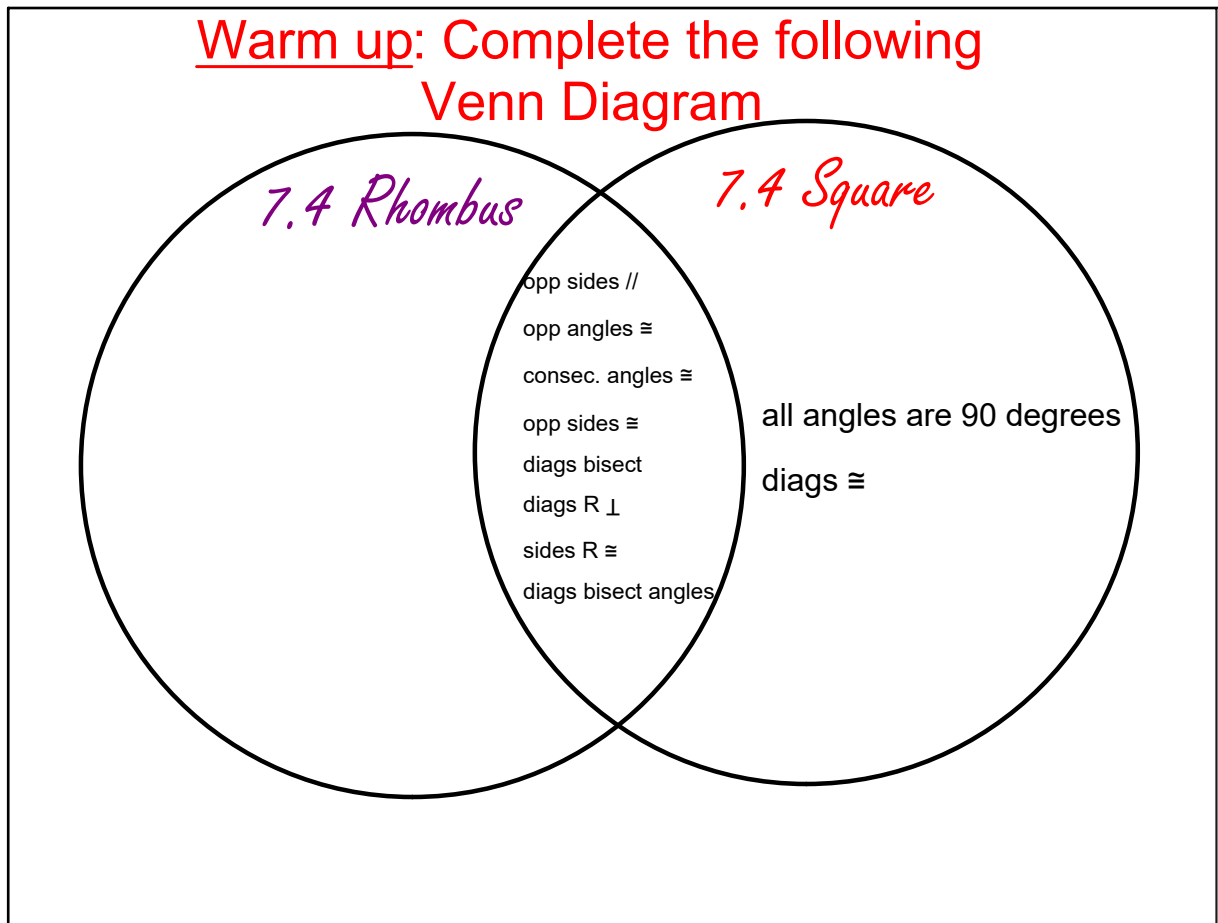


7.4 Rhombus and Square



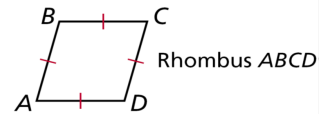
Jan 26-12:26 PM



Jan 25-10:43 AM

7.4 Rhombus and Square

A *rhombus* is another special quadrilateral. A **rhombus** is a quadrilateral with four congruent sides.



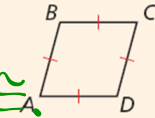
5 properties

Theorems Properties of Rhombuses

6)

6-4-3 If a quadrilateral is a rhombus, then it is a parallelogram. (rhombus \rightarrow \square)

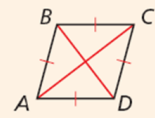
all sides \cong



ABCD is a parallelogram.

7)

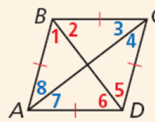
6-4-4 If a parallelogram is a rhombus, then its diagonals are perpendicular. (rhombus \rightarrow diags. \perp)



$\overline{AC} \perp \overline{BD}$

8)

6-4-5 If a parallelogram is a rhombus, then each diagonal bisects a pair of opposite angles. (rhombus \rightarrow each diag. bisects opp. \angle)



$\angle 1 \cong \angle 2$
 $\angle 3 \cong \angle 4$
 $\angle 5 \cong \angle 6$
 $\angle 7 \cong \angle 8$

Jan 25-10:29 AM

7.4 Example

Use the **diagonals** to determine whether a parallelogram with the given vertices is a ~~rectangle~~, **rhombus**, or ~~square~~. Give all the names that apply.

$W(0, 1), X(4, 2), Y(3, -2), Z(-1, -3)$

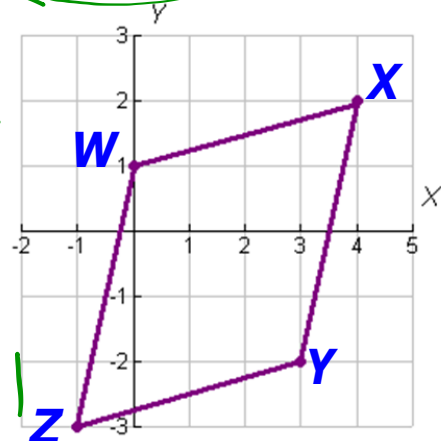
$$WY = \sqrt{(0-3)^2 + (1+2)^2} = \sqrt{9+9} = \sqrt{18}$$

$$XZ = \sqrt{(4+1)^2 + (2+3)^2} = \sqrt{25+25} = \sqrt{50}$$

$$m_{WY} = \frac{-2-1}{3-0} = \frac{-3}{3} = -1$$

$$m_{XZ} = \frac{2+3}{4+1} = \frac{5}{5} = 1$$

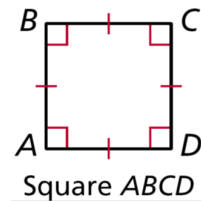
$$1(-1) = -1$$



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7.4 Rhombus and Square

A **square** is a quadrilateral with four right angles and four congruent sides. **Since a square is a parallelogram, a rectangle, and a rhombus it has the properties of all three.**

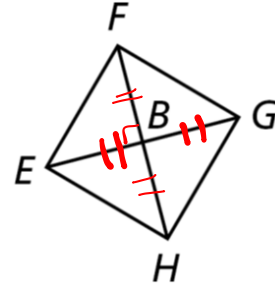


10 total properties

EX. Determine if the conclusion is valid. If not, tell what additional information is needed to make it valid.

Given:

$$\overline{EB} \cong \overline{BG}, \overline{FB} \cong \overline{BH}, \overline{EG} \cong \overline{FH}, \triangle EBF \cong \triangle EBH$$



Conclusion: EFGH is a square.

Parallelogram	Rectangle	Rhombus	Square
Yes	Yes	Yes	Yes

Jan 25-10:32 AM

7.4 Example

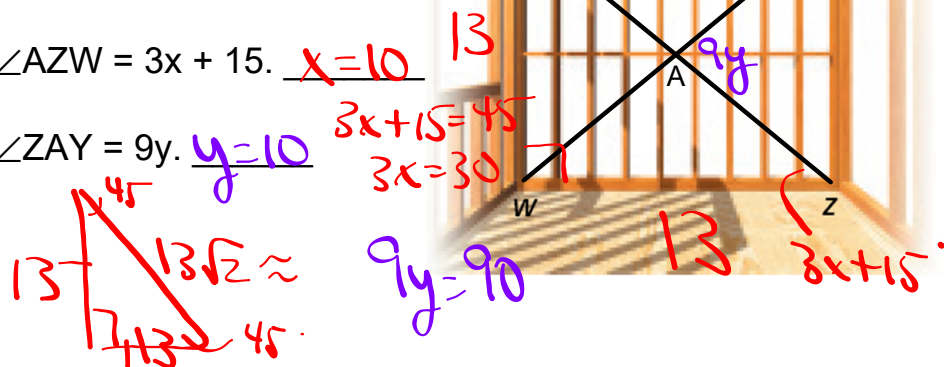
Ex. Builders often use a square frame when building houses.

If $XW = 13$, then $WZ = \underline{13}$,

$XZ = \underline{18.385}$ and $AZ = \underline{9.192}$.

Find x if $m\angle AZW = 3x + 15$. $x = \underline{10}$

Find y if $m\angle ZAY = 9y$. $y = \underline{10}$



Hint: Check answers by moving picture!!

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7.4 Rhombus and Square

Rhombus

RICE is a rhombus, $m\angle ICX = 24^\circ$, $IC = 10$, $IE = 16$

$$m\angle ERC = 24^\circ, m\angle RIC = 132^\circ$$

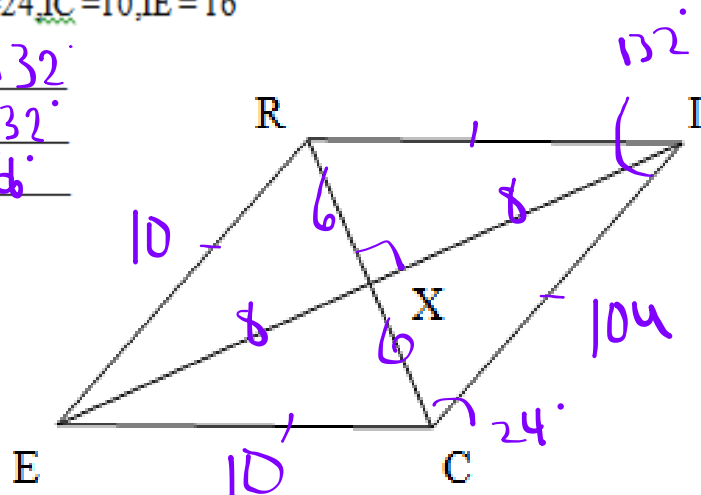
$$m\angle IXC = 90^\circ, m\angle REC = 132^\circ$$

$$m\angle IRX = 24^\circ, m\angle RIX = 6^\circ$$

$$IX = 8, XC = 6$$

$$RC = 12, IR = 10$$

$$x^2 + 6^2 = 10^2$$



Jan 13-2:43 PM

Square

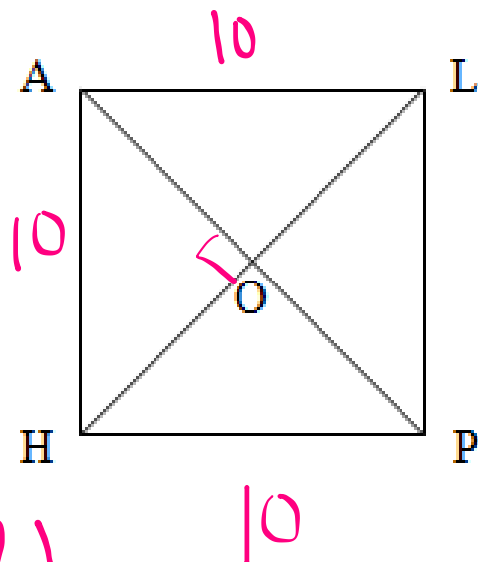
ALPH is a square, $AL = 10$

$$m\angle ALP = 90^\circ, m\angle ALO = 45^\circ$$

$$m\angle AOL = 90^\circ, m\angle AHO = 45^\circ$$

$$LP = 10, HP = 10$$

$$HO = 7.071, AP = 14.142$$



$$10 \sqrt{2} \approx 14.142$$

$$\frac{14.142}{2} \approx 7.071$$

Jan 13-2:46 PM

Attachments

Christopher Le and Hunter Lockwood Rhombus.pptx

Rhombus follow up.gsp

Square follow up.gsp

Get on the RhomBUS! 2nd per.pptx

Squares 4th period.docx

The Square 4th per.pptx

Parallelogram follow up.gsp

Rectangle follow up.gsp