Name: _____ Score: ____ out of 70

Folder Check Algebra Unit #4

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Worksheet Policy

-0 All Questions Done

-1 More than Half Done

-2 Only Groupwork Q's

-3 Less than Half Done

-4 Blank/Absent

Notes Policy

-0 All boxes filled

-1 One Empty Box

-2 Two Empty Boxes

-3 Less than Half Done

-4 Blank/Absent

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Name: _____ Date: Algebra

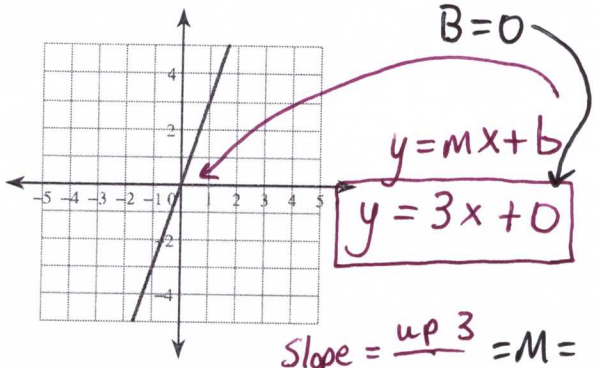
Writing Equations of Lines Given the Graph

Lesson #1 Unit 4

Write the slope-intercept form of the equation of each line.

y = mx + b

11)



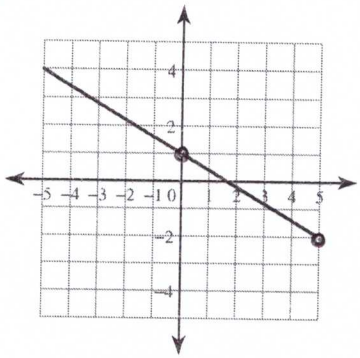
B = 0

y = mx + b

y = 3x + 0

Slope = $\frac{\text{up } 3}{\text{right } 1}$ = m = 3

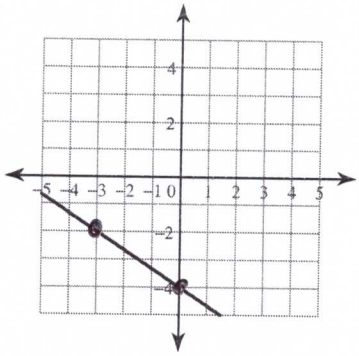
12)



m =

B =

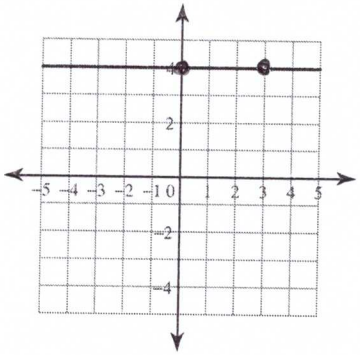
13)



m =

B =

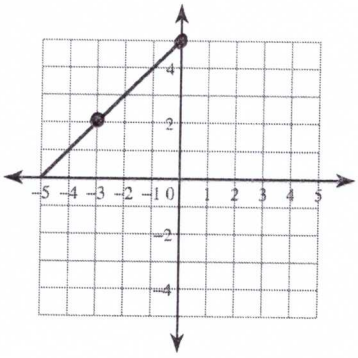
14)



m =

B =

15)

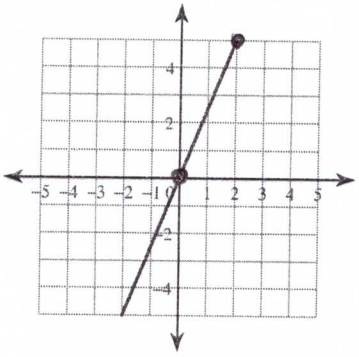


m =

B =

y =

16)

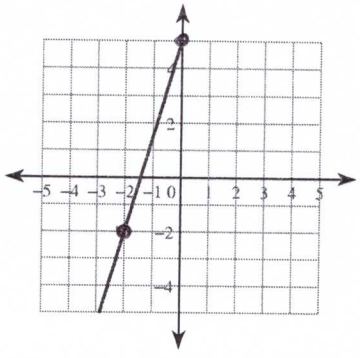


m =

B =

y =

17)

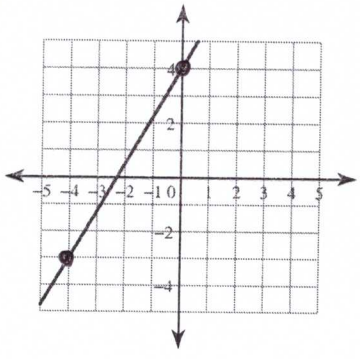


m =

B =

y =

18)



m =

B =

y =

SLOPE-INTERCEPT FORM: Part 1

Alg
Lesson # 1
Unit 4

What is the Y – INTERCEPT of a line?

The POINT where the line crosses the y – axis is called the y-intercept = (0, b)

Identify the y-intercept of each line

- **Y-AXIS:** vertical axis
- Follow the line until it reaches y- axis
  - Draw Intercept point
  - Find the coordinate of that point

Example: Line #1: Line #1 cross the y-axis B = 5

Line #2: B =

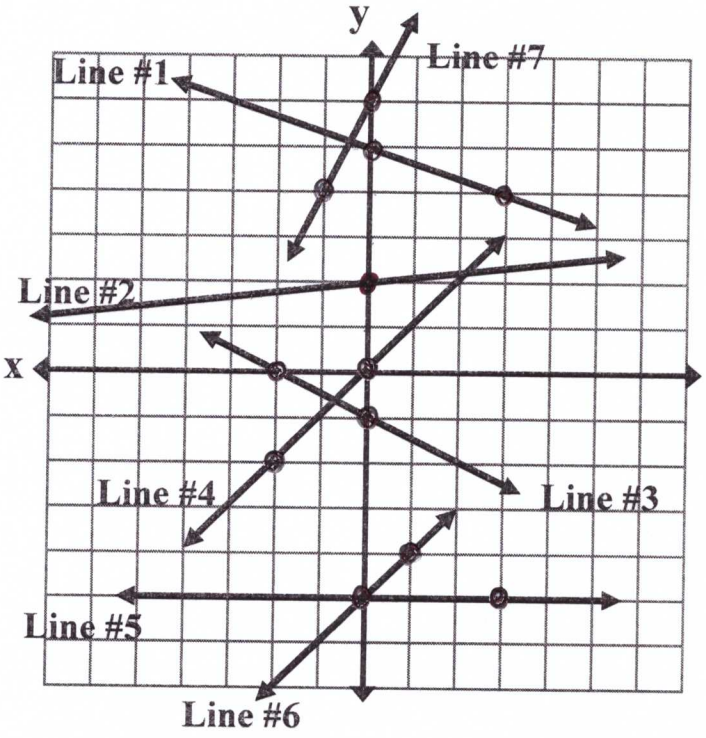
Line #3: B=

Line #4: B =

Line #5: B=

Line #6: B=

Line #7: B = 6



What is Slope-Intercept Form?

Identify the Slope and equation of each line above.

1M) $y = Mx + B$

$M = \frac{-1}{3}$

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

2M) $y = Mx + B$

$M =$ ____

3M) $y = Mx + B$

$m =$ ____

4M) $y = mx + b$

$M =$ ____

5M) $y = Mx + B$

$m =$ ____

6M) $y = mx + B$

$m =$ ____

Name: _____ Unit # 4 Lesson # 1

Activator

New Vocabulary (1 of 4)

New Vocabulary (2 of 4)

New Vocabulary (3 of 4)

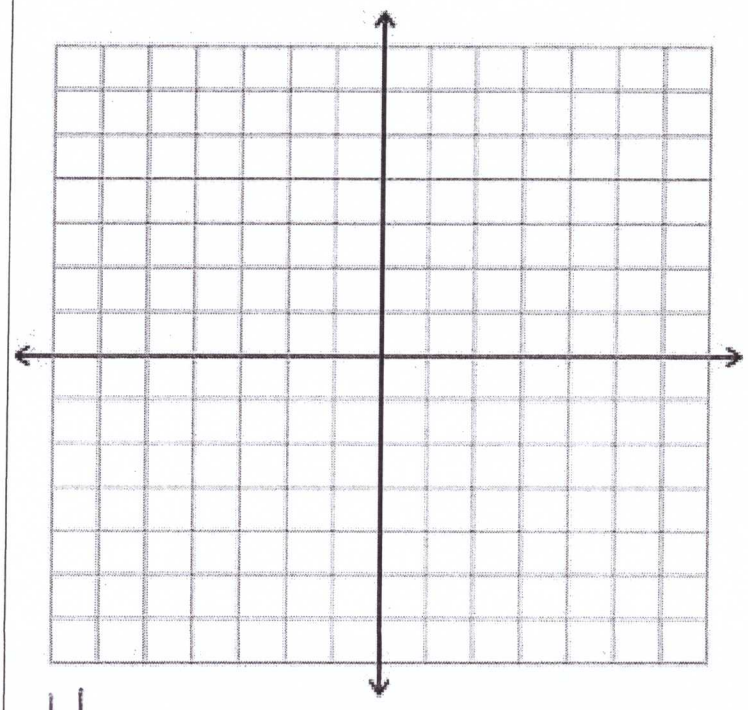
Unit # 4 Lesson # 1

Misconception (4 of 4)

Work Period

Exit Ticket

Extra Graph Paper



Name: _____ Date: Algebra

Write an equation in slope-intercept form $y = mx + b$ Lesson # 2

Unit 4

3) m = ¼ and (0, -6) $y = \frac{1}{4}x - 6$

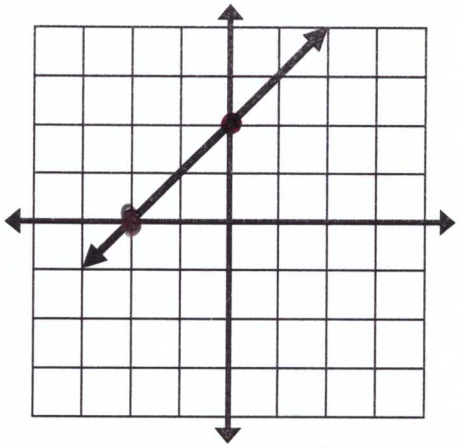
4) Slope of -2 and (0, 4)

5) b = $^5/_7$ and m = $^{-3}/_7$

6) Y – intercept is -2 and slope is - ¼.

Write the Equation of a line in each graph:

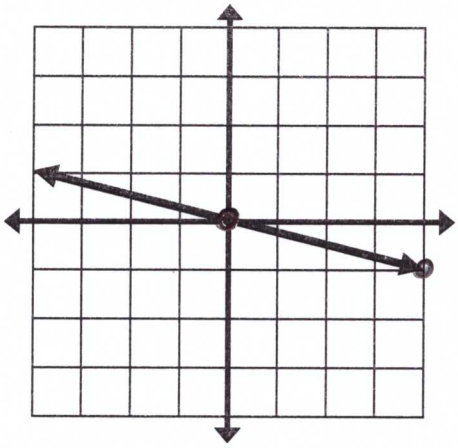
- **IDENTIFY the y-intercept (b) of the line and the slope (m) of the line**
- **WRITE y = mx + b equation by substituting m and b values.**



1) **Slope:** $M = \frac{up\ 1}{right\ 1} = +1$

Y – Intercept: $+2 = B$

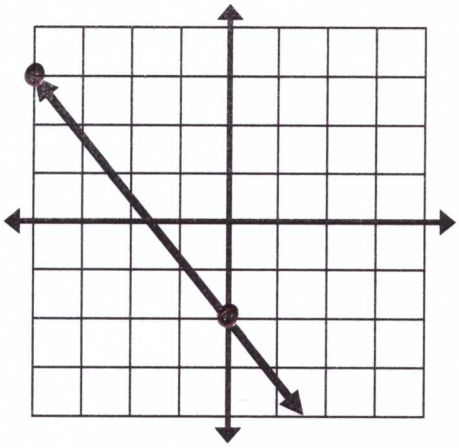
Equation: $y = +1x + 2$



2) **Slope:**

Y – Intercept:

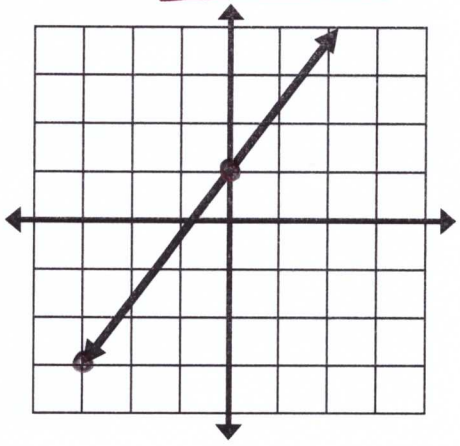
Equation:



7) **Slope:**

Y – Intercept:

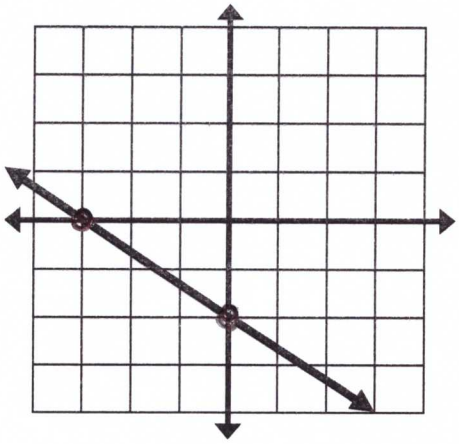
Equation:



8) **Slope:** M=

Y – Intercept: B=

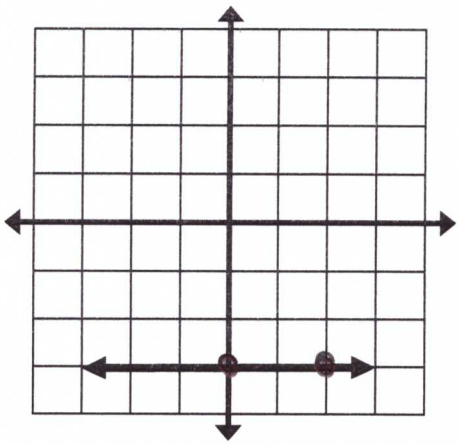
Equation: y =



9) **Slope:**

Y – Intercept:

Equation:



10) **Slope:**

Y – Intercept:

Equation:

GRAPHING LINES BY HAND: How?

Algebra Lesson #2

Unit 4

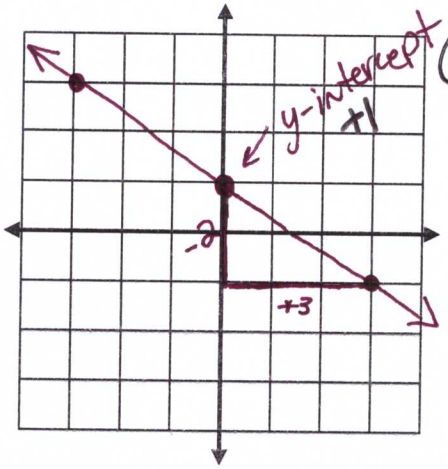
1) **PLOT the y – intercept.**
2) **From y – intercept perform SLOPE (RISE over RUN) to plot a second point.**
3) **Draw a line between the two points.**

(11) $y = -\frac{2}{3}x + 1$

y-intercept = 1

Slope = $\frac{-2}{3}$ down / right

x	y
0	1
3	-1



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

y-intercept =

Slope =

x	y
0	
2	

(12) $\frac{1}{2}x + 2 = y$

y-intercept =

Slope =

x	y
0	
2	

(16) $y = -\frac{5}{4}x + 4$

y-intercept =

Slope =

x	y
0	
4	

(13) $y = 1 - 4x$

y-intercept =

Slope =

x	y
0	
1	

(17) $y = -2x$

y-intercept =

Slope =

x	y
0	
1	

(14) $y = 3x - 2$

x	y
0	
1	

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

x	y
0	
1	

$-\frac{3}{1}$

Name: _____ Unit # 4 Lesson # 2

Activator

New Vocabulary (1 of 4)

New Vocabulary (2 of 4)

New Vocabulary (3 of 4)

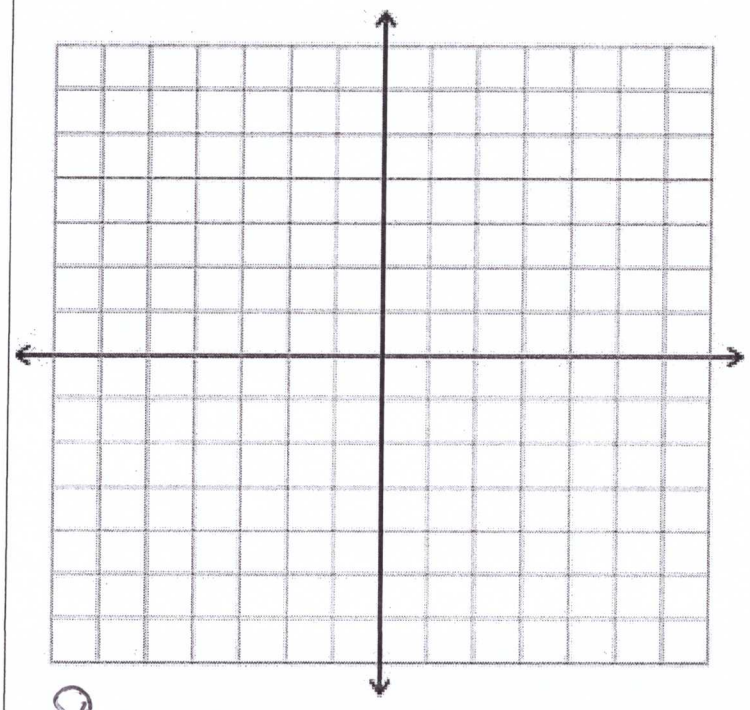
Unit # 4 Lesson # 2

Misconception (4 of 4)

Work Period

Exit Ticket

Extra Graph Paper



NAME: _____ DATE: Algebra

State the SLOPE Formula: $M = \frac{\text{change in}}{\text{change in}}$ ___

#1 ↗

Lesson #3
Unit #4

2) Find the slope of the line for each pair of points:

2a. (3, 4) and (5, 8)

X	Y
3	4
5	8

2c. (2, 9) and (-3, -6)

X	y

2e. (2, 3) and (-1, -3)

X	y

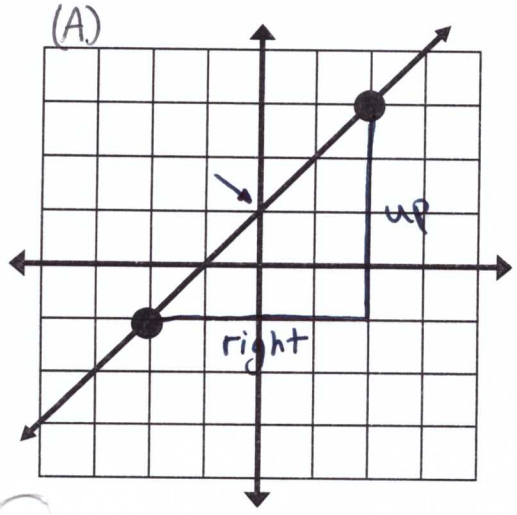
$\frac{\Delta y}{\Delta x}$ = Slope

Divide the two changes

3) State the SLOPE INTERCEPT FORM Equation for a line: $y =$ ___ ___ + ___

4) For each graph, FIND the slope and y-intercept to write the equation of the line:

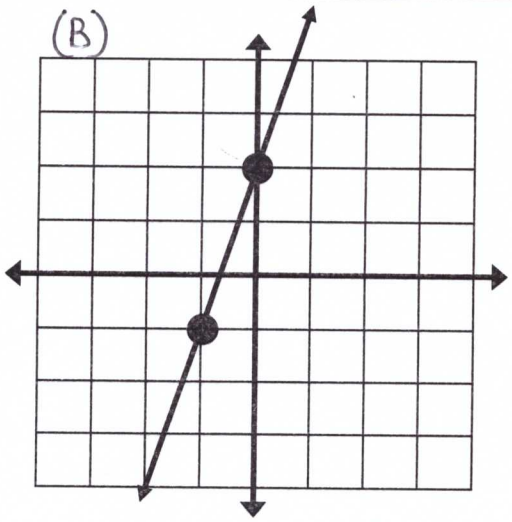
(A)



Slope = ___ yintercept = ___

Equation is $y =$

(B)

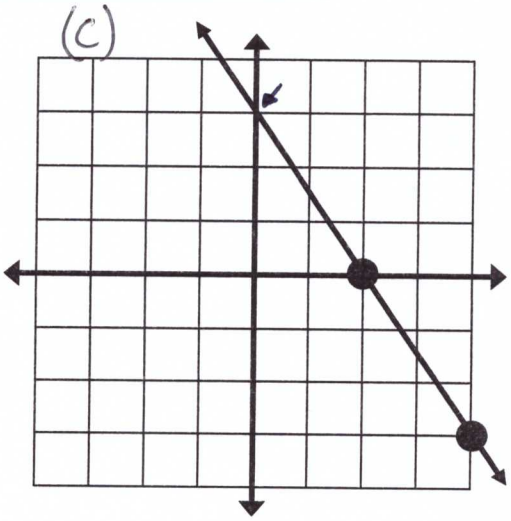


$M =$ ___ $B =$ ___

$y =$

-9-

(C)



$m =$ ___ $B =$ ___

$y =$

SLOPE-INTERCEPT FORM

Lesson # 3 Unit 4

Find the SLOPE-INTERCEPT FORM of a line when given ANY two points on the line?

3 STEP PROCESS: Given two points (x_1, y_1) and (x_2, y_2) on a line

Step 1: FIND the SLOPE of line: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$ ***(REDUCE FRACTIONS!!!!)***

Step 2: PICK one point and the slope to FIND the Y-INTERCEPT.

- (x_1,y_1) and m
- Find the y-intercept (b) for $y_1 = m\,x_1 + b$ ***(REDUCE FRACTIONS!!!!)***

Step 3: WRITE the equation of the line in SLOPE-INTERCEPT FORM.

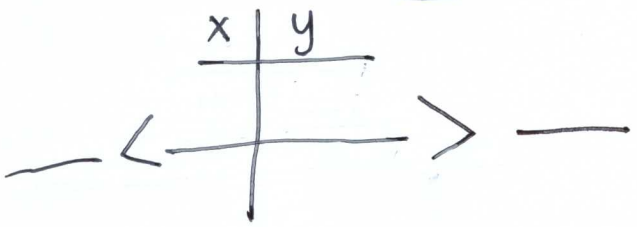
- Use the m from Step 1 and b from Step 2
- $y = mx + b$

STEP BY STEP: Find the Slope Intercept Form of the line through (5, 7) and (3, 1).

#1: SLOPE	#2: Y-INTERCEPT	#3: EQUATION
(5, 7) and (3, 1).	$m = 3$ and (5, 7)	$y = mx + b$
$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{1-7}{3-5}$	$y = mx + b$ $7 = 3 \bullet 5 + b$	$y = 3x - 8$
$m = 3$	$-8 = b$	Keep x and y as variables.

Example 5 Find the Slope Intercept Form of the line through (4, 7) and (8, 15)

x	y



What is M? ___

Example 6 Find the equation of the line that passes through (4, 7) and (8, 15)

Substitute (x, y) to solve for B

$y = \underline{2}\,x + B$

$(\ ) = \_\_(\ ) + B$

Solve for B

$\boxed{y = \_\_x\_\_}$

Name: _____ Unit # 4 Lesson # 3

Activator

New Vocabulary (1 of 4)

New Vocabulary (2 of 4)

New Vocabulary (3 of 4)

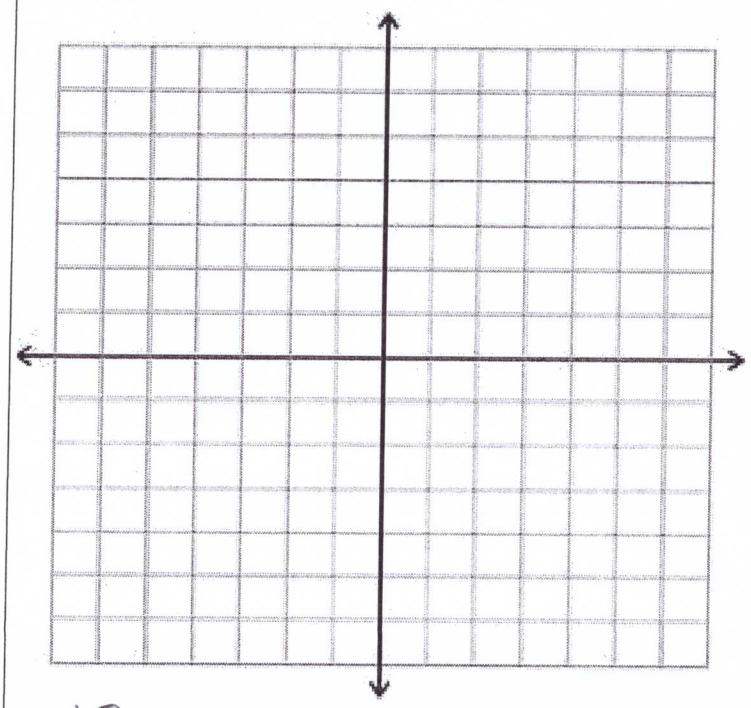
Unit # 4 Lesson # 3

Misconception (4 of 4)

Work Period

Exit Ticket

Extra Graph Paper



Name: _____ Date: Alg

Lesson # 4

Unit # 4

Evaluate each function.

1) $f(x) = 4x + 2$; Find $f(8)$

$f(8) = 4(8) + 2$

$f(8) = \_\_\_ + 2$

$f(8) = \_\_\_$

2) $h(x) = 4x - 2$; Find $h(-9)$

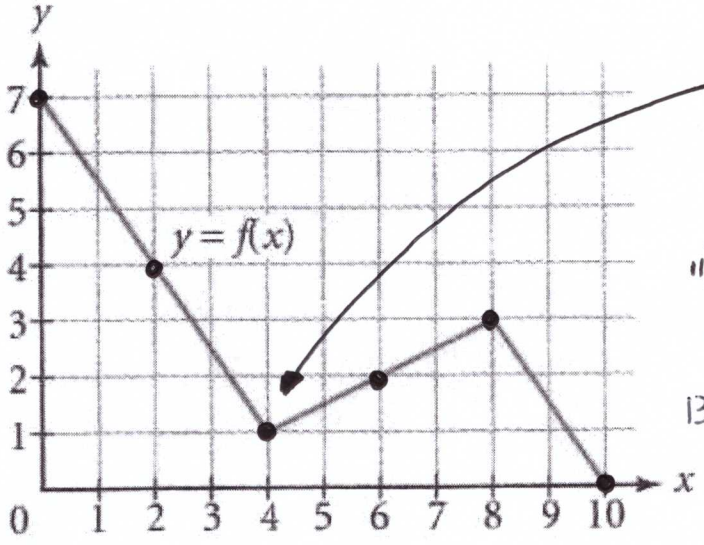
$h(-9) =$

5) $f(x) = 3x - 5$; Find $f(2)$

6) $w(a) = a - 1$; Find $w(0)$

9) $h(n) = 3n - 4$; Find $h(-6)$

10) $f(x) = 2x + 1$; Find $f(3)$



x y

In the graph above f(4) = 1.

Find the following values of the function.

11) f(6) = 2 / ↑up (right)

12) f(2) = _____ / ↑up (right)

13) f(0) = _____

14) f(5) = _____

For problems 6 - 10 do not graph the lines. Show your work mathematically.

3. Determine whether the given point (2, 5) is a solution of the equation $y = 3x - 1$

x y

( ) = 3( ) - 1

If true, the point (2,5) is on the Line.

Is this True or False? →

___ = ___ - 1

___ = ___

4. Does the point (2, - 3) lie on the line represented by the equation $3x - y = 3$?

No, why ?

7. Does the point (3, – 2) lie on the line defined by $2x + 5y = -4$

8. Does the point (1 , –1) lie on the line defined by $12x - y = 13$

Yes, why ? _____

Name: _____ Unit # 4 Lesson # 4

Activator

New Vocabulary (1 of 4)

New Vocabulary (2 of 4)

New Vocabulary (3 of 4)

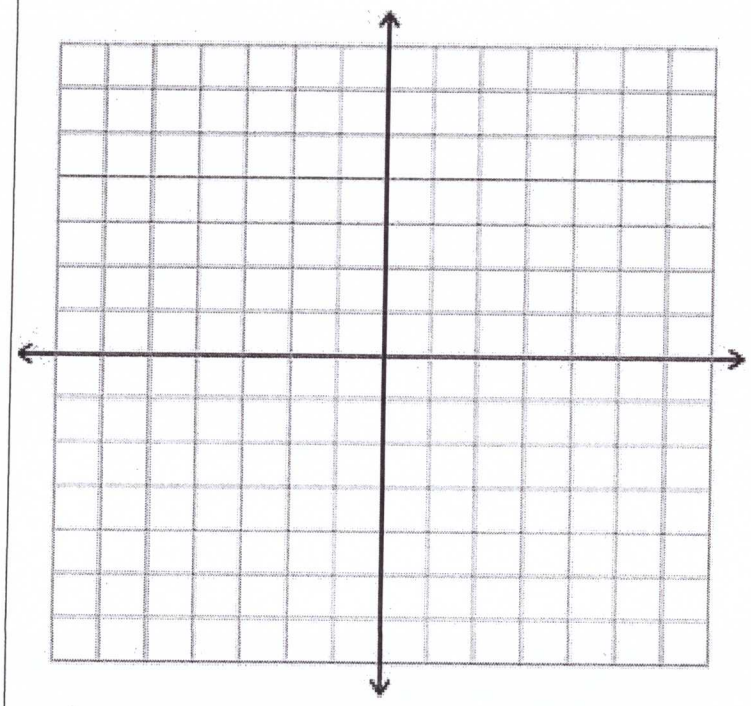
Unit # 4 Lesson # 4

Misconception (4 of 4)

Work Period

Exit Ticket

Extra Graph Paper



Name: _____ Date: _____

Lesson # 5 Unit 4

For problems 1-6, get the ' y ' by itself in the equation.

1. $y + 2 = 4x$

2. $6x + y = 4$

$-6x \quad -6x$

$y = -6x + 4$

For problems 7 - 14 do the following:

a) Get the ' y ' by itself in the equation.
b) Give the slope
c) Give the y-intercept
d) Graph the line

$y = mx + b$

x	y
0	
1	-1
2	

7. $y + 1 = -2x$

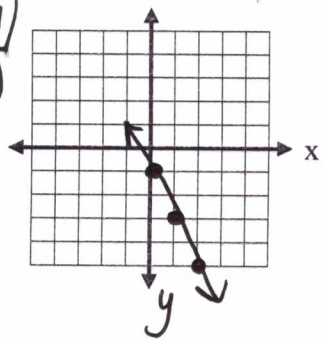
$-1 \quad -1$

$y = -2x - 1$

m = -2

b = -1

x	y
0	-1
1	-3
2	-5

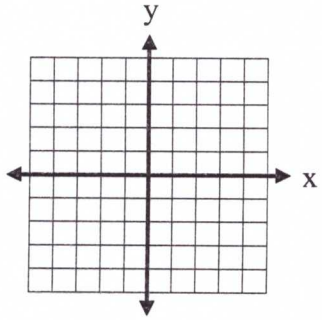


8. $3x + y = 2$ Subtract ____

y =

m = ____

b = ____



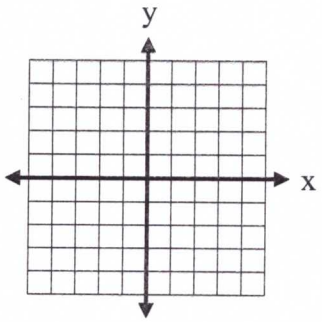
9. $-y = -x + 3$

Divide by ____

y =

m = ____

b = ____

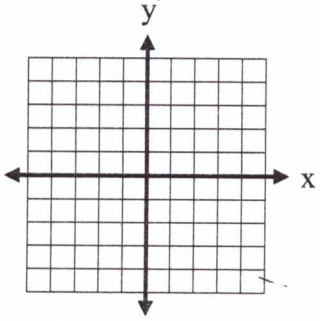


10. $2y = 4x + 2$ Divide by ____

y =

m = ____

b = ____



x	y
0	
1	
2	-1
3	

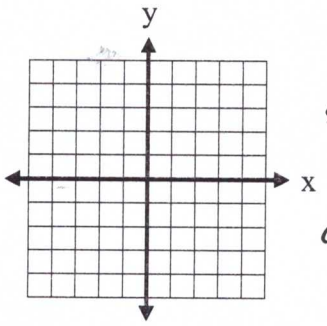
x	y
0	1
1	
2	

Make a table and graph for the equation. Lesson #5 Unit 4

11A $4x + 2y = 6$

Subtract

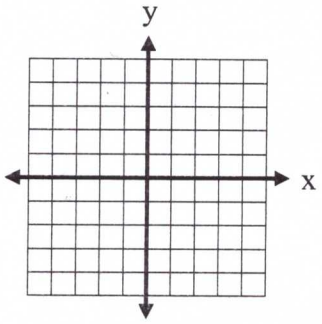
divide



subtract

divide

12A. $3x + 3y = 6$



11B.

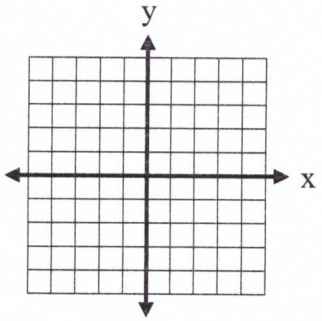
x	y
-3	
-2	
-1	
0	
1	

12B.

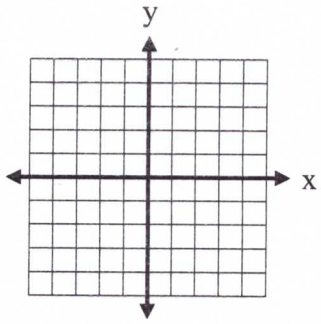
x	y
-1	
0	
1	
2	
+3	

For problems 15 - 18 sketch the graphs:

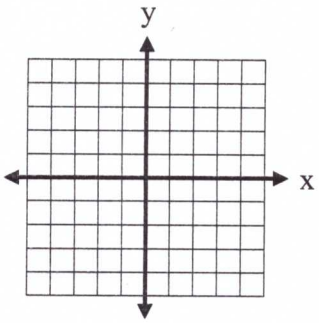
15A. $y = 3$



16A. $x = -4$



17A. $x = 1$



15B.

x	y
	3
	3
	3

16B.

x	y
-4	
-4	
-4	

17B.

x	y
	1
	1
	1

Why are the numbers repeated? _____

Name: _____ Unit # 4 Lesson # 5

Activator

New Vocabulary (1 of 4)

New Vocabulary (2 of 4)

New Vocabulary (3 of 4)

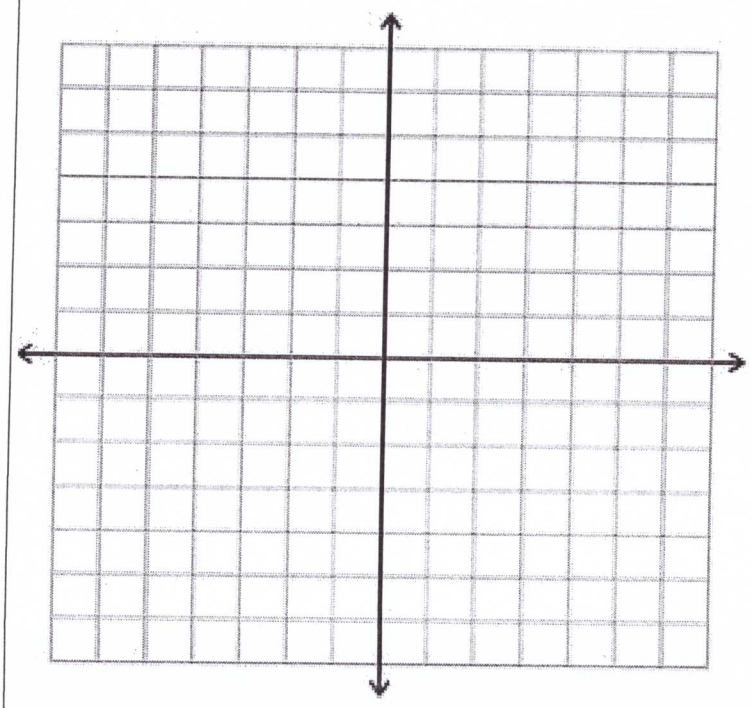
Unit # 4 Lesson # 5

Misconception (4 of 4)

Work Period

Exit Ticket

Extra Graph Paper



Slope-Intercept Form Word Problems

Name: _____ Date: Unit 4 lesson 6

1. In order to join a dancing club, there is a $30 startup fee and a $4 monthly fee. Write an equation in slope-intercept form that models this situation.

$y = mx + B$

$y = \_\_\_ x + \_\_\_$

2. In order to join an online learning community, there is a $20 startup fee and a $5 monthly fee. Write an equation in slope-intercept form that models this situation.

3. In order to become a member of the library-all-star-members club, there is a $40 sign-up fee and a $2 monthly fee. Write an equation in slope-intercept form that models this situation.

4. Use equation you wrote in problem 3 to find the total cost of being an all-star library member for 19 months.

5. The U.S. Bureau of the Census predicted that the population of Florida would be about 17 million in 2010 and then would increase by about 2 million per year. Write an equation.

6. Suppose that a bike rents for $4 plus $2 per hour. Write an equation in slope-intercept form that models this situation.

7. Use the equation you wrote in problem 6 to complete the table.

Hours (x)	2	4	6	8
Total Cost (y)				

8. In order to join a yoga club there is a $100 annual fee and a $5 fee for each class you attend. Write an equation in slope-intercept form that models this situation.

9. Cameron is designing a calendar as a fund-raising project for math class. The cost of printing is $500, plus $2.50 per calendar. Write an equation in slope-intercept form that models the total cost of printing the calendars.

10. Each calendar will sell for $5 each. Write an equation to model the total ***income, y***, for selling ***x calendars***.

11. Cameron estimates that the math class will sell 200 calendars. What will the **total cost** be?

12. Cameron estimates that the math class will sell 200 calendars. What will the **total income** be?

13. Determine how effective the fundraising project will be. Will there be a profit or a loss? If so, how much?

14. When visiting Baltimore, MD, you need to rent a taxi to get from your hotel to the National Aquarium. The taxi company charges a flat fee of $3.00 for using the taxi and $0.75 per mile. Write an equation in slope-intercept form that models this situation.

15. Use your equation from problem 14 to calculate the cost for using the taxi for 18 miles.

16. An airplane 30,000 feet above the ground begins descending at a rate of 2,000 feet per minute. **Write an equation** to model the situation. Find the altitude of the plane after **5 minutes**.

Name: _____ Unit # 4 Lesson # 6

Activator

New Vocabulary (1 of 4)

New Vocabulary (2 of 4)

New Vocabulary (3 of 4)

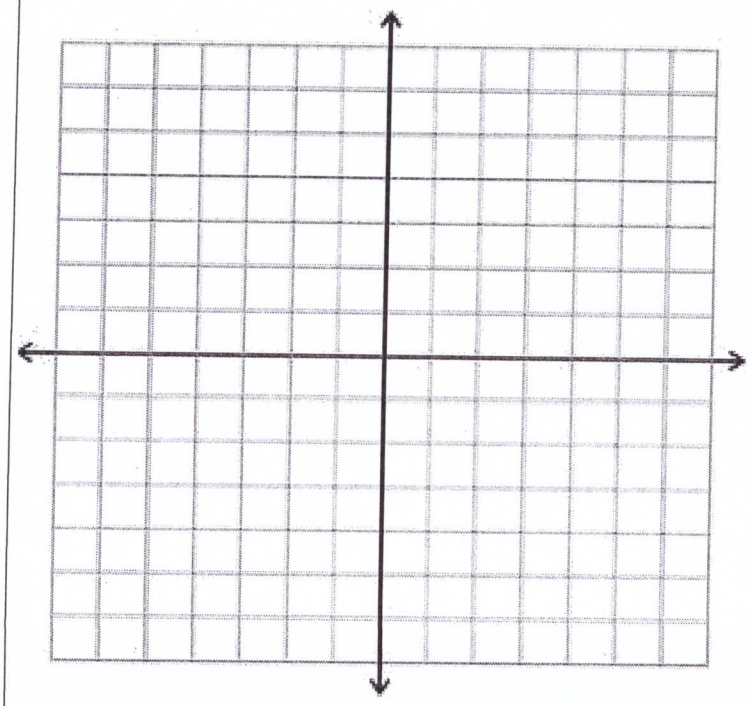
Unit # 4 Lesson # 6

Misconception (4 of 4)

Work Period

Exit Ticket

Extra Graph Paper



Name: _____

UNIT #4 ~~Study Guide~~
COMMON CORE ALGEBRA I

Study Guide

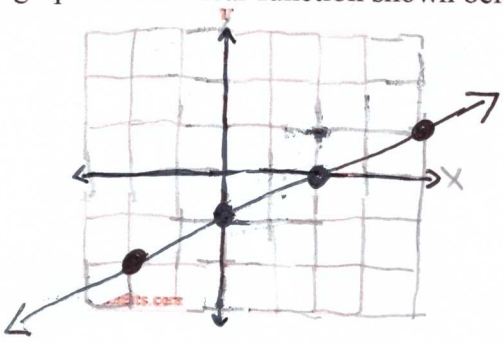
PART I QUESTIONS: Show all of your work.

1. Which of the following is the slope of the line that passes through the points $(-4,-6)$ and $(1,9)$

x	y
<	>

$M = \frac{y \text{ change}}{x \text{ change}} = \frac{\square}{\square} = \_\_\_\_$

2. Which equation could correspond to the graph of the linear function shown below?



$M =$ ____ ← fraction

$B =$ ____

$y =$ _____

3. A wheel with a specific circumference will move 540 inches when rolled 20 times. How far will the same wheel move, to the nearest inch, in 9 rolls?

$y = MX$

$y = (\ )(\ )$

$y =$ _____

x	y
9	
20	540

← inches after 9 rolls.

$M = \frac{540}{20} = \frac{\text{\_\_\_ in}}{\text{distance per roll}}$

4. A line with a slope of -3 passes through the point $(4,-5)$. Which of the following is the equation of the line?

$M =$ ____

$B =$ ____

$y =$ _____

$y = MX + B$

$y = (\ )X + B$

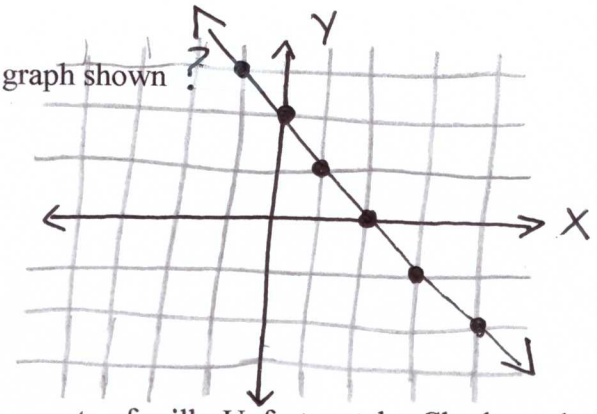
5. A rental car company charges a base fee of # 25 plus 29¢ per mile driven. Which of the following equations models the charge y for renting a car based on the number of miles, x, driven?

M = ____

B = ____

y = _____

6. Which of the following is the equation of the graph shown ?



M = ____

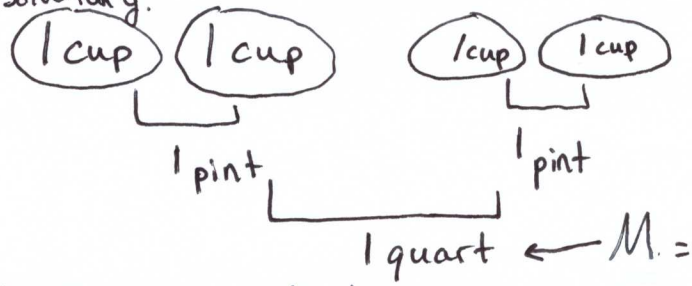
B = ____

y = _____

7. Charles is making a recipe that calls for 5 quarts of milk. Unfortunately, Charles only has a single cup measuring device. If there are two cups in a pint and two pints in a quart, then how many cups will Charles need for 5 quarts of milk? If B=0, solve for y.

x → $y = Mx + B$

$y = (\ )(\ ) + 0$



x	y
0	0
5	

8. Which of the following equations describes all points on a vertical line that passes through the point (-4, 8)

↖ only touches x

vertical Line x = ____

horizontal Line y = ____

9. A sequence is defined by the rule. If f(x) = 4x+2 If f(1) = 6 then what does f(7) = _____ ?

$f(1) = 4(1) + 2$

$f(1) = 4 + 2$

$f(1) = 6$

Name: _____ Date: Algebra Unit 4 Study Guide

10. If graphed in the coordinate plane, would the line $y = 3x + 6$ pass through the point $(-5, -9)$ Explain how you arrived at your answer. Use substitution.

Yes, because the Last equation is _____.

11. An arithmetic sequence has a B term of 6 and a M term of 8. What is its 3rd term? Show how you arrived at your answer.

B = ___ M = ___

f(__) = ___

x	f(x)
0	
1	
2	
3	

+ ___
+ ___
+ ___

PART III QUESTIONS: Show all of your work

12. As a large truck fills its gas tank, the volume of gas, in gallons, can be modeled with the linear function $y = 7.1x + 5$, where y is the volume of gas and x is the number of minutes it has been filling. Give a physical interpretation for both the 7.1 and 5 parameters in the linear model. Use appropriate units in your explanation.

7.1 is the ___ which is gallons per minute being filled

5 is the ___ which is the starting _____.

13. Write the equation of the line that passes through the points (5, 6) and (3, 8) Express your answer in simplest $y = mx + b$ form.

x	y

___ < ___ > ___

x change y change

$M = \frac{y \text{ change}}{x \text{ change}} = \_\_\_$

$y = Mx + B$

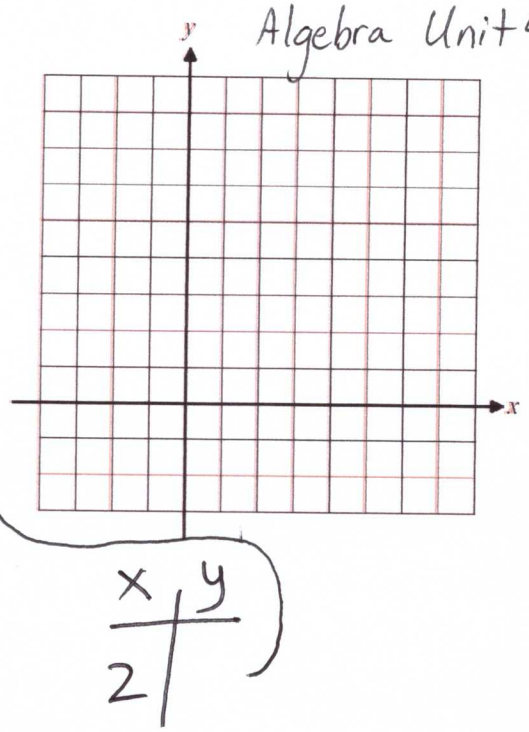
$(\ ) = (\ )(\ ) + B$

___ = B

← get y by itself

14. Graph the line $y - 4x = -3$ on the axes provided.

x	y
0	
1	
2	
3	



15. Use the graph from #14. At what value of y does the line have when $x = 2$ Show how you determined your answer.

↑ Substitute

$y - 4x = -3$

$y - 4(\ ) = -3$

x	y
2	

16. A company produces boxes of DVD's at a rate of 80 boxes per hour. They begin to produce boxes when they first open for the day and after 4 hours have 573 boxes in stock. How many boxes were in stock when they opened?

$y = Mx + B$ (4 → x, 573 → y)

$M = 80$

$y = (\ )x +$

$(\ ) = (\ )(\ ) + B$ ← solve for B

$y = 80x + \_\_\_\_$

17. Use the same company from problem #16. Write a linear model for the amount of boxes, y as a function of the number of hours since they opened, x Use your model to predict the number of boxes in stock at the end of 9 hours of work.

↑ x Substitute

$y = 80x + 253$

____ boxes will be at the company at the end of the day.