

SOAR

# Striving for Oral Language Achievement in Reading (SOAR)

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This research was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305F100013 to the University of Texas-Austin as part of the Reading for Understanding Research Initiative as well as grant K08 HD068545-01A1 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD).

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Austin

SOAR

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# Striving for Oral Language Achievement in Reading (SOAR)

## Description of the Intervention:

The SOAR intervention is designed to improve listening comprehension and reading comprehension skills among middle grade struggling readers. The SOAR intervention teaches students how to identify key words and use key words to formulate a main idea sentence. Main idea sentences for small sections of text are combined to form main idea sentences for larger sections of text. The intervention consists of four steps of understanding.

## Steps for Understanding.

- **Step 1: Read Passage**
  - Students read the passage aloud.
    - Chorally as a group,
    - Whisper read as a group
    - Partner pairs, or
    - Individually
      - Teachers should
        - Model
        - Provide positive corrective feedback for decoding errors.
        - Ask students to re-read a sentence or text section to improve reading accuracy or comprehension.
  
- **Step 2: Check for Understanding**
  - **Check for Understanding Questions.**
    - Students' comprehension of the text section is assessed with open ended, comprehension questions.
    - Teachers should
      - Call on students individually.
      - Prompt students to answer questions using their own words.
      - Prompt students to read the sentence or text section that supports their answer.
      - Re-read texts to improve comprehension.

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- **Target vocabulary.** Some text sections provide an opportunity to teach target vocabulary words. In these instances, teachers may use the vocabulary routine and vocabulary cards:
  - Call on student to read the vocabulary word and its definition.
  - Call on another student to describe the picture using the vocabulary word.
  - Call on another student to use target word in a sentence.
  - Repeat for additional vocabulary words.
  
- **Step 3: Identify Key Words**
  - Students are encouraged to follow a key word checklist.
  - Use a think aloud procedure to help students understand how to identify key words in text.
  
  - **Key Word Checklist:**
    - ✓ What's the subject or main topic?
      - Students are asked to describe the subject or topic of the text section in one word.
    - ✓ What's most important about it?
      - Direct students to the topic sentence and concluding sentence of the paragraph.
      - Students are encouraged to describe what happened or to identify important ideas.
      - Direct students to examine the body of the text to identify other important concepts.
    - ✓ Record key words in margin of the text or on the key word/main idea worksheet.
  
- **Step 4: Main Idea**
  - Students are encouraged to follow a main idea checklist.
  - Use a think aloud to help students learn how to use key words to form a main idea sentence.
  
  - **Main Idea Checklist:**
    - ✓ Include key words.
    - ✓ Include most important idea.
    - ✓ Check to make sure unnecessary details are left out.
    - ✓ Check to make sure main idea sentence is in your own words.
    - ✓ Record main idea by text section or on the key word/main idea worksheet.

## SOAR Lesson Outline

### Unit 1 (Lessons 1-5)

Steps for Understanding (Model)	<ul style="list-style-type: none"><li>▪ This activity will occur during the first 5 lessons and then as needed.</li><li>▪ The teacher models the steps for understanding (key words and main idea) with one paragraph of text.</li><li>▪ One target word is briefly explained as the passage is read.</li></ul>
Steps for Understanding (Practice)	<ul style="list-style-type: none"><li>▪ Students practice the steps for understanding (Key words, main idea, and focused summary) and receive teacher feedback.</li></ul>
Synthesize Passage	<ul style="list-style-type: none"><li>▪ Students synthesize knowledge across the text sections by applying the steps for understanding (Key words and main idea) to the main ideas identified in the past activity.</li></ul>
Integrate Knowledge	<ul style="list-style-type: none"><li>▪ The group will very quickly discuss the unit's big question.</li></ul>

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### Unit 1 (Lesson 6-8) – Unit 4

Steps for Understanding (Practice)	<ul style="list-style-type: none"><li>▪ Students practice the steps for understanding (Key words and main idea) and receive teacher feedback.</li><li>▪ One target vocabulary word is briefly explained as the passage is read.</li></ul>
Synthesize Passage	<ul style="list-style-type: none"><li>▪ Students synthesize knowledge across the text sections by applying the steps for understanding (Key words and main idea) to the main ideas identified in the past activity.</li></ul>
Integrate Knowledge	<ul style="list-style-type: none"><li>▪ The group will very quickly discuss the unit's big question.</li></ul>

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## Targeted, Positive Feedback to help develop Key Words and Main Ideas.

An important element of the intervention is feedback. Below are examples of feedback you may use to help students more accurately identify key words in text and form main ideas.

<b>Key Word</b>	
<b>Student Response</b>	<b>Targeted, Positive Feedback</b>
Accurately identifies a key word from text.	<ul style="list-style-type: none"> <li>▪ Excellent Job (student's name).</li> </ul>
Identifies a detail from text but it is not the most important detail or key word.	<ul style="list-style-type: none"> <li>▪ You are saying this text section is mostly about _____. That makes me think this paragraph describes <u>(elaborate and exaggerate their detail to demonstrate that it is not a key word)</u>.</li> <li>▪ Let's look back at the text and see if that matches.</li> </ul>
Identifies an irrelevant word not found in the text.	<ul style="list-style-type: none"> <li>▪ You are saying that this paragraph is mostly about _____.</li> <li>▪ Let's look back at the text and see if that matches.</li> </ul>

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**Main Idea**

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Integrates key words to form main idea sentence.

- Wonderful job (student's name).

Includes unnecessary details or lesser important details.

- You are saying this text section is mostly about \_\_\_\_\_. That makes me think this paragraph describes (elaborate/exaggerate to demonstrate that these details are not most important).
- Let's look back and see if that is discussed throughout the text.

Missing Key Words

- We had decided that \_\_\_\_\_ was also a key word. Could you include this key word to form your main idea?

Matches the text (Not in own words)

- Your main idea matches the \_\_\_\_\_ section in the text. Can you put this in your own words?
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## Unit 1, Lesson 1

Components
1) Steps for Understanding (model)
2) Steps for Understanding (practice)
3) Synthesize Passage
4) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet

### 1) Steps for Understanding (Model)

- *Our big question is, **What are the similarities and differences among natural disasters?***
- **Read Passage:**

#### Model Text



On a beautiful October afternoon in 1989, I was driving home when my car started to wobble. I thought I had a flat tire, but when I got out I realized that the ground was swaying like the deck of a small boat. I was confused as I heard what sounded like a gigantic roar coming from the south. Later I realized this was all of the houses, buildings, concrete, and earth cracking as an earthquake approached.

## SOAR

- **Identify Key words:** The first step is to identify key words.
  - a. **Determine Narrative or Expository Key Word Checklist?**
    - This is a narrative text.
    - Use the Narrative Key Words Checklist.
    - The author is telling a story about a person experiencing an earthquake.
  - b. **What was the subject or main topic of the paragraph?**
    - There was an earthquake! Earthquake is the main topic.
    - Write earthquake in the margin of our text.
  - c. **What happened?**
    - Write **Swaying** in the margin.
      - ✓ Swaying means moving back and forth.
      - ✓ This is the first thing the person noticed about the earthquake and it summarizes the first two sentences.
    - Write **roar** in the margin.
      - ✓ Next, the person heard a gigantic **roar**.
    - Write **cracking** in the margin.
      - ✓ **Cracking** is an important word because it explains why there was movement and loud noises.
    - Make sure you wrote these key words in the margin of your text.
    - Notice that these key words are underlined in the text.
- **Quickly review visual checklist for key words:**
  - a. **“Was it the subject or “what” of the paragraph?”**
    - The main topic in this paragraph is earthquake.
    - So, let’s put a checkmark next to that word because we’re sure that should be a key word.
  - b. Another question on our checklist asks: **“Does the word help explain the subject or key concept?”**
    - **Sway, roar, and cracking** are words used to describe the earthquake, which was the key concept in this paragraph.
      - Let’s put checkmarks next to those words.
      - Let’s skip the last two questions for now.

## SOAR

- **Main Idea:** Use key words to generate a main idea.
  - I'll write my main idea on the white board.
  - I know that the topic of the paragraph was earthquakes, so I am going to start with earthquakes and then use my other key words to create my main idea.
  
  - (Write and say the following sentence on the white board:
    - "A person realized an earthquake was taking place because the ground and building were swaying, cracking, and making a loud roar."
  
  - **Quickly review visual checklist for main ideas:**
    - Are the key words included in the main idea?
      - Yes? I included **swaying, cracking, and roar**.
    - Did I include the most important idea in the paragraph is the next question?
      - I think we included the most important idea since we described exactly what was happening in one sentence.

<b>2) Steps for Understanding (Practice)</b>	
<b>Text Section #2</b>	<b>Instructional Key</b>
<p>Within seconds, the <u>ground</u> was moving in waves that seemed to be 6 feet tall. I tried walking to a nearby tree but kept falling. The quake’s <b>tremors</b> caused underground pipes to burst and spray water into the air.  I looked over at a school building swaying back and forth on the brink of collapse. After what seemed like forever, the shaking <u>stopped</u>, although utility poles continued to wave back and forth.</p>	<p><b>1) Read Paragraph.</b></p> <p> <i>Let’s be sure we understand the word “<b>tremors</b>”.</i></p> <ul style="list-style-type: none"> <li>○ <i>The sentence says that the quake’s <b>tremors</b> caused pipes to burst.</i></li> <li>○ <i>Tremors are the vibrating or shaking motions from an earthquake.</i></li> <li>○ <i>Picture the ground shaking so much that underground pipes burst open.</i></li> </ul> <p><b>2) Check for Understanding:</b> <i>I want to make sure you understood the paragraph.</i>  <i>Q: What did the tremors, which I know means shaking from the earthquake, cause?</i>  <i>A: The tremors caused pipes to burst and buildings and poles to move back and forth.</i></p> <p><b>3) Key Words:</b> <i>Write 3-4 key words in the margin.</i></p> <ul style="list-style-type: none"> <li>○ <i>Discuss with your partners the key words you identified using the key words checklist.</i></li> <li>○ <i>As a class, share key words. Discuss why key words are correct.</i></li> <li>● <i><u>Answer key:</u> ground, waves, tremors, stopped</i></li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use the main idea checklist to help you write your main idea. Let’s share your main ideas.</i></p> <ul style="list-style-type: none"> <li>○ <i><u>Answer key:</u> The <u>ground</u> moved in <u>waves</u> and some things kept swaying even after the <u>tremors stopped</u>.</i></li> <li>○ <i>Great job. So, I’ll write our main idea as I understand it.</i></li> <li>● <i>Write and say appropriate main idea.</i></li> <li>● <i><u>The ground moved in waves and some things kept swaying even after the tremors stopped.</u></i></li> </ul>

Text Section #3	Instructional Key
<p>I drove to our <u>apartment</u> building and found water from the large in-ground pool covering the parking lot. My wife had ridden out the quake braced in the doorway of our apartment. Kitchen drawers had been knocked open and their contents had scattered everywhere. One wall in the kitchen was beginning to <u>collapse</u>, so we gathered our terrified cats and drove to a Red Cross shelter.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: The text said, “my wife had ridden out the quake braced in the doorway of the apartment” what does that mean?</i>  <i>A: It means that she held on to the walls under the doorway of the apartment during the entire earthquake.</i></p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• Partner share or class share and discuss</li> <li>• <u>Answer key:</u> apartment, collapse, Red Cross shelter</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Write your main idea using the checklist.</i></p> <ul style="list-style-type: none"> <li>○ <i>Share and Discuss</i></li> <li>○ <u>Answer key:</u> “Their <u>apartment</u> was in danger of <u>collapsing</u> so they went to a <u>Red Cross shelter</u>.”</li> <li>○ <i>Great job. So, I’ll write our main idea as I understand it.</i> <ul style="list-style-type: none"> <li>• Write and say appropriate main idea.</li> <li>• Or adapt the student generated main idea as appropriate.</li> </ul> </li> </ul>

Text Section #4	Instructional Key
<p>Six months before the earthquake, we had lived in a <u>house</u> on the edge of a cliff on Loma Prieta Mountain. We returned several years later to find that the house was now gone, having fallen off the cliff during the earthquake. Oddly, the home next to ours had survived. Being on Loma Prieta Mountain years after the quake made me grateful to be <u>alive</u>.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q: What house fell off the cliff? Was it their current house or their old house that fell off the cliff?</i>  <i>A: Their old house fell off the cliff.</i></p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• Pair and share</li> <li>• <u>Answer key:</u> house, cliff, alive</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use the main idea checklist to help you write your main idea. Get started.</i></p> <ul style="list-style-type: none"> <li>• Pair and share.</li> <li>• <u>Answer key:</u> “A <u>house</u> they had lived in earlier had fallen off a <u>cliff</u>, so they felt lucky to be <u>alive</u>.”</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

2) Synthesize Passage	
Main Ideas	Instructional Key
<ul style="list-style-type: none"> <li>▪ A person realized an earthquake was taking place because the ground and building were swaying, cracking, and making a loud roar.</li> <li>▪ The ground moved in waves and some things kept swaying even after the tremors stopped.</li> <li>▪ Their apartment was in danger of collapsing so they went to a Red Cross shelter.</li> <li>▪ A house they had lived in earlier had fallen off a cliff, so they felt lucky to be alive.</li> </ul>	<ul style="list-style-type: none"> <li>▪ <b>Read Passage.</b></li> <li>▪ <b>Overall Key Words:</b> <ul style="list-style-type: none"> <li>• <i>Model: Narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> earthquake, tremors, ground, collapse, alive.</li> </ul> </li> <li>▪ <b>Overall Main Idea:</b> <i>Ok, now we will use our overall key words to develop a main idea for the entire passage. Use your main idea checklist to help you a main idea.</i> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> "A person who lived through an earthquake with tremors that caused the ground to sway and buildings to collapse was glad to be alive. "</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul> </li> </ul>

#### 4) Integrate knowledge

- *Let's revisit our big question "What are the similarities and differences among natural disasters?"*
- *Today we learned about earthquakes.*
  
- *We don't have anything to compare them to at this point, so we can't answer the big question, however we can write down a few notes on what we learned about earthquakes, so let's do this.*
  
- *Who can tell me one fact they learned about earthquakes? (Teacher should write answers on whiteboard/posterboard.)*
  - Answer Key
    - Earthquakes cause the ground to move in waves
    - Quakes can be very destructive, resulting in burst pipes and collapsed buildings.
    - The ground can crack during a quake.



## Unit 1, Lesson 2

Components
1) Steps for Understanding (model)
2) Steps for Understanding (practice)
3) Synthesize Passage
4) Integrate Knowledge


### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 3) Steps for Understanding (Model)

- *This unit is focused on answering one big question: **What are the similarities and differences among natural disasters?***
- **Read Passage**

#### Model Text

Earthquakes are set off by the movement of tectonic plates, the enormous pieces of Earth's shell that fit together like pieces of a jigsaw puzzle. Tectonic plates are always in motion, moving between 1 and 6 inches per year. Usually they glide smoothly, but sometimes the edges catch against each other and **pressure** gradually builds up.  When the pressure becomes too strong and the huge plates suddenly shift, waves of energy are released, like the waves in a pond if you throw a stone into the water. This is an earthquake.



Before we continue, let's be sure we all understand the words "**plates**" and "**pressure**".

- The paragraph says that the edges of tectonic plates catch against each other and pressure builds up.
- Plates are the large pieces of land that make up Earth's surface.
- Pressure is force or stress on an object.
- Picture the edges of Earth's plates catching on each other, but still trying to move.
- Now picture the pressure that is building up where they catch.
- **Reread the paragraph** from the beginning.
  
- **Key words:**
  - **Narrative or informational text?**
    - Based on the first paragraph, we know the author is providing information about earthquakes and is not telling a story.
    - We'll use **our checklist for informational texts**.
  - **What is the subject or main topic of the paragraph?**
    - The subject of this paragraph is earthquakes.
    - Write earthquake in the margin of our text.
  - **Was there an important word in the topic or concluding sentence?**
    - Now focus on the topic sentence because it will often tell you the main idea of the paragraph.
    - The important term in the topic sentence is tectonic plates.
    - Tectonic plates are important because it is what "sets off" or causes earthquakes. It is described in the first paragraph.
    - Write tectonic plates in the margin.
  - **What words help to explain the subject or key concept?**
    - What is this paragraph telling us about earthquakes and tectonic plates?
      - We learn that tectonic plates "**are always in motion**" in the second paragraph.
        - Write **motion** as a key word in the margin.
      - One word that comes up in the a few times in the third and fourth sentences is **pressure**.
        - The passage says that the motion causes "pressure to build up" and when it gets "too strong" waves of energy are released.
        - Write **pressure** as a key word in the margin.

## SOAR

- **Quickly review visual checklist for key words:**
  - *Let's look at our checklist and check our key words.*
- 1. **Was it the subject or "what" of the paragraph?**
  - *What word would you say is the subject or main topic of the paragraph?*
  - *The main topic in this paragraph is **earthquake**.*
    - *So, let's put a checkmark next to that word because we're sure that should be a key word.*
- 2. *The next question is: **Was the word an important part of a topic or concluding sentence?***
  - *Were any of our key words an important part of the topic or concluding sentence?*
    - *Tectonic plates.*
- 3. *Next question: **"Does the word help explain a key concept?"***
  - *Which of these words explains a key concept?*
    - *Tectonic plates, motion, and pressure all describe the key concept of how earthquakes form.*
  - *Great, let's put checkmarks next to those words.*
- 4. *Read the next question together please: **"Does the word help explain the subject or key concept?"***
  - *Earthquakes was a key concept in this paragraph so let's put a checkmark next to that words.*
- 5. *Great, let's read the last question aloud together. Ready, begin: **"Did the word occur multiple times in the paragraph?"***
  - *What's the answer to this question?*
  - *tectonic plates, pressure, and earthquakes*

### 1) Main Idea:

- *Use our key terms to generate a main idea.*
- *"Earthquakes occur when motion in the tectonic plates causes pressure to build up and be released."*

- **Quickly review checklist for main ideas:** *Let's check our main idea checklist.*
  - **Did I include the key words?**
  - *Does my main idea sentence the most important idea in the paragraph?*
  - *Did we leave out unnecessary details?*

<b>2) Steps for Understanding (Practice)</b>	
<b>Text Section #2</b>	<b>Instructional Key</b>
<p>Seismology is the study of earthquakes and a seismologist is the scientist who studies them. A <u>seismograph</u> is an instrument that <u>measures</u> an earthquake's waves using a special pen and paper that are mounted on a moving cylinder. When an earthquake occurs, the pen jumps back and forth on the paper, creating lines that show the intensity of the earthquake. Seismograph stations are located all over the world and can record <b>tremors</b> from quakes thousands of miles away.</p>	<p><b>1). Read Paragraph.</b></p> <ul style="list-style-type: none"> <li>• <i>I see the vocabulary word "tremors" in this paragraph.</i></li> </ul> <p><b>2). Check for Understanding:</b> <i>I want to make sure we know what the big words in this paragraph meant.</i></p> <p><i>Q: Who can tell me, what's seismology?</i>  <i>A: The study of earthquakes.</i></p> <p><i>Q: What is a seismologist?</i>  <i>A: a scientist who study earthquakes</i></p> <p><i>Q: What is a seismograph?</i>  <i>A: an instrument that measures earthquakes</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>○ <u>Answer key:</u> seismograph, measures, intensity, tremors</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Ok, share your main idea.</i></p> <ul style="list-style-type: none"> <li>○ <u>Answer key:</u> A <u>seismograph</u> is an instrument that <u>measures</u> the <u>intensity</u> of an earthquake's <u>tremors</u>.</li> <li>○ <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Earthquakes can cause tremendous <u>destruction</u> and loss of life. The ground under buildings can become loose, causing buildings to collapse or sink. <b>Tremors</b> might trigger landslides, mudslides, and avalanches on steep hills or mountains. Broken gas and power lines, or tipped-over wood or coal stoves can start fires. Fires can be especially serious if water lines that feed the fire hydrants have also been damaged.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Check for Understanding:</b>  <i>Q: Look at the text and tell me, what are the consequences of earthquakes?</i>  A: (1) Destruction to buildings, power lines, gas lines, fire hydrants, etc., (2) landslides, mudslides, avalanches, and fires, (3) this destruction can cause the loss of life.)</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i>  ○ <u>Answer key:</u> earthquakes, destruction, loss of life.</p> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Ok, share your main idea.</i>  ○ <u>Answer key:</u> When an <u>earthquake</u> occurs, it can cause <u>destruction</u> and <u>death</u>.  ○ <i>Great job. So, I'll write our main idea as I understand it.</i></p>

Text Section #4	Instructional Key
<p>Seismologists have tried lots of different ways of <u>predicting</u> earthquakes, but none have been successful. They have a pretty good idea of <i>where</i> an earthquake is most likely to hit, but they still can't tell exactly <i>when</i> it will happen. There is no obvious sign to indicate that an earthquake is coming very soon. Vibrations can be detected just before an earthquake occurs, but this doesn't give enough time for people to <u>escape</u>.</p>	<p><b>1). Read Passage.</b></p> <p><b>2). Check for Understanding:</b>  <i>Q: What have seismologists been trying to figure out?</i>  <i>A: They have been trying to predict when an earthquake will happen.</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> seismologists, predicting, escape, earthquake</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Ok, share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Seismologists</u> are trying to determine how to <u>predict</u> an <u>earthquake</u> so people can <u>escape</u>, but they have not been successful.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

4) Synthesize Passage	
Main Ideas	Instructional Key
<ul style="list-style-type: none"> <li>▪ <u>Earthquakes</u> occur when <u>motion</u> in the <u>tectonic plates</u> causes <u>pressure</u> to build up and be released.</li> <li>▪ A <u>seismograph</u> is an instrument that <u>measures</u> the <u>intensity</u> of an earthquake's <u>tremors</u>.</li> <li>▪ When an <u>earthquake</u> occurs, it can cause <u>destruction</u> and <u>death</u>.</li> <li>▪ <u>Seismologists</u> are trying to determine how to <u>predict</u> an <u>earthquake</u> so people can <u>escape</u>, but they have not been successful.</li> </ul>	<p><b>1). Read Passage:</b></p> <p><b>2). Overall Key Words:</b> <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></p> <ul style="list-style-type: none"> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> earthquake, tectonic plates, pressure, destruction, seismologist.</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, now we will use our highlighted key words for the whole passage to develop an overall main idea for the whole passage. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Earthquakes</u> happen when <u>pressure</u> in earth's <u>tectonic plates</u> is released, creating tremors that can cause tremendous <u>destruction</u>. <u>Seismologists</u> study quakes to learn more about them and keep people safe (*second sentences is optional*).</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

#### 4) Integrate knowledge

Let's revisit our big question "*What are the similarities and differences among natural disasters?*"

- *We're still not ready to compare and contrast because we have only learned about earthquakes, however we did learn some new information about earthquakes.*
- *Let's write down a few notes to help us remember the key information we learned tomorrow when we compare and contrast earthquakes with tsunamis.*
- *Who can tell me something new they learned?*

Possible student responses:

- Earthquakes are caused by pressure building up along Earth's plates
- Earthquakes can cause tremendous destruction, such as landslides, fires, broken water pipes or gas lines
- Scientists who study earthquakes are called seismologists
- Seismologists have tried to learn how to predict earthquakes, without success



## Unit 1, Lesson 3

Components
1) Steps for Understanding (model)
2) Steps for Understanding (practice)
3) Synthesize Passage
4) Integrate Knowledge


### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.


### 1). Steps for Understanding (Model)

- *When we read today, let's keep in mind: **What are the similarities and differences among natural disasters?** (Point to the big question.)*
- **Read Passage.**

#### Model Text



You may have heard of tsunamis, the enormous waves that crash into the coastline and flood entire cities. The 2011 Tohoku Tsunami slammed into Japan and caused billions of dollars worth of damage. Thousands of lives were lost. It even caused the core of a nuclear power plant to overheat and release **contamination** into the environment. 

## SOAR

-  Vocabulary word: **contamination**.
  - “It even caused the core of a nuclear power plant to overheat and release **contamination** into the environment.”
  - Contaminate means to stain or infect something by contact with something that is dirty or harmful. The dangerous nuclear material was released into the clean environment. Imagine how that might affect it.
  
- **Key words:**
  - Narrative or expository?
    - Do you think this is an informational or narrative text? (Answer: informational) Why?
    - Answer: the author is providing information, not telling a story. Great. So, let’s use our checklist for **informational texts**.
  
  - Was it the subject or “what” of the paragraph:
    - The topic of the paragraph is tsunamis because the paragraph begins by saying, “you may have heard of tsunamis.”
    - However, the rest of the paragraph—sentences 2, 3, and 4—describe a specific tsunami, the 2011 Tohoku Tsunami, so we’re going to write *Tohoku Tsunami* in the margin of our text.
  
  - Does it help explain a key concept?
    - Does the word help explain the subject or key concept?
      - Yes, so what is the most important thing we learned about the Tohoku Tsunami?
      - I think it’s important that it killed thousands of people and left a lot of damage, so I’m going to write thousands died and damage.
  
  - Historic event:
    - One more word that you could include is Japan because this is paragraph is describing a historic event.

## 2) Main Idea:

- *Now that we have identified key words; we will use our key terms to write a main idea.*
  
- *“The 2011 Tohoku Tsunami killed thousands of people and caused lots of damage in Japan.”*
  
- **Quickly review visual checklist for main ideas:**
  - **Did I include the key words?**
  
  - *Does my main idea sentence cover the most important idea?*
    - *Yes, we know that explaining the effects of the Tohoku Tsunami was the most important idea because sentences 2-4 describe what happened.*
  
  - *Did we leave out unnecessary details?*
    - *Who can tell me an example of a detail that would have been unnecessary?*
  
  - *Was the main idea in my own words?*

2) Steps for Understanding (Practice) 25 minutes	
Text Section #2	Instructional Key
<p>Tsunamis are usually caused by underwater <u>earthquakes</u>. An undersea earthquake causes the <u>plates</u> on ocean floor to be pushed forcefully upwards by as much as 15 feet. As the plates rise, the ocean above it is <b>displaced</b> and also rises.  This causes a huge <u>wave</u> that can become a tsunami.</p>	<p><b>1). Read paragraph.</b></p> <p> <i>This is a great place to talk about the word “displaced.”</i></p> <ul style="list-style-type: none"> <li>• “As the plates rise, the ocean above it is displaced and also rises.”</li> <li>• <i>Displace means to move something away from its usual place.</i></li> </ul> <p><b>2). Check for Understanding:</b> <i>I want to make sure we know what the big words in this paragraph meant.</i></p> <p><i>Q: Who can tell me, what happens to the ocean floor during an undersea earthquake?</i>  <i>A: The plates move (If they don’t know the answer, prompt them to look at the text)</i></p> <p><i>Q: What are tsunamis usually created by?</i>  <i>A: Underwater earthquakes</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>○ <u>Answer key:</u> plates, wave, earthquake, tsunami</li> </ul> <p><b>4). Main Idea:</b> <i>Now we will use our key words to develop a main idea. Don’t forget to use the main idea checklist. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>○ <u>Answer key:</u> “<u>Tsunamis</u> occur when underwater <u>earthquakes</u> cause a giant <u>wave</u>.”</li> <li>○ <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

**Text Section #3**

The size of a tsunami depends on the strength of the earthquake's **tremors**. It also depends on the depth of the water where it occurs. A tsunami will be larger when a strong earthquake occurs in deep ocean water.

**Instructional Key****1) Read Passage.****2) Check for Understanding:** *Look at the text and tell me:*

*Q: What is a tremor?*

*A: A tremor is a vibrating or shaking motion.*

*Q: What determines the size of a tsunami?*

*A: The depth of the water where the earthquake occurs.*

**3). Key Words:** *Ok, write down your key words. Use the key word checklist to help you.*

- Answer key: tsunami, tremor, strength

**4). Main Idea:** *Ok, now we will use our key words and main idea checklist to write a main idea.*

- Answer key: "The size of a tsunami depends on the strength of the tremors and the depth of the ocean water."
- *Great job. So, I'll write our main idea as I understand it.*

Text Section #4	Instructional Key
<p>In the case of <u>Tohoku</u>, it was classified as an undersea megathrust <u>earthquake</u>. This was the biggest earthquake to ever hit Japan. In fact, it was the fifth-largest earthquake ever measured on earth since humans began tracking the size of earthquakes in 1900. The waves produced during the Tohoku tsunami were, quite simply, huge. The tallest may have reached a height of 133 feet, scientists believe. In certain areas, these waves traveled as far as six miles inland, wiping out nearly everything in their path.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Check for Understanding:</b> <i>Look at the text and tell me:</i>  <i>Q: How big was the Tohoku tsunami?</i>  <i>A: It was the fifth largest ever and the biggest in Japan.</i>  <i>Q: What did the waves of the tsunami do?</i>  <i>A: Traveled inland six miles and destroyed everything in its path.</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Tohoku, earthquake, wave</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> “The <u>Tohoku earthquake</u> was the fifth-largest in history, and the huge <u>wave</u> of the tsunami caused destruction on land.”</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

**3) Synthesize Passage**

Main Ideas	Instructional Key
<p>1) The <u>2011 Tohoku Tsunami</u> killed thousands of people and caused lots of <u>damage</u> in <u>Japan</u>.</p> <p>2) <u>Tsunamis</u> occur when underwater <u>earthquakes</u> cause a giant wave.</p> <p>3) The size of a tsunami depends on the <u>strength</u> of the <b>tremors</b> and the depth of the ocean water.</p> <p>4) The <u>Tohoku</u> earthquake was the fifth-largest in history, and the huge <u>wave</u> of the tsunami caused <u>destruction</u> on land.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> 2011 Tohoko Tsunami, earthquake, wave, destroy/destruction</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea for the whole passage. Go ahead and write your main idea. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> “The <u>2011 Tohoku tsunami</u> was caused by a strong underwater <u>earthquake</u>. The giant <u>wave</u> killed many people and caused <u>destruction</u> in Japan.”</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

#### 4) Integrate knowledge

- *Let's revisit our big question "What are the similarities and differences among natural disasters?"*
  - *In the past few days, we discussed earthquakes and tsunamis. Let's compare and contrast earthquakes and tsunamis. Who can tell me one similarity?*
    - (Students should compare earthquakes and tsunami).
    - Who can tell me a difference?
    - (Student should contrast earthquakes and tsunami.)
- Answer key:
  - Similarities: both natural disasters cause destruction, specific conditions must occur for a natural disasters to occur, earthquakes and tsunamis are both caused by **plate tectonics**.
  - Difference: tsunamis occur when earthquakes occur underwater, tsunamis cause big waves



## Unit 1, Lesson 4

Components
1) Steps for Understanding (model)
2) Steps for Understanding (practice)
3) Synthesize Passage
4) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding (Model)

- *Let's keep in mind our big question: **What are the similarities and differences among natural disasters?** So far, we have learned about earthquakes and tsunamis, so we can compare and contrast them.*
- **Read Passage.**

#### Model Text

“My wife and grandson are still missing,” Mr. Sato, a Tohoku fisherman, explained to a news reporter in November 2012. “The tsunami was estimated to be 20 feet tall, so my wife, my three brothers and I ran to a place that was 50 feet high. The tsunami was actually 65 feet high,” said Sato. “All I remember is holding on as the waves washed over me again and again. When it was all over, my wife was missing. That night, I walked to my wife’s hometown, but I could not find her.”

## SOAR

- **Key words:**
  - **Narrative or Informational?**
    - *Informational.*
  - **Was it the subject or “what” of the paragraph?**
    - *The subject or topic is a large tsunami.*
    - *It doesn't say large tsunami in the text, however a 65-foot tsunami seems large, so I'm going write “large tsunami”*
    - *Write large tsunami.*
  - **What happened?**
    - *What did we learn about the large tornado?*
    - *We know that the tornado crashed into land and it caused the wife and grandson of a family to go missing.*
    - *Write wife and grandson missing as key words in our margin.*
  - **Are there any other key words that we may need to identify?**
    - *The big ideas are explained by large tsunami, wife and grandson missing*

### 3) Main Idea:

- *Now that we have identified key words; we will use our key terms to write a main idea.*
- *“A large tsunami caused Mr. Sato's wife and grandson to go missing.”*
- **Quickly review checklist for main ideas:**
  - **Did I include the key words?**
  - **Does my main idea sentence cover the most important idea?**
    - *Yes, we know that the wife and grandson being lost in the tsunami is the most important thing because the entire paragraph describes what happened that caused the family members to go missing.*
  - **Did we leave out unnecessary details?**
    - *Right, who can tell me an example of a detail that would have been unnecessary?*
  - **Is the main idea in my own words?**

<b>2) Steps for Understanding (Practice)</b>	
<b>Text Section #1</b>	<b>Instructional Key</b>
<p>Not all <u>tsunamis</u> are formed by undersea earthquakes. Explosions, underwater landslides, and volcanic eruptions can also trigger them. A tsunami could even be generated by a giant meteor splashing into the ocean from outer space. That will cause a gigantic amount of water to be <b>displaced</b>, and can often result in a tsunami.</p>	<p><b>1). Read paragraph:</b></p> <p><b>2). Check for Understanding:</b>  Q: <i>Before we go on, let's review the word <b>displaced</b>. _____, could you tell me what it means in this sentence?</i>  A: the water was pushed out of its usual place  Q: <i>Besides undersea earthquakes, what are some other things that can cause tsunamis?</i>  A: Explosions, underwater landslides, volcanic eruptions, and meteors</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i>  ○ <u>Answer key:</u> tsunami, water, displaced</p> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Share your main idea.</i>  ○ <u>Answer key:</u> <u>Tsunamis</u> can be triggered by any natural event that causes ocean <u>water</u> to be <u>displaced</u>.  ○ <i>Great job. So, I'll write our main idea as I understand it.</i></p>

Text Section #2	Instructional Key
<p>How can people know if a tsunami is coming?            Sometimes roaring <u>sounds</u> from the ocean are heard before a tsunami strikes. The most threatening sign is when water that covers the shoreline begins to <u>recede</u>, or pull back. Some people from Tohoku said that the ocean receded and exposed the ocean floor before coming back in huge waves traveled as far as six miles inland, wiping out nearly everything in their path.</p>	<p><b>1). Read passage.</b></p> <p><b>2). Check for Understanding:</b>            Q: <i>Before we go on, what does recede mean?</i>            A: To pull back            Q: <i>What are some warning signs for tsunamis?</i>            A: Roaring sounds and the shoreline recedes</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i>            ○ <u>Answer key:</u> recede/pull back, waves, tsunami, sounds</p> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use the main idea checklist as you write your main idea.</i>            ○ <u>Answer key:</u> Just before a <u>tsunami</u> strikes, people near the shore hear a roaring <u>sound</u> and the <u>waves recede</u>.            ○ <i>Great job. So, I'll write our main idea as I understand it.</i></p>

Text Section #3	
Main Ideas	Instructional Key
<ul style="list-style-type: none"> <li>▪ “A large <u>tsunami</u> caused Mr. Sato’s wife and grandson to go missing.”</li> <li>▪ <u>Tsunamis</u> can be triggered by any natural event that causes ocean <u>water</u> to be <u>displaced</u>.</li> <li>▪ Just before a <u>tsunami</u> strikes, people near the shore hear a roaring <u>sound</u> and the waves <u>recede</u>.</li> <li>▪ “Since the <u>tsunami</u>, <u>Mr. Sato</u> has been helping with <u>recovery</u> efforts by improving the fishing industry and living conditions for the survivors.”</li> </ul>	<p><b>1). Review main ideas</b></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> tsunami, recovery, Mr. Sato</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Now we will use our key words to develop a main idea of the whole passage.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> “Mr. Sato lost his wife and grandson in a giant <u>tsunami</u> that gave little warning. Since the tsunami, <u>Mr. Sato</u> has helped with <u>recovery</u> efforts for the survivors.”</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

#### 4) Integrate knowledge

- *Let's revisit our big question "What are the similarities and differences between among natural disasters?"*
  - *In the past few days, we compared and contrasted earthquakes and tsunamis. How can we add to our understanding of the big question based on what we learned today?*
  - (Students should compare and contrast tornadoes to earthquakes and tsunami).
- Possible student answers:
  - 1) Similarities: all natural disasters cause destruction, specific conditions must occur for a natural disasters to occur
  - 2) Difference: tsunamis happen in in the ocean and affect people and property near the coast

## Unit 1, Lesson 5

Components
1) Steps for Understanding (model)
2) Steps for Understanding (practice)
3) Synthesize Passage
4) Integrate Knowledge


### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding (Model)

- Today, we will add to our understanding of our big question: *What are the similarities and differences between earthquakes, tsunamis and tornadoes?*
- **Read Passage**

#### Model Text

A tornado is a very dangerous part of some thunderstorms. Weather **conditions** have to be just right for a tornado to form.  First, layers of wind in a storm need to blow at different speeds and in different directions. This causes a tube of wind to form between the layers. It rolls horizontally like a log. Next, upward and downward air currents tip it on its end. The tube is now a vertical column of spinning air called a funnel cloud. A tornado occurs when the lower end of the funnel cloud touches the ground. Winds inside a tornado can blow at hundreds of miles per hour, destroying houses, ripping the bark off trees, and even uprooting trees!

## SOAR

- Vocabulary word: **Conditions**.
  - “Weather **conditions** have to be just right for a tornado to form.”
  
- **Key words:** Write the key words in the margin of your text.
  - **Narrative or Informational text?**
    - It’s an informational text.
    - So we’re going to focus on the important ideas in the text, not what happened.
  - Start with the **subject of the paragraph**.
    - So, I ask myself, what was the subject or the “what” of the sentence?
    - The subject of this paragraph is “tornadoes”, so let’s write “tornadoes” in the margin.
  - **What did we learn about tornadoes?**
    - We learned about the wind conditions that cause tornadoes to form and that was really the big idea in this paragraph,
    - Let’s also write “**conditions**” and “**form**” in the margin as well.
    - In the next couple of sentences, the text describes how the wind cause funnel clouds, so I am going to write “**wind**” and “**funnel clouds**.”
  - **What other words Describe the key concept?**
    - We also learned that funnel clouds can destroy communities, so let’s also write “**destroy**.”
  
- **Main Idea:** Now that we have identified key words, we will use our key terms to generate a main idea.
  - “Tornadoes are dangerous weather events formed by winds that turn into funnel clouds.”
  - Now with a partner, use the main idea checklist to check the main idea. (Allow students time to do this, asking specific questions as needed.)
  - Great, now it will be your turn to comprehend text.



Text Section #2	Instructional Key
<p>November 10, 2002 was an unusually hot and muggy day in Mossy Grove, Tennessee when my aunt called to warn us that tornadoes were headed our way. My parents didn't take her <u>warnings</u> seriously at first. My mother said I could hide under a mattress if I was scared. When I turned on the TV and saw the tornado warning, I shouted that we needed to get out now. My dad <u>rushed</u> us to a neighbor's house where we huddled together under the steps in the basement.</p>	<p><b>1) Read paragraph:</b></p> <p><b>2) Check for Understanding:</b> Before we go on, who can tell me:  Q: <i>What did the narrator's aunt warn the family about?</i>  A: Tornadoes were headed toward their house  Q: <i>Where did the family go?</i>  A: To a neighbor's house under the steps in the basement</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>o <u>Answer key:</u> tornadoes, warnings, rushed, basement</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Don't forget to use the main idea checklist. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>o <u>Answer key:</u> A family received warnings of a <u>tornado</u> so they <u>rushed</u> to their neighbor's house and huddled under the steps in the <u>basement</u>.</li> <li>o <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Moments after hiding under the steps, the tornado struck. It lasted only a couple of minutes, but it seemed to stretch on forever. The wind was pulling the whole house up and I thought my head was going to explode from the heavy air <b>pressure</b>. The top part of the house caved in, then the brick wall beside me <u>collapsed</u>. When the tornado lifted my little brother into the air I thought he was going to get sucked away, but my mom grabbed his arm and lay on top of him. I cradled my dog, Chipper, and we all held on to each other.</p>	<p><b>1) Synthesize main ideas:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2). Check for Understanding:</b>            Q: <i>Before we go on, let's review the word <b>pressure</b>. _____, could you tell me what it means in this sentence?</i>            A: <i>The heavy air is a force on the narrator's head</i>            Q: <i>What happened to the house when the tornado struck?</i>            A: <i>A wall collapsed and the top part of the house caved in</i></p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> terrified, tornado, crawl out, survived</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>tornado</u> <u>terrified</u> the family, but they all <u>survived</u> and were able to <u>crawl</u> out.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>When I saw my house the next day, it was totally destroyed. I only found one thing of mine left behind. It was the first <u>doll</u> that I ever had. It was lying there, totally undamaged. That felt so good, just being able to find something. When we found my brother's bed, it was like somebody had twisted it into a pretzel. We also found the mattress I was going to hide under. It was on the other side of the road. If I had stayed at home, the tornado would have killed me.</p>	<p><b>1). Read passage:</b></p> <p><b>2). Check for Understanding:</b> Q: Before we go on, who can tell me what happened to the narrator's house? A: (Possible answers) Her house was destroyed, her brother's bed was twisted, but her doll was fine.</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"><li>▪ <u>Answer key:</u> house, destroyed, doll</li></ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Share your main idea.</i></p> <ul style="list-style-type: none"><li>▪ <u>Answer key:</u> The family's <u>house</u> and everything in it was <u>destroyed</u>, except for a <u>doll</u>.</li><li>▪ <i>Great job. So, I'll write our main idea as I understand it</i></li></ul>

### 3) Synthesize Passage

Main Ideas	Instructional Key
<ol style="list-style-type: none"> <li>1. "<u>Tornadoes</u> are <u>dangerous</u> weather events <u>formed</u> by winds that turn into funnel clouds."</li> <li>2. A family received warnings of a <u>tornado</u> so they <u>rushed</u> to their neighbor's house and huddled under the steps in the <u>basement</u>.</li> <li>3. The <u>tornado</u> <u>terrified</u> the family, but they all <u>survived</u> and were able to <u>crawl</u> out.</li> <li>4. "The family's <u>house</u> and everything in it was <u>destroyed</u>, except for a <u>doll</u>."</li> </ol>	<ol style="list-style-type: none"> <li>1). <b>Synthesize Information.</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></li> <li>2). <b>Overall Key Words:</b> <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i> <ul style="list-style-type: none"> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> tornado, house, destroyed, basement</li> </ul> </li> <li>3). <b>Overall Main Idea:</b> <i>Now we will use our key words to develop a main idea for the whole passage. Share your main idea.</i> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> "A family survived a terrifying <u>tornado</u> by hiding in their neighbor's <u>basement</u>, but their house was <u>destroyed</u>."</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul> </li> </ol>

#### 4) Integrate knowledge

- *Let's revisit our big question "What are the similarities and differences among natural disasters?"*
  - *In the past few days, we compared and contrasted earthquakes and tsunamis. How can we add to our understanding of the big question based on what we learned today?*
  - (Students should compare and contrast tornadoes to earthquakes and tsunami).
- Possible answers:
  - 1) Similarities: natural disasters cause destruction, specific conditions must occur for a natural disasters to occur
  - 2) Difference: tornadoes are caused by wind and weather conditions not plate tectonics

## Unit 1, Lesson 6

### Components

1). Steps for Understanding Practice

2). Synthesize Passage

3). Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **What are the similarities and differences among natural disasters?***
- *Today we will continue to learn about tornadoes.*

Text Section #1	Instructional Key
<p>Tornadoes in the United States often form when a warm wind <u>converges</u> with a cold wind. In the US, many tornadoes occur in a part of the Great Plains known as "Tornado Alley." This area includes parts of Texas, Oklahoma, Kansas, and Nebraska. In the Great Plains, the cold, dry air from Canada converges with the warm, moist air from the Gulf of Mexico. Most tornadoes form along the front, or boundary, between these two <u>air masses</u>.</p>	<p>1) <b>Read paragraph.</b></p> <p>2) <b>Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: Converge means to come together. What two types of winds or air masses converge to form a tornado?</i>  <i>A: When a cold wind (or cold air mass) meets a warm wind (or warm air mass).</i></p> <p>3). <b>Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Tornado Alley, converge, air masses (or winds), tornadoes</li> </ul> <p>4). <b>Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Many <u>tornadoes</u> occur in a place called "<u>Tornado Alley</u>" where warm and cold <u>air masses converge</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>Keeping residents of Tornado Alley <u>safe</u> is a priority for weather scientists, emergency responders, and community members. While it may be difficult to protect houses and other buildings, keeping the public aware of weather <b>conditions</b> helps people protect themselves and their families in cases of severe weather. The National Weather service provides timely warnings, and local TV and radio stations broadcast these <u>warnings</u> so that people in the tornado’s path can seek shelter. Towns also set off warning sirens that <b>conditions</b> exist for a tornado to form.</p>	<p>1) <b>Read Passage.</b></p> <p style="padding-left: 40px;">✓ Review Vocabulary word: <i>“conditions”</i>.</p> <p>2) <b>Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: How do warning from the National Weather Service help the residents of Tornado Alley?</i>  <i>A: People have time to find shelter from the tornado.</i></p> <p>3). <b>Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> safe, warnings, people, tornadoes</li> </ul> <p>4). <b>Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> To keep people <u>safe</u>, <u>warning</u> systems let <u>people</u> know when <u>tornadoes</u> might form.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>



Text Section #3	Instructional Key
<p>Some scientists actually want to get close to tornadoes to learn about them. These <u>scientists</u> use special equipment and instruments to <u>measure</u> what is happening in and around a tornado. One special instrument these scientists use is called a tornado probe. This instrument is about six inches tall and looks like a short, orange construction cone. Inside the tornado probe, there are sensors to measure wind speed, temperature, pressure, and direction. Some even have cameras, so scientists can see and understand what it's like to be in a tornado.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What does a tornado probe do?</i>  <i>A: It measures what's happening in a tornado (wind speed, temperature, etc.)</i></p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> scientists, equipment, probe, measure.</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write your main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Scientists</u> use <u>equipment</u> such as the tornado <u>probe</u> to <u>measure</u> tornadoes.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Scientists will try to guess where the tornado will go next. Then they drive to that location and put down the probes. If they are right about the direction of the tornado, then the tornado will go near or even right over the equipment. Then they take all of the measurements from the equipment and use them to <u>predict</u> where future tornadoes will form and travel. The work of storm scientists is very important and has saved lives by giving people enough warning and time to get out of the way of a destructive tornado.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What do scientists do with the measurements from their probes and equipment?</i>  <i>A: They try to predict where tornadoes will form and travel</i></p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> scientists, predict, warnings</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write your main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Scientists</u> try to <u>predict</u> where tornadoes will form and give people <u>warnings</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ Many <u>tornadoes</u> occur in a place called "<u>Tornado Alley</u>" where warm and cold <u>air masses converge</u>.</li> <li>▪ To keep people <u>safe</u>, <u>warning</u> systems let <u>people</u> know when tornadoes might form.</li> <li>▪ <u>Scientists</u> use <u>equipment</u> such as the tornado <u>probe</u> to <u>measure</u> tornadoes.</li> <li>▪ <u>Scientists</u> try to <u>predict</u> where tornadoes will form and give people <u>warnings</u>.</li> </ul>	<p><b>1) Synthesize Passage.</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> tornadoes, safe(ty), scientists, predict</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time to use our overall key words to develop a main idea for the whole passage. Use the main idea checklist to help you.</i></p> <p>a) <u>Answer key:</u> "In Tornado Alley, <u>scientists</u> study tornadoes using equipment that <u>predicts</u> where future <u>tornadoes</u> will occur and keep people <u>safe</u>."</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it.</i></p>

### 3) Revisit big question

- *Let's revisit our big question "What are the similarities and differences among natural disasters?"*
- *In the past few days, we compared and contrasted earthquakes and tsunamis.*
  - *How can we add to our understanding of the big question based on what we learned today?*
  - (Students should compare and contrast tornadoes to earthquakes and tsunamis).
- Possible student responses:
  - Similarities: they all can destroy houses and buildings; they can injure or kill people
  - Differences: tornadoes are caused by winds; earthquakes are caused by tectonic plates shifting; tsunamis are caused by ocean water displacement

<b>Unit 1, Lesson 7</b>	
<b>Components</b>	
1)	Steps for Understanding Practice
2)	Synthesize Passage
3)	Revisit Big question

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

<b>1). Steps for Understanding Practice</b>
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- Today, we will add to our understanding of our big question: *What are the similarities and differences among natural disasters?*
- Today we will learn about a new type of natural disaster, volcanic eruptions.

Text Section #1	Instructional Key
<p>Mount St. Helens volcano is part of the Cascade Mountains in the state of Washington. On March 27, 1980, there were signs of volcanic activity when a steam explosion blasted a 200-foot wide crater through the summit's ice cap. For the next few weeks steam and ash periodically vented out of the growing crater on top. A bulge on the mountain's north side grew larger and larger so that by mid-May the north side of Mount St. Helens bulged out 300 feet. This rapidly growing bulge was evidence that <b>pressure</b> from molten rock (magma) was increasing inside the volcano.</p>	<p><b>1) Read passage.</b></p> <p>Review vocabulary word "<i>pressure</i>".</p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What was the first sign of volcanic activity on MSH?</i>  A: The steam explosion created a crater at the mountain's summit  <i>Q: Why was the bulge on the side of MSH growing?</i>  A: Pressure from magma inside the volcano was increasing</p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Mount St. Helens (MSH) volcano; steam explosion, pressure, bulge</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to guide your thinking.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> After a <u>steam explosion</u> at <u>MSH volcano</u>, <u>pressure</u> caused a large <u>bulge</u> on the side of the mountain to grow.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>On May 18, 1980 at 8:32 a.m., an <u>earthquake's</u> tremors rumbled underneath Mount St. Helens. At the same time as the earthquake, the volcano's northern bulge and peak slid away in a huge <u>landslide</u>—the largest debris avalanche on Earth in recorded history. The landslide released pressure from the volcano's magma-filled bulge and triggered powerful eruptions that blasted laterally (sideways). Everything within eight miles of the blast was destroyed almost instantly. The landslide flowed down the mountain and into surrounding areas at over 90 miles per hour, sweeping away everything in its path.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i></p> <p>Q. <i>What triggered the huge landslide?</i>  A. <i>An earthquake triggered the landslide.</i></p> <p>Q. <i>What caused the lateral eruptions?</i>  A. <i>The landslide released pressure from the bulge, which caused the lateral blast.</i></p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> earthquake, landslide, eruption.</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to guide your thinking.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> An <u>earthquake</u> triggered a huge <u>landslide</u> and volcanic <u>eruption</u> at MSH causing a lot of destruction.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>At the same time the earthquake caused the landslide and volcanic eruption, a <u>column of ash</u> rose thousands of feet skyward and drifted downwind, turning day into night as dark, gray ash fell over eastern Washington and beyond. Within 10 miles of the mountain, one foot of ash accumulated on the ground. The ash cloud <u>spread</u> across the U.S. in three days, and circled the Earth in 15 days. Although the ash eruption lasted 9 hours, it only took moments for Mount St. Helens and the surrounding landscape to change dramatically. A vast, gray landscape lay where the forested slopes of Mount St. Helens once grew.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What was it that caused it to become as dark as night?</i>  <i>A: A huge amount of ash from the eruption drifted in the air and blocked the sun</i></p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> column of ash, spread, (drifted and sky could also be included)</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time for our main idea. Share your main ideas.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> A large <u>column of ash</u> erupted from the volcano and formed an ash cloud that <u>spread</u> around the world.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>



Text Section #4	Instructional Key
<p>In terms of human <u>impact</u>, the Mount St. Helens eruption was the most <u>destructive</u> in U.S. history. Fifty-seven people are known to have died. Hundreds of people were displaced when over than 200 homes were destroyed. More than 185 miles of roads and 15 miles of railways were damaged. Ash clogged sewage systems, damaged cars and buildings, and temporarily shut down air traffic over the Northwest.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: Name one way that the MSH volcanic eruption was destructive.</i>  <i>A: Many people died, hundreds of homes were destroyed, roads were damaged</i></p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> impact, eruption, destructive</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Remember to use the main idea checklist. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The MSH volcanic <u>eruption</u> was the most <u>destructive</u> volcanic eruption in U.S. history and had a huge <u>impact</u> on the area.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<ul style="list-style-type: none"> <li>▪ After a <u>steam explosion</u> at <u>MSH volcano</u>, <u>pressure</u> caused a large <u>bulge</u> on the side of the mountain to grow.</li> <li>▪ An <u>earthquake</u> triggered a huge <u>landslide</u> and volcanic <u>eruption</u> at MSH causing a lot of destruction.</li> <li>▪ A large <u>column of ash</u> erupted from the volcano and formed an ash cloud that <u>spread</u> around the world.</li> <li>▪ The MSH volcanic <u>eruption</u> was the most <u>destructive</u> volcanic eruption in U.S. history and had a huge <u>impact</u> on the area.</li> </ul>	<p><b>1) Read Passage.</b></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> Mount St. Helens volcano, eruption, earthquake, destruction</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the entire passage. Remember to use the main idea checklist to guide your thinking. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> “An <u>earthquake</u> in Washington caused a magma-filled bulge on the side of <u>MSH Volcano</u> to <u>erupt</u> causing the most <u>destructive</u> eruption in U.S. History.”</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "What are the similarities and differences among natural disasters?"*
- *In the past few days, we compared and contrasted earthquakes, tsunamis, and tornadoes.*
  - *How can we add to our understanding of the big question based on what we learned today?*
  - (Students should compare and contrast volcanoes to tornadoes, earthquakes and tsunamis).
- Answer key:
  - **Similarities:** 1) All natural disasters cause destruction, 2) the MSH eruption was set off by an earthquake which makes it like a tornado, 3) specific conditions must exist for a natural disaster to arise
  - **Differences:** 1) Volcanic eruptions are caused by pressure from below the earth's floor, 2) Earthquakes and tsunamis are caused by plate tectonics where as volcanoes are caused by magma rising to the surface

<b>Unit 1, Lesson 8</b>	
<b>Components</b>	
1)	Steps for Understanding (Practice)
2)	Synthesize Passage
3)	Revisit Big question

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

<b>1). Steps for Understanding (Practice)</b>
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- *Today, we will add to our understanding of our big question: **What are the similarities and differences among natural disasters?***
- *Today we will continue to learn about volcanoes.*

2) Steps for Understanding	
Text Section #1	Instructional Key
<p>There are three types of <u>volcanoes</u>, each with different shapes and types of eruptions. Shield volcanoes are low and flat and have small, flowing eruptions. Cone volcanoes are the tallest and largest volcanoes, and have very explosive eruptions. Composite volcanoes are a midway between shield volcanoes and cone volcanoes, with explosive eruptions. Although volcanoes can look different, they're all created when magma from beneath the Earth reaches the surface and <u>erupts</u> as lava, ash, rock, and gas.</p>	<p><b>1) Read paragraph.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: How do the three types of volcanoes differ?</i>                      A: Each type has a different shape and type of eruption  <i>Q: How are all three types of volcanoes formed?</i>                      A: They are all formed when magma erupts</p> <p><b>3) Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Who can tell me the first thing we need to consider before we select key words? (narrative or informational text?)</i></li> <li>• <i>Right, it's informational, so be sure to use the Informational key words checklist.</i></li> <li>• <i>Ok, write down 3-4 key words. Use the key word checklist to help you</i></li> <li>• Answer key: volcano, eruption, magma</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Remember to use the main idea checklist.</i>                      a) <u>Answer key: Volcanoes</u> form in three different shapes and are caused by <u>eruptions of magma</u>.                      b) <i>Great job. So, I'll write our main idea as I understand it.</i></p>

Text Section #2	Instructional Key
<p>Volcanoes are a natural way that the Earth cools off and releases internal heat and <b>pressure</b>. To understand how volcanoes erupt, you have to consider the structure of the Earth. You're standing on the Earth's crust, which is a relatively small part of the total volume of the Earth. It's around 18 miles thick beneath the continents, and can be less than 6 miles thick beneath the ocean floor. Underneath the crust is the Earth's <u>mantle</u>, a vast region where it is almost 2000 degrees Fahrenheit.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What part of Earth is under the crust?</i>  A: the mantle  <i>Q: And what is one characteristic of the mantle?</i>  A: It is very hot.</p> <p><b>3). Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> heat, pressure, crust, mantle</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words and main idea checklist to write a main idea. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> "The Earth has a top layer, the <u>crust</u>, with the <u>mantle</u> underneath that is <u>hot</u> and under <u>pressure</u>."</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Although the Earth’s mantle is solid rock, the extremely high temperatures cause <u>rock</u> to <u>melt</u> and squeeze out of cracks in the rock. The liquefied rock, or magma, collects in vast chambers beneath the Earth’s crust. Since this magma is less dense than the surrounding rock, it “floats” up to the surface, seeking out cracks and weaknesses in the rock. When it finally reaches the surface, we see this as a volcanic eruption.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What happens to rock in Earth’s mantle?</i>  <i>A: It liquefies and rises to the surface</i></p> <p><b>3) Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> melt/molten, magma, mantle, rock, eruption</li> </ul> <p><b>4) Main Idea:</b> <i>Time to write a main idea. Share.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> “The <u>molten rock</u> in the <u>mantle</u> floats up to the surface, causing a volcanic <u>eruption</u>.”</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>When it's underneath the surface, the molten rock is called <u>magma</u>. When it reaches the surface, it erupts as lava, ash, volcanic rock, and gas. With each eruption, rocks, lava and ash build up around the volcanic vent where the materials erupted. The nature of the eruption depends on <u>viscosity</u> of the magma. When the lava flows easily, it can travel far and creates wide shield volcanoes. When the lava is thick, it creates a more familiar cone volcano shape. And when the lava is extremely thick, it can build up in the volcano and explode. This is what happened with Mount St. Helens in 1980.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding:</i>  <i>Q: What happens when magma is not very viscous or thick?</i>  A: It flows easily and can spread out (or creates a shield volcano)  <i>Q: How about when the magma is thick?</i>  A: It makes a cone shape</p> <p><b>3) Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> magma, eruption, viscosity</li> </ul> <p><b>4) Main Idea:</b> <i>Time to write a main idea. Share.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> “<u>Magma</u> beneath the surface <u>erupts</u> in different forms depending on the <u>viscosity</u>, or thickness, of the magma.”</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>



2) Synthesize Passage	
	Instructional Key
<p>1) “<u>Volcanoes</u> form in three different shapes and are caused by <u>eruptions</u> of <u>magma</u>.”</p> <p>2) “The Earth has a top layer, the <u>crust</u>, with the <u>mantle</u> underneath that is <u>hot</u> and under <u>pressure</u>.”</p> <p>3) “The <u>molten rock</u> in the <u>mantle</u> floats up to the surface, causing a volcanic <u>eruption</u>.”</p> <p>4) “<u>Magma</u> beneath the surface <u>erupts</u> in different forms depending on the <u>viscosity</u>, or thickness, of the magma.”</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <i>Answer key: volcano, eruption, magma, mantle, crust</i></li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, now let’s use those key words to write a main idea for the whole passage. Share your main idea.</i></p> <ul style="list-style-type: none"> <li>• <i>Answer key: “<u>Volcanoes</u> are caused by <u>magma</u> from Earth’s <u>mantle</u> moving up and <u>erupting</u> through the <u>crust</u>.”</i></li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "What are the similarities and differences among natural disasters?"*
- *In the past few days, we compared and contrasted earthquakes and tsunamis.*
  - *How can we add to our understanding of the big question based on what we learned today?*
  - (Students should compare and contrast tornadoes to earthquakes and tsunami).
- Answer key:
  - **Similarities:** natural disasters can cause destruction of property; natural disasters can injure or kill people; people can sometimes prepare for natural disasters
  - **Differences:** there are some warning signs that tsunamis are coming; scientists can predict tornados by looking at weather conditions; earthquakes do not give warnings

## Unit 2, Lesson 1

### Components

1) Steps for Understanding Practice

2) Synthesize Passage



3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will begin our second unit. This unit is focused on answering our big question, **How do the parts of an ecosystem interact?***
- *Today we will start by reading about how living things interact with each other. Let's get started.*

Text Section #1	Instructional Key
<p>Even if it doesn't look like it, all <b>organisms interact</b> with their environment. For instance, every time you breathe in, you get oxygen from the air.  When you breathe back out, you release carbon dioxide into the air. Both oxygen and carbon dioxide are vital gases that different organisms use. Humans need the oxygen for energy. They also need to get rid of the carbon dioxide because it is waste matter.</p>	<p><b>1) Read Passage</b> Vocabulary words: "<i>organism</i>" and "<i>interact</i>."  Reread the sentence: "Even if it doesn't look like it, all <i>organisms interact</i> with their environment."  <ul style="list-style-type: none"> <li>• An organism is a living thing.</li> <li>• To interact means when two or more things have an effect on one another.</li> <li>• Humans are organisms, or living things, and we interact, or affect, our environment and other living things around us.</li> </ul> <ul style="list-style-type: none"> <li>✓ Show the vocabulary visual for "organism" and "interact."</li> <li>✓ Say the word, read the student-friendly explanation, describe picture.</li> </ul> </p> <p><b>2) Check for Understanding:</b> Let's make sure we understood that section.  <ul style="list-style-type: none"> <li>• Q: <i>What do humans breathe in?</i> ○ A: Oxygen</li> <li>• Q: <i>What do humans breathe out?</i> ○ A: Carbon Dioxide</li> <li>• Q: <i>How do humans interact with the air around them?</i> A: They breathe in and out gases that are in the air.</li> </ul> </p> <p><b>5) Key Words:</b> Let's make sure we use the right key words checklist.  <ul style="list-style-type: none"> <li>✓ <i>Who can tell me the type of text this is and why?</i> (Students say it's an informational text and explain why.)</li> <li>✓ <i>Ok, write down your key words. Use the key word checklist to help you.</i></li> <li>• <u>Answer key:</u> organisms, interact, oxygen, breathe</li> <li>• <i>Great job using the key word checklist and picking words like organisms, interact, oxygen, and humans.</i></li> </ul> </p> <p><b>4) Main Idea:</b> Now we will use our key words to develop a main idea. Use the main idea checklist to help you. <i>What is this paragraph mostly about?</i>  <ul style="list-style-type: none"> <li>• <u>Answer key:</u> People breathe in oxygen and out carbon dioxide is an example of organisms interacting with their environment.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul> </p>

Text Section #2	Instructional Key
<p>Just like humans, all other <b>organisms</b> (living things) take something from their environment while putting waste back into it. When several kinds of <b>organisms interact</b> in one particular area, it's called an <u>ecosystem</u>. Depending on where they are on Earth, ecosystems can look and work differently. For example, in a forest ecosystem, living things such as plants, animals, insects, fungi and bacteria <b>interact</b> with each other. The living things also <b>interact</b> with nonliving things like soil, water, air, temperature, and sunlight. A different ecosystem, such as a desert area, would have different types of nonliving things and animals than the forest ecosystem.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: <i>What is an ecosystem?</i> <ul style="list-style-type: none"> <li>○ A: An ecosystem is a place where several organisms interact in an area.</li> </ul> </li> <li>• Q: <i>What are some examples of living parts of an ecosystem?</i> <ul style="list-style-type: none"> <li>○ A: plants, animals, fungi, &amp; bacteria.</li> </ul> </li> <li>• Q: <i>What are some examples of nonliving parts of an ecosystem?</i> <ul style="list-style-type: none"> <li>○ A: soil, water, air, temperature, and sunlight</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> ecosystem, organisms (living), nonliving, interact</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> In an <u>ecosystem</u>, <u>organisms</u> and <u>nonliving things</u> <u>interact</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p><b>Organisms</b> in an ecosystem depend on their environment to meet their needs. Nonliving things help living things—<b>organisms</b>—meet their needs. Think for a minute about the importance of <u>water</u> in an ecosystem. All organisms need water to survive! The amount of water in an ecosystem determines the kinds of <b>organisms</b> that can live there. For example, a desert ecosystem, which has much less water than other ecosystems, contains <b>species</b> of plants and animals that require very little water.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: <i>What do organisms depend on?</i> <ul style="list-style-type: none"> <li>○ A: Their environment</li> </ul> </li> <li>• Q: <i>What's one thing all organisms need to survive?</i> <ul style="list-style-type: none"> <li>○ A: Water</li> </ul> </li> <li>• Q: <i>How is a desert ecosystem different than other ecosystems?</i> <ul style="list-style-type: none"> <li>○ A: Since there is less water, the ecosystem contains species that require little water.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> organisms, ecosystem (or environment), water</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time for our main idea. Use the main idea checklist to help you write a main idea. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Organisms</u> depend on their ecosystem to live. For instance, all organisms need water.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Each ecosystem has its own set of <u>nonliving things</u> that includes soil, water, air, temperature, and sunlight. These conditions determine the types of <b>organisms</b> that are able to survive in that ecosystem. An organism can survive only where its needs are met. For example, the spider monkey lives in the trees of the rainforest. The rainforest provides all the food, water, and shelter the monkey needs. Each <b>organism</b> depends on each other, as well as the nonliving things, to survive.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: Can organisms live without other things? <ul style="list-style-type: none"> <li>○ A: No. They need other things to survive.</li> </ul> </li> <li>• Q: <i>What do organisms depend on for survival?</i> <ul style="list-style-type: none"> <li>○ A: Organisms depend on each other and the nonliving things to survive.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> nonliving things, organism, ecosystem, survive</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, write a main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Organisms</u> need other living and <u>nonliving things</u>, like soil and sunlight, to <u>survive</u> in an <b>ecosystem</b>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p><b>1)</b> People breathing in oxygen and out carbon dioxide is an example of organisms interacting with their environment.</p> <p><b>2)</b> In an ecosystem, organisms and nonliving things interact.</p> <p><b>3)</b> Organisms depend on their ecosystem to live. For instance, all organisms need water.</p> <p><b>4)</b> Organisms need other living and nonliving things, like soil and sunlight, to survive in an ecosystem.</p>	<p><i><b>Synthesize Passage:</b> Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>1) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> organisms, ecosystems, interact,</li> </ul> <p><b>2) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Organisms interact with other living and nonliving things in the environment to form an ecosystem.</li> <li>• <i>Great job. So, I'll write our overall main idea as I understand it.</i></li> </ul> <p><b>3) Self-assess Main Idea:</b> <i>Ok, I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it "poor," "so-so," or "good"?</i></p>



### 3) Revisit big question

- *Let's revisit our big question "How do the parts of an ecosystem interact?"*
- *Today we learned about what makes up an ecosystem and how they interact.*
  - *How can we use what we learned today to answer the big question?*
- Possible student responses:
  - All organisms affect their environment by using up things like air and water and producing waste.
  - Organisms depend on other living things as well as nonliving things (air, water, soil, sunlight) to live
  - Ecosystems differ based on their surrounding environment parts

## Unit 2, Lesson 3

Components
1) Steps for Understanding Practice
2) Synthesize Passage
3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do the parts of an ecosystem interact?***
- *We will continue to learn about ecosystems, only this time we'll be reading about a specific organism, bats, and how they interact with their environment.*
- *Our text is a little different than ones we've done before in that it's a transcript of an interview. An interview transcript is when the words of a conversation are written down. You'll see each person's name in all caps to show that they're speaking. Each section that we read has been divided into one question and one answer. Let's get started.*

Text Section #1	Instructional Key
<p><i>The following is an interview between a reporter and a scientist who studies bats and the ecosystem.</i></p> <p>MARIO RITTER: I'm Mario Ritter and I'm here talking to Barbara Klein. Today, we learn about the environmental and agricultural importance of bat populations.</p> <p>BARBARA KLEIN: The United Nations has declared 2011-2012 the Year of the Bat. The campaign was launched last year as a way to strengthen efforts for protecting the world's only flying mammal. These creatures can be found in many parts of the world. Bats live in cities, deserts, grasslands and forests. There are over one thousand two hundred bat species.</p>	<p><b>1) Set timer and read paragraph:</b></p> <p><b>2) Check for Understanding:</b> <i>Let's make sure we understood this section.</i></p> <ul style="list-style-type: none"> <li>• Q: <i>What is Barbara Klein's job?</i> <ul style="list-style-type: none"> <li>○ A: She is a scientist who studies bats and the ecosystem.</li> </ul> </li> <li>• Q: <i>What is the purpose of the Year of the Bat?</i> <ul style="list-style-type: none"> <li>○ A: The purpose is to strengthen efforts to protect bats.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>○ <u>Answer key:</u> bats, protecting, importance</li> </ul> <p><b>4) Main Idea:</b> <i>Now we will use our key words to develop a main idea. Use the main idea checklist. <u>What is this paragraph mostly about?</u></i></p> <ol style="list-style-type: none"> <li>a) <u>Answer key:</u> In an interview, a scientist talks about how <u>important</u> it is to <u>protect bat</u> populations.</li> <li>b) <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ol>

Text Section #2	Instructional Key
<p>MARIO RITTER: Most bats eat insects, but many feed on fruit or nectar from flowers. Many people think bats are blind, but this is not true. Many species have very good sight. Most bats communicate and find their way by making “echolocation” noises. They produce high-frequency noises and can estimate the distance of an object by using the sound echoes that bounce back to them. So, while bats may travel in total darkness, they “see” using sound.</p> <p>BARBARA KLEIN: Sadly, bats are widely feared and misunderstood. Most bats come out of their shelters only at nightfall. Three bat species feed on blood. Because of these qualities, bats have long been linked in many cultures to death, darkness and vampires. Yet bats are important for agriculture and our environment. They help pollinate plants and spread seeds. They also help control insects. Bats eat huge numbers of insects, including kinds that damage crops.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: How do bats communicate and find their way?               <ul style="list-style-type: none"> <li>○ A: Through a process called echolocation.</li> </ul> </li> <li>• Q: How do bats help their environments?               <ul style="list-style-type: none"> <li>○ A: Bats pollinate plants and help control insects.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> bats, echolocation, environment, important</li> </ul> <p><b>4) Main Idea:</b> <i>Now we will use our key words to write a main idea. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Bats use echolocation to move and communicate. Bats also play an important role in their environments.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>MARIO RITTER: For example, a brown bat can eat more than one thousand insects the size of a mosquito in one hour. One report says bats save American farmers billions of dollars every year by reducing crop damage and limiting the need for chemicals that kill insects.</p> <p>BARBARA KLEIN: Over one-fifth of all bat species are under threat. They face disease and the human destruction of their natural environments. In the eastern United States, a disease called white-nose syndrome has greatly damaged bat populations over the past five years. The organization Bat Conservation International says white-nose syndrome has killed more than a million bats since it was discovered in a New York cave in 2006. In some areas, the disease has killed nearly one hundred percent of bat populations.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: How do bats help farmers?               <ul style="list-style-type: none"> <li>◦ A: Bats eat the insects that damage crops and limit the need for pest-control, which saves farmers money</li> </ul> </li> <li>• Q: What are two reasons bats are under threat?               <ul style="list-style-type: none"> <li>◦ A: Bats’ environments are being destroyed and white nose-syndrome is infecting them.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> bats, insects, destruction, disease</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Bats</u> help control the <u>insect</u> populations, but some bat species are being threatened by <u>disease</u> and the <u>destruction</u> of their habitats.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>MARIO RITTER: Leslie Sturges is doing what she can to save bats. She is the director of Bat World NOVA, a bat protection group in the Washington, D.C. area. She cares for injured bats in the basement of her home. When the bats are healthy, she moves them to a closed off area next to her home so they can learn once more how to fly. Then she releases them back into the wild.</p>	<p><b>1) Read Passage</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: How does Leslie Sturges help bats?               <ul style="list-style-type: none"> <li>◦ A: She cares for injured bats until they are well and releases them into the wild.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> bat, protection, Bat World Nova</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time for our main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Bat World NOVA</u> is an organization that <u>protects bat</u> populations by caring for injured bats and releasing them into the wild.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul> <p><b>5) Self-assess Main Idea:</b> <i>I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it "poor," "so-so," or "good"?</i></p>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p><b>1)</b> In an interview, a scientist talks about how <u>important</u> it is to <u>protect bat</u> populations.</p> <p><b>2)</b> <u>Bats</u> use <u>echolocation</u> to move and communicate. Bats also play an important role in their <u>environments</u>.</p> <p><b>3)</b> <u>Bats</u> help control the insect <u>populations</u>, but some bat species are being threatened by <u>disease</u> and the <u>destruction</u> of their habitats.</p> <p><b>4)</b> <u>Bat World NOVA</u> is an organization that <u>protects bat</u> populations by caring for injured bats and releasing them into the wild.</p>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> bats, protect, environments</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Bats play an important role in their environment. However, their numbers are threatened by disease and destruction of their habitats and they need to be protected.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "How to parts of an ecosystem interact?"*
- *In the past few days, we discussed how the living and nonliving parts of an ecosystem interacted.*
- *How can we add to our understanding of the big question based on what we learned today?*
  - (Students should describe how bats interact with their ecosystems and what factors threaten the bat populations).
- Possible student responses:
  - Bats help control insect populations which reduces farmers' need for insecticides
  - Bats pollenate plants and flowers
  - Bat populations are being threatened because their habitats are being destroyed.
  - Bat populations are being threatened because of disease



## Unit 2, Lesson 4

### Components

1) Steps for Understanding Practice

2) Synthesize Passage



3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do parts of an ecosystem interact?***
- *Today we will continue to learn about ecosystems. Let's get started.*

Text Section #1	Instructional Key
<p>A <b>predator</b> is an organism that consumes another <b>organism</b>. The <b>prey</b> is the <b>organism</b> that the <b>predator</b> consumes. Some examples of <b>predator</b> and <b>prey</b> are lion and zebra, bear and fish, and fox and rabbit. Many <b>predators</b> live on land, but they can be found in many different habitats, such as swamps, deserts, oceans, coral reefs, and even your home or backyard. The words "<b>predator</b>" and "<b>prey</b>" are almost always used to refer to only animals that eat other animals, but the same concept also applies to plants: Bear and berry, rabbit and lettuce, grasshopper and leaf. </p>	<p><b>1) Read Passage:</b></p> <p> <i>Let's be sure we all understand the vocabulary word "<b>predator</b>."</i></p> <ul style="list-style-type: none"> <li>• (Show the vocabulary visual for predator and briefly say the word, read the definition, and describe the picture.)</li> </ul> <p>Review <i>prey</i>.</p> <ul style="list-style-type: none"> <li>○ <i>Think about the lion and zebra in the paragraph. The lion hunts the zebra so it can eat the zebra; the lion is the predator. The zebra is being hunted by the lion, so the zebra is the prey.</i></li> </ul> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i></p> <p>Q: <i>Where do predators eat?</i> A: Other organisms or animals.</p> <p>Q: <i>Where do predators live?</i> A: They can live on land, in the ocean, in the desert</p> <p>Q: <i>What might be a predator of lettuce?</i> A: A rabbit</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> predator, prey, consumes/eats, animal</li> </ul> <p><b>4). Main Idea:</b> <i>Now we will use our key words to write a main idea. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> A <u>predator</u> is an <u>animal</u> that <u>consumes</u> other animals, called <u>prey</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>In a given territory, <b>predators</b> compete with each other for the <b>prey</b> animals available. <b>Prey</b> animals are constantly aware of the possibility of being attacked, and experience fear of the <b>predator</b> or signs of its presence. Many animals are both <b>predators</b> and <b>prey</b> animals. This means that while an animal is hunting for its food (another animal), it can become <b>prey</b> at any time if a larger <b>predator</b> attacks it. For <b>prey</b>, an encounter with a <b>predator</b> means life or death. But for a <b>predator</b>, the only thing that is at stake is a meal!</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q: What happens if more than one predator wants the prey animals that are in a given territory?</i>            A: The predators compete with each other for the prey.  <i>Q: How is it possible for an animal to be both predator AND prey?</i>            A: An animal can hunt another animal for food, and be hunted by a larger predator.</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> predator, prey, attack</li> </ul> <p><b>4). Main Idea:</b> <i>Now we will use our key words to develop a main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> A <u>predator</u> can become <u>prey</u> if it is <u>attacked</u> by a larger predator.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>When a <b>predator</b> is in close range of <b>prey</b>, it will approach as quietly as possible and try not to be detected. Many <b>predators</b> use special body language, such as crouching and scurrying, as they stalk their <b>prey</b> and try to find the best way to make the final attack. Camouflage is another characteristic that helps <b>predator</b> and <b>prey</b>. Here’s how camouflage works: an animal’s natural appearance—the colors of its fur or feathers, as well as its patterns and markings—help the animal to blend with its surroundings. As the <b>predator</b> comes closer, the <b>prey</b> animal won’t notice. The reverse is true also: Camouflage can prevent a <b>predator</b> from detecting <b>prey</b>.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q: What can a predator do to not be noticed by prey?</i>                      A: Stalk the prey quietly by crouching and scurrying..  <i>Q: How does camouflage help prey?</i>                      A: Because it blends in with its surroundings, the predator might not know the prey is there.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> predator, prey, detect, camouflage</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help.</i>  <i>What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Camouflage</u> is one way that <u>predator</u> and <u>prey</u> try to avoid being <u>detected</u> by each other.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>A <b>predator</b> might attempt to capture <b>prey</b>, but fail. It might wound the <b>prey</b> animal, making the wounded animal even easier to catch and kill next time. If the <b>predator</b> doesn't capture <b>prey</b>, the <b>predator</b> might starve. If the <b>prey</b> animal's wound is severe enough, it might weaken and die. <b>Predators</b> keep populations of animals in balance. Many animals, such as rabbits, breed very quickly, and their numbers can become very high. If there were no <b>predators</b> to eat other animals, there would be too many animals in the world.</p>	<p><b>1) Read Passage :</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q What could happen if a predator wounds, but doesn't kill, its prey?</i>                      A: The prey would be easier to catch. The prey might also die from its wound.  <i>Q: What could happen if there weren't any hawks to eat rabbits?</i>                      A: The rabbit population would become too large.</p> <p><b>3) Key Words:</b> <i>Let's identify our key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> predators, prey, balance, population</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time to write our main idea Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The relationship between <u>predator</u> and <u>prey</u> helps keep animal <u>populations</u> <u>balanced</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ A <u>predator</u> is an animal that <u>consumes</u> other <u>animals</u>, called <u>prey</u>.</li> <li>▪ A <u>predator</u> can become <u>prey</u> if it is <u>attacked</u> by a larger predator.</li> <li>▪ <u>Camouflage</u> is one way that <u>predator</u> and <u>prey</u> try to avoid being <u>detected</u> by each other.</li> <li>▪ The relationship between <u>predator</u> and <u>prey</u> helps keep animal <u>populations</u> <u>balanced</u>.</li> </ul>	<p><b>1) <i>Synthesize Passage.</i></b> Now we are going to synthesize all of the information we read today using our steps for understanding.</p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> predator, prey, consumes, balance</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <p>a) <u>Answer key:</u> When a <u>predator</u> attacks and <u>consumes</u> a <u>prey</u> animal, it helps animal populations stay <u>balanced</u>.</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it</i></p> <p><b>4) Self-assess Main Idea:</b> <i>Ok, I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it "poor," "so-so," or "good"?</i></p>

### 3) Revisit big question

- *Let's revisit our big question "How do parts of an ecosystem interact?"*
- *In the past few days, we have read about several different kinds of organisms, such as consumers, producers, predator, and prey.*
  - *How can we add to our understanding of the big question based on what we learned today?*
- Possible student responses:
  - Predators hunt and eat prey animals to stay alive
  - The interaction between predator and prey helps keep ecosystems populations balanced

## Unit 2, Lesson 5

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice



- Today, we will add to our understanding of our big question: *How do parts of an ecosystem interact?*
- As we will continue to learn about ecosystems, today we will focus on the rainforest ecosystem. Let's get started.



Text Section #1	Instructional Key
<p>Where can you find more animal <b>species</b> than anywhere else in the world? It's not a zoo or the circus. It's a very special type of ecosystem called a tropical rainforest, and most tropical rainforests can be found in the Southern Hemisphere.</p> <p>Why do tropical rainforests exist only in certain regions of the Earth? Let's start with geography. The <u>Southern Hemisphere</u> starts just below the <u>equator</u> and ends at the South Pole in Antarctica. The Southern Hemisphere has fewer landmasses and more water, so the overall climate in the Earth's southern half is milder than in the northern half. The climate near the equator is humid, warm, and rainy, which is why 57% of all tropical rainforests are found near the equator in Latin America.</p>	<p><b>1) Read paragraph:</b></p> <ul style="list-style-type: none"> <li>• <i>Let's review the vocabulary word "<b>species</b>."</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for species and briefly say the word, read the definition, and describe the picture.)</li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q: What ecosystem is home to the largest number of animal species?</i>  A: Tropical rainforest ecosystem  <i>Q: Where are tropical rainforests usually located?</i>  A: In the Southern Hemisphere  <i>Q: What is the climate like in the Southern Hemisphere near the equator?</i>  A: warm, humid, rainy</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> tropical rainforest, species, Southern Hemisphere, equator</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. <b>What is this paragraph mostly about?</b></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Tropical rainforests</u> are home to many <u>species</u> and are in the <u>Southern Hemisphere</u> near the <u>equator</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>Because there are high amounts of precipitation and the temperature stays at about 75-85 degrees Fahrenheit year round, rainforests in tropical climates have optimal <u>conditions</u> for many animal <b>species</b>. Rainforest animals don't have to worry about freezing during the winter or finding shade in the summer. Plus, because it rains almost every day, animals rarely have to search for water. This makes tropical rainforests a suitable home for diverse <b>species</b>, from massive gorillas to tiny ants.</p> <p>In addition to their tropical climates, another reason why rainforests are home to so many different types of animals is because they are some of the <u>oldest</u> ecosystems on earth. Some scientists believe that certain rainforests have been around since dinosaurs roamed the earth at least 100 million years ago. Other scientists theorize that a large portion of the earth was completely frozen during the last Ice Age, causing many animal <b>species</b> to become extinct. But the massive freeze didn't affect certain places in tropical rainforests and their ecosystems continued to evolve.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q: Refer to the first paragraph in this section. What conditions in the tropical rainforest make it a good environment for so many species?</i>  <i>A: moderate temperatures year-round; plenty of water</i>  <i>Q: Refer to the second paragraph in the section. Why do many animal species live in the rainforest?</i>  <i>A: It is one of the oldest ecosystems on earth</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> conditions, optimal (good, favorable), species, oldest, ecosystem</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Many <u>species</u> live in the rainforest because the weather <u>conditions</u> are good and it is one of the <u>oldest ecosystems</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>The <u>Amazon</u> rainforest in Brazil, the biggest rainforest in the world, is home to jaguars, toucans, parrots, gorillas, and tarantulas. Yet this is only a small sample of rainforest animals. Many other <u>rare</u> and often endangered animals can be found in rainforests, like the okapi. This beautiful creature has striped hindquarters and front legs like a zebra, and tall perky ears, like a giraffe. There are so many different types of animals in tropical rainforests that we haven't been able to name all the <b>species</b> yet.</p> <p>The Amazon and other tropical rainforests are also home to some animals you might want to avoid, like flying snakes (although their name is actually a misnomer since they can only glide and not gain altitude) and spiders that eat birds. Other rainforest animals, like the coral snake and the poison arrow frog, produce natural poison that protects them from harm. Get too close, and they could easily harm you with poison. Many of these species are endemic to tropical rainforests, meaning that rainforests are the only place they live on Earth.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>I want to quickly check for understanding.</i>  <i>Q: Name at least three unusual species that live in the Amazon rainforest.</i>                      A: Okapi, flying snake, poison arrow frog, coral snake, toucan.  <i>Q: How does a coral snake protect itself from predators?</i>                      A: It produces a poison that can harm predators</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Amazon, big (large), rare (unusual), species, harm</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>largest</u> rainforest is the <u>Amazon</u>, where many <u>unusual</u> and harmful <u>species</u> live.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul> <p><b>5) Self-assess Main Idea:</b> <i>Ok, I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it "poor," "so-so," or "good"?</i></p>

Text Section #4	Instructional Key
<p>Some species have had to <b>adapt</b> to their surroundings in the rainforest in order to survive.  For example, toucans and parrots both have very large, strong beaks. These powerful beaks make it easy for them to crack open the tough shells of nuts that grow on many rainforest trees. Birds with small beaks, like robins and sparrows living in the Northern Hemisphere, probably would not be able <u>survive</u> in the rainforest without being able to crack open hard nuts.</p> <p>Another way animals <b>adapt</b> to life in the rainforest is by camouflaging themselves to hide from predators. An insect called the "walking stick" lives in the palm tree. It blends in so well with the tree that it's practically unnoticeable unless it moves. When some butterflies close their wings, they look identical to leaves, which masks them from predators.</p>	<p><b>1). Read Passage:</b></p> <p> <i>Let's be sure we all understand the vocabulary word "adapt."</i></p> <ul style="list-style-type: none"> <li>• (Show the vocabulary visual for adapt and briefly say the word, read the definition, and describe the picture.)</li> <li>• <i>The sentence says that animals adapt to their surroundings so they can survive there. You will read about some of these adaptations in today's text.</i></li> </ul> <p><b>2). Check for Understanding:</b> <i>I want to quickly check for understanding.</i></p> <p><i>Q: How have toucans and parrots adapted to survive in the rainforest?</i> A: They have very powerful beaks that help them crack nuts.</p> <p><i>Q: Why might other birds from other areas not survive?</i> A: Their beaks are too weak to crack open nuts.</p> <p><i>Q: What is another adaptation of rainforest animals?</i> A: Camouflage</p> <p><i>Q: How does a butterfly's camouflage protect it?</i> A: It masks them from predators</p> <p><b>3). Key Words:</b> <i>Let's identify our key words. Use your key words checklist in your discussion.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> adapt, survive, beaks, camouflage</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Adaptations, such as camouflage and strong beaks, have helped animals survive in the rainforest.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	2). Synthesize Passage: Instructional Key
<ul style="list-style-type: none"> <li>▪ <u>Tropical rainforests</u> are home to many <u>species</u> and are in the <u>Southern Hemisphere</u> near the <u>equator</u>.</li> <li>▪ Many <u>species</u> live in the rainforest because the weather <u>conditions</u> are good and it is one of the <u>oldest ecosystems</u>.</li> <li>▪ The <u>largest</u> rainforest is the <u>Amazon</u>, where many <u>unusual</u> and harmful <u>species</u> live.</li> <li>▪ <u>Adaptations</u>, such as <u>camouflage</u> and strong <u>beaks</u>, have helped animals <u>survive</u> in the rainforest.</li> </ul>	<p><b>1). Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> rainforest, species, conditions, adapt</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Many <u>species</u> live in the tropical <u>rainforest</u> because the <u>conditions</u> are good for survival and they have adapted to the conditions of the rainforest.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question, "How do parts of an ecosystem interact?"*
- *We read about the tropical rainforest ecosystem today.*
  - *How can we add to our understanding of the big question based on what we learned today?*
- Possible student responses:
  - The climate of tropical ecosystems help animals get enough water and shelter
  - Animals in tropical rainforests have adaptations, like strong beaks, that enable them to eat food that is available in the rainforest, which helps them survive

## Unit 2, Lesson 6

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do parts of an ecosystem interact?***
- *Today we will learn about how all the pieces in an ecosystem matter. Let's get started.*

Text Section #1	Instructional Key
<p>Jason stared at the whiteboard at the front of the classroom, trying to make sense of what he saw there. <u>Mr. Freamon</u> had drawn a complicated diagram of all the creatures living in the nearby Ho Tep Wildlife Reserve. Every type of living thing, from trees and insects to mammals and birds, was written down and circled on the board. Arrows snaked around the board, connecting the circles, showing which creatures depended on which other creatures to survive.</p> <p>Though he had been hiking out in the reserve plenty of times, Jason had never given much thought to the animals and wildlife he had seen out there. He'd never thought about how the amount of rainfall <u>affected</u> the amount of moisture in the soil, which affected how well plants could grow, which affected the ability of the animals that ate those plants to survive.</p> <p>Mr. Freamon could tell that the drawing on the board confused his students.</p> <p>“Relax,” Mr. Freamon said. “You don’t need to memorize what’s on the board. If you’re going to learn one thing from this lesson, let it be this: All the pieces matter. Every ecosystem on earth depends on a delicate balance among all of the different forms of life within it.”</p>	<p><b>1) Read paragraph:</b></p> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding.</i></p> <ul style="list-style-type: none"> <li>• <i>Q: What did Mr. Freamon draw on the board?</i> <ul style="list-style-type: none"> <li>○ <i>A: A diagram of all the living things in the Wildlife Reserve.</i></li> </ul> </li> <li>• <i>Q: What reaction did the students have to the diagram?</i> <ul style="list-style-type: none"> <li>○ <i>A: They were confused by it.</i></li> </ul> </li> <li>• <i>Q: What does Mr. Freamon want his students to learn from the diagram?</i> <ul style="list-style-type: none"> <li>○ <i>A: That all the living things in the ecosystem depend on each other.</i></li> </ul> </li> </ul> <p><b>3) Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s make sure we use the right key words checklist. Who can tell me the type of text this is and why? (Students say it’s a narrative text and explain why.) That’s right, this is a narrative text.</i></li> <li>• <i>Now, tell me your key words and why it is a key word.</i></li> <li>• <u>Answer key:</u> Mr. Freamon, ecosystem, living things (creatures, animals), affect</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Mr. Freamon</u> drew a diagram of the Wildlife Reserve <u>ecosystem</u> showing that all the <u>living things</u> in it <u>affect</u> each other.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>



Text Section #2	Instructional Key
<p>Mr. Freamon continued. “In any ecosystem, all of the creatures within it are competing for the same resources: food, water and shelter—the basic needs of every <u>living thing</u>. There’s only so much to go around, so creatures have to compete with other creatures to get what they need. And since they all go about it in a unique way, all of the creatures in an ecosystem end up <u>depending</u> on one another. Let me give you an example. Remember that video about <b>predator</b> and <b>prey</b> that we watched last week? With the wolves killing the elk at Yellowstone National Park?”</p> <p>Everyone nodded.</p> <p>“And how many of you thought that the wolves were mean for killing those elk?”</p> <p>About half the students raised their hands.</p> <p>“Consider this, then,” Mr. Freamon continued. “Without the wolves in the park to keep the elk population in check, the elk would have eaten all of the aspen and willow in the park. Not only would those plants be gone, but the other animals that depend on them to survive, would have been out of luck too. All the pieces matter.”</p>	<p><b>1) Read Passage:</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s review the vocabulary words “<b>predator</b>” and “<b>prey</b>”</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visuals for predator and prey, briefly say the word, read the definition, and describe the picture.)</li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding.</i></p> <ul style="list-style-type: none"> <li>• <i>Q: What do creatures in an ecosystem compete for?</i> <ul style="list-style-type: none"> <li>○ A: Basic needs such as food, water, and shelter</li> </ul> </li> <li>• <i>Q: Why do creatures need to compete for these resources?</i> <ul style="list-style-type: none"> <li>○ A: The text says “there’s only so much to go around”: That means there isn’t enough for all the creatures to have all they want.</li> </ul> </li> <li>• <i>Q: What does Mr. Freamon say would happen if there were no wolves in Yellowstone National Park?</i> <ul style="list-style-type: none"> <li>○ A: There would be too many elk, which would eat too many plants and trees, which would effect other animals.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> living things (creatures, animals), compete, depend, survive</li> </ul> <p><b>4) Main Idea:</b> <i>Now we will use our key words to develop a main idea. <b>Ok, what is this paragraph mostly about?</b></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Living things</u> in an ecosystem <u>compete</u> for resources and <u>depend</u> on one another for <u>survival</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>After class that day, Jason went home and found information about different ecosystems that had changed rapidly because one of the <u>pieces</u> had been taken out of the puzzle, as Mr. Freamon would have put it. For example, along some coasts, human activity had reduced the sea otter population. The sea otters ate sea urchins that ate kelp from huge kelp forests. Without the sea otters to keep sea urchins in check, the kelp started to disappear.</p> <p>The whole idea was starting to make sense to Jason. It was basically like <u>dominoes</u>—all the pieces lined up, and if you knocked one down, it would knock down the next one, which would knock down the one after that, until they all went down. Of course, it was a lot more complicated than that, but that was the basic idea.</p> <p>Jason thought about the wildlife on the reserve. A robin built its nest near the top of an oak tree. He imagined the robin catching insects to bring back to the nest to feed her chicks. He thought about how the roots of the tree reached way down into the soil to drink the moisture there. It really was fascinating how everything fit together.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding.</i></p> <p><i>Q: Look at the first paragraph. How did human activity affect kelp forests?</i>  A: Human activity affected sea otters, which affected sea urchins, which affected kelp forests.</p> <p><i>Q: Why does Jason think that pieces of an ecosystem are like dominoes?</i>  A: Because each piece affects the next piece, which affects the next piece, and so on.</p> <p><i>Q: Look at the final paragraph. How do the tree roots affect the robin's nest?</i>  A: The roots drink moisture to keep the tree alive. Because the tree is alive, there are branches for the robin's nest.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Jason, ecosystem, pieces (parts), dominoes.</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time to write our main idea. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Jason realized that the <u>parts</u> of an <u>ecosystem</u> are like <u>dominoes</u> because if one <u>part</u> changes, other <u>parts</u> change too.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>The next day at school, Mr. Freamon shared a surprising piece of information with his students.</p> <p>“Ho Tep Wildlife Reserve hasn’t always been a forest. It used to be a desert—a totally different ecosystem. But over time, things <u>changed</u>, like the weather patterns,” Mr. Freamon said. “There wasn’t a lot of rain falling on that area for a long time. But as that changed, there was more moisture in the soil. Enough for flowering plants to begin to take root, and eventually trees,”</p> <p>“And once there are trees, there’s shelter for birds and other animals,” Jason said.</p> <p>“Exactly right,” Mr. Freamon said. “Nature has a way of changing itself, but it takes a very long time. <u>Ecosystems</u> fall apart and then eventually find a new way to rebuild.”</p> <p>“Can people change an ecosystem?” Jason asked.</p> <p>Mr. Freamon smiled. “We’ve changed plenty of ecosystems! Except when humans change an ecosystem, it’s usually accidental. Usually it’s because clearing out land to build things drives out other creatures.”</p> <p>“Well, it’s like you always say: humans are a part of nature too, right?”</p> <p>“Exactly right, Jason,” Mr. Freamon said. “That’s exactly right.”</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding.</i></p> <p><i>Q: What did the Wildlife Reserve used to be?</i> A: A desert</p> <p><i>Q: How did the Wildlife Reserve change from a desert into a forest?</i> A: Over a long period of time, more rain began falling, which caused the soil to hold more moisture, which caused plants and trees to grow, which gave animals a habitat.</p> <p><i>Q: How can humans change an ecosystem?</i> A: By clearing out land and building on it.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> ecosystem, change, weather (climate), humans (people)</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. (Wait 1 minute.) What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Ecosystems can change over time when the climate changes</u> or <u>people</u> develop an area.</li> <li>• Building things and climate change</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

2) Synthesize Passage	
Synthesize Passage	Instructional Key
<ul style="list-style-type: none"> <li>▪ <u>Mr. Freamon</u> drew a diagram of the Wildlife Reserve <u>ecosystem</u> showing that all the <u>living things</u> in it <u>affect</u> each other.</li> <li>▪ <u>Living things</u> in an ecosystem <u>compete</u> for resources and <u>depend</u> on one another for <u>survival</u>.</li> <li>▪ <u>Jason</u> realized that the <u>parts</u> of an <u>ecosystem</u> are like <u>dominoes</u> because if one <u>part</u> changes other <u>parts</u> change too.</li> <li>▪ <u>Ecosystems</u> can <u>change</u> over time when the <u>climate changes</u> or <u>people</u> develop an area.</li> </ul>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> ecosystem, affect, parts, change</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <p>a) <u>Answer key:</u> All the <u>pieces</u> in an <u>ecosystem</u> <u>affect</u> all the other pieces. If one piece <u>changes</u>, other pieces change too.</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it</i></p> <p><b>4) Self-assess Main Idea:</b> <i>Ok, I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it "poor," "so-so," or "good"?</i></p>

### 3) Revisit big question

- *Let's revisit our big question "How do parts of an ecosystem interact?"*
- *We have just read that "all the pieces matter" in an ecosystem.*
  - *How can we add to our understanding of the big question based on what we learned today?*
- Possible student responses:
  - The living things in an ecosystem (plants, animals) compete with each other for food, water, and shelter.
  - Each part affects the other parts and keeps the ecosystem in balance.
  - If one part of an ecosystem changes, it affects every other part.

## Unit 2, Lesson 7

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do parts of an ecosystem interact?***
- *Today we will learn about life in a desert ecosystem. Let's get started.*

Text Section #1	Instructional Key
<p>People often use the adjectives “hot,” “dry,” and “empty” to describe deserts, but these words do not tell the whole story. Although some deserts are very hot, with daytime temperatures as high as 130°F, other deserts have cold winters or are cold year-round. And most deserts, far from being empty and lifeless, are home to a variety of plants, animals, and other <b>organisms</b>. One thing all deserts have in common is that they are arid, or dry. There is little water available for plants and other <b>organisms</b>.</p>	<p><b>1) Read paragraph:</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s review the vocabulary word “organism.” (Show the vocabulary visual for organism and briefly say the word, read the definition, and describe the picture. Don’t spend more than 30 seconds.)</i></li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding.</i></p> <ul style="list-style-type: none"> <li>• <i>Q: In what way are all deserts alike?</i> <ul style="list-style-type: none"> <li>○ <i>A: They have very little water.</i></li> </ul> </li> <li>• <i>Q: How are some deserts different?</i> <ul style="list-style-type: none"> <li>○ <i>A: Some are hot, but some are cold during the winter</i></li> </ul> </li> </ul> <p><b>3) Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s make sure we use the correct key words checklist. Who can tell me the type of text this is and why? (Students say it’s an informational text and explain why.)</i></li> <li>• <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></li> <li>• <i><u>Answer key:</u> desert, arid (dry), organisms, variety (many, different)</i></li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <i><u>Answer key:</u> Although all <u>deserts</u> are <u>dry</u>, a <u>variety</u> of <u>organisms</u> live there.</i></li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>Some desert plants, such as cactuses, have shallow, wide-spreading root systems. The plants soak up water quickly and store it in their cells. Saguaro cactuses, which live in Arizona and northern Mexico, expand like accordions to store water in the cells of their trunks and branches. Other desert plants, like the mesquite tree, have very deep roots that can reach water more than 100 feet underground. Mesquites, saguaros, and many other desert plants have also <b>adapted</b> by having thorns to protect them from grazing animals.</p>	<p><b>1) Read Passage:</b></p> <ul style="list-style-type: none"> <li>• <i>Review the vocabulary word “adapt.”</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for adapt and briefly say the word, read the definition, and describe the picture. )</li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding.</i></p> <ul style="list-style-type: none"> <li>• <i>Q: How do cactuses survive in the dry conditions of the desert?</i> <ul style="list-style-type: none"> <li>○ <i>A: They store water in their cells.</i></li> </ul> </li> <li>• <i>Q: What adaptation protects cactuses from animals?</i> <ul style="list-style-type: none"> <li>○ <i>A: Their thorns keep other animals from eating them.</i></li> </ul> </li> </ul> <p><b>3). Key Words:</b> <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> plants, water, store, desert</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Plants</u> in the <u>desert</u> have unique ways to reach and <u>store</u> water.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul> <p><b>5) Self-assess Main Idea:</b> <i>Ok, I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it “poor,” “so-so,” or “good”?</i></p>



Text Section #3	Instructional Key
<p>Animals that have <b>adapted</b> to a desert environment are called xerocoles (ZER uh coles). Some xerocoles escape the heat in cool burrows they dig in the ground. Most xerocoles are nocturnal, so they sleep through the hot days and do their hunting and foraging at night. Some xerocoles have bodies that help them handle the heat. For example, a desert tortoise's thick shell insulates the animal and reduces water loss.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding.</i>  <i>Q: How does being nocturnal help an animal survive in the desert?</i>  A: Nocturnal animals search for food at night when it is cooler.  <i>Q: What adaptation does a desert tortoise have?</i>  A: Its thick shell guards it from the heat and helps it retain water.</p> <p><b>3). Key Words:</b> <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> adapt, xerocoles, heat, desert.</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you.</i>  <i>What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Xerocoles</u> are animals that have <u>adapted</u> to survive the <u>heat</u> of the <u>desert</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Many desert animals have developed ingenious ways of getting the water they need. The thorny devil, a lizard that lives in the Australian Outback, has a system of tiny grooves and channels on its body that lead to its mouth. The lizard catches rain and dew in these grooves and sucks them into its mouth by gulping. The humps on a camel’s back store fat. Hydrogen molecules in the fat combine with oxygen to form water. During a shortage of food or water, camels draw upon this fat for nutrition and moisture.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding.</i>  <i>Q: What is stored in a camel’s hump?</i>                      A: Fat  <i>Q: How does a camel’s hump help it survive?</i>                      A: The fat makes water when it mixes with oxygen.</p> <p><b>3). Key Words:</b> <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> desert, water, animals, ingenious (unique, interesting)</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Animals</u> in the <u>desert</u> have <u>interesting</u> adaptations that help them get <u>water</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ Although all <u>deserts</u> are <u>dry</u>, a <u>variety</u> of <u>organisms</u> live there.</li> <li>▪ <u>Plants</u> in the <u>desert</u> have unique ways to reach and <u>store</u> water.</li> <li>▪ <u>Xerocoles</u> are animals that have <u>adapted</u> to survive the <u>heat</u> of the <u>desert</u>.</li> <li>▪ <u>Animals</u> in the <u>desert</u> have <u>interesting</u> adaptations that help them get <u>water</u>.</li> </ul>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> deserts, organisms (plants, animals), adapt, heat, water</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <p>a) <u>Answer key:</u> <u>Desert plants</u> and <u>animals</u> have <u>adapted</u> to the <u>heat</u> and lack of <u>water</u>.</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it.</i></p>

### 3) Revisit big question

- *Let's revisit our big question "How do parts of an ecosystem interact?"*
- *Based on what we read about desert life today, how can we add to our understanding of the big question based on what we learned today?*
- Possible student responses:
  - Desert animals avoid the harsh climate by burrowing underground during the heat of the day and getting food at night.
  - Even though the desert is arid, animals who live there have developed adaptations that help them collect water.
  - Plants store water in their leaves, or have deep roots to reach water.

## Unit 2, Lesson 8

Components
1) Steps for Understanding Practice
2) Synthesize Passage
3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do parts of an ecosystem interact?***

*“Dr. Osvel Hinojosa Huerta is an award-winning conservationist. He works with environmental organizations, governments, businesses, and citizen groups to save the delta of the Colorado River. Restoring the wetlands near the Gulf of California in Mexico will contribute to the area’s biodiversity as well as its economy.”*

Text Section #1	Instructional Key
<p><b>HOW DID YOU GET STARTED?</b>                      Despite growing up in the large urban area of San Luis Colorado, Sonora, Mexico, Osvel managed to find an instant connection with the natural world at a young age. “There was always this connection with nature,” he says. “But at the same time, I will also have to say that television had a big affect on me. The nature documentaries were very influential with connecting with nature.”<sup>[L1] [L2] [L3] [L4]</sup> Osvel quickly discovered his passion: to restore the ecosystem of the <u>Colorado River Delta</u>.</p> <p>Millions of American and Mexican consumers depend on the freshwater of the Colorado River for drinking, hygiene, irrigation, and industry. The river’s flow is very controlled, and dams have reduced the extent of the delta wetlands by more than 90 percent in the last century. For more than 15 years, Osvel has been working with communities along the river’s drainage basin to <u>restore</u> water back to the delta. “It takes time,” says Osvel. “But once you find common ground and make it clear that everyone is working toward a common goal, which is to improve conditions for everyone, then it’s easier to make progress, but it takes time.”<sup>[L1] [L2] [L3] [L4]</sup></p>	<p><b>1) Read paragraph:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: What has damaged the Colorado River?                             <ul style="list-style-type: none"> <li>○ A: Dams and peoples’ use of the river</li> </ul> </li> <li>• Q: What is Osvel’s passion?                             <ul style="list-style-type: none"> <li>○ A: To restore the ecosystem of the Colorado River Delta</li> </ul> </li> </ul> <p><b>3). Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s make sure we use the right key words checklist.</i></li> <li>• <i>Who can tell me the type of text this is and why? (Students say it’s an informational text and explain why.)</i></li> <li>• <i>That’s right, this is an informational text.</i></li> <li>• <i>Ok, write down your key words. Use the key word checklist to help you.</i></li> <li>• <u>Answer key:</u> Osvel, Colorado River Delta, restore, ecosystem</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use the main idea checklist to help you, then write down your main idea. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Osvel</u> is a conservationist working with communities to <u>restore</u> the <u>ecosystem</u> of the <u>Colorado River Delta</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p><b>WHAT IS THE MOST EXCITING PART OF YOUR WORK?</b>  <small>[L1] [SEP]</small>“The hope that we can <u>restore</u> nature, seeing the results, and enjoying the results. Going back to a place that has been protected or restored and looking at how it thrives again and how the wildlife thrives, it’s amazing.” <small>[L1] [L1] [SEP] [SEP]</small></p> <p><b>WHAT IS MOST DEMANDING PART OF YOUR WORK?</b>  “The main challenge we have is that we haven’t been setting aside water for nature, just for people. So, we are changing that and that is the main challenge. We have failed to recognize that <u>nature</u> needs water also, not just using it for our farming industry. We need to dedicate water to connect the rivers to the seas.” <small>[L1] [SEP]</small></p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: What is Osvel’s main challenge? <ul style="list-style-type: none"> <li>◦ A: Making sure water is set aside for nature and for people.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key</u>: restore, nature, challenge, results</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Share your main idea.</i></p> <p>a) <u>Answer key</u>: Osvel enjoys seeing the <u>results</u> of <u>restoring nature</u>, but says it’s <u>challenging</u> to set water aside for nature.</p> <p>b) <i>Great job. So, I’ll write our main idea as I understand it.</i></p>

Text Section #3	Instructional Key
<p><b>GEO-CONNECTION</b><sup>[L][L][L]</sup><sub>[SEP][SEP]</sub></p> <p>“Wetlands provide a lot of services to the world,” Osvel says. “They are great representatives of biodiversity. Many species live in wetlands. In many ways, they are the kidneys of the world. They clean the water and also provide protection against floods, storms, and hurricanes. They are very important.”<sup>[L][L][L]</sup><sub>[SEP][SEP]</sub></p> <p>Osvel and his team use different techniques to understand the Colorado River Delta. By <u>mapping</u> wetland areas that have been lost, as well as those that remain, they are able to understand the important connection we have with freshwater.</p> <p>“By using techniques like mapping and remote sensing, we started to learn what the areas could look like, and it has been very important,” he says. “It also links to the political geography, which means how different places deal with the water in the basin. By understanding how and why different cities and places use the water, we can understand where the solutions can come from.”<sup>[L][L][L]</sup><sub>[SEP][SEP]</sub></p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: In what ways are wetlands helpful to the world?             <ul style="list-style-type: none"> <li>○ A: Wetlands clean water and protect against floods and natural disasters.</li> </ul> </li> <li>• Q: Why is it important for Osvel to understand the Colorado River Delta?             <ul style="list-style-type: none"> <li>○ A: By mapping the wetland areas and where people are, he can understand how to find solutions.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> wetlands, mapping, freshwater</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time for our main idea. What is this paragraph mostly about?</i></p> <ol style="list-style-type: none"> <li>a) <u>Answer key:</u> Osvel and his team make <u>maps</u> of the <u>wetlands</u> to understand how to restore these important <u>freshwater</u> areas.</li> <li>b) <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ol>



Text Section #4	Instructional Key
<p><b>HOW CAN I BECOME A CONSERVATIONIST?</b>                      Osvel encourages students to learn all they can about <u>water</u>, because many times it is taken for granted. “We turn on our tap, but we don’t know where the water comes from and how much it really costs to bring that water to our houses,” he says. “So, <u>learn</u> about your watershed, where the water is produced, where the system goes, what are the important environmental values of your watershed and what are the conservation concerns of that area.”<sup>[SEP][SEP]</sup></p> <p><b>HOW CAN I GET INVOLVED?</b>                      “Learn. Go out and get engaged with the groups that are out there doing great work. There are many water-keepers around to learn from. There are also many grass roots organizations that deal with the health of rivers and water, especially in the U.S. There are plenty of these organizations. Try to learn from them and support their causes,” he says.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• Q: What can we learn about the water that comes out of the tap?                             <ul style="list-style-type: none"> <li>○ A: (Sample responses) We can learn where the water is produced, where the system goes, and how to conserve water in our area.</li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> water, learn, environment</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time for our main idea. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Osvel recommends students <u>learn</u> about the <u>water</u> in their <u>environments</u> and become involved in water conservation efforts.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ <u>Osvel</u> is conservationist working with communities to <u>restore</u> the <u>ecosystem</u> of the <u>Colorado River Delta</u>.</li> <li>▪ Osvel enjoys seeing the <u>results</u> of <u>restoring nature</u>, but says it's <u>challenging</u> to set aside water for nature as well as people and farming</li> <li>▪ Osvel and his team make <u>maps</u> of the <u>wetlands</u> to understand how to restore these important <u>freshwater</u> areas.</li> <li>▪ Osvel recommends students <u>learn</u> about the <u>water</u> in their <u>environments</u> and become involved in water conservation efforts.</li> </ul>	<p><b>1). Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> restore, water, Colorado River Delta, Osvel</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <p>a) <u>Answer key:</u> <u>Osvel</u> is a conservationist who is working to <u>restore</u> the <u>water</u> in the <u>Colorado River Delta</u> and improve the natural ecosystem.</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it.</i></p> <p><b>4) Self-assess Main Idea:</b> <i>Ok, I'd like you to use you're the main idea checklist in your packet to answer a few questions. Once you're done reviewing your main idea, I'd like to you rate your main idea, was it "poor," "so-so," or "good"?</i></p>

### 3) Revisit big question

- *Let's revisit our big question "How do parts of an ecosystem interact?"*
- *Throughout this unit, we've looked at what ecosystems are, how specific ecosystems such as deserts and rainforests are different, and what living and nonliving factors influence ecosystems.*
- *How can we add to our understanding of the big question based on what we learned today? (Students should describe how humans have affected the ecosystem).*
- Possible student responses:
  - Humans have used water in the Colorado River Delta for personal use and farming, but it has disrupted the ecosystem.
  - Osvel and other scientists are working to undo the damage by restoring the Delta to its original state.

## Unit 3, Lesson 1

### Components

1) Steps for Understanding Practice

2) Synthesize Passage


3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Unit 3 is about the human body.*
- *Our big question is: How do human body systems function to keep us alive?*

Text Section #1	Instructional Key
<p>Your body is composed of more than 75 trillion <u>cells</u>, all working together to help your body grow and sustain itself. A cell is the smallest unit of an organism. Each cell is a living unit that is capable of taking in food, getting rid of waste, and reproducing. Although all cells consist of the same basic parts, not all cells in your body have the same job. Many different <u>jobs</u> must be performed to keep the body in balance, so certain cells are responsible for certain jobs.</p> <p>Cells that do the same job in the body are organized into specific groups known as <b>tissues</b>. Muscle <b>tissue</b>, for example, consists of cells that can contract and relax. Nerve <b>tissue</b> is made of cells that can carry messages from one cell to another. When <b>tissues</b> work together in a group to perform a specific function, they become an <b>organ</b>. Some examples of <b>organs</b> are the heart, lungs, skin, and stomach. <b>Organs</b> are part of <b>organ systems</b>, such as the muscular and skeletal <b>systems</b>. All the body's <b>systems</b> work together and depend on each other to keep the body working.</p>	<p><b>1) Read Passage:</b></p> <ul style="list-style-type: none"> <li>•  <i>There are some very important vocabulary words in this section (Use visuals).</i> <ul style="list-style-type: none"> <li>○ <u>Tissue.</u> <ul style="list-style-type: none"> <li>▪ <i>Look at the first sentence of paragraph two: “Cells that do the same job in the body are organized into specific groups known as tissues.”</i></li> <li>▪ <i>Tissue is a similar group of cells in the body.</i></li> </ul> </li> <li>○ <u>Organ.</u> <ul style="list-style-type: none"> <li>▪ <i>The text says “When tissues work together in a group to perform a specific function, they become an organ.”</i></li> <li>▪ <i>Some examples of organs are the heart, lungs, skin, and stomach.”</i></li> </ul> </li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• <i>Q: What can cells do?</i> <ul style="list-style-type: none"> <li>○ <i>A: Take in food, get rid of waste, and reproduce.</i></li> </ul> </li> <li>• <i>Q: What do we call a group of cells working on the same job?</i> <ul style="list-style-type: none"> <li>○ <i>A: Tissues.</i></li> </ul> </li> <li>• <i>Q: And, what’s the name of tissues working together on the same job?</i> <ul style="list-style-type: none"> <li>○ <i>A: Organs.</i></li> </ul> </li> </ul> <p><b>3) Key Words:</b> <i>Ok let’s use our keyword checklist as a guide to find our key words. Tell me which word you found and why it’s a key word?</i></p> <ul style="list-style-type: none"> <li>○ <u>Answer key:</u> cells, jobs, tissues, organs</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use our main idea checklist to help you as you write down your main idea. <b>Ok, what is this section mostly about?</b></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The human body is made of <u>cells</u> that make up <u>tissues</u> and <u>organs</u> to do certain <u>jobs</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p><b>An Example</b>            1-year old Lily is a baby girl who is growing and will keep growing into adulthood. She is <u>growing</u> because she is what scientists call a multicellular organism—a living thing that is made from many cells. One of the most important <b>functions</b> of a cell is a process called <u>mitosis</u>. Mitosis occurs when a cell makes an exact copy of itself and splits into two identical, new cells. The original cell is called the mother cell and the two new cells are called daughter cells.</p> <p>By the time Lily is in middle school, hundreds of her cells have split into two, then split into two again, then split into two again, until there are thousands and thousands of cells. As time passes and Lily continues growing, mitosis also continues. Her cells continue splitting over and over, eventually becoming the trillions of cells that form the adult human body. An adult needs this many cells in order to have different <b>tissues</b> and <b>organs</b> for different purposes.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: Are humans single or multi-cell organisms?</i>            A: Multicellular organisms  <i>Q: What is mitosis?</i>            A: Mitosis is when a cell makes an identical copy of itself and splits into two new cells.</p> <p><b>3)Key Words:</b></p> <ul style="list-style-type: none"> <li>○ <i>Ok, write down your key words. Use the key word checklist to help you.</i></li> <li>● <u>Answer key:</u> growing, cells, mitosis, split</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. What is this section mostly about?</i></p> <ol style="list-style-type: none"> <li>a) <u>Answer key:</u> Cells in the human body are constantly <u>splitting</u>, which is called <u>mitosis</u>, allowing the body to <u>grow</u>.</li> <li>b) <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ol>

Text Section #3	Instructional Key
<p><b>Growth</b></p> <p>Think about how tall you are now. How tall were you a year ago? How tall were you when you were five years old? Human cells <u>grow</u> and mature until adulthood. Girls grow and develop until around age 17, but boys can grow until they are 22.</p> <p>Mitosis makes it possible for an organism to grow from a baby to an adult. The cells in Lily’s body are <u>splitting</u> all the time to help her grow. When she needs bigger shoes, it’s because mitosis is causing the bone cells in her foot to make copies of themselves. This makes her toes longer and the sole of her foot wider. When she needs a haircut, it’s because mitosis is causing the cells in her hair to multiply, resulting in longer hair. When she needs bigger muscles to support and move her growing body, mitosis produces more muscle cells.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• Write down your key words</li> <li>• Write a main idea sentence for the passage you just read.</li> <li>• Complete self-assessment form.</li> </ul> <p><b>3) Check for Understanding:</b></p> <p>Q: What makes it possible for an organism to grow? A: Mitosis</p> <p>Q: What are some examples of what mitosis does in the human body? A: growing taller, feet growing, hair growing, and muscles growing</p> <p><b>4) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> grow, cells, mitosis</li> </ul> <p><b>5) Main Idea:</b> <i>Tell me the main idea that you wrote.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Mitosis causes the <u>cells</u> in the body to split and produce more cells, which is why our muscles and hair <u>grow</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p><b>Healing</b></p> <p>Think about a time when you hurt yourself. Was it a scrape or cut? Did you break a bone? Each time you get injured or sick, the cells in your body work together to <u>heal</u>. Mitosis also helps the body heal. Mitosis is crucial for healing damaged <u>cells</u>. When Lily scrapes her knee on the playground, two weeks later her knee is completely healed. Thanks to mitosis, the skin cells in her knee multiplied to replace the damaged cells. If she breaks a bone, the cells along the edges of the break go through mitosis to repair it. Once Lily is an adult, however, some types of cells do not split and multiply. For instance, nerve cells and muscle cells don't regrow once they are mature.</p> <p><b>Replacement</b></p> <p>Certain <b>organs</b> constantly lose cells that need to be replaced by new cells. The skin is one example. Millions of skin cells die per day and are replaced through mitosis. The inner lining of the small intestine is another example. The small intestine is a tube that food travels through during digestion. Cells are knocked off as food passes through, and are replaced through mitosis.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b></p> <p><i>Q: How does mitosis help people heal from injury?</i>  <i>A: It heals the damaged cells.</i></p> <p><i>Q: What types of cells do not split or multiply?</i>  <i>A: Nerve cells and muscle cells</i></p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> heal, cells, organs, mitosis</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Mitosis</u> also allows <u>cells</u> to heal and <u>organ</u> cells to replace themselves.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>



2) Synthesize Passage	
Synthesize Passage	Instructional Key
<ul style="list-style-type: none"> <li>▪ The human body is made of <u>cells</u> that make up <u>tissues</u> and <u>organs</u> to do certain <u>jobs</u>.</li> <li>▪ Cells in the human body are constantly <u>splitting</u>, which is called <u>mitosis</u>, allowing the body to <u>grow</u>.</li> <li>▪ <u>Mitosis</u> causes the <u>cells</u> in the body to split and produce more cells, which is why our muscles and hair <u>grow</u>.</li> <li>▪ <u>Mitosis</u> also allows <u>cells</u> to heal and <u>organs</u> cells to replace themselves.</li> </ul>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> cells, mitosis, organs, grow/heal</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> In the human body, <u>cells</u> go through a process called <u>mitosis</u>, which allows <u>organs</u> and tissues in the body to <u>grow</u> and <u>heal</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's think about our big question "How do human body systems function to keep us alive?"*
- *Based on what we've read today,*
  - *What systems in the body work together to keep the body alive?*
  - *How can we add to our understanding of the big question based on what we learned today?*
  - (Students should describe how cells are organized, how cells reproduce and change the body).
- Possible student responses:
  - Cells make up the entire body and reproduce through mitosis
  - Cells are organized into tissues
  - Tissues are organized into organs and organ systems
  - Cells are responsible for growth and healing

## Unit 3, Lesson 2

### Components

- |                                       |
|---------------------------------------|
| 1) Steps for Understanding (Practice) |
| 2) Synthesize Passage                 |
| 3) Revisit Big question               |

#### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding (Practice)

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***

There are more than 600 muscles in the body. Muscle sizes vary from tiny, such as the muscles that move the eyeballs in their sockets, to very large, such as some muscles in the thighs. Muscles do everything from pumping blood throughout your body to helping you lift your heavy backpack. You consciously control some of your muscles, while others, like your heart, do their jobs automatically. There are three kinds of muscle **tissue**: skeletal, smooth, and cardiac.

Skeletal muscles **contract** to produce body movement as a result of nerve signals sent from the brain and spinal cord. Although these movements are under our conscious control, the brain can learn patterns of movements so that we can perform certain tasks, such as walking, without thinking. Unlike skeletal muscle, smooth and cardiac muscles are not under our conscious control — they **function** automatically. Smooth muscle is found in the walls of many **organs**, such as the stomach, where it **contracts** and relaxes to propel food along. Cardiac muscle, located only in the heart, pumps blood from the heart to the lungs and around the body.



### 1) **Read Passage:**



- *Let's take a minute to talk about some important vocabulary words.*
- **Tissue.** *What does tissue mean?*
- **Contract.**
  - *"Skeletal muscles **contract** to produce body movement as a result of nerve signals sent from the brain and spinal cord."*
  - Show the picture for contract and describe it briefly.
  - *Contract means to tighten up or shrink.*
- **Function.**
  - *"The smooth and cardiac muscles function automatically."*
  - Show the picture for contract and describe it briefly.
  - *Function means the purpose or role of something, so that sentence means the muscles do their jobs without the brain telling them to.*

### 2) **Check for Understanding:**

*Q: What are the three kinds of muscle tissue?*

*A: skeletal, smooth, and cardiac.*

*Q: Why do skeletal muscles move?*

*A: As a result of nerve signals sent from the brain and spinal cord.*

*Q: Where are cardiac muscles?*

*A: In the heart*

*Q: Do we control our smooth and cardiac muscles?*

*A: No, they function automatically.*

### 3) **Key Words:** *Ok, write down your key words. Use the key word checklist to help you.*

- Answer key: muscles, tissue, contract

### 4) **Main Idea:** *Ok, what is this section mostly about?*

- Answer key: Muscle tissue in the body control the heart, the organs, and movement by **contracting**.
- *Great job. So, I'll write our main idea as I understand it.*

Text Section #2	Instructional Key
<p><b>Muscle and Bone Work Together</b>            The 206 bones in our skeleton work with muscles to make the body move. <u>Joints</u> are formed where two bones meet. Joints make the skeleton flexible; without them, movement would be impossible. Skeletal muscles are the masses of tough, elastic <b>tissue</b> that pull our bones when we move. Together, our bones, muscles, and joints — along with tendons, ligaments, and cartilage — form our musculoskeletal <b>system</b> and enable us to do everyday physical activities.</p> <p>Your <u>skeletal muscles</u>, which always work in pairs, connect to different sides of your bones near a joint. For instance, your biceps muscle and triceps muscle are connected near your elbow joint. When you bend your elbow, the biceps <b>contracts</b> and the triceps relaxes. When you straighten your arm, the opposite happens: The triceps <b>contracts</b> and the biceps relaxes.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: What do joints make possible?</i>            A: They make the skeleton flexible and make movement possible.  <i>Q: Muscles, bones, and joints form the musculoskeletal system, what would happen if we didn't have muscles?</i>            A: muscles give us the strength to move bones in the joints.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> joints, skeletal muscles, contract, relax</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The bone <u>joints</u> are controlled by <u>skeletal muscles</u>, which work in pairs to <u>relax</u> and <u>contract</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p><b>What else to muscles do?</b>            It may come as a surprise to you to find out that your muscles also help maintain the <u>temperature</u> in your body. When muscles contract, they release heat. Without this heat from muscle contraction, the body could not maintain its normal temperature. You may have noticed the way your muscles affect your body temperature when you shiver. The quick muscle contractions that occur when you shiver release heat and raise your body temperature.</p> <p>Muscles also work closely together with the bones to keep you standing or sitting up standing. Have you ever noticed that you stand up straight without thinking about it? Most muscles in your body are always a little bit contracted. This tension, or muscle tone, is present even when you are sleeping. The muscles that maintain <u>posture</u> relax completely only when you are unconscious (passed out).</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• Write down your key words</li> <li>• Write a main idea sentence for the passage you just read.</li> <li>• Complete self-assessment form.</li> </ul> <p><b>3). Check for Understanding:</b> <i>Ok, let's go through the paragraph together to make sure we all have a good idea of what the paragraph is about.</i>  <i>Q: How does shivering help keep us warm?</i>  <i>A: The quick muscle contractions release heat and raise the body temperature.</i></p> <p><b>4). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> muscles, temperature/heat, posture</li> </ul> <p><b>5). Main Idea:</b> <i>Ok. Tell me your main idea. What is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Muscles</u> also help the body maintain body <u>temperature</u> and an upright <u>posture</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p><b>The Function of Bones</b>            Without your <u>skeleton</u> you'd be just a puddle of skin and guts on the floor. From our head to our toes, our bones provide support for our bodies and help form our shape. The skull <u>protects</u> the brain and forms the shape of our face. The spinal cord, a pathway for messages between the brain and the body, is protected by the set of ring-shaped bones called vertebrae that make up the spine. The ribs form a cage that shelters internal <b>organs</b> such as the heart and lungs. And the pelvis helps protect the bladder, intestines, and in girls, the reproductive <b>organs</b>. Although they're very light, bones are strong enough to support our entire weight.</p> <p>Because <u>bones</u> are made of living <b>cells</b>, when a bone is broken it will produce lots of new <b>cells</b> to rebuild the bone. These <b>cells</b> cover both ends of the broken part of the bone and close up the break. Calcium is an important mineral that bone <b>cells</b> need to repair themselves and stay strong, so make sure you eat a balanced diet!</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: What does the vertebrae that make up the spine protect?</i>            A: The spinal cord  <i>Q: What is the function of the skull?</i>            A: It protects the brain and forms the shape of our face.  <i>Q: What do the ribs protect?</i>            A: The internal organs, like the heart and lungs.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> skeleton, protects, bones, organs</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>skeleton</u> is a system of <u>bones</u> that support our bodies and <u>protect</u> the internal <u>organs</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p><b>1)</b> <u>Muscle</u> tissue in the body controls the heart, the organs, and <u>movement</u> by contracting.</p> <p><b>2)</b> The bone <u>joints</u> are controlled by <u>skeletal muscles</u>, which work in pairs to <u>relax</u> and <u>contract</u>.</p> <p><b>3)</b> <u>Muscles</u> also help the body maintain body <u>temperature</u> and an upright <u>posture</u>.</p> <p><b>4)</b> The <u>skeleton</u> is a system of <u>bones</u> that support our bodies and <u>protect</u> the internal <u>organs</u>.</p>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> <li>• <u>Answer key:</u> movement, muscle, skeleton</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>muscle</u> and <u>skeleton</u> systems work together to hold the body upright and make <u>movements</u>.</li> <li>• <i>Great job. So, I'll write our overall main idea as I understand it.</i></li> </ul>



### 3) Revisit big question

- *Let's revisit our big question "How do human body systems function to keep us alive?"*
- *In the past few days, we've learned about cells and the body's movement.*
  - *How can we add to our understanding of the big question based on what we learned today?*
  - (Students should describe how the muscular and skeletal systems enable movement and organ function).
- Answer key:
  - Skeletal muscles contract to produce body movement
  - Muscles function in response to signals from the brain and spine
  - Smooth muscles allow organs to function
  - Cardiac muscles keep the heart pumping blood
  - The muscular and skeletal systems work together to make the body move and stand up straight
  - The skeletal system gives the body its shape and protects the organs

## Unit 3, Lesson 3

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge



### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***
- *We will continue to learn about the human heart and the body system that it controls.*

Text Section #1	Instructional Key
<p>Have you ever wondered what your doctor is actually listening for when he or she uses a stethoscope to check your heart? Listening closely to your heart can give your doctor a wealth of information—for example, how hard or frequently it is beating and how your heart valves sound when they open and close. Your heart valves are flaps that control the flow of blood within and out of the heart. The normal heartbeat is said to make a “lubb-dupp” sound as your heart valves close. But sometimes doctors can hear an extra sound. This unusual swishing or whooshing sound is called a heart murmur. More often than not, heart murmurs are harmless and don’t require any treatment.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Check for Understanding:</b></p> <ul style="list-style-type: none"> <li>• <i>Q: What is the doctor listening for when he or she checks your heart?</i> <ul style="list-style-type: none"> <li>○ A: How hard or how frequently your heart beats, and the sounds of the valves opening and closing.</li> </ul> </li> <li>• <i>Q: The heart valves control the blood and produce what?</i> <ul style="list-style-type: none"> <li>○ A: A sound (i.e. the heartbeat)</li> </ul> </li> <li>• <i>Q: What is it called when a heart makes an extra sound?</i> <ul style="list-style-type: none"> <li>○ A: Heart Murmur</li> </ul> </li> </ul> <p><b>3). Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s make sure we use the right key words checklist.</i></li> <li>• <i>Who can tell me the type of text this is and why? (Students say it’s an informational text and explain why.)</i></li> <li>• <i>Ok, write down your key words. Use the key word checklist to help you.</i></li> <li>• <u>Answer key:</u> heart, heartbeat, listen, doctor</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Doctors listen to heartbeats</u> to hear the <u>heart’s</u> rate and the sound of valves as they open and close.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>The circulatory system is one of the most important <b>systems</b> in the body. Made up of the heart, blood and blood vessels, the circulatory <b>system</b> is your body's delivery <b>system</b>.  Blood that travels away from the heart delivers oxygen and nutrients to every part of the body. On the return trip toward the heart, blood picks up waste products so that your body can get rid of them. There are three types of blood vessels in your circulatory <b>system</b>. Blood is pumped away from the heart by vessels called arteries, and is carried <i>toward</i> the heart by veins. The smallest blood vessels are capillaries. These vessels are so thin that oxygen and nutrients can pass right through their walls and into body <b>tissues</b>.</p>	<p><b>1) Read Passage.</b></p> <p> <i>Let's talk about important vocabulary.</i></p> <p><b>System.</b></p> <ul style="list-style-type: none"> <li>• <i>The text says "Made up of the heart, blood, and blood vessels, the circulatory system is your body's delivery system."</i></li> <li>• <i>A system is a group of related parts that function together as a whole.</i></li> <li>• <i>So, the heart, blood, and blood vessels all work together to deliver blood and oxygen to all the parts of the body.</i></li> <li>• <i>Show the vocabulary visual for the word system and briefly say the word, read the student-friendly explanation, describe picture.</i></li> </ul> <p><b>2) Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3) Key Words:</b> <i>Ok. Tell me your key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> circulatory system, blood, heart, blood vessels</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, tell me the main idea you wrote down.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>heart</u> is the center of the <u>circulatory system</u>, and <u>blood</u> is pumped through <u>blood vessels</u> to the whole body.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Your heart is a muscle about the size of your fist when it’s clenched. It <b>contracts</b> and relaxes about 70 times a minute at rest — more if you are exercising — and pumps blood through its chambers to all parts of the body. The heart is divided into two sections. Both sides, which are called ventricles, pump at the same time. Veins throughout the body carry blood to the ventricle on the right side. The heart then sends the blood to the lungs, where it collects oxygen. The oxygen-rich blood then flows to the left ventricle of the heart. After moving through there, the oxygen-rich blood flows throughout the body and the whole process begins again.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: How does the heart move blood throughout the body?</i>                      A: By contracting and relaxing  <i>Q: In what organ does blood collect oxygen?</i>                      A: In the lungs</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> heart, lungs, oxygen, contracts</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>heart contracts</u> and relaxes to send blood, collect <u>oxygen</u> from the <u>lungs</u>, and move it through the body.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Your blood has several different parts. Most of it is a colorless liquid called plasma, which contains red blood cells, white blood cells, and platelets. Red blood cells give the blood its red color and transport oxygen and carbon dioxide to and from the body’s cells. White blood cells are part of your body's defense against pathogens. (A pathogen is an organism that causes disease.) Some white blood cells attack and kill pathogens directly; others create antibodies, which are chemicals that destroy pathogens. Platelets are pieces of cells in the blood that help your body repair itself after injury. When you get a cut, platelets stop the bleeding by bunching together and forming a clot.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: What do red blood cells do?</i>                      A: Red blood cells give blood its red color and transport oxygen and carbon dioxide.  <i>Q: What do white blood cells do?</i>                      A: Some attack pathogens, and others create antibodies.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> blood, white blood cells, red blood cells, platelets, plasma</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Blood</u> is made up of parts that each do a specific job. These parts are <u>white and red blood cells, platelets, and plasma.</u></li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p><b>1)</b> <u>Doctors</u> <u>listen</u> to <u>heartbeats</u> to hear the <u>heart's</u> rate and valves close.</p> <p><b>2)</b> The <u>heart</u> is the center of the <u>circulatory system</u>, and <u>blood</u> is pumped through <u>blood vessels</u> to the whole body.</p> <p><b>3)</b> The <u>heart contracts</u> and relaxes to send blood, collect <u>oxygen</u> from the <u>lungs</u>, and move it through the body.</p> <p><b>4)</b> <u>Blood</u> is made up of parts that each do a specific job. These parts are <u>white and red blood cells</u>, <u>platelets</u>, and <u>plasma</u>.</p>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> <li>• <u>Answer key:</u> circulatory system, heart, blood, vessels</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>Ok, what is this passage mostly about?</u></i></p> <p>a) <u>Answer key:</u> The <u>circulatory system</u> pumps <u>blood</u> from the <u>heart</u> through the <u>blood vessels</u> to the entire body.</p> <p>b) <i>Great job. So, I'll write our overall main idea as I understand it.</i></p>

### 3) Revisit big question

- *Let's revisit our big question "How do the human body systems function to keep us alive?"*
- *In the past few days, we learned about cells, the skeletal system, and the muscular system.*
  - *How can we add to our understanding of the big question based on what we learned today about the circulatory system?*
  - (Students should recall important information about how organisms interact in the food web.)
- Possible student responses:
  - The muscles in the heart allow it to contract and pump blood through the body
  - The circulatory system is made up of different types of blood cells
  - The heart's beating sends oxygen and nutrients to the whole body, which is what keeps humans alive
  - The skeletal system protects all of the other systems



**Unit 3, Lesson 4**


Components
1) Steps for Understanding Practice
2) Synthesize Passage
3) Integrate Knowledge

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

**1). Steps for Understanding Practice**

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***
- *Today we will continue to learn about the largest organ in your body.*

Text Section #1	Instructional Key
<p>Body <b>organs</b> aren't all internal like the brain or the heart. There's one we wear on the outside. <u>Skin</u> is our largest <b>organ</b>—the average adult has about 8 pounds and 22 square feet of it. This fleshy covering does a lot more than make us look good. Your skin covers and protects everything inside your body. Without skin, people's muscles, bones, and <b>organs</b> would be hanging out all over the place. Skin holds everything together.</p> <p>Skin acts as a waterproof, insulating shield that guards the body against extreme temperature, sunlight, and chemicals. It releases substances that prevent infection and makes vitamin D for converting calcium into healthy bones. Additionally, skin is a huge sensor packed with <u>nerves</u> that keep the brain in touch with the outside world. At the same time, skin is stretchy and allows us free movement. It is an amazingly useful <b>organ</b>.</p>	<p><b>1) Read Passage:</b>   <i>Let's review the word organ. _____, would you please remind us what the word means?</i></p> <p><b>2) Check for Understanding:</b>  <i>Q: What is the largest organ in your body?</i>                      A: The skin  <i>Q: What are some ways skin helps or bodies?</i>                      A: It is a shield against temperature, sunlight, and chemicals; skin makes Vitamin D; skin contains nerves</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> skin, protects, nerves, touch.</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Skin</u> is the largest organ in the body. It <u>protects</u> the internal organs and contains <u>nerves</u> for the sense of <u>touch</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>Skin is made up of <u>layers</u>. The outermost is the epidermis. This consists mainly of cells that are made from the tough protein called keratin. Keratin is also the same protein that makes nails and hair.</p> <p>Cells in the epidermis form several layers that constantly grow outwards as the outer cells die and flake off. It takes roughly five weeks for newly created cells to work their way to the surface. The covering of dead skin is thicker on some parts of the body than others. For example, it is ten times thicker on the soles of the feet than around the eyes. The epidermis is attached to a deeper skin layer below known as the dermis, which gives the organ its strength and stretchiness.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: What is keratin?</i>  A: A tough protein that makes nails and hair  <i>Q: What happens to layers of the epidermis?</i>  A: They are constantly growing and outer cells flake and die off.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> layers, skin, epidermis, dermis</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>epidermis</u> is the outer <u>layer</u> of <u>skin</u> that is constantly re-growing, and the <u>dermis</u> is the layer underneath.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Blood vessels in the <u>dermis</u> help regulate body temperature by increasing blood flow to the skin to allow heat to escape, or by restricting the flow when it's cold. A network of nerve fibers picks up feelings such as touch, temperature, and pain, relaying them to the brain.</p> <p>The dermis also holds hair follicles and glands with ducts that pass up through the skin. Sweat <u>glands</u> bring down the body's temperature through perspiration. Sweating also gets rid of waste fluids. Apocrine glands, which develop during the teenage years, produce a scented sweat that can cause body odor, especially around the armpits. Another type of gland releases an oily substance that keeps the hair and skin healthy.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• Write down your key words</li> <li>• Write a main idea sentence for the passage you just read.</li> <li>• Complete self-assessment form.</li> </ul> <p><b>3). Check for Understanding:</b></p> <p>Q: What do the nerve fibers in the dermis do?  A: The fibers pick up feelings such as touch, temperature, and pain and send them to the brain.</p> <p>Q: How do sweat glands help the body?  A: Bring down the body's temperature through perspiration and get rid of waste fluids.</p> <p><b>4). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Specific positive reinforcement and error-handling, as needed</u></li> <li>• <u>Answer key:</u> skin, dermis, temperature, glands</li> </ul> <p><b>5). Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>dermis</u> layer of <u>skin</u> helps control body <u>temperature</u> and contains several types of <u>glands</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Skin color is due to <u>melanin</u>, a pigment produced in the epidermis to protect us from the sun's potentially cancer-causing ultraviolet (UV) rays. Dark-skinned people produce more numerous and deeper-colored melanin cells. People with the darkest complexions are native to tropical regions, particularly those with few forested areas.</p> <p>Fair skin is an <u>adaptation</u> found in people from northern latitudes where solar rays are relatively weak. In these areas of the world, having dark skin is less helpful because of humans' need for bone-strengthening vitamin D. Vitamin D is produced through exposure to UV rays. But hotter, sunnier environments bring the risk of serious skin damage. Australia, where the majority of the population is of northern European descent, has the world's highest rates of skin cancer, accounting for more than 80 percent of all cancers diagnosed there each year.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: What is melanin?</i>  A: A pigment in the epidermis to protect against the sun's rays  <i>Q: If a person gets exposed to too much UV rays, what can happen?</i>  A: The person could develop skin cancer</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> melanin, adaptation, skin color, UV rays</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time for our main idea. Use the main idea checklist to help you. <u>Ok, what is this section mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Melanin</u> is an <u>adaptation</u> that protects the skin from the sun's <u>UV rays</u>. The amount of melanin determines a person's <u>skin color</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p><b>1)</b> <u>Skin</u> is the largest organ in the body. It <u>protects</u> the internal organs and contains <u>nerves</u> for the sense of <u>touch</u>.</p> <p><b>2)</b> The <u>epidermis</u> is the outer <u>layer</u> of <u>skin</u> that is constantly re-growing, and the <u>dermis</u> is the layer underneath.</p> <p><b>3)</b> The <u>dermis</u> layer of <u>skin</u> helps control body <u>temperature</u> and contains several types of <u>glands</u>.</p> <p><b>4)</b> <u>Melanin</u> is an <u>adaptation</u> that protects the skin from the sun's <u>UV rays</u>. The amount of melanin determines a person's <u>skin color</u>.</p>	<p><b>1) Synthesize Passage.</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> skin, layer, protects, nerves</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <b>Ok, what is this passage mostly about?</b></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>skin's layers</u> <u>protect</u> the body and contain <u>nerves</u> for the sense of touch.</li> <li>• <i>Great job. So, I'll write our overall main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "How do the human body systems function to keep us alive?"*
- *In the past few days, we learned about cells, the skeletal system, and the muscular system.*
  - *How can we add to our understanding of the big question based on what we learned today about skin?*
  - (Students should recall important information about how organisms interact in the food web.)
- Possible student responses:
  - Skin protects the internal organs
  - Skin regulates body temperature
  - Skin holds nerves that communicate with the brain and control the sense of touch
  - Melanin protects skin from the sun's rays

**Unit 3, Lesson 5****Components**

- |                                     |
|-------------------------------------|
| 1) Steps for Understanding Practice |
| 2) Synthesize Passage               |
| 3) Revisit Big question             |

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.



**1). Steps for Understanding Practice**

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***
- *Today we will learn more about the circulatory system, this time focusing on what happens when something goes wrong.*



Text Section #1	Instructional Key
<p>Sept. 15, 2006: That was the day that Matt Nader’s <u>heart</u> stopped, his athletic dreams ended, and he got a second chance at life. The Texas teen was an all-American football player headed for the University of Texas Longhorns. But at a game during his senior year of high school, he experienced sudden cardiac arrest.</p> <p>“It felt like a grenade exploded in my chest,” Nader told an interviewer from Current Health. “Then I lost consciousness.” His heart had stopped beating, condemning him to almost certain <u>death</u>.</p> <p>.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3). Check for Understanding:</b> <i>Now let’s check your understanding.</i>  <i>Q: What happened to Matt Nader in September of 2006?</i>  <i>A: He went into cardiac arrest.</i>  <i>Q: What happens when someone experiences cardiac arrest?</i>  <i>A: Their heart stops beating and they usually die.</i></p> <p><b>4). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Specific positive reinforcement and error-handling, as needed</u></li> <li>• <u>Answer key:</u> Matt Nader, heart, cardiac arrest, death</li> </ul> <p><b>5). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Remember to use the main idea checklist to guide your thinking. Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> When <u>cardiac arrest</u> caused Matt <u>Nader’s heart</u> to stop beating, he almost <u>died</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>Every time the heart beats, its main <b>function</b> is to pump oxygen-rich blood throughout the body and receive the blood back once the <u>oxygen</u> has been used. What makes the heart beat? Every pump needs a power source. In the heart’s case, specialized <b>tissue</b> sends electrical impulses through muscle fibers and causes them to contract, creating the heartbeat.</p> <p>During <u>cardiac arrest</u>, the heart stops, the person quickly loses consciousness, and heart rate and blood pressure drop. Every second counts once the brain and other <b>organs</b> lose their oxygen supply. Most people will die if they don’t get help within four to six minutes. Only 8 percent of people who have cardiac arrest outside a hospital make it home again, according to the American Heart Association.</p>	<p><b>1) Read Passage</b></p> <ul style="list-style-type: none"> <li>• <i>Let’s review the vocabulary word “function”</i> <ul style="list-style-type: none"> <li>◦ Show the vocabulary visual for function and briefly say the word, read the definition, and describe the picture.</li> </ul> </li> <li>• <i>Review “tissue”. (Show vocabulary card and review)</i></li> <li>• <i>Review “organ”. (Show vocabulary card and review)</i></li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding.</i></p> <p><i>Q: What is the heart’s main job?</i>  <i>A: To pump oxygenated blood throughout the body.</i></p> <p><i>Q: How does the heart beat?</i>  <i>A: The heart’s special tissue sends electric impulses that causes the muscle to contract.</i></p> <p><i>Q: What four things happen during cardiac arrest?</i>  <i>A: the heart stops beating, the person becomes unconscious, blood pressure drops, and organs don’t get oxygen</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Specific positive reinforcement and error-handling, as needed</u></li> <li>• <u>Answer key:</u> heart, cardiac arrest, consciousness, oxygen.</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Remember to use the main idea checklist to guide your thinking. <b>Ok, what is this section mostly about?</b></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> When <u>cardiac arrest</u> occurs, the <u>heart</u> stops, the body’s organs don’t get <u>oxygen</u>, and the person becomes <u>unconscious</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Any death from cardiac arrest is tragic, but the death of a teen is especially devastating. Unfortunately, each year a small number of teens—often athletes—experience sudden cardiac arrest. In many cases, they have undiagnosed heart <u>conditions</u>, but in other cases, no explanation is ever found. Athletes seem to be at a slightly higher risk because physical activity may strain a weak heart.</p> <p> Hypertrophic cardiomyopathy (HCM)—a dangerous thickening of the heart muscle—is the leading cause of sudden cardiac arrest in young <u>athletes</u>. A normal heart has orderly sheets of muscle, but an HCM heart’s muscle fibers are intertwined irregularly. These irregular fibers can interfere with a regular heartbeat.</p>	<p><b>1) Read Passage:</b> </p> <ul style="list-style-type: none"> <li>• <i>Let’s talk about the vocabulary word “condition”.</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for condition and briefly say the word, read the definition, and describe the picture.</li> <li>○ <i>You have seen this word before in an earlier unit, but it means something a little different here.</i></li> <li>○ <i>The text is saying that some teens have some type of heart disease.</i></li> <li>○ <i>Let’s reread that paragraph from the beginning.</i></li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>Let’s check your understanding.</i>  <i>Q: Do all teens who experience cardiac arrest have a heart condition? Why / why not?</i>                      A: No. Some teens have a heart condition, but sometimes no reason is found.  <i>Q: How is HCM related to cardiac arrest?</i>                      A: When a young athlete has cardiac arrest, HCM is the main reason.</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> cardiac arrest, athletes, heart, conditions</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Remember to use the main idea checklist to guide your thinking. What is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Some teen <u>athletes</u> have a <u>heart condition</u> that can cause <u>cardiac arrest</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Nader’s heart seems normal, and his cardiac arrest has never been explained. CPR and an <u>automated external defibrillator (AED)</u> saved him. “My school had bought an AED four years earlier but had never used it,” he says. “I wouldn’t be here if they didn’t have that AED.” The American Heart Association recommends that all schools have defibrillators.</p> <p>Matt Nader now has a tiny defibrillator implanted in his chest in case of another cardiac arrest. He is enjoying college life and still works with his beloved Longhorns, now as a student assistant. “I’m here because people around me knew what to do,” he says. “I can’t even put my <u>gratitude</u> into words.”</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Now it’s time to check your understanding of the text.</i>  <i>Q: Has a reason been found for Matt Nader’s cardiac arrest?</i>                      A: No, an explanation hasn’t been found.  <i>Q: Why didn’t Nader die?</i>                      A: His school had an AED (a device that sends an electric shock to the heart to restore a heartbeat).</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Specific positive reinforcement and error-handling, as needed</u></li> <li>• <u>Answer key:</u> Nader, AED (defibrillator), grateful</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Matt Nader is grateful</u> for the <u>defibrillator</u> at his school that saved him.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

2) Synthesize Passage	
<ul style="list-style-type: none"> <li>▪ When <u>cardiac arrest</u> caused Matt <u>Nader's</u> <u>heart</u> to stop beating, he almost <u>died</u>.</li> <li>▪ When <u>cardiac arrest</u> occurs, the <u>heart</u> stops, the body's organs don't get <u>oxygen</u>, and the person becomes <u>unconscious</u>.</li> <li>▪ Some teen <u>athletes</u> have a <u>heart condition</u> that can cause <u>cardiac arrest</u>.</li> <li>▪ <u>Matt Nader</u> is <u>grateful</u> for the <u>defibrillator</u> at his school that saved him.</li> </ul>	<p><b>1) Read Passage.</b></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> Matt Nader, cardiac arrest, heart, grateful</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the entire passage. Remember to use the main idea checklist to guide your thinking. <u>Ok, what is this passage mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Cardiac arrest</u> happens when the <u>heart</u> stops beating and the body doesn't get oxygen. <u>Matt Nader</u> is <u>grateful</u> that to be alive after his cardiac arrest.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question, **How do human body systems function to keep us alive?***
- *In the past few days, we've learned about the skeletal system and circulatory system.*
  - *How can we add to our understanding of the big question based on what we learned today about cardiac arrest?*
- Possible student response:
  - If the heart, which is part of the circulatory system, stops beating, we die because oxygen doesn't get to vital organs

## Unit 3, Lesson 6

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***
- *Today we will learn about the respiratory system. Let's get started.*

Text Section #1	Instructional Key
<p>Each day we breathe about 20,000 times. All of this breathing couldn't happen without help from the respiratory <b>system</b>, which includes the nose, throat, trachea (windpipe), and lungs. With each breath, you take in air through your nostrils and mouth, and your lungs fill up and empty out. The process of taking air into the lungs is called inhalation and the process of breathing it out is called exhalation.</p>	<p><b>1) Read Passage.</b></p> <ul style="list-style-type: none"> <li>• <i>Let's review the vocabulary word "system"</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for system and briefly say the word, read the definition, and describe the picture.)</li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding.</i>  <i>Q: What body parts make up the respiratory system?</i>            A: nose, throat, trachea, and lungs  <i>Q: What are the scientific terms for breathing in and breathing out?</i>            A: Inhalation (breathing in); exhalation (breathing out)</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> breathe, respiratory system, lungs</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>respiratory system's</u> function is to help us <u>breathe</u> air into and out of our <u>lungs</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>



Text Section #2	Instructional Key
<p>Although we can't see it, the air we breathe is made up of several gases. Oxygen is the most important for keeping us alive because body cells need it for energy and growth. Without oxygen, the body's cells would die. Carbon dioxide is the waste gas that is produced when we breathe. Respiration is when oxygen from the environment is exchanged for carbon dioxide waste from the body.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Let's see how well you understand the text.</i>  <i>Q: Why is oxygen so important to the human body?</i>                      A: The body's cells would die without oxygen.  <i>Q: What is carbon dioxide?</i>                      A: A waste gas that humans produce  <i>Q: Describe respiration in your own words.</i>                      A: Respiration is when we breathe in air (oxygen), and breathe out carbon dioxide.</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> oxygen, cells, respiration, carbon dioxide</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Respiration</u> occurs when we get <u>oxygen</u> that our <u>cells</u> need and get rid of <u>carbon dioxide</u> waste.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #3	Instructional Key
<p>Asthma is a lung <b>condition</b> that causes respiratory, or breathing, difficulty. Lots of people have asthma, from young kids to the elderly. Asthma affects the bronchial tubes — also known as airways. With normal breathing, air flows in through the nose or mouth and then into the trachea. From there, it easily passes through the bronchial tubes, into the lungs, and finally back out again.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• Write down your key words</li> <li>• Write a main idea sentence for the passage you just read.</li> <li>• Complete self-assessment form.</li> </ul> <p>• Let's review the vocabulary word "condition"          ✓ (Show the vocabulary visual for condition and briefly say the word, read the definition, and describe the picture.)</p> <p><b>3) Check for Understanding:</b> <i>Let's check your understanding of the text.</i>  <i>Q: What part of the respiratory system does asthma affect?</i>  <i>A: The bronchial tubes (airways)</i>  <i>Q: Trace the flow of air in normal breathing.</i>  <i>A: Air enters the nose or mouth, goes into the trachea, then to the bronchial tubes, then into the lungs, then back out again.</i></p> <p><b>4). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> asthma, breathing, bronchial tubes</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Many people have <u>asthma</u>, a condition that affects the <u>bronchial tubes</u> and makes it hard to <u>breathe</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Breath doesn't always flow as easily through the airways when people have asthma, though. Their bronchial tubes are inflamed, so they swell up and produce lots of thick mucus. The inflamed airways are also very sensitive to allergens and pollutants, so things like dust or smoke can cause the involuntary muscle around the airways to tighten up. All of this can constrict, or narrow, the bronchial tubes and make it hard for air to move through.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Let's check your understanding of the text.</i>  <i>Q: What happens to an asthmatic person's bronchial tubes?</i>                      A: The bronchial tubes become constricted (narrowed, tightened up, swollen), making it hard for air to flow through.  <i>Q: What can cause the bronchial tubes to constrict?</i>                      A: dust, smoke, allergens</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> asthma, bronchial tubes (airways), inflamed</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. What is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Asthma</u> causes the <u>bronchial tubes</u> to become <u>inflamed</u>, making it difficult for air to flow.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ The <u>respiratory system's</u> function is to help us <u>breathe</u> air into and out of our <u>lungs</u>.</li> <li>▪ <u>Respiration</u> occurs when we get <u>oxygen</u> that our <u>cells</u> need and get rid of <u>carbon dioxide</u> waste.</li> <li>▪ Many people have <u>asthma</u>, a condition that affects the <u>bronchial tubes</u> and makes it hard to <u>breathe</u>.</li> <li>▪ <u>Asthma</u> causes the <u>bronchial tubes</u> to become <u>inflamed</u>, making it difficult for air to flow.</li> </ul>	<p><b>1) Synthesize Passage.</b></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> respiratory system, breathe, asthma, bronchial tubes</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>What is this paragraph mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>respiratory system</u> helps us <u>breathe</u>, but <u>asthma</u> makes it difficult because the <u>bronchial tubes</u> are inflamed.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "How do human body systems function to keep us alive?"*
- *Now that you have read about the respiratory system, how can we add to our understanding of the big question?*
- Possible student responses:
  - The respiratory system keeps us alive by helping us breathe.
  - When we breathe, the body gets oxygen it needs to survive, and gets rid of carbon dioxide it doesn't need

## Unit 3, Lesson 7

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***
- *Today we will learn how the digestive system functions to keep us alive. Let's get started.*

Text Section #1	Instructional Key
<p>If it's been a while since your last meal, you probably feel hungry. You eat until you're satisfied and then go about your day. But for the next 20 hours or so, your digestive <b>system</b> is doing its job as the food you ate travels through your body. The <u>nutrients</u> in food give the body's cells the fuel they need to <b>function</b>. But before food can do this, every morsel you eat has to be broken down into nutrients that can be absorbed by the body.</p> <p>The digestive <b>system</b> is made up of the alimentary canal (also called the digestive tract) and the other abdominal <b>organs</b> that play a part in digestion, such as the liver and pancreas. The digestive tract is the long tube of <b>organs</b> — including the esophagus, the stomach, and the intestines — that runs from the mouth to the anus. An adult's digestive tract is about 30 feet long.</p>	<p><b>1) Read Passage.</b></p> <ul style="list-style-type: none"> <li>• <i>Let's review the vocabulary word "<b>system</b>"</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for system and briefly say word, read definition, and describe picture.)</li> </ul> </li> <li>• <i>Review "<b>function</b>". (Show vocabulary card for function and review.)</i></li> <li>• <i>Review "<b>organ</b>". (Show vocabulary card for organ and review.)</i></li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding of the text.</i></p> <p><i>Q: How long does it take the body to digest food?</i>  <i>A: about 20 hours</i></p> <p><i>Q: Why are nutrients important to your body?</i>  <i>A: They provide fuel for your body's cells.</i></p> <p><i>Q: What organs make up the digestive tract?</i>  <i>A: esophagus, stomach, intestines, anus</i></p> <p><b>3) Key Words:</b> <i>Use your key words checklist to identify key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> digestive system, food, nutrients, organs</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. <u>What is this section mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>digestive system</u> consists of several <u>organs</u> that help break down <u>food</u> into <u>nutrients</u> that the body needs.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>The process of digestion starts well before food reaches the stomach. When we see, smell, taste, or even imagine a tasty snack, our salivary glands begin producing <u>saliva</u>. This flow of saliva is set in motion by a brain reflex that is triggered when we sense food or even think about eating. The brain sends a message to the salivary glands, located under the tongue, telling them to prepare for a meal.</p> <p>As the teeth tear and chop the food, saliva breaks it down and moistens it for easy swallowing. Swallowing, which is done by muscles in the tongue and mouth, moves the food into the throat. From the throat, food travels down the esophagus, a muscular tube in the chest. Muscles in the esophagus <b>contract</b> in waves to force food down to the stomach. This takes about 2 or 3 seconds — and most people aren't even aware of it!</p>	<p><b>1) Read Passage.</b></p> <ul style="list-style-type: none"> <li>• Review the vocabulary word "<b>contract</b>" <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for contract and briefly say the word, read the definition, and describe the picture)</li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>Let's check your understanding of the text.</i></p> <p><i>Q: What is the very first step in the digestive process?</i>  A: When your brain senses food it tells you to produce saliva.</p> <p><i>Q: How does saliva help the digestive process?</i>  A: It moistens food so it's easier to swallow</p> <p><i>Q: How does food get to your stomach?</i>  A: The esophagus contracts to force the food to the stomach.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key</u>: saliva, food, swallow, esophagus</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. What is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key</u>: Digestion begins when <u>saliva</u> moistens <u>food</u>, which makes it easy to <u>swallow</u> and travel through the <u>esophagus</u> to the stomach.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>



Text Section #3	Instructional Key
<p>At the end of the esophagus, a special opening allows food to enter the stomach and then squeezes shut to keep food from flowing back up into the esophagus. The stomach muscles churn and mix the food with acids and enzymes, breaking it into much smaller pieces. By the time food is ready to leave the stomach, it has been processed into a thick liquid.</p> <p>The small intestine continues to break down the food mixture even more so your body is able to absorb all of its <u>nutrients</u>. Your food can spend as long as 4 hours in the small intestine. Nutrients pass through the intestinal wall into blood vessels as a very thin, watery mixture. The circulatory <b>system</b> works to distribute these nutrients to the rest of the body.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding of the text.</i>  <i>Q: What happens to food in the stomach?</i>                      A: Food is mixed with acids and enzymes and broken down into smaller pieces and eventually into a thick liquid.  <i>Q: What is the small intestine's function?</i>                      A: To break food down even more so the body can absorb nutrients.  <i>Q: About how long does food spend in the small intestine?</i>                      A: About 4 hours  <i>Q: How do nutrients get to the rest of the body?</i>                      A: The nutrients go into your blood vessels and are distributed by the circulatory system.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> food, stomach, small intestine, nutrients.</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. <u>What is this section mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Food</u> is broken down in the <u>stomach</u> and <u>small intestine</u>, so your body can get the <u>nutrients</u> it needs.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #4	Instructional Key
<p>Your large intestine finishes the process of digesting food — a process that starts in your mouth and stomach and ends with you going to the bathroom. The large intestine absorbs water from undigested food and stores solid <u>wastes</u> until they are passed out of the body as waste.</p> <p>The digestive <b>system</b> is an important part of your body. Without it, you couldn't get the nutrients you need to grow properly and stay healthy. Your digestive system requires regular care to run smoothly. You can help it by drinking plenty of water and eating a healthy diet that includes foods rich in fiber. High-fiber foods, like fruits, vegetables, and whole grains, make it easier for your large intestine to do its job. And next time you sit down to lunch, you'll know where your food goes — from start to finish!</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Now let's see how well you understand the text.</i></p> <p><i>Q: What is the function of the large intestine?</i>  A: It absorbed water from food you didn't digest and stores the waste until you go to the bathroom.</p> <p><i>Q: Name two things you can do to help your digestive system function well.</i>  A: Drink lots of water, eat high-fiber foods, eat an overall healthy diet</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> digestion, large intestine, waste</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. What is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Digestion</u> is finished when the <u>large intestine</u> gets rid of <u>waste</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ The <u>digestive system</u> consists of several <u>organs</u> that help break down <u>food</u> into <u>nutrients</u> that the body needs.</li> <li>▪ Digestion begins when <u>saliva</u> moistens <u>food</u>, which makes it easy to <u>swallow</u> and travel through the <u>esophagus</u> to the stomach.</li> <li>▪ <u>Food</u> is broken down in the <u>stomach</u> and <u>small intestine</u> so your body can get the <u>nutrients</u> it needs.</li> <li>▪ <u>Digestion</u> is finished when the <u>large intestine</u> gets rid of <u>waste</u>.</li> </ul>	<p><b>1) Read Passage:</b></p> <p><b>2) Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> digestion, food, nutrients</li> </ul> <p><b>4) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage Use the main idea checklist to help you. <u>What is this passage mostly about?</u></i></p> <p>a) <u>Answer key:</u> The <u>digestive</u> process breaks down <u>food</u> so the body gets important <u>nutrients</u>.</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it.</i></p>

### 3) Revisit big question

- *Let's revisit our big question "How do human body systems function to keep us alive?"*
- *Now that we know about the digestive system, how can we add to our understanding of the big question based?*
- Possible student responses:
  - The digestive system helps the body get nutrients from food.
  - The digestive tract contains several organs (liver, pancreas, stomach, intestines) that work together.

## Unit 3, Lesson 8

### Components

1) Steps for Understanding Practice

2) Synthesize Passage

3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **How do human body systems function to keep us alive?***
- *Today we will learn about the importance of the nervous system. Let's get started.*

Text Section #1	Instructional Key
<p>Think of the brain as a central computer that monitors and controls all the <b>functions</b> of your body. The nervous <b>system</b> is like a network for that central computer: Neurons, or nerve cells, carry messages back and forth from the brain to different parts of the body. This happens through the spinal cord, which runs from the brain down through the back. The spinal cord contains threadlike nerves that branch out to every organ and body part. The brain and the spinal cord are protected by bone.</p> <p>When a message comes into the brain from anywhere in the body, the brain sends a message out through the spinal cord telling the body how to react. Sensory neurons send messages from sensory receptors in your skin, eyes, nose, tongue, or ears toward the brain. Motor neurons send messages away from the brain to your muscles. For example, if you accidentally touch a hot stove, the sensory receptors in your skin shoot a message of pain to your brain. The spinal cord carries a message from your brain back to the muscles in your hand, telling it to pull away.</p>	<p><b>1) Read Passage.</b></p> <ul style="list-style-type: none"> <li>• <i>Let's review the vocabulary word "function"</i> <ul style="list-style-type: none"> <li>○ (Show the vocabulary visual for function and briefly say word, read definition, and describe picture.)</li> </ul> </li> <li>• <i>Now let's review "system".</i> <ul style="list-style-type: none"> <li>○ (Show vocabulary card for system and review the word.)</li> </ul> </li> </ul> <p><b>2) Check for Understanding:</b> <i>Now let's check your understanding of the text.</i></p> <p><i>Q: Why is your brain like a central computer?</i>  <i>A: Because it is in charge of everything your body does.</i></p> <p><i>Q: What are neurons? what do they do?</i>  <i>A: They are nerve cells that carry messages to and from the brain to your body.</i></p> <p><i>Q: Why is the spinal cord an important part of the nervous system?</i>  <i>A: Because nerve cells (neurons) travel along the spinal cord to get to and from the brain.</i></p> <p><i>Q: What is the difference between a motor neuron and a sensory neuron?</i>  <i>A: A motor neuron sends messages <u>away</u> from your brain to your muscles. A sensory neuron sends messages <u>to</u> your brain from your body's senses.</i></p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> nervous system, brain, spinal cord, messages</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to develop a main idea. Use the main idea checklist to help. What is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The function of the <u>nervous system</u> is to send <u>messages</u> back and forth from your <u>brain</u> to your body through the <u>spinal cord</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>In the summer of 2006, a promising baseball pitcher named Rob Summers was in a car accident that seriously injured the lower part of his spinal cord. The damage to his spinal cord stopped the brain’s messages from reaching many of the motor neurons in his lower body. The accident left him paraplegic—unable to move his lower body. “The doctors told me that I had no hope of walking again,” says Summers. “My comment was, ‘You don’t know me very well. I’m going to fight until I get well again.’”</p> <p>Summers spent the next two years adjusting to life in a wheelchair. Then he was chosen for an experimental research project to see if it was possible to teach the spinal cord to control body movement independently of the brain. In a four-and-a-half-hour operation, the research team implanted electrodes in Summers’s spinal cord. The electrodes were then wired to a pulse generator that was implanted in his back. A device outside the body acts like a remote control for the pulse generator.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Now let’s check your understanding of the text.</i></p> <p><i>Q: What is a paraplegic?</i>  A: Someone who is unable to move the lower part of the body</p> <p><i>Q: What was injured that caused Rob Summer to be paraplegic?</i>  A: His spinal cord</p> <p><i>Q: What was the purpose of the experimental research project Summers was chosen for?</i>  A: To see if the spinal cord could control body movements</p> <p><i>Q: What did the research team put in Summers’ spinal cord?</i>  A: electrodes that could be controlled by a remote control device</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <p>a) <u>Answer key:</u> Rob Summers, spinal cord, walk (movement, paraplegic), experiment</p> <p><b>4). Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you. What is this section mostly about?</i></p> <p>b) <u>Answer key:</u> After damaging his <u>spinal cord</u> in an accident, <u>Rob Summers</u> was chosen for an <u>experimental</u> operation that might allow him to <u>walk</u> again.</p> <p>c) <i>Great job. So, I’ll write our main idea as I understand it.</i></p>

Text Section #3	Instructional Key
<p>After the surgery, the researchers switched on the pulse generator for two hours a day, electrically stimulating the nerves in his spinal cord. Nerves are able to respond to electrical stimulation because the messages they carry are in the form of electric signals. On the third day of electrical stimulation, Summers was able to stand. “It was unbelievable,” he says. “There was so much going through my head at that point. I was amazed; I was in shock.”</p> <p>The research team explains it this way: Summers’s spinal cord wasn’t totally damaged in the accident. It could still receive limited messages from the muscles in his lower body. Messages carried from the legs by sensory neurons are traveling to Summers’s electrically stimulated spinal cord. The spinal cord then sends messages along the motor neurons and makes the legs move.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Now let’s see how well you understand the text.</i>  <i>Q: Was Rob Summers able to move his lower body after the surgery?</i>                      A: Yes! After 3 days of electrical stimulation he was able to stand.  <i>Q: Look at the first paragraph. Why were Summers’ nerves able to respond to the pulse generator?</i>                      A: Because nerves carry messages in the form of electric signals.  <i>Q: Refer to the second paragraph. What explanation do researches have for Summers being able to move?</i>                      A: His spinal cord wasn’t completely damaged so it could receive and send some signals from electric stimulation.</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> spinal cord, messages, electrical stimulation, nerves (neurons)</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, time to write our main idea. Use the main idea checklist to help you. What is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Electrically stimulated nerves</u> were able to carry <u>messages</u> back and forth from the <u>spinal cord</u> to Summers’ brain, telling him to stand.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>



Text Section #4	Instructional Key
<p>“Our big finding is that the spinal cord is as sophisticated as the brain,” says researcher Susan Harkema. “The spinal cord basically takes information from the brain and then handles all the details. We didn’t know that before.”</p> <p>Today, Summers can walk slowly on a treadmill with the aid of an assistant and a supporting harness. He can move his hips, knees, ankles, and toes voluntarily. “Now I can stand,” says Summers. “I’ve gotten my confidence back to just go out in public.” His goal is to stand and walk completely normally. “I’m working toward that every day.”</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice.</b></p> <ul style="list-style-type: none"> <li>• Write down your key words</li> <li>• Write a main idea sentence for the passage you just read.</li> <li>• Complete self-assessment form.</li> </ul> <p><b>3) Check for Understanding:</b> <i>Let’s check your understanding.</i>  <i>Q: What did the researchers discover about the spinal cord?</i>                      A: It is much more sophisticated than they thought—as sophisticated as the brain.  <i>Q: How is Rob Summers doing now?</i>                      A: He can walk with assistance and is becoming more confident.</p> <p><b>4). Key Words:</b> <i>What key words did you identify.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Summers, walk (stand, move), goal</li> </ul> <p><b>5). Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Summers’ goal is to walk and move without help.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ The function of the <u>nervous system</u> is to send <u>messages</u> back and forth from your <u>brain</u> to your body through the <u>spinal cord</u>.</li> <li>▪ After damaging his <u>spinal cord</u> in an accident, <u>Rob Summers</u> was chosen for an <u>experimental</u> operation that might allow him to <u>walk</u> again.</li> <li>▪ <u>Electrically stimulated nerves</u> were able to carry <u>messages</u> back and forth from the <u>spinal cord</u> to Summers' brain, telling him to stand.</li> <li>▪ <u>Summers' goal</u> is to walk and <u>move</u> without help.</li> </ul>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> nervous system, spinal cord, Rob Summers, brain, messages, movement, experiment</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. Use the main idea checklist to help you. <u>What is this passage mostly about?</u></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>nervous system</u> sends <u>messages</u> between the body and the <u>brain</u> along the <u>spinal cord</u>. <u>Rob Summers</u> is learning to <u>move</u> again after a spinal cord injury because of an <u>experimental</u> operation he was chosen for.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "How do human body systems function to keep us alive?"*
- *Now that we know about the nervous system, how can we add to our understanding of the big question based?*
- Possible student responses:
  - One function of the nervous system is to help us move.
  - The nervous system sends messages between the brain and body.
  - If the spinal cord is damaged, movement or the sense of touch might be impossible.

## Unit 4, Lesson 1

Components
1) Vocabulary Refresher of Unit 1
2) Steps for Understanding Practice (3 text sections)
3) Synthesize Passage

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1) Vocabulary Refresher UNIT 1

*Today, we're going to review the vocabulary that we learned in Unit 1.*

#### Vocabulary routine

1. Call on student to read the word and definition
2. Call on another student to describe the picture using the vocabulary word
3. Call on another student to read the example sentence.
4. Repeat for second vocabulary sentence.
5. Pose discussion question.
6. Repeat for all Unit 1 vocabulary

*\*\*Encourage students to use the vocabulary word during discussion\*\**

### 2) Steps for Understanding Practice - UNIT 4

- *Today we will begin to think about our big question:*
  - *What has space exploration taught us about outer space?*
- *Today we will learn about the solar system. Let's get started.*

Text Section #1	Instructional Key (TEACHER THINK ALOUD SECTION)
<p><b>Our Solar System</b> <b>The Sun</b> Our Sun is a <u>star</u>. It only appears to be larger than other stars because it is much closer to Earth than the stars we see at night. At one time, people thought the Sun was a huge burning rock. Actually, the Sun is made of a type of super hot matter called plasma, which is similar to a gas.</p> <p>And the Sun does not burn; it glows in the same way that a light bulb glows—only much brighter. The Sun consists of layers. A heavy core makes up the inner part of the Sun. Particles react in the core to release large amounts of energy that provides the light and heat that living things on earth need to survive. The Sun’s outer layer, the corona, consists of swirling layers of plasma.</p> <p>Just how hot does it get on the sun? On the corona, <u>temperatures</u> hover around 10,000 degrees Fahrenheit. If you think that’s hot, temperatures in the core are around 13,600,000 degrees! On Earth, much of the heat humans and other living</p>	<ol style="list-style-type: none"> <li><b>1. Read Passage.</b></li> <li><b>2. Check for Understanding:</b>  <i>Q: What is the sun made of?</i>  A: A matter called plasma, which is super hot. People used to think it was rock.  <i>Q: How hot does it get on the outer layer of the sun?</i>  A: 10,000 degrees</li> <li><b>3. Key Words:</b> <i>Ok, write down 3-4 key words. Use the key word checklist to help you.</i>  <u>Answer key:</u> Sun, star, layers, temperature</li> <li><b>4. Main Idea:</b> <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></li> <li><b>5. Rate the main ideas:</b> <i>Ok. You can see 3 main ideas that I created for this passage. Today, I want to see how you would rate these main ideas. (Discuss)</i></li> <li><b>6. Discussion of main ideas:</b> <i>Let’s discuss how to improve these main ideas. (Use the self-assessment form and/or the suggestions below to guide the discussion.)</i></li> </ol> <p><u>Suggestions for guiding the discussion if they do not see any mistakes:</u></p> <p><b>Main Idea #1) The sun is extremely hot and that’s why we can see it.</b> (problem: key words missing)</p> <ul style="list-style-type: none"> <li><i>In paragraph one, what word tells us what the sun is, and appears multiple times? (Students say star.)</i></li> <li><i>In paragraph two, what does the sun consist of—in other words, what is it made of? (Students say layers.)</i></li> <li><i>What is the important idea in the third paragraph? (Students should respond that the sun is very hot.)</i></li> </ul>

SOAR

things need to survive is supplied by the sun.

**Main Idea #2) The sun's light and heat helps living things on earth survive.** (problem: missing key information)



- Paragraph 1: The sun is a star;
- Paragraph 2: The sun is made of layers;
- Paragraph 3: The sun is extremely hot.)

**Main Idea #3) The sun is a very hot star with layers called the core and the corona and plasma and the layers swirl.** (Problem: unnecessary details)

- Point out that this main idea has all the key words and ideas, but contains unnecessary details from the paragraph 2.
- Guide them to notice the difference between the main idea of paragraph 2 (the sun is made of layers) and unnecessary details (the names of the layers, the swirling layers).

**Check students main idea:**

**Answer key: The Sun is a star made up of layers that have extremely high temperatures.**

Text Section #2	Instructional Key
<p><b>The Solar System</b> Our <u>solar system</u> is made up of the sun and everything that travels around it. This includes eight planets, moons, asteroids, comets, and meteoroids. The four planets closest to the sun—Mercury, Venus, Earth, and Mars—are called the <b>terrestrial planets</b> because they have solid, rocky surfaces.  Everything in the Solar System <u>orbits</u> around the Sun. Now why does a planet orbit the Sun and not the other way around? The lighter object orbits the heavier one, and the Sun is, by far, the heaviest object in the solar system. The Sun is 1000 times heavier than the largest planet, Jupiter, and it is more than 300,000 times heavier than Earth. As the heavyweight in our solar system, the Sun has the strongest gravitational pull.</p> <p><b>The Moon</b> The Moon is the closest body in space to Earth. It has no light of its own, but light from the Sun reflects off its surface. This is what makes it appear lit to us. The Moon is Earth's satellite, so it orbits around the earth. As the Moon revolves around Earth, it seems to have different shapes, but it does not actually change. The different shapes are called the phases of the Moon. We see the phases because of changes in the size of the lighted part of the Moon that is visible from Earth. Only the half of the Moon that faces the Sun is lighted. The positions of the Moon, Earth, and Sun determine how the Moon will look from Earth at any given time.</p>	<p><b>1) Read Passage.</b></p> <ul style="list-style-type: none"> <li> Let's take a minute to talk about terrestrial planets. <ul style="list-style-type: none"> <li>The text says they have solid, rocky surfaces.</li> <li>Planets that are not terrestrial are made of gases.</li> <li>(Show the vocabulary visual for terrestrial planets and briefly say the word, read the student-friendly explanation, describe picture.</li> </ul> </li> <li>Repeat routine for vocab word orbit.</li> </ul> <p><b>2) Check for Understanding:</b>  <i>Q: What planets are closest to the sun?</i>  A: Mercury, Venus, Earth, and Mars  <i>Q: Why does everything in the solar system orbit around the sun?</i>  A: The sun is the heaviest object and has the strongest gravitational pull.  <i>Q: Where does the moon get the light that we can see from Earth?</i>  A: The moon reflects the sun's light.</p> <p><b>3) Key Words and Main Idea:</b> <i>Today you are going to write your key words and main idea by yourself. Remember to use your checklists to make sure that your main idea meets all of our criteria for a good main idea.</i></p> <p><b>4) Provide Feedback on Main Idea.</b> (use peer pairing or group share)  <u>Peer pairing:</u> Partners check main idea using checklist.  <u>Group share:</u> <i>I'd like someone to tell me their main idea and I'll write it down.</i></p> <ul style="list-style-type: none"> <li>Evaluate using Main Idea Checklist.</li> <li><u>Answer key:</u> The <u>Sun</u> is a <u>star</u> made up of <u>layers</u> that have extremely high <u>temperatures</u>.</li> </ul>

Text Section #3	Instructional Key
<p><b>Mercury.</b> The planet <u>Mercury</u> is the closest of the planets to the Sun. It is often called a morning star because Mercury shines brightly in the early morning just before the sun rises. The surface of the planet Mercury is covered with craters created by asteroids and comets hitting the planet.</p> <p><b>Venus.</b> Venus is in many ways Earth's <u>sister planet</u>. It is almost identical in size, and density as the Earth. In other words, Venus is made up of almost the exact same types of materials as the Earth and in about the same amounts.. However, if they are twins, then Venus is the evil twin; she is the Earth gone wrong, very wrong. Venus is a deadly world where the surface temperature is hot enough to cook a meal in mere minutes. There is nowhere to hide from this ever- present furnace. Like Mercury, Venus is also a terrestrial planet.</p> <p><b>Earth.</b> Earth, our home planet, is the only planet in our solar system known to harbor <u>life</u>—life that is incredibly diverse. Earth is a rocky planet, also known as a terrestrial planet, with a surface of mountains, valleys, canyons, plains and so much more. What makes Earth different from the other terrestrial planets is that it is also an ocean planet: 70 percent of the Earth's surface is covered in oceans.</p> <p><b>Mars.</b> Mars excites scientists because its mild temperament is more like the Earth's than any of the other planets. Evidence suggests that Mars once had rivers, streams, lakes, and even an ocean. Mars is also a terrestrial planet.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3). Check for Understanding:</b></p> <p><i>Q: Why is Mercury called the morning star?</i> A: Mercury shines brightly in the early morning just before the sun rises.</p> <p><i>Q: What is unique about the surface of Mercury?</i> A: It is covered with craters.</p> <p><i>Q: In what ways is Venus Earth's sister planet?</i> A: It is similar in size, gravity, and density as the earth.</p> <p><i>Q: In what ways is Venus different from Earth?</i> A: It has high temperatures and is very toxic.</p> <p><i>Q: Which planet is most like Earth?</i> A: Mars.</p> <p><b>4). Provide Feedback on Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <p>a) <u>Answer key:</u> Mercury, Venus, Earth, and Mars are all terrestrial planets, but there are many differences between the planets.</p>



<b>3) Synthesize Passage</b>	
<b>Main Ideas</b>	<b>Instructional Key</b>
<p>1) The <u>Sun</u> is a <u>star</u> made up of <u>layers</u> that have extremely high <u>temperatures</u>.</p> <p>2) The <u>solar system</u> is made up of <u>planets</u> that <b>orbit</b> around the sun. The closest planet to Earth is the <u>moon</u>.</p> <p>3) Mercury, Venus, Earth, and Mars are all terrestrial planets, but there are many differences between the planets.</p>	<p><b>1). Synthesize:</b> <i>Synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> solar system, planets, orbit, sun</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>solar system</u> is made up of all the <u>planets</u> that <u>orbit</u> around the <u>Sun</u>. All the planets are different.</li> </ul> <p style="text-align: center;"><b>LESSON EXTENSION: REVIEW THE VOCABULARY ONE MORE TIME.</b></p>

## Unit 4, Lesson 2

Components
1) Vocabulary Refresher
2) Steps for Understanding Practice (3 text sections)
3) Synthesize Passage

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1) Vocabulary Refresher - UNIT 2

*Today, we're going to review the vocabulary that we learned in Unit 2.*

#### Vocabulary routine

1. Call on student to read the word and definition
2. Call on another student to describe the picture using the vocabulary word
3. Call on another student to read the example sentence.
4. Repeat for second vocabulary sentence.
5. Pose discussion question.
6. Repeat for all Unit 2 vocabulary

*\*\*Encourage students to use the vocabulary word during discussion\*\**

### 2) Steps for Understanding Practice



- *Today, we will add to our understanding of our big question: **What has space exploration taught us about outer space?***
- *Today we will learn about how space exploration began. Let's get started.*



U4, L2, Text Section #1	Instructional Key (TEACHER THINK ALOUD SECTION)
<p><b>Space Exploration</b>            Throughout history, people have been curious about what is beyond Earth. Such curiosity has led some to study the stars and planets, while others have developed theories to explain how the universe functions. Space travel and exploration have been topics of scientific inquiry for hundreds of years. However, one of the most rapid and important series of advances in space exploration began in the 1950s. Two countries, the United States and the Soviet Union, led the world into an era of intense exploration. After World War II, these countries had strong political differences. Known as the Cold War, this period of political disagreements and military rivalry did not end in actual combat. However, the rivalry between the United States and the Soviet Union fueled many competitions, from sports to space exploration.</p>	<p><b>1) Read Passage.</b></p> <p><b>2) Check for Understanding:</b> <i>Let's make sure we understood what we read.</i>  <i>Q: When did space exploration start becoming more advanced?</i>            A: the 1950s  <i>Q: What two countries had a space exploration "competition"?</i>            A: The United States and the Soviet Union</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> space exploration, rivalry (competition), US and Soviet Union, and 1950s</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Write key words and main idea on the board.</u></li> <li>• Key Words: space exploration, rivalry, US and Soviet Union, 1950s.</li> <li>• Main Idea: People have always wanted to explore space.</li> </ul> <p><b>5) Rate the main idea:</b> <i>Ok. You can see the main idea that I have. Today, I want to see how you all would rate it. (Discuss)</i></p> <p><b>6) Discussion of main idea:</b> <i>Let's discuss how to improve this main idea (below are suggestions for guiding the discussion).</i></p> <ul style="list-style-type: none"> <li>• <u>Does it cover the main idea?</u> <ul style="list-style-type: none"> <li>• <i>Did you think my main idea covers the most important idea?</i> <ul style="list-style-type: none"> <li>• (Students should say no, it is missing information from the 2<sup>nd</sup> paragraph)</li> </ul> </li> </ul> </li> </ul>

- *What is the big idea from the 2<sup>nd</sup> paragraph?*
  - (Guide students to the idea that the United States and the Soviet Union had a rivalry related to space exploration.
  - The paragraph uses the words competition, rivalry, US and Soviet Union multiple times.
  - This is a clue that competition between them is a big idea of the 2<sup>nd</sup> paragraph.)

Answer key: Starting in the 1950s, the United States and the Soviet Union had a rivalry about exploring space.

- Check students main idea: *Ok, I want to take a look at the main ideas that you wrote and provide feedback.*
- (Provide feedback and have students revise, if time allows).

Text Section #2	Instructional Key
<p>History changed on October 4, 1957, when <i>Sputnik 1</i>, the world’s <u>first</u> artificial <b>satellite</b>, was <b>launched</b> into space. It <b>orbited</b> Earth in about 98 minutes, giving the Soviets a great victory because they put a <b>satellite</b> in <b>orbit</b> before the United States.  Most Americans were shocked and worried that the Soviets had technology that was superior to the United States. As a result, the U.S. increased funding for its space program and on January 31, 1958 successfully launched its own satellite, called <i>Explorer 1</i>.</p> <p>The <b>launch</b> of <i>Sputnik 1</i> and <i>Explorer 1</i> marked the beginning of the <u>Space Race</u>, a long-term competition between the U.S. and the Soviet Union to make discoveries in space. Both countries wanted to be the leader in space exploration. During the Space Race, leaders from both countries were under great pressure to meet some tough deadlines. They developed and used many new technologies in a very short period of time.</p>	<p><b>1) Read Passage.</b>   <i>Let’s be sure we all understand the vocabulary word “launch.”</i></p> <ul style="list-style-type: none"> <li>• (Show the vocabulary visual for launch and briefly say the word, read the definition, and describe the picture.)</li> <li>• <i>Review “satellite”.</i></li> <li>• <i>Review “orbit”.</i></li> <li>• <i>The text says that a satellite was launched into space and orbited Earth. Picture a satellite that is set in motion – sent into space – and is moving in a circular path around Earth. Let’s reread those two sentences.</i></li> </ul> <p><b>2) Check for Understanding:</b>  <i>Q: What country launched the first satellite? What was the name of the satellite?</i>            A: The Soviet Union launched Sputnik I.  <i>Q: What was the United States’ reaction to the Sputnik I launch?</i>            A: The US put more money into its space program and launched its own satellite.  <i>Q: What is the name of the space competition between the US and the Soviet Union?</i>            A: Space Race</p> <p><b>3) Key Words:</b> <i>Please write a few key words in the margin. Discuss with your partners the key words you identified using the key words checklist.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> to satellite, Space Race, first, country (US / Soviet Union)</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> The <u>Space Race</u> began when the <u>Soviet Union</u> launched the <u>first satellite</u> into space.</li> </ul>

Text Section #3	Instructional Key
<p>As the Space Race became more competitive, more and more <b>space missions</b> were <b>launched</b>.  Many milestones were achieved in a very short period of time: John Glenn circled Earth three times, becoming the first American to orbit Earth. The Soviets sent the first woman to space and successfully accomplished the first space walk outside of a spacecraft. Both countries began sending space probes, unmanned exploratory spacecraft, to the Moon. Even though the Soviets had beaten the Americans to every space <u>milestone</u>, the United States ultimately won the Space Race when they successfully put the first human on the Moon in 1969.</p> <p>Space exploration is no longer a competition between countries. Instead it is an international project. Sixteen countries worked together to build the International Space Station (ISS), the largest object ever flown in space. The ISS was built to be a space research laboratory where crew members could conduct experiments in scientific fields such as astronomy and meteorology. The ISS also provides opportunities to test spacecraft systems and equipment and act as a staging base for future <b>space missions</b> to the Moon or Mars.</p>	<p><b>1) Read Passage.</b></p> <p> <i>Let's be sure we all understand the vocabulary word "space mission."</i></p> <ul style="list-style-type: none"> <li>• Review "launch".</li> <li>• The text says that many space missions were launched, so that means that many of spacecraft were sent on flights into space. Let's reread, starting at the beginning.</li> </ul> <p><b>2) Check for Understanding:</b></p> <p>Q: <i>What did John Glenn accomplish</i> A: He was the first American to orbit Earth. He orbited three times.</p> <p>Q: <i>What is a space probe?</i> A: An unmanned exploratory spacecraft</p> <p>Q: <i>Which country finally "won" the Space Race, and how was it won?</i> A: The United States won by putting the first human on the Moon.</p> <p>Q: <i>How has space exploration changed since the Moon landing?</i> A: Countries now work together to explore space.</p> <p><b>3) Key Words:</b> <i>Let's identify our key words. Please work with your partner to identify key words. Use your key words checklist in your discussion.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> space missions, Moon, milestones</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Both countries achieved many <u>milestones</u>, but the US "won" the Space Race by being the first country to put a human on the <u>Moon</u>. Now countries work together on <u>space missions</u>.</li> </ul>

<b>3) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<ul style="list-style-type: none"> <li>▪ Starting in the <u>1950s</u>, the <u>United States</u> and the <u>Soviet Union</u> had a <u>rivalry</u> about <u>exploring space</u>.</li> <li>▪ The <u>Space Race</u> began when the <u>Soviet Union</u> launched the <u>first satellite</u> into space.</li> <li>▪ Both countries achieved many <u>milestones</u>, but the US “won” the Space Race by being the first country to put a human on the <u>Moon</u>. Now countries work together on <u>space missions</u>.</li> </ul>	<p><b>1) Synthesize.</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding. (Make sure students can see main ideas.)</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, we need to narrow down all of the words we underlined to the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>Share one word key word you identified and tell me why using the key words checklist.</i></li> <li>• <i>Answer key: United States, Soviet Union, rivalry (competition, space race), exploration, first, Moon</i></li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• <i>Answer key: The <u>rivalry</u> between the <u>US</u> and <u>Soviet Union</u> over space <u>exploration</u> began in the 1950s and ended when the US put the <u>first</u> human on the <u>Moon</u>.</i></li> </ul>

LESSON EXTENSION: REVIEW THE VOCABULARY ONE MORE TIME.

<b>Unit 4, Lesson 3</b>	
<b>Components</b>	
1) Vocabulary Refresher	
2) Steps for Understanding Practice (3 text sections)	
3) Synthesize Passage	

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or white board
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
  
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.



## 1) Vocabulary Refresher UNIT 3

*Today, we're going to review the vocabulary that we learned in Unit 3.*

### Vocabulary routine

1. Call on student to read the word and definition
2. Call on another student to describe the picture using the vocabulary word
3. Call on another student to read the example sentence.
4. Repeat for second vocabulary sentence.
5. Pose discussion question.
6. Repeat for all Unit 3 vocabulary

\*\*Encourage students to use the vocabulary word during discussion\*\*

## 2) Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **What has space exploration taught us about outer space?***
- *Today we will learn more about the Moon landing. Let's get started.*

U4, L3, Text Section #1	Instructional Key (TEACHER THINK ALOUD SECTION)
<p>The objective of NASA’s Apollo program was to land an American on the Moon and then return him or her safely to Earth. On July 16, 1969, the United States was ready to make history when astronauts Neil Armstrong, Michael Collins and Edwin “Buzz” Aldrin were <b>launched</b> in the spacecraft <i>Columbia</i>. The plan was to have a <u>lunar module</u> called <i>Eagle</i> separate from the command module, <i>Columbia</i>. The lunar module would land on the surface of the Moon while the command module <b>orbited</b> the Moon.</p>	<p><b>1) Read Passage:</b></p> <ul style="list-style-type: none"> <li>• Review the vocabulary word “launch.”</li> <li>• Review “orbit”.</li> </ul> <p><b>2) Check for Understanding:</b> <i>Let’s make sure we understood what we read.</i></p> <p>Q: <i>What was the goal of the Apollo program?</i>  A: to have an American land on the Moon and return safely</p> <p>Q: <i>What is the difference between the Columbia spacecraft and the Eagle lunar module?</i>  A: The <i>Columbia</i> is the command module that all three astronauts launched in. The <i>Eagle</i> is the smaller lunar module that separates from <i>Columbia</i> and actually lands on the Moon.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words.</i>  a) <u>Answer key:</u> Apollo, lunar module, moon, orbit</p> <p><b>4) Main Idea:</b> <i>Ok, now you will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <p><b>5) Rate the main ideas:</b> <i>Ok. You can see the main idea that I have. Today, I want to see how you all would rate it. (Discuss)</i></p> <p><b>6) Discussion of main ideas:</b> <i>Let’s discuss how to improve these main ideas. (Use the self-assessment form and/or the suggestions below to guide the discussion.)</i></p>

**Main Idea #1) NASA sent Neil Armstrong, Michael Collins and Edwin “Buzz” Aldrin to the moon and then have them return safely after they landed on the moon using the lunar module called Eagle separate from the rest of the spaceship.** (problem: many unnecessary details.)

- Guide students to realize that the names of the astronauts and the name of the spacecraft are unnecessary details.
- *What could we say instead of each astronaut’s name?*
- Remind students that the text says NASA wanted to put an American on the moon, so we could say American instead.

**Main Idea #2) On July 16, 1969, a spacecraft landed on the surface of the moon.**

(problem: inaccurate main idea)

- Have students reread the section to confirm what it says about July 16, 1969.
- The spacecraft was launched on July 16, but the text doesn’t say it landed on July 16.

**Main Idea #3) The goal of NASA’s Apollo program was to land an American on the Moon and then return him safely to Earth.** (problem: main idea not paraphrased)

- Have students look back at the first sentence in the text.
- The main idea is almost exactly the same.
- Help students paraphrase the idea.

Check students main idea: *Ok, I want to take a look at your main ideas.*

- a) Answer key: The goal of the Apollo program was to have an American in a lunar module land on the surface of the Moon while the command module remained in orbit.

**Text Section #2**

On July 20, 1969, *Eagle* landed safely on the Moon. “That’s one small step for man, one giant leap for mankind.” These were the words astronaut Neil Armstrong spoke as he became the first human to ever step foot on the Moon. As Michael Collins continued **orbiting** in the *Columbia*, Buzz Aldrin joined Armstrong on the lunar surface. The two men took pictures, collected rocks and soil samples, and planted an American flag on the Moon’s surface. Millions of people on Earth watched the historic event on television.

**Instructional Key:****1). Read Passage:****2). Independent Practice:**

- Write down your key words
- Write a main idea sentence for the passage you just read.
- Complete self-assessment form.

**3). Check for Understanding:** *Let’s make sure we understood what we read.*

Q: *When did the Moon landing happen/ and who was the first person on the Moon?*

A: July 20, 1969

Q: *Who were the first two Americans to stand on the Moon?*

A: Neil Armstrong and Buzz Aldrin

Q: *Where was astronaut Michael Collins during the Moon landing?*

A: He was orbiting in the command module, *Columbia*.

Q: *What did Armstrong and Aldrin do on the Moon?*

A: They collected samples of the lunar surface and took pictures.

\*\*If students do not appear to have basic understanding, go sentence by sentence through the text asking basic recall questions (less than 1 minute).\*\*

**4) Provide Feedback on Main Idea:** *Ok, what is this paragraph mostly about?*

(2 options for teacher: peer pairing or group share)

- Answer key: On June 20, 1969, astronauts Neil Armstrong and Buzz Aldrin became the first humans to land on the Moon.

<p><b>Text Section #3</b></p> <p><i>Below, Buzz Aldrin answers questions in a Scholastics Books interview from 1998.</i></p> <p><b>Is the surface of the moon different from that of Earth?</b><sup>[SEP]</sup>          The <u>surface</u> of the moon is like nothing here on Earth! It's totally lacking any evidence of life. It has lots of fine, powder-like dust mixed with a variety of pebbles, rocks, and boulders. There are many pebbles, fewer rocks, and even fewer boulders. The dust is a dark gray. And with no air molecules to separate the dust, it clings together like cement.</p> <p><b>What was the most memorable part of walking on the moon?</b>          There are two moments that are recorded in my mind. One was just the second or two after we shut the engine down and we realized that the spacecraft was on the moon. That really was the major <u>achievement</u>. When I was outside seeing the Earth, my other thought was that there were only three human beings.</p>	<p><b>Instructional Key:</b></p> <p><b>1) Read Passage:</b> .</p> <p><b>2) Check for Understanding:</b> <i>Let's check your understanding of the text.</i>  <i>Q: Why does Buzz Aldrin know about the Moon?</i>          A: He was one of the first humans to land on its surface.  <i>Q: Name three characteristics of the Moon's surface.</i>          A: It has no life at all; it has dust that sticks together; it has rocks of different sizes  <i>Q: Why does the dust stick together?</i>          A: There is no air on the Moon, so no air molecules to separate the pieces of dust.  <i>**If students do not appear to have basic understanding, go sentence by sentence through the text asking basic recall questions (less than 1 minute).**</i></p> <p><b>3) Key Words:</b> <i>Please work with your partner to identify key words. Use your key words checklist in your discussion.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Buzz Aldrin, Moon's surface, life</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> In an interview, <u>Buzz Aldrin</u> answers questions about the moon and his most memorable moments.</li> </ul>
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<b>3) Synthesize Passage</b>	
<p><b>Synthesize Passage:</b></p> <ul style="list-style-type: none"> <li>▪ The goal of the <u>Apollo</u> program was to have an American in a <u>lunar module</u> land on the surface of the <u>Moon</u> while the command module remained in <u>orbit</u>.</li> <li>▪ On June 20, 1969, <u>astronauts</u> Neil Armstrong and Buzz Aldrin became the <u>first</u> humans to <u>land</u> on the <u>Moon</u>.</li> <li>▪ In an interview, <u>Buzz Aldrin</u> answers questions about the moon and his most memorable moments.</li> </ul>	<p><b>Instructional Key:</b></p> <p><b>1). Synthesize:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding. (Make sure students can see main ideas.)</i></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, we need to narrow down all of the words we underlined to the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• Share one word key word you identified and tell me why using the key words checklist.</li> <li>• <u>Answer key:</u> Moon, land, surface, achievement, first</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> When the <u>first</u> humans <u>landed</u> and walked on the <u>Moon's</u> surface, it was a major <u>achievement</u>.</li> </ul> <p style="text-align: center; background-color: #e0e0e0;"><b>LESSON EXTENSION: REVIEW THE VOCABULARY ONE MORE TIME.</b></p>

## Unit 4, Lesson 4

Components
1) Vocabulary Refresher
2) Steps for Understanding Practice
3) Synthesize Passage

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

## 1) Vocabulary Refresher UNIT 4

*Today, we're going to review the vocabulary that we learned in Unit 4.*

### **Vocabulary routine**

1. Call on student to read the word and definition
2. Call on another student to describe the picture using the vocabulary word
3. Call on another student to read the example sentence.
4. Repeat for second vocabulary sentence.
5. Pose discussion question.
6. Repeat for all Unit 4 vocabulary


*\*\*Encourage students to use the vocabulary word during discussion\*\**

## 2). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **What has space exploration taught us about outer space?***
- *Today we will learn about the possibility of living on the moon. Let's get started.*



U4, L4, Text Section #1	Instructional Key (TEACHER THINK ALOUD SECTION)
<p><b>Living on the Moon</b></p> <p>Only 12 people have set foot on the moon—so far. The last time was in late 1972, when two astronauts walked on its surface. Their final visit, the longest of any, lasted just three days. Now astronauts are preparing for another <b>mission</b> to our space neighbor. This time, though, they plan to stay there.</p> <p>NASA recently announced plans to build a permanent colony on the moon. The space agency hopes that astronauts will be living and working there by 2024. One goal of the moon colony is to prepare astronauts for a trip to Mars in the future.</p> <p>Under the plan, four-person crews will begin with week-long <b>missions</b> to the moon. By 2024, when more equipment has been set up, astronauts will be able to reside, or live, on the moon for as long as six months. Astronauts will travel in roving vehicles to explore the area near the lunar base.</p>	<p><b>1) Read Passage:</b></p> <ul style="list-style-type: none"> <li>Review the vocabulary word “space mission.”</li> </ul> <p><b>2) Check for Understanding:</b> <i>Let’s make sure we understood what we read.</i></p> <p><i>Q: What is the longest visit to the moon so far?</i> A: 3 days</p> <p><i>Q: What is NASA’s plan for future missions to the moon?</i> A: NASA wants to build a permanent space colony on the moon.</p> <p><i>Q: When the colony has been set up, how long will astronauts be able to live on the moon?</i> A: six months</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words.</i> <u>Answer key:</u> moon, mission, colony, astronauts</p> <p><b>4) Main Idea:</b> <i>Ok, now we will use our key words to write a main idea. Use the main idea checklist to help you.</i></p> <p>Key Words: astronauts, colony, missions, moon. Main Idea: Astronauts are planning to go back to the moon and travel to Mars.</p> <p><b>5) Rate the main idea:</b> <i>You can see the main idea that I have. How did you rate it? (Discuss.)</i></p> <p><b>6) Discussion of main idea:</b> <i>Let’s discuss how to improve this main idea.</i> <u>Suggestions for guiding the discussion if they do not see any mistakes:</u></p> <ul style="list-style-type: none"> <li><u>Does it cover the main idea?</u> <ul style="list-style-type: none"> <li><i>The information in the main idea is accurate, but are there important details missing?</i> <ul style="list-style-type: none"> <li>(Use the key word “colony” to guide students to provide the missing information.</li> <li>Paragraphs 2 and 3 are mostly about setting up a colony on the moon and living there.</li> </ul> </li> </ul> </li> </ul> <p><u>Answer key:</u> <u>Astronauts</u> will establish a permanent <u>colony</u> on future <u>missions</u> to the <u>moon</u>.</p>

Text Section #2	Instructional Key:
<p>The moon is the only place beyond Earth that humans have visited. About 238,900 miles away, the moon is Earth's closest space neighbor. Like the earth, the moon has gravity, which means that things are naturally pulled downward. Unlike Earth, the moon has no air, wind, or weather. Its dusty terrain, or surface, is covered with deep craters. So how can humans survive on the moon? There are some basic needs that the moon colonists would have to take care of, such as power, breathable air, and water</p> <p>It would be ideal to get as much of these resources as possible from the moon itself, because shipping costs to the moon are unbelievable – close to \$50,000 per pound. Just one gallon of water weighs about eight pounds, so it would cost \$400,000 to get it to the moon! Obviously you want to carry as little as possible to the moon and manufacture as much as you can once you get there.</p> <p>NASA hopes to establish a lunar colony near one of the moon's poles. "These locations experience sunlight for longer periods of time than other locations on the moon, which will make it possible to use solar power," NASA official Michael Braukus told WR News. Solar power is energy from the sun that can be used to generate electricity.</p>	<p>1).  Before we read I want to explain the word <i>gravity</i>.</p> <ul style="list-style-type: none"> <li>• Gravity is a natural force that causes things to fall toward the earth.</li> <li>• The text says that earth and moon both have gravity.</li> <li>• Without gravity, people and object would just float.</li> <li>• (Show the vocabulary visual for gravity, briefly say the word, read the student-friendly explanation, and describe picture.)</li> </ul> <p>2). <b>Read Passage:</b></p> <p>3). <b>Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p>4). <b>Check for Understanding:</b> <i>Let's make sure we understood what we read.</i></p> <p><i>Q: How is the moon different from Earth?</i> A: The moon has no air, wind, or weather. The surface has many craters.</p> <p><i>Q: If someone were to live on the moon, what do they need to survive?</i> A: oxygen, water, power</p> <p><i>Q: Why can't things like water be sent to the moon on a spaceship?</i> A: It is horribly expensive to transport things in space.</p> <p><i>Q: Why does NASA want to establish a colony close to one of the moon's poles?</i> A: The poles get the most sunlight, so they could generate solar power.</p> <p>5). <b>Provide Feedback on Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> To <u>survive</u> on the <u>moon</u>, humans need <u>air, water, and power</u>. Locations near the moon's poles might be able to generate <u>solar</u> power.</li> </ul>

Text Section #3	Instructional Key:
<p>Obtaining breathable air, in the form of oxygen, is fairly easy on the moon. Oxygen doesn't exist only as a gas above the ground. It can also be found in certain kinds of moon rocks. Scientists are experimenting with how oxygen in the rocks can be collected using heat and electricity.</p> <p>Water is trickier. There's now some evidence that there may be water, in the form of buried ice at the south pole of the moon. If so, water mining might be possible, and it would solve a lot of problems.</p> <p>The moon <b>mission</b> was part of President George W. Bush's long-term space plan. The proposed base is the first step in the bold plan to prepare astronauts for their ultimate destination—Mars. Because Mars is so far from Earth, a <b>mission</b> to Mars will require humans to stay for long periods of time. While some supporters are excited about <b>launching</b> a new era of space exploration, not everyone is pleased with the plan. Critics warn that it will be difficult to fund the moon program. So far, NASA has not put a price tag on the <b>mission</b> but welcomes participation by other countries to help carry out its plan.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Let's check your understanding of the text.</i>  <i>Q: Is there oxygen on the moon? Where?</i>  A: Oxygen exists in some moon rocks.  <i>Q: Is there water on the moon? Where?</i>  A: There might be ice at the south pole of the moon.  <i>Q: Name two advantages to getting water from moon rocks.</i>  A: 1) Humans would have water for drinking and irrigating, and  2) it could be converted to rocket fuel</p> <p><b>3) Key Words:</b> <i>Work with your partner to identify key words. Use your key words checklist in your discussion</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> oxygen, water, moon, pole</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Oxygen</u> is available in <u>moon</u> rocks, and <u>water</u> might be found near the moon's south <u>pole</u> in the form of ice.</li> </ul>

<b>3). Synthesize Passage</b>	
<p><b>Synthesize Passage:</b></p> <ul style="list-style-type: none"> <li>▪ <u>Astronauts</u> will establish a permanent <u>colony</u> on future <u>missions</u> to the <u>moon</u>.</li> <li>▪ To <u>survive</u> on the <u>moon</u>, humans need <u>air, water, and power</u>. Locations near the moon's poles might be able to generate <u>solar</u> power.</li> <li>▪ <u>Oxygen</u> is available on the moon, but a <u>mission</u> to <u>Mars</u> will be challenging because of its <u>distance</u> from Earth.</li> </ul>	<p><b>Instructional Key:</b></p> <p><b>1). Synthesize:</b> <i>we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, we need to narrow down all of the words we underlined to the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• Share one word key word you identified and tell me why using the key words checklist.</li> <li>• <u>Answer key:</u> mission, moon, resources (air/oxygen, water, power), survive, Mars</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• Answer key: To <u>survive</u> on a <u>moon</u> colony, astronauts hope to get <u>water, air, and power</u> from the moon. A <u>mission</u> to <u>Mars</u> is even more challenging because of its distance from Earth.</li> </ul> <p style="text-align: center;"><b>LESSON EXTENSION: REVIEW THE VOCABULARY ONE MORE TIME.</b></p>

**Unit 4, Lesson 5**

Components
1) Vocabulary Refresher
2) Steps for Understanding Practice
3) Synthesize Passage

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or white board
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

## 1) Vocabulary Refresher

Today, we're going to review the vocabulary that we learned in Unit 1-4.

### Vocabulary routine

1. Call on student to read the word and definition
2. Call on another student to describe the picture using the vocabulary word
3. Call on another student to read the example sentence.
4. Repeat for second vocabulary sentence.
5. Pose discussion question.
6. Repeat for all Unit 1-4 vocabulary

\*\*Encourage students to use the vocabulary word during discussion\*\*

## 2) Steps for Understanding Practice

- Today, we will add to our understanding of our big question: *What has space exploration taught us about outer space?*
- Today we will learn about the possibility of living on the moon. Let's get started.

Text Section #1	Instructional Key
<p>NASA created the <u>space shuttle</u> as a <u>reusable launch</u> vehicle to carry astronauts and cargo into space and back again. It was designed to carry as many as seven astronauts at a time. Once in space, the shuttle flew many different types of <b>missions</b>. For instance, it launched <b>satellites</b> and served as an <b>orbiting</b> science laboratory. Astronauts collected information on space, planets, stars and comets. Its crews repaired and improved other spacecraft, such as the Hubble Space Telescope. On its later <b>missions</b>, the space shuttle was mostly used to work on the International Space Station.</p> <p>Space shuttles are made up of many different parts, but the three main pieces are the rocket boosters, the fuel tank and the orbiter. There are two rocket boosters that are used to lift the shuttle off the ground and blast into space. The tank on the outside of the shuttle holds fuel to be used by the rocket boosters for <b>launch</b>. Orbiters carry the passengers, astronaut and whatever they bring with them.</p> <p>Space shuttles are rockets, not engines. Rockets do not need air to run, which is why they work so well in space, where there is no air. During <b>launch</b>, NASA uses solid fuels to push the space shuttle up and out, sending the shuttle into <b>orbit</b>. After the <b>launch</b>, the fuel tanks separate and fall off the shuttle so it can easily <b>orbit</b> at a lighter mass. When a <b>mission</b> is completed, the shuttle reduces speed and after descending through the atmosphere, lands like a glider.</p>	<p><b>1) Read Passage:</b></p> <ul style="list-style-type: none"> <li>Review the vocabulary word “space mission.”</li> <li>Review “launch”, “satellite”, and “orbit” using vocabulary visuals.</li> </ul> <p><b>2) Check for Understanding:</b> <i>Let’s make sure we understood what we read.</i></p> <p><i>Q: What is the space shuttle’s purpose? In other words, why was it created?</i> A: It’s a reusable spacecraft for astronauts and cargo.</p> <p><i>Q: What are the main parts of a space shuttle?</i> A: The rocket boosters, the fuel tank, and the orbiter.</p> <p><i>Q: What does the orbiter do?</i> A: The orbiter carries the passengers and cargo.</p> <p><i>Q: What happens to the fuel tanks after the shuttle launches?</i> A: They come apart from the shuttle to make the shuttle lighter.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words</i></p> <ul style="list-style-type: none"> <li><u>Answer key:</u> space shuttle, missions, launch, reusable</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li><u>Answer key:</u> The <u>space shuttle</u> is a <u>reusable</u> spacecraft with a fuel tank that separates after <u>launching</u>. It flies different types of data-collecting <u>missions</u>.</li> </ul>

Text Section #2	Instructional Key
<p><u>Challenger</u>, NASA's second space shuttle to enter service, made a total of nine voyages. In 1986, it was scheduled to <b>launch</b> on January 22 carrying a seven-member crew that included Christa McAuliffe, a 37-year-old high school social studies instructor from New Hampshire. McAuliffe had earned a spot on the <b>mission</b> through NASA's Teacher in Space Program. After undergoing months of training, she was set to become the first ordinary American citizen to travel into space.</p> <p>The mission's <b>launch</b> from Kennedy Space Center at Cape Canaveral, Florida, was delayed for six days due to weather and technical problems. The morning of January 28 was unusually cold. Engineers warned their superiors that certain components—particularly the rubber O-rings that sealed the joints of the shuttle's solid rocket boosters—were vulnerable to failure at low temperatures. However, these warnings went unheeded, and at 11:39 a.m. Challenger lifted off.</p> <p>Seventy-three seconds later, hundreds of spectators on the ground, including the families of McAuliffe and the other astronauts on board, stared in disbelief as the shuttle <u>exploded</u> in a plume of smoke and fire. Millions more watched the tragedy on live television. Within instants, the spacecraft broke apart and plunged into the ocean, killing its entire crew.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3). Check for Understanding:</b> <i>Let's make sure we understood what we read.</i></p> <p><i>Q: What was unique about Christa McAuliffe being part of the Challenger crew?</i></p> <p><i>A: She wasn't an astronaut; she was the first ordinary American to go into space.</i></p> <p><i>Q: Why was the launch delayed for so 6 days?</i></p> <p><i>A: It was too cold and there were technical problems with the shuttle.</i></p> <p><i>Q: What were engineers worried could happen in cold temperatures?</i></p> <p><i>A: The O-rings wouldn't work properly.</i></p> <p><i>Q: What happened to the Challenger soon after it launched</i></p> <p><i>A: It exploded and the entire crew died.</i></p> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <i>Answer key: The <u>space shuttle</u>, <u>Challenger</u>, <u>exploded</u> soon after launching when the <u>O-ring</u> failed in the <u>cold</u> weather. The crew died, including <u>Christa McAuliffe</u>, the first ordinary American in space.</i></li> </ul>



<b>3.) Synthesize Passage:</b>	<b>3.) Synthesize Passage:</b>
<p><b>Synthesize Passage:</b></p>	<p><b>Instructional Key:</b></p>
<ul style="list-style-type: none"> <li>▪ The <u>space shuttle</u> is a <u>reusable</u> spacecraft with a fuel tank that separates after <u>launching</u>. It flies different types of data-collecting <u>missions</u>.</li> <li>▪ The <u>space shuttle</u>, <u>Challenger</u>, <u>exploded</u> soon after launching when the <u>O-ring</u> failed in the <u>cold</u> weather. The crew died, including <u>Christa McAuliffe</u>, the first ordinary American in space.</li> <li>▪ <u>President Reagan</u> gave a comforting speech to the <u>nation</u> and ordered an <u>investigation</u>, which revealed technical <u>problems</u> that had been <u>ignored</u>.</li> </ul>	<p><b>1). Synthesize:</b> <i>Synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2). Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, narrow down all the words we underlined to identify the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>(Share one word key word you identified and tell me why using the key words checklist.)</i></li> <li>• <u>Answer key:</u> space shuttle, Challenger, explosion, investigation, problems, change</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• Answer key: The <u>space shuttle Challenger</u> was a reusable spacecraft that <u>exploding</u> after takeoff, killing all crew members. An <u>investigation</u> uncovered <u>problems</u>.</li> </ul> <p style="text-align: center; background-color: #cccccc;"><b>LESSON EXTENSION: REVIEW THE VOCABULARY ONE MORE TIME.</b></p>

**Unit 4, Lesson 6**

Components
1) Steps for Understanding Practice
2) Synthesize Passage
3) Integrate Knowledge

**Materials/Preparation:**

- Teacher supplies:
  - Smartboard or whiteboard and marker,
  - Cue cards (How, Why, Bullseye, Funnel, Text, Evidence),
  - Sentence frames,
  - Big question,
  - Instructional checklists,
  - Unit vocabulary cards.
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form

**1). Steps for Understanding Practice**

- Today, we will add to our understanding of our big question: *What has space exploration taught us about outer space?*
- Today we will learn about an interesting new project that NASA, the United States government agency that is in charge of space exploration, is working on. Let's get started.

Text Section #1	Instructional Key
<p>What would you say to an extraterrestrial being—a living thing that’s not from Earth? Now you will have a chance to contribute to a message that NASA, the U.S. space agency, is planning to send to a spacecraft that is currently traveling in outer space. The message is intended for any intelligent life forms the spacecraft may encounter in its travels.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Let’s make sure we understood what we read.</i>  Q: <i>What is an extraterrestrial being?</i>  A: A living thing that’s not from Earth  Q: <i>Who is the NASA message intended for?</i>  A: Any intelligent life it encounters in space</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> message, NASA, space</li> <li>• <i>It seems like you all included words related to message, NASA, and space.</i></li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>NASA</u> is planning to send a <u>message</u> on a spacecraft to <u>space</u> communicate with any extraterrestrial beings it finds.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>NASA (the National Aeronautics and Space Administration) will be transmitting the message to the <i>New Horizons</i> space probe. <i>New Horizons</i> is an unmanned spacecraft that is on a path to Pluto. The digital message sent to the probe will include words, sounds, maps, and maybe even photos of what life is like on Earth in 2014.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3). Check for Understanding:</b></p> <p>Q: <i>What does it mean that the New Horizons will be “unmanned?”</i>  A: No people will be on board</p> <p>Q: <i>What kinds of things will be sent to the probe?</i>  A: words, sounds, maps, and photos of Earth today</p> <p><b>4) Provide Feedback on Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>NASA</u> will send the <u>New Horizons</u> probe into space with <u>messages</u> of what life is like on <u>Earth</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

Text Section #3	Instructional Key
<p>The project to create this digital record is called the One Earth: New Horizons Message. Jon Lomberg, a design director at NASA, is leading the project. When Lomberg announced NASA's approval for the One Earth: New Horizons Message at a science festival earlier this year, there was a lot of excitement from the crowd. "I think you could hear us cheering all the way out to Pluto," he said.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  Q: <i>What is the project called?</i>  A: One Earth: New Horizons Message  Q: <i>How did people at the science festival react?</i>  A: They were excited and cheered.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> excitement, One Earth: New Horizons Message, Jon Lomberg</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Jon Lomberg</u> announced the project called <u>One Earth: New Horizons Message</u>, and people were very <u>excited</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it.</i> (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</li> </ul>

Text Section #4	Instructional Key
<p>Engineers will pull together all the data that will make up the One Earth: New Horizons Message, and then stream it from Earth to <i>New Horizons</i>. Scientists believe <i>New Horizons</i> will be able to continue exploring outer space after completing its mission. In fact, the spacecraft will likely leave our solar system. In the next few months, scientists will be gathering the messages, facts, and files from people all over the world to show what life is like for humans on Earth in 2014.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  Q: <i>How far away is the New Horizons going to travel?</i>  A: It will likely travel outside our solar system.  Q: <i>What are scientists gathering for the mission?</i>  A: messages, facts, and files from people all over the world to show what life is like on Earth</p> <p><b>3). Key Words:</b> <i>Ok, write down your key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> New Horizons, mission, scientists</li> </ul> <p><b>4). Main Idea:</b> <i>Ok, what is this paragraph mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Scientists</u> are currently gathering information to put in the <u>New Horizons</u> message when they send it on its <u>mission</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p>1) <u>NASA</u> is planning to send a <u>message</u> on a spacecraft to <u>space</u> communicate with any extraterrestrial beings it finds.</p> <p>2) <u>NASA</u> will send the <u>New Horizons</u> probe into space with <u>messages</u> of what life is like on <u>Earth</u>.</p> <p>3) <u>Jon Lomberg</u> announced the project called <u>One Earth: New Horizons Message</u>, and people were very <u>excited</u>.</p> <p>4) <u>Scientists</u> are currently gathering information to put in the <u>New Horizons</u> message when they send it on its <u>mission</u>.</p>	<p><b>1) Synthesize:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, we need to narrow down all of the words we underlined to the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>Share one key word you identified and tell me why using the key words checklist.</i></li> <li>• <u>Answer key:</u> NASA, New Horizons, scientists, message</li> </ul> <p><b>3) Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. I will give you some time to use your pencil to write out a main idea. Use the main idea checklist to help you. <u>Ok, what is this passage mostly about?</u></i></p> <p>a) <u>Answer key:</u> Scientists are preparing NASA's New Horizons mission, which will contain messages to extraterrestrials from Earth.</p> <p>b) <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></p>

### 3) Revisit big question

- *Let's revisit our big question "What has space exploration taught us about outer space?"*
- *Now that we know about NASA's New Horizons mission, how can we add to our understanding of the big question?*
- Possible student responses:
  - Scientists now know how to send messages in unmanned space crafts.
  - Scientists know how large the solar system is.
  - Scientists are hoping to find and communicate with other life forms in space.



## Unit 4, Lesson 7

### Components

- 1) Steps for Understanding Practice
- 2) Synthesize Passage
- 3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or whiteboard and marker,
  - Cue cards (How, Why, Bullseye, Funnel, Text, Evidence),
  - Sentence frames,
  - Big question,
  - Instructional checklists,
  - Unit vocabulary cards.
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form

### 1). Steps for Understanding Practice

- *Today, we will add to our understanding of our big question: **What has space exploration taught us about outer space?***
- *Today we will read a fictional short story about two astronauts going on a unique mission to space. Keep in mind this story is NOT true. As we read, think about what we've learned about space and what parts of the story could be true.*

Text Section #1	Instructional Key
<p>It had taken decades of hard work, but at long last the day arrived. Hundreds of spectators gathered at NASA’s Kennedy Air Force Base to watch the Orion 254 shuttle shoot up into outer space, headed for Mars. Almost everyone in the world had tuned in to watch live coverage of the launch. Onboard the shuttle two astronauts, dressed in puffy white spacesuits, patiently waited for blastoff. Roy Ruiz and Ciara Jones were the astronauts NASA had specially selected to undertake this risky mission. In just a few minutes, they would begin an adventure that would carry them further away from Earth than anyone else in human history.</p> <p>A voice came over the speakers that hovered above the excited spectators. “In 1969, human beings walked on the moon for the first time,” said the confident voice, “and now, in July of 2020, we expand our frontier to Mars. Please send your good wishes to our brave astronauts as they begin this groundbreaking mission. ” Everyone erupted into cheers and whistles. Family and friends of the astronauts stood at the front of the crowd. Tears streamed down their faces. They were proud of Roy and Ciara, but they did not know when or if they would ever see them again. The voyage would take at least a year to complete, and it involved many risks.</p> <p>“Ten,” counted the deep voice, “nine, eight, seven, six, five, four, three, two, one!” Huge fuel jets attached to the shuttle Orion shot white-hot streaks of fire into the ground, and the shuttle and tanks immediately shot upward into the sky. The shuttle’s fuel tanks had to generate enough force to propel the shuttle from Earth’s surface all the way into outer space. That’s why NASA scientists designed the jets to be so big and powerful.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Let’s make sure we understood what we read.</i>  <i>Q: Is this story set in the past, present, and future?</i>  A: Future, because the year is 2020  <i>Q: Who are Roy and Ciara?</i>  A: Astronauts who are leaving on a mission to Mars.</p> <p><b>3) Key Words:</b> <i>Write down a few key words using the keyword checklist as a guide. Tell me one of the words you selected and why it is a key word.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> two astronauts, mission, NASA, Mars</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Two astronauts</u> leave on a <u>NASA mission</u> to <u>Mars</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it.</i></li> </ul>

Text Section #2	Instructional Key
<p>Within minutes, Roy and Ciara passed through the top layers of the earth’s atmosphere. The fuel jets, which were no longer necessary, broke away from the shuttle and drifted off into outer space. Roy and Ciara began to float inside the shuttle because Earth’s gravitational pull no longer weighed them down. Oxygen tanks fed air into their surroundings so they could breathe. Roy and Ciara took their first deep breaths in space and gazed out the window. A brilliant blue sphere rose before them. That was Earth, and they were now speeding away from it at 75,000 miles per hour.</p> <p>“Ground control to Roy and Ciara,” said a happy voice on the radio from Mission Control.  “Roy Ruiz to Mission Control,” replied Roy.  “That was a perfect takeoff,” the officer said.  “Congratulations!”  “Thanks,” said Roy. “We’ll keep you posted as we move along.”</p> <p>NASA chose Roy and Ciara for the Mars mission for important reasons. They were both very intelligent and physically fit. They were also got along well and worked together easily. Over such a long trip, NASA felt it was better to send people who would not easily get into fights. If anything went wrong on board the spacecraft, Roy and Ciara would have to work as a tight team to fix the problem. For an entire year they would have to survive without a single freshly cooked meal—all their food was stored on the craft in vacuum- sealed packs and tubes. There were a limited number of oxygen tanks containing their air supply. If the mission had a problem that required a lengthy repair, they risked running out of air to breathe. To maintain a good attitude among these challenges, the two astronauts had to get along well.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  Q: <i>How will Roy and Ciara breathe on board the space shuttle?</i>  A: Using oxygen tanks that are on board  Q: <i>What are some challenges the astronauts will face?</i>  A: they’ll be gone for over a year, they’ll have to get along and work together, and they risk running out of oxygen</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Roy and Ciara, mission, challenges, get along</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Roy and Ciara’s mission to Mars</u> will have many <u>challenges</u> and require them to <u>get along</u> and work together.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it’s appropriate or use the main idea from the answer key.)</i></li> </ul>

Text Section #3	Instructional Key
<p>For one whole quiet year the couple sailed across space. Sometimes Roy felt claustrophobic inside the small craft. When this happened, he exercised on the special fitness machines or put on his spacesuit to check on the external parts of the spacecraft. Ciara wrote in a journal about the beautiful sights she saw out the window—distant galaxies and stars, and a giant asteroid not so far away.</p> <p>By the time Orion finally approached the dry, red-colored surface of Mars, people on Earth had almost forgotten about them. But as the craft got closer and closer to the planet, news channels on Earth started buzzing. “Men on Mars, at long last! Another giant leap for mankind!” they proclaimed.</p> <p>Roy, an expert pilot, landed the spacecraft with a gentle thud. “Bravo!” shouted Mission Control. Everyone was clapping in the background. “You’re about to make history!”</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• <i>Write down your key words</i></li> <li>• <i>Write a main idea sentence for the passage you just read.</i></li> <li>• <i>Complete self-assessment form.</i></li> </ul> <p><b>3). Check for Understanding:</b></p> <p>Q: <i>How did the astronauts do while they were traveling through space?</i> A: Exercise and write in journals</p> <p>Q: <i>Where have Roy and Ciara finally arrived?</i> A: On the surface of Mars</p> <p><b>4) Provide Feedback on Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> After a long <u>year</u>, the <u>space craft</u> <u>landed</u> safely on <u>Mars</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it’s appropriate or use the main idea from the answer key</i></li> </ul>

Text Section #4	Instructional Key
<p>Roy switched on the television monitors outside the spacecraft so citizens of Earth could watch this historic, first walk on Mars. The two astronauts fixed microphones to the insides of their spacesuits so they could talk to Mission Control, each other, and the rest of the earthly world. They fastened their spacesuits to cords inside the craft, and stepped out into the swirling dust.</p> <p>As he took his first steps, Roy saw a flicker of silver out of the corner of his eye. It seemed to move through the air and settle behind a rock to his right.</p> <p>“You’re not going to believe this,” said Roy. “But I swear I saw something silver, moving behind that rock just ahead.”</p> <p>“Are you saying...that you might have seen a life form?” asked the Mission Control commander in a serious, quiet voice.</p> <p>“Could be,” said Roy. “Won’t know for sure until we explore a bit.” “Indeed,” said Ciara. “We’ll have to be very quiet and slow.”</p> <p>Side by side, tools in hand, and Roy and Ciara ventured forth into the mysterious red landscape.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  <i>Q: How are the astronauts sharing their experience with the people on Earth?</i>  A: They are using microphones that are inside their suits and TV monitors.  <i>Q: What did Roy see?</i>  A: A moving silver object that could be a life form</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> first walk, Mars, ventured/explored, life form</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> During their <u>first walk</u> on <u>Mars</u>, the astronauts <u>venture</u> out to see if there are any <u>life forms</u>.</li> <li>• <i>Great job. So, I’ll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it’s appropriate or use the main idea from the answer key.)</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p>1) <u>NASA</u> is planning to send a <u>message</u> on a spacecraft to <u>space</u> communicate with any extraterrestrial beings it finds.</p> <p>2) <u>Roy and Ciara's mission</u> to Mars will have many <u>challenges</u> and require them to <u>get along</u> and work together.</p> <p>3) After a long <u>year</u>, the <u>space craft landed</u> safely on <u>Mars</u>.</p> <p>4) During their <u>first walk</u> on <u>Mars</u>, the astronauts <u>venture</u> out to see if there are any <u>life forms</u>.</p>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, we need to narrow down all of the words we underlined to the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>Share one key word you identified and tell me why using the key words checklist.</i></li> <li>• <u>Answer key:</u> Astronauts, mission, NASA, Mars</li> </ul> <p><b>3). Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. I will give you some time to use your pencil to write out a main idea. Use the main idea checklist to help you. <b>Ok, what is this passage mostly about?</b></i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Two NASA astronauts successfully complete a mission to explore the surface of Mars.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "What has space exploration taught us about outer space?"*
- *Even though the passage we just read is fiction and isn't real, how can we add to our understanding of the big question?*
- Possible student responses:
  - Scientists know it will take a year to get to Mars.
  - Mars is a terrestrial planet similar to Earth
  - It is possible that there could be life forms on Mars.

## Unit 4, Lesson 8

Components
1) Steps for Understanding Practice
2) Synthesize Passage
3) Integrate Knowledge

### Materials/Preparation:

- Teacher supplies:
  - Smartboard or white board and marker
  - Big question,
  - Unit vocabulary cards,
  - Cue cards (instructional checklists, bullseyes, funnel, text evidence)
  - Student texts,
  - Writing packet,
  - Self-assessment form
- Student supplies:
  - Student text packet,
  - Writing packet,
  - Self-assessment form,
  - Student vocabulary packet.

### 1). Steps for Understanding Practice

- Today, we will add to our understanding of our big question: *What has space exploration taught us about outer space?*
- Today, we are going to talk about a new piece of technology that does not explore space, but it does explore the Earth. It is something that you will hear a lot about in the future. Let's find out what it is.



Text Section #1	Instructional Key
<p>One day in the not-so-distant future, an unmanned aerial vehicle, also known as a drone, flies over an apple orchard. As it zips around, it snaps high-definition photos and runs them through software that analyzes the crops' health. The software homes in on a corner of the field that doesn't look so good: Insects are attacking the apples. The drone turns and heads toward the area. Sprayers on its wings dispense pesticide, killing the insects that are harming the trees. Then the drone returns to its patrol.</p> <p>Weeks later, an apple from that same orchard arrives at a grocery warehouse near you. From your cell phone, you add it to your cart and click "deliver." Twenty minutes later, you hear a whirring noise outside. A different drone lands on your doorstep. It sets your apple down and zips away. This scenario sounds like science fiction. But scientists think it could become a reality—and probably sooner than you think. From moviemakers to animal conservationists, people are already finding ways to use drones.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> <i>Let's make sure we understood what we read.</i>  Q: <i>What is an extraterrestrial being?</i>  A: A living thing that's not from Earth  Q: <i>Who is the NASA message intended for?</i>  A: Any intelligent life it encounters in space</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> drone, flies, scientist, deliver</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Scientists think <u>drones</u>, which are <u>flying</u> vehicles, can be used to gather information and <u>deliver</u> products.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

Text Section #2	Instructional Key
<p><b>Drones Today</b> Drones were first built in the early 1900s for military pilots and gunners to use as target practice. Today the military remains the leading user of drones. But as drones have become smaller and more affordable, people outside the military have begun to use them.</p> <p>Today, the hottest application for drones is in Hollywood. Filmmakers are using drones equipped with cameras to capture footage that would otherwise be dangerous and expensive to shoot. Action scenes, for example, have traditionally been filmed using helicopters. To capture the shot, the crew sometimes has to fly in the helicopter, which can cost \$10,000 per day. Camera drones, by contrast, can get close to the action without endangering lives. And they're far less expensive than helicopters: A state-of-the-art camera drone costs about \$25,000 and can be used over and over again.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b>  Q: <i>Where did drones begin to be used?</i>  A: They were used by the military as target practice.  Q: <i>Why are drones useful to filmmakers?</i>  A: The drones can be used to film and are less expensive and safer than helicopters.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> drones, military, filmmakers, helicopters</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> <u>Drones</u> were originally used by the <u>military</u>, but now <u>filmmakers</u> are using drones to film scenes instead of <u>helicopters</u>.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

Text Section #3	Instructional Key
<p><b>Privacy Concerns</b>            In the United States, anyone who owns or flies an airplane or drone must get a license and permission from the Federal Aviation Administration (FAA). The government agency is currently facing a debate about privacy and safety issues.</p> <p>The public is concerned that camera drones could be used to peer into windows and spy on people. And since drones don't have flight guidelines, critics worry that they could crash into buildings, people, and other drones. Before drones can be flown over populated areas, says Taylor, rules are needed about who can fly them, and when and where.</p>	<p><b>1). Read Passage:</b></p> <p><b>2). Independent Practice:</b></p> <ul style="list-style-type: none"> <li>• Write down your key words</li> <li>• Write a main idea sentence for the passage you just read.</li> <li>• Complete self-assessment form.</li> </ul> <p><b>3). Check for Understanding:</b>            Q: <i>Who needs a license from the FAA?</i>            A: Anyone who owns or flies an airplane or drone            Q: <i>Why are people concerned about camera drones?</i>            A: Drones could be used to spy on people, and they could crash into things.</p> <p><b>4) Provide Feedback on Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>▪ <u>Answer key:</u> People who own or fly drones needs a <u>license</u>, but people are still <u>concerned</u> about drones <u>spying</u> on them and <u>crashing</u> onto the ground.</li> <li>▪ <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

Text Section #4	Instructional Key
<p><b>Air Delivery</b> Some companies aren't letting any obstacle stop them from investigating uses for drones. Amazon, the online store, says it intends to start a new service called Prime Air as early as 2015. It says it will be able to deliver packages via drone in under 30 minutes. Pizza deliveries could follow. Drones might even deliver Internet access. Facebook is working on a project that would launch drones that broadcast Internet signals to parts of the world that aren't connected.</p> <p>What about drones for personal use? Already, anyone can go online and buy a camera drone for a few hundred dollars. In the near future, people could use drones to snap selfies from the perfect vantage point or record footage as people skateboard or play soccer. Someday, personal drones could even race you during your workout. Experts say that when it comes to the uses of drones, the sky is—literally—the limit.</p>	<p><b>1) Read Passage:</b></p> <p><b>2) Check for Understanding:</b> Q: <i>How could companies use drones?</i> A: Drones could deliver packages and pizza, as well as internet signals. Q: <i>What are some ways people could use drones?</i> A: They could use them to take selfies, record video, or be used in workouts.</p> <p><b>3) Key Words:</b> <i>Ok, write down your key words. Use the key word checklist to help you.</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key</u>: companies, deliver, internet, people, drones</li> </ul> <p><b>4) Main Idea:</b> <i>Ok, what is this section mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key</u>: In the future, <u>drones</u> could be used by <u>companies</u> to <u>deliver</u> products and <u>internet</u> service, and <u>people</u> can also use them for their own needs.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

<b>2) Synthesize Passage</b>	
<b>Synthesize Passage</b>	<b>Instructional Key</b>
<p>1) <u>Scientists</u> think <u>drones</u>, which are <u>flying</u> vehicles, can be used to gather information and <u>deliver</u> products.</p> <p>2) <u>Drones</u> were originally used by the <u>military</u>, but now <u>filmmakers</u> are using drones to film scenes instead of <u>helicopters</u>.</p> <p>3) People who own or fly drones needs a <u>license</u>, but people are still <u>concerned</u> about drones <u>spying</u> on them and <u>crashing</u> onto the ground.</p> <p>4) In the future, <u>drones</u> could be used by <u>companies</u> to <u>deliver</u> products and <u>internet</u> service, and <u>people</u> can also use them for their own needs.</p>	<p><b>1) Synthesize Passage:</b> <i>Now we are going to synthesize all of the information we read today using our steps for understanding.</i></p> <p><b>2) Overall Key Words:</b></p> <ul style="list-style-type: none"> <li>• <i>First, we need to narrow down all of the words we underlined to the key words of the whole passage.</i></li> <li>• <i>Use your key word checklists for informational texts as a guide.</i></li> <li>• <i>Share one key word you identified and tell me why using the key words checklist.</i></li> <li>• <u>Answer key:</u> drones, deliver, spying, film</li> </ul> <p><b>Overall Main Idea:</b> <i>Ok, time for our main idea for the whole passage. I will give you some time to use your pencil to write out a main idea. Use the main idea checklist to help you. Ok, what is this passage mostly about?</i></p> <ul style="list-style-type: none"> <li>• <u>Answer key:</u> Drones could be very useful in helping make deliveries and shoot films, but people are also concerned that they could be used for spying.</li> <li>• <i>Great job. So, I'll write our main idea as I understand it. (Write and say appropriate main idea. Use the student generated main idea when it's appropriate or use the main idea from the answer key.)</i></li> </ul>

### 3) Revisit big question

- *Let's revisit our big question "What has space exploration taught us about outer space?"*
- *Thinking about what we read about drones, how are drones similar and different than the types of space exploration that we read about in this unit?*
  
- Possible student responses:
  - Drones and space craft are unmanned.
  - Drones fly much closer above the earth than space craft.
  - Drones and space craft help people accomplish tasks.

## **SOAR Resources:**

Key Word and Main Idea Writing Guide

Main Idea Self-Assessment

Vocabulary Cards

Vocabulary Refresher Cards

## Key Word and Main Idea Writing Guide

**Key words:**

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**Main idea: What is this text section mostly about?**

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**Overall Key words:**

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**Overall Main idea: What is this passage mostly about?**

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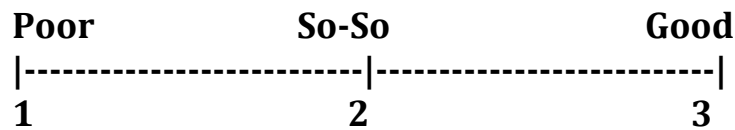
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## Main Idea Self-Assessment

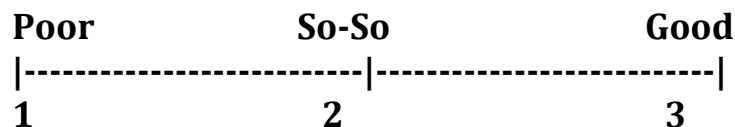
- |  |    |     |
|--|----|-----|
| <input checked="" type="checkbox"/> Does my main idea sentence include the key words?                        | No | Yes |
| <input checked="" type="checkbox"/> Is my main idea sentence written in my own words?                        | No | Yes |
| <input checked="" type="checkbox"/> Are unnecessary details left out of my main idea sentence?               | No | Yes |
| <input checked="" type="checkbox"/> Does my main idea sentence cover the most important idea in the passage? | No | Yes |

**Based on your answers above, how good is your main idea sentence?"**



- |  |    |     |
|--|----|-----|
| <input checked="" type="checkbox"/> Does my main idea sentence include the key words?                        | No | Yes |
| <input checked="" type="checkbox"/> Is my main idea sentence written in my own words?                        | No | Yes |
| <input checked="" type="checkbox"/> Are unnecessary details left out of my main idea sentence?               | No | Yes |
| <input checked="" type="checkbox"/> Does my main idea sentence cover the most important idea in the passage? | No | Yes |

**Based on your answers above, how good is your main idea sentence?"**



# SOAR Vocabulary

## Units 1-4

- Target Vocabulary is taught in Units 1-4.
- Vocabulary cards include the target vocabulary, a short definition, and a picture that describes the word.
- **A Vocabulary Routine** is used to help students master target vocabulary.
  - Call on a student to read the vocabulary word and its definition.
  - Call on another student to describe the picture using the vocabulary word.
  - Call on another student to use target word in a sentence.
  - Repeat for additional vocabulary words.

## SOAR

### Unit 1

- Plates
- Displace
- Contaminate
- Conditions
- Tremor
- Pressure

### Unit 2

- Interact
- Organism
- Species
- Adapt
- Prey
- Predator

### Unit 3

- Condition
- Function
- Contract
- System
- Tissue
- Organ

### Unit 4

- Launch
- Space Mission
- Orbit
- Satellite
- Gravity
- Terrestrial Planet

# UNIT 1

Plates

Displace

Contaminate

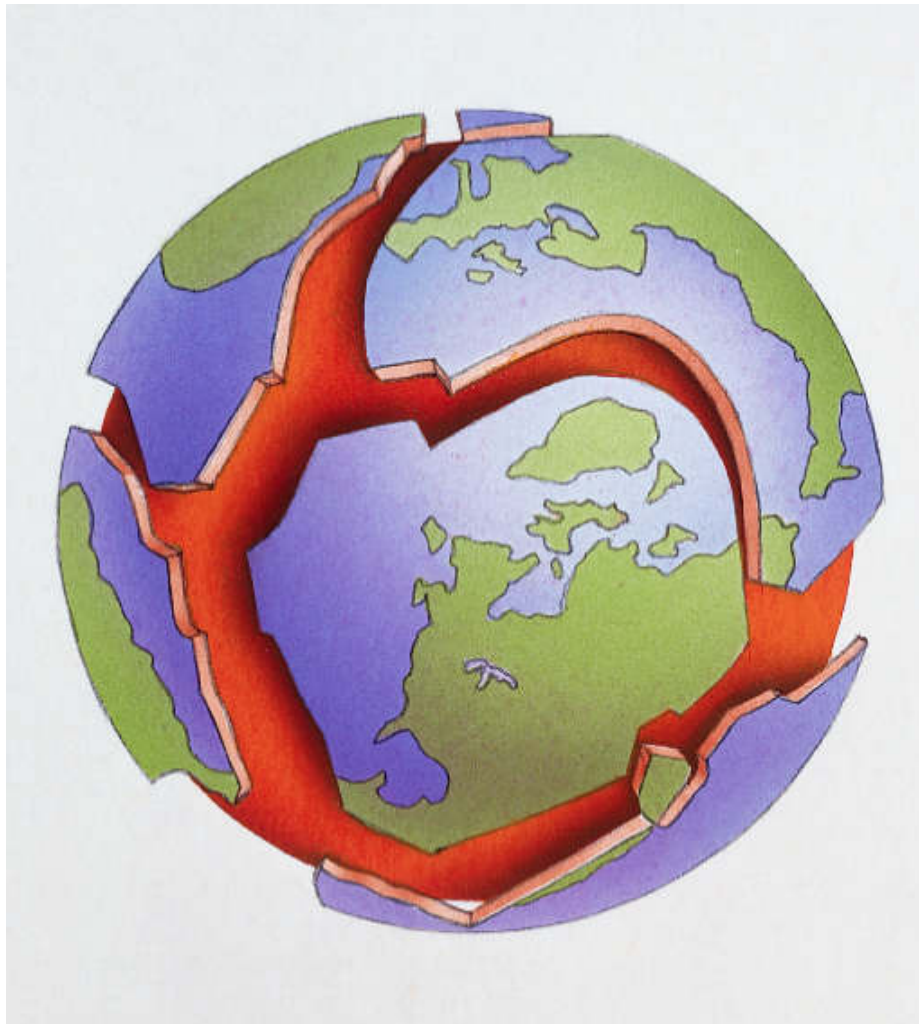
Conditions

Tremor

Pressure

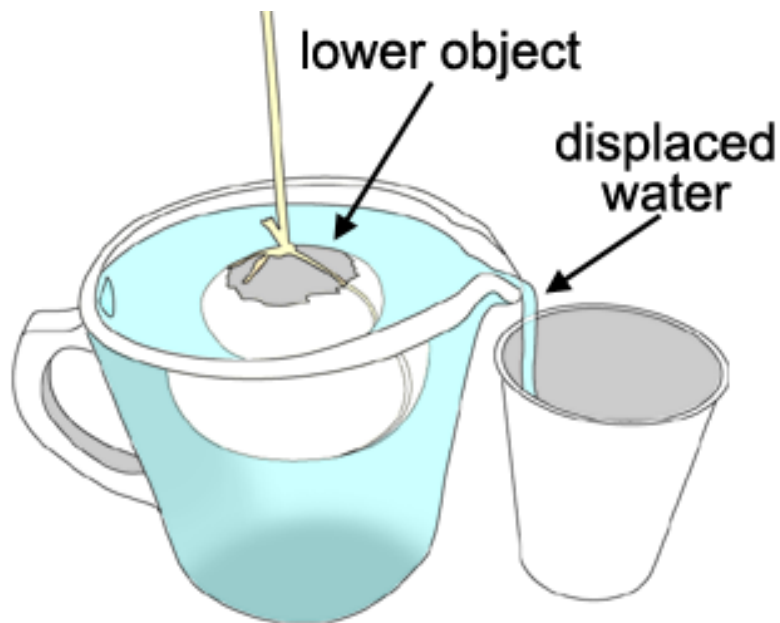
# plates

large pieces of land that make up  
Earth's surface



# displace

to remove something from its usual place



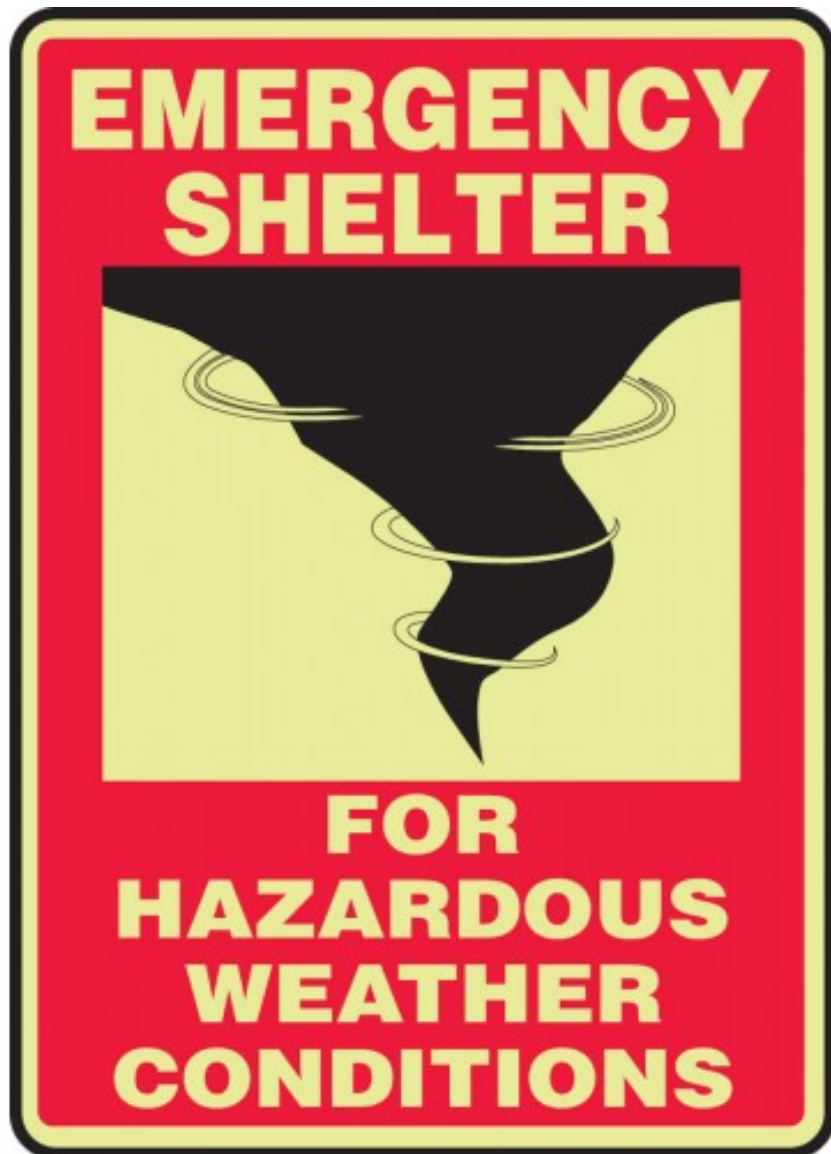
# contaminate

to stain or infect something by contact with something that is dirty or harmful



# conditions

the state of something





# tremor

a vibrating or shaking motion



# pressure

a force or stress on something by something else

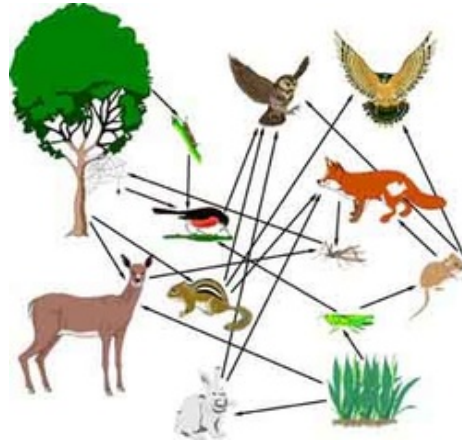


## UNIT 2

Interact  
Organism  
Species  
Adapt  
Prey  
Predator

# interact

when two or more things have an effect on one another



# organism

a living thing



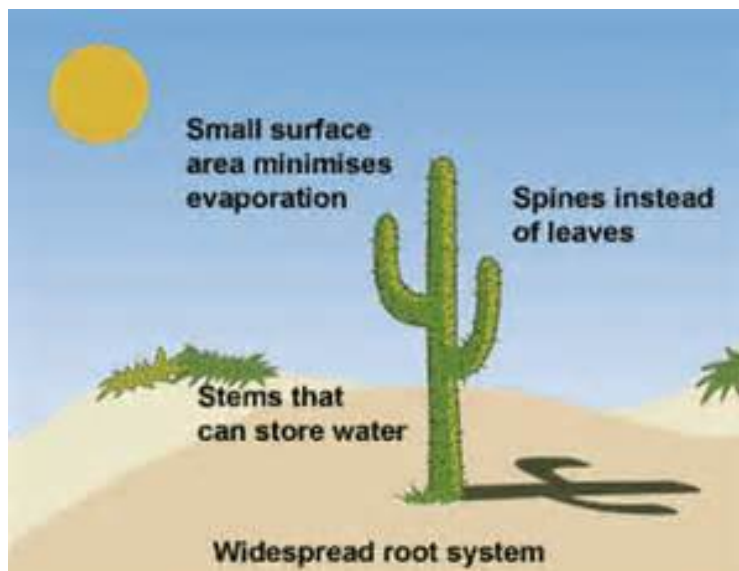
# Species

a category of living things that are capable of reproducing



# adapt

to change to fit a new or specific situation or use



## **prey**

an animal being hunted by  
another animal



## **predator**

an animal that hunts other animals



## **Unit 3**

Conditions

Function

Contract

System

Tissue

Organ

## condition

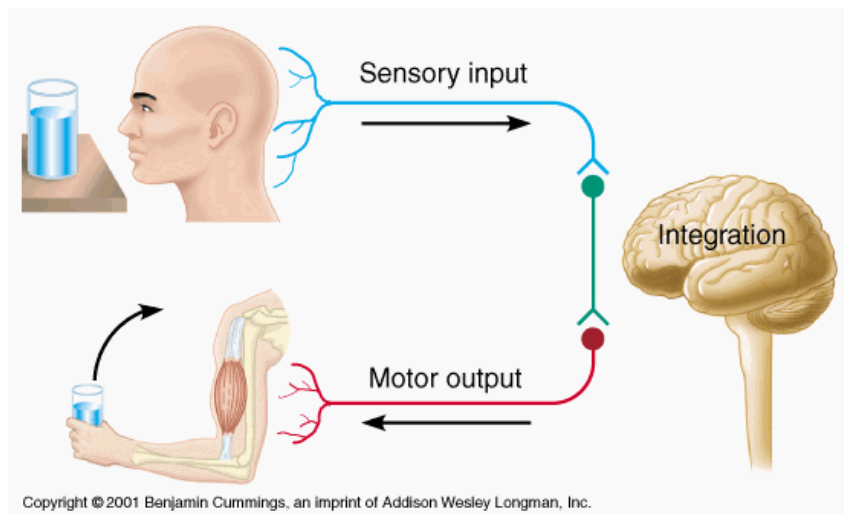
an illness, disease, or disorder



## function

the purpose or role of something

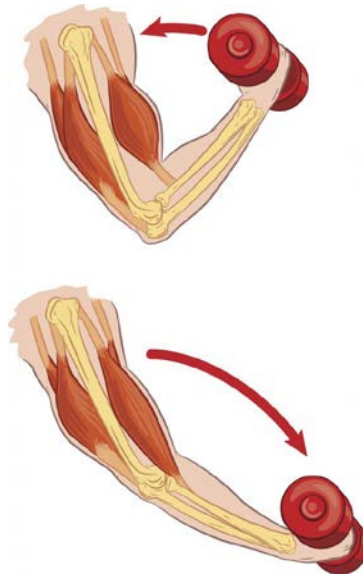
*The function of the nervous system is to send messages to and from the brain.*





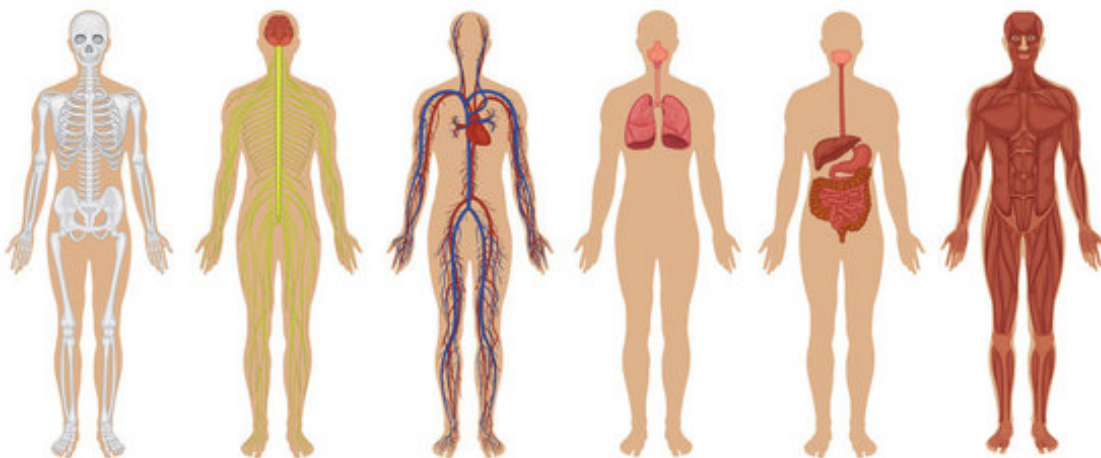
## contract

to tighten up or shrink



## system

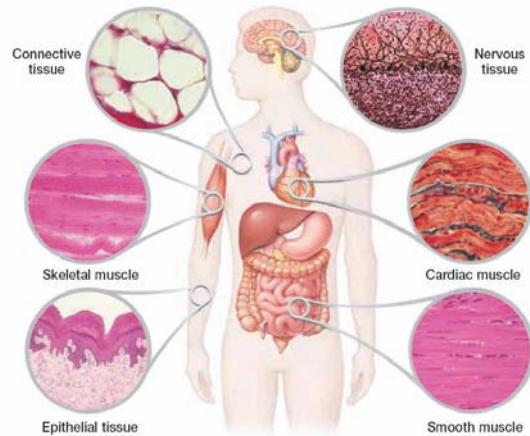
a group of related parts that function together as a whole



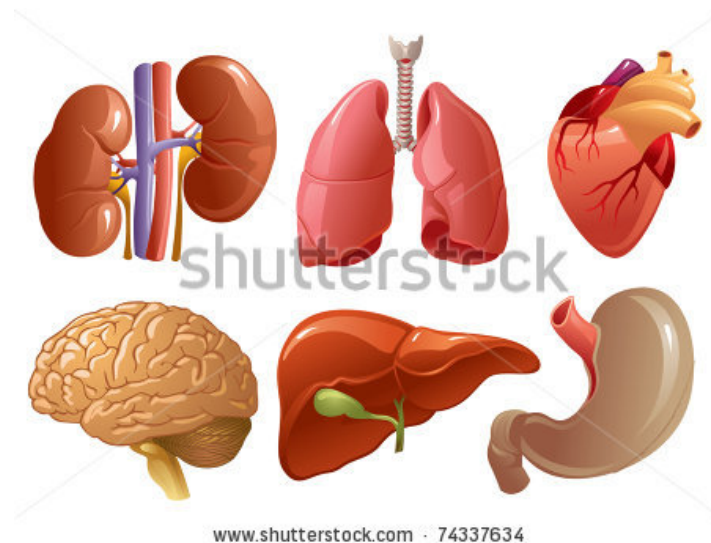
# tissue

a group of similar cells

## Human Body Tissues



**Organ:** a part of an organism that has a specific, important function



# **Unit 4**

Launch

Space Mission

Orbit

Satellite

Gravity

Terrestrial Planet

## launch

to start or set something in motion



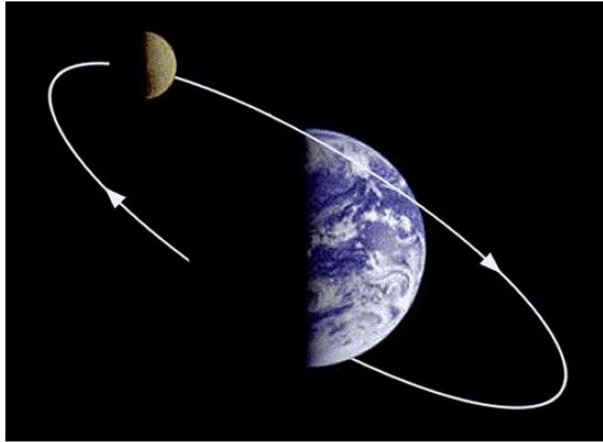
## space mission

flying a spacecraft into outer space



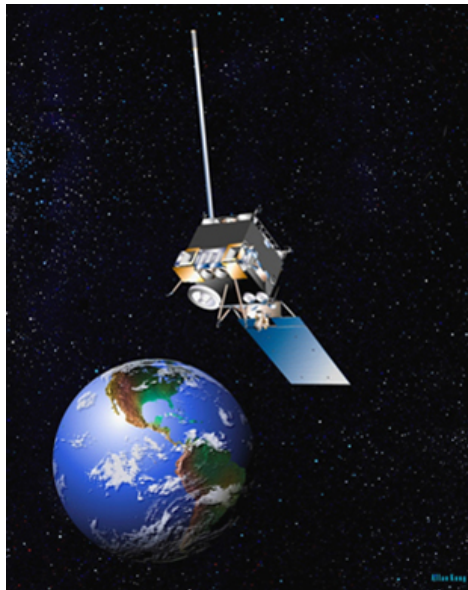
## orbit

circular path of one object as it revolves around another object



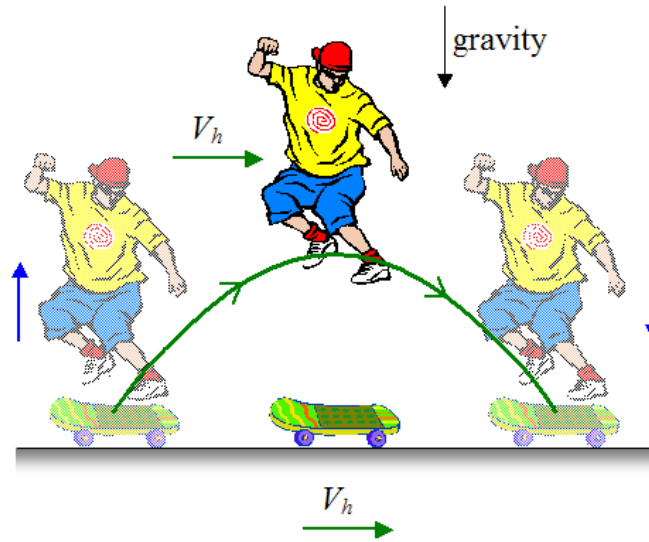
## satellite

object in space that revolves around the earth and provides information



# gravity

natural force that causes things to fall toward the earth



# terrestrial planet

planet that is made up of rocks or metals with a hard surface



# SOAR Vocabulary Refresher

To enhance vocabulary development, you may do “vocabulary refreshers” throughout instruction. The refresher vocabulary cards include 2 examples of the target word and a discussion question.

- At the end of unit 1, review unit 1 target vocabulary
- At the end of unit 2, review unit 1 and unit 2 target vocabulary
- At the end of unit 3, review unit 1 – unit 3 target vocabulary
- At the end of unit 4, review unit 1 – unit 4 target vocabulary



Unit 2

Unit 1

- Tectonic Plates
- Displace
- Contaminate
- Conditions
- Tremor
- Pressure

Unit 2

- Interact
- Organism
- Species
- Adapt
- Prey
- Predator

Unit 3

- Conditions
- Function
- Contract
- System
- Tissue
- Organ

Unit 4

- Launch
- Space Mission
- Orbit
- Satellite
- Gravity
- Terrestrial Planet

# Unit 1

Tectonic Plates

Displace

Contaminate

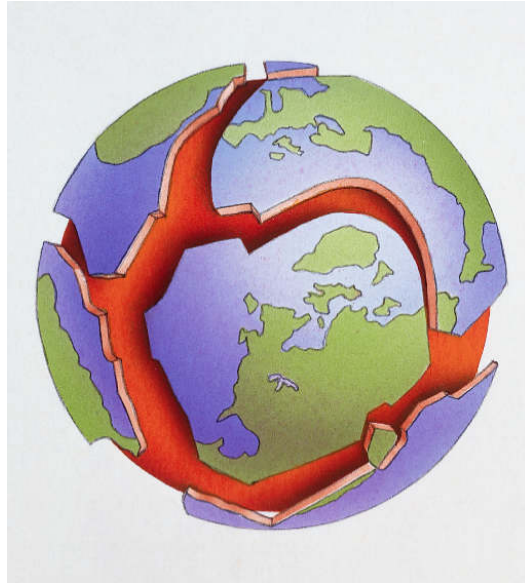
Conditions

Tremor

Pressure

## Tectonic plates

large pieces of land that make up Earth's surface



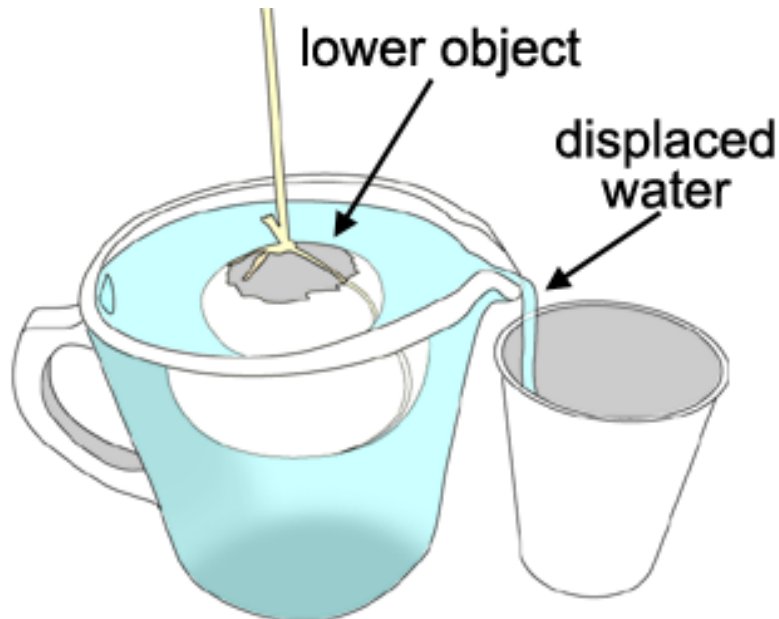
**Example #1:** Scientists agree that tectonic plates move, however there is not agreement on what causes the plates to move.

**Example #2:** When tectonic plates move into one another, it is called a convergent boundary.

**Discussion question?** Many of our state boundaries are straight lines, however the tectonic plate boundaries are not straight. Why do you think this is?

# displace

to remove something from its usual place



**Example #1:** When the football player was tackled his, his femur (upper leg bone) broken and displaced (moved from the center to the outside of the leg).

**Example #2:** In 2005, the storm and flooding of Hurricane Katrina displaced many people from their homes. In particular, many people moved from New Orleans to Houston.

**Discussion question?** What might cause something to displace you from your home?

## contaminate

to stain or infect something by contact with something that is dirty or harmful



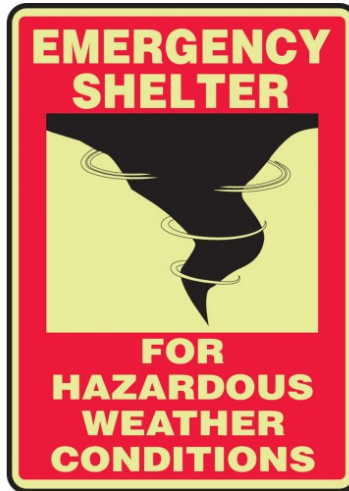
**Example #1:** The water supply in Hawaii was contaminated when a sewage pipe burst and spread to the water filtration plant.

**Example #2:** Air quality is contaminated by the burning of coal (electricity), oil (cars), and gas (heating), however new alternatives that are better for the environment are being developed.

**Discussion question?** Many of the rivers in cities are contaminated. What things do you think may contaminate these water passages?

## conditions

the state of something



**Example #1:** In just a few days, Buffalo, New York was hit with 7 feet of snow! Extreme weather conditions in Buffalo have led to school closings, road closures, and flight cancellations.

**Example #2:** After the train accident, the people were not worried about the condition of the train. Instead, they were concerned about the health conditions of the passengers.

**Discussion question?** Explain a way to make sure that your car remains in good condition.

## tremor

a vibrating or shaking motion



**Example #1:** The earthquake's tremor last 90 seconds, which may not sound like a long time. However, for the construction worker standing on a beam on the 12<sup>th</sup> floor, the shaking seemed to last forever!

**Example #2:** The young mayor was very nervous before his first speech, but he tried to pretend like he was fine by smiling. The tremor in was a tremor in his voice

**Discussion question?** Can you think of a time that you were so nervous that you could feel a tremor in your hands or voice?

## pressure

a force or stress on something by something else



**Example #1:** Many students feel pressure from their parents and themselves to succeed in school because they know how important it is for their future.

**Example #2:** The 3 year old applied too much pressure to the balloon when he pushed on it and it popped. The loud sound scared him and he started to cry.

**Discussion question?** Can you think of a time you have seen something explode due to extreme pressure?



## **Unit 2**

Tectonic Plates

Displace

Contaminate

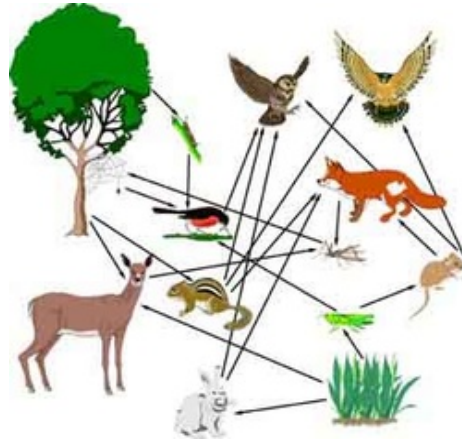
Conditions

Tremor

Pressure

## interact

when two or more things have an effect on one another



**Example #1:** During recess, you will see students and teachers interacting through play or conversation.

**Example #2:** Bees interact with flowers in a process called pollination. During pollination, bees take pollen from one part of the flower to another part to enable fertilization and reproduction.

**Discussion question:** What are some ways that you interact with nature?

## organism

a living thing



**Example #1:** Many organisms play a role in the survival of other animals. A food chain reveals what each animal eats and what animals eat them.

**Example #2:** Did you know there are microscopic organisms that live in the hair of animals? There are actually organisms that live in our eyebrows!

**Discussion question:** Some organisms are on the verge of extinction.



## species

a category of living things that are capable of reproducing

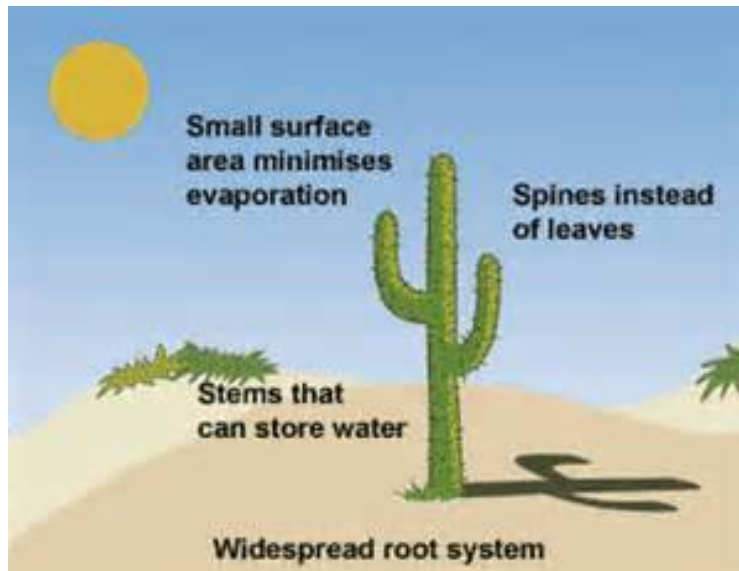
**Example #1:** The students studied endangered species in hopes of raising awareness to protect animals from going extinct.

**Example #2:** Scientists have discovered that African elephants may include two different species – forest elephants and savannah elephants. Their ears are bigger and their tusks are more curved.

**Discussion question:** Some species are on the verge of extinction. For instance, the tiger and whale are both on the endangered species list. Do you think they should be protected?

## adapt

to change to fit a new or specific situation or use



**Example #1:** Because regular leaves don't store water well, the cactus developed modified leaves to adapt to its extremely dry environment.

**Example #2:** To prepare students for a technological world, schools must adapt by using more technology in the classroom.

**Discussion question:** Tell me one way you have adapted to your surroundings.

**Prey:** an animal being hunted by another animal



**Example #1:** Animals have learned many tricks to avoid becoming another animal's meal. Prey stay alive by using special skills such as camouflage, spraying venom, and speed.

**Example #2:** Unlike other members of the cat family, the tiger cannot outrun its prey and therefore it hides and surprises its prey.

**Discussion question?** Name ways a prey might outsmart its predator and explain why these strategies are important.

## predator

an animal that hunts other animals



**Example #1:** A spider is a predator to a fly. It builds a sticky web, which works as its weapon to catch bugs it eats.

**Example #2:** Great white sharks can accelerate to speeds as high as 35mph, making them one of the greatest predators of the ocean.

**Discussion question?** Where do you think predators fall on the food chain? Explain your reasoning.

## **Unit 3**

Conditions

Function

Contract

System

Tissue

Organ



## condition

an illness, disease, or disorder



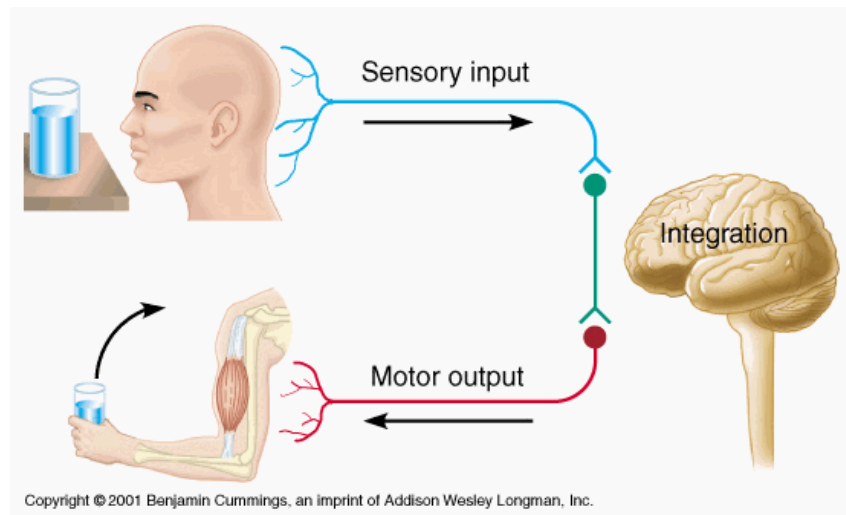
**Example #1:** The doctor realized the patient's condition was severe when he started to struggle to breathe.

**Example #2:** Cancer is a serious medical condition that accounts for almost 1 of every 4 deaths in America.

**Discussion question?** Asthma is a common medical condition found in children. Do you know anyone with Asthma or another medical condition?

## function

the purpose or role of something

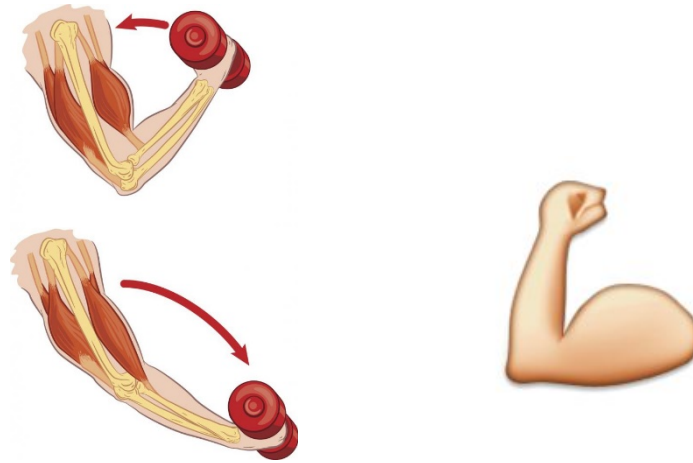


**Example #1:** The function of the nervous system is to send messages to and from the brain.

**Example #2:** The co-pilot's function is to help the captain of the flight by watching the plane's monitors.

**Discussion question?** Have you ever wondered why we have thumbs? Thumbs have an important function. What do you think it is?

**Contract:** to tighten up or shrink



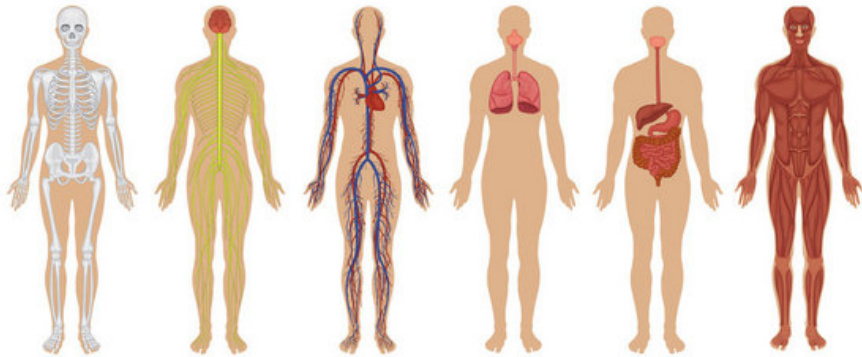
**Example #1:** People contract their muscles when they flex their biceps.

**Example #2:** When you touch your chest to feel your heart beat, you are actually feeling parts of your heart contract and expand as it pumps blood.

**Discussion question?** Have you ever wondered why we have thumbs? Thumbs have an important function. What do you think it is?

## system

a group of related parts that function together as a whole



**Example #1:** The sewer system is made up of pipes that transport waste, wastewater facilities that clean, and more pipes to send clean sewage to be used in agriculture.

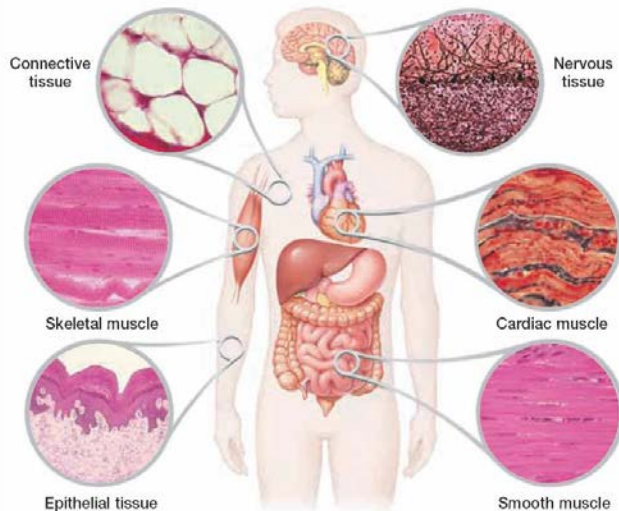
**Example #2:** The building's security system of cameras, noise detectors, and alarms identified the burglars and called the police.

**Discussion question?** When you are driving in your car and listening to music you are counting on a system. What system(s) are you using?

# tissue

a group of similar cells

## Human Body Tissues



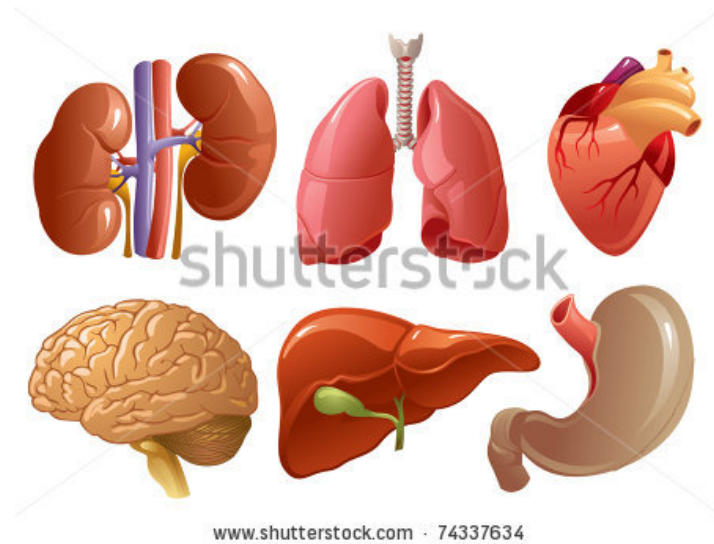
**Example #1:** After you get a cut, you may have scar tissue form. Scar tissue is made up of many similar cells that are damaged and that is why the skin looks different.

**Example #2:** Muscle tissue is long and can be controlled which makes it different than brain tissue.

**No discussion question**

## organ

a part of an organism that has a specific, important function



**Example #1:** Many people are willing to donate their organs after they die so that someone else can use their healthy organ.

**Example #2:** The kidney is the human body's sewer system. The kidney is an organ responsible for filtering waste out of our blood.

**Discussion question?** What organs in your body do you think are required for living? Heart? Lungs? Wisdom teeth? Kidney? Appendix?

## **Unit 4**

Launch

Space Mission

Orbit

Satellite

Gravity

Terrestrial Planet

## launch

to start or set something in motion



**Example #1:** The crowd gathered to watch the rocket launch into space for the first time.

**Example #2:** The family backed their boat trailer down the ramp to launch their boat onto the lake for a day of fun on the water.

**Discussion question?** Let's say that you wanted to launch a campaign for class president. What might you do?



## space mission

flying a spacecraft into outer space



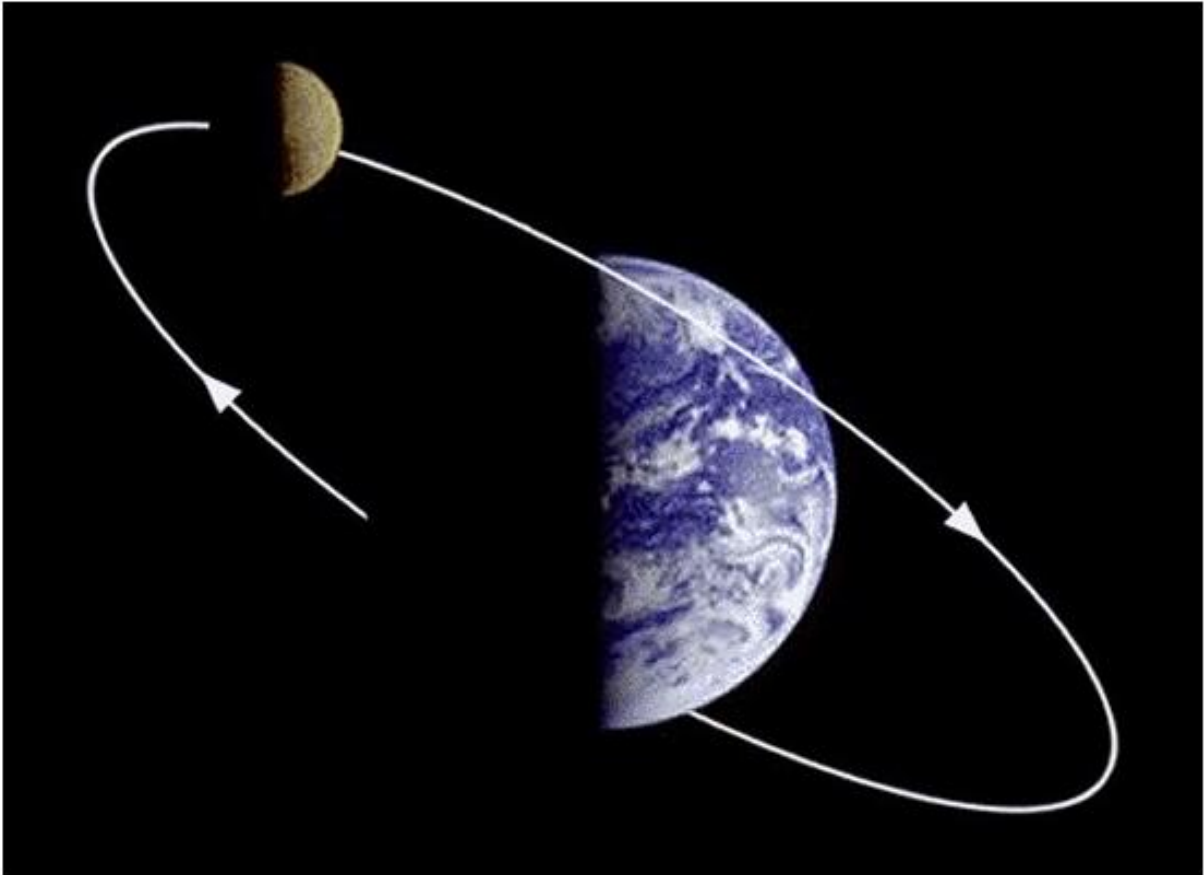
**Example #1:** Apollo 13 may be the most famous space mission of all time. There was even a movie made about it.

**Example #2:** The astronaut knew the space mission may end badly when the spacecraft's computer stopped communicating with the control center on Earth.

**Discussion question?** What do you think would be the scariest moment of a space mission? What might be the most fun?

## orbit

circular path of one object as it revolves around another object



SOAR

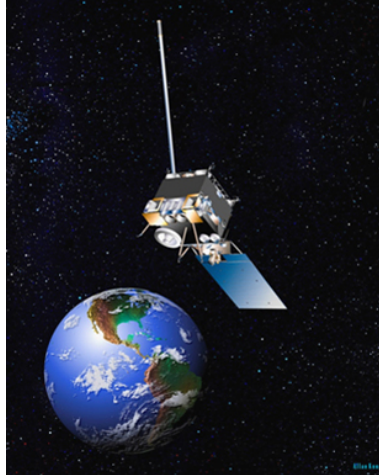
**Example #1:** The earth fully orbits the sun once every 365 days and the moon orbits the earth once every 27 days.

**Example #2:** The pack of hyenas orbited the two giraffes and planned their attack.

**Discussion questions:** Do you think that satellites that orbit the earth need an engine to circle earth or do you think it naturally orbits the earth?

## satellite

object in space that revolves around the earth and provides information



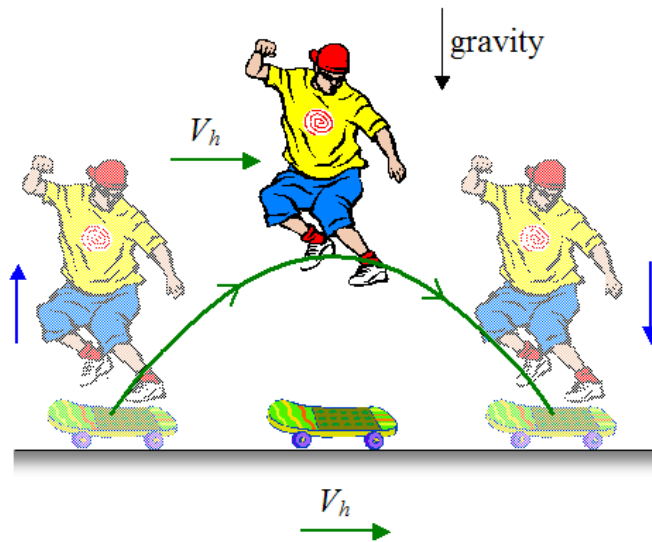
**Example #1:** Space satellites are used to capture the images of the earth that you can see online at GoogleEarth.com.

**Example #2:** Satellite TV is one way to receive TV programming in your home. If you have Satellite TV, then you have a piece of equipment on your roof that receives TV signals from satellites in space.

**Discussion question?** Some people think that all information will be stored in space satellites in the future. What do you think the advantages of having information kept in space?

## gravity

natural force that causes things to fall toward the earth



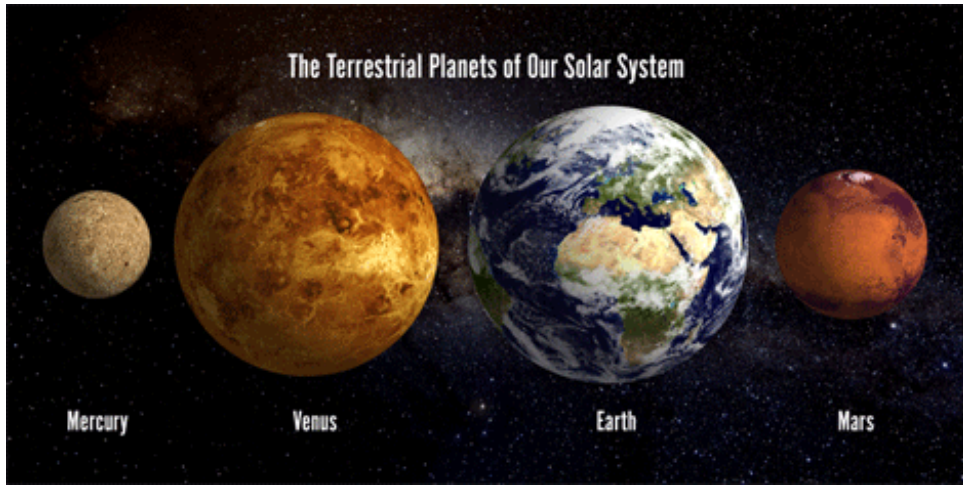
**Example #1:** When Jacob fell of his lab stool and onto the ground during physics class, he joked to the class, "I did that to prove the law of gravity. Do I get extra credit?" The teacher just rolled her eyes.

**Example #2:** LeBron James, one of the most famous basketball players of all time, seems to defy gravity when he floats in the air and dunks the ball.

**Discussion question?** Would you rather be able to defy gravity or be invincible?

## terrestrial planet

planet that is made up of rocks or metals with



a  
hard

surface

**Example #1:** Mars is the closest of the four terrestrial planets in the Milky Way solar system to Earth and that is why people want to travel to Mars.

**Example #2:** After the train accident, the people were not worried about the condition of the train. Instead, they were concerned about the health conditions of the passengers.

**Discussion question?** Why do you think scientists more interested in traveling to terrestrial planets than non-terrestrial planets?