Name: _____

The Distance and Midpoint Formulas

Exercise 1: Find the distance between each pair of points. Round to the nearest tenth, if necessary.

1) $X(5, 0)$, $Y(12, 0)$

2) $M(-2, -5)$, $N(3, 7)$

3) $A(-6, -4)$, $B(-6, 8)$

4) $P(-4, 0)$, $Q(3, -3)$

5) $V(3, 4)$, $W(-1, -2)$

6) $C(7, 2)$, $D(-4, 10)$

7) $E(3, -6)$, $F(9, -2)$

8) $G(-4, -6)$, $H(-7, -3)$

Exercise 2: Find the value of a if the points are the indicated distance apart.

1) $A(a, -5)$, $B(-3, -2)$; $d = 5$

2) $Q(7, 2)$, $R(-1, a)$; $d = 10$

3) $D(-3, a)$, $E(5, 2)$; $d = 17$

4) $G(7, -3)$, $H(5, a)$; $d = 5$

5) $T(6, -3)$, $U(-3, a)$; $d = \sqrt{30}$

6) $U(1, -6)$, $V(10, a)$; $d = \sqrt{4}$

Exercise 3: Find the distance between $J(-9, 5)$ and $K(-4, -2)$.

Exercise 4: What is the distance between $C(-8, 1)$ and $D(5, 6)$?

Exercise 5: What is the value of c if $W(1, c)$ and $V(-4, 9)$ are 13 units apart?

Exercise 6: Suppose $M(b, 9)$ and $N(20, -5)$ are $4\sqrt{2}$ units apart. What is the value of b?

Exercise 7: Find the midpoint of the line segment whose endpoints are given.

1) $X(5, 0)$, $Y(12, 0)$
2) $M(-2, -5)$, $N(3, 7)$
3) $A(-6, -4)$, $B(-6, 8)$
4) $P(-4, 0)$, $Q(3, -3)$
5) $V(3, 4)$, $W(-1, -2)$
6) $C(7, 2)$, $D(-4, 10)$
7) $E(3, -6)$, $F(9, -2)$
8) $G(-4, -6)$, $H(-7, -3)$

Exercise 8: M is the midpoint of line segment AB. The coordinates of A are (-2,3) and the coordinates of M are (1,0). Find the coordinates of B.

Exercise 9: The coordinates of quadrilateral ABCD are A(-3,-1), B(3,1), C(7,5), and D(1,3). Do the diagonals bisect each other?

Exercise 10: M is the midpoint of segment AB. The coordinates of A are (2,3) and the coordinates of M are (4.5,6). Find the coordinates of B.

Exercise 11: If the midpoint between (x, 3) and (9, 14) is $\left(7, \frac{17}{2}\right)$, what is the value of x?

Exercise 12: For the given endpoints of a diameter, find the center of the circle and its radius

1) (-8, 6) and (0, 0)
2) (4,-9) and (-2, -9)
3) (-5, 7) and (4, -2)
4) (-2, -3) and (4, 5)
5) (3, 4) and (2, 1)