Lesson 5.4 Understanding Inverse Proportion

Tell whether two quantities are in inverse proportion. If so, find the constant of proportionality.

Example

x	2	4	6
y	12	6	4

For each pair of values, x and y:

$xy = 2 \cdot 12$ $xy = 4 \cdot 6$ $xy = 6 \cdot 4$
   $= 24$ $= 24$ $= 24$

> Check to see whether the product of x and y is a constant value.

Is x inversely proportional to y? __Yes__

If yes, what is the constant of proportionality? __24__

Complete.

1.

x	2	3	6
y	18	12	6

For each pair of values, x and y:

$2 \cdot 18 =$ _____   _____ $\cdot 12 =$ _____   _____ $\cdot$ _____ $=$ _____

Is x inversely proportional to y? _____

If yes, what is the constant of proportionality? _____

2.

x	2	5	15
y	25	10	3

For each pair of values, x and y:

$2 \cdot 25 =$ _____ $5 \cdot$ _____ $=$ _____   _____ $\cdot$ _____ $=$ _____

Is x inversely proportional to y? _____

If yes, what is the constant of proportionality? _____

Tell whether two quantities are in inverse proportion. If so, find the constant of proportionality.

3.

x	2	3	4
y	9	6	4.5

Is x inversely proportional to y? _____

If yes, what is the constant of proportionality?_____

4.

x	30	40	60
y	10	8	5

Is x inversely proportional to y? _____

If yes, what is the constant of proportionality?_____

5.

x	2	3	4
y	1	$\frac{2}{3}$	$\frac{1}{2}$

Is x inversely proportional to y? _____

If yes, what is the constant of proportionality?_____

Tell whether two quantities are in inverse proportion. If so, find the constant of proportionality.

Example

$$\frac{2}{3}y = \frac{6}{x}$$

$$\frac{2}{3}y = \frac{6}{x}$$

$$\frac{2}{3}y \cdot \frac{3}{2} = \frac{6}{x} \cdot \frac{3}{2}$$

$$y = \frac{9}{x}$$

$$y \cdot x = \frac{9}{x} \cdot x$$

$$xy = 9$$

Rewrite the equation as an equivalent equation in the form

$$xy = k \text{ or } y = \frac{k}{x}.$$

Can the original equation be written as two equivalent equations in the form

$xy = k$ and $y = \frac{k}{x}$? ___Yes___

Is the equation an inverse proportion, and if so, what is the constant of proportionality?
___Yes. The constant of proportionality is 9.___

Complete.

6. $3y = \frac{9}{x}$

$$3y = \frac{9}{x}$$

$$3y \cdot \underline{\hspace{1.5cm}} = \frac{9}{x} \cdot \underline{\hspace{1.5cm}}$$

$$y = \frac{\boxed{}}{x}$$

$$y \cdot x = \frac{\boxed{}}{x} \cdot x$$

$$yx = \underline{\hspace{1.5cm}}$$

Can the original equation be written as two equivalent equations in the form

$xy = k$ and $y = \frac{k}{x}$? _____

Is the equation an inverse proportion, and if so, what is the constant of proportionality?

_____

Complete.

7. $y + 6x = 8$

$$y + 6x = 8$$

$$y + 6x - \text{_____} = 8 - \text{_____}$$

$$\text{_____} = \text{_____} - \text{_____}$$

Can the original equation be written as two equivalent equations in the form
$xy = k$ and $y = \dfrac{k}{x}$? _____

Is the equation an inverse proportion, and if so, what is the constant of proportionality?

_____

Tell whether two quantities are in inverse proportion. If so, find the constant of proportionality

8. $2y = \dfrac{4}{x}$

9. $3y = \dfrac{x}{9}$

10. $6x = \dfrac{2}{y}$