# 5.4 Practice

**Decide whether the parallelogram is a rhombus, a rectangle, or a square. Explain**

1.
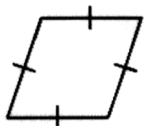
Rhombus
all sides ≅

2.
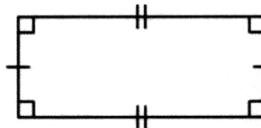
RECTANGLE
2 pair opp side ≅
w/ 90° ∠'s

3.
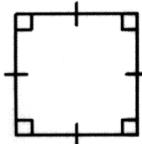
SQUARE

4.
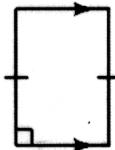
Rectangle! It is a
Parallelogram
with right angles!!

**Find the measures of the numbered angles in each rhombus.**

5.
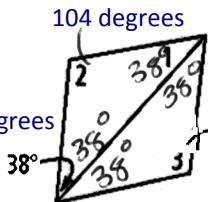
104 degrees

Angle 1 = 38 degrees
Angles 2 and 3 = 104 degrees

38°   104 degrees

To start, a diagonal of a rhombus forms
an isosceles triangle with congruent base
angles.
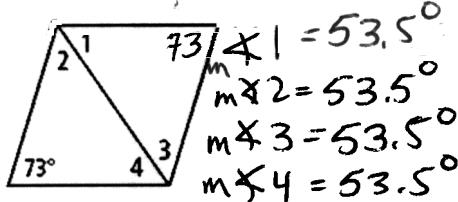
So, m∠ [1] = 38.

6.

73°   m∠1 = 53.5°
m∠2 = 53.5°
m∠3 = 53.5°
m∠4 = 53.5°

7.

106°   37   m∠1 = 106°
37   m∠2 = 37°
37   106°   m∠3 = 37°

m∠1 = m∠4 = 20°
m∠2 = 90°

8.

90   70° 70°
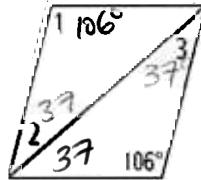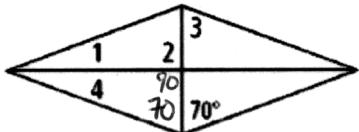
To start, the diagonals of a rhombus are perpendicular.

So, m∠ [2] = 90.   m∠3 = 70°

9.

90   25°
25°

m∠1 = 90° = m∠4
m∠2 = 65° = m∠3

10.

1
2
52°   4
36° 3

m∠2 = 9
m∠4 = 52°
m∠3 = 38°
m∠1 = 38°

Q    R

T    S
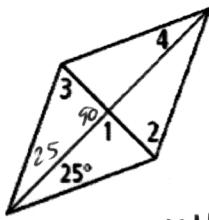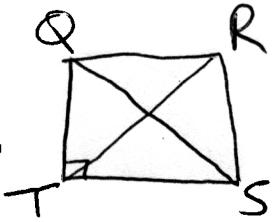
**Algebra** *QRST* is a rectangle. Find the value of $x$ and the length of each diagonal.

**11.** $QS = x$ and $RT = 6x - 10$

Both DIAGONALS are ≅

$x = 6x - 10$
$10 = 5x$
$2 = x$

$\boxed{\text{DIAGONAL} = x = 2}$

**12.** $QS = 5x + 12$ and $RT = 6x - 2$

$5x + 12 = 6x - 2$
$14 = x$

$\text{DIAGONAL} = 6(14) - 2$

$\boxed{\text{DIAGONAL} = 82}$

**13.** $QS = 6x - 3$ and $RT = 4x + 19$

$6x - 3 = 4x + 19$

**Determine the most precise name for each quadrilateral.**

**14.**

Rhombus

**15.**

3   3

Rhombus

3   3
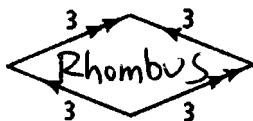
**Algebra** Find the values of the variables. Then find the side lengths.

**16.**

$x + 14$    $2y + 4$

$3y - 3$    $5x - 2$

set opp sides =

$y = 7$   $x = 4$

**17.**

$4x - 22 = 2x + 4$
$2x = 26$
$\boxed{x = 13}$

$4x - 22$

$5y - 15$   □    $3y + 3$

$2x + 4$

$5y - 15 = 3y + 3$
$2y = 18$
$\boxed{y = 9}$
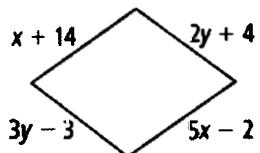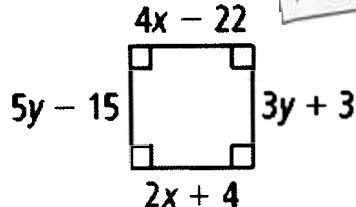
**Determine whether each statement is *true* or *false*. If it is false, rewrite the sentence to make it true. If it is true, list any other quadrilaterals for which the sentence would be true.**

**18.** Rhombuses have four congruent sides. TRUE (SQUARE)

**19.** Rectangles have four congruent angles. TRUE (SQUARE)

**20.** The diagonals of a rectangle bisect the ~~opposite angles~~ DIAGONALS FALSE

**21.** The diagonals of a rhombus are always congruent. FALSE (RECTANGLE, SQUARE)

**For Exercises 22-29, write *All*, *Some*, or *No*. Explain.**

**22.** SOME (if the sides are ≅) ? rectangles are squares.

**23.** NO ? isosceles trapezoids are parallelograms.

**24.** ALL ? rhombuses are quadrilaterals.

**25.** ALL ? squares are parallelograms.

**26.** ALL ? squares are rhombuses. (WITH RT ∡'s)