6-4

PROPERTIES OF RHOMBUSES,
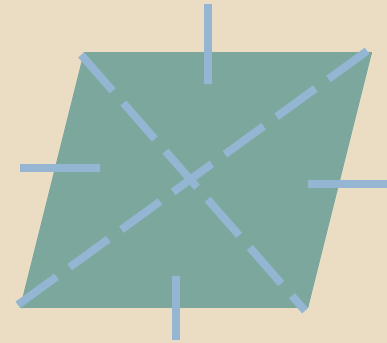RECTANGLES AND SQUARES

OBJECTIVE

TO USE THE PROPERTIES OF SPECIAL TYPES OF PARALLELOGRAMS TO FIND ANGLE AND SEGMENT MEASUREMENTS

KEY CONCEPTS
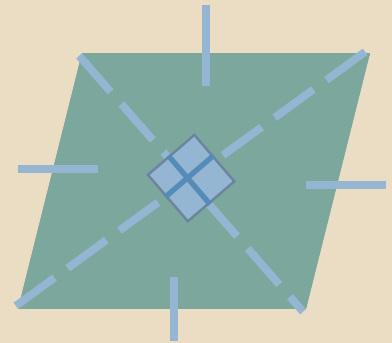
Properties of a Rhombus:

If a parallelogram is a rhombus,

Source	then…
Definition of Rhombus	it has 4 congruent sides
Theorem 6-4-4	
Theorem 6-4-5	

KEY CONCEPTS

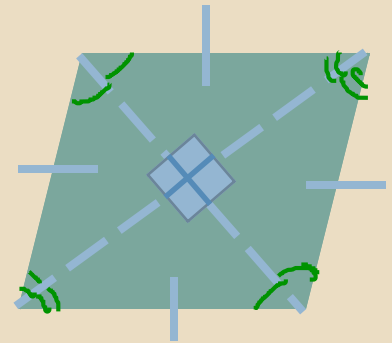Properties of a Rhombus:

If a parallelogram is a rhombus,

Source	then…
Definition of Rhombus	it has 4 congruent sides
Theorem 6-4-4	its diagonals are perpendicular
Theorem 6-4-5	

KEY CONCEPTS

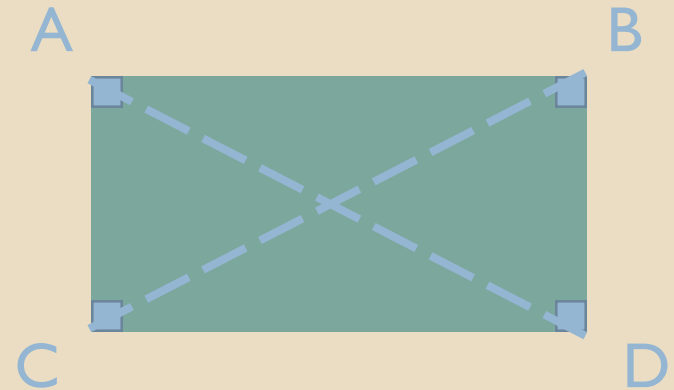Properties of a Rhombus:

If a parallelogram is a rhombus,

Source	then…
Definition of Rhombus	it has 4 congruent sides
Theorem 6-4-4	its diagonals are perpendicular
Theorem 6-4-5	each diagonal bisects a pair of opposite angles

KEY CONCEPTS

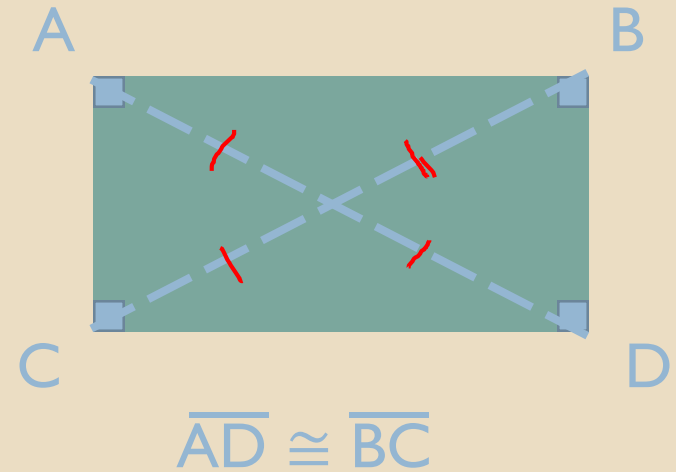Properties of a Rectangle:

If a parallelogram is a rectangle,

A   B

C   D

Source	then…
Definition of Rectangle	it has 4 right angles
Theorem 6-4-2	

KEY CONCEPTS

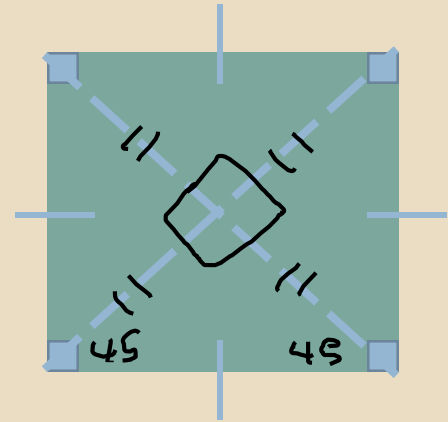Properties of a Rectangle:

If a parallelogram is a rectangle,

A   B

C   D

$$\overline{AD} \cong \overline{BC}$$

Source	then…
Definition of Rectangle	it has 4 right angles
Theorem 6-4-2	Its diagonals are congruent

KEY CONCEPTS

Square:

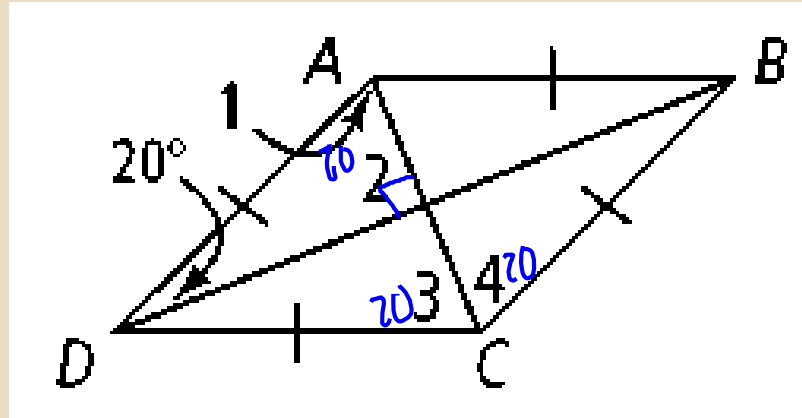A square has 4 congruent sides and 4 right angles. It is both a rhombus and a rectangle.

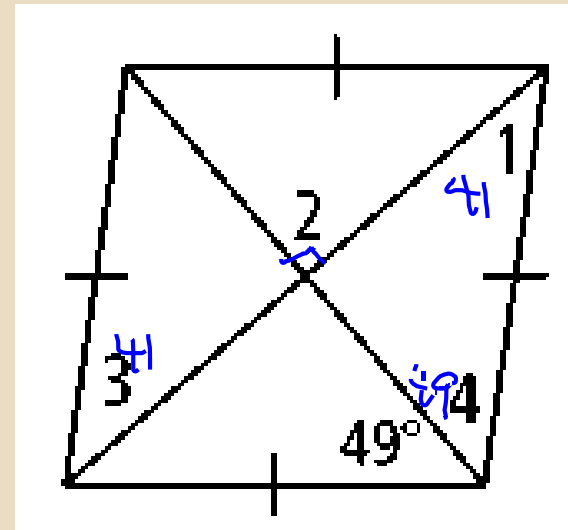A square has all the properties of a parallelogram, rhombus and rectangle.

CLASS WORK

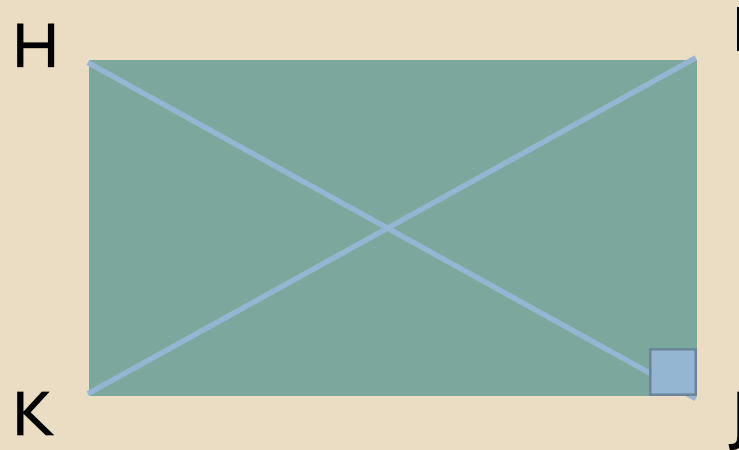**Find the measures of the numbered angles in each rhombus.**

1.

2.

CLASS WORK

HIJK is a rectangle. Find the value of x and the length of each diagonal.

3. $HJ = 3x + 7$ and $IK = 6x - 11$

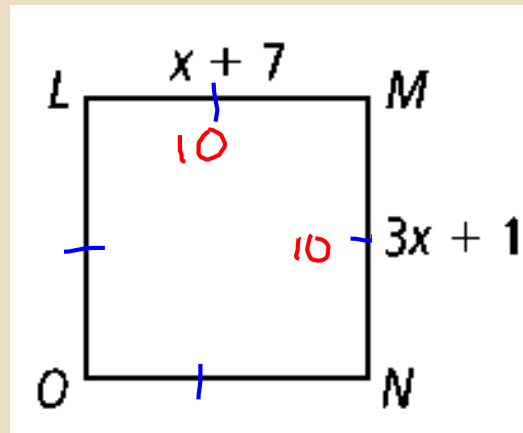25   25

H   I

K   J

$$6x - 11 = 3x + 7$$
$$3x = 18$$
$$x = 6$$

CLASS WORK

Find the value of x. Then find the side lengths.

4. square *LMNO*

In the figure: side $x + 7$ (labeled 10), and side $3x + 1$ (labeled 10), with vertices L, M, N, O.
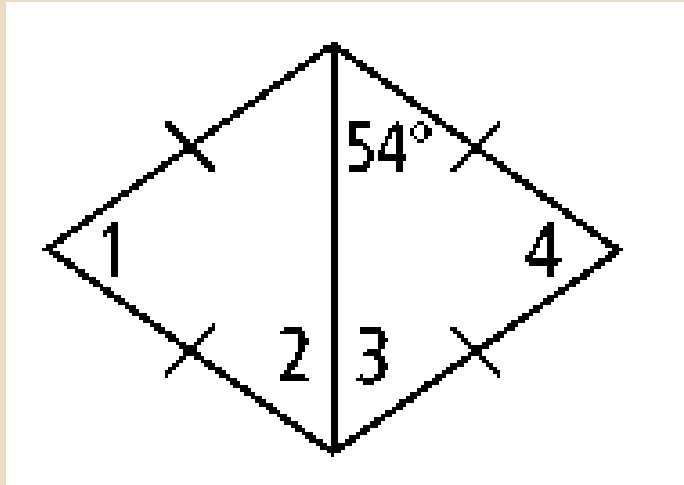
$$x + 7 = 3x + 1$$
$$6 = 2x$$
$$3 = x$$

EXIT PROBLEMS

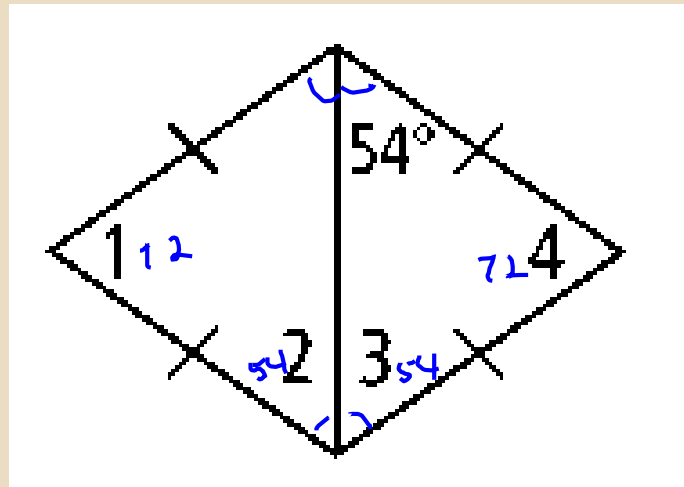10. Find the measures of the numbered angles in the rhombus.

11. *HIJK* is a rectangle. Find the value of *x* and the length of each diagonal.

$HJ = 19 + 2x$ and $IK = 3x + 22$

EXIT PROBLEMS

10. Find the measures of the numbered angles in the rhombus.

11. *HIJK* is a rectangle. Find the value of *x* and the length of each diagonal.

$HJ = 19 + 2x$ and $IK = 3x + 22$

$19 + 2x = 3x + 22$

$-3 = x$

$19 + 2(-3)$

$19 - 6$

$HJ = IK = 13$

LEARNING RUBRIC

Got It: Completes general proofs and uses proof to prove theorems about special parallelograms

Almost There: Uses formulas with special parallelograms on the coordinate plane

Moving Forward: Applies the properties of parallelograms to write equations to find segment lengths and angle measures

Getting Started: Applies the properties of parallelograms to find segment lengths and angle measures

HOMEWORK

Pages 424 – 426

14 – 30 even

35, 36, 38, 40, 42, 46

SUMMARY

IN ADDITION TO ALL PROPERTIES OF A PARALLELOGRAM:

RHOMBUS:

1. 4 CONGRUENT SIDES
2. DIAGONALS ARE PERPENDICULAR
3. DIAGONALS BISECT PAIRS OF OPPOSITE ANGLES

RECTANGLE:

1. 4 RIGHT ANGLES
2. DIAGONALS ARE CONGRUENT

SQUARE:

1. ALL PROPERTIES OF RHOMBUS AND RECTANGLE.