

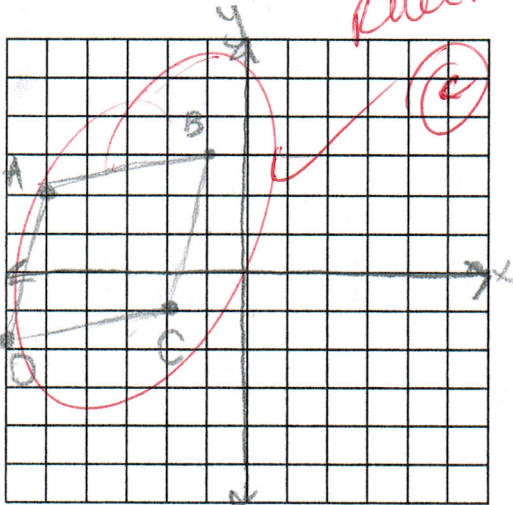
Name: _____

Date: _____

(APPLICATION)

1. Identify the quadrilateral with vertices A(-5, 2), B(-1, 3), C(-2, -1), D(-6, -2)

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$$\begin{aligned} A(-5, 2) \\ B(-1, 3) \\ C(-2, -1) \\ D(-6, -2) \end{aligned}$$

$$\begin{aligned} m_{AB} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{3 - 2}{-1 - (-5)} \\ &= \frac{1}{4} \end{aligned}$$

$$\begin{aligned} m_{BC} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{-1 - 3}{-2 - (-1)} \\ &= \frac{-4}{-1} \\ &= 4 \end{aligned}$$

$$\begin{aligned} m_{CD} &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{-2 - (-1)}{-6 - (-2)} \\ &= \frac{-1}{-4} \\ &= \frac{1}{4} \end{aligned}$$

$$\begin{aligned} l_{AB} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-1 - (-5))^2 + (3 - 2)^2} \\ &= \sqrt{(4)^2 + (1)^2} \\ &= \sqrt{16 + 1} \\ &= \sqrt{17} \end{aligned}$$

$$\begin{aligned} l_{BC} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-2 - (-1))^2 + (-1 - 3)^2} \\ &= \sqrt{(-1)^2 + (-4)^2} \\ &= \sqrt{1 + 16} \\ &= \sqrt{17} \end{aligned}$$

$$\begin{aligned} l_{CD} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-6 - (-2))^2 + (-2 - (-1))^2} \\ &= \sqrt{(-4)^2 + (-1)^2} \\ &= \sqrt{16 + 1} \\ &= \sqrt{17} \end{aligned}$$

Rhombus.

$$\begin{aligned} l_{DA} &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{-5 - (-6) + 2 - (-2)} \\ &= \sqrt{(1)^2 + (4)^2} \\ &= \sqrt{1 + 16} \\ &= \sqrt{17} \end{aligned}$$

∴ Since the opposite sides are parallel, there are no right angles, and all sides are of equal length, this shape is a rhombus.