Lesson 5.1

Tell whether each equation represents a direct proportion. If so, identify the constant of proportionality.

5. \(3y = \frac{1}{2}x\) \hspace{1cm} Y = \boxed{\frac{1}{2}} \times \frac{1}{3} \hspace{1cm} \text{YES!}

6. \(2y - \frac{x}{2} = x\) \hspace{1cm} \frac{2y}{2} = \frac{x + \frac{5}{2}}{2} \hspace{1cm} \text{NO!}

7. \(p = 0.25q\)

4. \(x = \frac{1}{4} y\) \hspace{1cm} \text{YES!} \hspace{1cm} C_o p = 4 \hspace{1cm} K = 4

8. \(4.5a = b + 12\) \hspace{1cm} 4.5x = y + 12 \hspace{1cm} \text{NO!}

4.5x - 12 = y
Homework Review

1. Jim rode his bike at a steady rate of 20 miles per hour. Given that his distance, \( d \) miles, is directly proportional to the time he rides, \( t \) hours, identify the constant of proportionality and write a direct proportion equation.

\[
k = 20 \quad \text{cop}
\]

\[
y = kx\quad \text{d=20t}
\]

2. Emily worked in a florist shop and earned $12 per hour. Given that the amount she earned, \( w \) dollars, is directly proportional to the time she worked, \( t \) hours, identify the constant of proportionality and write a direct proportion equation.

\[
k = 12
\]

\[
y = kt
\]

\[
w = 12t
\]

3. \( y \) is directly proportional to \( x \), and \( y = 10 \) when \( x = 15 \). Write a direct proportion equation that relates \( x \) and \( y \).

\[
k = \frac{y}{x}
\]

\[
k = \frac{10}{15}
\]

\[
k = \frac{2}{3}
\]

\[
y = \frac{2}{3}x
\]
17. y is directly proportional to x, and \( y = 33 \) when \( x = 11 \). Write a direct proportion equation that relates \( x \) and \( y \).

\[
\frac{y}{x} = \frac{33}{11} \quad \Rightarrow \quad k = 3
\]

\[
y = 3x
\]

18. Karl hikes 3 miles in 45 minutes. Given that his distance is directly proportional to the time he walks, find the constant of proportionality and write an equation to represent the direct proportion.

\[
d = \frac{1}{15}t
\]

19. Paul pays $20 to download 16 songs. Given that the amount he pays is directly proportional to the number of songs he downloads, find the constant of proportionality and write a direct proportion equation.

\[
k = \frac{20}{16} = \frac{5}{4}
\]

\[
k = 1.25
\]

**COP = 1.25**

\[
C = 1.25s
\]

**C = total cost**

**s = # of songs**

**define your variables**