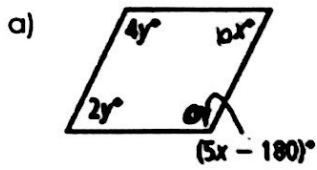


# 6.3 Parallelograms

SWBAT prove a figure to be a parallelogram and solve for variables in a parallelogram.

Properties of Parallelograms		
<b>Sides</b>	<p>A <b>parallelogram</b> is a quadrilateral with both pairs of opposite sides parallel.</p> <p><math>AB \parallel DC, AD \parallel BC</math></p>	
	<p>If a quadrilateral is a parallelogram, the 2 pairs of opposite sides are congruent.</p> <p><math>\overline{AB} \cong \overline{DC}, \overline{AD} \cong \overline{BC}</math></p>	
<b>Angles</b>	<p>If a quadrilateral is a parallelogram, the 2 pairs of opposite angles are congruent.</p> <p><math>\angle A \cong \angle C, \angle D \cong \angle B</math></p>	
	<p>Same side</p> <p>↓ If a quadrilateral is a parallelogram, the consecutive angles are supplementary. = 180°</p> <p><math>\angle A + \angle D = 180^\circ, \angle B + \angle C = 180^\circ</math>  <math>\angle C + \angle D = 180^\circ, \angle A + \angle B = 180^\circ</math></p>	
	<p>If a quadrilateral is a parallelogram and one angle is a right angle, then all angles are right angles.</p> <p>*We cannot assume it's 90°, we have to be told</p>	
<b>Diagonals</b>	<p><math>\overline{AE} \cong \overline{EC}, \overline{DE} \cong \overline{EB}</math></p> <p>If a quadrilateral is a parallelogram, the diagonals bisect each other.</p> <p>↓</p> <p>2 equal pieces</p>	
	<p>If a quadrilateral is a parallelogram, the diagonals form two congruent triangles.</p> <p><del>ABD</del> <math>\triangle ABD \cong \triangle CDB</math></p>	

Example 3: For what values of x and y must each figure be a parallelogram?



$$4y + 2y = 180$$

$$6y = 180$$

$$y = 30$$

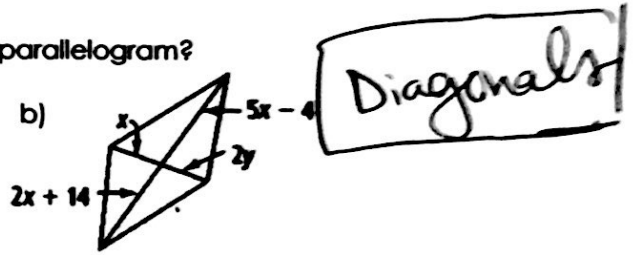
$$5x - 180 + x = 180$$

$$6x - 180 = 180$$

$$6x = 360$$

$$\frac{6x}{6} = \frac{360}{6}$$

$$x = 60$$

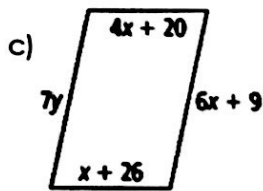


$$2x + 14 = 5x - 4$$

$$x = 6$$

$$x = 2y$$

$$y = 3$$



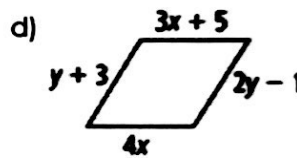
SIDES

$$4x + 20 = x + 26$$

$$x = 2$$

$$7y = 6x + 9$$

$$y = 3$$



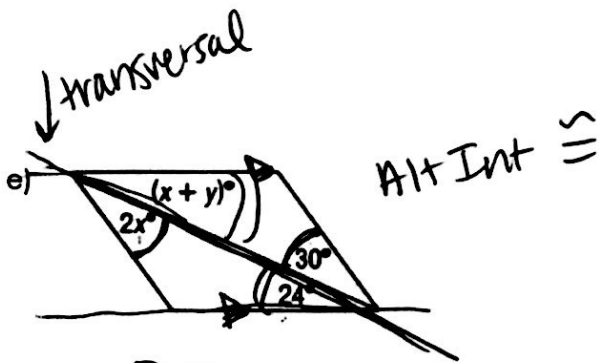
SIDES

$$3x + 5 = 4x$$

$$x = 5$$

$$y + 3 = 2y - 1$$

$$y = 4$$

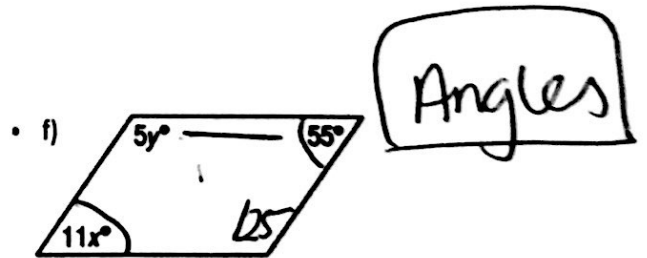


$$2x = 30$$

$$x = 15$$

$$24 = x + y$$

$$y = 9$$



$$5y + 55 = 180$$

$$y = 25$$

$$11x = 55$$

$$x = 5$$