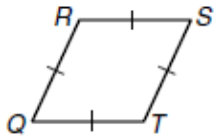
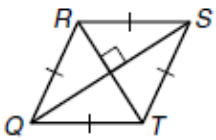
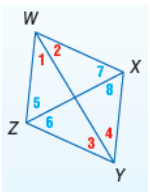
Name_____ **Date**_____

Ms. Williams – Geometry Applications **Chapter 6 - 4**

Properties of Rhombi and Squares

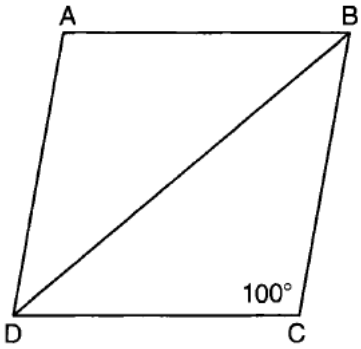
Properties of Rhombuses		
 *QRST* is a parallelogram.	 $\overline{QS} \perp \overline{RT}$	
If a parallelogram is a rhombus, then all the sides are equal.	If a parallelogram is a rhombus, then its diagonals are perpendicular.	If a parallelogram is a rhombus, then each diagonal bisects a pair of opposite angles.

1. In rhombus $ABCD$, the measure, in inches, of $\overline{AB}$ is $3x + 2$ and $\overline{BC}$ is $x + 12$. Find the number of inches in the length of $\overline{DC}$.

   a) What property of the Rhombus will help you find DC?

   b) Find x, and then find DC.

2. In the diagram below of rhombus $ABCD$, $m\angle C = 100$. What is $m\angle DBC$?



   a) What property of the Rhombus will help you find the angle measures?
   - _____
   - _____
   - _____

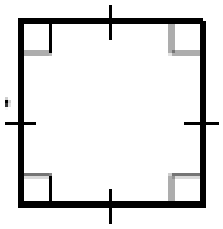
   b) Find the measures of∠DBC.

3. The diagonals of a rhombus are 16 and 30 cm long. Find the perimeter of the rhombus.

a. What property of the rhombus will help you solve this problem?

b. Find the measure of one side of a rhombus.

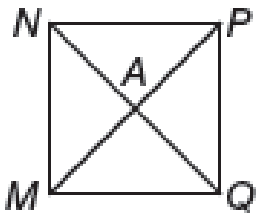
c. Calculate the perimeter of the rhombus.



Square
parallelogram with
4 ≅ sides and 4 right ∠s

4. MNPQ is a square with PQ $= 3\sqrt{2}$.

a. What property of the square will help you solve for AQ?



b. Solve for AQ and PM.

c. What property of the square will help you solve for the m∠APQ?

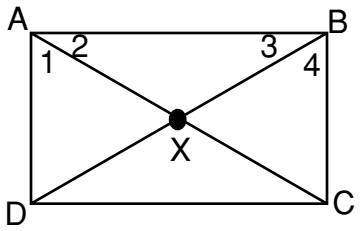
Properties of Rectangles, Rhombuses, and Squares

Rectangles	Rhombuses
all properties of parallelograms plus —diagonals are congruent —all angles measure 90°	all properties of parallelograms plus —all sides are congruent —diagonals are perpendicular —diagonals bisect opposite angles

Squares
—all properties of parallelograms
—all properties of rectangles
—all properties of rhombuses

Use the properties to find measures of segments and angles in the diagrams.

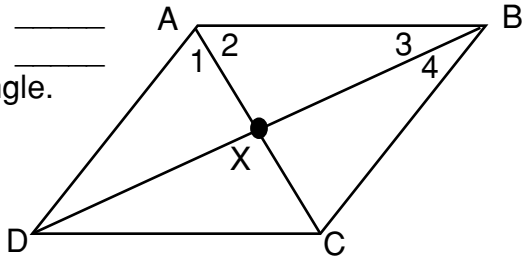
1. ABCD is a rectangle. If AB = 24, BC = 10, and ∠1 = 50°, find the following:



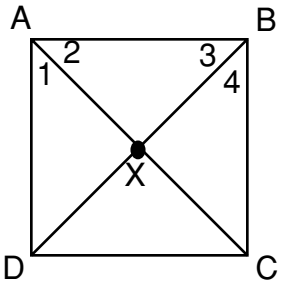
a. CD = _____ d. BD = _____ g. ∠DAB = _____
b. AD = _____ e. AX = _____ h. ∠3 = _____
c. AC = _____ f. BX = _____ i. ∠AXB = _____

2. ABCD is a rhombus. If AB = 6, XC = 3, and ∠DAB = 120°, find the following:

a. BC = _____ d. ∠AXB = _____ g. ∠3 = _____
b. ∠ADC = _____ e. ∠1 = _____ h. ∠4 = _____
c. ∠DCB = _____ f. ∠2 = _____ i. AX = _____
j. ΔABC is an _____triangle.



3. ABCD is a square. If AB = 16 and AC = $16\sqrt{2}$, find the following:



a. BC = _____ e. ∠2 = _____
b. BD = _____ f. ∠AXB = _____
c. AD = _____ g. ∠BXC = _____
d. ∠1 = _____ h. ∠4 = _____