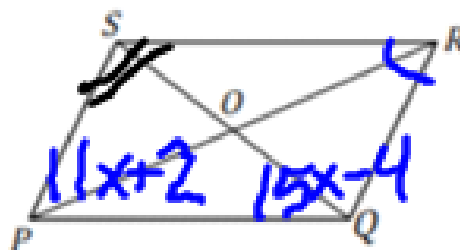


2. Consider parallelogram PQRS again.

If $m\angle SPQ = 11x + 2$ and
 $m\angle PQR = 15x - 4$, find $m\angle QRS$
and $m\angle RSP$.



$$\begin{aligned} 11x + 2 + 15x - 4 &= 180 \\ 26x - 2 &= 180 \\ \frac{26x}{26} &= \frac{182}{26} \\ x &= 7 \end{aligned}$$

$$\begin{aligned} 11(7) + 2 \\ m\angle QRS &= 79^\circ \end{aligned}$$

$$\begin{aligned} m\angle RSP &= \\ 15(7) - 4 \\ &= 101^\circ \end{aligned}$$

The lengths of diagonals of a rectangle are represented by $5x$ yards and $7x - 18$ yards. Find the length of each diagonal.

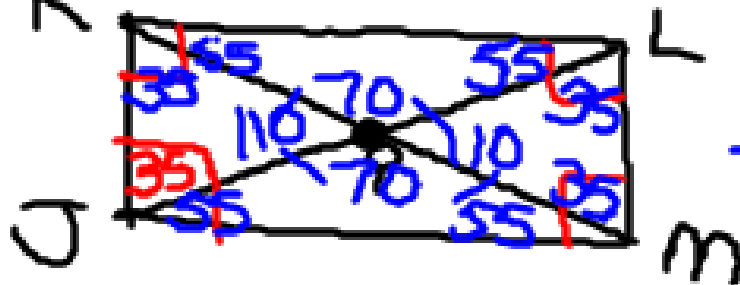
$$\begin{array}{r} 5x = 7x - 18 \\ - 7x \quad - 7x \\ \hline - 2x = -18 \\ x = 9 \end{array}$$

$$5(9) = 45$$

$$7(9) - 18 = 45$$

$$\begin{array}{r} 90 \\ - 35 \\ \hline 55^\circ \end{array}$$

Rectangle $JKLM$ has diagonals intersecting at P . If $m\angle LJK = 35^\circ$, find $m\angle LJM$, $m\angle JLK$, $m\angle JPK$, and $m\angle JPM$.



$$\begin{array}{r} 55 \quad 180 \\ 55 \quad - 110 \\ \hline 110 \quad 70 \end{array}$$

$$m\angle LJM = 55^\circ$$

$$m\angle JLK = 55^\circ$$

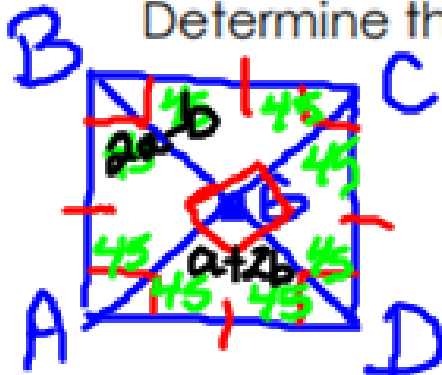
$$m\angle JPK = 110^\circ$$

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

In square $ABCD$, the diagonals intersect at G . If $AC = 9x - 6$ and $BD = 21x - 30$.

$$AC = 12 \quad BD = 12$$

Determine the length of the side of the square.



$$\begin{array}{r} 9x - 6 = 21x - 30 \\ -9x \qquad -9x \\ \hline -6 = 12x - 30 \\ +30 \qquad +30 \\ \hline 24 = 12x \\ 2 = x \end{array}$$

$$\frac{12}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$$

$$\frac{12\sqrt{2}}{2} = 6\sqrt{2}$$

In square $ABCD$, the diagonals intersect at G .

If $m\angle AGD = a + 2b$ and $m\angle ABC = 2a - b$, find the values of a and b .

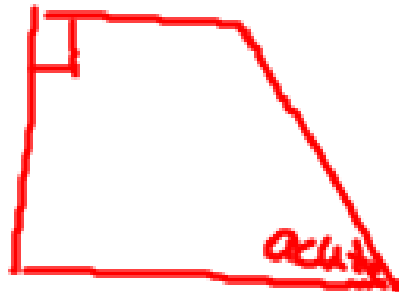
$$\begin{array}{l} \cancel{a+2b} = \cancel{2a-b} \\ 2(a+2b=90) \rightarrow 2a+4b=180 \\ 2a-b=90 \rightarrow \underline{2a-b=90} \\ \hline 2a-18=90 \\ +18 \quad +18 \\ \hline 2a=108 \quad a=54 \end{array}$$

$$\begin{array}{l} 5b=90 \\ b=18 \end{array}$$

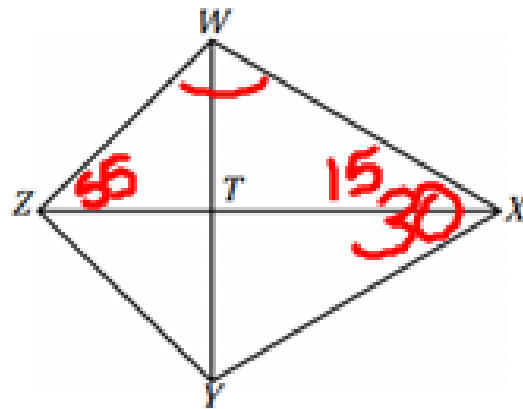
1. Identify which quadrilateral(s) meet the following criteria.

Criteria	Trapezoid	Parallelogram	Kite	Rhombus	Rectangle	Square
No parallel sides	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exactly one pair of parallel sides	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exactly one pair of sides are both congruent and parallel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Two pairs of opposite sides are congruent	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Two pairs of opposite angles are congruent	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Consecutive angles are supplementary	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Diagonals bisect the vertex angles	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1. If two opposite angles of a quadrilateral are supplementary, is the quadrilateral a parallelogram?
- (A) No, because in parallelograms, angles are supplementary if and only if they are consecutive.
 - (B) No, because opposite angles in a parallelogram are never congruent.
 - (C) Yes, but only when the angles of the quadrilateral are right angles. Otherwise, it will be a trapezoid rather than a parallelogram.
 - (D) Yes, because only squares have that property, and squares are both parallelograms and quadrilaterals.



Consider kite $WXYZ$.



- a. If $m\angle WZT = 55^\circ$ and $m\angle WXY = 30^\circ$, find $m\angle ZWX$.

$$55 + 15 + x = 180$$
$$m\angle ZWX = 110^\circ$$

- b. If $WZ = 8$ and $WT = 5$, find ZT .