

Angle Pairs and Algebra

Supplementary Angles

$$\angle A + \angle B = 180^\circ$$

Complementary Angles

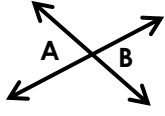
$$\angle A + \angle B = 90^\circ$$

Vertical Angles

$$\angle A = \angle B$$

Solve for x. Identify the measurement of each angle. Draw a diagram to help you if needed.

1) $\angle A$ and $\angle B$ are shown below. The measure of $\angle A = 78^\circ$ and the measure of $\angle B = 4x + 14$. Find the measure of each angle.

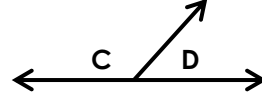


$$x = \underline{\hspace{2cm}}$$

$$m\angle A = \underline{\hspace{2cm}}$$

$$m\angle B = \underline{\hspace{2cm}}$$

2) $\angle C$ and $\angle D$ are shown below. The measure of $\angle C = 3x$ and the measure of $\angle D = x + 8$. Find the measure of each angle.

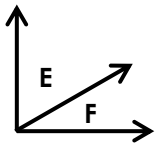


$$x = \underline{\hspace{2cm}}$$

$$m\angle C = \underline{\hspace{2cm}}$$

$$m\angle D = \underline{\hspace{2cm}}$$

3) $\angle E$ and $\angle F$ are shown below. The measure of $\angle E = 5x + 8$ and the measure of $\angle F = x + 4$



$$x = \underline{\hspace{2cm}}$$

$$m\angle E = \underline{\hspace{2cm}}$$

$$m\angle F = \underline{\hspace{2cm}}$$

4) $\angle G$ and $\angle H$ are vertical angles. The measure of $\angle G = 3x + 20$ and the measure of $\angle H = 5x - 50$. Find the measure of each angle.

$$x = \underline{\hspace{2cm}}$$

$$m\angle G = \underline{\hspace{2cm}}$$

$$m\angle H = \underline{\hspace{2cm}}$$

5) $\angle J$ and $\angle K$ are complementary. $\angle J$ is 6 more than 5 times $\angle K$. Find the measure of each angle.

$$m\angle J = \underline{\hspace{2cm}}$$

$$m\angle K = \underline{\hspace{2cm}}$$

6) $\angle L$ and $\angle M$ are supplementary. The measure of $\angle L = 12x + 1$ and the measure of $\angle M = x + 10$. Find the measure of each angle.

$$x = \underline{\hspace{2cm}}$$

$$m\angle L = \underline{\hspace{2cm}}$$

$$m\angle M = \underline{\hspace{2cm}}$$

7) $\angle N$ and $\angle P$ are vertical angles. The measure of $\angle N = 6x - 50$ and the measure of $\angle P = x + 95$. Find the measure of each angle.

$x =$ _____

$m\angle N =$ _____

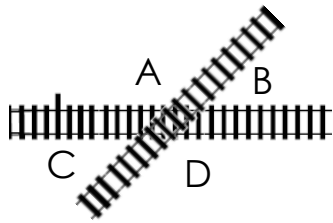
$m\angle P =$ _____

8) $\angle R$ and $\angle S$ are complementary to one another. $\angle R$ is five times the measure of $\angle S$. Identify each angle as an algebraic expression. Write and solve an equation in order to find the measurements of $\angle R$ and $\angle S$.

$m\angle R =$ _____

$m\angle S =$ _____

9. Two railroads cross each other, as shown. If the measure of angle A is 15 less than twice the size of angle B. What are the measures of all four angles?



$m\angle A =$ _____

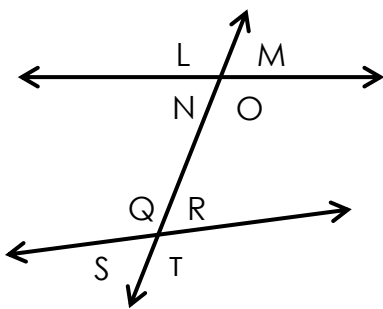
$m\angle B =$ _____

$m\angle C =$ _____

$m\angle D =$ _____

10. A railroad crosses two streets as indicated below.

- Part 1: The measure of angle L is four more than 7 times angle M. Use this information to find the measures of $\angle L$, $\angle M$, $\angle N$, and $\angle O$.
- Part 2: $\angle T$ measures $(3y + 27)^\circ$. The $m\angle Q$ is $(5y - 21)^\circ$. Use this information to find the measures of $\angle Q$, $\angle R$, and $\angle S$.



$m\angle L =$ _____ $m\angle M =$ _____ $m\angle N =$ _____

$m\angle O =$ _____

$m\angle Q =$ _____ $m\angle R =$ _____ $m\angle S =$ _____

$m\angle T =$ _____