

Name: Answer Key

Date: _____

Lesson #2: Rectangles

Fill in the blanks:

➤ Rectangles have the SAME properties of parallelograms:

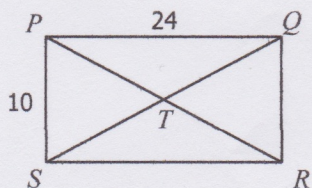
1. Opposite sides are congruent.
2. Opposite sides are parallel.
3. Opposite angles are congruent.
4. Consecutive angles are supplementary.
5. Diagonals bisect each other.

➤ PLUS these!

1. Four right angles.
2. Diagonals are congruent.

Practice:

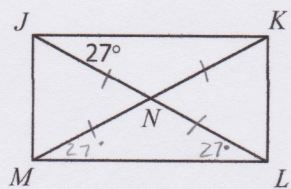
* 1.



$$\begin{aligned} QR &= \underline{10} \\ SR &= \underline{24} \\ SQ &= \underline{26} \\ PR &= \underline{26} \\ QT &= \underline{13} \quad \frac{26}{2} \end{aligned}$$

$$\begin{aligned} \text{Let } x &= SQ \\ 10^2 + 24^2 &= x^2 \\ 676 &= x^2 \\ x &= 26 \end{aligned}$$

2.



$$m\angle MJK = 90^\circ$$

$$m\angle MJL = 63^\circ \quad 90^\circ - 27^\circ = 63^\circ$$

$$m\angle JLK = 63^\circ \quad \text{alt. int. } \angle's$$

$$m\angle KML = 27^\circ \quad \angle JLM = 27^\circ \text{ so since diagonals are equal, sides of triangle are equal so angles equal}$$

$$m\angle MNL = 126^\circ$$

$$180^\circ - 27^\circ - 27^\circ$$

3.

If $RT = 5x - 14$ and $US = 2x + 10$, find VT .

$$5x - 14 = 2x + 10$$

$$3x = 10 + 14$$

$$3x = 24$$

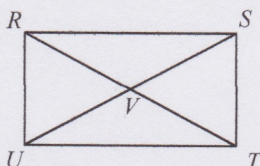
$$x = 8$$

$$RT = 5(8) - 14$$

$$RT = 26$$

$$VT = \frac{26}{2} = 13$$

$$VT = 13$$



Extra

4.

If $VW = 9x - 11$ and $SU = 16x - 12$, find WT .

$$2(VW) = SU$$

$$2(9x - 11) = 16x - 12$$

$$18x - 22 = 16x - 12$$

$$2x = -12 + 22$$

$$2x = 10$$

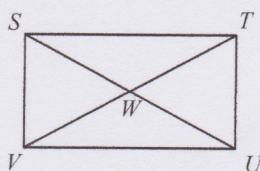
$$x = 5$$

5.

$$VW = 9(5) - 11$$

$$VW = 34$$

$$WT = 34$$



Find $m\angle BCE$.

$$7x + 5 = 11x - 3$$

$$11x - 7x = 3 + 5$$

$$4x = 8$$

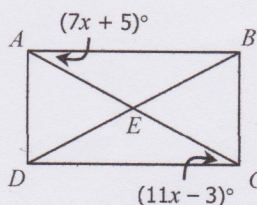
$$x = 2$$

$$m\angle DCE = [11(2) - 3]^\circ$$

$$= 19^\circ$$

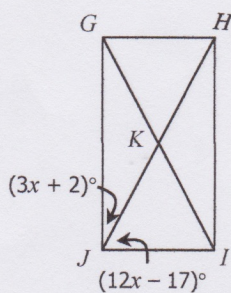
$$m\angle BCE = 90^\circ - 19^\circ$$

$$= 71^\circ$$



6.

Find $m\angle JHI$.



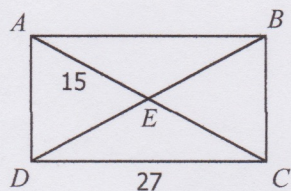
$$\begin{aligned} 3x + 2 + 12x - 17 &= 90 \\ 15x - 15 &= 90 \\ 15x &= 105 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} m\angle GJK &= 3(7) + 2 \\ &= 21 + 2 \\ &= 23^\circ \end{aligned}$$

$$m\angle JHI = 23^\circ \text{ alt. int. } \angle's$$

Problems:

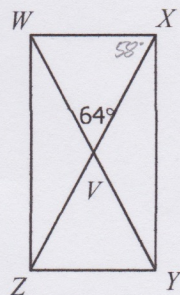
1.



$$\begin{aligned} AC &= \underline{30} & 15 \cdot 2 \\ BD &= \underline{30} \\ BE &= \underline{15} \\ AB &= \underline{27} \\ BC &= \underline{13.1} \end{aligned}$$

$$\begin{aligned} 30^2 &= 27^2 + x^2 \\ x^2 &= 30^2 - 27^2 \\ x^2 &= 171 \\ x &= 13.1 \end{aligned}$$

2.

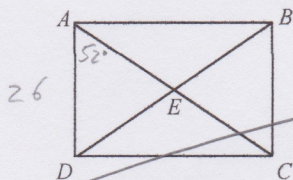


$$\begin{aligned} m\angle XWY &= \underline{58^\circ} & 180^\circ - 64^\circ &= \frac{116^\circ}{2} = 58^\circ \\ m\angle YXZ &= \underline{32^\circ} & 90^\circ - 58^\circ & \\ m\angle WVZ &= \underline{116^\circ} & 180^\circ - 64^\circ & \\ m\angle XWZ &= \underline{90^\circ} & & \\ m\angle XZY &= \underline{58^\circ} & & \end{aligned}$$

Take out

3.

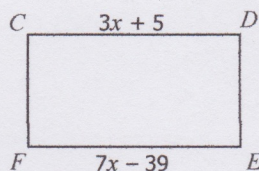
Given $DB = 42$, $AD = 26$, and $m\angle DAE = 52^\circ$.



- $AC = 42$
 $EB =$
 $BC =$
 $AB =$
 $m\angle ADC =$
 $m\angle ABD =$
 $m\angle BCA =$
 $m\angle DEC =$

Extra 3.

Find EF .



$$\begin{aligned}
 3x + 5 &= 7x - 39 \\
 5 + 39 &= 7x - 3x \\
 4x &= 44 \\
 x &= 11
 \end{aligned}$$

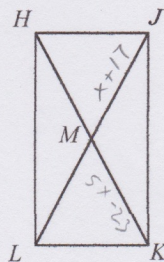
★

4.

$$\begin{aligned}
 7(11) - 39 &= 38 \\
 EF &= 38
 \end{aligned}$$

If $JM = x + 17$ and $MK = 5x - 23$, find JL .

$$\begin{aligned}
 x + 17 &= 5x - 23 \\
 5x - x &= 17 + 23 \\
 4x &= 40 \\
 x &= 10
 \end{aligned}$$



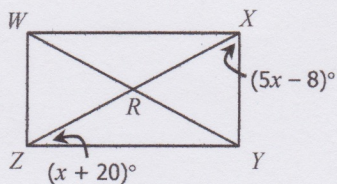
$$\begin{aligned}
 JM &= 10 + 17 \\
 JM &= 27 \\
 JL &= 27 \cdot 2 \\
 JL &= 54
 \end{aligned}$$

★

5.

Find $m\angle XZW$.

$$\begin{aligned}
 x + 20 + 5x - 8 &= 90 \\
 6x + 12 &= 90 \\
 6x &= 78 \\
 x &= 13
 \end{aligned}$$

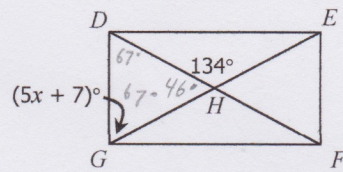


$$\begin{aligned}
 m\angle XZY &= 5(13) - 8 \\
 &= 57^\circ
 \end{aligned}$$

$$m\angle XZW = 57^\circ \text{ alt. int. } \angle's$$

7. 6.

Solve for x .



$$180^\circ - 134^\circ = 46^\circ$$

$$180^\circ - 46^\circ = 134^\circ$$

$$\frac{134^\circ}{2} = 67^\circ$$

$$5x + 7 = 67^\circ$$

$$5x = 60$$

$$x = 12$$