

Geometry

Name: _____

Coordinate Geometry Review

Period: _____

1.) Given the points $A(-2, 4)$ and $B(7, -2)$:

must start with same point

a.) Find the slope of the line passing through points A and B . Remember: $m = \frac{y_2 - y_1}{x_2 - x_1}$

$$m = \frac{4 - (-2)}{-2 - 7} = \frac{6}{-9} = -\frac{2}{3}$$

b.) Find the midpoint of \overline{AB} . Remember Midpoint: $(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2})$

$$\text{midpt: } (\frac{-2 + 7}{2}, \frac{4 + (-2)}{2}) = (2.5, 1)$$

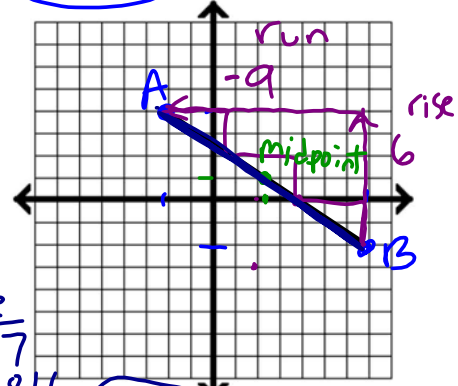
c.) Find the distance between points A and B . Round to 100ths place. Remember Pythagorean Theorem: $a^2 + b^2 = c^2$

$a = 6$
 $b = 9$
 $c = AB$

$$6^2 + 9^2 = c^2 \quad \text{hypotenuse}$$

$$36 + 81 = c^2 \quad c = \sqrt{117}$$

$$117 = c^2 \quad c = 10.816 \approx 10.82 \text{ units}$$



2.) You are given quadrilateral GEOM with vertices at $G(-3, 4)$ $E(5, 6)$ $O(4, -2)$ $M(-4, -4)$. Graph them.

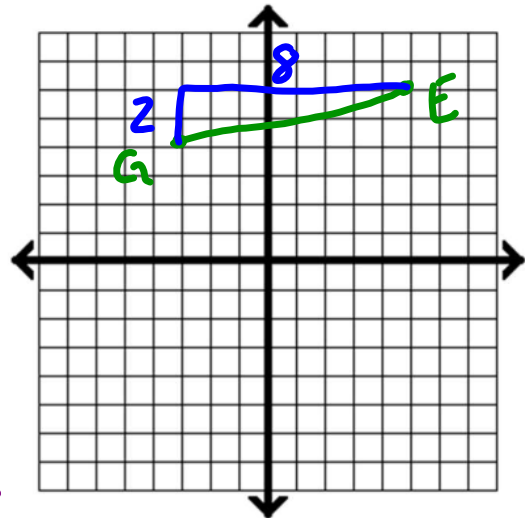
a.) Find the slope of all 4 sides. : $m = \frac{y_2 - y_1}{x_2 - x_1}$

Slope of GE: $\frac{1}{4}$

Slope of EO: 8

Slope of OM: $\frac{1}{4}$

Slope of MG: 8



b.) Find the length of all 4 sides (Round to 100ths place). $a^2 + b^2 = c^2$

Length of GE: $a = 2$
 $2^2 + 8^2 = c^2$
 $4 + 64 = c^2$
 $68 = c^2$
 $c = 8.25$

Length of EO: 8.06

Length of OM: 8.25

Length of MG: 8.06

c.) Do you observe anything about your answers from (a) and (b)?

Opposite sides are congruent
 Opposite sides have the same slope

3.) You are given line m with a slope of $2\frac{1}{4}$.

a.) What is the slope of a line parallel to line m? (Same slope, write as an improper fraction) Para. Slope = $\frac{9}{4}$

b.) What is the slope of a line perpendicular to line m? (Negative Reciprocal) Perp. Slope = $-\frac{4}{9}$

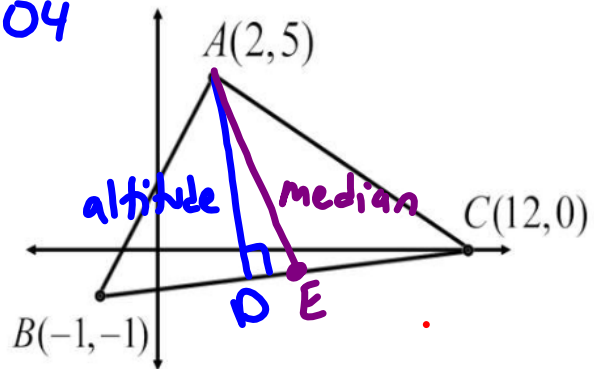
Use the diagram to the right for problems (4)-(8)

4.) Find the length of all 3 segments of $\triangle ABC$. Round to the nearest 100th. $a^2 + b^2 = c^2$

Length of AB: 6.71

Length of BC: 13.04

Length of CA: 11.18



5.) Find the slopes of all 3 sides of $\triangle ABC$.

Slope of AB: 2

Slope of BC: $\frac{1}{13}$

Slope of CA: $-\frac{1}{2}$

6.) If lines are perpendicular then they form a right angle.

Using your information from (5), is $\triangle ABC$ a right triangle? Briefly explain your answer.

$\triangle ABC$ is a right triangle because $AB \perp AC$, slope 2 and $-\frac{1}{2}$ are negative reciprocals.

7.) Find the slope of the altitude of $\triangle ABC$ to \overline{BC} and draw it. Altitudes are the lines from an angle to the opposite side at a right angle. Determine the perpendicular slope to BC. Draw a line from Angle A using this slope. Label the point of intersection D, or extend the line BC out to intersect AD.

Slope of BC is: $\frac{1}{13}$

Perpendicular Slope to BC is: $-\frac{13}{1} = -13$

8.) Find the slope and length of the median of $\triangle ABC$ to \overline{BC} . Medians are the lines from an angle to the midpoint on the opposite side. Draw a line from Angle A to the midpoint of BC. Label the midpoint E.

Midpoint of BC is: (5.5, 0.5) Slope of AE: -1.57

Length of AE: 6.52