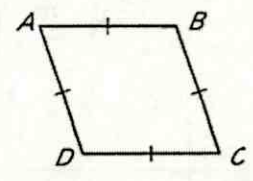
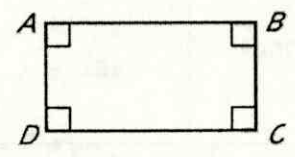
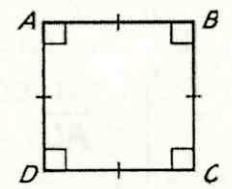
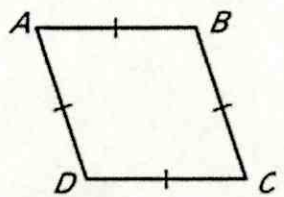
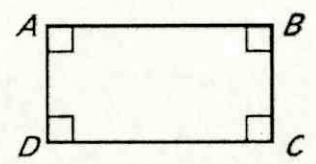
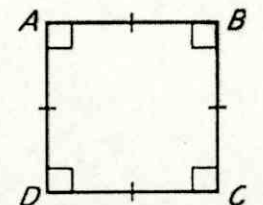


PROPERTIES of RHOMBUSES, RECTANGLES, and SQUARES

Vocabulary	Definition	Example
RHOMBUS	A rhombus is a parallelogram with four congruent sides.	
RECTANGLE	A rectangle is a parallelogram with four right angles.	
SQUARE	A square is a parallelogram with four congruent sides and four right angles.	

You can use the corollaries below to prove that a quadrilateral is a rhombus, rectangle, or square, without proving that the quadrilateral is a //gram.

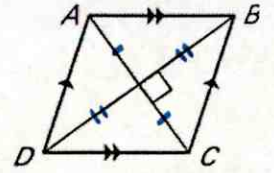
RHOMBUS COROLLARY	RECTANGLE COROLLARY	SQUARE COROLLARY
<p>A quadrilateral is a rhombus if and only if it has four congruent <u>sides</u>.</p> <p><math>ABCD</math> is a rhombus if and only if <math>\overline{AB} \cong \overline{BC} \cong \overline{CD} \cong \overline{AD}</math>.</p> 	<p>A quadrilateral is a rectangle if and only if it has four <u>right angles</u>.</p> <p><math>ABCD</math> is a rectangle if and only if <math>\angle A, \angle B, \angle C,</math> and <math>\angle D</math> are right angles.</p> 	<p>A quadrilateral is a square if and only if it is a <u>rhombus</u> and a <u>rectangle</u>.</p> <p><math>ABCD</math> is a square if and only if <math>\overline{AB} \cong \overline{BC} \cong \overline{CD} \cong \overline{AD}</math> and <math>\angle A, \angle B, \angle C,</math> and <math>\angle D</math> are right angles.</p> 

THEOREM 8.11

A parallelogram is a rhombus if and only if its diagonals are perpendicular.

$\square ABCD$  is a rhombus if and only if  $\overline{AC} \perp \overline{BD}$ .

$$4 \cong \triangle S$$

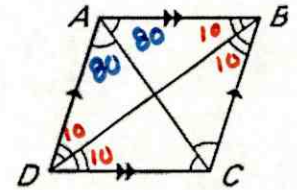


THEOREM 8.12

A parallelogram is a rhombus if and only if each diagonal bisects a pair of opposite angles.

$\square ABCD$  is a rhombus if and only if  $\overline{AC}$  bisects  $\angle A$  and  $\angle C$  and  $\overline{BD}$  bisects  $\angle B$  and  $\angle D$ .

$$\angle A = 140^\circ \quad \angle B = 20^\circ$$



THEOREM 8.13

A parallelogram is a rectangle if and only if its diagonals are congruent.

$\square ABCD$  is a rectangle if and only if  $\overline{AC} \cong \overline{BD}$ .

