For the following questions, show all work.

1. Find the distance between the following pair of points: (-3,4) and (5,4).

2. Find the length of the line segment joining the points whose coordinates are (-5,1) and (7,6).

3. Find the length of the shortest side of the triangle whose vertices are R(-2,-1), S(1,3) and T(1,10).

4. Find the coordinates of the midpoint of the line segment that joins the following pair of points: (-2,7) and (0,-5).

5. In a circle, A and B are endpoints of a diameter, and P is the center of the circle. Find the coordinates of P, given the following coordinates for A and B: A(-5,-2) and B(3,7).

6. In triangle ABC, the midpoints of sides AB, BC, and CA are points D, E, and F, respectively. Find the coordinates of D, E, and F, given the coordinates of the vertices: A(-5,2), B(7,4), C(3,-6).

7. M is the midpoint of AB. Given the coordinates of points A and M, find the coordinates of point B.
   a. A(4,3), M(4,9)
   b. A(6,10), M(7,-2)

8. Find the slope of the line that passes through:
   a. (3,5) and (8,5)
   b. (-5,-6) and (-1,0)

9. Find the value of k so that the slope of the line passing through the points (5,3) and (k,6) will be 1.

10. Find the value of y so that the slope of the line passing through the points (2,y) and (6,10) will be $\frac{1}{2}$. 