

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Notes: Linear Equations in Different Forms

**Do Now: Find the equation of each linear relation in  $y = mx + b$  form.**

1) Find the equation of a line that passes through the point (1,4) and has a slope of  $-2$  in  $y = mx + b$  form.

2)

A typical cell phone plan has a fixed base fee that includes a certain amount of data and an overage charge for data use beyond the plan. A cell phone plan charges a base fee of \$62 and an overage charge of \$30 per gigabyte of data that exceed 2 gigabytes. If  $C$  represents the cost and  $g$  represents the total number of gigabytes of data, which equation could represent this plan when more than 2 gigabytes are used?

(1)  $C = 30 + 62(2 - g)$

(3)  $C = 62 + 30(2 - g)$

(2)  $C = 30 + 62(g - 2)$

(4)  $C = 62 + 30(g - 2)$

# **WE CAN WRITE EQUATIONS IN SO MANY DIFFERENT WAYS!!!!!!**

$$4 - 2y = 2x$$

1) Slope-Intercept Form:

2) Standard Form

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3) Point-Slope Form

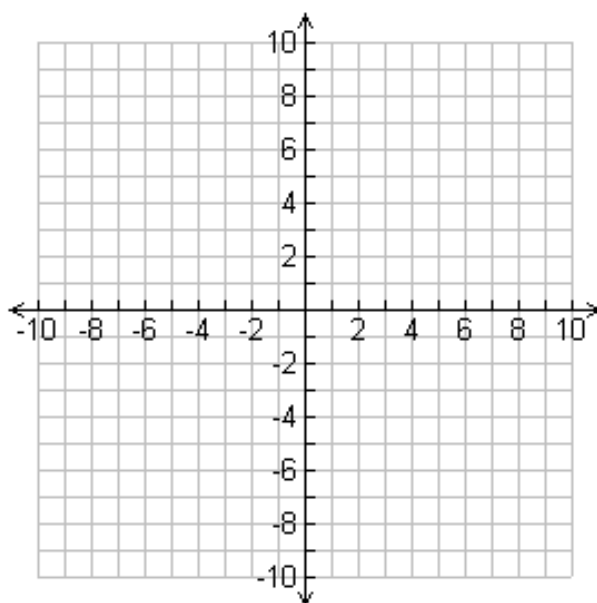
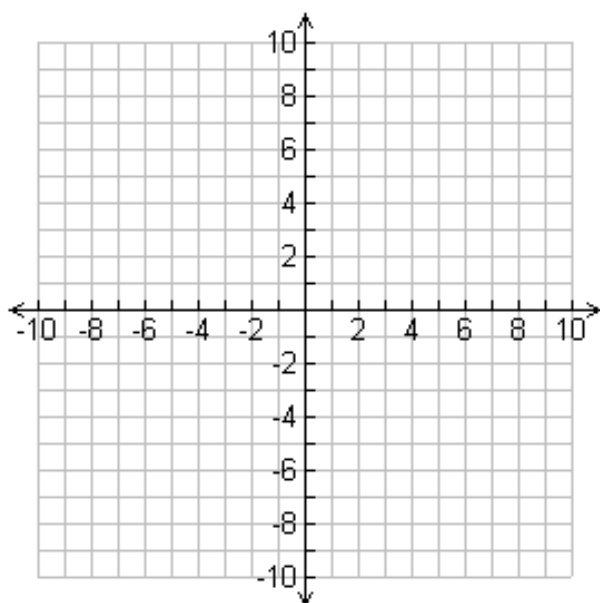
Ex: A line that passes through (2,1) and  $m = 2$ .

A line that passes through the point  $(4, -2)$  and has a slope of  $-1$ .

**Slope-Intercept Form**

**Point-Slope Form**

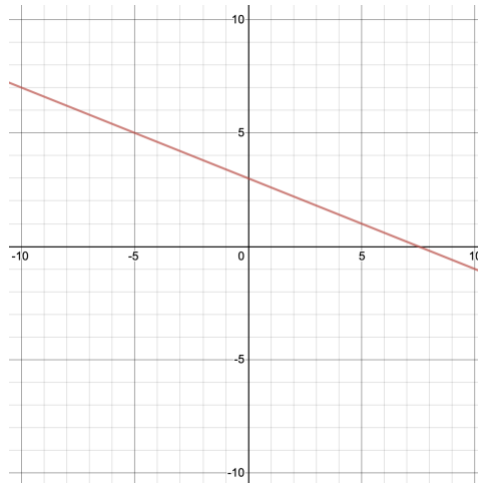
Using your equation, graph the line.



**Standard Form**

Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points  $(-3,4)$  and  $(6,1)$ . Sue wrote  $y - 4 = -\frac{1}{3}(x + 3)$  and Kathy wrote  $y = -\frac{1}{3}x + 3$ . Justify why both students are correct.

What is the equation to the following line?



**Point-Slope Form:**

**Slope-Intercept Form:**

**Standard Form:**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Classwork: Linear Equations in Different Forms

1) A line that passes through the point  $(-9,12)$  and has a slope of  $-\frac{3}{4}$ . Find the equation of this line in all three forms.

a) **Point-Slope Form**

b) **Slope-Intercept Form**

c) **Standard Form**

2) A line that passes through the points  $(-1, -10)$  and  $(2,10)$ . Find the equation of this line in all three forms.

a) **Point-Slope Form**

b) **Slope-Intercept Form**

c) **Standard Form**

3) The two points  $(-2,5)$  and  $(4,8)$  lie on the given line. Which point also lies on the line? (You may solve graphically or algebraically)

a)  $(0,7)$

b)  $(6,8)$

c)  $(8,10)$

d)  $(2,6)$

4) Write the equation of the relation in the following table in all three forms.

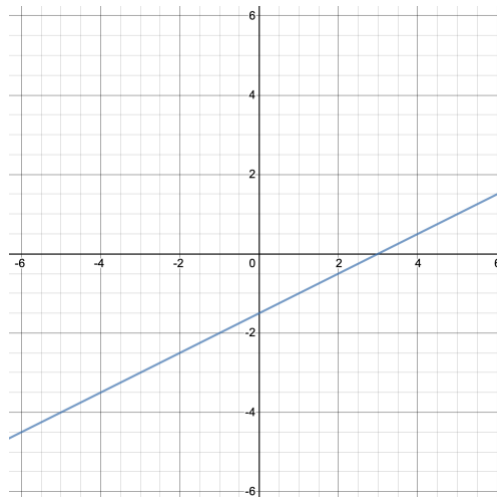
$x$	$y$
6	96.4
8	89.6
10	82.8
12	76
14	69.2

a) **Point-Slope Form**

b) **Slope-Intercept Form**

c) **Standard Form**

5) What is the equation to the following line in all three forms?



a) **Point-Slope Form**

b) **Slope-Intercept Form**

c) **Standard Form**

6) Latrell and Patrick were doing their algebra homework. They were asked to write the equation of the line that passes through the points  $(-5,8)$  and  $(10,2)$ . Latrell wrote  $y = -\frac{1}{5}x + 6$  and Patrick wrote the equation  $y + 8 = -\frac{1}{5}(x - 5)$ . Who is incorrect? Explain your reasoning.

7) In 2013, the United States Postal Service charged \$0.46 to mail a letter weighing up to 1 oz. and \$0.20 per ounces for each additional ounce. Which function would determine the cost, in dollars,  $y$ , of mailing a letter weighing  $x$  ounces where  $x$  is an integer greater than 1?

(1)  $y = 0.46x + 0.20$

(3)  $y = 0.46(x - 1) + 0.20$

(2)  $y = 0.20x + 0.46$

(4)  $y = 0.20(x - 1) + 0.46$