## Warm Up

September 24, 2018

- 1.) Write the equation of a line with:
- A. a slope of o and y-intercept of 5. y = 5
- B. a slope of 3/4 and a y-intercept of o.  $\sqrt{1 + 1}$
- C. a slope of -1/2 and a y-intercept of -7.  $V = \overline{2} \times \overline{1}$
- 2.) Find the perimeter of square with a side length of 4x + 2.

3.) What is the rate of change for the function f(x) = 2.1x - 6 over the interval [13, 25]?  $\longrightarrow$   $\begin{bmatrix} x \\ y \end{bmatrix}$ 

$$f(b)-f(a) \rightarrow 3.1$$

## **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:

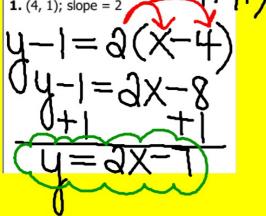
#### Point-Slope Formula:

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

\*Be sure to distribute and solve for y!\*

## Point-Slope

**1.** (4, 1); slope = 2



### Slope-Intercept Form

2. (2, 4); slope = 
$$\frac{1}{2}$$
 $y = Mx + b$ 
 $4 = \frac{1}{3}(a) + b$ 
 $4 = 1 + b$ 
 $5 = 3$ 
 $3 = 3$ 
 $3 = 3$ 

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

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

$$y-y=m(x-x_1)$$
 $y+1=-3-x-1$ 
 $y=-3-x-7$ 

#### Main Ideas/Questions

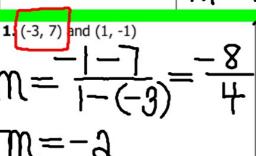
#### Notes/Examples

# 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

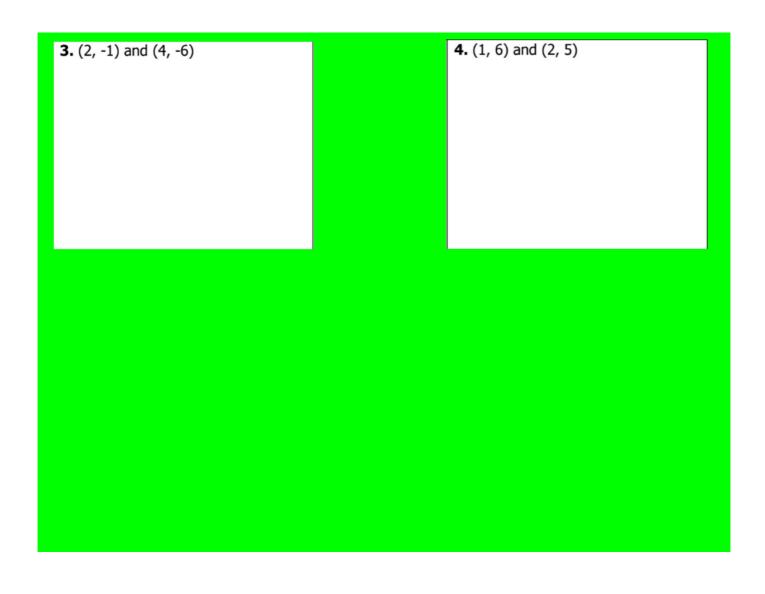


$$y-1=-3x-6$$
  
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$$y + 7 = \frac{1}{3}(x + 6)$$

$$y + 7 = \frac{1}{3}x + 2$$

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



#### Challenge!

Which of the following linear equations has the greater yintercept: the line containing the points (10, 20) and (15, 50) or the line containing the points (10, 20) and (15, 51)?

Explain.
$$\frac{50-30}{15-10} = \frac{30}{5} = 6$$

$$y-30 = 6(x-10)$$

$$\frac{-51-20}{15-10} = \frac{31}{5} = 6.2 \quad y-20 = 6.2(x-10) \\ y-20 = 6.2x-62 \\ (10,20)(15,50) \quad y=6.2x-62$$

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?

$$T_{m} = \frac{81 - 131}{35 - 50} = -\frac{50}{35} = 2$$

$$y-81=3(x-25)$$
  
 $y-81=3x-50$   
 $y=3x+31$ 

Each mint weighs 2 grams. The container weighs 31 grams.