Math 9 – Coordinate Geometry Name: Mr. Hagen

Review – Test on Tuesday, June 8

1. Fill in the blank with the most appropriate word(s). An item is used only once, and you will not use them all.

a) The quadrants are the four corners or sections of the coordinate plane.

b) The origin is the ordered pair (0,0).

c) The vertical number line on the coordinate plane is called the y-axis.

d) The dependent variable relies on another variable or information.

e) The slant of a line can be calculated by finding the slope.

f) When graphing a line, you need to organize all your points in a table of values.

g) When plotting a point, you first look at the x-coordinate.

BANK:

Coordinate Plane	Quadrants	x- axis	y-axis	Ordered Pair
x-coordinate	y-coordinate	Origin	Graph	Independent
Dependent	Linear Relationship	Table of Values	Slope	Rate of Change

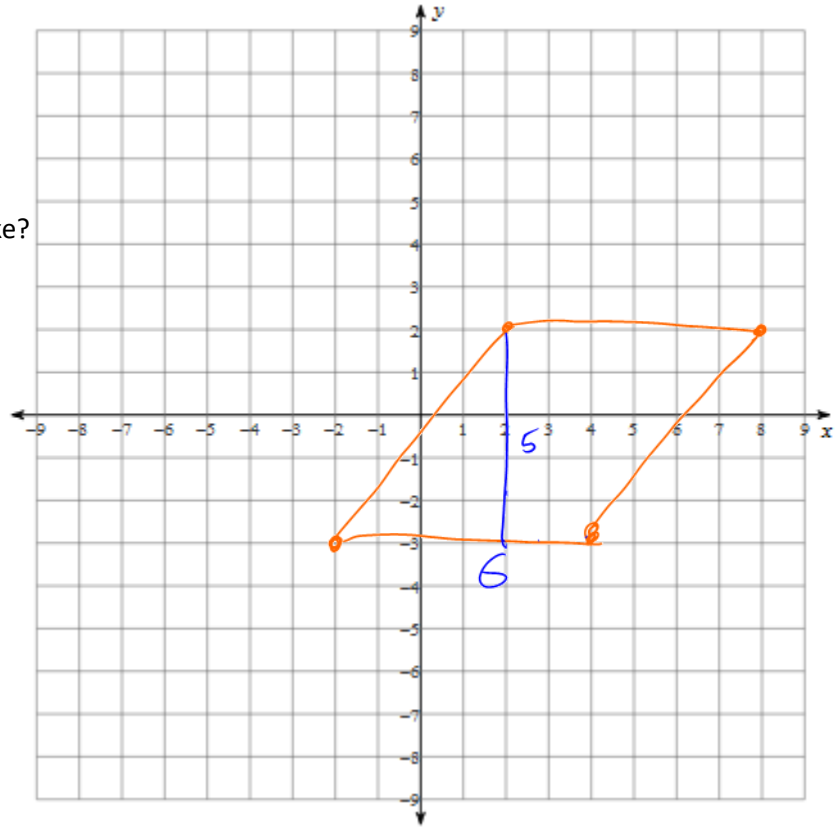
2. Plot the points A(-2,-3), B(2,2), C(4,-3), D(8,2) on the graph below.

a) Which quadrant has no point in it?

Quadrant two.

b) Connect the dots. What shape do the points make?

rhombus/parallelogram.



c) Calculate the area of the shape in square units.

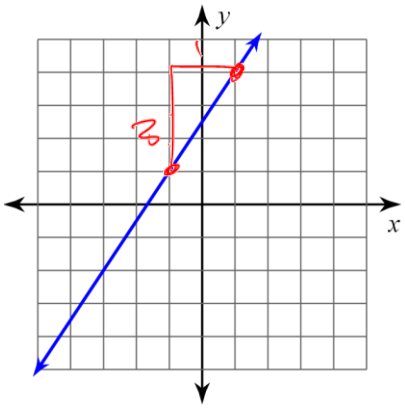
$A = bh$

$A = (6)(5)$

$A = 30 \text{ units}^2$

3. Determine the slope of the following:

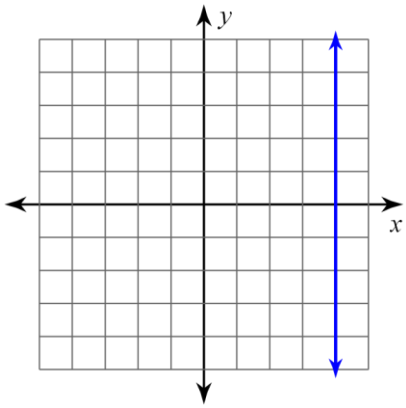
a)



$m = \frac{3}{1}$

$m = 3$

b)

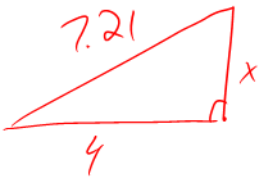


vertical

$\therefore m$ = undefined

4. A right angled triangle has its horizontal line measuring 4 units and the hypotenuse as 7.21 units.

a) Find the missing dimension.



$a^2 + b^2 = c^2$

$4^2 + x^2 = 7.21^2 - 4^2$

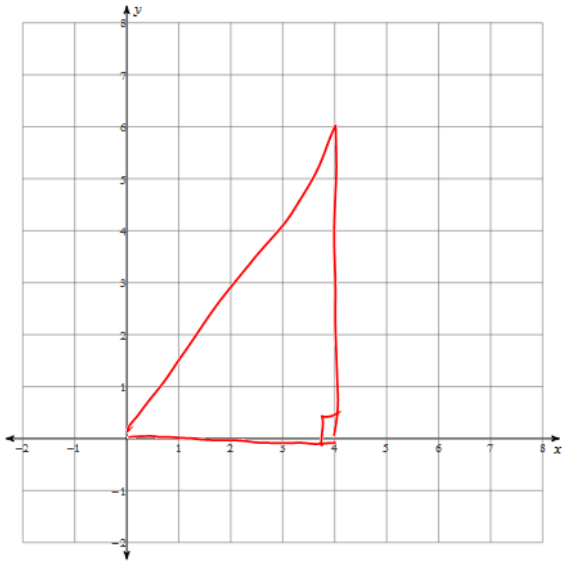
$x^2 = 51.9841 - 16$

$x^2 = 35.9841$

$x = \sqrt{35.9841}$

$x = 6$

b) If the corner made by the hypotenuse and horizontal line started at the origin, graph the triangle:



c) Calculate the slope of the hypotenuse line.

$m = \frac{6}{4} = \frac{3}{2}$

5. Calculate the slope of the line formed by the two points:

a) $(8, 20), (2, 6)$ (1, 2)

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{6 - 20}{2 - 8}$

$m = \frac{-14}{-6} = \frac{7}{3}$

b) $(-15, 3), (3, -20)$ (1, 2)

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{-20 - 3}{3 - (-15)}$

$m = \frac{-23}{18}$

6. Use the slope formula to find the missing coordinate:

a) $(2, y)$ and $(7, 2)$; slope: $\frac{7}{5}$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{7}{5} = \frac{y-2}{2-7}$

$\frac{7}{5} = \frac{(y-2)}{-5}$

$-35 = 5y - 10$ (+10, ×10)

$-25 = 5y$

$\frac{-25}{5} = \frac{5y}{5}$

$-5 = y$

b) $(x, -9)$ and $(7, -6)$; slope: $\frac{3}{5}$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{3}{5} = \frac{-9-(-6)}{x-7}$

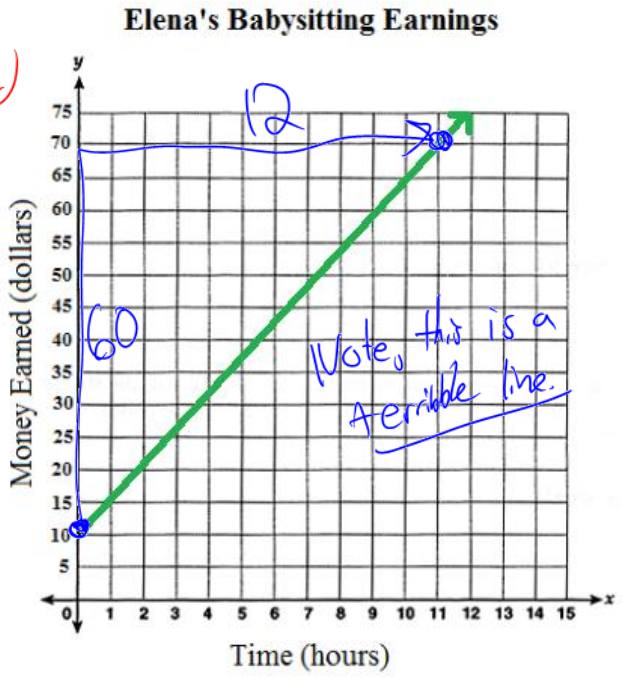
$\frac{3}{5} = \frac{-3}{(x-7)}$

$3x - 21 = -15$ (+21, +21)

$\frac{3x}{3} = \frac{6}{3}$

$x = 2$

7. Given the graph to the left:



a) Determine the rate of change.

$m = \frac{\$60}{12\text{h.}} = \$5/\text{h}$ (yes, this is old information)

b) What does the rate of change represent?

This is how much Elena makes every hour.

c) How can Elena earn $10 if she worked zero hours?

She charges $ money to show up.

d) How much will Elena earn if she works a total of 20 hours?

$\$5 \times 20 = \$100.$

$+ 10$

$\$110$

8. At birth, a blue whale is 7m long. After 7 months, it is 15m long. How much is the whale growing every month?

(months, length)
(0, 7)
(7, 15)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{15-7}{7-0} = \frac{8}{7} = 1.14 \text{ metres/month}$

9. In 1970, 12.1% of Canadian households had colour televisions. In 1997, that figure had risen to 98.7%. Find the average rate of change in percent per year.

(year, %)
(1970, 12.1)
(1997, 98.7)

$m = \frac{98.7 - 12.1}{1997 - 1970} = \frac{86.6\%}{27} = 3.2\%/\text{year}$

10. In 1995, a public library had 16,000 books on its shelf. In 1999, the library had 19,000 books.

a) Find the average rate of change.

(year, books)
(1995, 16000)
(1999, 19000)

$m = \frac{19000 - 16000}{1999 - 1995} = \frac{3000}{4} = 750 \text{ books/year}$

b) How many books are there today = 2019

2019 − 1999 = 20 years. ∴ 750 × 20 = 15000

+ 19000 → the books in 1999

34,000 books in 2019

Use the algorithm to graph the following lines on the grid below. Label the lines.

11. $y = \frac{-1}{2}x + 1$ Blue line

x	$y = \frac{-1}{2}x + 1$	(x, y)
−4	$\frac{-1}{2}(-4) + 1 = 3$	(−4, 3)
−2	$\frac{-1}{2}(-2) + 1 = 2$	(−2, 2)
0	$\frac{-1}{2}(0) + 1 = 1$	(0, 1)
2	$\frac{-1}{2}(2) + 1 = 0$	(2, 0)
4	$\frac{-1}{2}(4) + 1 = -1$	(4, −1)

12. $3x - 4y = 8$ Green line

$\frac{3x}{4} - \frac{8}{4} = \frac{4y}{4}$

$\frac{3}{4}x - 2 = y$

x	$y = \frac{3}{4}x - 2$	(x, y)
−8	$\frac{3}{4}(-8) - 2 = -8$	(−8, −8)
−4	$\frac{3}{4}(-4) - 2 = -5$	(−4, −5)
0	$\frac{3}{4}(0) - 2 = -2$	(0, −2)
4	$\frac{3}{4}(4) - 2 = 1$	(4, 1)
8	$\frac{3}{4}(8) - 2 = 4$	(8, 4)

13. $2x+3y=-6$

Pinkish line

$\frac{3y}{3} = \frac{-6}{3} - \frac{2x}{3}$

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

x	$y = -2 - \frac{2}{3}x$	(x,y)
-6	$-2-\frac{2}{3}(-6) = 2$	$(-6,2)$
-3	$-2-\frac{2}{3}(-3) = 0$	$(-3,0)$
0	$-2-\frac{2}{3}(0) = -2$	$(0,-2)$
3	$-2-\frac{2}{3}(3) = -4$	$(3,-4)$
6	$-2-\frac{2}{3}(6) = -6$	$(6,-6)$

14. $10y+20x-50=0$

Red Line

$\frac{10}{10}y = \frac{-20x}{10} + \frac{50}{10}$

$y = -2x+5$

x	$y = -2x+5$	(x,y)
-2	$-2(-2)+5 = 9$	$(-2,9)$
-1	$-2(-1)+5 = 7$	$(-1,7)$
0	$-2(0)+5 = 5$	$(0,5)$
1	$-2(1)+5 = 3$	$(1,3)$
2	$-2(2)+5 = 1$	$(2,1)$