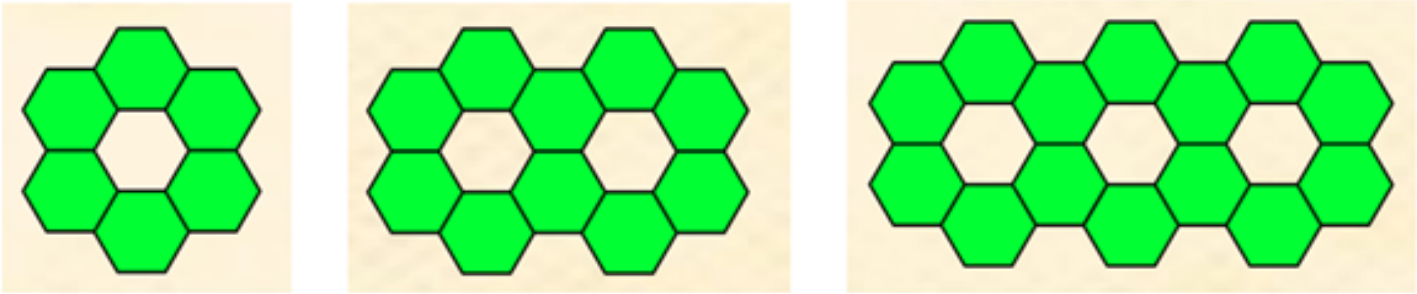
BEFORE YOU START ON TOUGH PATTERN TUESDAY:

- Write a new goal for **this class** for the 2nd 9 weeks on your blue slip of paper! A volunteer will tape them up to the #goals cabinet.

- A good goal is:
  - **Specific**
  - **Hard enough that you'll be proud if you reach it**
  - **Not too hard that it's unreachable**

Warmup $10/\left(\frac{5000 \cdot 3}{2 \cdot 500}\right)$



1) **Sketch step #4.**

2) **Complete the table:**

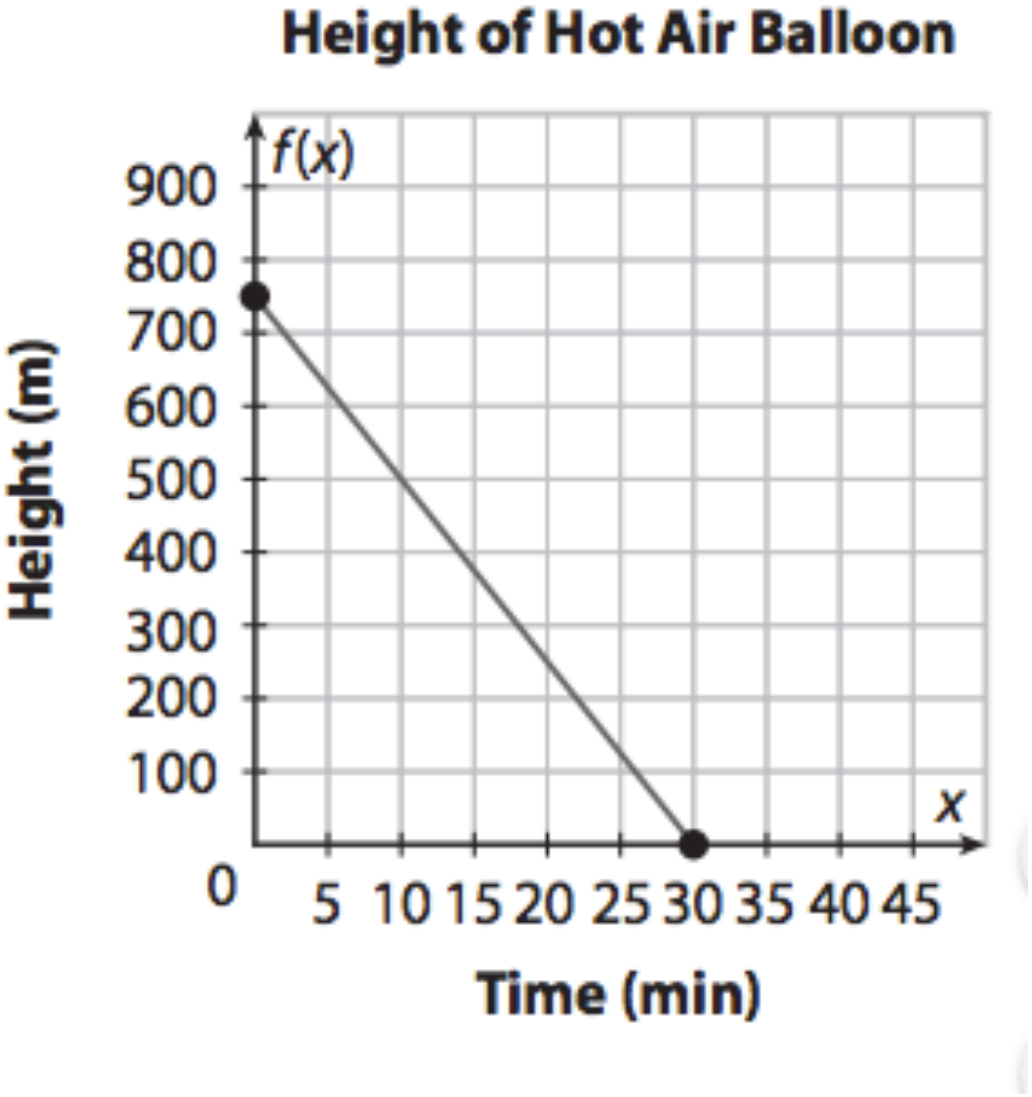
Step number (n)	1	2	3	4	5	10
Number of hexagons (h)	6	10	14	18	22	42

3) **Write an equation.** $\#hex = 4n+2$

“SEL Advisory Board”

- We need a homeroom representative to be on the SEL Advisory board.
- 1-2 meetings every 9 weeks.
- This group will:
  - Give input on our SEL lessons
  - Suggest SEL activities
  - Look for good videos
  - Make videos?

Interpret the intercepts.



Go over Homework

Reminder

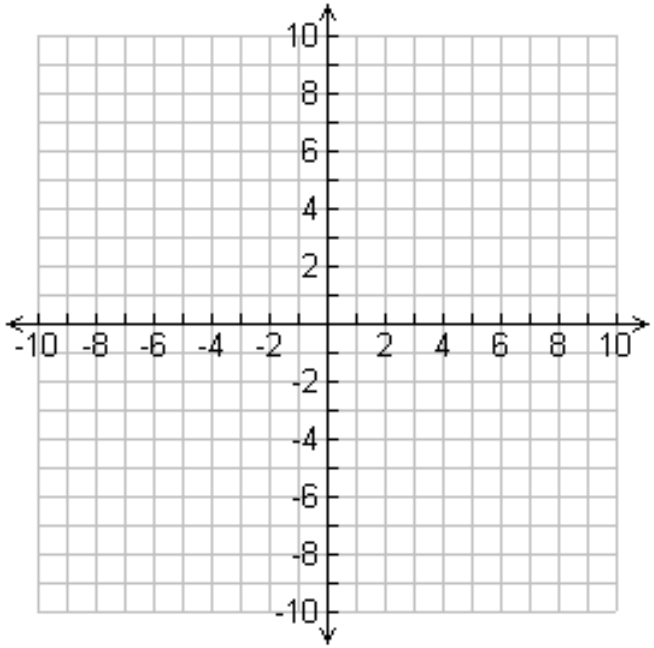
- Retakes for the Linear Quiz **MUST BE DONE TOMORROW.** See me if you would like some extra practice.

- Lunch study session today STRONGLY encouraged.

Graph 2 different ways!!!

1) Change it into standard form & find the intercepts
2) Change it into slope-intercept form

$$-2y = -3x + 6$$



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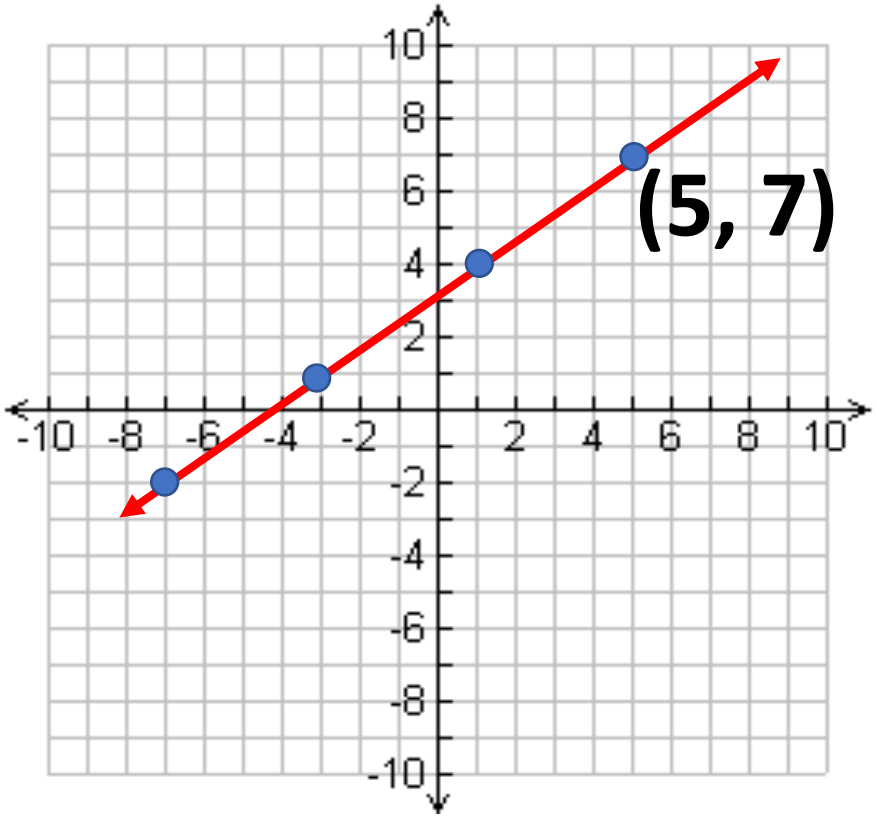
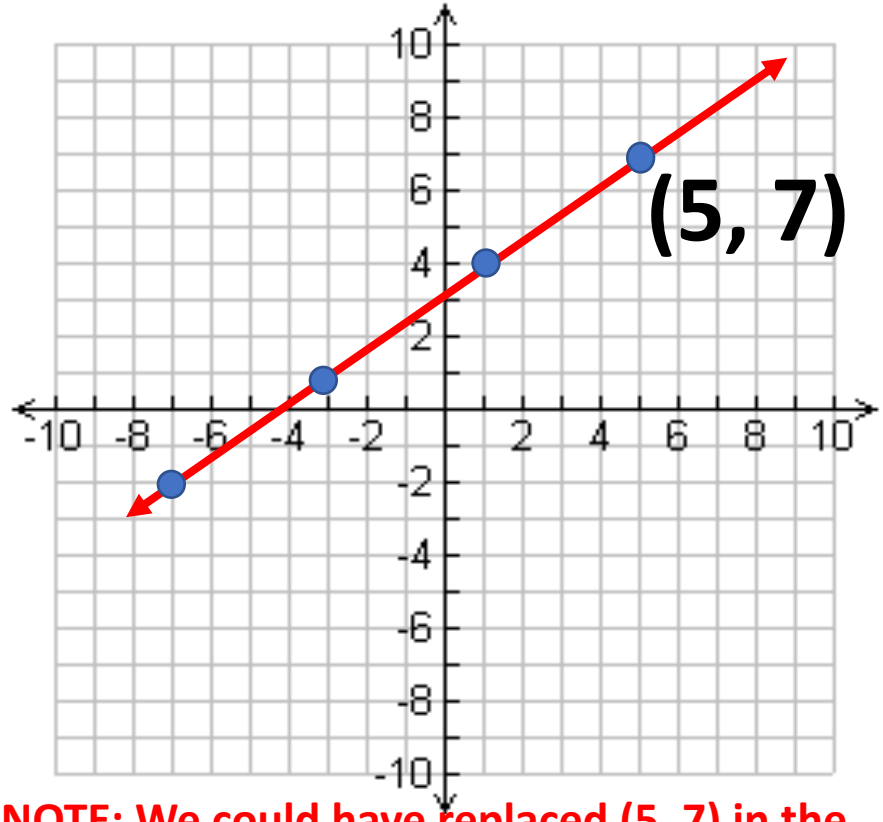
“Testing” a point

- **The slope of this line is ¾. Would the point (21, 19) be on this line? How could you check?**
- $\frac{19-7}{21-5} = \frac{12}{16} = \frac{3}{4}$
- **Would the point (-35, -13) be on this line?**
- $\frac{-13-7}{-35-5} = \frac{-20}{-40} = \frac{1}{2}$



Deriving "Point-Slope" Form

- **Any (x, y) point that would be on this line must make the equation work:**
- $\frac{y-7}{x-5} = \frac{3}{4}$
- **This is a point-slope equation!**
- **However, we don't like to have variables in the denominator, so we typically multiply both sides by the denominator to get:**
- $y - 7 = \frac{3}{4}(x - 5)$



NOTE: We could have replaced (5, 7) in the equation with any other from the line!

Point-Slope Form

- **The equation of a line with slope m that goes through a point (x_1, y_1) is:**

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

(Remember: x and y are variables. They stay as x and y. x_1, y_1 are points on the line!)

Why is point-slope form useful???

- **Many mathematicians MUCH prefer point-slope form to slope-intercept form.**
- **Most students don't like it at first, because it looks more complicated. But be open-minded.**
- **With slope-intercept form, you need the slope and the y-intercept.**
- **With point-slope form, you need the slope and literally ANY POINT!!!**
- **"Billy was saving $3.50 per day. After 12 days, he had $50."**
- **Instead of going back and calculating his original value, you can just write:**
- **$y - 50 = 3.50(x - 12)$**

Write an equation in point-slope form:

- Slope = $\frac{1}{6}$; (5, 1)

- Slope = 1; (-1, -4)

Write an equation in point-slope form:

- Slope = 2; (½, 1)

$$y-1=2\left(x-\frac{1}{2}\right)$$

- Slope = 0; (3, -4)

$$y+4=0(x-3)$$

$$\downarrow$$

$$y+4=0$$

$$\downarrow$$

$$y=-4$$

What is the point we know? What is the slope?

- $y + 2 = 6(x - 1)$

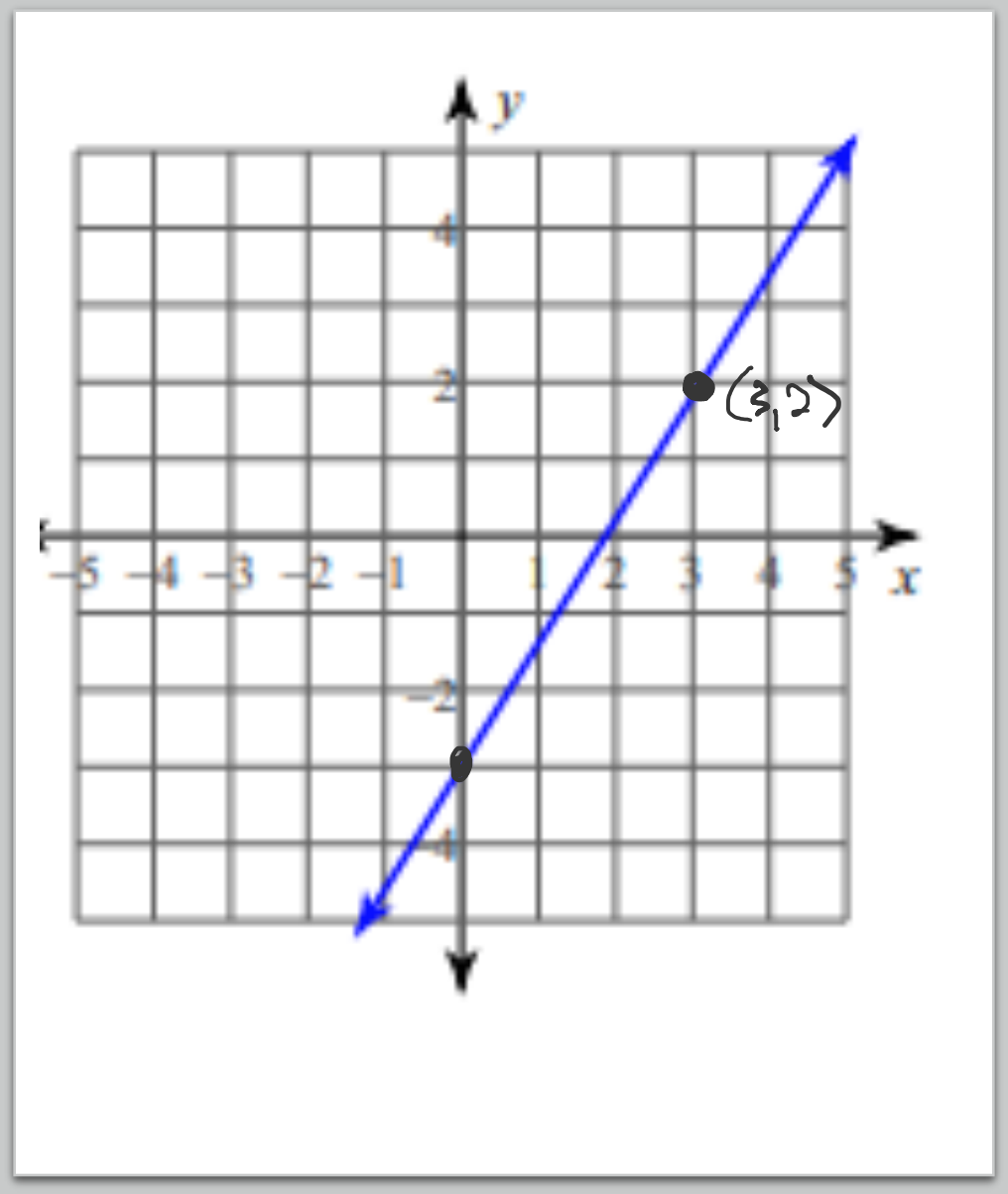
slope = 6
point = (1, -2)

- $y - 2 = 6(x + 1)$

slope = 6
point = (-1, 2)

Remember, to figure out what the "point" is, think:

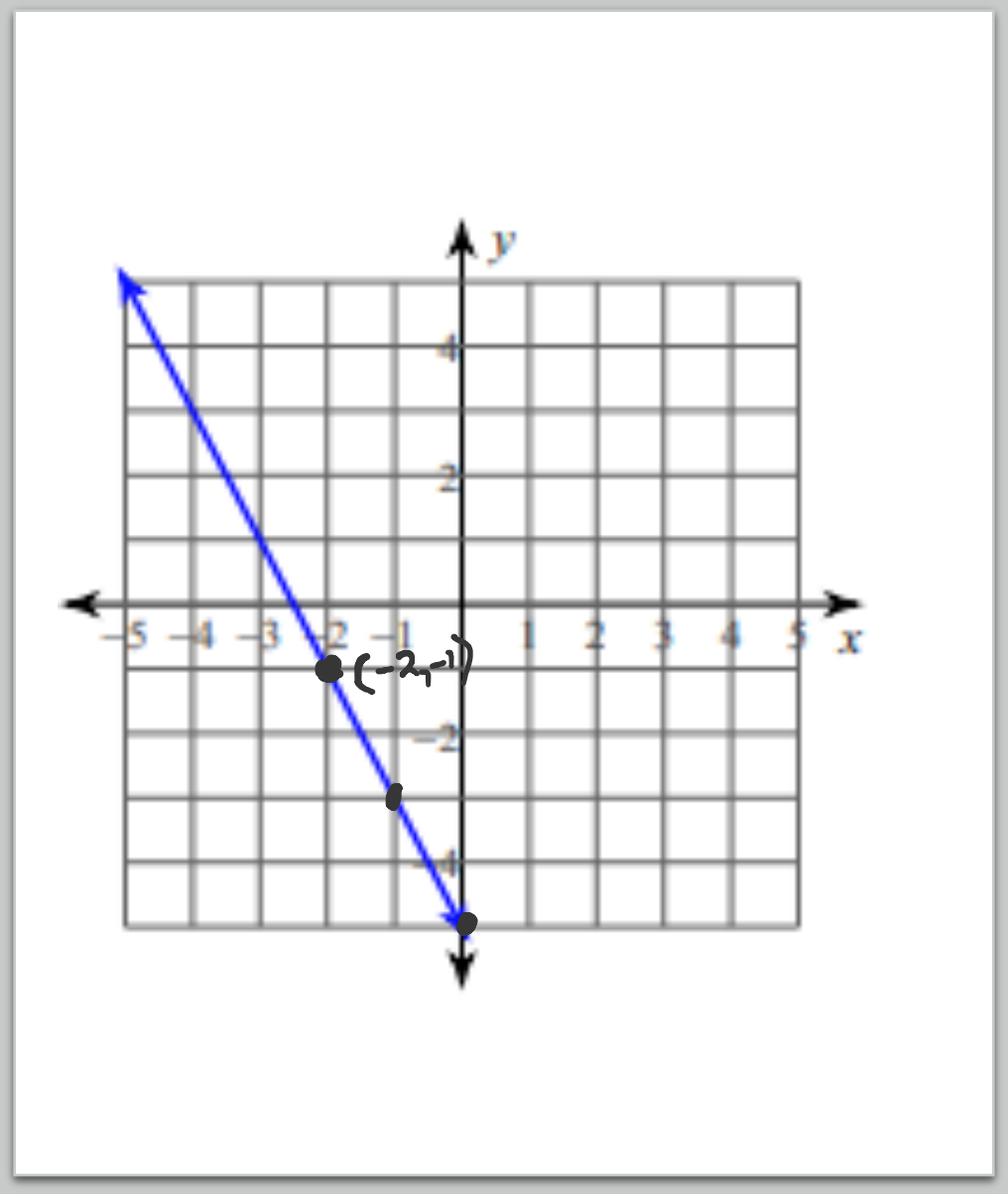
- **"What are we SUBTRACTING from x and y???"**



Write the equation in point-slope form AND slope-intercept form.

$y-2=\frac{5}{3}(x-3)$

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



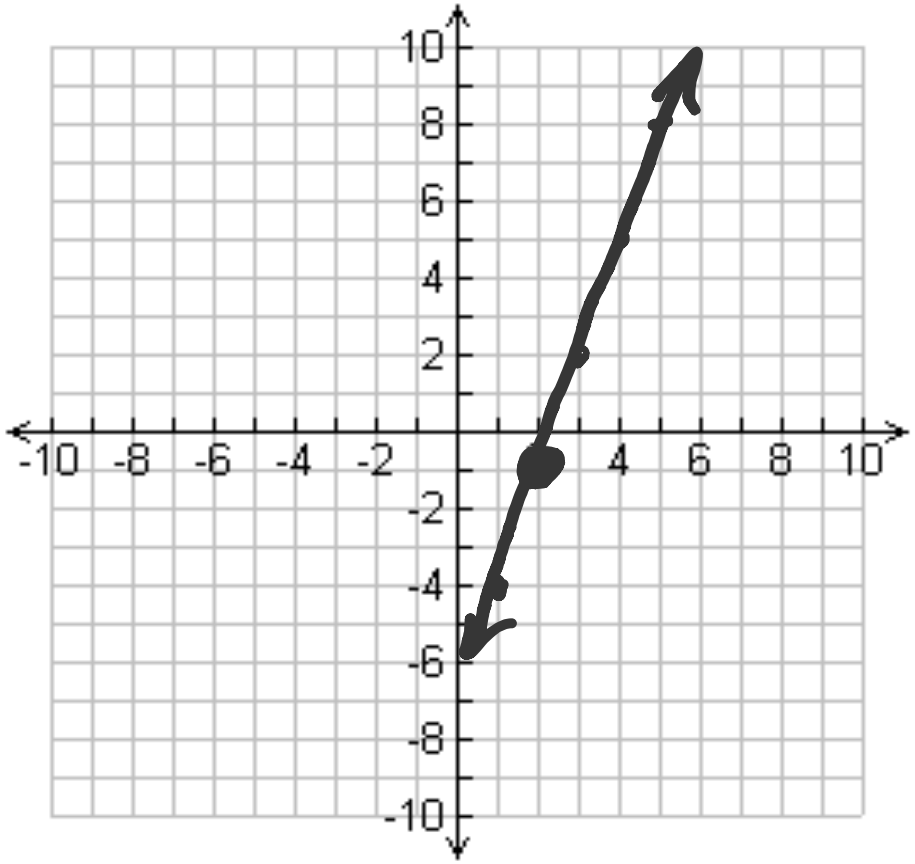
Write the equation in point-slope form AND slope-intercept form.

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

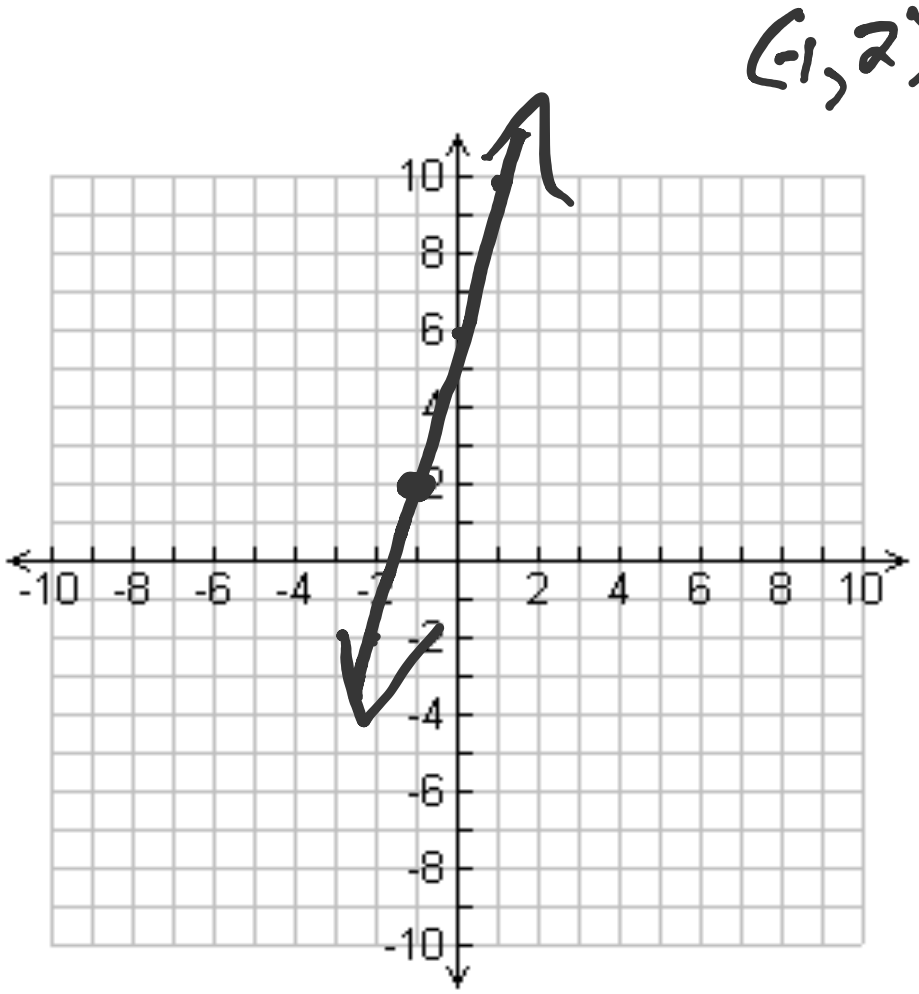
$y=-2x-5$

Graph: $y + 1 = 3(x - 2)$

$m = 3$ $(2, -1)$

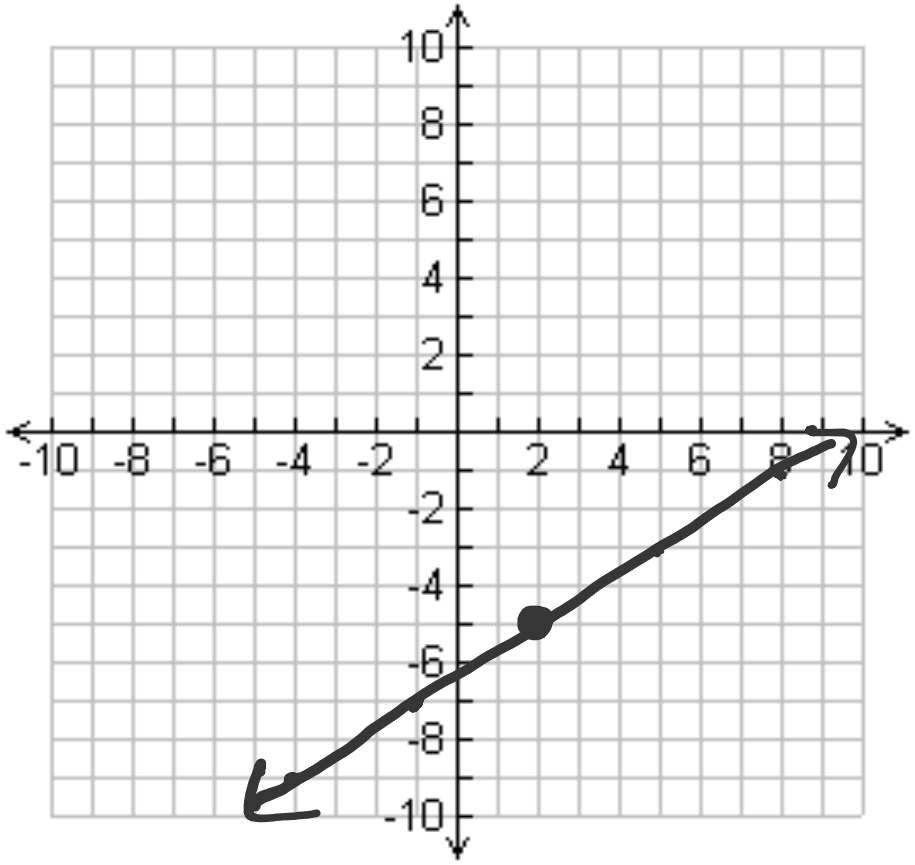


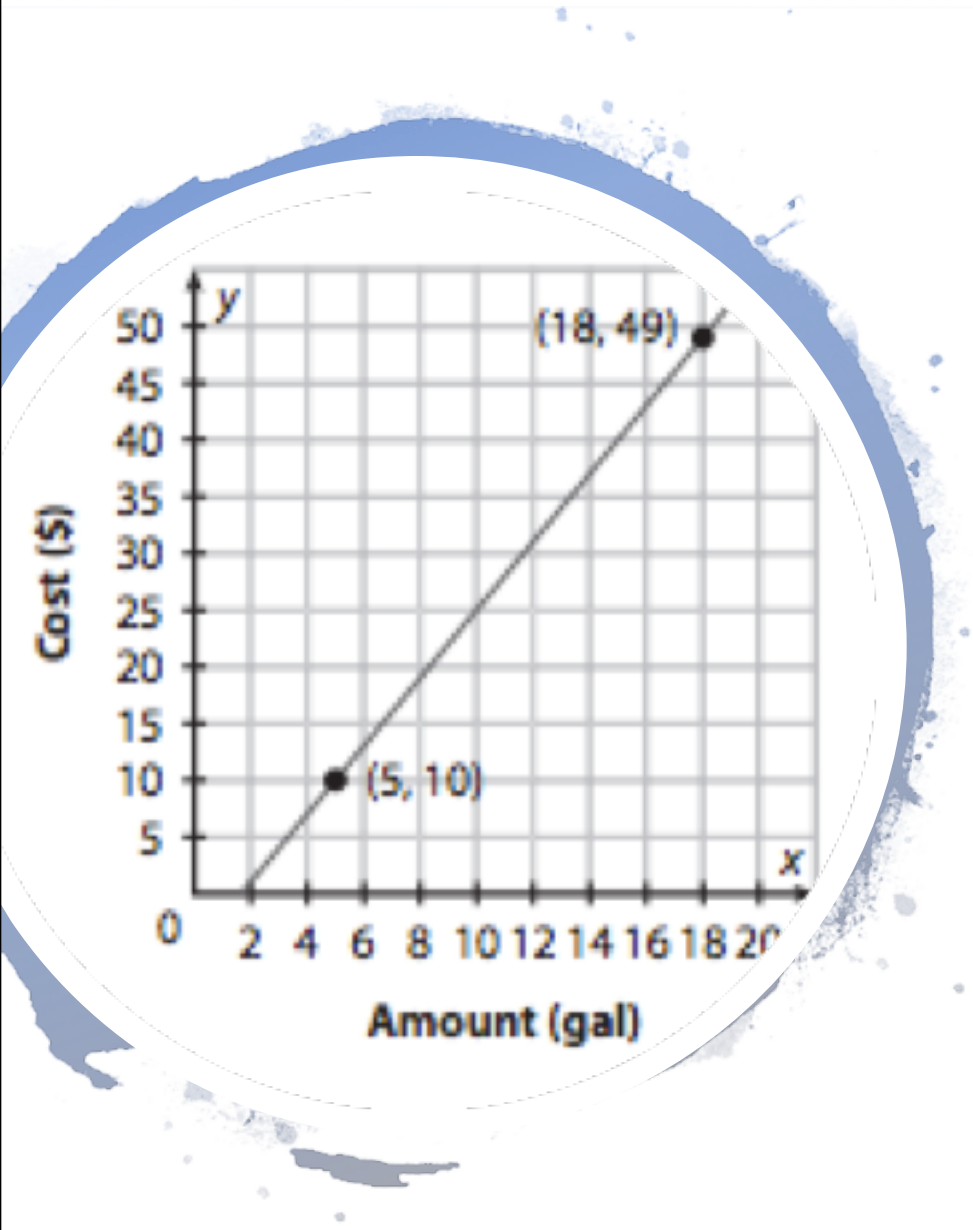
Graph: $y - 2 = 4(x + 1)$



Graph: $y + 5 = \frac{2}{3}(x - 2)$

$(2, -5)$





A gas station has a customer loyalty program. The graph shows the amount of dollars that two members paid for gas.

Why should we use point-slope form for this situation?

Write a function that relates the number of gallons with the cost.

How much will a customer pay for 25 gallons of gas?

Homework:

- Point-Slope Worksheet