Geometry
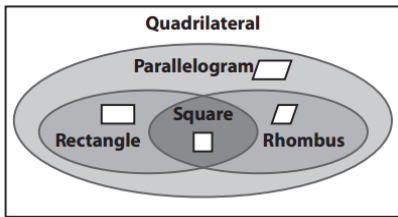## 9.3 Properties of Rhombuses, Rectangles, and Squares

A **rhombus** is a parallelogram with four congruent sides. and perpendicular diagonals and each diagonal bisects a pair of opposite angles

A **rectangle** is a parallelogram with four right angles. and congruent diagonals

A **square** is a parallelogram with four congruent sides and four right angles. and congruent diagonals and perpendicular diagonals and each diagonal bisects a pair of opposite angles
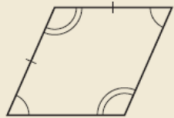

Quadrilateral

Parallelogram

Square

Rectangle   **Rhombus**

Classify the special quadrilateral. Explain your reasoning.

70°
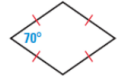
Rhombus
4 ≅ sides
& not all ∡'s are 90°

Classify the special quadrilateral. Explain your reasoning.


Rhombus
All sides ≅
not all ∡'s = 90°

CARPENTRY You are building a frame for a window. The window will be installed in the opening shown in the diagram.

a. The opening must be a rectangle. Given the measurements in the diagram, can you assume that it is? *Explain.* No not all 90° ∡'s

b. You measure the diagonals of the opening. The diagonals are 54.8 inches and 55.3 inches. What can you conclude about the shape of the opening?

Not a rectangle

33 in
44 in   44 in
33 in
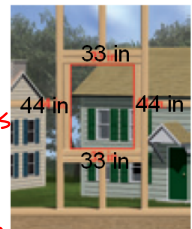
You are building a case with glass shelves for collectibles.

24 in.   24 in.

24 in.   24 in.
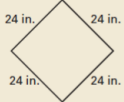
a. Given the shelf measurements in the diagram, can you assume that the shelf is a square? Explain.
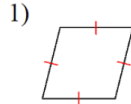
No, all right ∡'s not shown

b. You measure the diagonals and find they are both 33.94 inches. What can you conclude about the shape?
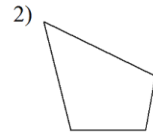
Square

quadrilateral, parallelogram, rhombus, rectangle, square
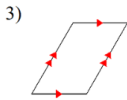
State all possible names for each figure.
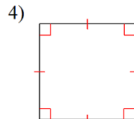
1)

quad
ll-ogram
rhombus

2)

quad

quadrilateral, parallelogram, rhombus, rectangle, square

State all possible names for each figure.

3)

quad
ll-ogram
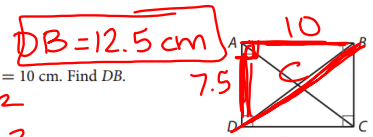
4)

quad
ll-ogram
rhombus
rectangle
square

Find each measure.

DB = 12.5 cm

5. $AD = 7.5$ cm and $DC = 10$ cm. Find DB.

7.5

10

10

$$a^2 + b^2 = c^2$$
$$7.5^2 + 10^2 = c^2$$
$$\sqrt{156.25} = \sqrt{c^2}$$
$$c = \pm 12.5$$

6. $AB = 17$ cm and $BC = 12.75$ cm. Find DB.

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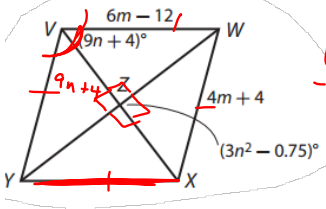12.75   *c*   12.75

17
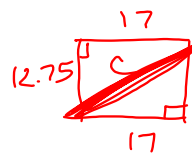
$$12.75^2 + 17^2 = c^2$$
$$162.5625 + 289$$
$$\sqrt{451.5625} = \sqrt{c^2}$$
$$c = \pm 21.25$$

DB = 21.25 cm

Use rhombus *VWXY* to find each measure.

$$6m - 12$$
V $(9n + 4)°$ W

$9n+4$

$4m + 4$

$(3n^2 - 0.75)°$

Y X

(A) Find *XY*. $= 36$

$$6m - 12 = 4m + 4$$
$$-4m \qquad +12$$
$$2m = 16 \qquad 8.4 + 4$$
$$m = 8$$

(B) Find ∠*YVW*. $m\angle YVW = 107$

$$3n^2 - .75 = 90$$

$$\frac{3n^2}{3} = \frac{90.75}{3}$$

$$\sqrt{n^2} = \sqrt{30.25}$$

$$n = \pm 5.5$$

$2[9(5.5) + 4]$

$2 \cdot 53.5$

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Homework

Worksheet

&

pg 388; 2-7, 9-12, 16-19