

Name: Key

Date: _____

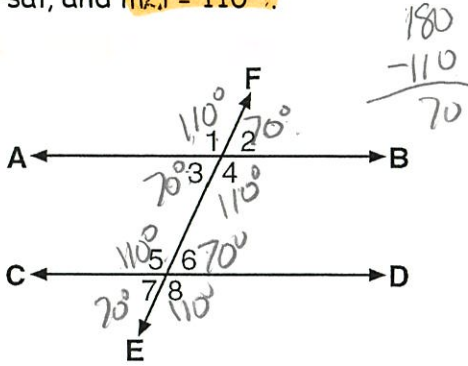
Mrs. Roubos

8R Period _____

* one acute and one obtuse add up to 180°

Classwork

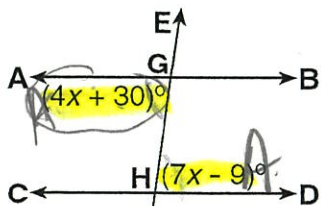
- 1) In the accompanying diagram, $\overline{AB} \parallel \overline{CD}$, \overline{EF} is transversal, and $m\angle 1 = 110^\circ$.



What is $m\angle 7$?

- A) 50° C) 110°
 B) 70° D) 20°

- 2) In the accompanying diagram, parallel lines \overline{AB} and \overline{CD} are intersected by transversal \overline{EF} at G and H , respectively. If $m\angle AGH = (4x + 30)^\circ$ and $m\angle GHD = (7x - 9)^\circ$, what is the value of x ?

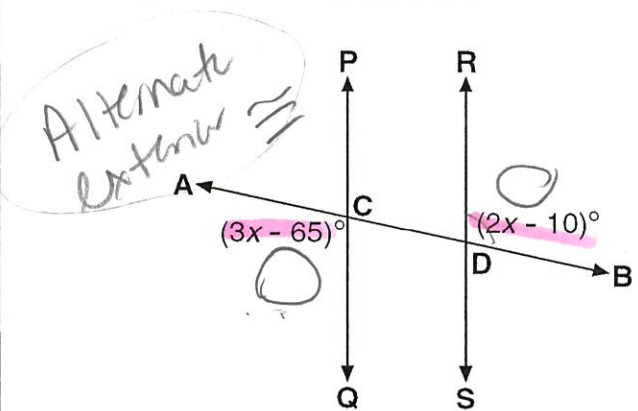


Alternate interior \cong

$$4x + 30 = 7x - 9$$

$$\begin{array}{r} 4x + 30 = 7x - 9 \\ -4x \quad -4x \\ \hline 30 = 3x - 9 \\ +9 \quad +9 \\ \hline 39 = 3x - 9 \\ +9 \quad +9 \\ \hline 39 = 3x \\ \frac{39}{3} = \frac{3x}{3} \\ \boxed{x = 13} \end{array}$$

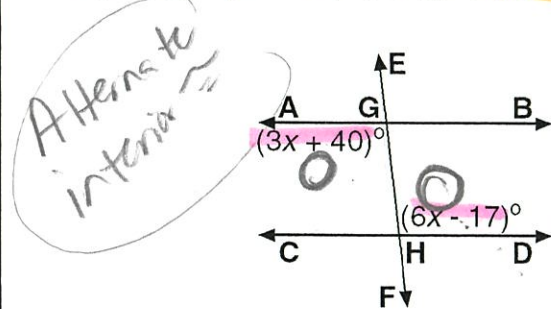
- 3) In the accompanying diagram, \overline{AB} intersects \overline{PQ} and \overline{RS} at C and D , respectively. If $\overline{PQ} \parallel \overline{RS}$, $m\angle RDB = (2x - 10)^\circ$, and $m\angle QCA = (3x - 65)^\circ$, find x .



$$3x - 65 = 2x - 10$$

$$\begin{array}{r} 3x - 65 = 2x - 10 \\ -2x \quad -2x \\ \hline x - 65 = -10 \\ +65 \quad +65 \\ \hline \boxed{x = 55} \end{array}$$

- 4) In the accompanying diagram, transversal \overline{EF} intersects parallel lines \overline{AB} and \overline{CD} at G and H , respectively. If $m\angle AGH = (3x + 40)^\circ$ and $m\angle GHD = (6x - 17)^\circ$, what is the value of x ?



$$3x + 40 = 6x - 17$$

$$\begin{array}{r} 3x + 40 = 6x - 17 \\ -3x \quad -3x \\ \hline 40 = 3x - 17 \\ +17 \quad +17 \\ \hline 57 = 3x \\ \frac{57}{3} = \frac{3x}{3} \\ \boxed{x = 19} \end{array}$$

- 5) In the accompanying diagram, parallel lines \overline{AB} and \overline{CD} are cut by transversal \overline{GH} at E and F, respectively. If $m\angle GEB = (2x - 30)^\circ$ and $m\angle EFD = (x + 15)^\circ$, find the value of x .

Handwritten work for problem 5:

$$\begin{array}{r} 2x - 30 = x + 15 \\ -x \quad -x \\ \hline x - 30 = 15 \\ +30 \quad +30 \\ \hline x = 45 \end{array}$$

Corresponding angles

- 8) In the accompanying diagram, the adjacent angles formed by intersecting lines \overline{AB} and \overline{CD} have measures $(3x + 50)^\circ$ and $(x + 10)^\circ$, respectively. Find x .

Supplementary

Handwritten work for problem 8:

$$\begin{array}{r} (3x + 50) + (x + 10) = 180 \\ 3x + 50 + x + 10 = 180 \\ 4x + 60 = 180 \\ -60 \quad -60 \\ \hline 4x = 120 \\ \frac{4x}{4} = \frac{120}{4} \\ x = 30 \end{array}$$

- 6) In the accompanying diagram, parallel lines \overline{AB} and \overline{CD} are intersected by transversal \overline{GH} at points E and F, respectively. If $m\angle AEG$ is $(3x + 7)^\circ$ and $m\angle CFE$ is $(4x - 2)^\circ$, find x .

Handwritten work for problem 6:

$$\begin{array}{r} 3x + 7 = 4x - 2 \\ -3x \quad -3x \\ \hline 7 = x - 2 \\ +2 \quad +2 \\ \hline x = 9 \end{array}$$

Corresponding angles

- 9) In the accompanying diagram, \overline{AB} and \overline{CD} intersect at F. If $m\angle AED = (2x + 11)^\circ$ and $m\angle CEB = (5x - 19)^\circ$, find the value of x .

Vertical angles

Handwritten work for problem 9:

$$\begin{array}{r} 5x - 19 = 2x + 11 \\ -2x \quad -2x \\ \hline 3x - 19 = 11 \\ +19 \quad +19 \\ \hline 3x = 30 \\ \frac{3x}{3} = \frac{30}{3} \\ x = 10 \end{array}$$

- 7) Solve for x

Handwritten work for problem 7:

Consecutive angles

$$\begin{array}{r} 3x + 70 + 50 = 180 \\ 3x + 120 = 180 \\ -120 \quad -120 \\ \hline 3x = 60 \\ \frac{3x}{3} = \frac{60}{3} \\ x = 20 \end{array}$$

- 10) In the accompanying diagram, \overline{AB} is parallel to \overline{CD} , and \overline{EF} is a transversal.

Handwritten work for problem 10:

$$\begin{array}{r} 2x + 60 + 3x + 20 = 180 \\ 5x + 80 = 180 \\ -80 \quad -80 \\ \hline 5x = 100 \\ \frac{5x}{5} = \frac{100}{5} \\ x = 20 \end{array}$$

If $m\angle BEF = (2x + 60)^\circ$, and $m\angle DFE = (3x + 20)^\circ$, what is $m\angle BEF$?

Handwritten solution for problem 10:

$$\begin{array}{l} m\angle BEF = 2x + 60 \\ m\angle BEF = 2(20) + 60 \\ m\angle BEF = 40 + 60 \\ m\angle BEF = 100^\circ \end{array}$$