

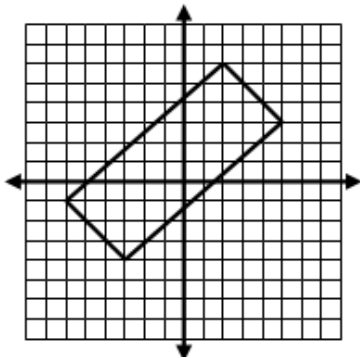
**Geometric & Algebraic Connections
Review WS**

Name: _____

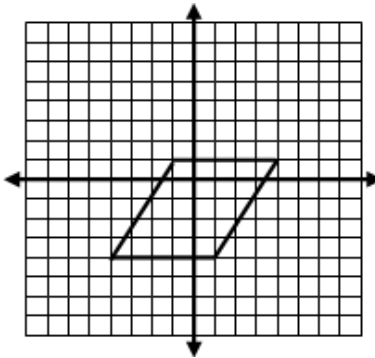
1. **Study** the handout on the properties of quadrilaterals and triangles and **know** your formulas!

2. Use the distance formula and/or slope formulas to identify each of the following shapes.

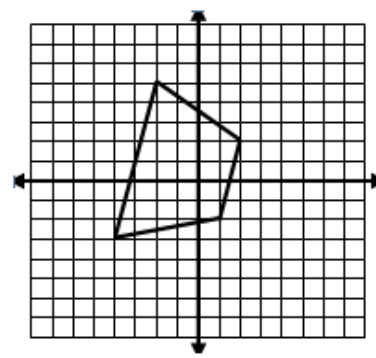
a.



b.



c.



3. Find the distance between the points. Then, find the midpoint of the points.

a. $(-5, 3)$ $(2, 6)$

b. $(3, -2)$ $(-1, 5)$

4. Find the coordinates of the **other endpoint** of a segment with an endpoint of $(-1, 5)$ and a midpoint $(2, -3)$.

5. Justin and Austin decide to play catch after school. They start at the same point. Justin walks 50 feet north and 20 feet west. Austin walks 40 feet south and 10 feet east. How far apart are they?

6. Find the equation of the line that is parallel to $y = 2x + 8$ that passes through $(-6, 1)$.

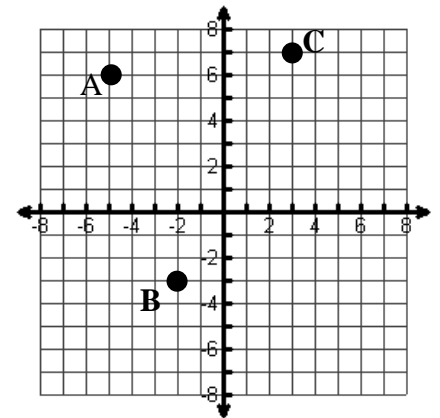
7. Find the equation of the line that is perpendicular to $y = 3x + 1$ that passes through $(9, -2)$.

For Question 8-10, refer to the graph below.

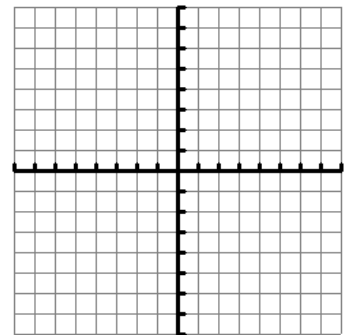
8. Find a point P on the segment \overline{AB} that partitions it in a 1:2 ratio.

9. Find a point Q on the segment \overline{BC} that partitions it in a 3:2 ratio.

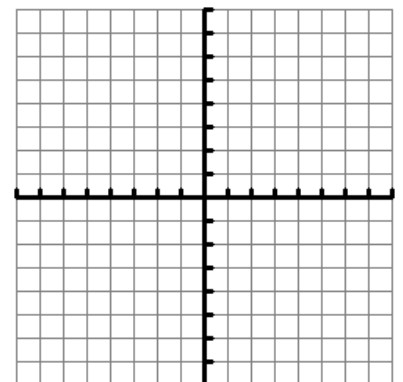
10. Is the triangle formed by the 3 points a right triangle?



11. On a coordinate graph, the three points $(-2, 0)$, $(0, 1)$, and $(0, -7)$ are given. What is a coordinate of a fourth point required to form a kite?

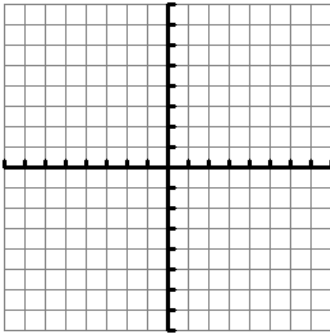


12. On a coordinate graph, the points $A(-1, 2)$, $B(2, 4)$, $C(5, 2)$, and $D(2, 0)$ are given. What is the most specific name of the quadrilateral ABCD formed by these vertices? Support your answer mathematically using coordinate proof.

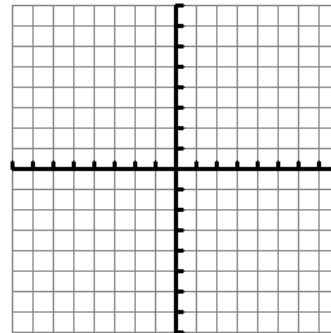


13. Graph each circle. Identify the center and radius.

a. $x^2 + y^2 = 25$



b. $(x-3)^2 + (y+5)^2 = 4$



14. Write the equation of each circle in standard form.

a. center $(-3, 1)$ and radius $\sqrt{7}$

b. center $(0, -8)$ and diameter 6

15. Rewrite each equation in standard form.

a. $x^2 - 4x + y^2 + 6y - 5 = 0$

b. $x^2 + y^2 - 12x - 85 = 0$

16. A circle is centered at the origin and contains the point $P(0, 4)$. Determine if Point $A(3, \sqrt{7})$ lies on the same circle.

**Geometric & Algebraic Connections
Review WS – answers**

1. Hope you did this!!

2. a. Parallelogram

b. Parallelogram

c. Trapezoid

3. a. $d = \sqrt{58}$; $M = \left(-\frac{3}{2}, \frac{9}{2}\right)$

b. $d = \sqrt{65}$; $M = \left(1, \frac{3}{2}\right)$

4. (5, -11)

5. $d = 30\sqrt{10} \approx 94.87$ feet

6. $y = 2x + 13$

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

8. (-4, 3)

9. (1, 3)

10. No ... the slopes are -3 and $\frac{1}{8}$ which are not opposite reciprocals.

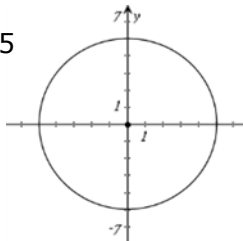
11. (2, 0)

12. rhombus ...

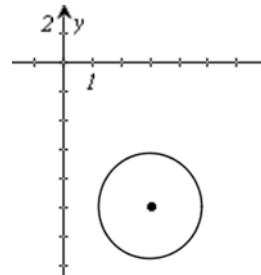
... use the slope formula to prove that opposite sides are parallel

... and then use the distance formula to prove that consecutive sides congruent

13. a. $C(0, 0)$; $r = 5$



b. $C(3, -5)$; $r = 2$



14. a. $(x+3)^2 + (y-1)^2 = 7$

b. $x^2 + (y+8)^2 = 9$

15. a. $(x-2)^2 + (y+3)^2 = 18$

b. $(x-6)^2 + y^2 = 121$

16. Point A is on the circle ... the radius of the circle (CP) is 4 and the distance from the center of the circle to point A is also 4, as shown by the distance formula.