

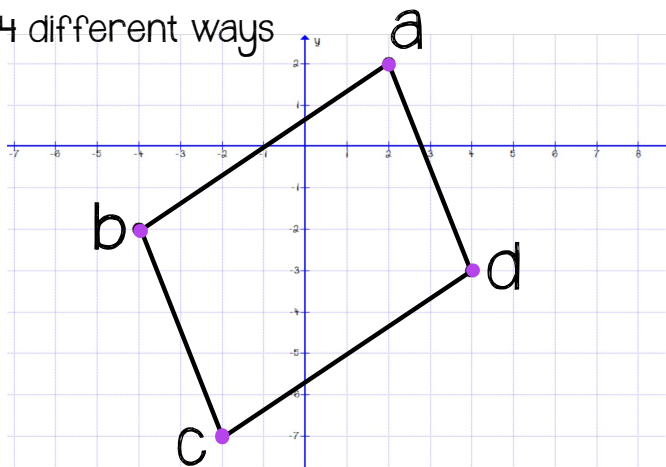
## Proofs of Quads in the Coordinate Plane

### Ways to Prove a Parallelogram:

1. Prove both pairs of opposite sides are parallel.
2. Prove one pair of opposite sides are parallel and congruent.
3. Prove both pairs of opposite sides are congruent.
4. Prove both pairs of opposite angles are congruent.
5. Prove one angle is supplementary to both of its consecutive angles.
6. Prove the diagonals bisect each other.

Given  $A(2,2)$   $B(-4,-2)$   $C(-2,-7)$  &  $D(4,-3)$

Prove it's a parallelogram 4 different ways



## Proofs of Quads in the Coordinate Plane

To prove a quadrilateral is a rectangle...

1) **First prove it is a parallelogram.** Then prove parallelogram contains at least one right angle.

OR

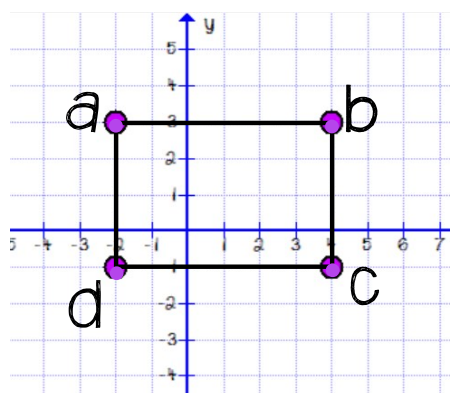
2) **First prove it is a parallelogram.** Then, the diagonals of a parallelogram are congruent.

OR

3) You could prove that all four angles are right angles.

Given  $A(-2,3)$   $B(4,3)$   $C(4,-1)$  and  $D(-2,-1)$

Prove ABCD is a rectangle 2  
different ways



## Proofs of Quads in the Coordinate Plane

### To prove a quadrilateral is a rhombus...

First, prove the quadrilateral is a parallelogram. Then prove:

- 1) First prove the quadrilateral is a parallelogram. Then, prove it has a pair of consecutive sides that are congruent.

OR

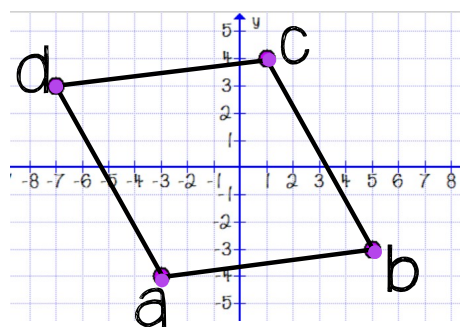
- 2) First prove the quadrilateral is a parallelogram. Then, prove either diagonal bisects two angles of the parallelogram.

OR

- 3) Prove the diagonals are perpendicular bisector of each other.

Given:  $A(-3,-4)$   $B(5,-3)$   $C(1,4)$  and  $D(-7,3)$

Prove it's a Rhombus 2 ways



## Proofs of Quads in the Coordinate Plane

To prove a quadrilateral is a square...

Prove it is both a rectangle and a rhombus!

\*\*HINT...prove 4 right angles & 4 congruent sides....

Given  $A(1,2)$   $B(2,-1)$   $C(5,0)$   $D(4,3)$

Prove ABCD is a Square

