Introduction to the Coordinate Plane

Name: _____

Date: _____

Example 1. Define the following terms and label each one on the following diagram.



• Coordinate plane

• Origin

• *x*-axis

- *y*-axis
- *x*-coordinate
- *y*-coordinate
- Concurrent
- Collinear

Example 2. Graph the points A = (1,3), B = (0,7), C = (7,6), D = (2,5), and E = (4,9).



• Which three points are collinear?

• The line through A and C and the line through B and D intersect at a point. What are the coordinates of that point?

Example 3. Do the points (0,1), (1,4), (4,3), and (3,0) form a square? Why or why not?



Example 4. How many points with whole number coordinates lie on line segment with endpoints (0, 10) and (10, 0)?

Example 5. Define A = (3, 5), B = (6, 6), and C = (7, 2).



- How many points with whole number coordinates lie in the interior of the triangle with vertices A, B, and C?
- Point D lies in the coordinate plane such that A, B, C, and D form a parallelogram. What are the possible coordinates for point D?

Here is a coordinate plane you can print out multiple times.



Problem 1. Define A = (5,3) and B = (8,5). Find points C and D such that the quadrilateral formed by points A, B, C, and D form a square.

Problem 2. Let A = (3, 2). *B* is a point such that the *x*-axis, the *y*-axis, and the line through *A* and *B* are concurrent. If the sum of the *x*-coordinate and the *y*-coordinate of *B* is 10, what is the positive difference between *B*'s *x*-coordinate and *y*-coordinate?

Problem 3. Let A = (4, 1), let B = (6, 10), and let O be the origin. What is the degree measure of $\angle AOB$?

Problem 4. The line through points (1, 2) and (8, 10) and the line through (2, 9) and (3, 8) meet at a point *P*. Find the sum of the *x*-coordinate and the *y*-coordinate of point *P*.

Problem 5. Let X = (100, 0), Y = (0, 100), and Z = (100, 100).

• How many points with whole number coordinates lie on the perimeter of the triangle formed by X, Y, and Z?

• How many points with whole number coordinates lie on or inside of the triangle formed by X, Y, and Z?