

Name: _____

Date: _____

Notes

Algebra Section 5.2

Pages 292-299



Goal: “You will write an equation of a line using points on the line”

Situation 1: Write the equation of a line in slope – intercept form given the slope and one point:

1. Plug in x , y , and m **Ex:** slope: -4 , passes through $(-1, 3)$

$$3 = -4(-1) + b$$

2. Solve for b $b = -1$

3. Plug in m and b $y = -4x - 1$

Try These:

Write the equation of the line with the given slope that passes through the given point.

Ex: $(6, 3)$, slope = 2

Ex: $(6, 3)$ slope: -2

$$y = 2x - 9$$

$$y = -2x + 15$$

Situation 2: Write the equation of the line in slope – intercept form that passes through the given points:

1. Find the slope **Ex:** $(-2, 5)$ $(2, -1)$

$$m = -\frac{3}{2}$$

2. Plug in m and one point (x and y) $-1 = -\frac{3}{2}(2) + b$

3. Solve for b $2 = b$

4. Plug in m and b $y = -\frac{3}{2}x + 2$

Try These:

Write the equation of the line in slope – intercept form that passes through the given points:

Ex: $(3, 0)$ $(2, -4)$

Ex: $(1, -2)$ $(5, 4)$

$$y = 4x - 12$$

$$y = \frac{3}{2}x - \frac{7}{2}$$

Situation 3 Write an equation for the linear function f with the given values.

1. Write the ordered pairs. $(-2, 15)$ $(1, 9)$ **Ex:** $f(-2)=15; f(1)=9$

2. Find the slope $m = -2$

3. Solve for b $b = 11$

4. Plug in m and b $y = -2x + 11$

Try These:

Ex: $f(4) = 9$ and $f(-4) = -7$

$$y = 2x + 1$$

Ex: $f(-2) = 10$ and $f(4) = -2$

$$y = -2x + 6$$

Ex: $f(2) = 8$ and $f(4) = -2$

$$y = -5x + 18$$

Word Problems:

1. Your gym membership costs \$33 per month after an initial membership fee. You paid a total of \$228 after 6 months. Write an equation for the total cost as a function of the number attended. Then find the total cost for 9 months.

$$228 = 33(6) + b$$

$$228 = 198 + b$$

$$b = 30$$

$$y = 33x + 30$$

$$y = 33x + 30$$

$$y = 33(9) + 30$$

$$y = 327$$

2. In BMX racing, racers purchase a one-year membership to a track. They also pay an entry fee for each race at that track. One racer paid a total of \$125 for 5 races. A second racer paid a total of \$170 for 8 races. How much does each race cost? How much does the membership fee cost? Write an equation to find the total cost for any number of races.

$$(5, 125) \quad (8, 170)$$

$$125 = 15(5) + b$$

$$125 = 75 + b$$

$$50 = b$$

$$m = 15$$

$$y = 15x + 50$$

3. For science class you need to know the Celsius equivalent of a room temperature of 70° Fahrenheit. To estimate, you use the facts that 32° Fahrenheit is equivalent to 0°C and that 212°F is equivalent to 100°C. Write an equation to represent degrees Celsius, C , based on degrees Fahrenheit, F .

$$(32, 0) \quad (212, 100)$$

$$0 = \frac{5}{9}(32) + b$$

$$0 = \frac{160}{9} + b$$

$$-\frac{160}{9} = b$$

$$m = \frac{5}{9}$$

$$C = \frac{5}{9}F - \frac{160}{9}$$