

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



a.) Find the slope of the line passing through points A and B .
 $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 4}{7 - (-2)} = \frac{-6}{9} = \boxed{-\frac{2}{3}}$

b.) Find the midpoint of \overline{AB} .

MIDPOINT = $\left(\frac{-2+7}{2}, \frac{4+(-2)}{2}\right) = \boxed{\left(\frac{5}{2}, 1\right)}$

c.) Find the distance between points A and B .

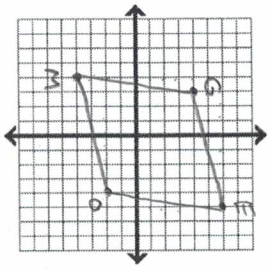
DISTANCE = $\sqrt{20^2 + 15^2} = \sqrt{(-9)^2 + 6^2} = \boxed{\sqrt{117}}$

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

a.) Find the slope of all 4 sides.

\overline{GE} AND $\overline{MO} = \frac{2}{8} = \boxed{\frac{1}{4}}$

\overline{GM} AND $\overline{EO} = \frac{8}{1} = \boxed{8}$



b.) Find the length of all 4 sides (using the Distance Formula).

\overline{GE} AND $\overline{MO} = \sqrt{8^2 + 2^2} = \boxed{\sqrt{68}}$

\overline{GM} AND $\overline{EO} = \sqrt{1^2 + 8^2} = \boxed{\sqrt{65}}$

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

OPP. SIDES ARE \cong AND PARALLEL, WHICH ARE 2 OF THE PROPERTIES OF A PARALLELOGRAM.

3.) You are given line m with a slope of $2\frac{1}{4}$. $2\frac{1}{4} = \frac{9}{4}$

a.) What is the slope of a line parallel to line m ?

b.) What is the slope of a line perpendicular to line m ?

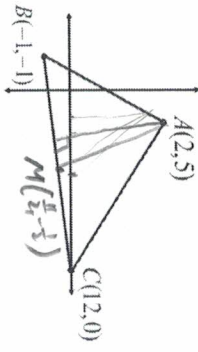
Use the diagram to the right for problems (4)-(8)

4.) Find the length of all 3 segments of $\triangle ABC$. Leave your answers in radical form.

$\overline{AB} = \sqrt{3^2 + 6^2} = \sqrt{45}$

$\overline{BC} = \sqrt{3^2 + 1^2} = \sqrt{10}$

$\overline{AC} = \sqrt{0^2 + (-5)^2} = \sqrt{25}$



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

$\overline{AB} = \frac{6}{3} = \boxed{2}$

$\overline{BC} = \frac{1}{3} = \boxed{\frac{1}{3}}$

$\overline{AC} = \frac{-5}{0} = \boxed{-\frac{5}{0}}$

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

YES. THE SLOPES FOR \overline{AB} AND \overline{BC} ARE

OPPOSITE RECIPROCAL $(2 \text{ AND } -\frac{1}{2})$.

7.) Find the slope of the altitude of $\triangle ABC$ to \overline{BC} .

SLOPE = $-\frac{1}{\frac{1}{3}}$ (OR RECIPROCAL TO BC)

8.) Find the slope of the median of $\triangle ABC$ to \overline{BC} .

MEDIAN \rightarrow MIDPOINT

MIDPOINT = $\left(\frac{-1+1}{2}, \frac{-1+0}{2}\right) = \left(\frac{0}{2}, -\frac{1}{2}\right)$ FROM $A(2, 5)$

SLOPE = $\frac{5 - (-\frac{1}{2})}{2 - \frac{0}{2}} = \frac{\frac{11}{2}}{2} = \boxed{\frac{11}{4}}$

