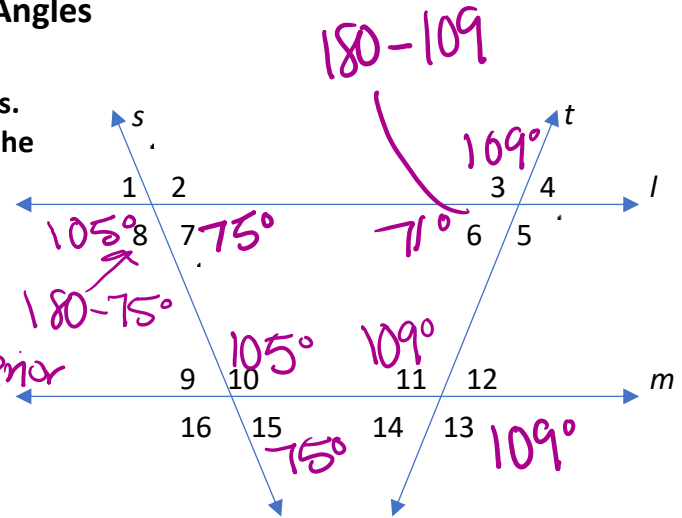


Parallel Lines and Angles

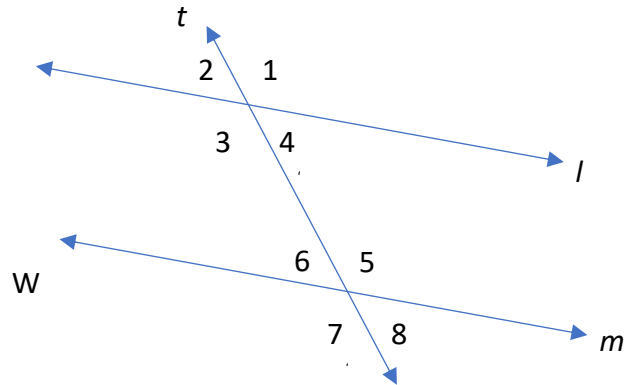
Lines l and m are parallel. Lines s and t are transversals.
If $m\angle 7 = 75^\circ$ and $m\angle 13 = 109^\circ$, what are the values of the missing angles?

- 1) $m\angle 11 = \underline{109}$ *vertical* $m\angle 6 = \underline{71}$ *linear pair*
 $m\angle 3 = \underline{109}$ *corresponding* $m\angle 8 = \underline{105}$ *linear pair*
 $m\angle 15 = \underline{75}$ *corresponding* $m\angle 10 = \underline{105}$ *alternate interior*



What are the values of x if lines l and m are parallel and line t is a transversal? (see workout below)

- 2) $m\angle 1 = 120^\circ$; $m\angle 7 = 6x - 18$ $x = \underline{23}$
 3) $m\angle 3 = 7x + 18$; $m\angle 6 = 6x + 19$ $x = \underline{11}$
 4) $m\angle 2 = 3x + 7$; $m\angle 6 = 61$ $x = \underline{18}$
 5) $m\angle 3 = 133^\circ$; $m\angle 5 = 11x - 10$ $x = \underline{13}$



What are the values of x based on the given information?

6) $l \parallel m$ <i>alternate interior</i> $12x+13 = 8x+37$ $\begin{array}{r} 12x+13 = 8x+37 \\ -8x \quad -8x \\ 4x+13 = 37 \\ -13 \quad -13 \\ 4x = 24 \\ \frac{4x}{4} = \frac{24}{4} \\ x = 6 \end{array}$	7) $l \parallel m$ <i>alternate exterior</i> $9x = 117$ $\frac{9x}{9} = \frac{117}{9}$ $x = 13$	8) $l \parallel m$ <i>supplementary (same side)</i> $6x+7 + 8x+5 = 180$ $14x + 12 = 180$ $\begin{array}{r} 14x + 12 = 180 \\ -12 \quad -12 \\ 14x = 168 \\ \frac{14x}{14} = \frac{168}{14} \\ x = 12 \end{array}$
9) $l \parallel m$ <i>alternate interior</i> $3x+10 + 30 + 4x = 180$ $7x + 40 = 180$ $\begin{array}{r} 7x + 40 = 180 \\ -40 \quad -40 \\ 7x = 140 \\ \frac{7x}{7} = \frac{140}{7} \\ x = 20 \end{array}$		6) $x = 6$ 7) $x = 13$ 8) $x = 12$ 9) $x = 20$

Parallel Lines and Angles

2) $\angle 1$ & $\angle 7$ alternate exterior

$$\begin{array}{r} 120 = 6x - 18 \\ + 18 \quad + 18 \end{array}$$

$$\begin{array}{r} 138 = 6x \\ \underline{6} \quad \underline{6} \\ \boxed{x = 23} \end{array}$$

4) $\angle 2$ & $\angle 6$ are corresponding

$$\begin{array}{r} 3x + 7 = 61 \\ - 7 \quad - 7 \end{array}$$

$$\begin{array}{r} 3x = 54 \\ \underline{3} \quad \underline{3} \\ \boxed{x = 18} \end{array}$$

3) $\angle 3$ & $\angle 6$ are supplementary
(same side interior)

$$6x + 19 + 7x + 18 = 180$$

$$13x + 37 = 180$$

$$\begin{array}{r} - 37 \quad - 37 \end{array}$$

$$\begin{array}{r} 13x = 143 \\ \underline{13} \quad \underline{13} \end{array}$$

$$\boxed{x = 11}$$

5) $\angle 3$ & $\angle 5$ are alternate interior

$$133 = 11x - 10$$

$$\begin{array}{r} + 10 \quad + 10 \end{array}$$

$$\begin{array}{r} 143 = 11x \\ \underline{11} \quad \underline{11} \end{array}$$

$$\boxed{13 = x}$$