Chapter 11: Coordinate Geometry Proofs
Topic 8: 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:
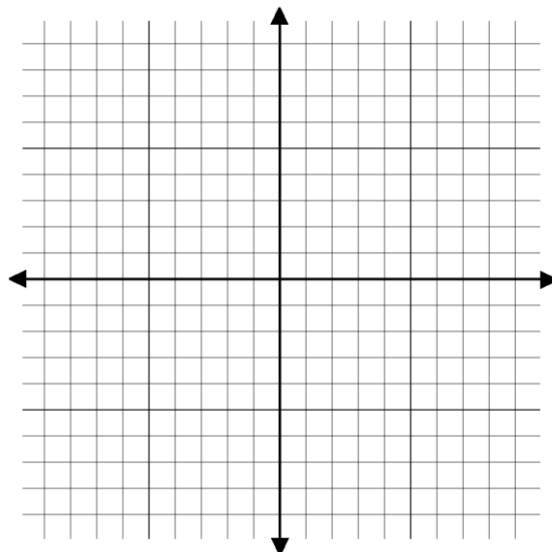
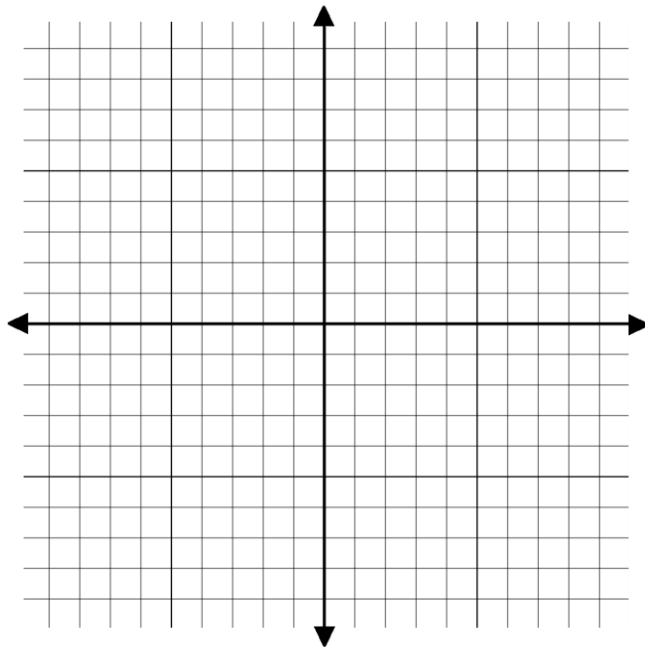∴ $\overline{AC}$ bisects $\overline{BD}$ because _____

∴ Quadrilateral ABCD is _____

- *Distance & Work*

Conclusions:

∴ $\overline{AC}$ is congruent to $\overline{BD}$ because _____
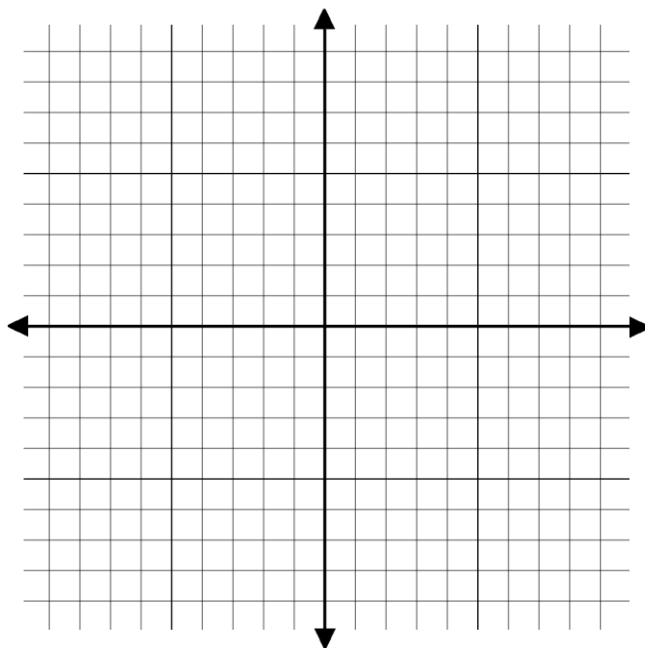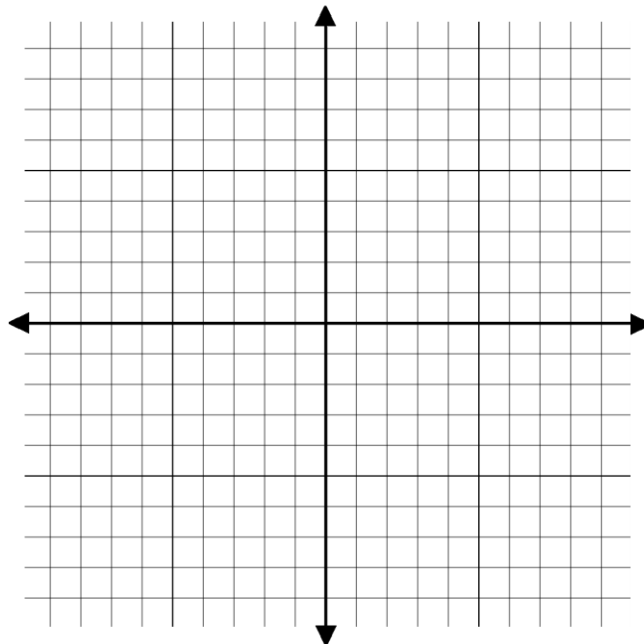
∴ Parallelogram ABCD is _____

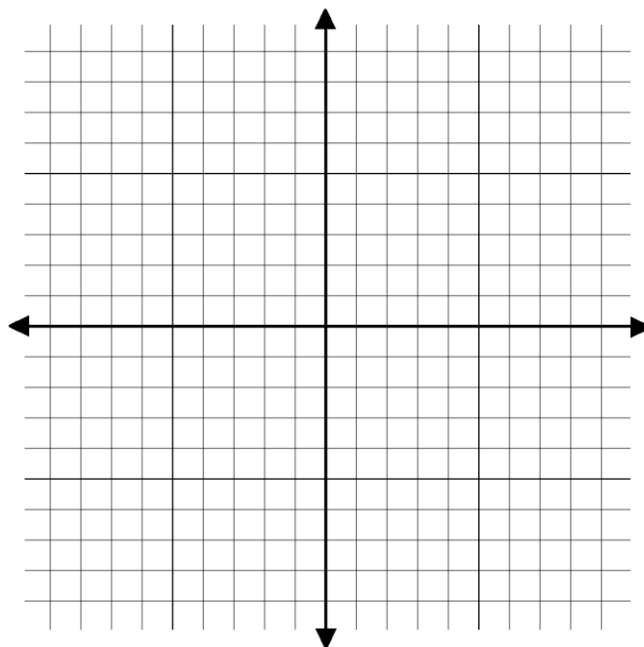2. Determine if quadrilateral PQRS with P(0, 2), Q(4, 8), R(7, 6) and S(3, 0) is a rectangle.

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)
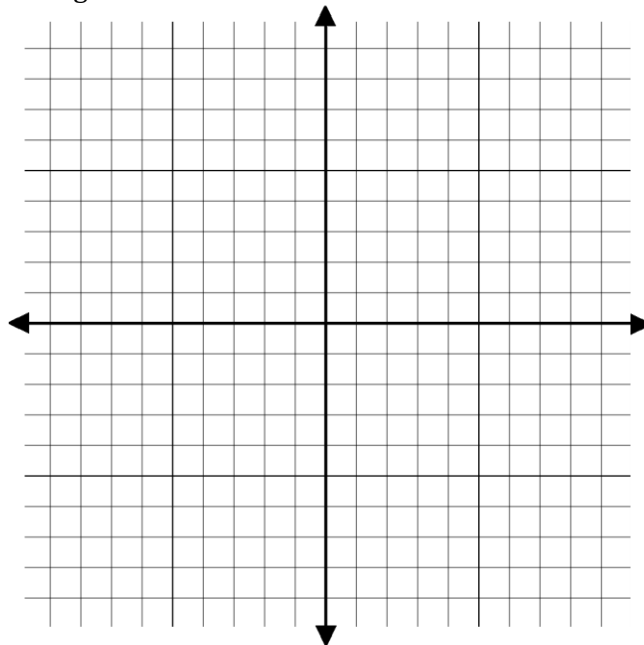   **Prove:** This quadrilateral is a rectangle.
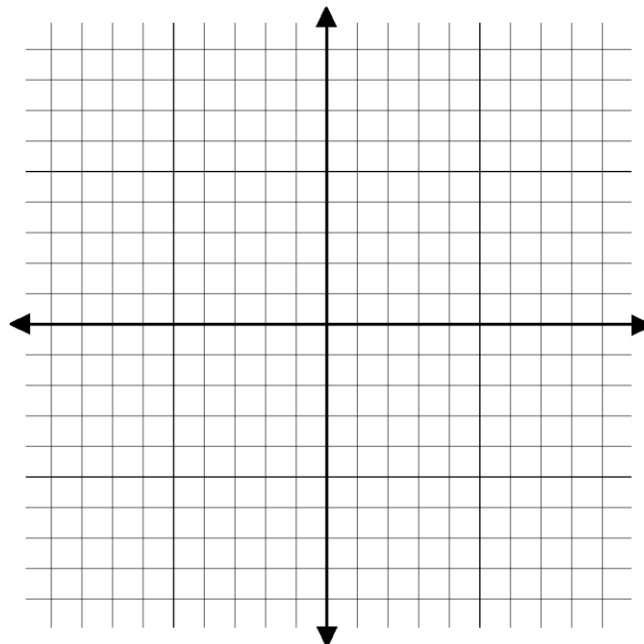
Rectangle Proofs Homework

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

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