

Name: _____ Date : _____

IM 2 UNIT TEST V1 - Co-ordinate Geometry
Teacher: Mr. Santowski and Ms. Aschenbrenner

Score: _____

1. Here are three points, A(-4,4), B(2,-6,) and C(8,-4) that form a triangle. The following questions deal with these three points.

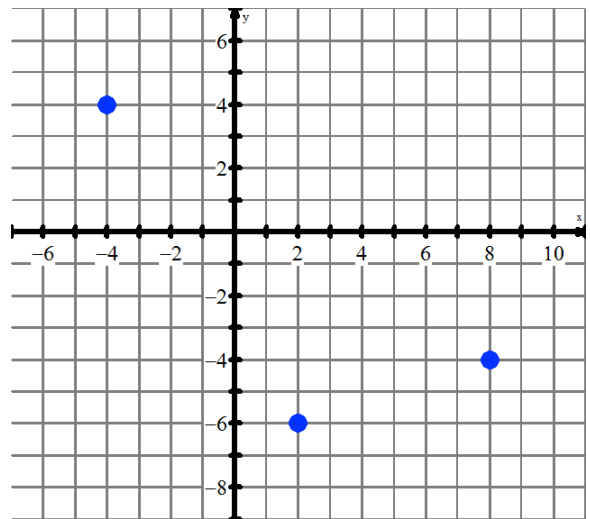
a. Determine the midpoint of side AB and label it on the diagram.

(12 marks)

(2)

b. Determine the length of side BC.

(2)



c. Find the slope of side AC.

(2)

d. Draw the median from vertex C.

(2)

e. Determine the equation of line segment AC.

(2)

- f. EXPLAIN what you would need to calculate in order to determine if the triangle was a right triangle. Then EXPLAIN how you would use your information to decide whether or not it was a right triangle.

(2)

2. Given the circle $x^2 + y^2 = 49$, answer the following questions:

(12 marks)

- a. Determine the length of the diameter of the circle. b. State the coordinates of the center of the circle.

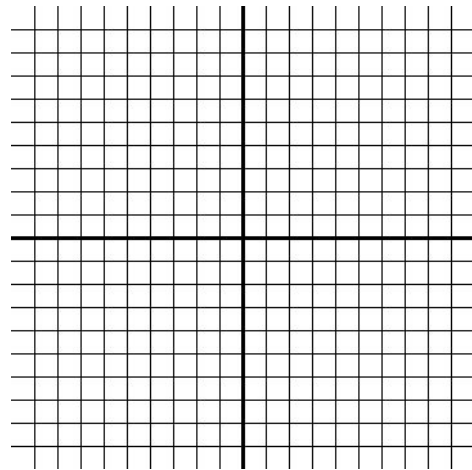
(2)

(1)

- c. Determine the x- and y-intercepts of the circle. d. Sketch the circle on the grid provided.

(2)

(2)



- e. Use your graph to determine if $x^2 + y^2 = 49$ represents a function. Explain your answer.

(2)

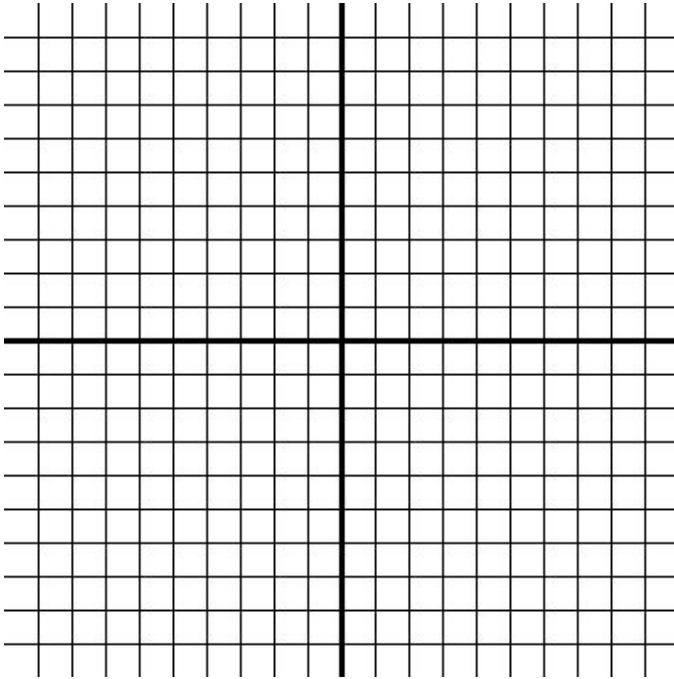
- f. If $x = 4$, determine the value(s) of y , rounded to one decimal place.

(3)

3. Graph the two points $X(-8,4)$ and $Y(4,-8)$ and draw the line segment XY on the grid provided.

(8 marks)

(2)



a. If the points X and Y represent the endpoints of a diameter, find the midpoint.

(2)

b. Determine the length of the radius of this circle. (Leave your answer as an EXACT number!)

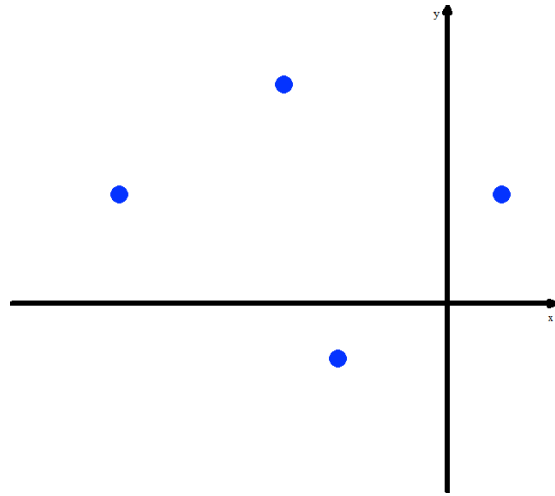
(2)

c. Determine the equation of the circle.

(2)

4. The following 4 points that make a quadrilateral: $A(-3,4)$, $B(1,2)$, $C(-1,-1)$, $D(-7,2)$. Mr. S. has made a rough sketch and wants to know if this quadrilateral is a parallelogram.

(12 marks)



- a. Calculate the slopes of the sides.

(4)

- b. What conclusion can you now make? Justify your conclusion.

(2)

- c. If Ms. A. suggested it was really an isosceles trapezoid, what additional information would you need to calculate?

(2)

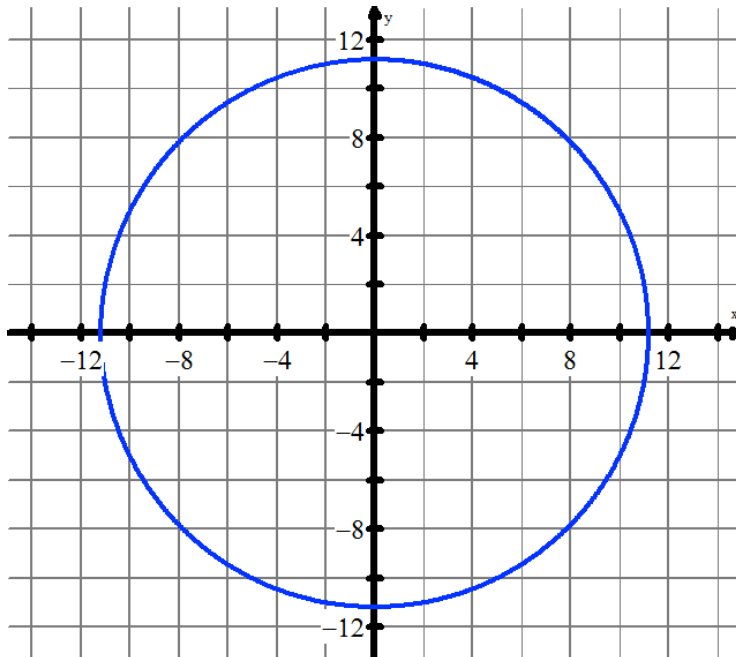
- d. So is it an isosceles trapezoid? Why or why not?

(4)

5. The following proof involves circles and triangles. I have graphed the circle $x^2 + y^2 = 125$ on the grid provided. You are being asked to prove that the triangle constructed using a point on the circle and the diameter of the circle will be a right triangle.

PRESENT YOUR SOLUTION ON THE NEXT PAGE

(15 points)



The following questions will help guide you with the visualization of the problem.

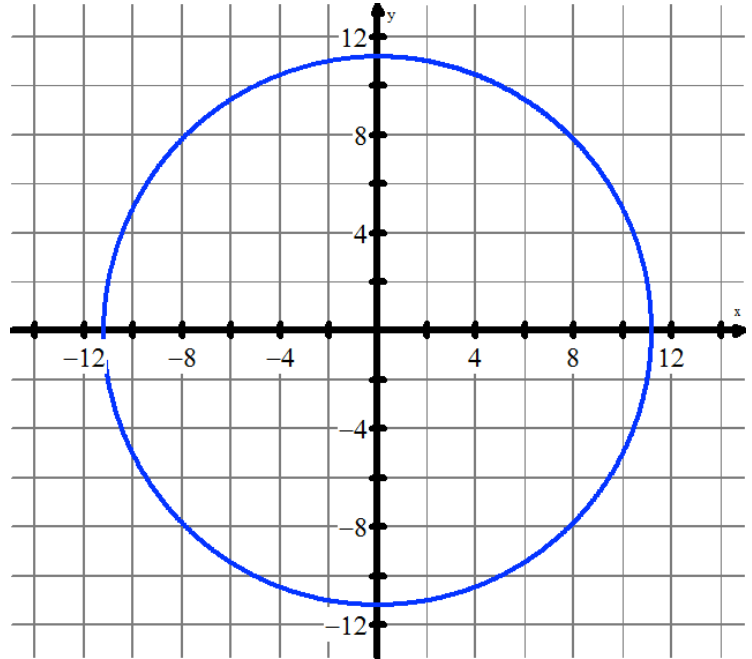
- Graph the two endpoints of a diameter, which will be $A(11,2)$ and $B(-11,-2)$ and draw in the diameter of this circle. (2)
- Use algebra to prove that $(5,-10)$ is on the circle. (2)
- Label the point $(5,-10)$ as point C. (1)
- Draw triangle ABC. (1)

Now that you have the proper diagram set up, you will be asked to prove that triangle ABC is a right triangle.

- What calculations must you make to complete the proof? Explain WHY you need to make these calculations. (3)
- Now make your necessary calculations. (4)
- Given your calculations, is the triangle a right triangle? Justify your conclusion. (2)

CONTINUED: The following proof involves circles and triangles. I have graphed the circle $x^2 + y^2 = 125$ on the grid provided. You are being asked to prove that the triangle constructed using a point on the circle and the diameter of the circle will be a right triangle.

(15 points)



6. Here are 4 co-ordinates of corners of a park: $W(4,1)$, $X(8,3)$, $Y(7,-1)$, $Z(3,-3)$. The 4 midsegments create a walking path, find the length of the path. (Scaffold) (i) draw points (ii) draw quad (iii) cal midpoints (iv) draw adjacent midsegments (v) calc length of path (scale factor?)

