Name: Answer Key

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
-4	-6
1	9

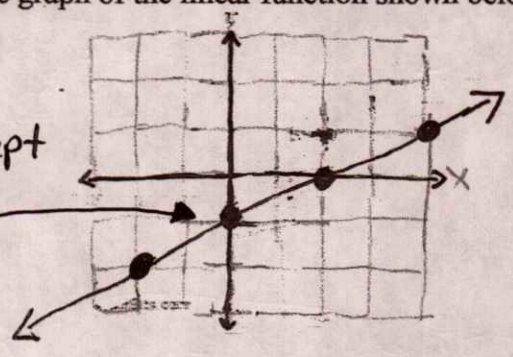
+5, +15

$\frac{15}{5} = 3$

$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{(-6)-(9)}{(-4)-(1)} = \frac{-15}{-5} = 3$ ← slope

$x_1\ y_1 \quad x_2\ y_2$

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



$y = mx + B$ — y intercept

$y = \frac{+1}{2}x - 1$

Slope is $\frac{\text{rise/lower}}{\text{run (right)}}$ divided by

$\frac{\text{up } 1}{\text{right } 2}$

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?

$y = mx$

$y = (27)(9)$

$y = 243$

x	y
9	243
20	540

$m = \frac{540}{20} = 27$ inches per roll

243 inches after 9 rolls.

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

$x\ y$

$y = mx + b$

$y = -3x + b$

$(-5) = -3(4) + b$

$-5 = -12 + b$

$+12 \quad +12$

$7 = b$

$y = mx + b$

$y = -3x + b$

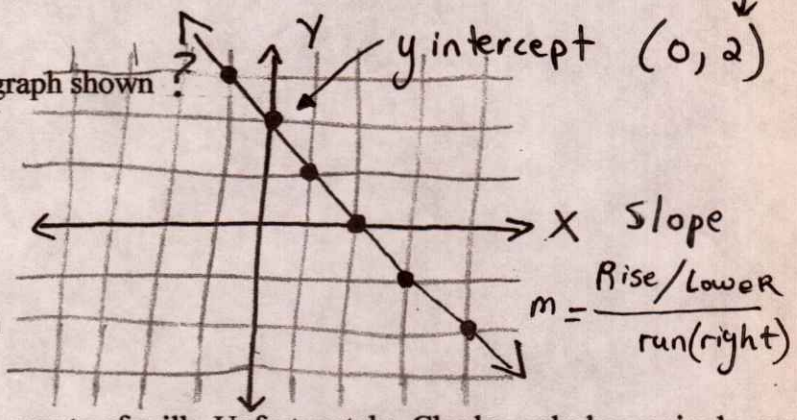
$y = -3x + 7$

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?

$y = mx + B$

$y = 0.29x + 25$

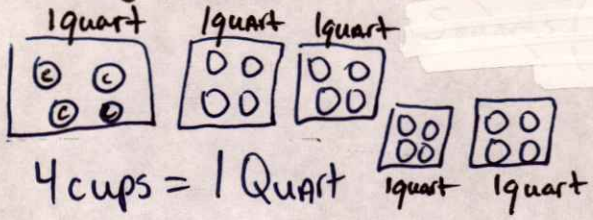
6. Which of the following is the equation of the graph shown?



$y = mx + B$

$y = -1x + 2$

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?



4 cups = 1 Quart

x	y
0	0
1	4
2	8
3	
4	16
5	20

5 quarts

4 + 4 + 4 + 4 + 4 = 20 cups

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

↑ goes through x Axis

So, $x = -4$

x, y

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

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

$f(1) = 4 + 2$

$f(1) = 6$

$f(7) = 4(7) + 2$

$f(7) = 28 + 2$

$f(7) = 30$

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PART II QUESTIONS: Show all of your work.

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.

$(-9) = 3(-5) + 6$ (x, y)

$-9 = -15 + 6$

$-9 = -9$ True,

$(-5, -9)$ is a solution and is on the Line and table

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.

The 3rd number is 30.

B= 6 M= 8

f(3) = 30

X	f(x)	
0	6	+8
1	14	+8
2	22	+8
3	30	

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.

The truck started with 5 gallons of gas.

7.1 gallons of gas are being pumped per minute.

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_1, y_1 x_2, y_2

$y = -1x + B$

$( ) = -1( ) + B$

$(6) = -1(5) + B$

$6 = -5 + B$

$+5 \quad +5$

$11 = B$

$y = mx + B$

$y = -1x + B$

$y = -1x + 11$

X	Y	
5	6	+2
3	8	

$m = \frac{\text{change in } y}{\text{change in } x} = \frac{2}{-2} = -1$

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

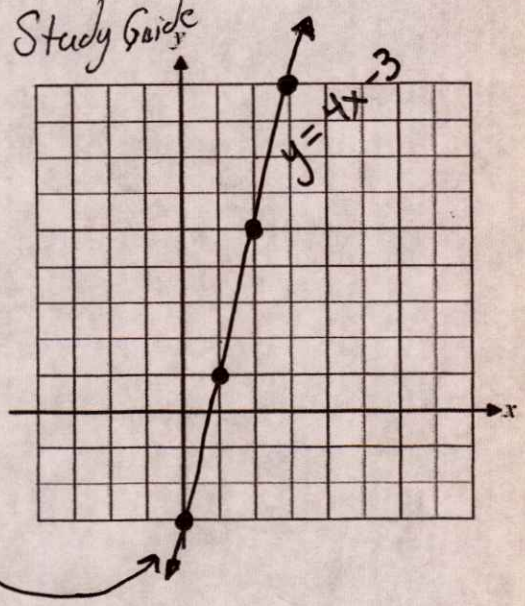
$y - 4x = -3$

$+4x \quad +4x$

$y = 4x - 3$

(0, -3) start y-intercept

slope: $\frac{up\,4}{right\,1}$



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

$y = 4x - 3$

$y = 4(\,) - 3$

$y = 4(2) - 3$

$y = 8 - 3$

$y = 5$

PART IV QUESTION: Show all of your work.

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?

$y = mx + B$

$y = 80x + B$

$(\,) = 80(\,) + B$

$(573) = 80(4) + B$

(4, 573)

x y

The store opened with 253 Boxes

$573 = 80(4) + B$

$573 = 320 + B$

$-320 \quad -320$

$253 = B$

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.

$y = mx + B$

$y = 80x + 253$

$y = 80(\,) + 253$

$y = 80(9) + 253$

$y = 720 + 253$

$y = 973$

973 boxes will be at the Company at the end of this day.