

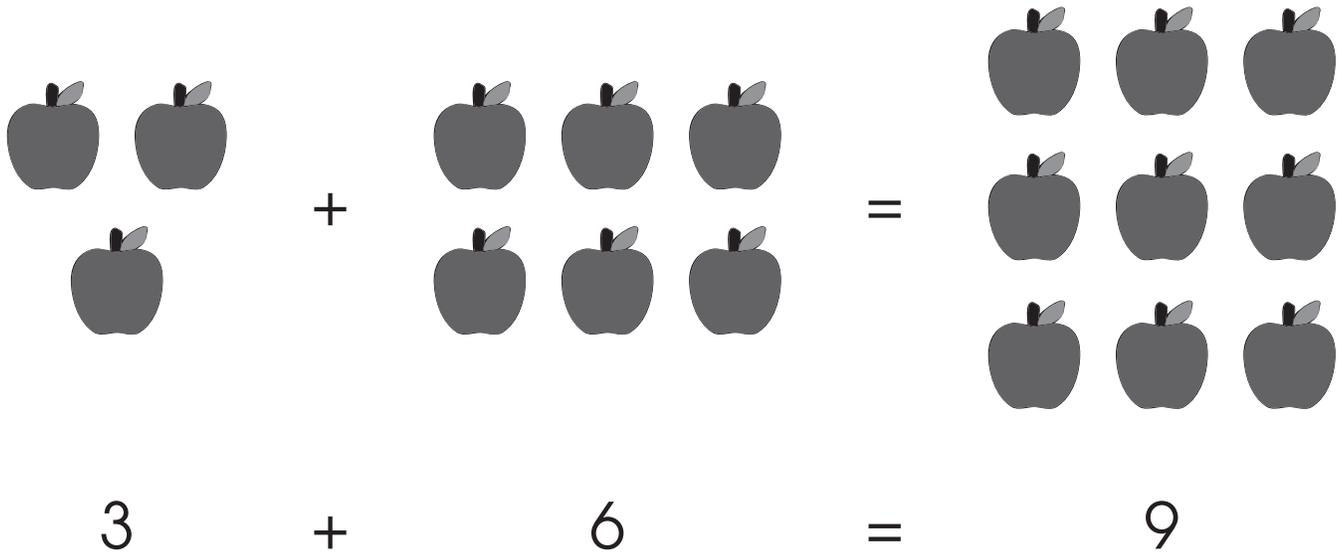
Display Master: Key Ideas: Multiplicative vs. Additive Thinking

- Additive thinking is present when a constant number is added to a value to get the resulting value.
- Multiplicative thinking is present when a value is multiplied by a constant rate to get the resulting value.

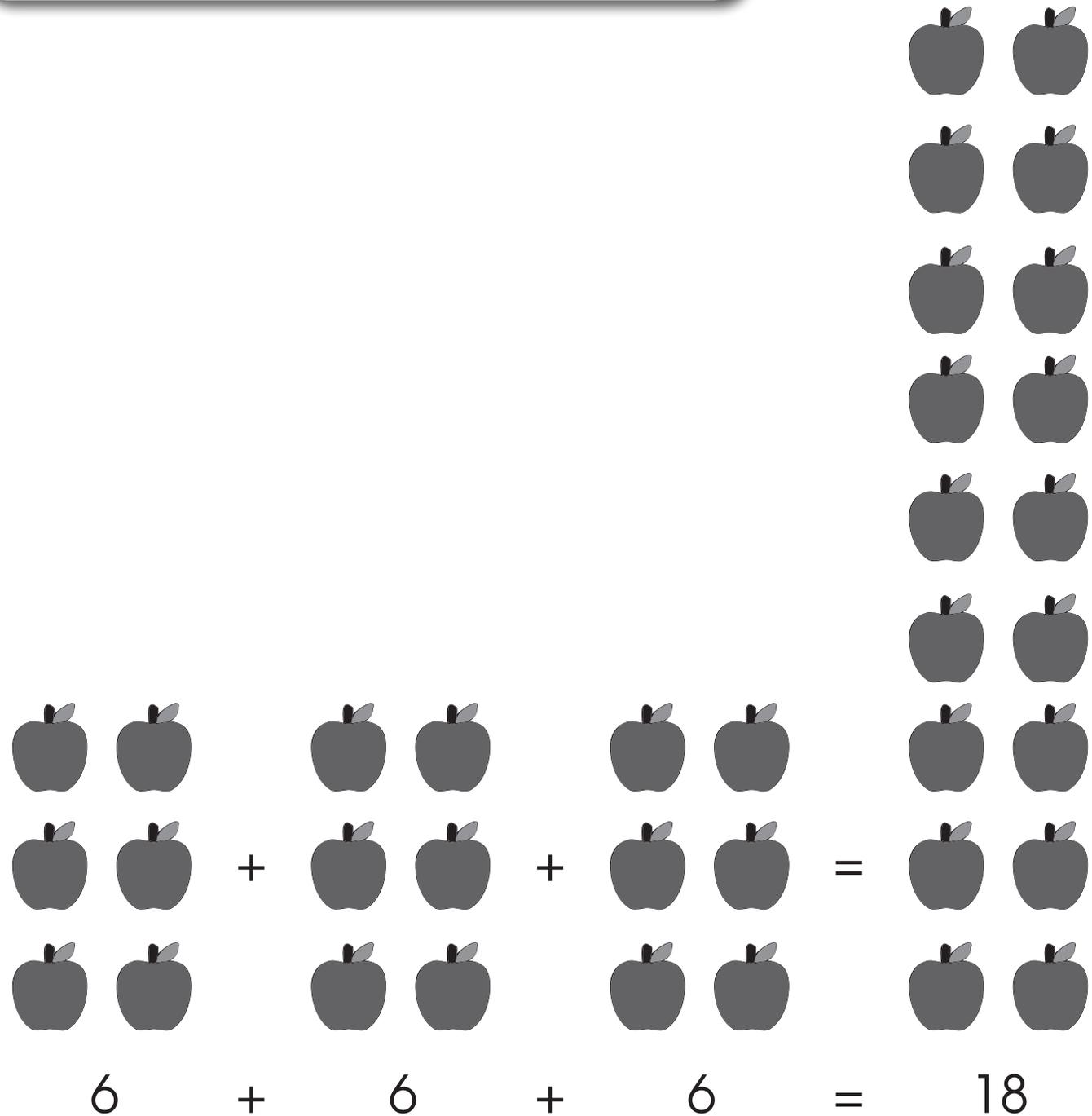
Additive Thinking			Multiplicative Thinking		
○	+ 3	○○○○	○	x 3	○○○
○○	+ 3	○○○○○	○○	x 3	○○ ○○ ○○
○○○	+ 3	○○○○○○	○○○	x 3	○○○ ○○○ ○○○
○○○○	+ 3	○○○○○○○	○○○○	x 3	○○○○ ○○○○ ○○○○ ○○○○

- A proportional relationship exists when multiplicative thinking is present.

Display Master: Apple Addition



Display Master: Apple Multiplication



or

$$3 \times 6 = 18$$

Display Master: Fruit Punch A

3 cups of orange juice are used for every cup of cranberry juice when making fruit punch.

Cups of cranberry juice x	Process		Cups of orange juice y
	Add	Multiply	
1			3
2			6
3			
4			
10			
x			

Display Master: Fruit Punch B

3 cups of orange juice are used for every cup of cranberry juice when making fruit punch.

Cups of cranberry juice x	Process		Cups of orange juice y
	Add	Multiply	
1	$1 + 2$	$3(1)$	3
2	$2 + 4$	$3(2)$	6
3			
4			
10			
x			

Display Master: Fruit Punch C

Cups of cranberry juice x	Process: Multiply	Cups of orange juice y
1	$3(1)$	3
2	$3(2)$	6
3	$3(3)$	9
4	$3(4)$	12
10	$3(10)$	—
x	$3(x)$	—

Display Master: Fruit Punch D

Cups of cranberry juice x	Process: Multiply	Cups of orange juice y
1	$3(1)$	3
2	$3(2)$	6
3	$3(3)$	9
4	$3(4)$	12
10	$3(10)$	30
x	$3(x)$	$3x$

Therefore, $y = 3x$

Display Master: Fruit Punch E

$$\frac{2}{6} = \frac{3}{9}$$

Display Master: Fruit Punch F

$$\frac{2}{6} = \frac{1}{3}$$

$$\frac{3}{9} = \frac{1}{3}$$

Therefore, the ratios are proportional.

Display Master: How Old? A

James was 4 years old when his sister Lisa was born.

Lisa's age x	Process		James' age y
	Add	Multiply	
1			5
2			6
3			

Display Master: How Old? B

James was 4 years old when his sister Lisa was born.

Lisa's age x	Process		James' age y
	Add	Multiply	
1	$1 + 4$	$5(1)$	5
2	$2 + 4$	$3(2)$	6
3			
12			
x			

Display Master: How Old? C

Lisa's age x	Process: Add	James' age y
1	$1 + 4$	5
2	$2 + 4$	6
3	$3 + 4$	7
12	$12 + 4$	_____
x	$x + 4$	_____

Display Master: How Old? D

Lisa's age x	Process: Add	James' age y
1	$1 + 4$	5
2	$2 + 4$	6
3	$3 + 4$	7
12	$12 + 4$	16
x	$x + 4$	$x + 4$

Therefore, $y = x + 4$

Display Master: How Old? E

$$\frac{1}{5} \qquad \frac{2}{6}$$

Display Master: How Old? F

$$\frac{1}{5} = \frac{1}{5}$$

$$\frac{2}{6} = \frac{1}{3}$$

Therefore, the ratios are not proportional.

Display Master: Grapes and Apples A

Julie is making a fruit salad. The recipe asks for 4 apples for every 1 bunch of grapes.

Display Master: Grapes and Apples B

Bunches of grapes x	Process		Number of apples y
	Add	Multiply	
1			4
2			
3			
4			
x			

Display Master: Grapes and Apples C

Bunches of grapes x	Process		Number of apples y
	Add	Multiply	
1	$1 + 3$	$4(1)$	4
2	$2 + 6$	$4(2)$	8
3			
4			
x			

Display Master: Grapes and Apples D

Bunches of grapes x	Process	Number of apples y
1	$4(1)$	4
2	$4(2)$	8
3	$4(3)$	12
4	$4(4)$	16
x	$4(x)$	

Display Master: Grapes and Apples E

Bunches of grapes x	Process	Number of apples y
1	$4(1)$	4
2	$4(2)$	8
3	$4(3)$	12
4	$4(4)$	16
x	$4(x)$	$4x$

Therefore, $y = 4x$