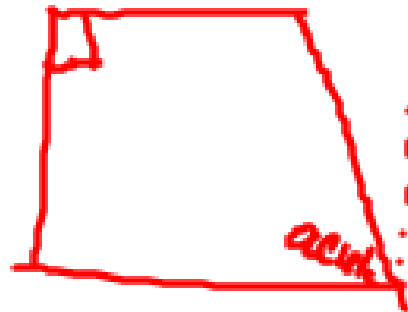


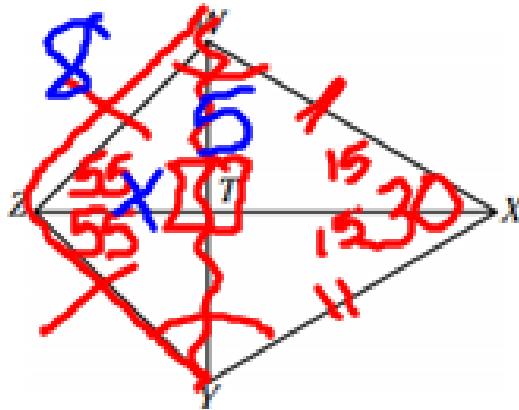
1. Identify which quadrilateral(s) meet the following criteria.

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 $m\angle ZWX$.

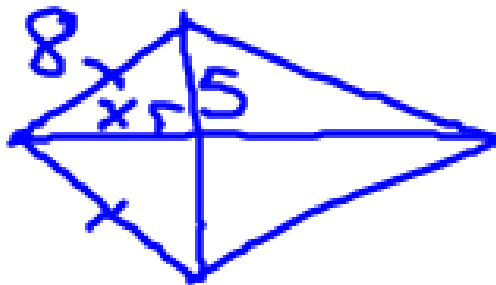
$$55 + 55 = 110$$

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

$$\frac{180 - 110}{2} = 35^\circ$$

$$\frac{180 - 30}{2} = 75^\circ$$

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



$$x^2 + 5^2 = 8^2$$

$$x^2 + 25 = 64$$

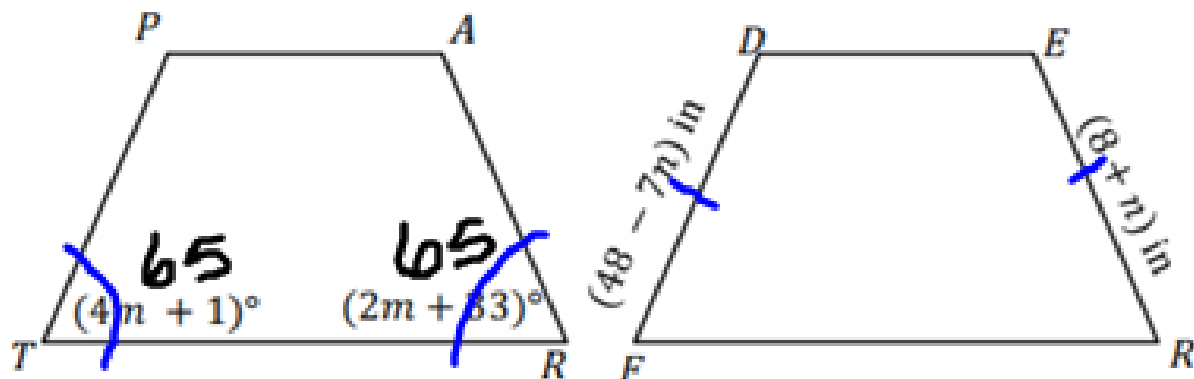
$$x^2 = 64 - 25$$

$$x^2 = 39$$

$$x = \sqrt{39}$$

$$\sqrt{39}$$

4. Consider isosceles trapezoids $TRAP$ and $FRED$.



Find m , n , $m\angle PTR$, $m\angle PAR$, and FD .

$$4m + 1 = 2m + 33$$

$$\begin{array}{r} -2m \quad -2m \\ \hline 2m + 1 = 33 \\ -1 \quad -1 \\ \hline 2m = 32 \\ m = 16 \end{array}$$

$$2m + 1 = 33$$

$$\begin{array}{r} -1 \quad -1 \\ \hline 2m = 32 \\ m = 16 \end{array}$$

$$2m = 32$$

$$m = 16$$

$$m\angle PTR = 4(16) + 1 = 65^\circ$$

$$m\angle PAR = 180 - 65 = 115^\circ$$

$$48 - 7n = 8 + n$$

$$\begin{array}{r} +7n \quad +7n \\ \hline 48 = 8 + 8n \\ -8 \quad -8 \\ \hline 40 = 8n \\ 5 = n \end{array}$$

$$40 = 8n$$

$$5 = n$$

$$FD = 48 - 7(5) = 13$$

1. A diagonal of a rhombus that is on the coordinate plane can be modeled by the equation $6x + y = 13$. What is the slope of the other diagonal?

slope

$$\begin{array}{r} 6x + y = 13 \\ -6x \quad -6x \\ \hline y = -6x + 13 \end{array}$$

$$y = mx + b$$

$$m = \frac{1}{6}$$

2. In rhombus $HJKI$, $m\angle H$ is 120° . Does the diagonal \overline{HJ} divide the rhombus into two equilateral triangles? Justify your answer.



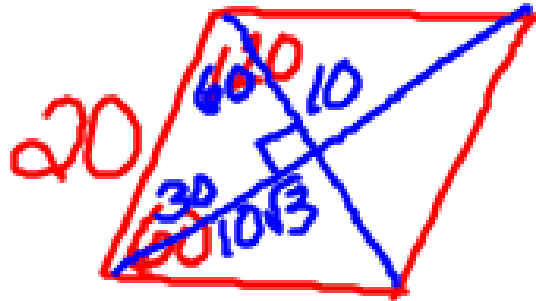
yes

$$120 \div 2 = 60$$

opp \angle 's \cong

so $60^\circ - 60^\circ - 60^\circ$

3. The size of the acute angle of a rhombus is half the size of its obtuse angle. The side length of the rhombus is equal to 20 feet. Find the lengths of the diagonals of the rhombus.



$$20, 20\sqrt{3}$$

