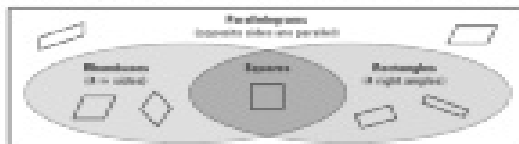


Name: \_\_\_\_\_ Date: \_\_\_\_\_ Block: \_\_\_\_\_

Rhombuses, Rectangles, Squares

The Venn diagram below describes the relationship between different kinds of parallelograms:

- A rhombus is a parallelogram with four congruent sides.
- A rectangle is a parallelogram with four right angles.
- A square is a parallelogram with four congruent sides and four right angles.



**Corollaries:**

- A quadrilateral is a rhombus IFF it has four congruent sides
- A quadrilateral is a rectangles IFF it has four right angles
- A quadrilateral is a square IFF it is a rhombus and a rectangle.

Since rhombuses, squares, and rectangles are parallelograms, they have all the properties of parallelograms (opposite sides parallel, opposite angles congruent, diagonals bisect each other, etc.). In addition...

Rhombus	Rectangle	Square
<ul style="list-style-type: none"> <li>• 4 congruent sides</li> <li>• diagonals bisect angles</li> <li>• diagonals perpendicular</li> </ul>	<ul style="list-style-type: none"> <li>• 4 right angles</li> <li>• diagonals congruent</li> </ul>	<ul style="list-style-type: none"> <li>• 4 congruent sides</li> <li>• diagonals bisect each other</li> <li>• diagonals perpendicular</li> <li>• 4 right angles</li> <li>• diagonals congruent</li> </ul>

**Theorems:**

- A parallelogram is a rhombus IFF its diagonals are perpendicular.
- A parallelogram is a rhombus IFF each diagonal bisects a pair of opposite angles.
- A parallelogram is a rectangle IFF its diagonals are congruent.

**Examples:**

- 1) Given rhombus DEFG, are the statement sometimes, always, or never true:  
 a)  $\angle DEG \cong \angle FED$  b)  $\angle DEG \cong \angle EFD$  c)  $\overline{DG} \cong \overline{GF}$

- 2) Classify the parallelogram and find missing values
- a) b)

- 3) Given rhombus WXYZ and  $m\angle XZY = 34^\circ$ , find:  
 a)  $m\angle WZY$  b)  $WY$  c)  $XY$



- 4) Given rectangle PQRS and  $m\angle RPS = 62^\circ$  and  $QS = 18$ , find:  
 a)  $m\angle QPR$  b)  $m\angle PTQ$  c)  $ST$

