

Today is 10/25/17

Get out calculator and Note packet

Pick up My Favorite No Slip

**Goal: Find the slope given two points**

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Agenda:

My Favorite NO

Go Over HW

Slope p. 15

No Homework

Quiz Friday on slope  
and proportions

## HW Answers

1. no

5. no

9. 15

2. no

6. yes

10. 6

3. yes

7. 5

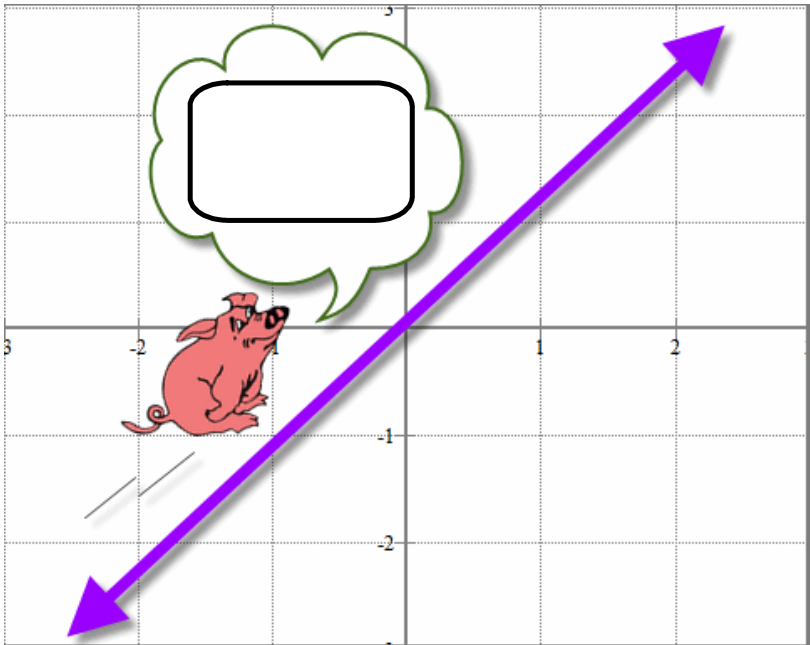
11. 9

4. yes

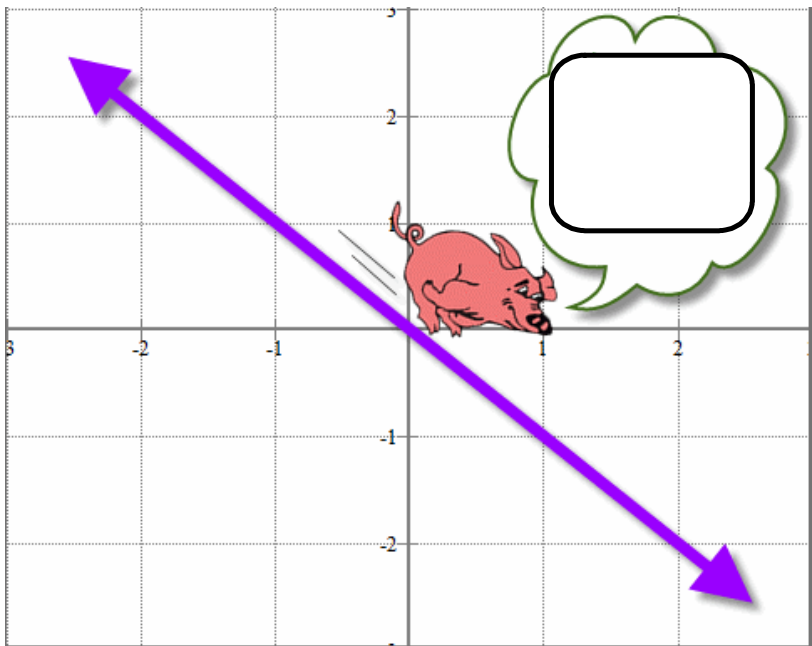
8. 4.2

12. 16

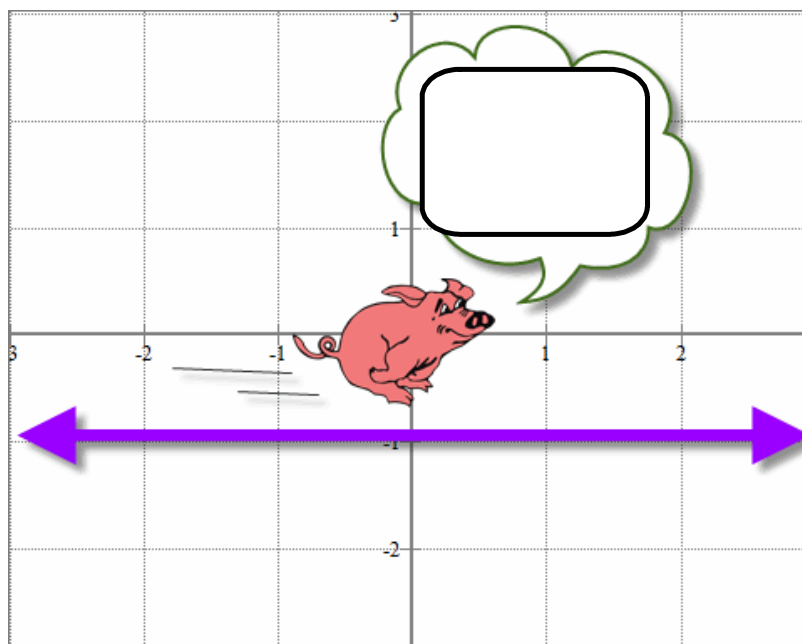
Types of slope



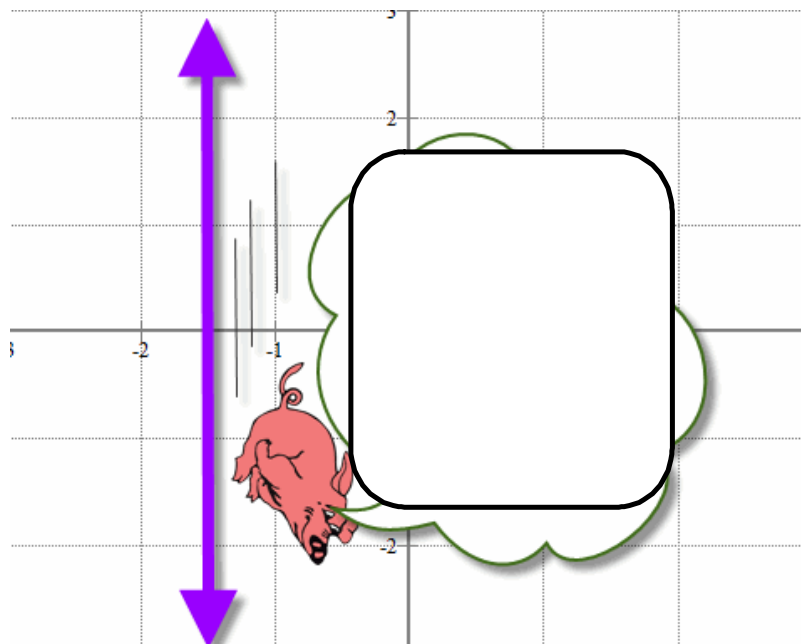
Types of slope



## Types of slope



## Types of slope



## Find Slope

Slope of a Line	$m = \frac{\text{rise}}{\text{run}}$ or $m = \frac{y_2 - y_1}{x_2 - x_1}$ , where $(x_1, y_1)$ and $(x_2, y_2)$ are the coordinates of any two points on a nonvertical line
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**Example 1** Find the slope of the line that passes through  $(-3, 5)$  and  $(4, -2)$ .

Let  $(-3, 5) = (x_1, y_1)$  and  $(4, -2) = (x_2, y_2)$ .

$$\begin{aligned}
 m &= \frac{y_2 - y_1}{x_2 - x_1} && \text{Slope formula} \\
 &= \frac{-2 - 5}{4 - (-3)} && y_2 = -2, y_1 = 5, x_2 = 4, x_1 = -3 \\
 &= \frac{-7}{7} && \text{Simplify.} \\
 &= -1
 \end{aligned}$$

**Example 2** Find the value of  $r$  so that the line through  $(10, r)$  and  $(3, 4)$  has a slope of  $-\frac{2}{7}$ .

$$\begin{aligned}
 m &= \frac{y_2 - y_1}{x_2 - x_1} && \text{Slope formula} \\
 -\frac{2}{7} &= \frac{4 - r}{3 - 10} && m = -\frac{2}{7}, y_2 = 4, y_1 = r, x_2 = 3, x_1 = 10 \\
 -\frac{2}{7} &= \frac{4 - r}{-7} && \text{Simplify.} \\
 -2(-7) &= 7(4 - r) && \text{Cross multiply.} \\
 14 &= 28 - 7r && \text{Distributive Property} \\
 -14 &= -7r && \text{Subtract 28 from each side.} \\
 2 &= r && \text{Divide each side by } -7.
 \end{aligned}$$

**Exercises**

Find the slope of the line that passes through each pair of points.

$$\begin{array}{l} \text{1. } \overset{1}{(4, 9)}, \overset{2}{(1, 6)} \\ \quad \times \quad \times \\ \hline \frac{6 - 9}{1 - 4} = \frac{-3}{-3} = \textcircled{1} \end{array}$$

$$\begin{array}{l} \text{2. } \overset{1}{(-4, -1)}, \overset{2}{(-2, -5)} \\ \quad \times \quad \times \\ \hline \frac{-5 - -1}{-2 - -4} \\ = \frac{-4}{-2} = \textcircled{-2} \end{array}$$



Determine the value of  $r$  so the line that passes through each pair of points has the given slope.

$$10. \overset{1}{(6, 8)}, \overset{2}{(r, -2)}, m = 1$$

$$\frac{-2-8}{r-6} = \frac{-10}{r-6}$$

$$\frac{-10}{r-6} = \frac{1}{1}$$

$$-10 = r - 6$$

$$\begin{array}{r} -10 = r - 6 \\ +6 \quad +6 \\ \hline -4 = r \end{array}$$

$$11. \overset{1}{(-1, -3)}, \overset{2}{(7, r)}, m = \frac{3}{4}$$

$$\frac{r-(-3)}{7-(-1)} = \frac{r+3}{8}$$

$$\frac{r+3}{8} = \frac{3}{4}$$

$$24 = 4(r+3)$$

$$24 = 4r + 12$$

$$\begin{array}{r} 24 = 4r + 12 \\ -12 \quad -12 \\ \hline 12 = 4r \end{array}$$

$$\frac{12}{4} = \frac{4r}{4}$$

$$3 = r$$

Finish problems on page 15 on loose leaf

- |                   |                   |                    |        |
|-------------------|-------------------|--------------------|--------|
| 1. 1              | 6. 0              | 11. $\frac{3}{4}$  |        |
| 2. -2             | 7. $\frac{4}{5}$  | 12. 6              | 16. 2  |
| 3. undefined      | 8. $-\frac{3}{4}$ | 13. -5             | 17. 10 |
| 4. $\frac{4}{3}$  | 9. 0              | 14. 11             | 18. 2  |
| 5. $\frac{2}{-7}$ | 10. -4            | 15. $7\frac{2}{3}$ |        |

$$\textcircled{3.} \begin{matrix} 1 & 2 \\ (-4, -1), & (-4, -5) \\ x & y & x & y \end{matrix}$$

$$\frac{-5 - -1}{-4 - -4} = \frac{-4}{0}$$

undefined

$$4. \begin{matrix} 1 & 2 \\ (2, 1), & (8, 9) \\ x & y & x & y \end{matrix}$$

$$\frac{9 - 1}{8 - 2} = \frac{8}{6} = \left(\frac{4}{3}\right)$$

5.  $(14, -8), (7, -6)$

$x_1 \quad y_1 \quad x_2 \quad y_2$

$$\frac{-6 - -8}{7 - 14} = \frac{2}{-7}$$

6.  $(4, -3), (8, -3)$

$x_1 \quad y_1 \quad x_2 \quad y_2$

$$\frac{-3 - -3}{8 - 4} = \frac{0}{4}$$

0

$$\begin{array}{cc} 1 & 2 \\ 7. & (1, -2), (6, 2) \\ & \times \quad + \quad \times \quad + \\ & \frac{2 - (-2)}{6 - 1} = \frac{4}{5} \end{array}$$

$$\begin{array}{cc} 1 & 2 \\ 8. & (2, 5), (6, 2) \\ & \times \quad + \quad \times \quad + \\ & \frac{2 - 5}{6 - 2} = \frac{-3}{4} \end{array}$$

$$\begin{array}{l}
 \text{9. } \overset{1}{(4, 3.5)}, \overset{2}{(-4, 3.5)} \\
 \frac{3.5 - 3.5}{-4 - 4} = \frac{0}{-8} \\
 \textcircled{0}
 \end{array}$$

$$\begin{array}{l}
 \text{12. } \overset{1}{(2, 8)}, \overset{2}{(r, -4)} \quad m = -3 \\
 \frac{-4 - 8}{x - 2} = \frac{-12}{x - 2} \\
 \frac{-12}{x - 2} = \frac{-3}{1} \\
 -12 = -3(x - 2) \\
 -12 = -3x + 6 \\
 -6 \qquad \qquad -6 \\
 \hline
 -18 = -3x \\
 \frac{-18}{-3} = \frac{-3x}{-3} \\
 \textcircled{6 = x}
 \end{array}$$

$$13. \begin{matrix} 1 & 2 \\ x & y & x & y \end{matrix} (7, -5), (6, r), m = 0$$

$$\frac{r - (-5)}{6 - 7} = \frac{r + 5}{-1}$$

$$\frac{r + 5}{-1} = \frac{0}{1}$$

$$\begin{matrix} r + 5 = 0 \\ -5 & -5 \end{matrix}$$

$$r = -5$$

$$14. \begin{matrix} 1 & 2 \\ x & y & x & y \end{matrix} (r, 4), (7, 1), m = \frac{3}{4}$$

$$\frac{1 - 4}{7 - r} = \frac{-3}{7 - r}$$

$$\frac{-3}{7 - r} = \frac{3}{4}$$

$$-12 = 3(7 - r)$$

$$\begin{matrix} -12 & = & 21 & - & 3r \\ -21 & & -21 & & \end{matrix}$$

$$\begin{matrix} -33 & = & -3r \\ -3 & & -3 \end{matrix}$$

$$11 = r$$

$$\textcircled{15.} \begin{matrix} 1 & 2 \\ (7, 5), & (r, 9), & m = 6 \\ x & y & x & y \end{matrix}$$

$$\frac{9-5}{r-7} = \frac{6}{1}$$

$$\frac{4}{r-7} = \frac{6}{1}$$

$$4 = 6(r-7)$$

$$\begin{array}{r} 4 = 6r - 42 \\ +42 \quad \quad +42 \end{array}$$

$$\frac{46}{6} = \frac{6r}{6}$$

$$\frac{7\frac{2}{3}}{1} = r$$

$$\textcircled{16.} \begin{matrix} 1 & 2 \\ (10, r), & (3, 4), & m = -\frac{2}{7} \\ x & y & x & y \end{matrix}$$

$$\frac{4-r}{3-10} = \frac{4-r}{-7}$$

$$\frac{4-r}{-7} = -\frac{2}{7}$$

$$7(4-r) = 14$$

$$\begin{array}{r} 28 - 7r = 14 \\ -28 \quad \quad -28 \\ \hline -7r = -14 \\ \frac{-7r}{-7} = \frac{-14}{-7} \end{array}$$

$$r = 2$$



$$17. \begin{matrix} 1 & 2 \\ x & y & x & y \end{matrix} (10, 4), (-2, r), m = -0.5$$

$$\frac{r-4}{-2-10} = \frac{r-4}{-12}$$

$$\frac{r-4}{-12} = \frac{-0.5}{1}$$

$$\begin{matrix} r-4 = 6 \\ +4 & +4 \end{matrix}$$

$$\boxed{r=10}$$

$$18. \begin{matrix} 1 & 2 \\ x & y & x & y \end{matrix} (r, 3), (7, r), m = -\frac{1}{5}$$

$$\frac{r-3}{7-r} = \frac{-1}{5}$$

$$-1(7-r) = 5(r-3)$$

$$-7+r = 5r-15$$

$$\begin{matrix} +15 & +15 \end{matrix}$$


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$$8+r = 5r$$

$$\begin{matrix} -r & -r \end{matrix}$$

$$8 = 4r$$

$$\frac{8}{4} = \frac{4r}{4}$$

$$\boxed{2=r}$$