Warm Up February 13, 2019

1.) Write the equation of a line with :

A. a slope of 0 and y-intercept of 6. $y = 6$

B. a slope of 3/4 and a y-intercept of 0. $y = \frac{3}{4}x$

C. an undefined slope with an x-intercept of -3 $x = -3$

2.) Find the perimeter of square with a side length of $4x + 2$.

add all sides = all sides

$4(4x+2) = 16x+8$ units

2.

3.) Twice the larger of two consecutive integers is equal to fifteen less than three times the smaller.

n = 1st #

$n+1$ = 2nd #

$2(n+1) = 3n-15$

$2n+2 = 3n-15$

$-2n \quad -2n$

$2 = n-15$

$+15 \quad +15$

$17 = n$

15

$n = 17$

$n+1 = 18$

WRITING LINEAR EQUATIONS

(Given a Point and Slope)

To write the equation of the line passing through point (x_1, y_1) with slope (m), you can use the point-slope formula:

Point-Slope Formula:

$$y - y_1 = m(x - x_1)$$

Be sure to distribute and solve for y!

Point-Slope

1. (4, 1); slope = 2

x_1 y_1 m

$y-1=2(x-4)$

$y-1=2x-8$

$+1 \quad +1$

$y=2x-7$

Slope-Intercept Form

2. (2, 4); slope = $\frac{1}{2}$

x y m

$y=mx+b$

$4=\frac{1}{2}(2)+b$

$4=1+b$

$-1 \quad -1$

$3=b$

$y=\frac{1}{2}x+3$

3. (-6, 0); slope = $\frac{2}{3}$

x_1 y_1 m

$y - y_1 = m(x - x_1)$

$y - 0 = \frac{2}{3}(x - (-6))$

$y = \frac{2}{3}x + 4$

4. (-8, -1); slope = $-\frac{3}{4}$

x_1 y_1 m

$y - y_1 = m(x - x_1)$

$y - (-1) = \frac{-3}{4}(x - (-8))$

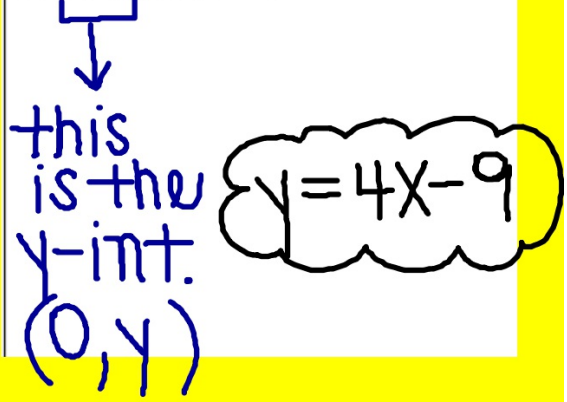
$y + 1 = \frac{-3}{4}x - 6$

$-1 \quad -1$

$y = \frac{-3}{4}x - 7$

5. (4, -3); slope = -1

6. (0, -9); slope = 4



Main Ideas/Questions	Notes/Examples
WRITING LINEAR EQUATIONS (Given Two Points)	To write a linear equation that passes through two points, (x_1, y_1) and (x_2, y_2), use the slope formula followed by the point-slope formula:

Slope Formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Point-Slope Formula

$$y - y_1 = m(x - x_1)$$

$x_1\ y_1 \quad x_2\ y_2$

1. (-3, 7) and (1, -1)

$$m = \frac{-1-7}{1-(-3)} = \frac{-8}{4}$$

$$m = -2$$

$$y - y_1 = m(x - x_1)$$

$$y - 7 = -2(x - (-3))$$

$$y - 7 = -2x - 6$$

$$+7 \qquad +7$$

$$y = -2x + 1$$

2. (-6, -7) and (3, -4)

$$m = \frac{-4 - (-7)}{3 - (-6)} = \frac{3}{9}$$

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

$$y - y_1 = m(x - x_1)$$

$$y - (-4) = \frac{1}{3}(x - 3)$$

$$y + 4 = \frac{1}{3}x - 1$$

$$-4 \qquad -4$$

$$y = \frac{1}{3}x - 5$$

3. (2, -1) and (4, -6)

$$m = \frac{-6-(-1)}{4-2} = \frac{-5}{2}$$

$$y+1 = \frac{-5}{2}(x-2)$$

$$y+1 = \frac{-5}{2}x+5$$

$$-1 \qquad -1$$

$$y = \frac{-5}{2}x+4$$

4. (1, 6) and (2, 5)

Challenge!

Which of the following linear equations has the greater y-intercept: the line containing the points (10, 20) and (15, 50), or the line containing the points (10, 20) and (15, 51)? Explain.

The mass of a package of 50 mints, including the container, is 131 grams. If half of the mints are removed, the total mass is 81 grams. If x is the mass of one mint and y is the total mass, what linear function describes the total mass?