

4/8/20: Topic 4- SAS 2

4/9/20: Topic 4- SAS 3

4/10/20: Topic 4- SAS 4 and SAS 5

4/13/20: Topic 5- SAS 2

4/14/20: Topic 5- SAS 4, Problems 1-8

4/15/20: Topic 5- SAS 4, Problems 9-16

4/16/20: Topic 5- SAS 5

4/17/20: Topic 8- SAS 2

4/20/20: Topic 8- SAS 3, Problems 1-8

4/21/20: Topic 8- SAS 3, Problems 9-16

4/22/20: Topic 8- SAS 5

4/23/20: Solidifying your skills with equations- SAS 2, Problems 1-4

4/24/20: Solidifying your skills with equations- SAS 2, Problems 4-8

Support for students, parents, and guardians:

- Teachers will be available to answer questions through Zoom on the following dates. To access the support call, following the directions below
  - **April 14<sup>th</sup>, 11:00 a.m. – 11:45 a.m.**
    - Click on the link <https://zoom.us/j/120184560>, OR
    - Open Zoom, click join, and enter Meeting ID: 120 184 560
  - **April 21<sup>st</sup>, 11:00 a.m. – 11:45 a.m.**
    - Click on the link <https://zoom.us/j/3791568353>, OR
    - Open Zoom, click join, and enter Meeting ID: 379 156 8353

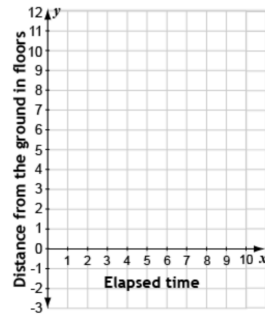
## Topic 4: Rate of change

Student Activity Sheet 2; *Exploring "Constant rates"*

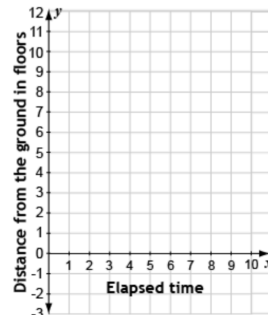
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1. **REINFORCE** Sketch the graphs of Elevator A and Elevator B. Use a solid line for Elevator A and a dotted line for Elevator B.

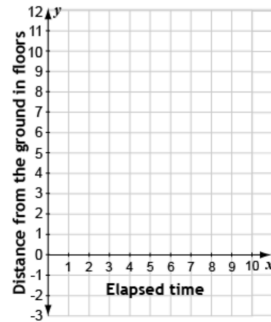
- a. Elevator A: Start at floor 11 at rate -1.  
Elevator B: Start at floor 11 at rate -3.



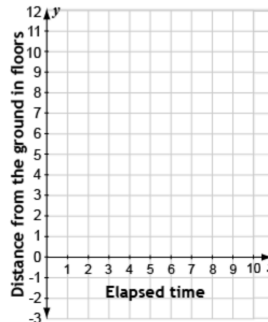
- b. Elevator A: Start at floor 1 at rate -1.  
Elevator B: Start at floor 12 at rate -3.



- c. Elevator A: Start at floor 1 at rate -1.  
Elevator B: Start at floor 10 at rate -4.



- d. Elevator A: Start at floor 1 at rate 1.  
Elevator B: Start at floor 10 at rate -3.



## Topic 4: Rate of change

Student Activity Sheet 2; *Exploring "Constant rates"*

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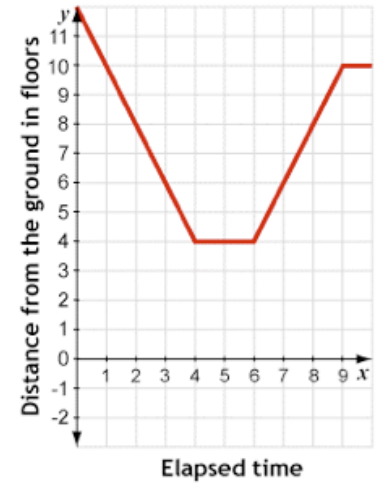
2. **REINFORCE** Here is the graph of one elevator ride. Interpret the graph by answering the following questions.

- a. Where did the elevator start? How do you know?

- b. What happened between 0 and 4 seconds? How do you know?

- c. What happened between 4 and 6 seconds? How do you know?

- d. What happened between 8 and 9 seconds? How do you know?



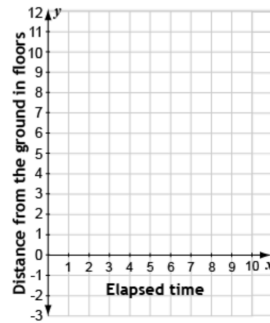
### Topic 4: Rate of change

#### Student Activity Sheet 2; Exploring "Constant rates"

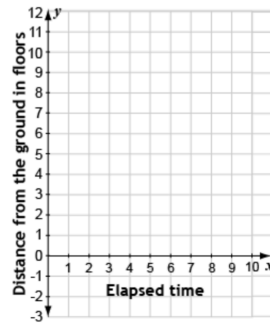
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3. **REINFORCE** Sketch a graph of an elevator whose movement is described.

- a. The elevator starts on floor 5 and moves at a rate of 0.5 floors per second for 4 seconds. Then, it pauses for 2 seconds and then moves at a rate of -2 floors per second for 4 seconds.



- b. The elevator starts on floor 0 and moves at a rate of -1 floors per second for 3 seconds. Then, it pauses for 3 seconds and then moves at a rate of 3 floors per second for 4 seconds.



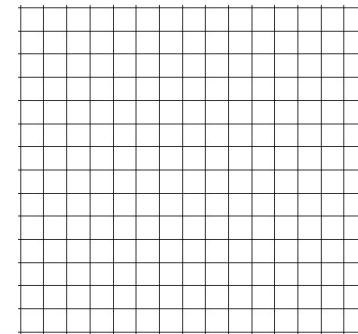
### Topic 4: Rate of change

#### Student Activity Sheet 2; Exploring "Constant rates"

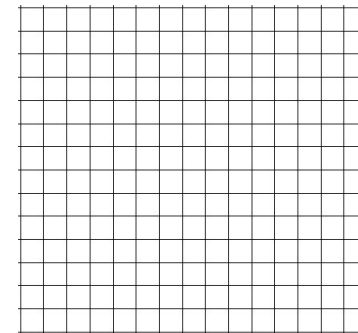
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4. **REINFORCE** Read each of the following scenarios. Sketch graphs that could represent the situations described.

- a. A ceramic tile factory produces 100 plain tiles per hour. The factory also produces 20 decorated tiles each hour. Sketch two graphs on the same set of axes showing the relationship between hours and number of tiles produced. Sketch one graph for each type of square foot tile. Be sure it is clear which graph represents each type of tile.



- b. Jeriah borrowed \$200 dollars from his older sister to buy a bike. He agreed to pay her back \$15 each week. Sketch a graph showing the relationship between the number of weeks and the amount of money Jeriah owes his sister.



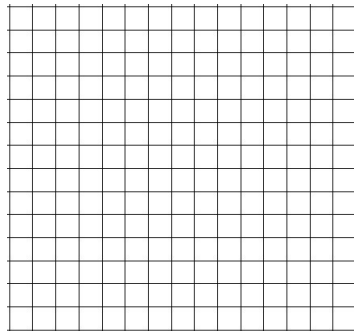
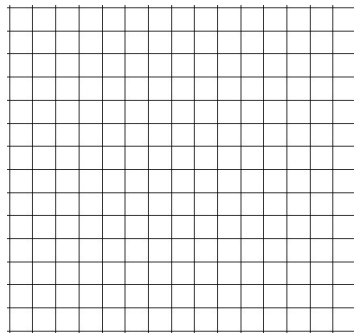
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- c. Brian and Brad were each given \$500 by their grandmother to start savings accounts. Twice a month Brian deposits an additional \$10 into his account. Brad deposits an additional \$50 into his account every other month. Sketch a graph showing the relationship between the number of months and the total amount in Brian's account during the first year. Then, sketch a graph showing the relationship between the number of months and the total amount in Brad's account during the first year.



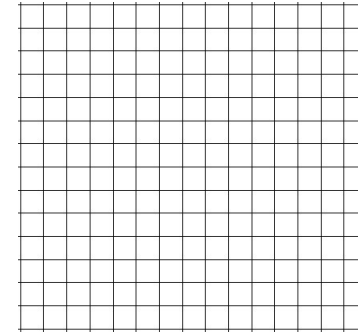
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- d. Jace's mother bought a 4-pound container of gourmet jelly beans. Every day she puts 2 ounces of jelly beans in Jace's lunch box. Sketch a graph showing the relationship between the number of lunches and the number of ounces of jelly beans remaining in the original container. (There are 16 ounces in 1 pound.)



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Student Activity Sheet 2; *Exploring "Constant rates"*

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5. **REINFORCE** For each of the following situations, calculate the rate of change shown in the table.

- a. The table shows the number of 8-ounce packages of fish-shaped cheese crackers produced at a cracker factory for different numbers of hours of production.

Hours of production	Number of packages produced
2	1040
5	2600
9	4680
12	6240

- b. The table shows how many gallons of saltwater were in the jellyfish tank of the Benton Aquarium at different times as the tank was being emptied for its periodic cleaning.

Time emptying (in minutes)	Amount of saltwater (in gallons)
5	437.5
8	400
14	325
23	212.5

#### Topic 4: Rate of change

Student Activity Sheet 2; *Exploring "Constant rates"*

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6. **REINFORCE** Jayne recently started working for the Benton water department. Her job is to record the reservoir levels. She took measurements every day starting May 1.

Using the data in the table, describe what is happening in the situation. As part of your description, comment on the rate of change.

Day since May 1	Reservoir level (in feet)
0	836
2	834.5
5	832.25
6	831.5
9	835
13	832.75

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

#### Topic 4: Rate of change

Student Activity Sheet 3; *Exploring* "Direct variation"

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1. **REINFORCE** The number of cups of sugar needed to make cookies is proportional to the number of cookies you make.
  - a. If 3 dozen cookies require 1 cup of sugar, write a direct variation equation in two variables that represents this situation. Make sure to define your variables.
  - b. Use your equation to solve for the number of cups of sugar needed for 10 dozen cookies.

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

#### Topic 4: Rate of change

Student Activity Sheet 3; *Exploring* "Direct variation"

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2. **REINFORCE** The number of drops of red tint needed to make a certain shade of purple paint varies directly with the number of gallons of paint base. Suppose that 5 drops of red tint can be mixed with 2 gallons of paint base to create the correct shade. How many drops of red tint must be mixed with 6 gallons of paint base to create the correct shade?

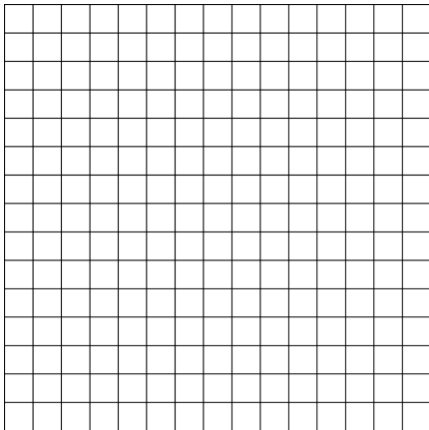
### Topic 4: Rate of change

Student Activity Sheet 3; *Exploring "Direct variation"*

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3. **REINFORCE** Sandra was hired as a part-time office assistant. The amount of money she earns in a week is proportional to the number of hours she works during the week. She earned \$167 for working 20 hours during her first week on the job. During the second week she worked 35 hours and earned \$292.25.

- Identify the constant of proportionality in this situation.
- Sandra worked for 28 hours during the third week. How much money did she earn?
- Create a graph showing how much Sandra will earn for working 5, 10, 15, 20, and 25 hours a week.



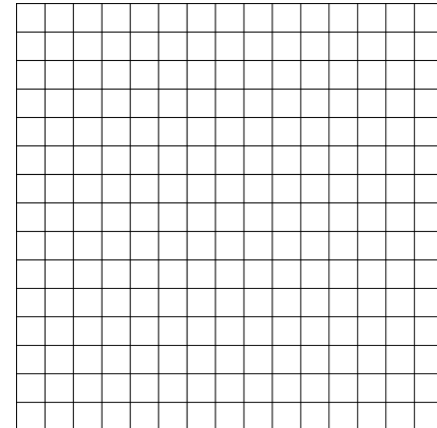
### Topic 4: Rate of change

Student Activity Sheet 3; *Exploring "Direct variation"*

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4. **REINFORCE** Jacob has also been working as a part-time office assistant. He started off earning the same pay as Sandra. But after six months of quality work, Jacob earned a raise of \$0.50 per hour.

- Identify the constant of proportionality in Jacob's situation.
- How much will Jacob earn for a 22-hour work week?
- Create a graph showing how much Jacob will earn for working 5, 10, 15, 20, and 25 hours a week.



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date \_\_\_\_\_

#### Topic 4: Rate of change

Student Activity Sheet 3; *Exploring* "Direct variation"

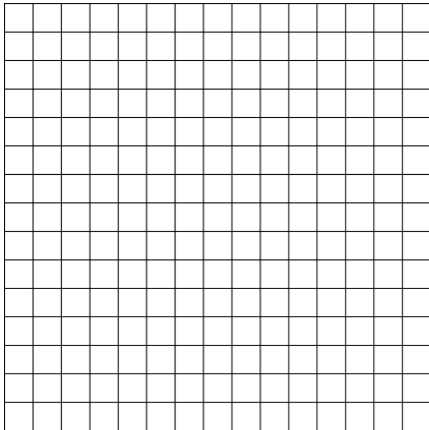
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5. **REINFORCE** David works as a tile decorator for a ceramic tile factory. The amount of money he earns is directly proportional to the number of tiles he paints. When he paints 15 tiles, he earns \$41.25. When he paints 25 tiles, he earns \$68.75.

a. Identify the constant of proportionality.

b. How many tiles did David paint if he earned \$99.00?

c. Create a graph showing how much David will earn for painting 0, 4, 8, 12, and 16 tiles.



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date \_\_\_\_\_

#### Topic 4: Rate of change

Student Activity Sheet 3; *Exploring* "Direct variation"

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6. **REINFORCE** Solve the following proportions.

a.  $\frac{4}{16} = \frac{x}{14}$

b.  $\frac{12}{30} = \frac{x}{5}$

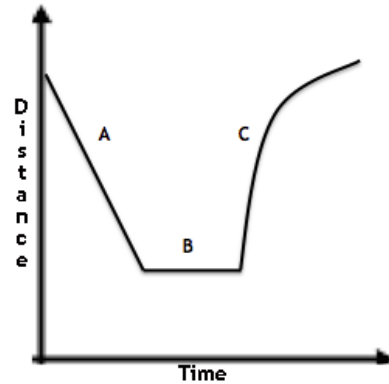
#### Topic 4 Rate of change

Student Activity Sheet 4; *Exploring "Rates that are not constant"*

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1. **REINFORCE** The graph models a skateboarder's movement in front of a motion detector. Match each description of the skateboarder's movement with the letter indicating the appropriate segment of the graph.

- \_\_\_\_\_ He stopped moving.
- \_\_\_\_\_ He moved at a fast, constant rate.
- \_\_\_\_\_ He moved away from the motion detector.
- \_\_\_\_\_ He slowed down.



2. **REINFORCE** Describe how you would move a skateboarder to create this graph.



#### Topic 4: Rate of change

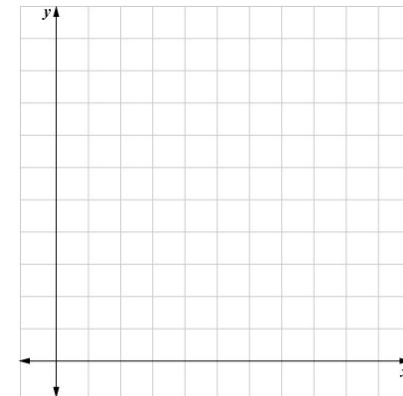
Student Activity Sheet 5; *Exploring "Other non-constant rates"*

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1. **REINFORCE** Jai is a biology student. She has a job as a lab assistant for one of her professors. The professor is doing an experiment in which she sprays mosquitos with insecticide. Jai's job is to count the number of mosquitos that die. The table shows how many dead mosquitos she counted each hour after the insecticide was sprayed.

Time since insecticide was sprayed (in hours)	Number of dead mosquitoes
1	3000
2	1500
3	750
4	375

- a. Sketch a graph showing the data in the table.



- b. Compute the first and second differences.

## Topic 4: Rate of change

Student Activity Sheet 5; *Exploring "Other non-constant rates"*

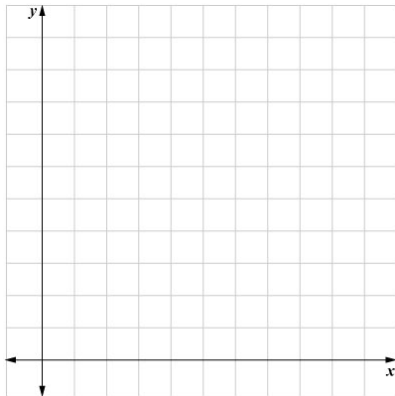
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- c. Do these data show a linear, quadratic, or exponential pattern? Explain.

2. **REINFORCE** Jai is also supposed to keep track of the amount of food the lab rats eat every day. The rat food is kept in a large container. A technician feeds the rats from the container. Each day Jai weighs the food remaining in the large container to see how much the rats ate.

Time since start of experiment (days)	Amount of food remaining (kg)
1	21.52
2	21.28
3	21.04
4	20.80
5	20.56

- a. Sketch a graph showing the data in the table.



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Student Activity Sheet 5; *Exploring "Other non-constant rates"*

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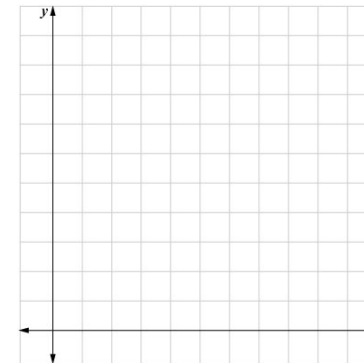
- b. Compute the first and second differences.

- c. Do these data show a linear, quadratic, or exponential pattern? Explain.

3. **REINFORCE** Jai's professor is doing another experiment. This one involves Madagascar hissing cockroaches. Jai needs to record the amount of oxygen the cockroaches consume as the temperature increases in their terrarium.

Temperature (degrees Celsius)	Oxygen consumed (microliters per gram per hour)
10	85
15	140
20	220
25	325

- a. Sketch a graph showing the data in the table.



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date \_\_\_\_\_

## Topic 4: Rate of change

Student Activity Sheet 5; *Exploring* “Other non-constant rates”

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- b. Compute the first and second differences.
- c. Do these data show a linear, quadratic or exponential pattern? Explain.

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date \_\_\_\_\_

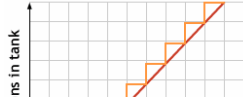
## Moving beyond slope-intercept

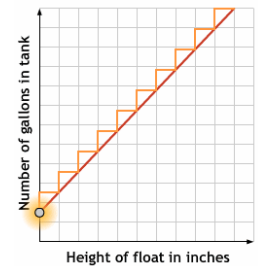
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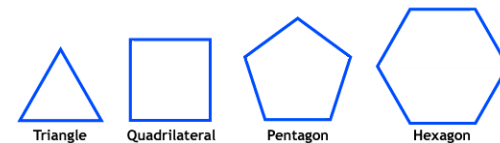
In the *Overview*, you reviewed the connection between a constant rate of change, the slope of a line, and a linear function. Using the terms provided, fill in the blanks to complete the statements in questions 1-3.

rate of change	constant	slope	linear function
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1. When talking about how quickly or slowly a linear function is changing, you are discussing the function's \_\_\_\_\_.
  2. The graph of a \_\_\_\_\_ forms a straight line. The line is straight because the linear function has a \_\_\_\_\_ rate of change.
  3. When you graph a linear function, \_\_\_\_\_ refers to the steepness of the line the function makes. The slope of this line is the same as the \_\_\_\_\_ of the linear function. The slope can be expressed as a decimal, fraction, or integer.
  4. Use the points (0,1.5) and (10,12) from the graph to find the slope of this line and then use the slope to build a linear function rule that represents this relationship between **g**, the number of gallons in the tank, and **h**, the height of the float.
- 



5. For each of the regular polygons below, sketch the diagonals that can be drawn from one vertex through the interior of the polygon.



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

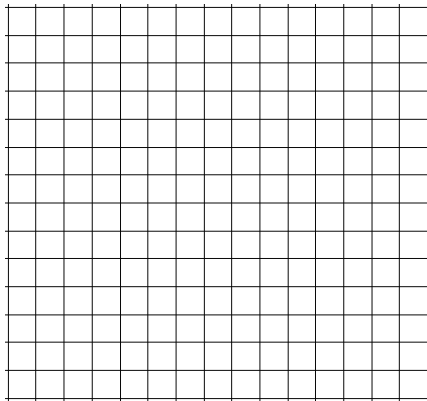
Topic 5: Student Activity Sheet 2; *Exploring* “Using slope-intercept form”

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6. Complete the table to show the relationship between the number of sides of a polygon and the number of diagonals that can be drawn from one vertex through its interior.

Name of polygon	Number of sides	Number of diagonals
Triangle	3	0
Quadrilateral	4	1
Pentagon	5	2
Hexagon	6	3
Heptagon		
Octagon		
Nonagon		
Decagon		

7. Draw a graph that best represents the information in the table.



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

Topic 5: Student Activity Sheet 2; *Exploring* “Using slope-intercept form”

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8. What is the general trend, or flow, of the data in the table? Indicate this trend on your graph from question 7.

9. Use the table of data and the graph you created to find a function rule that best represents the line through the data.

Find the slope:

Find the y-intercept:

### Moving beyond slope-intercept

Topic 5: Student Activity Sheet 2; *Exploring* “Using slope-intercept form”

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10. Use your function rule to answer the following questions.

- How many diagonals are in a 20-sided polygon?
- What does a  $y$ -intercept at the point  $(0, -3)$  mean in this problem situation?

11. What are the domain and range of the mathematical function  $f(x) = x - 3$ ?

12. What are the domain and range of the function that expresses the number of diagonals in a polygon,  $y$ , given the number of sides in the polygon,  $x$ ?

### Moving beyond slope-intercept

Topic 5: Student Activity Sheet 2; *Exploring* “Using slope-intercept form”

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13. Alejandro borrowed \$1050 from his grandfather for a down payment on a car. He told his grandfather he would make weekly payments until he had repaid all of the money he borrowed. Alejandro made this table to represent the amount of money he still owes his grandfather. Describe precisely what is happening to the amount of money in Alejandro's savings account.

Time in weeks	Amount still owed
0	\$1050
1	\$1000
2	\$950
3	\$900
4	\$850
5	\$800
6	\$750

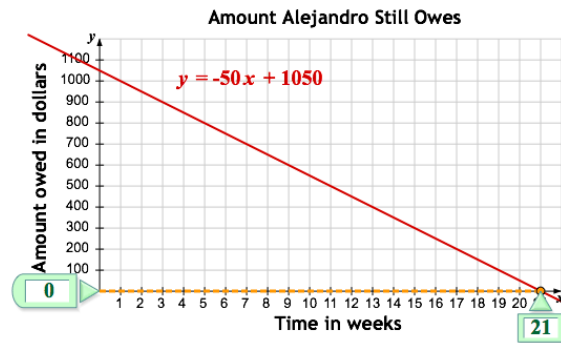
14. In the table, you can see 6 weeks of Alejandro's repayments. Study the pattern in the table, and then write a linear function rule that you could use to find out how much Alejandro will still owe his grandfather after 10 weeks or 20 weeks.

15. Assume that Alejandro's repayment rate remains the same for several more weeks. Use your rule to calculate how much money Alejandro will owe his grandfather after 15 weeks.

### Moving beyond slope-intercept

Topic 5: Student Activity Sheet 2; *Exploring* "Using slope-intercept form"

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16. Consider the function  $f(x) = 12x - 24$ . Can you find the zero of this function?

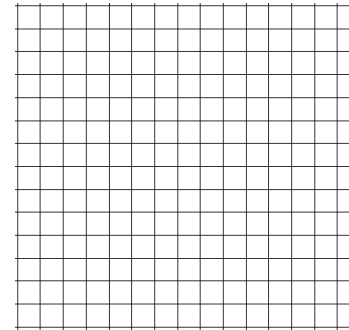
### Moving beyond slope-intercept

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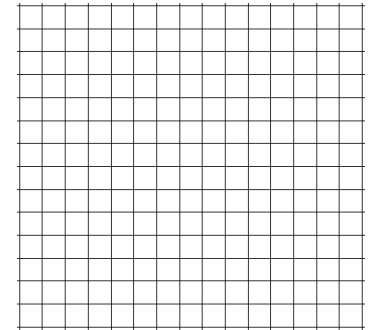
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17. Graph the following functions.

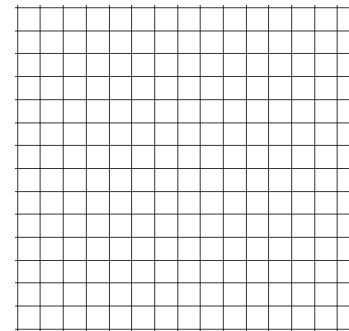
a.  $y = 3x - 2$



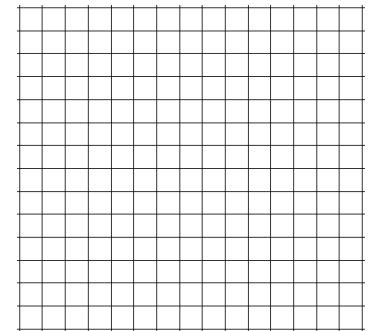
b.  $y = -2x + 4$



c.  $y = \frac{2}{5}x - 3$



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



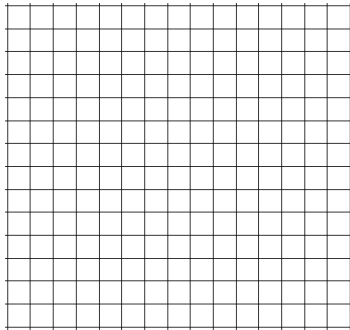
### Moving beyond slope-intercept

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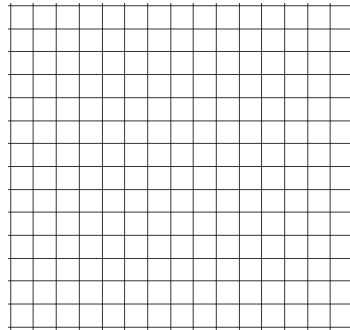
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18. **REINFORCE** Graph the following functions.

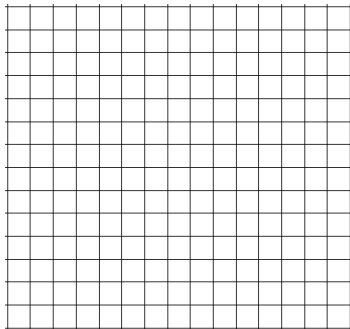
a.  $y = 2x - 6$



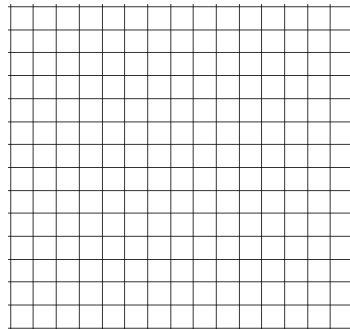
b.  $y = -4x + 3$



c.  $y = \frac{3}{4}x + 5$



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



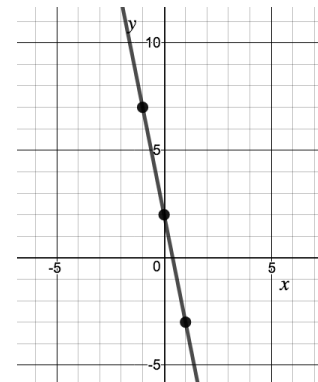
### Moving beyond slope-intercept

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19. **REINFORCE** Write an equation in slope-intercept form for each function represented.

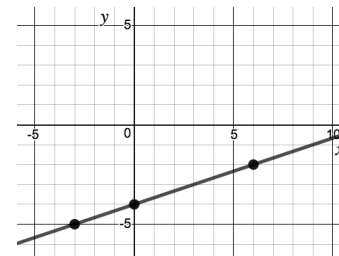
a.



b.

$x$	$y$
3	6
5	12
7	18
9	24

c.



d. A line passing through the points (10, -2) and (15, -4).

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

Topic 5: Student Activity Sheet 4; *Exploring* "Intercepts and standard form" Page 1 of 10

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**REINFORCE** Without graphing, what is the  $y$ -intercept of the line  $y = \frac{3}{2}x + 12$ ?

1. The *standard form* of a linear equation is the form \_\_\_\_\_.
2. Explain one way to find the  $x$ - and  $y$ -intercepts of an equation in standard form.
3. Identify the  $x$ - and  $y$ -intercepts of the line represented by  $15x - 5y = 30$ .

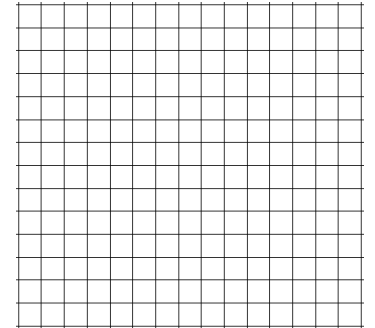
Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

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4. Identify the  $x$ - and  $y$ -intercepts of the line represented by  $3x - 2y = -6$  and use the intercepts to graph the line.



5. Find the slope of the line represented by  $3x - 2y = -6$  using its intercepts. How is the slope represented in your graph?

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

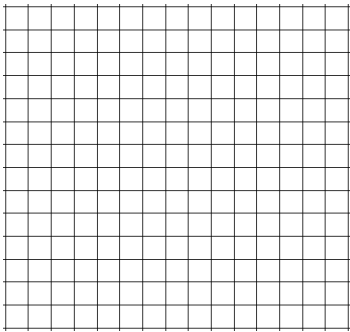
### Moving beyond slope-intercept

Topic 5: Student Activity Sheet 4; *Exploring* "Intercepts and standard form" Page 3 of 10

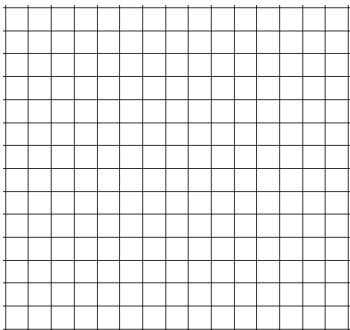
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6. Create graphs of lines that match each description.

a. A line with  $x$ -intercept 5 and  $y$ -intercept 10



b. A line with  $y$ -intercept 10 and no  $x$ -intercept



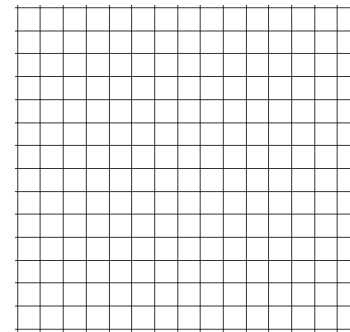
Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

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c. A line with  $x$ -intercept 5 and no  $y$ -intercept



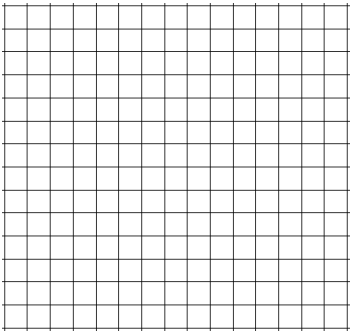
7. Which of the graphs you created in question 6 represent functions? How do you know?

8. Next to each graph in question 6, write the equation of the line you graphed.

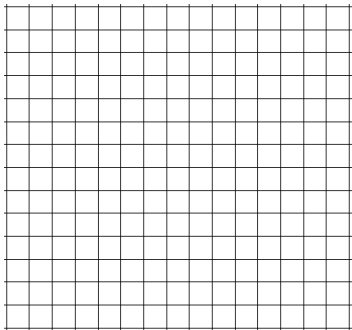
**Moving beyond slope-intercept**  
Topic 5: Student Activity Sheet 4; *Exploring* “Intercepts and standard form” Page 5 of 10

9. **REINFORCE** Graph each of the following lines.

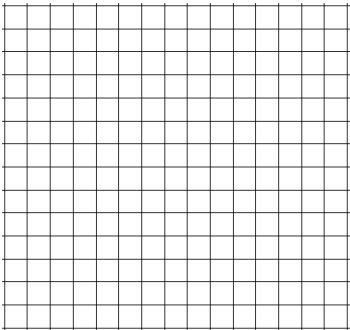
a.  $x = 3$



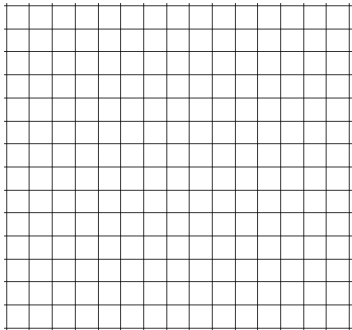
b.  $y = 4$



c.  $x = -5$

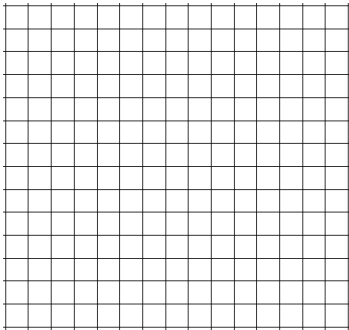


d.  $y = -2$

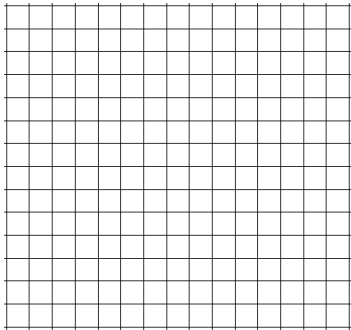


**Moving beyond slope-intercept**  
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e.  $x = 0$



f.  $y = 0$



10. Complete the table for each line you create. Be sure to create at least one vertical line and at least one horizontal line.

Equation for line	Point on line	Point on line	Slope

### Moving beyond slope-intercept

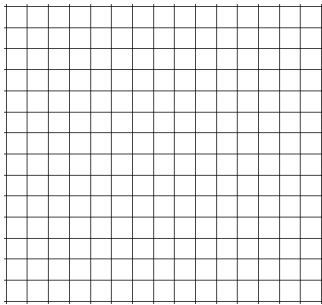
Topic 5: Student Activity Sheet 4; *Exploring* "Intercepts and standard form" Page 7 of 10

11. Calculate the slope for each line.

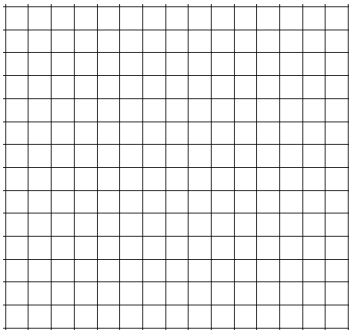
a.  $y = 4$

b.  $x = -4$

12. **REINFORCE** Write the equation of a line that has a slope of 0. Graph your line.



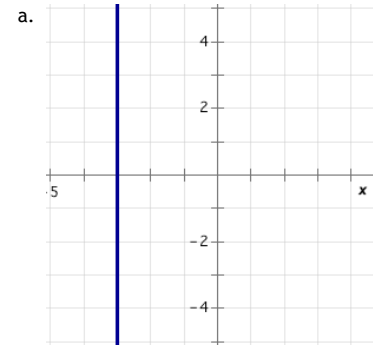
13. **REINFORCE** Write the equation of a line that has no slope. In other words, write the equation of a line for which the value of the slope is undefined. Graph your line.



### Moving beyond slope-intercept

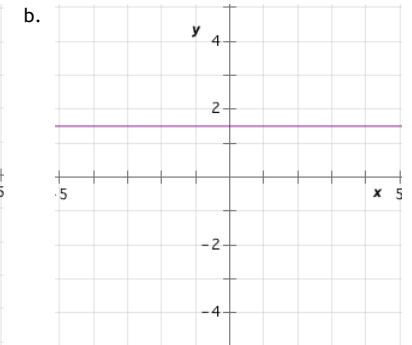
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14. **REINFORCE** Write an equation for each line represented by a graph or described in words. Then, determine the slope of each line.



Equation:

Slope:



Equation:

Slope:

c. The line is parallel to the  $y$ -axis and contains the point  $(5, 7)$ .

Equation:

Slope:

d. The line is parallel to the  $x$ -axis and contains the point  $(5, 7)$ .

Equation:

Slope:

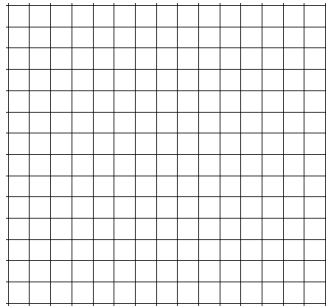
Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

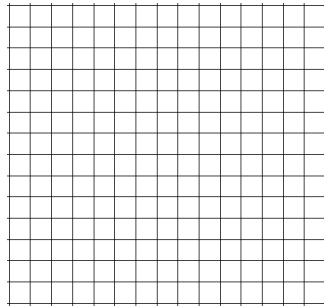
Topic 5: Student Activity Sheet 4; *Exploring* "Intercepts and standard form" Page 9 of 10

15. **REINFORCE** Find the  $x$ - and  $y$ -intercepts for each of the lines below. Then use the intercepts to graph the line.

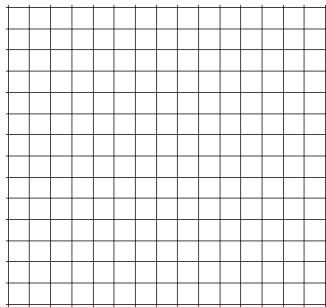
a.  $3x - 4y = 24$



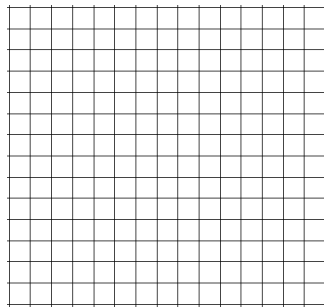
b.  $2x - 7y = -14$



c.  $5x + 3y = -15$



d.  $4x + 8y = 20$



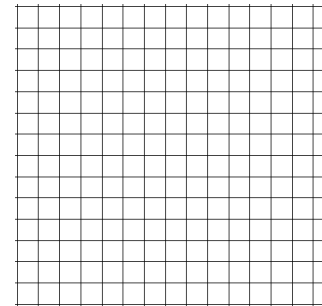
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### Moving beyond slope-intercept

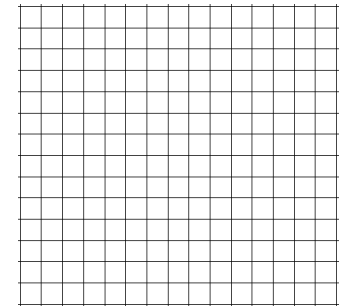
Topic 5: Student Activity Sheet 4; *Exploring* "Intercepts and standard form" Page 10 of 10

16. **REINFORCE** Graph each line given.

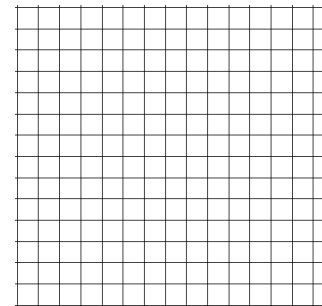
a.  $y = -4x + 2$



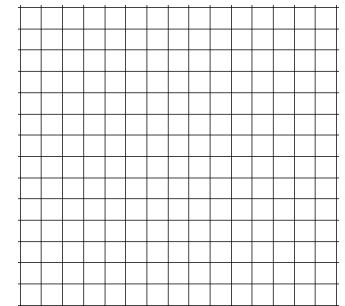
b.  $y = -\frac{4}{5}x - 3$



c.  $3x + 2y = 12$



d.  $4x - 3y = -24$

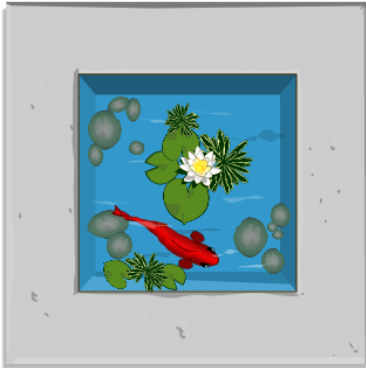


### Moving beyond slope-intercept

Student Activity Sheet 5; *Exploring* "Point-slope form"

Page 1 of 7

1. Mr. Chen wants to put a tile border around each square fish pond. The tiles he uses are 1-foot squares.



- How many tiles will be needed for a 1-foot by 1-foot pond?
- How many tiles will be needed for a 2-foot by 2-foot pond?
- How many tiles will be needed for a 3-foot by 3-foot pond?

- d. Record your information in a table. How would you describe the relationship between the length of the side of the pond and the number of tiles you will need for that pond?

Length of pond in feet	Number of tiles in border

2. Study the pattern in your table. Will the pattern continue? How can you be sure?

### Moving beyond slope-intercept

Student Activity Sheet 5; *Exploring* "Point-slope form"

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3. How do you know from the pattern in your table that this situation can be modeled by a linear function? How is this pattern related to the graph of the linear function?

4. Use what you know about the rate of change in this situation to write a linear function rule in slope-intercept form for the relationship between the length of the side of the pond,  $s$ , and the number of tiles in the border,  $t$ .

5. Use the slope formula to find an equation for the line that contains the pond data.

6. What is the format for the *point-slope form* of a line?

### Moving beyond slope-intercept

Student Activity Sheet 5; *Exploring* "Point-slope form"

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7. Rearrange and simplify the point-slope form of the equation you developed in question 5 to find the slope-intercept form.

8. Match each equation of a line with the slope of the line and a point on the line.

-2	(7,3)	$-\frac{2}{5}$	(3,7)	$\frac{5}{2}$	(5,0)	4	(0,5)
----	-------	----------------	-------	---------------	-------	---	-------

Equation of line	Point on line	Slope of line
$y = -2x + 5$	<input type="text"/>	<input type="text"/>
$y - 3 = 4(x - 7)$	<input type="text"/>	<input type="text"/>
$2x + 5y = 10$	<input type="text"/>	<input type="text"/>

### Moving beyond slope-intercept

Student Activity Sheet 5; *Exploring* "Point-slope form"

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9. Match each description with the correct equation.

$2x - 3y = 4$	$x - 4y = 9$	$y = x + 5$	$y = -4x + 2$
$3x - 2y = 6$	$y = 3x - 1$	$y = 2x - 4$	$y = -x + 5$

Description of line	Equation of line
The line contains the point (1,-2) and is parallel to the line given by the equation $y = 2x + 3$ .	<input type="text"/>
The line contains the point (1,-2) and is perpendicular to the line given by the equation $y = -4x + 2$ .	<input type="text"/>
The line contains the points (1,2) and (2,5).	<input type="text"/>
The line contains the points (2,0) and (0,-3).	<input type="text"/>
The line contains the points (0,5) and (1,4).	<input type="text"/>

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

Student Activity Sheet 5; *Exploring* "Point-slope form"

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10. **REINFORCE** Write the equation of the line with slope of -2, containing the point (-12,15) in point-slope form.

11. **REINFORCE** Rearrange and simplify the point-slope form for the equation from the previous question to find the slope-intercept form for the equation.

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

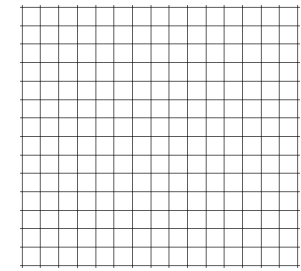
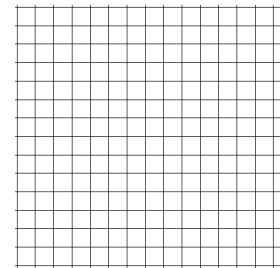
Student Activity Sheet 5; *Exploring* "Point-slope form"

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12. **REINFORCE** Identify the slope and a point on the line for each line given. Then use the point and the slope to graph the line.

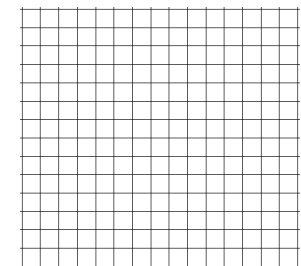
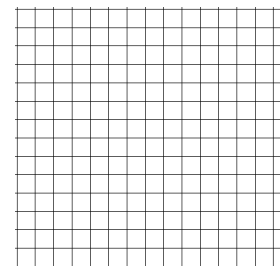
a.  $y - 4 = -2(x + 5)$

b.  $y + 3 = (x - 6)$



c.  $y + 5 = \frac{1}{2}(x - 3)$

d.  $y - 2 = -\frac{2}{3}(x + 4)$



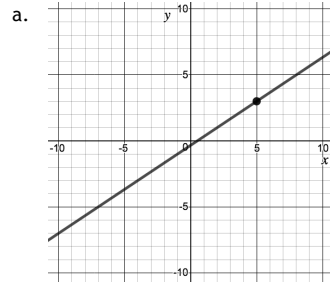
Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Moving beyond slope-intercept

Student Activity Sheet 5; *Exploring* "Point-slope form"

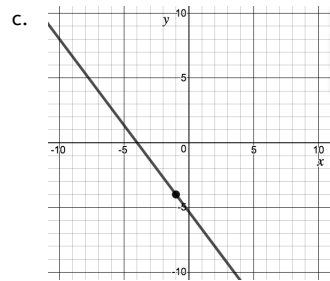
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13. REINFORCE Write an equation in point-slope form for the function represented.



b.

$x$	$y$
1	7
2	4
3	1
4	-2



d. A line passing through the points  $(-3, 2)$  and  $(4, 16)$ .

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Solving linear equations and inequalities

Topic 8: Student Activity Sheet 2; *Exploring* "Solving linear equations"

Page 1 of 5

1. Solve the equation  $x + 2 = 7$

2. Solve the equation  $15d = 300$  algebraically

3. Use algebraic operations to solve the equation  $29.95 + 0.16m = 75$ . How can you use a graph or table to verify your solution?

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date \_\_\_\_\_

### Solving linear equations and inequalities

Topic 8: Student Activity Sheet 2; *Exploring* "Solving linear equations"

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4. Solve the equation  $5x + 7 = 22$ .

5. Solve  $5x + 4 = 3x + 8$ .

6. Solve each equation.

a.  $x + 4 = 3x + 8$

c.  $3x - 4 = 2x + 3$

b.  $2x + 3 = x - 2$

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date \_\_\_\_\_

### Solving linear equations and inequalities

Topic 8: Student Activity Sheet 2; *Exploring* "Solving linear equations"

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7. **REINFORCE** Use algebraic operations to solve the equations.

a.  $\frac{1}{3}z = -2$

b.  $6y = 3$

8. **REINFORCE** Solve  $9 - x = 10$  using algebraic operations.

9. **REINFORCE** Solve  $2x - 5 = 3$  using algebraic operations.

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### Solving linear equations and inequalities

Topic 8: Student Activity Sheet 2; *Exploring* "Solving linear equations"

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10. **REINFORCE** Solve  $5 + \frac{1}{5}b = 6$  using algebraic operations.

11. **REINFORCE** Solve  $-2a + 9 = -3$  using algebraic operations.

12. **REINFORCE** Solve the equation  $31.25 - 0.03g = 29.95$  using algebraic operations.

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### Solving linear equations and inequalities

Topic 8: Student Activity Sheet 2; *Exploring* "Solving linear equations"

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13. **REINFORCE** Solve the equation  $\frac{4}{3}r - 6 = \frac{2}{3}r$  using algebraic operations.

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**Topic 8: Solving linear equations and inequalities**

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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1. Use algebraic operations to solve the equation  $8 - 3y = 7y - 2 - 5y$ .

2. Solve the equation  $4(k - 3) + 7 = 2k - (k + 8)$ .

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**Topic 8: Solving linear equations and inequalities**

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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3. Solve the equation  $\frac{b}{3} + 5 = \frac{3}{2}b + \frac{1}{3}$ , and check your work.

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### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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4. Solve the following equations.

a.  $\frac{x-3}{5} = \frac{x-6}{2}$

b.  $\frac{2x+11}{7} = \frac{-2x-1}{3}$

c.  $\frac{x+4}{8} = \frac{3x-7}{5}$

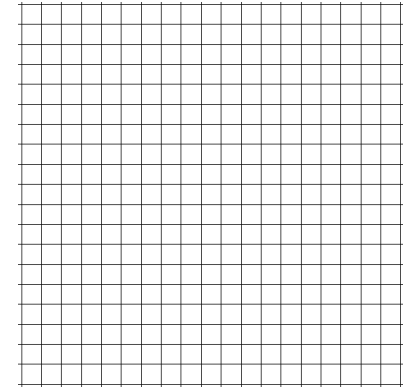
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### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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5. Solve the equation  $x + 2 = x + 5$  using algebraic operations. Check your work by graphing.



6. Use algebraic operations to solve the equation  $C = 2\pi r$  for  $r$ .

7. The equation  $25x - 5y = 30$  is in the standard form for the equation of a line. Transform the equation to slope-intercept form.

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### Topic 8: Solving linear equations and inequalities

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8. The equation  $\frac{98.6 - f}{1.5} = t$  approximates the time of death,  $t$ , based on body temperature,  $f$ . Solve this equation for  $f$  to determine the temperature of a body  $t$  hours after death.

9. **REINFORCE** Solve  $5x - 7 = 5 - x$  using algebraic operations. Check your solution using a table and explain how you used the table to check your solution.

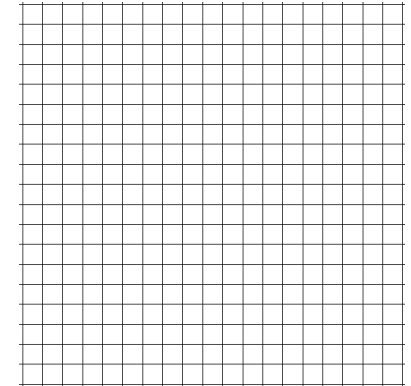
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### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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10. **REINFORCE** Solve  $-2x + 4 = 7$  using algebraic operations and then check your solution by graphing. Sketch the graph you make, and explain how you used it to check your solution.



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### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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11. **REINFORCE** An equation that shows the relationship between Fahrenheit and Celsius temperatures is  $F = \frac{9}{5}C + 32$ , where  $F$  represents the temperature in degrees Fahrenheit and  $C$  represents the temperature in degrees Celsius.

Solve this equation for  $C$  in terms of  $F$ .

12. **REINFORCE** Solve  $\frac{2}{3}(3x - 5) = \frac{1}{3}(8x + 8)$  using algebraic operations.

13. **REINFORCE** Solve  $\frac{5}{6}(4x + 8) = \frac{3}{8}x - \frac{1}{4}$  using algebraic operations.

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### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 3; *Exploring* "More solving linear equations"

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14. **REINFORCE** Solve the equation  $5(3p - 5) + 4p = 5p - 6(p + 4)$  using algebraic operations.

15. **REINFORCE** Solve the equation  $-(4q + 8) + 6q = 12q - \frac{5}{6}(18q + 6)$  using algebraic operations.

16. **REINFORCE** Solve  $\frac{x + 13}{8} = \frac{-2x - 1}{9}$ .

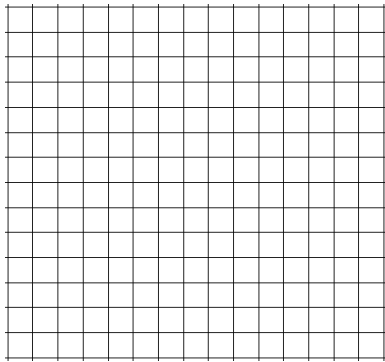
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### Topic 8: Solving linear equations and inequalities

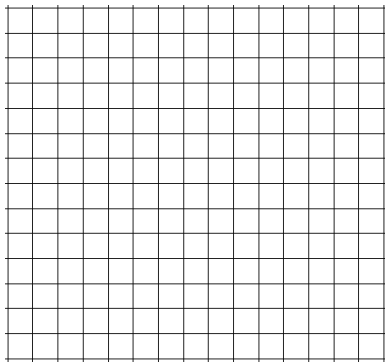
Student Activity Sheet 5; *Exploring* "Consolidating your skills with linear functions and equations"  
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1. For each equation, estimate the solution graphically. Then confirm the solution algebraically using properties of equality.

a.  $5x + 8 = 20$



b.  $2(x - 3) = 5x + 10$

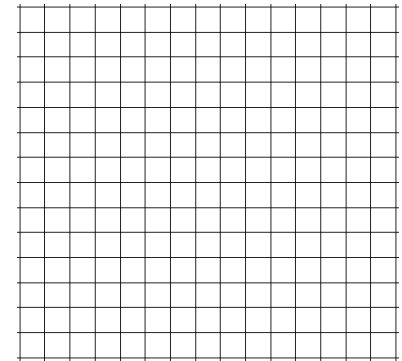


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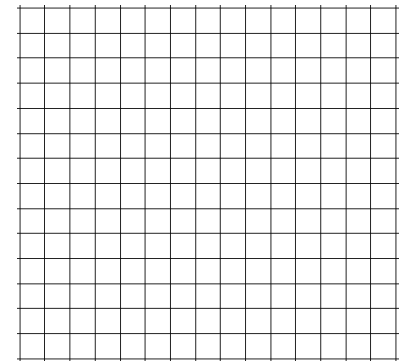
### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 5; *Exploring* "Consolidating your skills with linear functions and equations"  
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c.  $\frac{1}{2}x - 15 = 25$



d.  $\frac{x - 2}{2} = \frac{3x + 6}{3}$



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 5; *Exploring* "Consolidating your skills with linear functions and equations"  
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2. Solve each equation algebraically.

a.  $2(x - 4) + 3 = -3x + 5$

b.  $-2x - 2(3x - 4) = 2(3x - 4) + 2x$

c.  $\frac{2}{3}x - 8 = -\frac{1}{2}x + \frac{5}{2}$

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 5; *Exploring* "Consolidating your skills with linear functions and equations"  
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d.  $\frac{1}{3}\left(2x + \frac{3}{2}\right) = -2\left(2x + \frac{1}{4}\right)$

e.  $-2\left(\frac{2}{3}x - \frac{3}{4}\right) = 3\left(\frac{2}{3}x + \frac{5}{2}\right)$

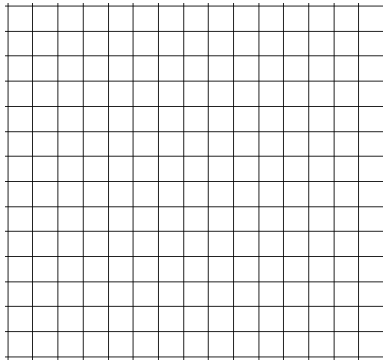
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### Topic 8: Solving linear equations and inequalities

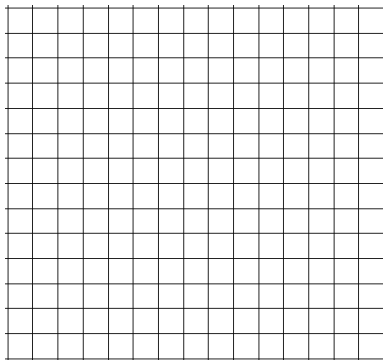
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3. For each inequality, estimate the solution graphically. Then confirm the solution algebraically using properties of equality.

a.  $3x + 7 > 10$



b.  $-4x - 10 \leq 12$

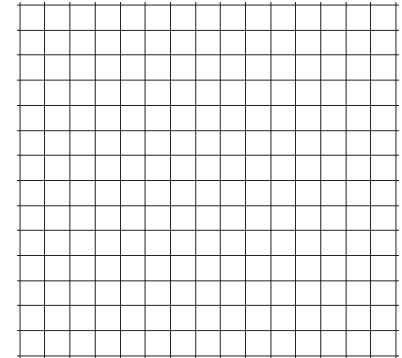


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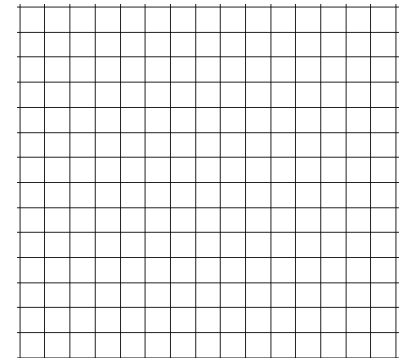
### Topic 8: Solving linear equations and inequalities

Student Activity Sheet 5; *Exploring* "Consolidating your skills with linear functions and equations"  
Page 6 of 7

c.  $3x - 8 \geq 5x + 7$



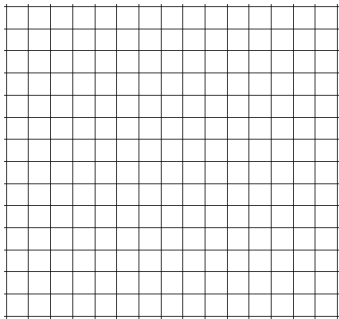
d.  $\frac{2}{3}x + 1 < 5$



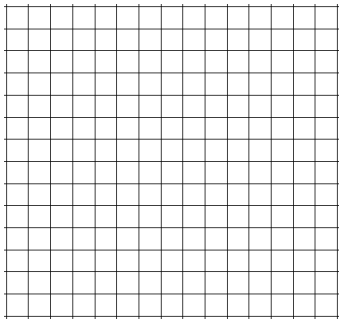
**Topic 8: Solving linear equations and inequalities**  
Student Activity Sheet 5; *Exploring* “Consolidating your skills with linear functions and equations”  
Page 7 of 7

4. **REINFORCE** Graph each line below.

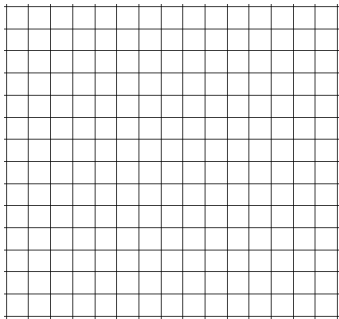
a.  $y = -\frac{3}{4}x + 4$



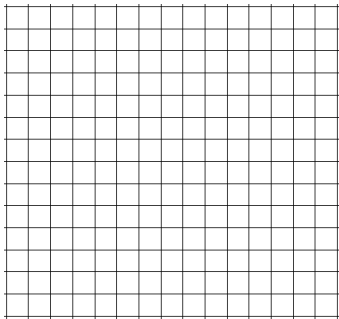
b.  $-3x + 4y = 24$



c.  $-3x - 4y = 36$



d.  $-2y = 11$



**Solidifying your skills with equations**  
Student Activity Sheet 2; *Exploring* “Consolidating your skills with equation solving”  
Page 1 of 9

1. Solve  $\frac{1}{3}x - 6 = \frac{2}{3}$ .

2. Solve  $\frac{3}{4}(x - 5) = -\frac{3}{2}$ .

3. Solve each equation.

Equation	Solution
$6 - 2x = 4$	
$\frac{2}{3}x - 6 = 10$	
$2(x - 4) = 6$	
$\frac{1}{2}(x - 7) = 4$	
$\frac{3}{2}x - \frac{2}{3} = -\frac{13}{6}$	

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

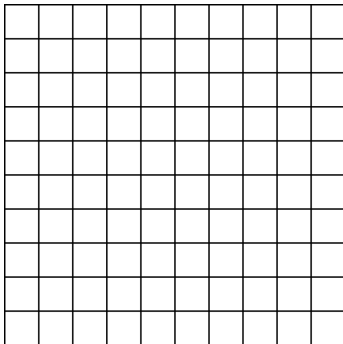
### Solidifying your skills with equations

Student Activity Sheet 2; *Exploring* “Consolidating your skills with equation solving”

Page 2 of 9

4. Solve each equation by graphing.

a.  $-5 = -2x - 3$



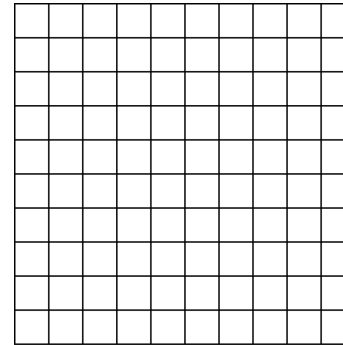
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### Solidifying your skills with equations

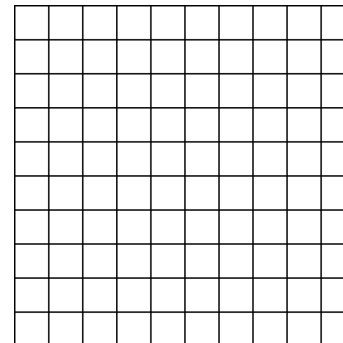
Student Activity Sheet 2; *Exploring* “Consolidating your skills with equation solving”

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b.  $3x + 2 = 8$



c.  $-4x - 2 = 6$



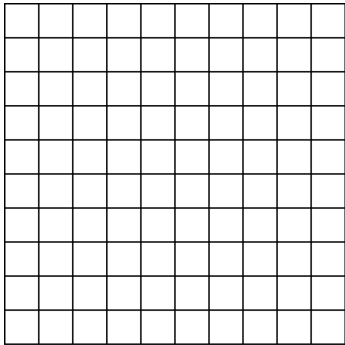
Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Solidifying your skills with equations

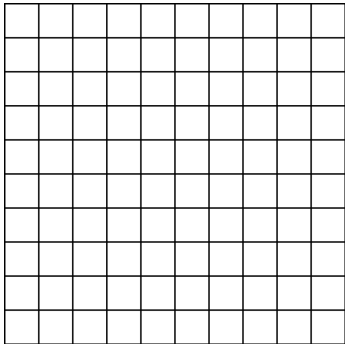
Student Activity Sheet 2; *Exploring* "Consolidating your skills with equation solving"

Page 4 of 9

d.  $\frac{1}{4}x + 2 = 2x - 5$



e.  $2x + 4 = -\frac{2}{3}x - 4$



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Solidifying your skills with equations

Student Activity Sheet 2; *Exploring* "Consolidating your skills with equation solving"

Page 5 of 9

5. Solve each of the following equations algebraically.

a.  $2x - 5 = -8x$

b.  $-5(3x + 3) = 3(2x - 5)$

c.  $-3x - 4(x - 2) = -(x + 4) - 6$

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Solidifying your skills with equations

Student Activity Sheet 2; *Exploring* "Consolidating your skills with equation solving"

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6. Solve each of the equations algebraically.

a.  $-3 = \frac{4}{3}x + 5$

b.  $\frac{3}{2}x - \frac{1}{3} = 2$

c.  $\frac{5}{3}x - \frac{3}{2} = 5 - \frac{1}{2}x$

d.  $3\left(\frac{3}{4}x - 4\right) = 2\left(\frac{1}{3}x - 6\right)$

Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

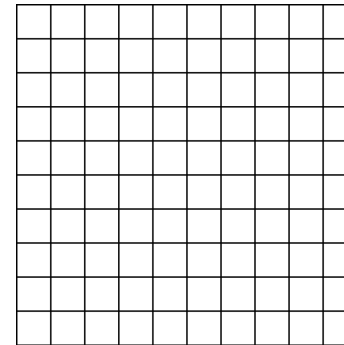
### Solidifying your skills with equations

Student Activity Sheet 2; *Exploring* "Consolidating your skills with equation solving"

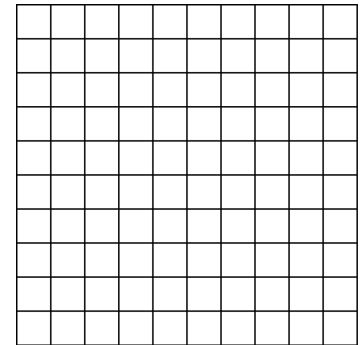
Page 7 of 9

7. **REINFORCE** Solve each equation by graphing.

a.  $7 = \frac{3}{4}x + 4$



b.  $-5 = -\frac{2}{3}x - 3$



Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Solidifying your skills with equations

Student Activity Sheet 2; *Exploring* “Consolidating your skills with equation solving”

Page 8 of 9

c.  $4x + 2 = -2x - 4$


d.  $\frac{1}{3}x - 5 = \frac{4}{3}x + 4$


Student: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

### Solidifying your skills with equations

Student Activity Sheet 2; *Exploring* “Consolidating your skills with equation solving”

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8. **REINFORCE** Solve each equation algebraically.

a.  $-\frac{3}{2}x - 5 = \frac{2}{3}x + 8$

b.  $\frac{1}{3}x + 5 = -\frac{1}{2}x + \frac{5}{2}$

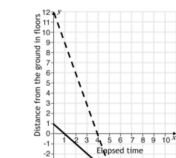
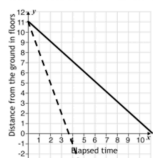
c.  $-3\left(\frac{4}{5}x - 4\right) = 4\left(\frac{1}{3}x + 3\right)$

d.  $-3\left(\frac{1}{4}x - 3\right) = \frac{1}{2}\left(2x + \frac{1}{2}\right)$

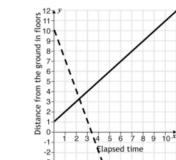
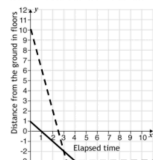
4/8/20: Topic 4 – SAS 2

1. **REINFORCE** Sketch the graphs of Elevator A and Elevator B. Use a solid line for Elevator A and a dotted line for Elevator B.

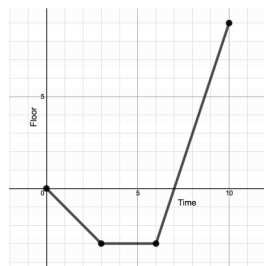
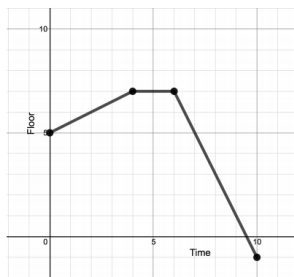
- a. Elevator A: Start at floor 11 at rate -1.  
Elevator B: Start at floor 11 at rate -3.



- c. Elevator A: Start at floor 1 at rate -1.  
Elevator B: Start at floor 10 at rate -4.

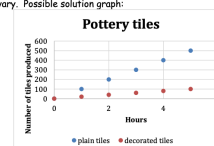


2. A) At floor 12, That is the point where the graph touches the y-axis, when time is 0.  
B) The elevator descended from floor 12 to floor 4. The graph fell on that interval from  $y=12$  to  $y=4$ .  
C) The elevator stayed on the 4<sup>th</sup> floor. Its distance from the ground did not change, as indicated by the horizontal line.  
D) The elevator rose from the 8<sup>th</sup> floor to the 10<sup>th</sup> floor. The graph rose on that interval from  $y=8$  to  $y=10$ .
- 3.



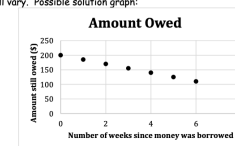
4. A)

Answers will vary. Possible solution graph:



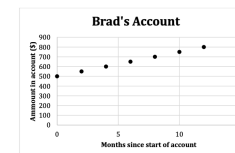
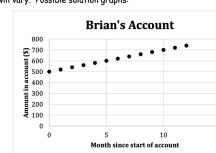
- B)

Answers will vary. Possible solution graph:



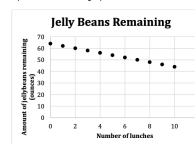
- C)

Answers will vary. Possible solution graphs:



- D)

Answers will vary. Possible solution graph:



5. A) 520 packages per hour B) -12.5 gallons per minute  
6. Sample response: Between days 0 and 6 the water level decreased at a constant rate. Between days 6 and 9 the water level increased, but not at a constant rate. Overall, the rate of change is not constant; therefore, this data is not linear.

4/9/20: Topic 4 – SAS 3

1. A) Let the number of cups of sugar =  $s$ . Let the number of dozens of cookies =  $c$ . Depending on which variable students choose to be the independent variable, the equation could be either

$$c = 3s \text{ or } s = \frac{1}{3}c.$$

- B) Use your equation to solve for the number of cups of sugar needed for 10 dozen cookies.

$$10 = 3s, \text{ so } s = 3\frac{1}{3} \text{ cups.}$$

Using the first equation,

$$s = \frac{1}{3}(10) = 3\frac{1}{3} \text{ cups.}$$

Using the second equation,

2.

Let the number of drops of red tint =  $r$   
Let the number of gallons of base =  $b$

Method 1: Find the constant of proportionality and use it to find the answer.

$$5 = k(2)$$

$$\frac{5}{2} = k$$

The constant of proportionality is  $\frac{5}{2}$ :

$$r = \frac{5}{2}(6)$$

$$r = 15 \text{ drops}$$

Method 2: Use the fact that, in a proportional relationship, the ratios between the quantities must be constant.

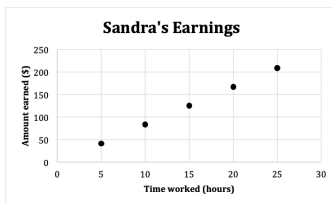
$$\frac{5}{2} = \frac{r}{6}$$

$$2r = 30$$

$$r = 15 \text{ drops}$$

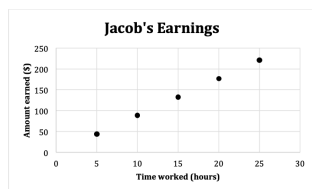
3. A) \$167/20 hours = \$8.35 per hour  
B) You know Sandra earns \$8.35 per hour. Then, her pay for 28 hours would be  $8.35(28) = \$233.80$ .

C) Answers will vary. Possible solution graph:



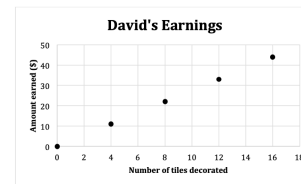
4. A)  $8.35 + 0.50 = \$8.85$  per hour  
B)  $8.85(22) = \$194.70$   
C)

Answers will vary. Possible solution graph:



5. A)  $\$41.25/15 \text{ tiles} = \$2.75$  per tile  
B)  $\$99.00/\$2.75 \text{ per tile} = 36 \text{ tiles}$ .  
C)

Answers will vary. Possible solution graph:



6. A)

$$14 \cdot \frac{4}{16} = \frac{x}{14}$$

$$\frac{56}{16} = \frac{x}{14}$$

$$3.5 = x$$

B)

$$5 \cdot \frac{12}{30} = \frac{x}{5}$$

$$\frac{60}{30} = \frac{x}{5}$$

$$2 = x$$

4/10/20:

Topic 4 – SAS 4

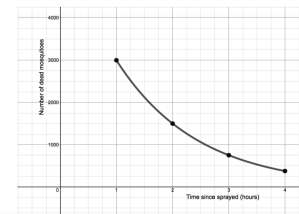
1. A) b B) a C) c D) c  
2. Descriptions will vary, but they should all indicate that the skateboarder will start out away from the motion detector and move toward it at an increasing speed. Then the skateboarder will slow down as he changes directions. He then starts to move away from the motion detector at an increasing speed, but then slows down toward the end.

Topic 4 – SAS 5

1. A)

Sketch a graph showing the data in the table.

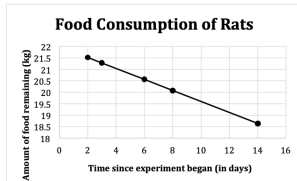
Answers will vary. Possible solution graph:



- B) First differences: -1500, -750, -375. Second differences: 750, 375  
C) Exponential. The data show a halving pattern, which can be represented by an exponential function. The graph is not linear and the first/second differences are not constant

2. A)

Answers will vary.  
Possible solution graph:



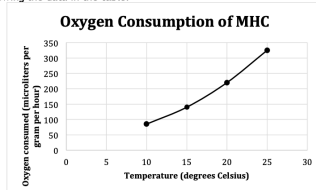
B) First differences: -0.24 (constant). Second differences: 0 (constant)

C) Linear. The data have a constant rate of change (first differences are constant). Also, the graph is linear.

3. A)

Sketch a graph showing the data in the table.

Answers will vary. Possible solution graph:



B) First differences: 55, 80, 105. Second differences: 25, 25

C) Quadratic. The second differences are constant.

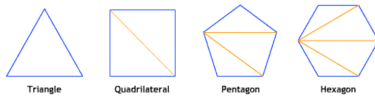
4/13/20: Topic 5 – SAS 2

1. Rate of change
2. Linear function, constant
3. Slope, rate of change
- 4.

$$m = \frac{12 - 1.5}{10 - 0} = 1.05$$

$$g = 1.05h + 1.5$$

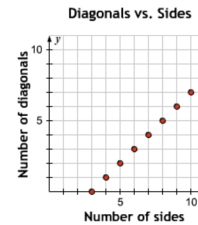
5.



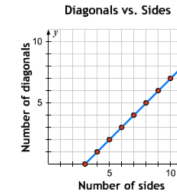
6.

Heptagon	7	4
Octagon	8	5
Nonagon	9	6
Decagon	10	7

7.



8.

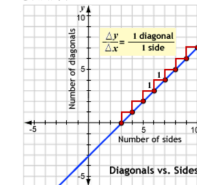


9.

Find the slope:

TABLE:  $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 \text{ diagonal}}{1 \text{ side}} = 1$

GRAPH:



Find the y-intercept:

TABLE: Find where  $x = 0$ . (Work backwards in the table to find where the  $x$ -value equals zero.) At this point, the number of sides = 0 and the number of diagonals = -3.

GRAPH: Follow the trend line back to the  $y$ -axis to see that it crosses at (0, -3). The rule is  $y = x - 3$ .

10. A)  $y = 20 - 3 = 17$  diagonals.

B) There is no polygon with “zero” sides; therefore, the point (0, -3) has no meaning in the context of the problem situation.

11. You can subtract 3 from any real number, so the domain of the mathematical function  $f(x) = x - 3$  is the set of all real numbers. Given any real number,  $x$ , subtracting 3 results in another real number, and there is no real number you could not get from this subtraction. So, the range of the mathematical function is also the set of all real numbers.

You can confirm this information by looking at the graph. The line that is the graph of the mathematical function is made up of points of the form  $(x, x - 3)$ , where  $x$  can be any real number.

12. Because  $x$  represents the number of sides of a polygon, values for  $x$  are restricted to positive integers greater than or equal to 3. Therefore, the range for the situation is restricted to integers greater than or equal to 0. You can use inequalities to efficiently represent the domain and range of the situation. The domain is the set of all  $x$  such that  $x \geq 3$  and  $x$  is an integer. The range is the set of all  $y$  such that  $y \geq 0$  and  $y$  is an integer.

Again, you can confirm this from the graph by considering only the points that represent the ordered pairs from the problem situation.

13. According to Alejandro's table, he is repaying \$50 to his grandfather each week. The amount he still owes his grandfather is decreasing at a constant rate of \$50 per week.
14. If  $s$  represents Alejandro's savings and  $w$  represents the number of weeks, one function rule is  $s = -50w + 1050$ . You might have a rule that looks different but is equivalent, such as  $s = 1050 + (-50)w$  or  $s = 1050 - 50w$ .
15. By substituting 15 for  $w$  in the function rule, you can calculate how much money Alejandro will owe his grandfather after 15 weeks:

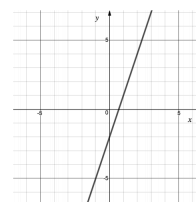
$$\begin{aligned}s &= -50(15) + 1050 \\s &= -750 + 1050 \\s &= 300\end{aligned}$$

After 15 weeks, Alejandro will still owe his grandfather \$300. You will get the same answer if you extend the table. However, that process may be time consuming and tedious.

16. To find the zero, find the value of  $x$  that causes the function to have a value of 0. Set the linear expression equal to 0 and solve:  
 $12x - 24 = 0$   
 $x = 2$   
 No other value of  $x$  makes the expression have a value of 0, so 2 is the only zero of this function.

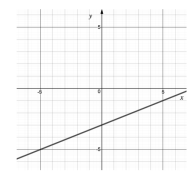
17. A)

$$y = 3x - 2$$



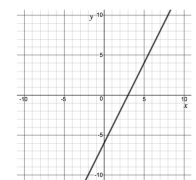
C)

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



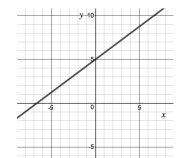
18. A)

$$y = 2x - 6$$



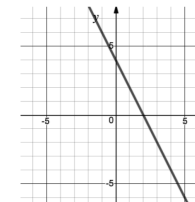
C)

$$y = \frac{3}{4}x + 5$$



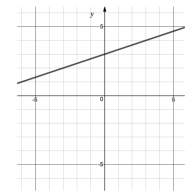
B)

$$y = -2x + 4$$



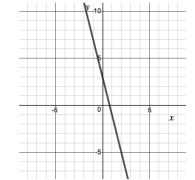
D)

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



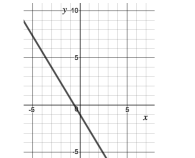
B)

$$y = -4x + 3$$



D)

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



19. A)  $y = -5x + 2$       B)  $y = 3x - 3$       C)  $y = \frac{1}{3}x - 4$       D)  $y = -\frac{2}{5}x + 2$

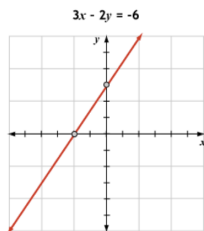
4/14/20: Topic 5 – SAS 4, Problems 1-8

REINFORCE

$$\begin{aligned} y &= \frac{3}{2}x + 12 \\ &= \frac{3}{2}(0) + 12 \\ &= 12 \end{aligned}$$

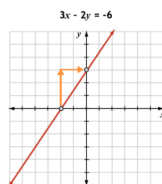
The graph of the line  $y = \frac{3}{2}x + 12$  has a y-intercept of 12. The line crosses the x-axis at the point (0,12).

- $Ax + By = C$
- To find the x-intercept, substitute 0 for y and solve the resulting equation for x.  
To find the y-intercept, substitute 0 for x and solve the resulting equation for y.
- To find the x-intercept, let  $y = 0$  and solve for x:  
 $15x = 30$ , so the x-intercept is  $x = 2$ .  
To find the y-intercept, let  $x = 0$  and solve for y:  
 $-5y = 30$ , so the y-intercept is  $y = -6$ .
- To find the x-intercept, let  $y = 0$  and solve for x:  
 $3x = -6$ , so the x-intercept is  $x = -2$ .  
To find the y-intercept, let  $x = 0$  and solve for y:  
 $-2y = -6$ , so the y-intercept is  $y = 3$ .



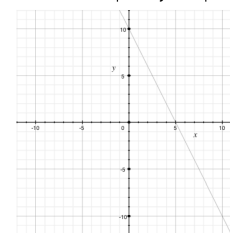
5.

$$\begin{aligned} \frac{\Delta y}{\Delta x} &= \frac{3 - 0}{0 - (-2)} \\ &= \frac{3}{2} \end{aligned}$$



6. A)

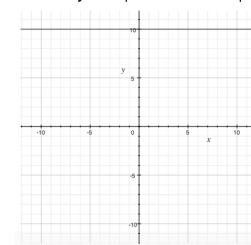
A line with x-intercept 5 and y-intercept 10



$2x + y = 10$

B)

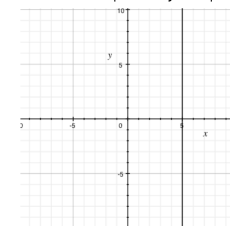
A line with y-intercept 10 and no x-intercept



$y = 10$

C)

A line with x-intercept 5 and no y-intercept



$x = 5$

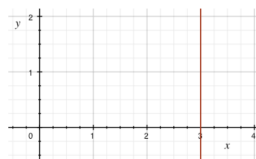
- Graphs a and b represent functions. On graph a, each value of x is associated with a different value of y, and there is no value of x that is associated with two different values of y. On graph b, each value of x is associated with the same value of y, 10. No value of x is associated with two different values of y.

Graph c does not represent a function. Each point on the line associates the same xvalue, 5, with a different value for y.

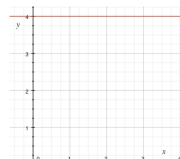
- See above

4/15/20: Topic 5 – SAS 4, 9-16

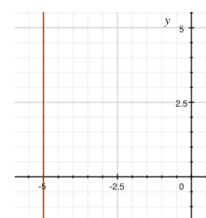
9. A)



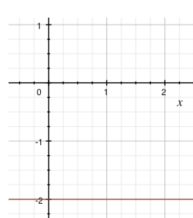
B)



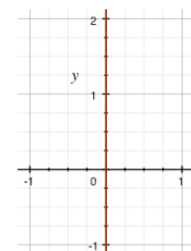
C)



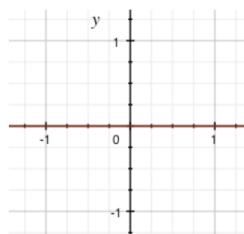
D)



E)



F)



10. The first line in the table shows the information for the initial state of the animation. After the first line, student answers will vary.

Equation for line	Point on line	Point on line	Slope
$y = x + 4$	$(-4, 0)$	$(0, 4)$	1

11. A)

Choose any two points:

$$\frac{\Delta y}{\Delta x} = \frac{4 - 4}{4 - 1} = \frac{0}{3} = 0$$

B)

Choose any two points:

$$\frac{\Delta y}{\Delta x} = \frac{3 - 2}{-4 - (-4)} = \frac{1}{0} = \text{undefined}$$

12. Student answers will vary, but should be of the form  $y = \text{constant}$ . The graph should be a horizontal line that intersects the y-axis at the constant.

13. Student answers will vary, but should be of the form  $x = \text{constant}$ . The graph should be a vertical line that intersects the x-axis at the constant.

14. A) Equation:  $x = -3$  Slope: no slope

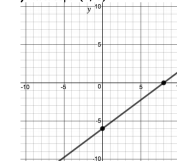
C) Equation:  $x = 5$  Slope: no slope

B) Equation:  $y = 1.5$  Slope: 0

D) Equation:  $y = 7$  Slope: 0

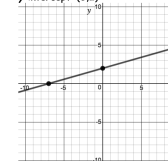
15. A)

x-intercept: (8, 0)  
y-intercept: (0, -6)



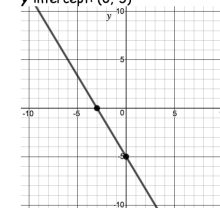
B)

x-intercept: (-7, 0)  
y-intercept: (0, 2)



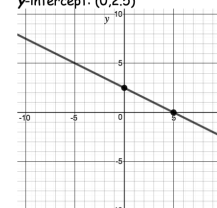
C)

x-intercept: (-3, 0)  
y-intercept: (0, -5)

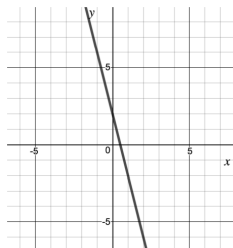


D)

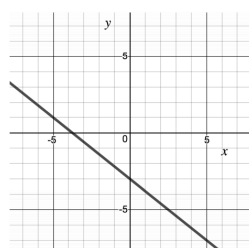
x-intercept: (5, 0)  
y-intercept: (0, 2.5)



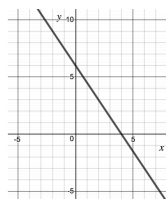
16. A)



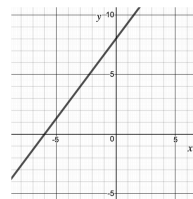
B)



C)



D)



4/16/20: Topic 5 – SAS 5

1. A) 8 tiles will be needed B) 12 tiles will be needed C) 16 tiles will be needed  
D) The number of tiles increases by 4 each time the pond side's length increases by 1 foot.

Length of pond in feet	Number of tiles in border
1	8
2	12
3	16

2. For each increase of 1 foot in the length, the number of tiles increases by 4. This pattern will continue. Each pond has 4 sides, so each 1-foot increase in length means that each side of the pond will be 1 foot longer. This means that 1 additional tile will be needed for each of the 4 sides of the pond.
3. The rate at which the number of tiles changes with respect to a change in pond length is constant:  $\frac{4 \text{ tiles}}{1 \text{ foot}}$ . This tells you that the slope of the graph of the linear function is 4.
4.  $t = 4s + 4$

5.

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad m = 4 \quad \text{Point } (3, 16)$$

$$4 = \frac{y - 16}{x - 3}$$

$$4(x - 3) = \frac{(y - 16)}{(x - 3)}(x - 3)$$

$$4(x - 3) = y - 16$$

$$y - 16 = 4(x - 3)$$

6.

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

7.

$$y - 16 = 4(x - 3)$$

$$y - 16 = 4x - 12$$

$$y - 16 + 16 = 4x - 12 + 16$$

$$y = 4x + 4$$

8.

Equation of line	Point on line	Slope of line
$y = -2x + 5$	(0, 5)	-2
$y - 3 = 4(x - 7)$	(7, 3)	4
$2x + 5y = 10$	(5, 0)	$-\frac{2}{5}$

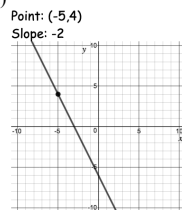
9.

Description of line	Equation of line
The line contains the point (1, -2) and is parallel to the line given by the equation $y = 2x + 3$ .	$y = 2x - 4$
The line contains the point (1, -2) and is perpendicular to the line given by the equation $y = -4x + 2$ .	$x - 4y = 9$
The line contains the points (1, 2) and (2, 5).	$y = 3x - 1$
The line contains the points (2, 0) and (0, -3).	$3x - 2y = 6$
The line contains the points (0, 5) and (1, 4).	$y = -x + 5$

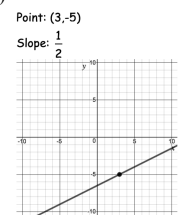
10.  $y - 15 = -2(x + 12)$

11.  $y - 15 = -2(x + 12)$   
 $y - 15 = -2x - 24$   
 $y = -2x - 9$

12. A)



C)



13. A)

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

C)

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

4/17/20: Topic 8 – SAS 2

1.

$$x + 2 - 2 = 7 - 2$$

Subtraction Property of Equality

$$x + 0 = 5$$

Subtraction of Integers

$$x = 5$$

Additive Identity Property

$$x + 2 + (-2) = 7 + (-2)$$

Addition Property of Equality

$$x + 0 = 7 + (-2)$$

Additive Inverse Property

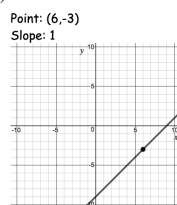
$$x + 0 = 5$$

Addition of Integers

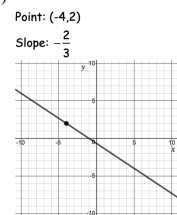
$$x = 5$$

Additive Identity Property

B)



D)



B)

Answers will vary with the point used. One possible function rule is shown.

$$y + 2 = -3(x - 4)$$

D)

Students can write either of these two rules:  
 $y - 16 = 2(x - 4)$   
 $y - 2 = 2(x + 3)$

2.

$$15d = 300$$

$$\frac{15}{15}d = \frac{300}{15}$$

Division Property of Equality

$$1 \cdot d = 20$$

Division of Integers

$$d = 20$$

Multiplicative Identity Property

$$15d = 300$$

$$\frac{1}{15} \cdot 15d = \frac{1}{15} \cdot 300$$

Multiplicative Property of Equality

$$1 \cdot d = \frac{1}{15} \cdot 300$$

Multiplicative Inverse Property

$$1 \cdot d = 20$$

Multiplication of Rational Numbers

$$d = 20$$

Multiplicative Identity Property

3.

$$29.95 + 0.16m = 75$$

$$29.95 + 0.16m - 29.95 = 75 - 29.95$$

Subtraction Property of Equality

$$0.16m = 45.05$$

Subtraction of rational numbers

$$m = 281.5625$$

Division Property of Equality

Make a table of values for the rental cost function. Scroll down the table until you find the number of miles that is associated with a cost of \$75. To use a graph, graph the rental cost function and the line  $y = 75$ . The x-coordinate of the point where the two lines intersect is the solution to the equation.

4.  $x = 3$

5.  $x = 2$

6. A)  $-2 = x$  B)  $x = -5$  C)  $x = 7$

7. A)  $z = -6$  B)  $y = \frac{1}{2}$

8.  $x = -1$  or  $-1 = x$

9.  $x = 4$

10.  $b = 5$

11.  $a = 6$

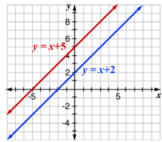
12.

$$g = 43\frac{1}{3}$$

13.  $9 = r$

4/20/20: Topic 8 – SAS 3, Problems 1-8

1.  $2 = y$
2.  $k = -1$
3.  $4 = b$
4. A)  $8 = x$       B)  $x = -2$       C)  $4 = x$
5.  $0 = 3$



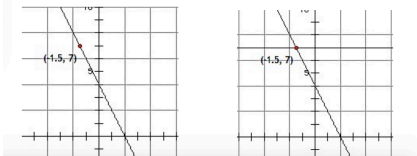
6.  $\frac{C}{2\pi} = r$
7.  $y = 5x - 6$
8.  $f = 1.5t + 98.6$

4/21/20: Topic 8 – SAS 3, Problems 9-16

9.  $x = 2$
- 10.

The solution is  $x = -\frac{3}{2}$ .

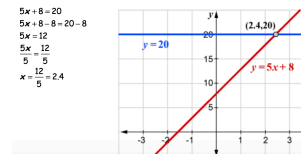
Students may graph  $y = -2x + 4$  and trace to find the ordered pair with a  $y$ -coordinate of 7. They may also graph the lines  $y = 7$  and  $y = -2x + 4$ , and find the point of intersection.



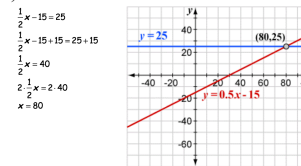
11.  $\frac{5}{9}F - \frac{160}{9} = C$
12.  $-9 = x$
13.  $x = -\frac{166}{71}$
14.  $p = \frac{1}{20}$
15.  $q = \frac{3}{5}$
16.  $x = -5$

4/22/20: Topic 8 – SAS 5

1. A)

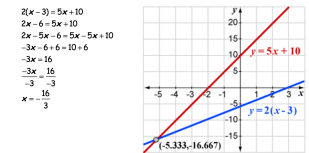


- C)

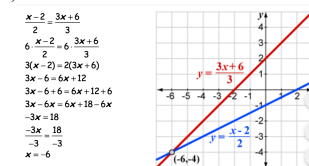


2. A)  $x = 2$       B)  $x = 1$       C)  $x = 9$       D)  $x = -3/14$       E)  $x = -9/5$

- B)

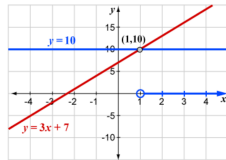


- D)



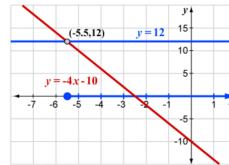
3. A)

$$\begin{aligned} 3x + 7 &> 10 \\ 3x + 7 - 7 &> 10 - 7 \\ 3x &> 3 \\ x &> 1 \end{aligned}$$



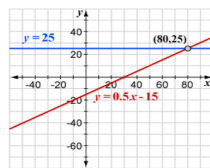
B)

$$\begin{aligned} -4x - 10 &\leq 12 \\ -4x - 10 + 10 &\leq 12 + 10 \\ -4x &\leq 22 \\ x &\geq \frac{22}{-4} \\ x &\geq -5.5 \end{aligned}$$

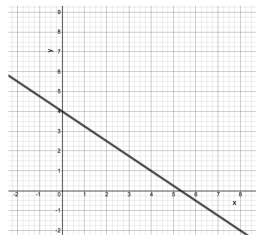


C)

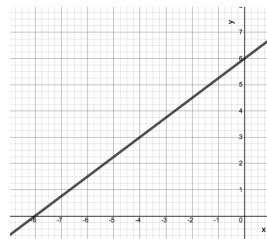
$$\begin{aligned} 3x - 8 &\geq 5x + 7 \\ 3x - 8 + 8 &\geq 5x + 7 + 8 \\ 3x &\geq 5x + 15 \\ 3x - 5x &\geq 5x + 15 - 5x \\ -2x &\geq 15 \\ x &\leq \frac{15}{-2} \\ x &\leq -7.5 \end{aligned}$$



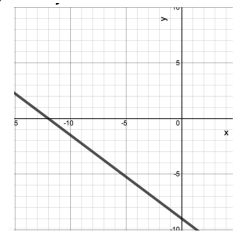
4. A)



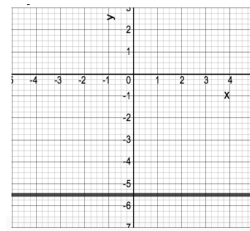
B)



C)



D)

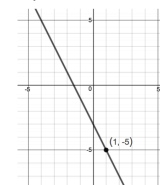


4/23/20: Solidifying your skills with equations – SAS 2, Problems 1-4

1.  $x = 20$
2.  $x = 3$
- 3.

Equation	Solution
$6 - 2x = 4$	$x = 1$
$\frac{2}{3}x - 6 = 10$	$x = 24$
$2(x - 4) = 6$	$x = 7$
$\frac{1}{2}(x - 7) = 4$	$x = 15$
$\frac{3}{2}x - \frac{2}{3} = \frac{-13}{6}$	$x = -1$

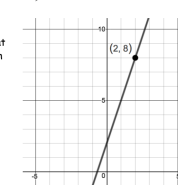
4. A)



$$x = 1$$

The point on the graph where  $y = -5$  is at (1, -5). This means that  $x = 1$  is a solution to the equation  $-5 = -2x - 3$ .

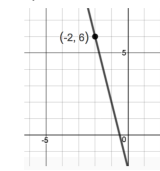
B)



$$x = 2$$

The point on the graph where  $y = 8$  is at (2, 8). This means that  $x = 2$  is a solution to the equation  $3x + 2 = 8$ .

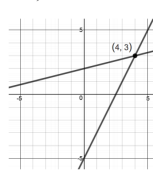
C)



$$x = -2$$

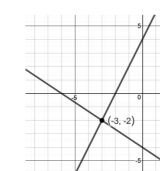
The point on the graph where  $y = 6$  is at (-2, 6). This means that  $x = -2$  is a solution to the equation  $-4x - 2 = 6$ .

D)



The point on the graph where the expression on the left-hand side equals the expression on the right-hand side is (4, 3). This means that  $x = 4$  is a solution to the equation  $\frac{1}{4}x + 2 = 2x - 5$  because each side of the equation equals 3 when  $x = 4$ .

E)



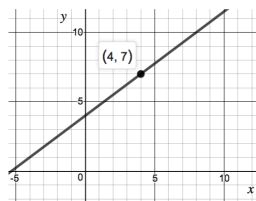
The point on the graph where the expression on the left-hand side equals the expression on the right-hand side is (-3, -3). This means that  $x = -3$  is a solution to the equation  $2x + 4 = -\frac{2}{3}x - 4$  because each side of the equation equals -2 when  $x = -3$ .

4/24/20: Solidifying your skills with equations – SAS 2, Problems 4-8

5. A)  $\frac{1}{2} = x$     B)  $x = 0$     C)  $x = 3$

6. A)  $-6 = x$     B)  $x = 14/9$     C)  $x = 3$     D)  $x = 0$

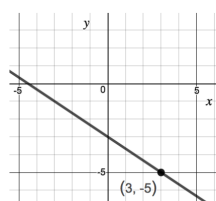
7. A)



The solution to the equation

$$7 = \frac{3}{4}x + 4 \text{ is } x = 4.$$

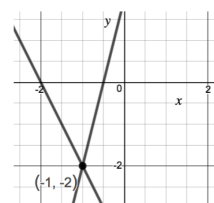
B)



The solution to the equation

$$-5 = -\frac{2}{3}x - 3 \text{ is } x = 3.$$

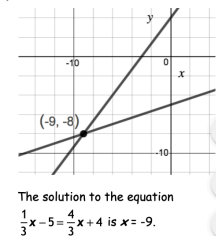
C)



The solution to the equation

$$4x + 2 = -2x - 4 \text{ is } x = -1.$$

D)



The solution to the equation

$$\frac{1}{3}x - 5 = \frac{4}{3}x + 4 \text{ is } x = -9.$$

8. A)  $x = -6$     B)  $x = -3$     C)  $0 = x$     D)  $x = 5$