Display Master: Key Idea: Writing Proportions From Word Problems

- A proportion from a word problem can be written in multiple formats and still accurately describe the scenario.

Display Master: Basketball A

Robert makes 12 shots for every 50 he tries. He has made 24 shots; therefore, he has attempted 100 shots. Set up a proportion that represents Robert's basketball statistics.

Display Master: Basketball B

Robert makes 12 shots for every 50 he tries. He has made 24 shots; therefore, he has attempted 100 shots. Set up a proportion that represents Robert's basketball statistics.

Display Master: Basketball C

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
$\frac{\text{Shots made}}{\text{Shots attempted}}$	____	=	____

Solve

What is the most efficient method to prove proportionality?

Check

Is my answer reasonable? How do I know?

Display Master: Basketball D

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would I set this up? (use the format)

Units	**Ratio 1**		**Ratio 2**
$\frac{\text{Shots made}}{\text{Shots attempted}}$	$\frac{12}{50}$	=	$\frac{24}{100}$

Solve

What is the most efficient method to prove proportionality?

Check

Is my answer reasonable? How do I know?

Display Master: Basketball E

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would I set this up? (use the format)

Units	**Ratio 1**		**Ratio 2**
Shots made / Shots attempted	12 / 50	=	24 / 100

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**		**Ratio 2**
Shots made / Shots attempted	12 x 2 / 50 x 2	=	24 / 100

Units	**Ratio 1**	**Ratio 2**
	1,200	1,200
Shots made / Shots attempted	12 / 50	24 / 100

Check

Is my answer reasonable? How do I know?

Display Master: Basketball F

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would I set this up? (use the format)

Units	**Ratio 1**		**Ratio 2**
Shots made / Shots attempted	12 / 50	=	24 / 100

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**		**Ratio 2**
	1,200		1,200
Shots made / Shots attempted	12 / 50	=	24 / 100

Units	**Ratio 1**		**Ratio 2**
Shots attempted / Shots made	50 / 12	=	100 / 24

Check

Is my answer reasonable? How do I know?

Display Master: Basketball G

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would I set this up? (use the format)

Units	**Ratio 1**		**Ratio 2**
Shots made / Shots attempted	12 / 50	=	24 / 100

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**	**Ratio 2**
	1,200	1,200
Shots made / Shots attempted	12 / 50	= 24 / 100

Units	**Ratio 1**	**Ratio 2**
Shots attempted / Shots made	50 / 12	= 100 / 24

Units	**Ratio 1**	**Ratio 2**	**Units**
Shots made / Shots made	12 / 24	= 50 / 100	Shots attempted / Shots attempted

Check

Is my answer reasonable? How do I know?

Display Master: Basketball H

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would I set this up? (use the format)

Units	**Ratio 1**		**Ratio 2**
Shots made / Shots attempted	12 / 50	=	24 / 100

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**	**Ratio 2**
	1,200	1,200
Shots made / Shots attempted	12 / 50	= 24 / 100

Units	**Ratio 1**	**Ratio 2**
Shots attempted / Shots made	50 / 12	= 100 / 24

Units	**Ratio 1**	**Ratio 2**	**Units**
Shots made / Shots made	12 / 24	= 50 / 100	Shots attempted / Shots attempted

Units	**Ratio 1**	**Ratio 2**	**Units**
Shots made / Shots made	24 / 12	= 100 / 50	Shots attempted / Shots attempted

Check

Is my answer reasonable? How do I know?

Display Master: Basketball I

Understand

What is the question?

We are looking for the proportion that represents Robert's basketball statistics.

Plan

What quantities am I comparing?

Shots made and shots attempted

What do I know?

12 shots made out of 50 shots attempted; 24 shots made out of 100 shots attempted

What quantities go together?

12 shots made and 50 shots attempted; 24 shots made and 100 shots attempted

How would I set this up? (use the format)

Units	Ratio 1		Ratio 2
$\frac{\text{Shots made}}{\text{Shots attempted}}$	$\frac{12}{50}$	=	$\frac{24}{100}$

Solve

What is the most efficient method to prove proportionality?

Units	Ratio 1	Ratio 2
	1,200	1,200
$\frac{\text{Shots made}}{\text{Shots attempted}}$	$\frac{12}{50}$	$\frac{24}{100}$

Units	Ratio 1	Ratio 2
	1,200	1,200
$\frac{\text{Shots attempted}}{\text{Shots made}}$	$\frac{50}{12}$	$\frac{100}{24}$

Units	Ratio 1	Ratio 2	Units
	1,200	1,200	
$\frac{\text{Shots made}}{\text{Shots made}}$	$\frac{12}{24}$	$\frac{50}{100}$	$\frac{\text{Shots attempted}}{\text{Shots attempted}}$

Units	Ratio 1	Ratio 2	Units
	1,200	1,200	
$\frac{\text{Shots made}}{\text{Shots made}}$	$\frac{24}{12}$	$\frac{100}{50}$	$\frac{\text{Shots attempted}}{\text{Shots attempted}}$

Check

Is my answer reasonable? How do I know?

My answers are reasonable because we proved a relationship exists and all cross products are the same, proving proportionality.

Display Master: Basketball J

Units	Ratio 1		Ratio 2
Shots made / Shots attempted	12 / 50	=	24 / 100

Display Master: Mowing Lawns A

Lucy receives $25 for mowing 2 lawns. At this rate, she would make $175 for mowing 14 lawns. Set up a proportion that represents Lucy's rate for mowing lawns.

Display Master: Mowing Lawns B

Lucy receives $25 for mowing 2 lawns. At this rate, she would make $175 for mowing 14 lawns. Set up a proportion that represents Lucy's rate for mowing lawns.

Display Master: Mowing Lawns C

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
$\frac{\text{Dollars made}}{\text{Lawns mowed}}$	____	=	____

Solve

What is the most efficient method to prove proportionality?

Check

Is my answer reasonable? How do I know?

Display Master: Mowing Lawns D

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
$\frac{\text{Dollars made}}{\text{Lawns mowed}}$	$\frac{25}{2}$	=	$\frac{175}{14}$

Solve

What is the most efficient method to prove proportionality?

Check

Is my answer reasonable? How do I know?

Display Master: Mowing Lawns E

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**		**Ratio 2**
Dollars made / Lawns mowed	25 x 7 / 2 x 7	=	175 / 14

Units	**Ratio 1**		**Ratio 2**
	350		350
Dollars made / Lawns mowed	25 / 2		175 / 14

Check

Is my answer reasonable? How do I know?

Display Master: Mowing Lawns F

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**		**Ratio 2**
	350		350
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Units	**Ratio 1**		**Ratio 2**
Lawns mowed / Dollars made	2 / 25	=	14 / 175

Check

Is my answer reasonable? How do I know?

Display Master: Mowing Lawns G

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**		**Ratio 2**
	350		350
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Units	**Ratio 1**		**Ratio 2**
Lawns mowed / Dollars made	2 / 25	=	14 / 175

Units	**Ratio 1**		**Ratio 2**	**Units**
Dollars made / Dollars made	25 / 175	=	2 / 14	Lawns mowed / Lawns mowed

Check

Is my answer reasonable? How do I know?

Display Master: Mowing Lawns H

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**		**Ratio 2**
	350		350
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Units	**Ratio 1**		**Ratio 2**
Lawns mowed / Dollars made	2 / 25	=	14 / 175

Units	**Ratio 1**	**Ratio 2**	**Units**
Dollars made / Dollars made	25 / 175 =	2 / 14	Lawns mowed / Lawns mowed

Units	**Ratio 1**	**Ratio 2**	**Units**
Dollars made / Dollars made	175 / 25 =	14 / 2	Lawns mowed / Lawns mowed

Check

Is my answer reasonable? How do I know?

Display Master: Mowing Lawns I

Understand

What is the question?

We are looking for the proportion that represents Lucy's rate for mowing lawns.

Plan

What quantities am I comparing?

Dollars made and lawns mowed

What do I know?

$25 made for 2 lawns mowed; $175 made for 14 lawns mowed

What quantities go together?

$25 made and 2 lawns mowed; $175 made and 14 lawns mowed

How would i set this up? (Use the format)

Units	**Ratio 1**		**Ratio 2**
Dollars made / Lawns mowed	25 / 2	=	175 / 14

Solve

What is the most efficient method to prove proportionality?

Units	**Ratio 1**	**Ratio 2**
	350	350
Dollars made / Lawns mowed	25 / 2	175 / 14

Units	**Ratio 1**	**Ratio 2**
	350	350
Lawns mowed / Dollars made	2 / 25	14 / 175

Units	**Ratio 1**	**Ratio 2**	**Units**
	350	350	
Dollars made / Dollars made	25 / 175	2 / 14	Lawns mowed / Lawns mowed

Units	**Ratio 1**	**Ratio 2**	**Units**
	350	350	
Dollars made / Dollars made	175 / 25	14 / 2	Lawns mowed / Lawns mowed

Check

Is my answer reasonable? How do I know?

My answers are reasonable because we proved a relationship exists and all cross products are the same, proving proportionality.

Display Master: Mowing Lawns J

Units	Ratio 1		Ratio 2
$\frac{\text{Dollars made}}{\text{Lawns mowed}}$	$\frac{25}{2}$	=	$\frac{175}{14}$

Display Master: Mowing Lawns K

A

Units	Ratio 1		Ratio 2
Dollars made / Lawns mowed	25 / 2	=	175 / 14

B

Units	Ratio 1		Ratio 2
Dollars made / Lawns mowed	25 / 2	=	14 / 175

C

Units	Ratio 1		Ratio 2
Lawns mowed / Dollars made	25 / 2	=	14 / 175

D

Units	Ratio 1		Ratio 2
Lawns mowed / Dollars made	2 / 25	=	14 / 175

E

Units	Ratio 1		Ratio 2	Units
Dollars made / Dollars made	25 / 175	=	2 / 14	Lawns mowed / Lawns mowed

F

Units	Ratio 1		Ratio 2	Units
Dollars made / Dollars made	175 / 25	=	2 / 14	Lawns mowed / Lawns mowed

G

Units	Ratio 1		Ratio 2	Units
Dollars made / Dollars made	25 / 175	=	14 / 2	Lawns mowed / Lawns mowed

H

Units	Ratio 1		Ratio 2	Units
Dollars made / Dollars made	175 / 25	=	14 / 2	Lawns mowed / Lawns mowed