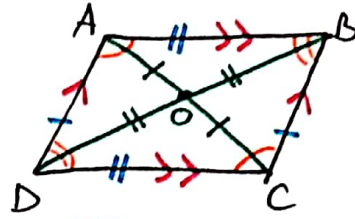


Objective: To apply the properties of parallelograms.

2/26/19

Parallelogram:

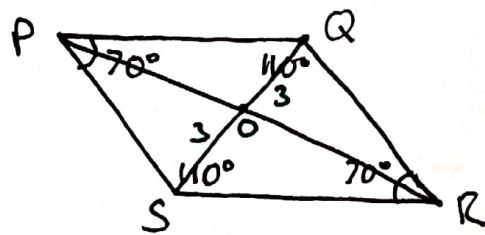


- 1.) 4 sides
- 2.) Opposite sides are parallel $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \parallel \overline{BC}$
- 3.) Opposite sides are congruent $\overline{AB} \cong \overline{DC}$ and $\overline{AD} \cong \overline{BC}$
- 4.) Opposite angles are congruent $\angle A \cong \angle C$ and $\angle D \cong \angle B$
- 5.) consecutive or (same side) angles are supplementary
 $m\angle A + m\angle D = 180^\circ$ and $m\angle B + m\angle C = 180^\circ$
 $m\angle A + m\angle B = 180^\circ$ and $m\angle D + m\angle C = 180^\circ$
- 6.) Diagonals bisect each other
 \hookrightarrow connect opposite angles with a line segment.
 $\overline{AO} \cong \overline{OC}$ and $\overline{BO} \cong \overline{OD}$

★ Different types of parallelograms

- square
- rectangle
- rhombus

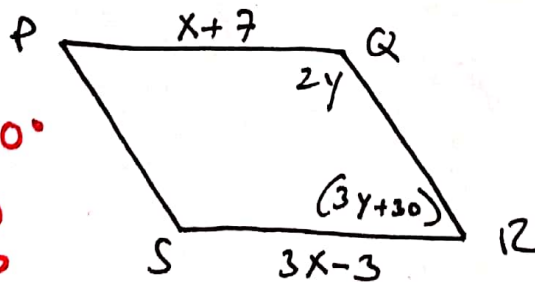
Example:



$$m\angle S = 110^\circ$$

$$m\angle R = 70^\circ$$

$$m\angle Q = 110^\circ$$



$$2y + 3y + 30 = 180^\circ$$

$$5y + 30 = 180$$

$$\begin{array}{r} 5y + 30 = 180 \\ -30 \quad | \quad -30 \\ \hline 5y = 150 \\ \hline \frac{5y}{5} = \frac{150}{5} \\ \hline y = 30 \end{array}$$

$$\begin{array}{r} x + 7 = 3x - 3 \\ -x \quad | \quad -x \\ \hline 7 = 2x - 3 \\ +3 \quad | \quad +3 \\ \hline 10 = 2x \\ \hline \frac{10}{2} = \frac{2x}{2} \\ \hline \boxed{x = 5} \end{array}$$