

Name:

Date:

Period:

HW #6-11: More Algebra Practice with Points of Concurrency

1. Find the circumcenter of the triangle with coordinates A(4, 12) B(14, 6) C(-6, 2) **graph on back side**

$$\text{mdpt } \overline{AB} : (9, 9)$$

$$\text{slope } \overline{AB} = \frac{6-12}{14-4} = \frac{-6}{10} = -\frac{3}{5}$$

$$\perp \text{ slope} = \frac{5}{3}$$

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

$$y - 9 = \frac{5}{3}x - 15$$

$$y = \frac{5}{3}x - 6$$

$$\text{mdpt } \overline{AC} = (-1, 7)$$

$$\text{slope } \overline{AC} = \frac{2-12}{-6-4} = \frac{-10}{-10} = 1$$

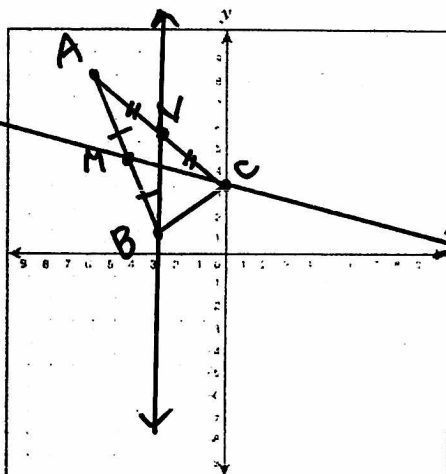
$$\perp \text{ slope} = -1$$

$$y - 7 = -(x + 1)$$

$$y - 7 = -x - 1$$

$$y = -x + 6$$

2. Find the centroid of the triangle with coordinates A(-6, 8) B(-3, 1) C(0, 3)



$$(-3, 4)$$

$$\text{mdpt } \overline{AB} : (-4.5, 4.5) M$$

$$\text{slope } \overline{MC} = \frac{3-4.5}{0+4.5} = \frac{-1.5}{4.5} = -\frac{1}{3}$$

$$y - 3 = -\frac{1}{3}(x - 0)$$

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

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

$$\text{mdpt } \overline{AC} (-3, 5.5) N$$

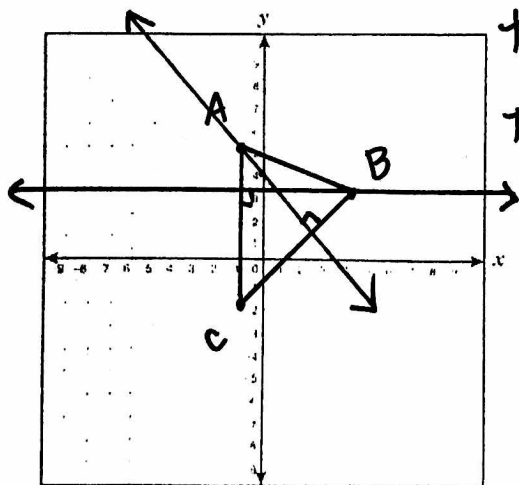
$$\text{slope } \overline{BN} \text{ undef!}$$

$$x = -3$$

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

$$y = 1 + 3 \rightarrow y = 4$$

3. Find the orthocenter of the triangle with coordinates A(-1, 5) B(4, 3) C(-1, -2)



$$\text{thru B: horiz: } y = 3$$

$$\text{thru A: slope } \overline{BC} = \frac{-2-3}{-1-4} = \frac{-5}{-5} = 1$$

$$\perp \text{ slope} = 1$$

$$y - 5 = 1(x - (-1))$$

$$y - 5 = x + 1$$

$$y = x + 6$$

$$3 = -x + 4$$

$$-1 = -x$$

$$1 = x$$

$$(1, 3)$$

#1 cont'd

$$-x + 6 = \frac{5}{3}x - 6$$

$$-3x + 18 = 5x - 18$$

$$34^6 = 8x$$

$$x = 4.25$$

$$y = 1.75$$

$$(4.25, 1.75)$$

mdpt $\overline{CB}$: (4, 4)

slope $\overline{CB}$: $\frac{4}{20} = \frac{1}{5}$ $\perp = -5$

$$y - 4 = -5(x - 4)$$

$$y - 4 = -5x + 20$$

$$y = -5x + 24$$