What are the properties of parallelograms, rectangles, rhombuses, and squares?

Quadrilateral

4 sided polygon

Parallelogram

2 pairs of parallel sides

- opposite sides are CONGRUENT
- opposite angles are CONGRUENT
- diagonals BISECT

• consecutive angles are supplementary

Rectangle

4 right angles (also parallelogram)

- diagonals are congruent

Rhombus

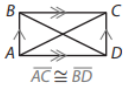
4 equal sides

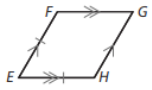
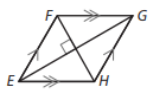
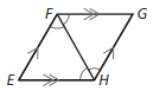
- diagonals are perpendicular
- diagonals bisect angles

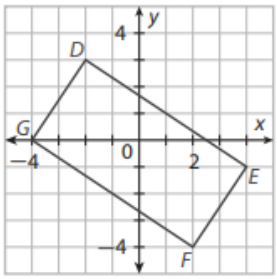
Square

Rectangle + Rhombus!

Special Conditions:

Theorems: Conditions for Rectangles	
If one angle of a parallelogram is a right angle, then the parallelogram is a rectangle.	
If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.	 $\overline{AC} \cong \overline{BD}$

Theorems: Conditions for Rhombuses	
If one pair of consecutive sides of a parallelogram are congruent, then the parallelogram is a rhombus.	
If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus.	
If one diagonal of a parallelogram bisects a pair of opposite angles, then the parallelogram is a rhombus.	

How can slope criteria help you identify types of parallelograms?

Parallel	$y = mx + b$ (slope) Same slope
Perpendicular	opposite reciprocals
	$\|\|$ = parallel $\perp$ = perpendicular
Trapezoid	***One set of parallel lines (only one!)--that are NOT congruent!*
Using slope criteria