

The Distance Formula

If $A(x_1, y_1)$ and $B(x_2, y_2)$ are any two points on the coordinate plane, then

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Practice Exercises

- A. Find PQ .
- $P(4, 2), Q(8, 2)$
 - $P(3, 5), Q(3, -2)$
 - $P(0, 0), Q(-4, 3)$
 - $P(-2, 6), Q(-7, 7)$
 - $P(5, 2), Q(0, -6)$
- B. Find the length of each side of $\triangle EXP$. Tell whether $\triangle EXP$ is isosceles, right, or neither.
- $E(4, 3), X(-1, 1), P(5, 0)$
 - $E(-3, -2), X(1, -1), P(0, 2)$
 - $E(0, 8), X(9, 6), P(8, 10)$
- C. Find the perimeter and area of the triangles in Part B.
- D. Answer the following.
- Given three points $Q(-3, 4)$, $E(-1, 3)$, and $D(1, 2)$, find QE , QD , and ED and show that they are collinear.
 - $M(-5, -4)$, $C(-1, 3)$, and $D(1, -1)$ are three points on a plane. Find MC , MD , and CD and show that they are collinear points.
 - Show that the diagonals of $\square CUTE$ are congruent for $C(5, -1)$, $U(9, -1)$, $T(9, 0)$, and $E(5, 0)$.
 - A triangle has vertices $S(-2, 5)$, $U(3, -8)$, and $N(8, 5)$. Find the length of the altitude to the shortest side.

Problem Set

- A. Find PQ .
- $P(-3, 1), Q(3, 9)$
 - $P(4, 2), Q(9, 14)$
 - $P(-8, 0), Q(16, -24)$
 - $P(-3, 4), Q(5, 2)$
 - $P(4, 5), Q(1, 3)$
- B. Find the length of each side of $\triangle EXP$. Tell whether $\triangle EXP$ is isosceles, right, or neither.
- $E(1, 8), X(6, -4), P(11, 8)$
 - $E(3, 3), X(5, 8), P(7, 3)$
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