

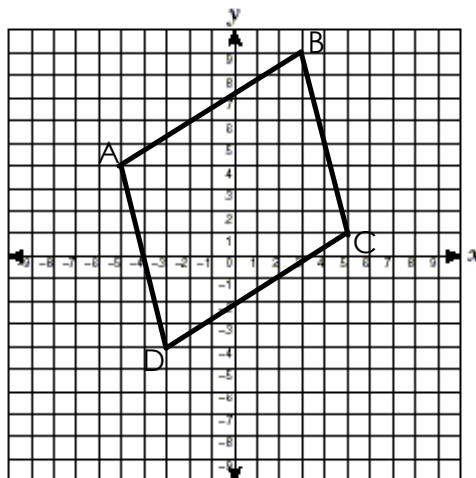
8.3 - Proving Parallelograms

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

Proving a Quadrilateral Is a Parallelogram

Properties of a Parallelogram

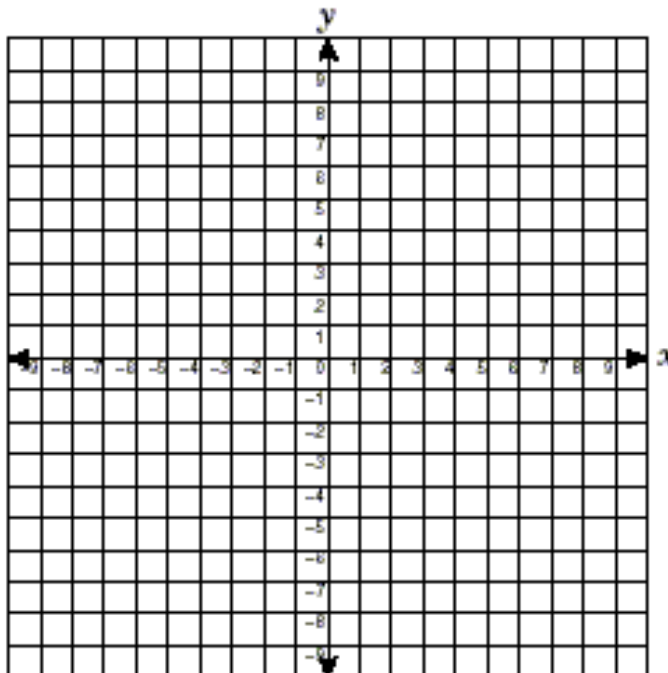
- 1) Opposite Sides are Parallel
- 2) Opposite Sides are Congruent
- 3) Diagonals Bisect Each Other
- 4) Opposite Angles are Congruent
- 5) Consecutive Angles are Supplementary



Quadrilateral PSFT has coordinates at P(-5, 1), S(-2, 2), F(-1, -3), T(-4, -4).
Prove PSFT is a parallelogram.

Step 2: Find slope of each side

Step 1: Plot Points



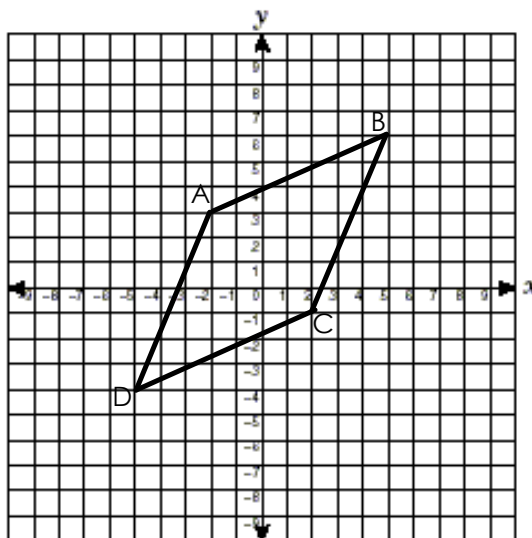
Step 3: Write Conclusion

In quadrilateral PSFT, _____ and _____.
Therefore, PSFT is a parallelogram because

Proving a Quadrilateral Is a Rhombus

Special Properties of a Rhombus

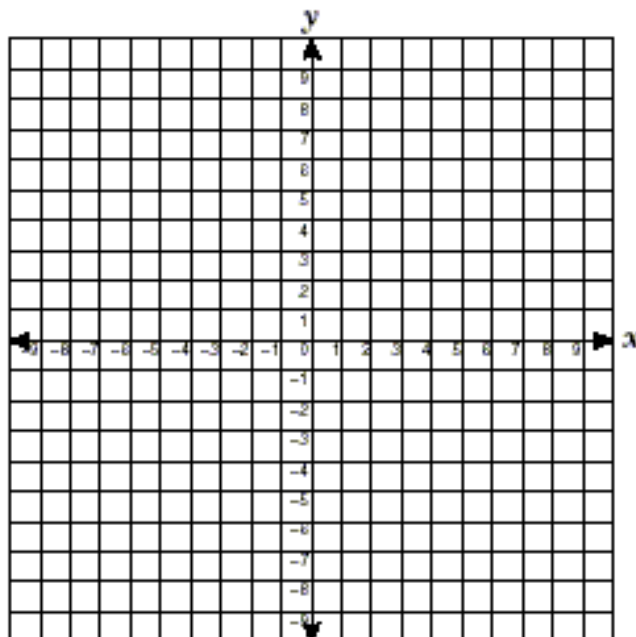
- 1) All Sides are Congruent
- 2) Diagonals are Perpendicular
- 3) Diagonals Bisect Vertex Angles



Quadrilateral ROMY has coordinates at $R(2, 3)$, $O(5, -4)$, $M(-2, -1)$, $Y(-5, 6)$.
Prove ROMY is a rhombus.

Step 1: Plot Points

Step 2: Prove the quadrilateral is a parallelogram (refer to last page)



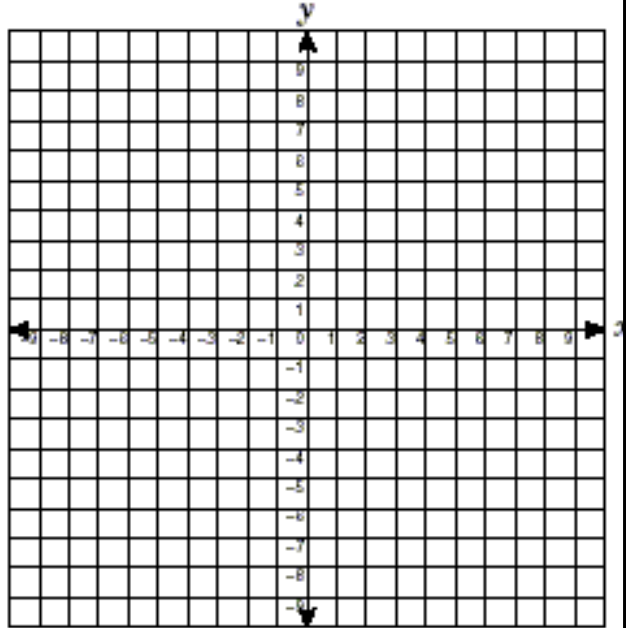
Step 3: Show diagonals are perpendicular

In parallelogram ROMY, _____.

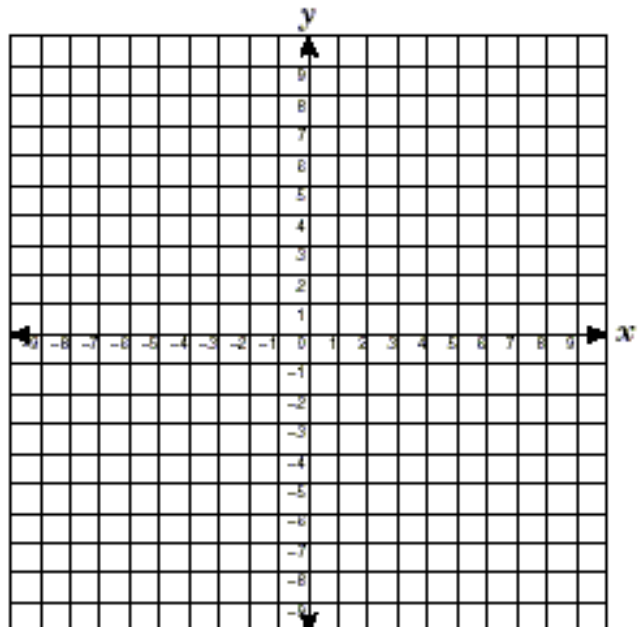
Therefore, ROMY is a rhombus because

Independent Practice

1. Show that the quadrilateral $M(-4,0)$, $A(-1,3)$, $T(3,1)$ and $H(0,-2)$ is a parallelogram.

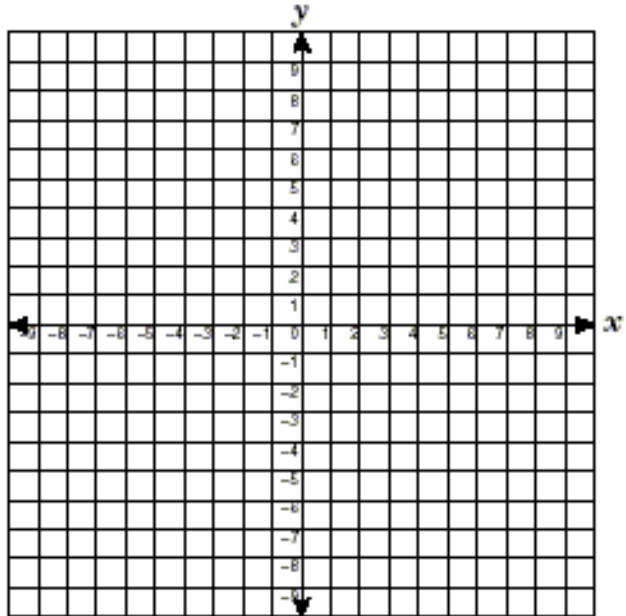


Prove that quadrilateral LEAP with the vertices $L(-3,1)$, $E(2,6)$, $A(9,5)$ and $P(4,0)$ is a parallelogram



Proving a Quadrilateral is a Rhombus

Prove that a quadrilateral with the vertices $A(-5,4)$, $B(1,6)$, $C(-1,0)$ and $D(-7,-2)$ is a rhombus.



Graph quadrilateral EFGH with the given vertices $E(-6, -3)$, $F(1, 0)$, $G(4, 7)$, $H(-3, 4)$. Prove the figure is a rhombus.

