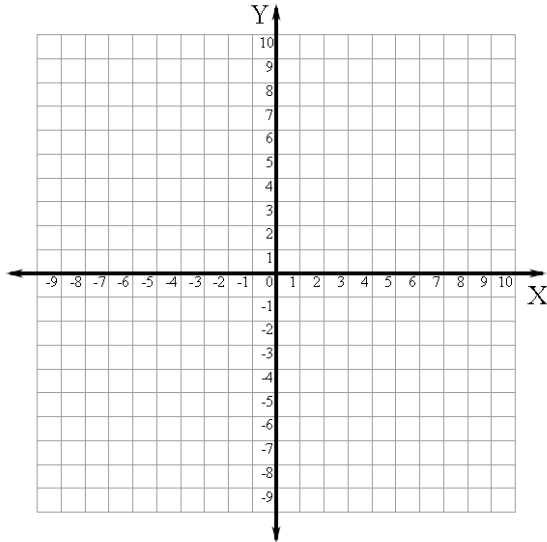


Triangle ABC has vertices **A(-2, 4)** , **B(2, 2)**, and **C(3, 7)**.

- a. **Plot** the points on the grid below.



- b. Find the length of AB. Show your work.

- c. Find the length of BC. Show your work.

- d. Find the length of AC. Show your work.

- e. Using your answers from b-d, determine if the triangle is a scalene triangle, an isosceles triangle, or an equilateral triangle. Explain how you know.

f. Is triangle ABC a right triangle. Justify your answer.

g. Find the midpoint of AB. Call this point D and plot it on the grid in part a.

h. Find the midpoint of BC. Call this point E and plot it on the grid in part a.

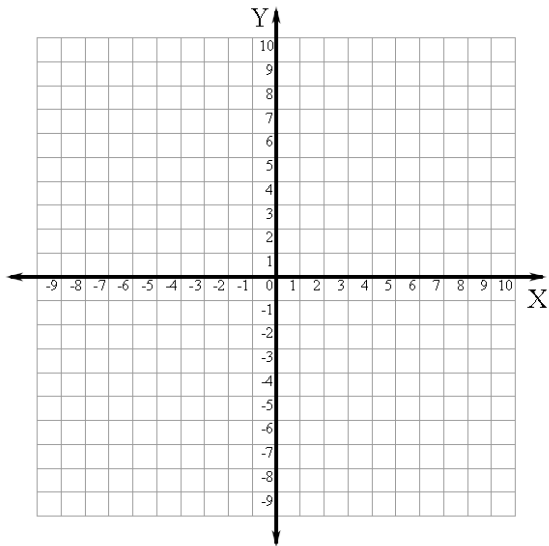
i. Find the slope of DE, that is the slope between the two points you found in parts f and g.

j. Find the slope of AC.

k. Compare the two slopes you found in parts h and i. What can you conclude about the segment DE and AC?

2. The vertices of a **quadrilateral** are $A(-1, 4)$, $B(4, 3)$, $C(1, 1)$, and $D(6, 0)$.

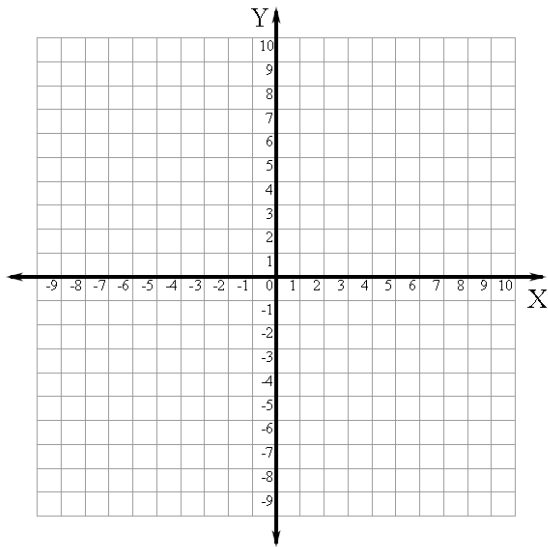
a. Plot the points on the grid below.



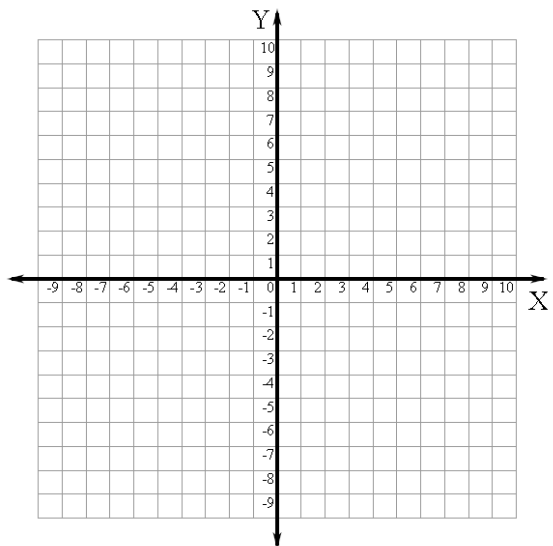
b. Determine if the quadrilateral is a parallelogram. Show your work and explain your reasoning.

3. Classify each quadrilateral as a parallelogram, rectangle, rhombus, square, kite, trapezoid, or isosceles trapezoid. Be as specific as possible. Show your work to justify your answer.

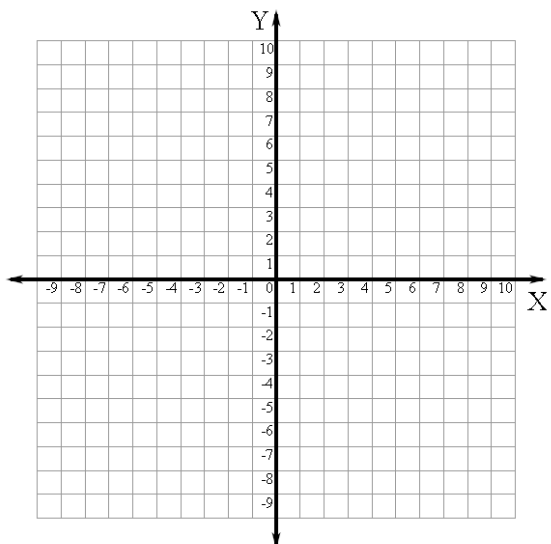
a. W (4, 1), X (1, 5), Y (-3, 2), Z (0, -2)



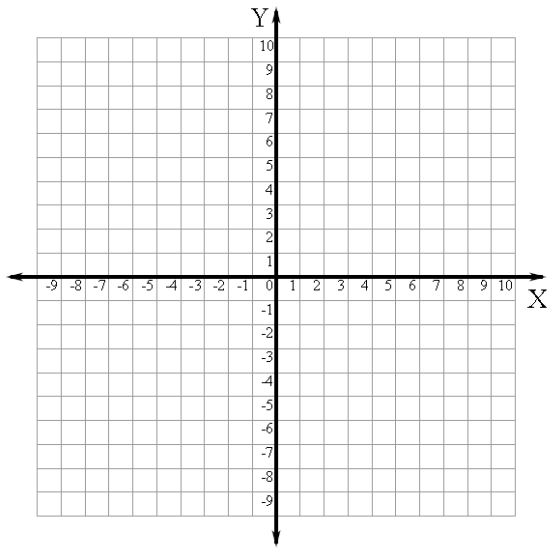
b. M (-3, 3) A (7, 3) T(3, 6) H (1, 6)



c. Q (-3,1) P (3, 3) R (5, 7) S (-1, 5)



4. Graph A (3, 2), B (7, 0), C (11, 2) and D (7, 4). Prove that quadrilateral ABCD is a rhombus.

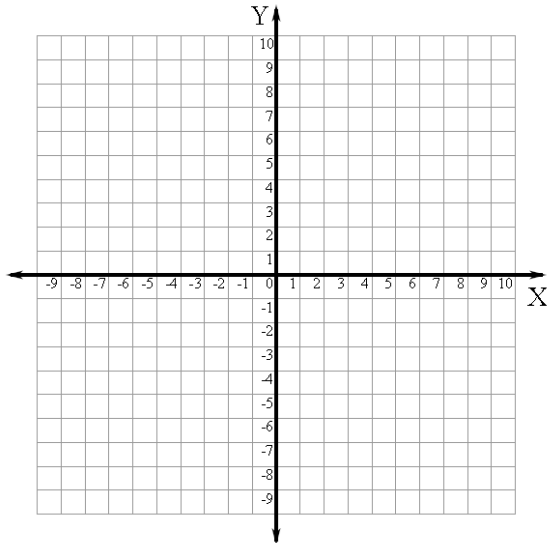


Find the midpoint of each diagonal.

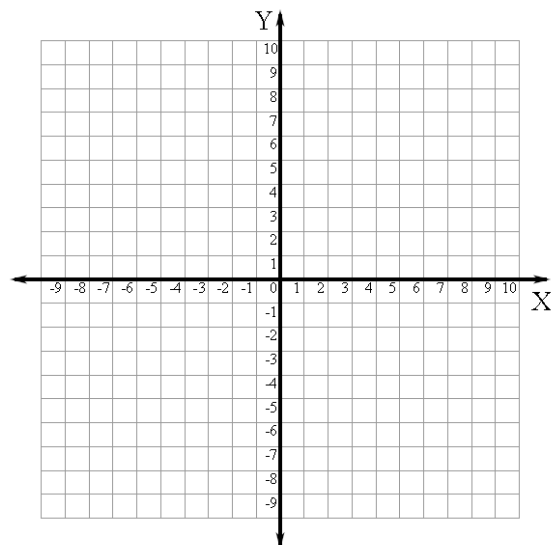
Do the diagonals bisect each other? Explain your reasoning.

For problems 5 - 7 classify each quadrilateral as a parallelogram, rectangle, rhombus, square, kite, trapezoid, or isosceles trapezoid.

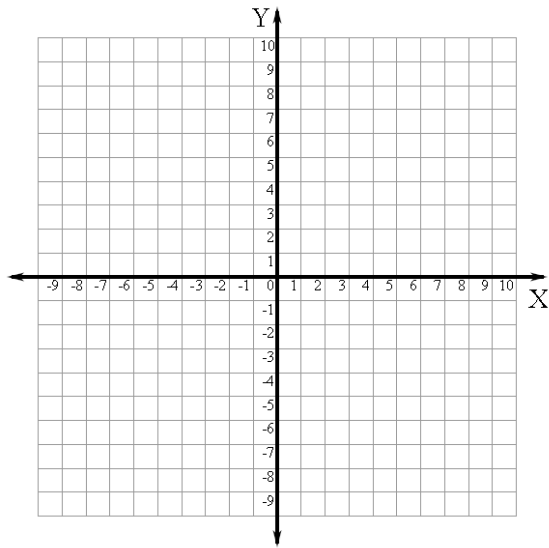
5. W (-4, -2), X (5, 4), Y (7, 1), Z (-2, -5)



6. M (-3,2), A (-1, 6), T (1, 0), H (-1, -4)



7. F (-2, 3), I (3, 4), S (4, -1), H (-1, -2)



Replace each blank with always, sometimes or never.

2. A Rectangle _____ has four right angles.
3. The diagonals of a parallelogram _____ bisect the opposite angles.
4. The two legs of a trapezoid are _____ congruent.
5. A parallelogram _____ has only one pair of opposite sides parallel.