

Adv. Geometry 8.4

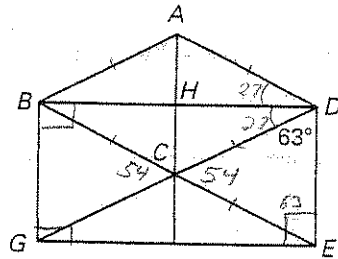
key

Decide whether the statement is *true* or *false*. Decide whether the converse is *true* or *false*. If both statements are *true*, write a biconditional statement.

- If a quadrilateral is a rectangle, then it is a parallelogram. $S: T$
 $C: F$
- If a quadrilateral is a parallelogram, then it is a rhombus. $S: F$
 $C: T$
- If a quadrilateral is a square, then it is a rhombus. $S: T$
 $C: F$
- If a quadrilateral is a rectangle, then it is a rhombus. $S: F$
 $C: F$
- If a rhombus is a square, then it is a rectangle. $S: T$
 $C: T$ A rhombus is a square if and only if it is a rectangle.

In the diagram shown, $BDEG$ is a rectangle and $ABCD$ is a rhombus. Find the measure of the indicated angle.

- $\angle GDB = 27^\circ$
- $\angle ABC = 54^\circ$
- $\angle DAB = 126^\circ$
- $\angle BCG = 54^\circ$
- $\angle GCE = 126^\circ$
- $\angle DEG = 90^\circ$
- $\angle AHB = 90^\circ$
- $\angle DGB = 63^\circ$



Find the length or angle measure.

14. $WXYZ$ is a square.

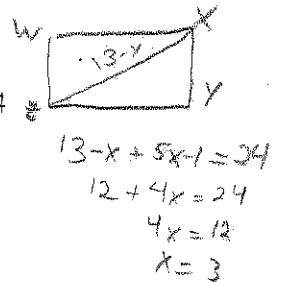
$$\begin{aligned} WX &= 1 - 10x = 14 + 3x \\ YZ &= 14 + 3x = 13 \\ XY &= ? = 11 \end{aligned}$$

15. $WXYZ$ is a rhombus.

$$\begin{aligned} m\angle X &= 24(10 - x)^\circ \\ m\angle Z &= 6(x + 15)^\circ = 120 \\ m\angle Y &= ? = 160^\circ \end{aligned}$$

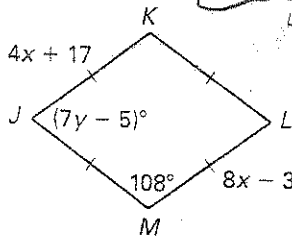
16. $WXYZ$ is a rectangle.

$$\begin{aligned} \text{Perimeter of } \triangle XYZ &= 24 \\ XZ &= 13 - x \\ XY + YZ &= 5x - 1 \\ WY &= ? = 10 \end{aligned}$$



Classify the special quadrilateral. Explain your reasoning. Then find the values of x and y .

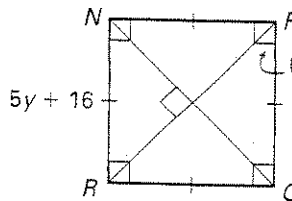
17.



Rhombus - 4 congruent sides

$$\begin{aligned} 4x + 17 &= 8x - 3 \\ 22 &= 4x \\ 5 &= x \\ 7y - 5 + 108 &= 180 \\ 7y &= 77 \\ 11 &= y \end{aligned}$$

18.

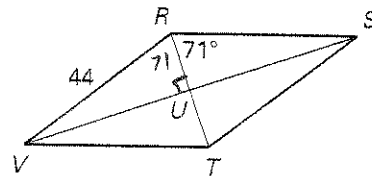


Square - 4 right angles, all sides congruent

$$\begin{aligned} 6x + 21 &= 45 \\ 6x &= 24 \\ 4 &= x \\ 5y + 16 &= 10y - 29 \\ 45 &= 5y \\ 9 &= y \end{aligned}$$

The diagonals of rhombus $RSTV$ intersect at U . Given that $m\angle URS = 71^\circ$ and $RV = 44$, find the indicated measure.

- $m\angle URV = 71^\circ$
- $m\angle RVT = 38^\circ$
- RT
- SU



$$\begin{aligned} \cos 71 &= \frac{RU}{44} \\ 44 \cdot \cos 71 &= RU \\ 14.325 &\approx RU \\ RT &= 2 \cdot RU \approx 28.65 \end{aligned}$$

$$\begin{aligned} \sin 71 &= \frac{SU}{44} \\ 44 \cdot \sin 71 &= SU \\ SU &\approx 41.6 \end{aligned}$$

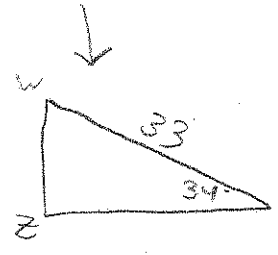
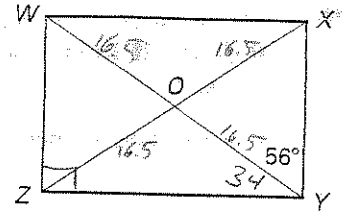
The diagonals of rectangle $WXYZ$ intersect at O . Given that $m\angle XYW = 56^\circ$ and $WY = 33$, find the indicated measure.

23. $m\angle XWO = 34^\circ$

24. $m\angle ZOY = 112^\circ$

25. $XO = 16.5$

26. WZ



$$\sin 34^\circ = \frac{WZ}{33}$$

$$WZ = 33 \cdot \sin 34^\circ \approx 18.45$$