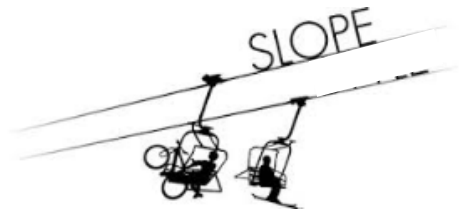


Chapter 6 Linear Functions



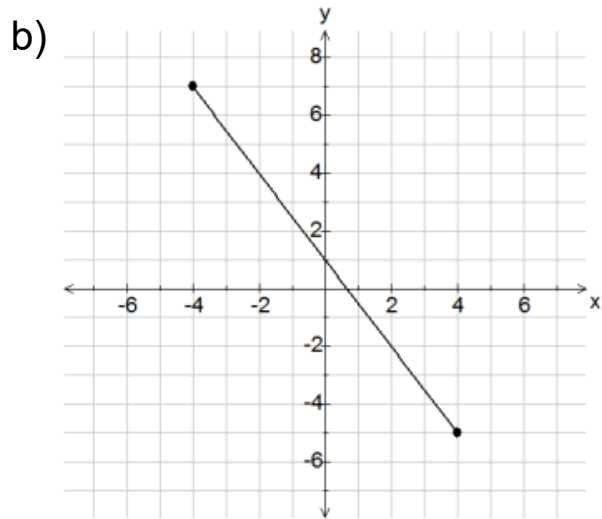
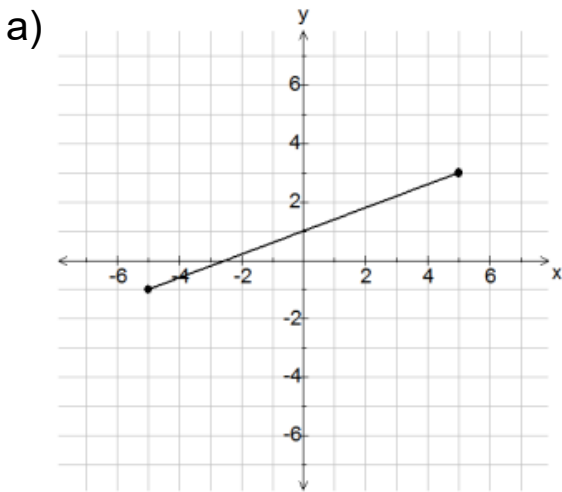
↳ Sec 6.1 to 6.6

Sec 6.1: Slope of a Line

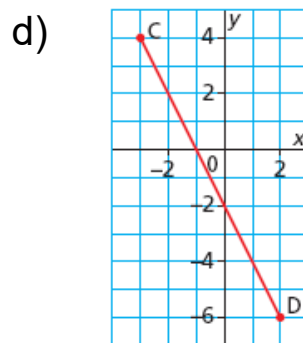
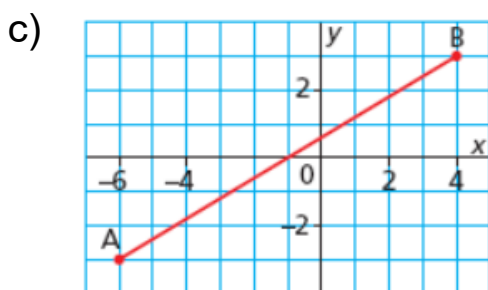
The slope of a line is a number representing the steepness of the line.

$$\text{Slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{\text{Rise}}{\text{Run}}$$

Example 1 Determine the slope of each line.



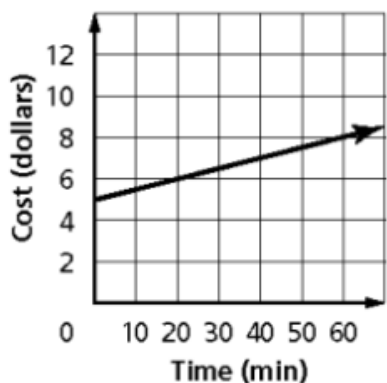
Your Turn



A line slanting upwards to the right has a positive slope. ↗

A line slanting downwards to the right has a negative slope. ↘

e) **Long Distance Service**



Be careful with the scale on the graph. Each block is not always one!

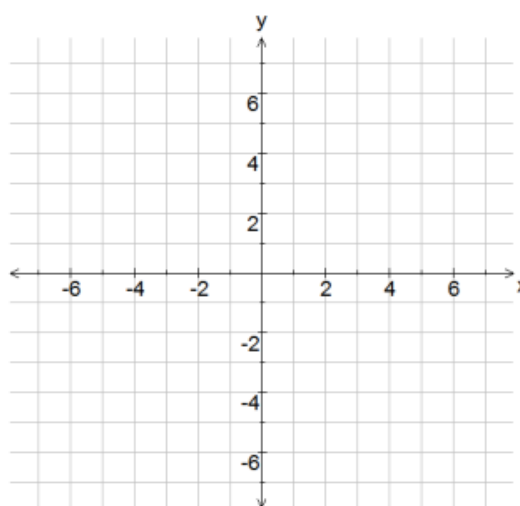
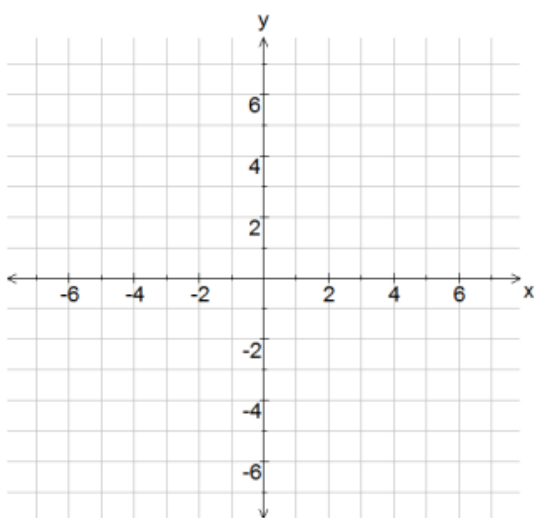
Always reduce to lowest terms.

Example 2 Draw a line segment with each given slope.

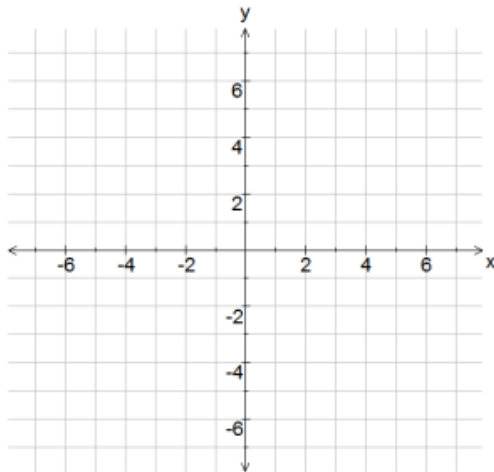
↳ **Hint:** Choose any point to start on the graph. Then follow the directions of the slope.

a) $\frac{7}{5}$

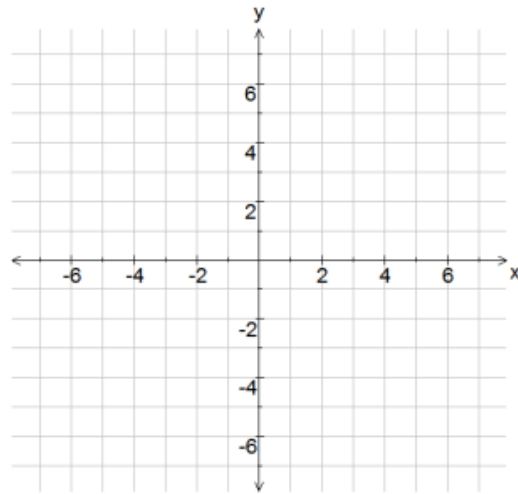
b) $-\frac{3}{8}$



c) -5



d) 0



The slope of a line can also be found when you are given two points and no graph!

Use this formula:

$$\text{Slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{y_2 - y_1}{x_2 - x_1}$$

To avoid making errors label your points as (x_1, y_1) and (x_2, y_2) .

Example 3

Determine the slope of the line that passes through ...

a) $C(-5, -3)$ and $D(2, 1)$

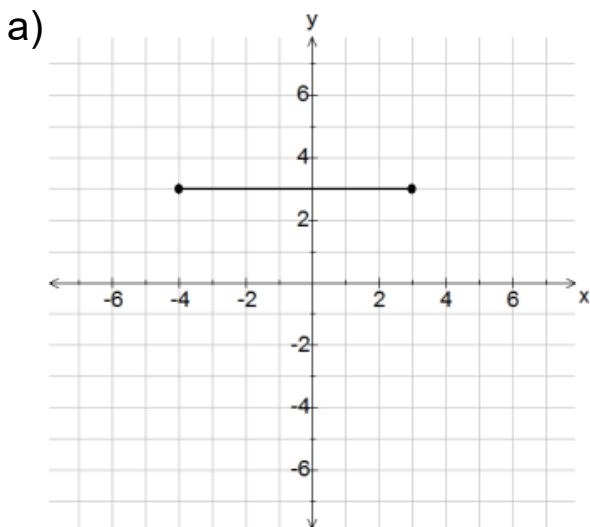
b) $E(4, -5)$ and $F(8, 6)$

Your Turn

c) $P(-3, -1)$ and $Q(4, -11)$

Example 4 Special Slopes

Refer to the graphs below and determine the missing information.



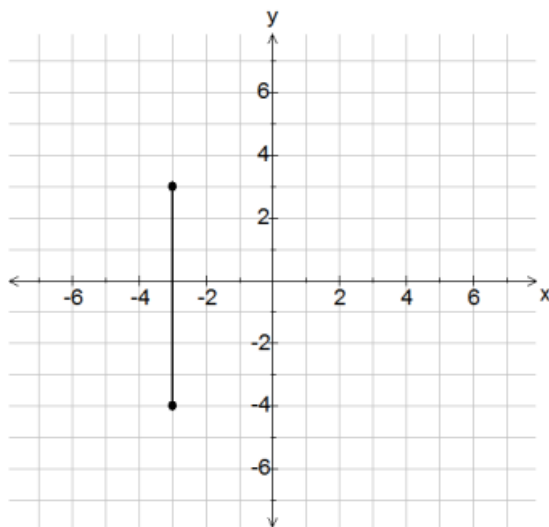
Points:

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Equation:

Horizontal Lines have a slope of zero because there is no vertical change.
The equation is always $y = \#$.

b)



Points:

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

Equation:

Vertical Lines have an undefined slope because there is no horizontal change. The equation is always $x = \#$.

Summary

- Slope can be found from a graph $\frac{\text{Rise}}{\text{Run}}$
- Slope can be found using a formula $\frac{y_2 - y_1}{x_2 - x_1}$
- The greater the number the steeper the slope. The sign indicates the direction on the line not its steepness!
- A horizontal line is a special case with a slope of zero and equation $y = \#$.
- A vertical line is a special case with an undefined slope and equation $x = \#$.

Work Book Questions

p.339 - 341 #6ab, 8abcd, 9abc,
11abc, 13a (i) (iii), 17abcd

Extra Practice Questions

p.339 - 341 #4ab, 5abcd, 6cd,
7abcd, 9d, 13a (ii) (iv), 19ab
Worksheet