

★ - Answer does not need simplification!

Classwork 1, Math 1113, Harrison Chapman

Name & Time:

Key

8:00

or

Key

~~8:00~~

9:30

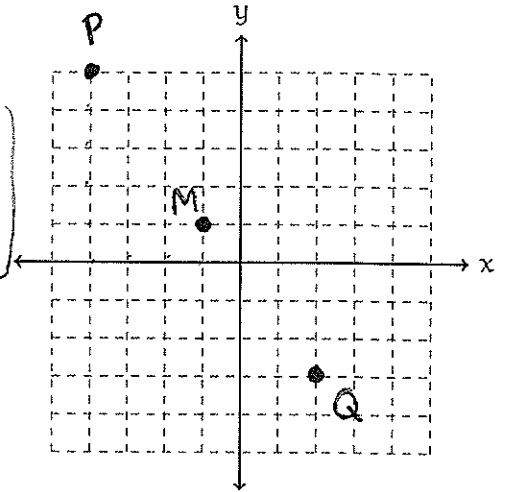
Please complete the following and turn it in by the end of the period. Work together and ask questions.

1. (3 points) Use the axes provided to help you complete the following:

- (a) Clearly label the points  $P(-4, 5)$  and  $Q(2, -3)$ .  
(b) Compute and label the midpoint  $M$  between  $P$  and  $Q$ .

$$M = \left( \frac{2 + (-4)}{2}, \frac{(-3) + 5}{2} \right) \star$$

$$= (-1, 1)$$



(c) Compute the distance between  $P$  and  $Q$ .

$$d(P, Q) = \sqrt{(2 - (-4))^2 + ((-3) - 5)^2} \star$$

$$= \sqrt{6^2 + (-8)^2}$$

$$= \sqrt{36 + 64}$$

$$= \sqrt{100}$$

$$= 10$$

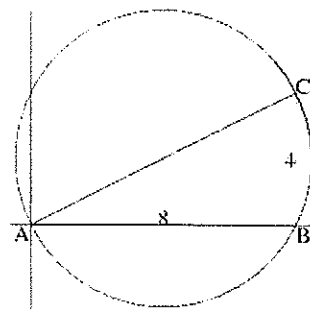
2. (3 points) In the figure, the circle passes through the vertices of the right triangle ABC. Leg AB has length 8, leg BC has length 4, and leg AC is the diameter of the circle. Vertex A is at the origin.

(a) List the coordinates for points A, B, and C.

$$A(0,0) \quad B(8,0) \quad C(8,4)$$

(b) Find the center and radius of the circle.

Hint: The center is a midpoint. The radius is a distance.



$$\text{diameter} = \text{length of } \overline{AC}$$

$$= \sqrt{(8-0)^2 + (4-0)^2} = \sqrt{64+16} = \sqrt{80}$$

$$\text{radius} = \frac{1}{2} \text{diameter} = \frac{1}{2} \sqrt{80}$$

$$\text{Center} = \text{midpoint } \overline{AC} = \left( \frac{8+0}{2}, \frac{4+0}{2} \right) = (4, 2)$$

3. (2 points) Find the two points of the form  $(a, 2a)$  that are distance 5 from the point  $(-2, 1)$ .

Hint: Set up the distance formula  $5 = \sqrt{(a+2)^2 + (2a-1)^2}$  and solve for  $a$ .

$$5 = \sqrt{(a+2)^2 + (2a-1)^2}$$

$$25 = (a+2)^2 + (2a-1)^2$$

$$25 = (a^2 + 4a + 4) + (4a^2 - 4a + 1)$$

$$25 = 5a^2 + 5$$

$$20 = 5a^2$$

$$4 = a^2$$

$$\pm 2 = a$$

First point:  $\left( \frac{-2}{a}, \frac{-4}{2a} \right)$   
 $a = -2$        $a = 2a$

Second point:  $\left( \frac{2}{a}, \frac{4}{2a} \right)$   
 $a = +2$        $a = 2a$