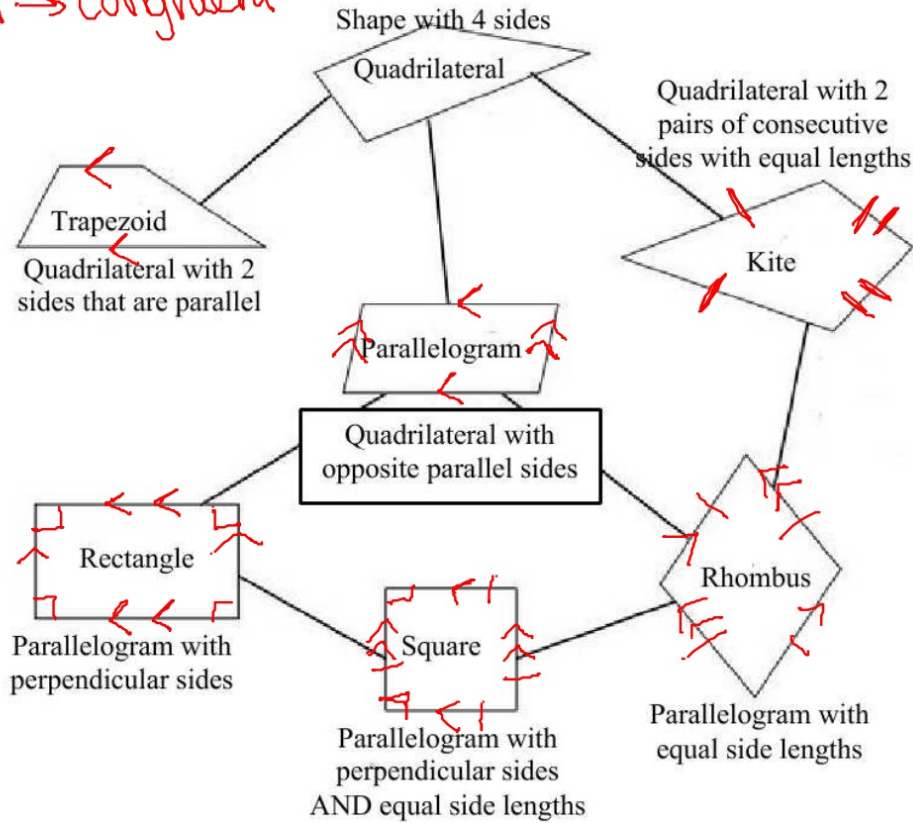


< → parallel  
| → congruent

Classification Chart



**Example 1:** Specify what information would be needed to confirm each shapes classification.

Quadrilateral	Any shape with 4 sides
Trapezoid	2 sides have the same slope
Kite	2 sides have the same length (consecutive) The other 2 sides have the same length
Parallelogram	Opposite sides have the same slope AND the same length.
Rectangle	Opposite sides have same length and slope Slopes will be perpendicular
Rhombus	All sides have same length Opposite sides have same slope
Square	All sides have same length Opposite sides have same slope Slopes are perpendicular

Ex. 1: Classify quadrilateral  $ABCD$ .

$$A(-7, -2) \quad B(-5, -5) \quad C(7, 3) \quad D(5, 6)$$

Slope of Sides:

$$AB = -3/2$$

$$BC = 8/12 = 2/3$$

$$CD = -3/2$$

$$DA = 8/12 = 2/3$$

Side Lengths:

$$AB = \sqrt{(-7 - (-5))^2 + (-2 - (-5))^2} = \sqrt{13}$$

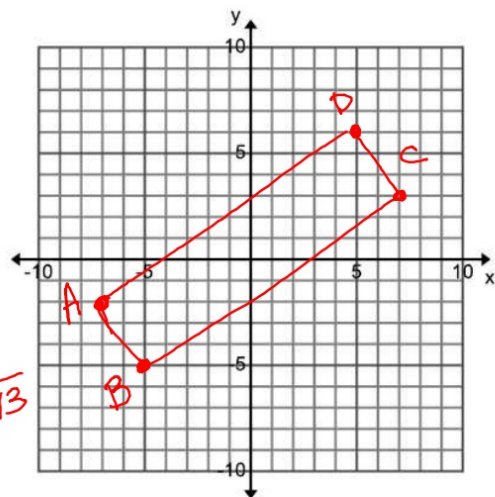
$$BC = 4\sqrt{13}$$

$$CD = \sqrt{13}$$

$$DA = 4\sqrt{13}$$

Classify Quadrilateral: *Rectangle*

Explain:



Ex. 2: Classify quadrilateral  $ABCD$ .

$$A(-2, -2) \quad B(2, -1) \quad C(-4, 5) \quad D(-8, 4)$$

Slope of Sides:

$$AB = \frac{1}{4}$$

$$BC = -1$$

$$CD = \frac{1}{4}$$

$$DA = -1$$

Side Lengths:

$$AB = \sqrt{17}$$

$$BC = 6\sqrt{2}$$

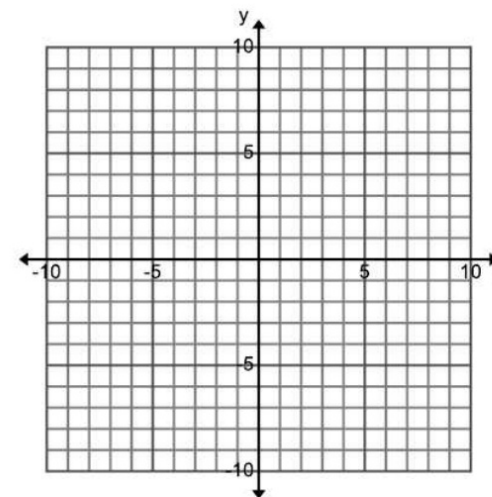
$$CD = \sqrt{17}$$

$$DA = 6\sqrt{2}$$

Classify Quadrilateral:

*Parallelogram*

Explain:



**Ex 3:** Using the following information, classify the quadrilateral:

Slopes of sides =

$$AB: \frac{1}{2} \quad BC: -2 \quad CD: \frac{1}{2} \quad DA: -2$$

Side lengths:

$$\overline{AB}: \sqrt{5} \quad \overline{BC}: \sqrt{5} \quad \overline{CD}: \sqrt{5} \quad \overline{DA}: \sqrt{5}$$

Classification: SQUARE

Explain: All sides are  $\cong$ .  
Slopes are  $\perp$

**Ex 4:**

Slopes of sides =

$$AB: -2 \quad BC: 1 \quad CD: -1 \quad DA: \frac{1}{2}$$

Side lengths:

$$\overline{AB}: 2\sqrt{5} \quad \overline{BC}: 2\sqrt{2} \quad \overline{CD}: 2\sqrt{2} \quad \overline{DA}: 2\sqrt{5}$$

Classification: KITE

Explain: consecutive sides are  $\cong$ .

**Ex 5:**

Slopes of sides =

$$AB: \frac{7}{4} \quad BC: -\frac{4}{7} \quad CD: \frac{7}{4} \quad DA: -\frac{4}{7}$$

Side lengths:

$$\overline{AB}: 2\sqrt{65} \quad \overline{BC}: \sqrt{65} \quad \overline{CD}: 2\sqrt{65} \quad \overline{DA}: \sqrt{65}$$

Classification: Rectangle

Explain: opposite sides are  $\cong$  and  $\parallel$   
consecutive sides are  $\perp$

**Ex 6:**

Slopes of sides =

$$AB: 2 \quad BC: -\frac{5}{2} \quad CD: 2 \quad DA: -\frac{5}{2}$$

Side lengths:

$$\overline{AB}: 3\sqrt{5} \quad \overline{BC}: \sqrt{13} \quad \overline{CD}: 3\sqrt{5} \quad \overline{DA}: \sqrt{13}$$

Classification: Parallelogram

Explain: opposite sides are  $\parallel$  and  $\cong$

## Ex 7:

Slopes of sides =

$$AB: 1 \quad BC: 0 \quad CD: \frac{3}{2} \quad DA: 0$$

Side lengths:

$$\overline{AB}: 3\sqrt{2} \quad \overline{BC}: 9 \quad \overline{CD}: \sqrt{13} \quad \overline{DA}: 10$$

Classification: TrapezoidExplain: one pair of ll sides

## Ex 8:

Slopes of sides =

$$AB: -\frac{3}{4} \quad BC: \frac{3}{4} \quad CD: -\frac{3}{4} \quad DA: \frac{3}{4}$$

Side lengths:

$$\overline{AB}: 5 \quad \overline{BC}: 5 \quad \overline{CD}: 5 \quad \overline{DA}: 5$$

Classification: RhombusExplain: All sides are  $\cong$   
Opposite sides are ll

## Ex 9:

Slopes of sides =

$$AB: \frac{3}{2} \quad BC: -\frac{1}{4} \quad CD: 4 \quad DA: -\frac{2}{5}$$

Side lengths:

$$\overline{AB}: \sqrt{13} \quad \overline{BC}: \sqrt{17} \quad \overline{CD}: \sqrt{17} \quad \overline{DA}: \sqrt{29}$$

Classification: Quadrilateral

Explain: