

graphing inequalities

objective:
you will
graph linear
inequalities.

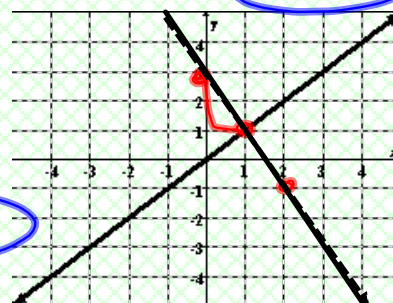
Agenda
warm-up
hw check
notes • foldable
homework

$$y = mx + b$$

Warm-up

The graph below represents the parent function $y = x$.

A) From the equation above, if the y-intercept is changed to 3 and the slope is changed to -2, what is the equation of the new line?



$$y = -2x + 3$$

$$b = 3$$

$$m = -\frac{2}{1}$$

B) Sketch the new line..

C) Describe the transformation from the original line to the new line in words.

- decreasing
- steeper
- up

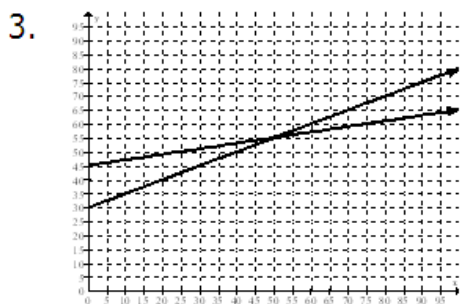
y -int \rightarrow start

slope \rightarrow PER

Answers:

1. $y = 30 + 0.5x$

2. $y = 45 + 0.20x$



4. The initial rental fee

5. The cost per mile

6. 50 miles

7. STRIPES

8. A. $y = 400 + 80x$

B. \$400 initial fee

C. \$80 per linear foot

9. line m

10. $m = \frac{1}{20}$ or $m = \frac{0.05}{1}$

cost per minute

11. D

12. A. The amount owed each month

B. The original amount borrowed

C. $y = -75x + 900$

13. It takes time to react to the teacher saying "go".

Algebra I – Unit 3: Topic 2

Practice - Meaning of Slope and Intercepts

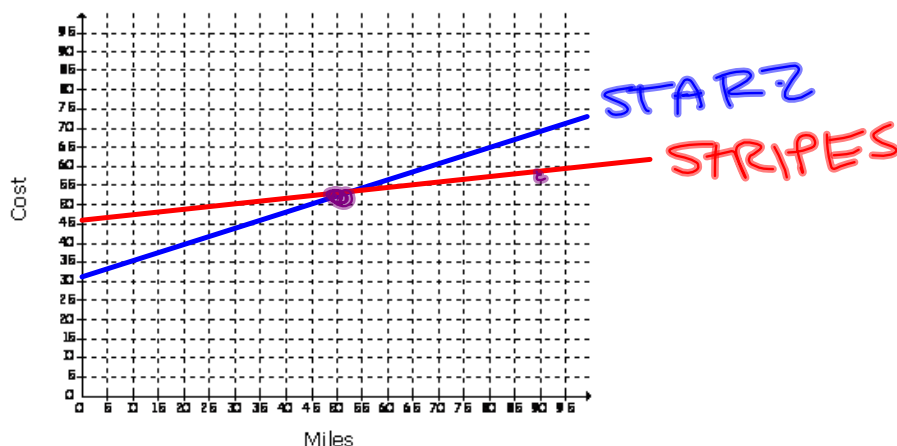
No Textbook Correlation

Name _____ Date _____ Period _____

Using the situation below, answer questions 1-9.

STARZ Car Rentals charges an initial rental fee of \$30 plus \$0.50 per mile. STRIPES Car Rentals charges a flat fee of \$45 plus \$0.20 per mile.

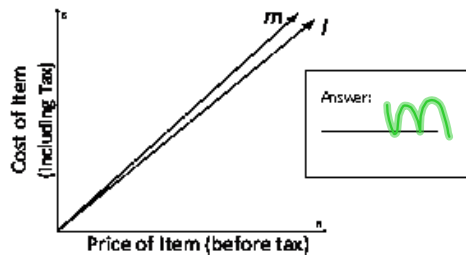
- Write a function rule for the cost of renting a car through STARZ. $y = 30 + .50x$
- Write a function rule for the cost of renting a car through STRIPES. $y = 45 + .20x$
- Graph the two functions on the graph provided below. Make sure to label the graphs.



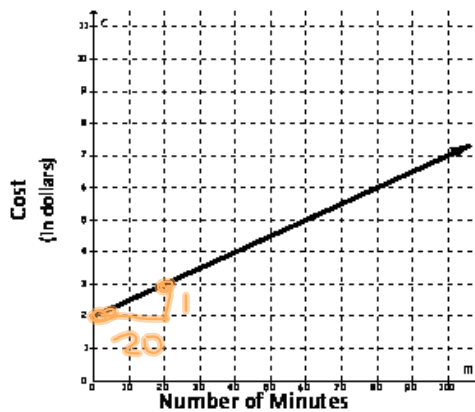
- What does the y -intercept represent in the two equations? initial rental fee
- What does the slope represent in the two equations? cost per mile
- How long would you have to drive so that the cost would be the same? 60 miles (y's same)
- If you were only driving 90 miles, which car rental should you use? STRIPES
- Jeri installs granite counter tops. She charges \$400 for all jobs and then \$80 per linear foot of granite.
 - What is the equation of the line? $y = 400 + 80x$
 - What is the y -intercept of the graph? What does it represent? 400, cost initially
 - What is the value of the slope? What does it represent? 80, cost per foot

Algebra I – Unit 3: Topic 2

9. The graphs below show Lines l and m , the total cost, including tax, of an item in two different states. Which line represents the total cost, including tax, of an item with a higher tax rate?



10. The graph below represents the cost of a long distance call with a phone company based on the number of minutes.



Based on the graph, what is the slope and what does it represent?

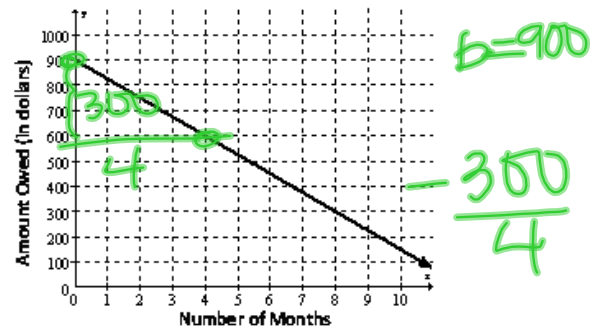
$\frac{\text{RISE}}{\text{RUN}} = +\frac{1}{20}$
costs \$1 for every 20 min

11. Alyssa's carpet cleaning service charges an initial fee of \$45, plus \$5 for every 100 square feet of carpet cleaned. Alyssa graphed y , the amount that her cleaning service charges, as a function of x , every 100 square feet of carpet cleaned. What does the y-intercept of Alyssa's graph represent?

- ☐ A The charge per square foot of carpet cleaned
☐ B The number of square feet of carpet cleaned
☒ C The total amount owed
☐ D The initial fee

$y = 45 + 5x$

12. The graph below represents the amount of money Liz borrowed from her father and the number of monthly payments needed to pay it back.



- A. What does the slope of the graph represent in the situation?

$\frac{\text{RISE}}{\text{RUN}} = \frac{\$}{\text{months}}$ amount paid per month

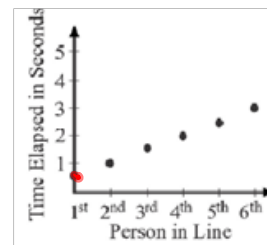
- B. What does the y-intercept in the graph represent in this situation?

starting amount

- C. What is the function rule? equation

$y = \frac{300}{4}x + 900$

13. Ten students are standing in a line in the front of the classroom. The teacher has told them to hold hands with the person on either side of them. When she says "go", the first person squeezes the hand of the person on their right. As soon as that person feels the squeeze, they squeeze the hand of the person on their right, etc. The graph below represents the time at which each of the first six students squeezes the hand of the person on their right. Why is the y-intercept not 0?



Linear Inequality:

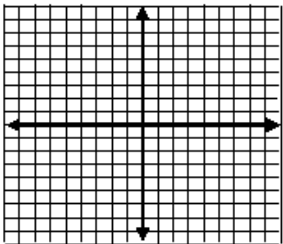
Solution SET:

Shade DOWN
Shade UP

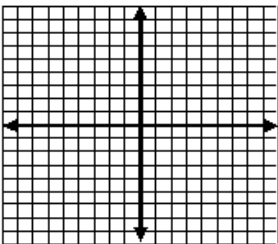
Dotted Line

Solid Line

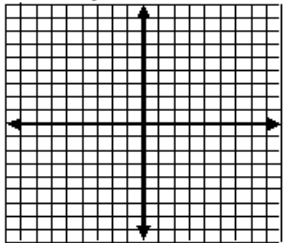
$$y > 2x - 4$$



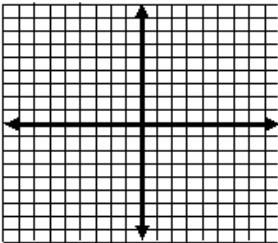
$$2y - 3x \geq 12$$



$$-2y - x > -8$$



$$3x - 3y \geq 9$$



CUT OUT ALONG THE DOTTED LINES
GLUE TABS DOWN ON EACH RECTANGLE

Graphing Inequalities

Linear Inequality:

is similar to a linear equation, but the equal sign is replaced with an inequality symbol

$$y = mx + b$$

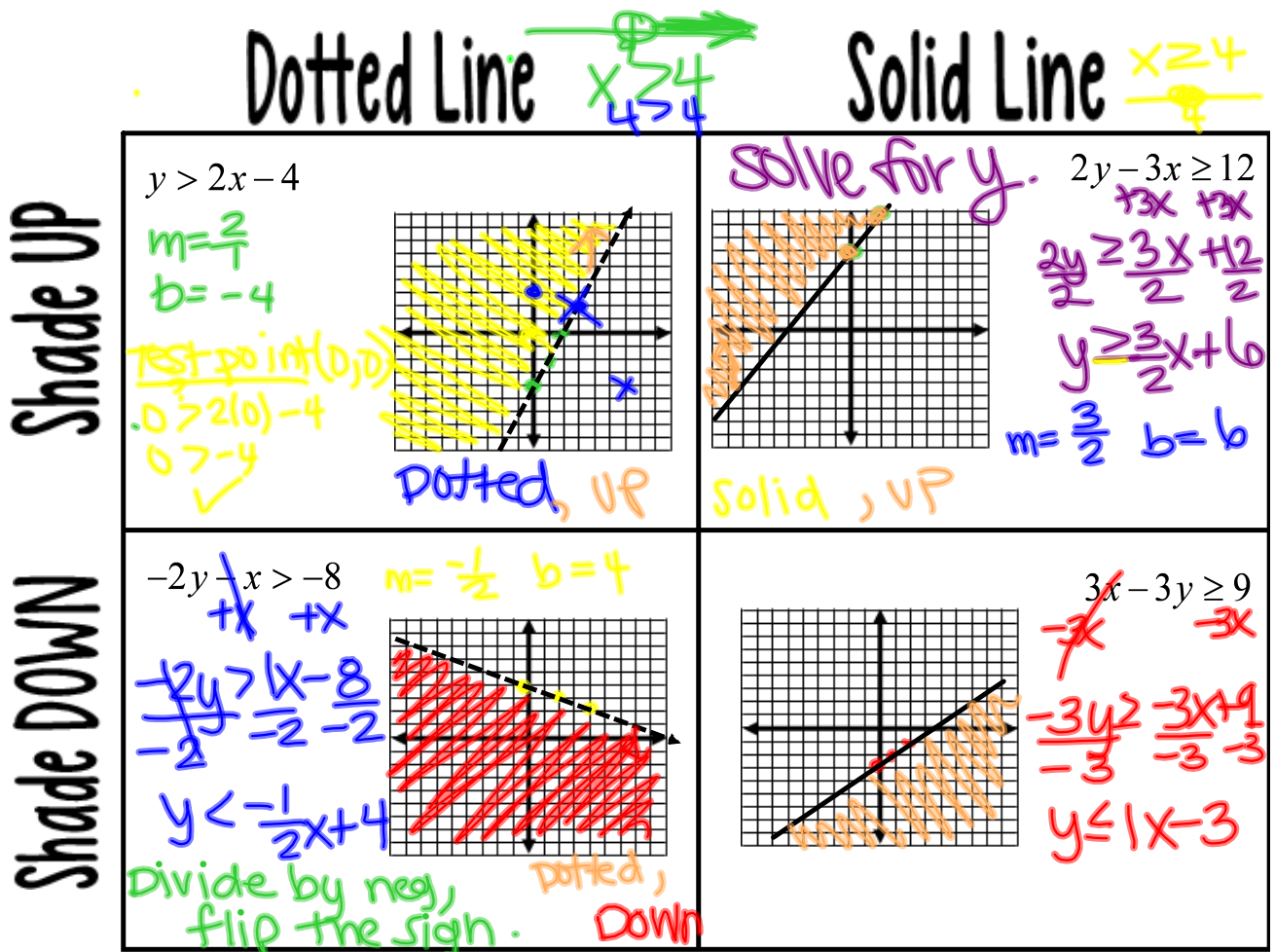
Solution SET:

any ordered pair that makes the inequality true.

(in shaded region)

	Dotted Line	Solid Line
Shade UP	$>$	\geq
Shade DOWN	$<$	\leq

Y MUST BE ON THE LEFT SIDE!!



Y MUST BE ON THE LEFT SIDE!!

p.60

H (0) $y = \#$
horizontal Slope (or y-int)

$y > \#$
shade UP
 $y < \#$
shade DOWN

Vertical

U undefined slope

$X = \#$
(x-intercept)

vertical line
 $x > \#$
shade RIGHT
 $x < \#$
shade LEFT

Algebra I - Unit 3: Topic 2 – Graphing Inequalities

Practice – Graphing Inequalities

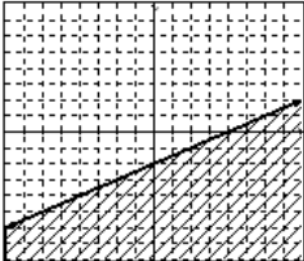
pp 414-417

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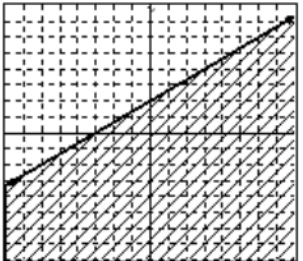
Match each inequality with its graph. Check the shading on the calculator.

_____1.	$y \geq \frac{1}{2}x - 2$
_____2.	$y \leq \frac{2}{3}x + 2$
_____3.	$y \geq \frac{2}{3}x + 2$
_____4.	$y \leq \frac{1}{2}x - 2$

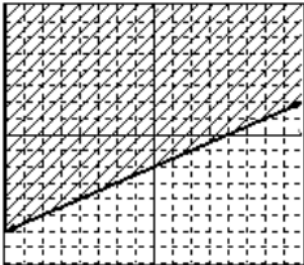
A.



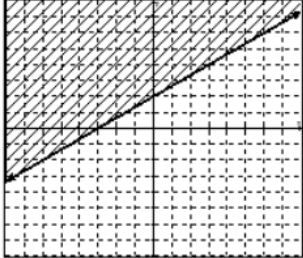
B.



C.



D.



5. Determine which ordered pairs are solutions to the inequality (circle them):

$$y > x - 1$$

A (0, 0)

B (2, 0)

C (5, 4)

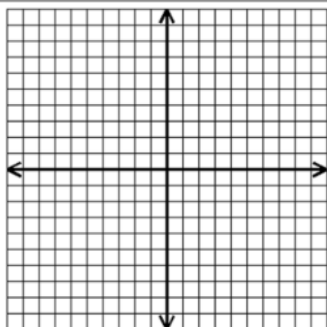
D (1, 3)

Graph each inequality.

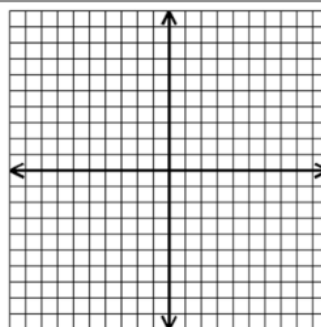
6. $x > 2$	7. $-3y \geq 12$

Algebra I - Unit 3: Topic 2 – Graphing Inequalities

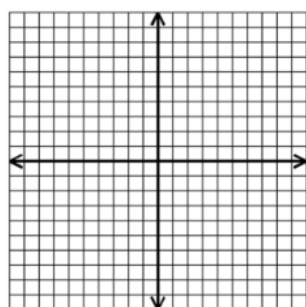
8. $y \leq -x$



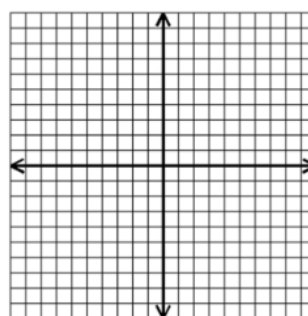
9. $4x - y < 2$



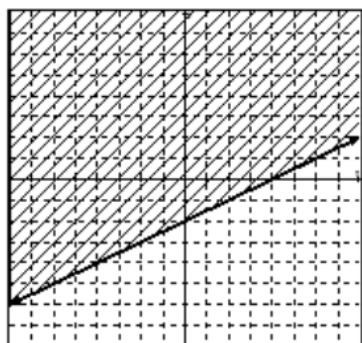
10. $2x - 5y \leq -10$



11. $6x + 2y < -2$



12. Given the graph, answer the following questions.



A. $m =$ _____ $b =$ _____

B. Inequality: _____

C. Solution Point: _____ Not a solution Point: _____

D. x -intercept: _____ y -intercept: _____

Algebra I - Unit 3: Topic 2 – Graphing Inequalities

13. The members of a school choir had a fundraising drive last month. They sold candy bars for \$2 each and cans of popcorn for \$5 each. Derek sold more than \$300 worth of candy and popcorn altogether.

- A. Write an inequality to represent Derek's sales if x is the number of cans of popcorn sold and y is the number of candy bars sold.

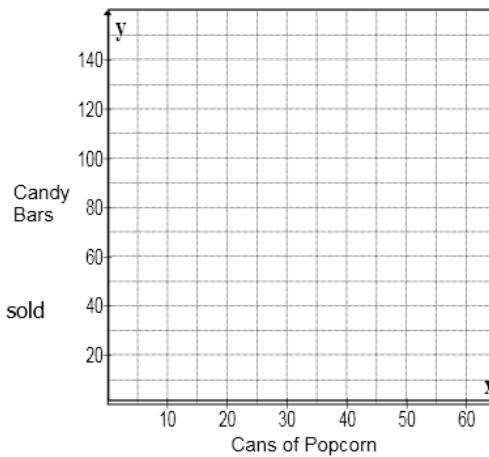
$$5x + 2y > 300$$

- B. Solve the inequality for y .

- C. Which of the following points could not reasonably represent the number of candy bars and cans of popcorn sold by Derek last month?

- A (30, 90)
B (40, 80)
C (20, 50)
D (50, 40)

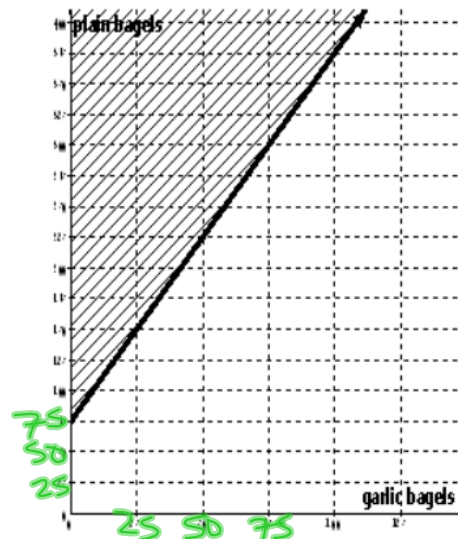
$$30(5) + 2(90) \\ 150 + 180$$



14. Each morning at his bagel shop, Simon makes at least three times as many plain bagels as he does onion bagels and 25 more onion bagels than garlic bagels. The graph below represents the relationship between the number of plain bagels, p , and the number of garlic bagels, g , Simon prepares each day.

Which statement below does not satisfy this inequality relationship?

- A Simon made 100 garlic bagels and 390 plain bagels.
B Simon made 50 garlic bagels and 225 plain bagels.
C Simon made 75 garlic bagels and 300 plain bagels.
D Simon made 25 garlic bagels and 125 plain bagels.



Whiteboard Practice

