

Name: _____

Date: _____

Period: _____

Chapter 11: Coordinate Geometry Proofs

Topic 5: Rectangle Proofs

Do Now:

Given line \overline{AB} with endpoints $A(0, 6)$ and $B(-2, -2)$, and line \overline{CD} with endpoints $C(2, 0)$ and $D(0, -4)$, are these lines parallel, perpendicular, or neither? Explain your answer.

Recall: A **rectangle** is a quadrilateral in which both pairs of opposite sides are parallel and congruent, and all four angles are right angles.

Properties of Rectangles:

- All the properties of a parallelogram.
- One right angle.
- Diagonals _____.

To prove that a Quadrilateral is a Rectangle, we must prove that

_____ (midpoint twice).

_____ (distance twice).

Examples:

1. Prove that quadrilateral A(4, 4), B(6, 1), C(0, -3), and D(-2, 0) is a rectangle.

- Plot and label the graph
- Midpoint & Work

Conclusions:

$\therefore \overline{AC}$ bisects \overline{BD} because _____

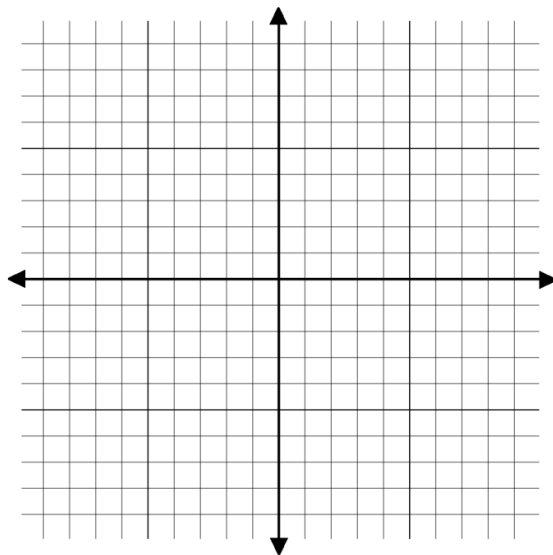
\therefore Quadrilateral ABCD is _____

- Distance & Work

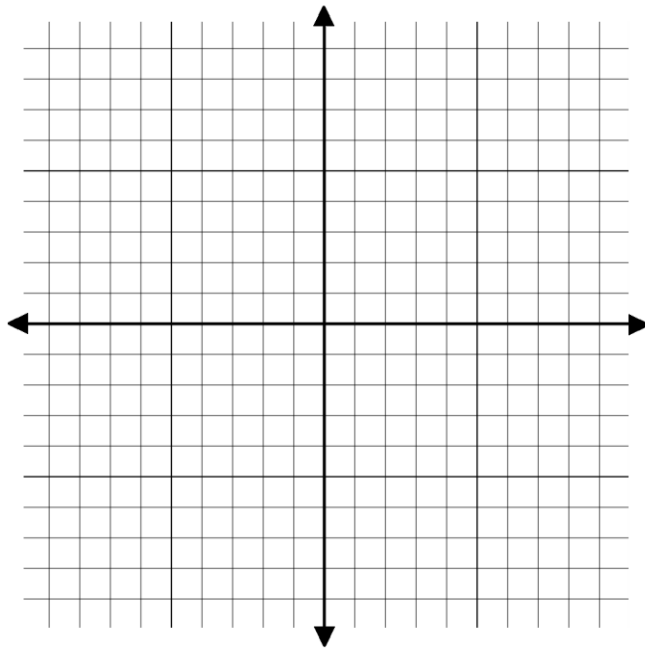
Conclusions:

$\therefore \overline{AC}$ is congruent to \overline{BD} because _____

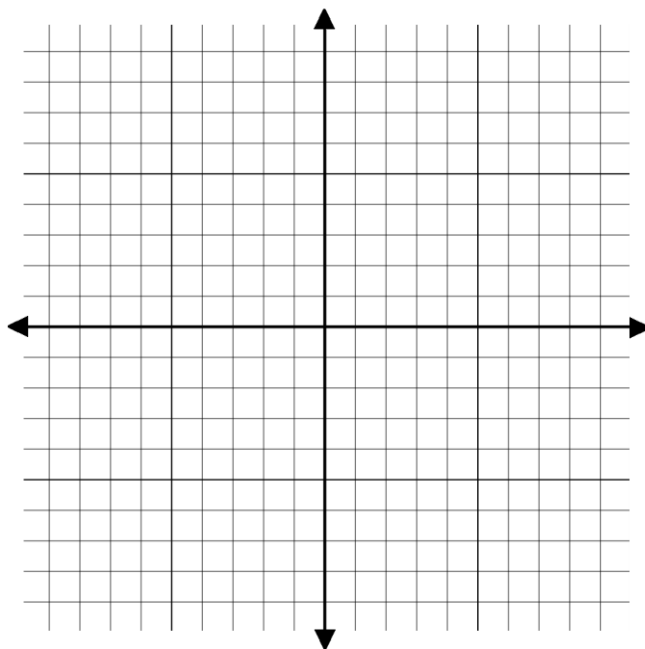
\therefore Parallelogram ABCD is _____



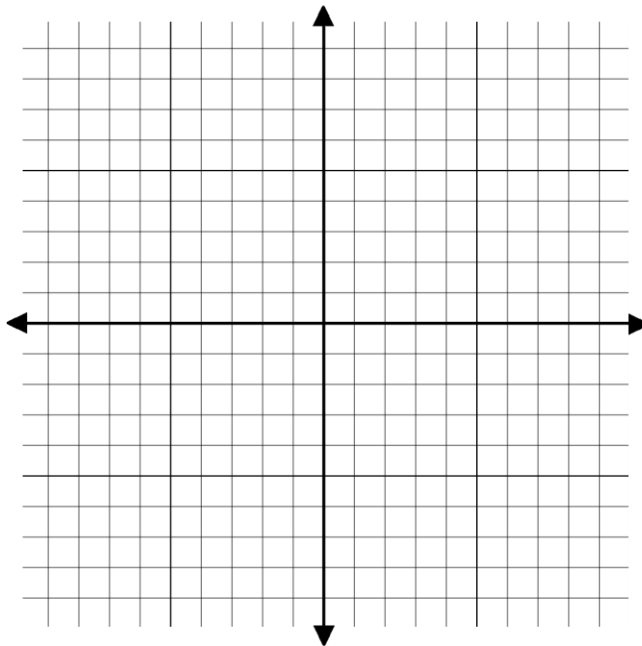
2. Determine if quadrilateral PQRS with $P(0, 2)$, $Q(4, 8)$, $R(7, 6)$ and $S(3, 0)$ is a rectangle.



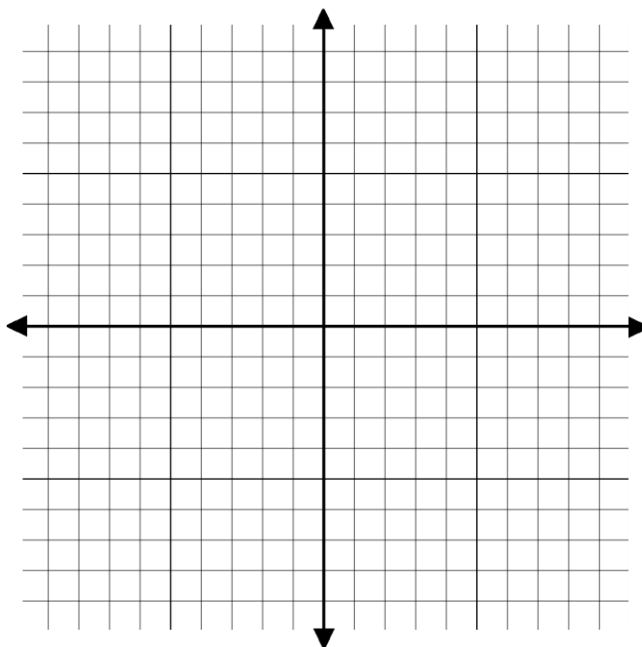
3. Determine if quadrilateral WXYZ with $W(1, 2)$, $X(-4, 8)$, $Y(-8, 6)$, and $Z(-3, 0)$ is a rectangle.



4. Prove that Quadrilateral EFGH with E(1, 4), F(7, 0), G(5, -3) and H(-1, 1) is a rectangle.



5. **Given:** A(-5, 6), B(6, 6), C(8, -3), D(-3, -3)
Prove: This quadrilateral is a rectangle.



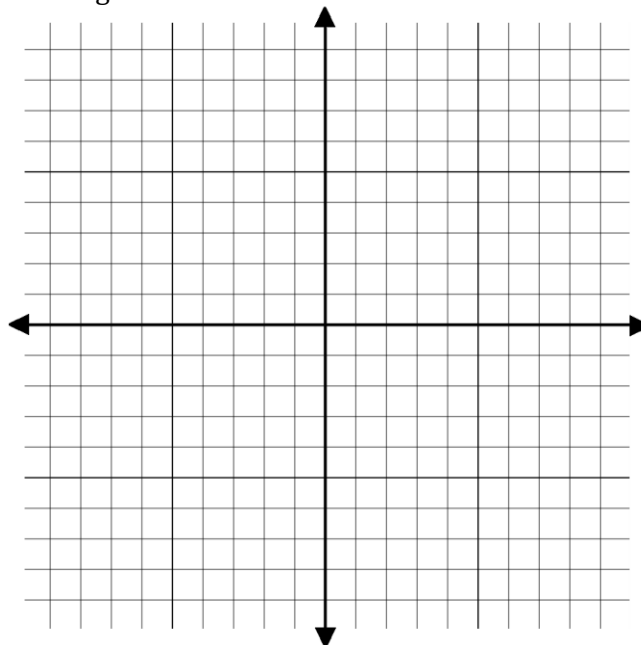
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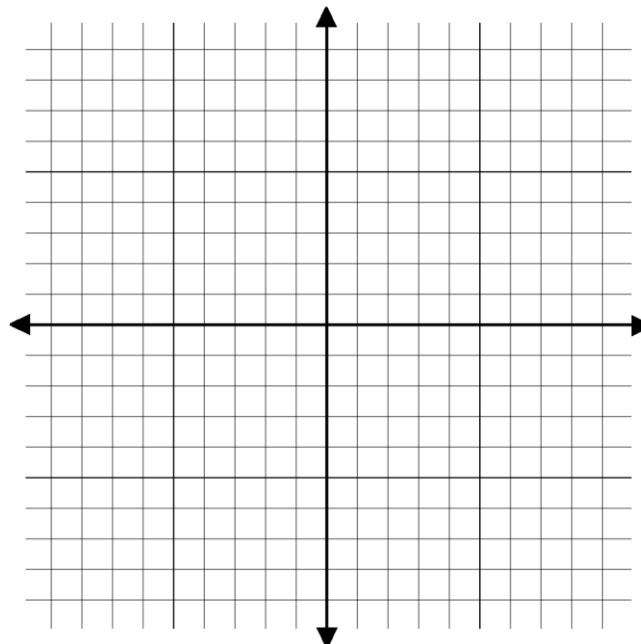
Period: _____

Rectangle Proofs Homework

1. Prove that $W(-5, -1)$, $X(-4, 3)$, $Y(8, 0)$ and $Z(7, -4)$ is a rectangle.



2. Determine if quadrilateral PQRS with $P(-7, 3)$, $Q(-5, 7)$, $S(-1, 3)$ and $R(1, 7)$ is a rectangle.



3. The coordinates of the endpoints of FG are $(-4, 3)$ and $(2, 5)$. Find the length of FG in simplest radical form.