Unit: Ratios and Proportions

Name: _____

Lesson 5: Direct Variation with Equations

Hour: Key

Assignment 5

The variables x and y vary directly. Use the variables to write an equation that relates x and y.

1. $y = 4; x = 2$

$\frac{4}{2} = \frac{2K}{2} \Rightarrow y = 2x$

$2 = K$

2. $y = 25; x = 5$

$\frac{25}{5} = \frac{5K}{5} \Rightarrow y = 5x$

$5 = K$

3. $y = 45; x = 40$

$\frac{45}{40} = \frac{40K}{40} \Rightarrow y = \frac{9}{8}x$

$\frac{9}{8} = K$

4. $y = 20; x = 12$

$\frac{20}{12} = \frac{12K}{12} \Rightarrow y = \frac{5}{3}x$

$\frac{5}{3} = K$

Tell whether x and y show direct variation. Explain your reasoning.

5. $xy = 3$ $y = \frac{3}{x}$ NO

6. $x = \frac{1}{3}y$ $y = \frac{x}{(\frac{1}{3})}$ $y = 3x$ yes

7. $y - 5 = 2x$ $y = 2x + 5$ NO

8. $\frac{x}{y} = 2$ $x = 2y$ $y = \frac{1}{2}x$ yes

Write a direct variation equation. Then solve.

9. Suppose y varies directly as x. If y = 3 when x = 15, find x when y = 5.

$3 = K(15)$

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

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

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

$x = 25$

10. Suppose y varies directly as x. If y = -7 when x = -14, find x when y = 10.

$-7 = K(-14)$

$\frac{1}{2} = K$

$y = \frac{1}{2}x$

$10 = \frac{1}{2}x$

$x = 20$

11. Suppose y varies directly as x. If x = 15 when y = 12, find x when y = 21.

$12 = K(15)$

$\frac{4}{5} = K$

$y = \frac{4}{5}x$

$21 = \frac{4}{5}x$

$x = 26\frac{1}{4}$

12. Suppose y varies directly as x. If x = 24 when y = 8, find y when x = 33.

$8 = K(24)$

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

$y = \frac{1}{3}x$

$y = \frac{1}{3}(33)$

$y = 11$

13. Suppose y varies directly as x. If x = 27 when y = 6, find x when y = 2.

$6 = K(27)$

$\frac{2}{9} = K$

$y = \frac{2}{9}x$

$2 = \frac{2}{9}x$

$x = 9$