

P. 7 Quads in the Coordinate Plane.

- A) Given the vertices of a quadrilateral, it can be classified by characterizing its sides. You start by calculating the length and slope of each side.

Classify quadrilateral LION with vertices L(-5, -2), I(1, 2), O(3, -1), N(-3, -5)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Length:

$$LI = \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-5, -2) & (1, 2) \end{matrix}$$

$$\boxed{LI = 7.2}$$

↑ Rise
↔ Run

Slope:

$$LI = \frac{4}{6} = \boxed{\frac{2}{3}}$$

$$d = \sqrt{(1 - (-5))^2 + (2 - (-2))^2}$$

$$IO = \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (1, 2) & (3, -1) \end{matrix}$$

$$\boxed{IO = 3.6}$$

$$IO = \boxed{-\frac{3}{2}}$$

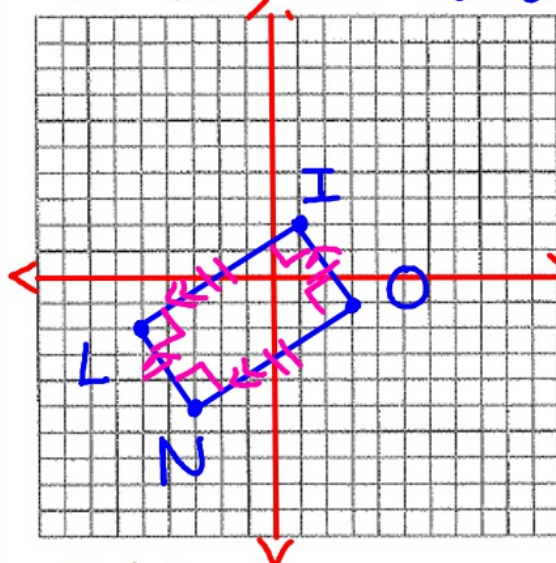
$$d = \sqrt{(3 - 1)^2 + (-1 - 2)^2}$$

$$ON = \boxed{\sqrt{52} = 7.2}$$

$$ON = \boxed{\frac{2}{3}}$$

$$NL = \boxed{\sqrt{13} = 3.6}$$

$$NL = \boxed{-\frac{3}{2}}$$



Conclusions:

$LI \cong ON$, $IO \cong NL$, $LI \parallel NO$, $LN \parallel IO$
 $LI \perp IO$, $IO \perp ON$, $ON \perp NL$, $NL \perp LI$

This quadrilateral is a rectangle because opposite sides are congruent and parallel and all 4 angles are 90° .