

8-6 Slope (Pages 400–404)

The steepness, or **slope**, of a line can be expressed as the ratio of the vertical change to the horizontal change. The vertical change (or the change up or down) is called the **change in y**. The horizontal change (or change right or left) is called the **change in x**.

Finding the Slope of a Line	<p>You can find the slope of a line by using the coordinates of any two points on the line.</p> <ul style="list-style-type: none"> • To find the change in y, subtract the y-coordinate of the first point from the y-coordinate of the second point. • To find the change in x, subtract the x-coordinate of the first point from the x-coordinate of the second point. • Write this ratio to find the slope of the line: $\text{slope} = \frac{\text{change in } y}{\text{change in } x}$.
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EXAMPLE

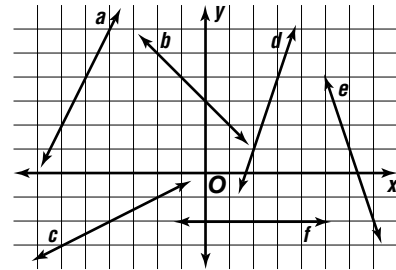
Find the slope of the line that contains the points $(-5, 2)$ and $(7, 4)$.

$$\begin{aligned} \frac{\text{change in } y}{\text{change in } x} &= \frac{2\text{nd } y\text{-coordinate} - 1\text{st } y\text{-coordinate}}{2\text{nd } x\text{-coordinate} - 1\text{st } x\text{-coordinate}} && \text{Note that order is important.} \\ &= \frac{4 - 2}{7 - (-5)} \\ &= \frac{2}{12} \text{ or } \frac{1}{6} \end{aligned}$$

PRACTICE

Determine the slope of each line named below.

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|-------------|-------------|-------------|
| 1. <i>a</i> | 2. <i>b</i> | 3. <i>c</i> |
| 4. <i>d</i> | 5. <i>e</i> | 6. <i>f</i> |



Find the slope of the line that contains each pair of points.

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|---------------------------|------------------------|---------------------------|
| 7. $K(3, 9), L(2, 4)$ | 8. $A(1, 0), B(-3, 1)$ | 9. $M(8, -6), N(8, 4)$ |
| 10. $S(1, -5), T(-3, -4)$ | 11. $W(1, 6), Z(2, 6)$ | 12. $P(-4, -5), Q(-3, 7)$ |

13. Carpentry A ladder leans against a building. What is the slope of the ladder if the top of the ladder is 15 feet above the ground and the base of the ladder is 3 feet from the building?



14. Standardized Test Practice Find the slope of the line that contains the points $(-3, 2)$ and $(-6, 0)$.

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|-----------------|-----------------|------------------|------------------|
| A $\frac{2}{3}$ | B $\frac{2}{9}$ | C $-\frac{2}{9}$ | D $-\frac{2}{3}$ |
|-----------------|-----------------|------------------|------------------|

Answers: 1. 2 -1 2. -1 3. $\frac{2}{1}$ 4. 3 5. -3 6. 0 7. 5 8. $-\frac{4}{1}$ 9. no slope 10. $-\frac{4}{1}$ 11. 0 12. 12 13. 5 14. A