

Name: _____

The Distance and Midpoint Formulas

1) Find the distance between each pair of points.

1) $(-5, -5), (1, 3)$

2) $(-11, -5), (5, 7)$

3) $(8, -2), (-7, 6)$

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

1) $A(a, 3), B(6, 5); d = 2$

2) $G(-1, 5), H(-8, a); d = \sqrt{85}$

3) $X(9, a), Y(5, -2); d = 4$

4) $P(6, 1), Q(a, -7); d = \sqrt{113}$

5) $C(-9, -2), D(0, a); d = \sqrt{90}$

6) $Q(a, -1), R(4, 5); d = 10$

7) $E(7, a), F(-2, 4); d = \sqrt{90}$

8) $M(a, 3), N(-1, 5); d = \sqrt{8}$

9) $V(-3, -3), W(a, 4); d = \sqrt{50}$

- 3) What are the coordinates of the midpoints of the segment joining
- (1) (2, -1) and (8, 5)
 - (2) (-3, 1) and (2, -8)
 - (3) (-3, 2) and (1, -6)
 - (4) (-2, -1) and (3, 4)
 - (5) (-1, -5) and (-4, -6)
- 4) Use the distance formula and the slope of segments to identify the type of quadrilateral. Explain your reasoning.
- 1) A(-2, 1), B(3, -2), C(8, 1), D(3, 4)
 - 2) T(-3, -3), U(4, 4), V(0, 6), W(-5, 1)
- 5) Use $\triangle ABC$ with coordinates A(4, 14), B(10, 6), and C(16, 14).
- 1) Determine whether $\triangle ABC$ is scalene, isosceles, or equilateral. Find the perimeter of the triangle.
 - 2) Find the midpoints M and N of \overline{AB} and \overline{AC} , respectively. Find the slopes and lengths of \overline{MN} and \overline{BC} . How do the slopes compare? How do the lengths compare?