

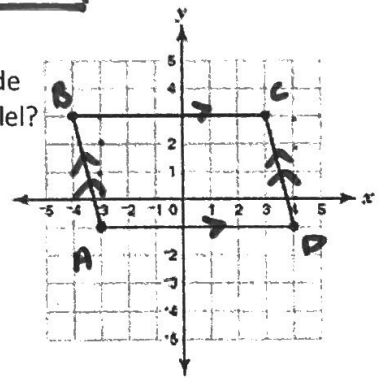
5.1 Notes

Main Ideas/Questions	Notes
PROPERTIES OF Parallelograms	① Opposite sides are \cong .
	② Opposite sides are \parallel .
	③ Opposite \angle 's are \cong .
	④ consecutive (next to) \angle 's are supp. (180°)
	⑤ diagonals bisect each other (are cut in half)

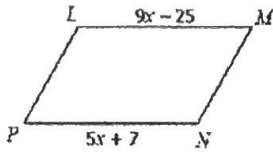
Directions: Each quadrilateral below is a parallelogram. Find the missing measures.

<p>1.</p> <p>$AD = 8$ $DC = 15$ $m\angle A = 112^\circ$ $m\angle B = 68^\circ$ $m\angle C = 112^\circ$</p> <p>$180 - 68 = 112^\circ$</p>	<p>2.</p> <p>$JK = \underline{\hspace{2cm}}$ $KL = \underline{\hspace{2cm}}$ $m\angle J = \underline{\hspace{2cm}}$ $m\angle K = \underline{\hspace{2cm}}$ $m\angle M = \underline{\hspace{2cm}}$</p>
<p>3.</p> <p>$UT = 27$ $ST = 18$ $VS = 7$ $VT = 15$</p> <p>* $RT = 30$</p>	<p>4.</p> <p>$m\angle DEC = \underline{\hspace{2cm}}$ $m\angle CDE = \underline{\hspace{2cm}}$ $m\angle ECD = \underline{\hspace{2cm}}$ $m\angle DFE = \underline{\hspace{2cm}}$</p> <p>* $m\angle FED = 134^\circ$</p>

Distance Formula	$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ * use to see if sides are \cong .	EXAMPLE: Find the length of segment AB given A (-4, 1) and B (3, -1). $\sqrt{(3 - (-4))^2 + (-1 - 1)^2} \Rightarrow \sqrt{49 + 4} \Rightarrow \sqrt{53}$
Slope Formula	$m = \frac{y_2 - y_1}{x_2 - x_1}$ (rise/run) * use to see if slopes are the same!	EXAMPLE: Find the slope of segment AB given A (-4, 1) and B (3, -1). $\frac{-1 - 1}{3 - (-4)} = \frac{-2}{7}$
Slopes of Parallel Lines	The slopes of parallel lines are the same!	EXAMPLE: Are there the opposite side of this quadrilateral parallel? $\overline{BC}: 0$ $\overline{AD}: 0$ $\overline{AB}: \frac{4}{-1} = -4$ $\overline{CD}: \frac{4}{-1} = -4$



7. Solve for x.



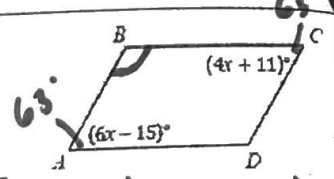
$$\begin{array}{r} 9x - 25 = 5x + 7 \\ +25 \quad +25 \\ \hline \end{array}$$

$$\begin{array}{r} 9x = 5x + 32 \\ -5x \quad -5x \\ \hline \end{array}$$

$$4x = 32$$

$$\boxed{x = 8}$$

11. Find $m\angle B$.



$$\begin{array}{r} 6x - 15 = 4x + 11 \\ +15 \quad +15 \\ \hline \end{array}$$

$$\begin{array}{r} 6x = 4x + 26 \\ -4x \quad -4x \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{26}{2}$$

$$x = 13$$

$$6(13) - 15 = 63^\circ$$

$$180 - 63 = 117^\circ$$

$$\boxed{m\angle B = 117^\circ}$$

9. If $TV = 74$ and $WV = 4x + 1$, solve for x.

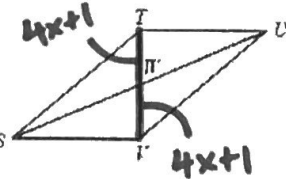
$$\frac{74}{2} = 37$$

$$\begin{array}{r} 4x + 1 = 37 \\ -1 \quad -1 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{36}{4}$$

$$\boxed{x = 9}$$

OR



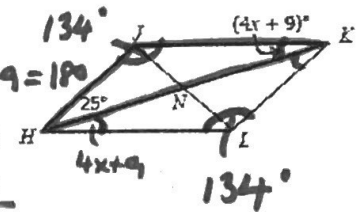
$$4x + 1 + 4x + 1 = 74$$

$$\begin{array}{r} 8x + 2 = 74 \\ -2 \quad -2 \\ \hline \end{array}$$

$$\frac{8x}{8} = \frac{72}{8}$$

$$\boxed{x = 9}$$

13. If $m\angle KLH = 134^\circ$, solve for x.



$$134 + 25 + 4x + 9 = 180$$

$$\begin{array}{r} 168 + 4x = 180 \\ -168 \quad -168 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{12}{4}$$

$$\boxed{x = 3}$$

Is segment AB parallel to segment XY given that A (1, 6) B (4, 2) X (-4, 2) Y (-1, -2)?

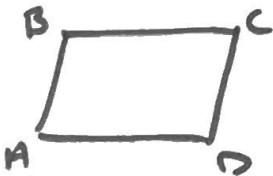
$$\frac{y_2 - y_1}{x_2 - x_1}$$

$$AB: \frac{2 - 6}{4 - 1} = \frac{-4}{3}$$

Yes

$$XY: \frac{-2 - 2}{-1 - 4} = \frac{-4}{3}$$

Find the length of each side of quadrilateral ABCD given that A (1, 6) B (4, 2) X (-4, 2) Y (-1, -2)?



• Find length of \overline{AB} & \overline{CD} .

• Find length of \overline{BC} & \overline{AD} .