

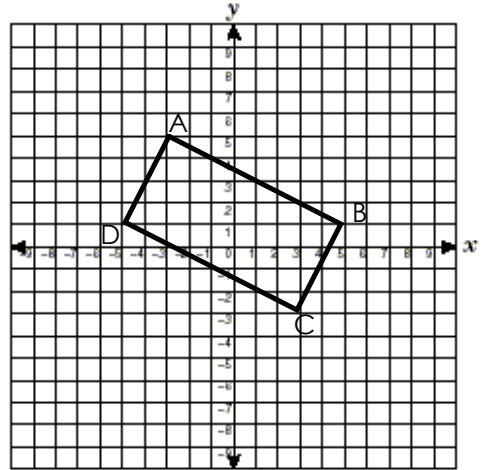
8.4 - Proving Rectangles and Squares

Objective: Students will be able to prove what shape a figure is based on its coordinates

Proving a Quadrilateral Is a Rectangle

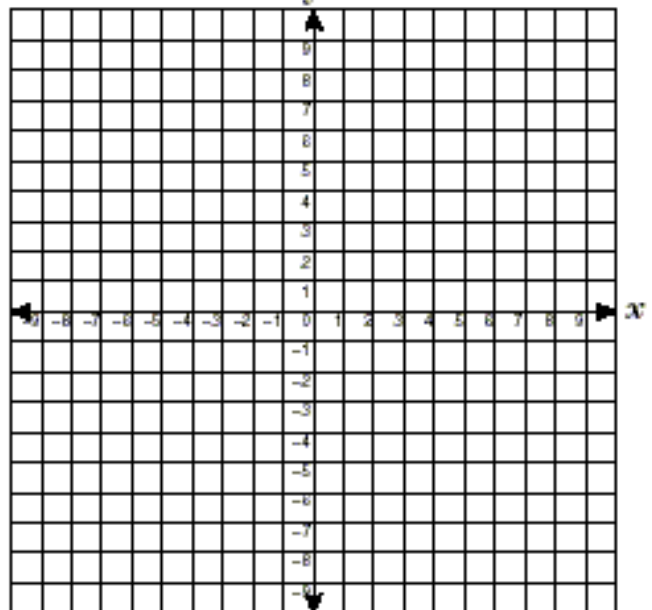
Special Rectangle Properties

- 1) Diagonals are congruent
- 2) All angles are congruent



Prove a quadrilateral with vertices $G(1,1)$, $H(5,3)$, $I(4,5)$ and $J(0,3)$ is a rectangle.

Step 1: Prove the quadrilateral is a parallelogram



Step 2: Prove the parallelogram is a rectangle by showing diagonals are congruent

Conclusion

Quadrilateral GHIJ is a rectangle because _____ and _____

Proving a Quadrilateral Is a Square

Properties of a Parallelogram

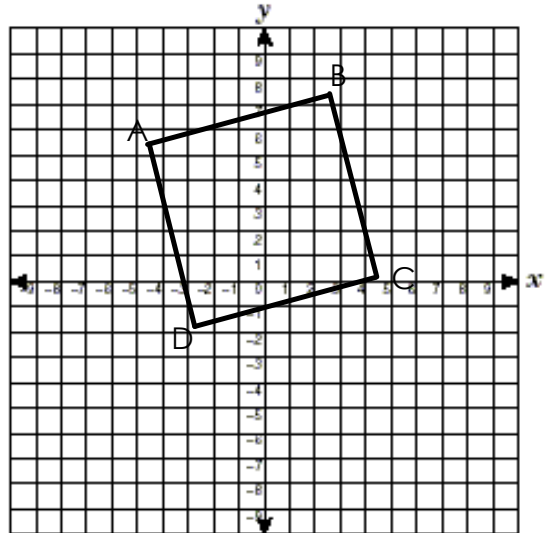
- 1) Opposite Sides are Parallel
- 2) Opposite Sides are Congruent
- 3) Diagonals Bisect Each Other

Special Properties of a Rhombus

- 1) All Sides are Congruent
- 2) Diagonals are Perpendicular

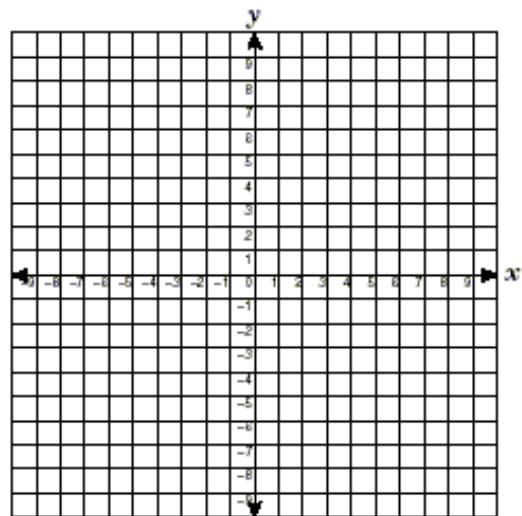
Special Rectangle Properties

- 1) Diagonals are congruent
- 2) All angles are congruent



Prove that a quadrilateral with vertices $J(2,-1)$, $K(-1,-4)$, $L(-4,-1)$ and $M(-1, 2)$ is a square.

1) Prove the quadrilateral is a parallelogram



2) Prove the parallelogram is a rhombus

3) Prove the parallelogram is also a rectangle

Conclusion

Quadrilateral GHIJ is a square because

_____,

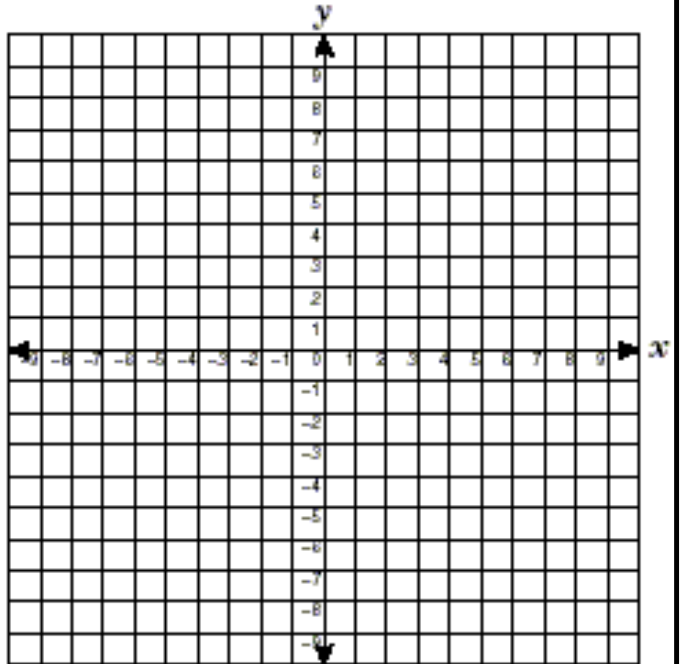
_____,

and _____

Independent Practice

Prove that quadrilateral PLUS with the vertices $P(2,1)$, $L(6,3)$, $U(5,5)$, and $S(1,3)$ is a rectangle.

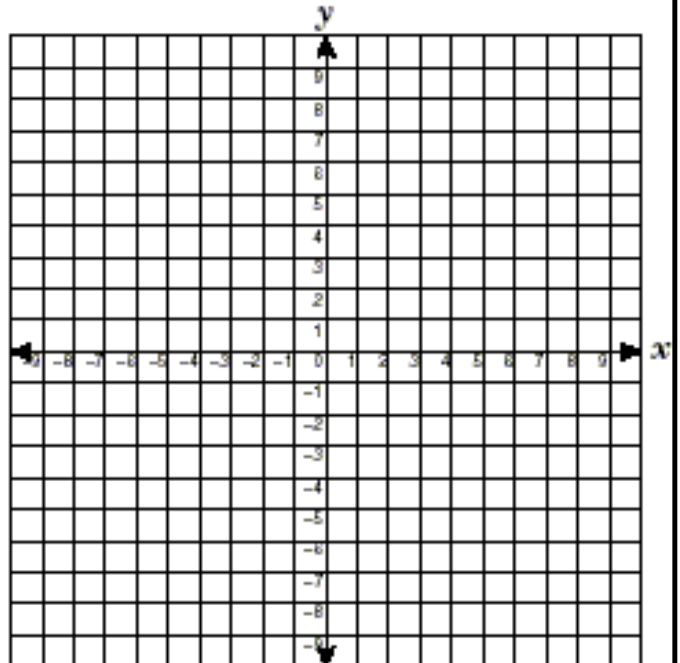
Step 1: Prove the quadrilateral is a parallelogram



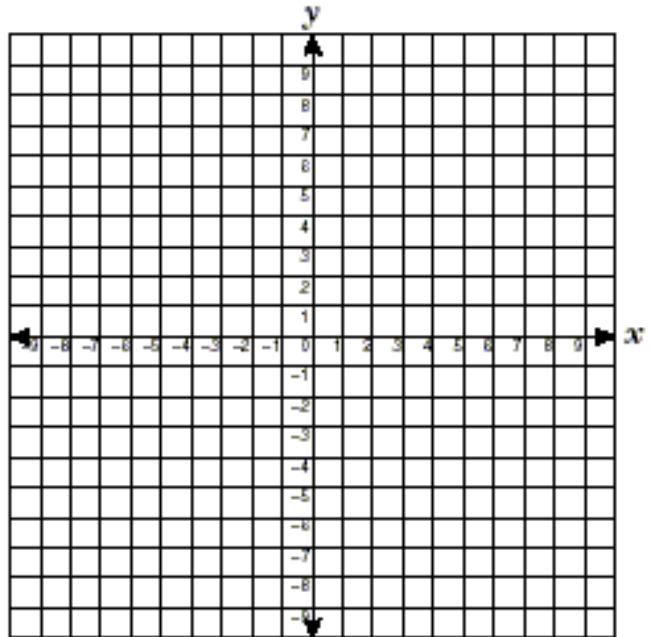
Step 2: Prove the parallelogram is a rectangle by **showing diagonals are congruent**

Conclusion

Prove that quadrilateral ABCD with the vertices $A(2,1)$, $B(1,3)$, $C(-5,0)$, and $D(-4,-2)$ is a rectangle.



Prove that ABCD is a square if $A(1,3)$, $B(2,0)$, $C(5,1)$ and $D(4,4)$.



Quadrilateral *MATH* has coordinates $M(1,1)$, $A(-2,5)$, $T(3,5)$, and $H(6,1)$. Prove that quadrilateral *MATH* is a rhombus and prove that it is *not* a square. [The use of the grid is optional.]

