

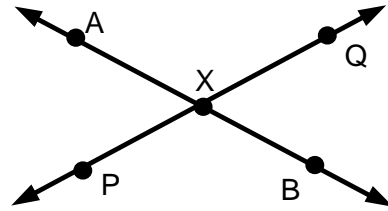
Section 1.8 Pairs of Angles

Adjacent Angles are angles that have a common vertex and a common side.

- $\angle AXQ$ is Adjacent to $\angle QXB$
- $\angle QXB$ is Adjacent to $\angle BXP$

Vertical Angles are two non-adjacent angles formed by two intersecting lines.

- $\angle AXQ$ is Vertical to $\angle BXP$
- $\angle QXB$ is Vertical to $\angle AXP$

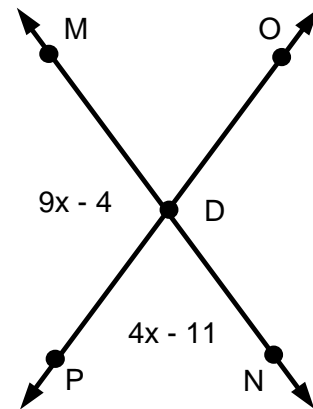


Vertical Angles are congruent.

A **linear pair** is a pair of adjacent angles that when added together create a straight line. Therefore, the sum of a linear pair is 180° . They are said to be supplementary.

Example: In the figure, line MN and line OP intersect at point D. Find the value of x and m $\angle ODN$.

<u>Statement</u>	<u>Reason</u>
$9x - 4 + 4x - 11 = 180$	Supplementary angles
$13x - 15 = 180$	Combing like terms
$13x = 195$	Add 15 to both sides
$x = 15$	Divide by 13
$9x - 4 = \angle ODN$	Vertical angles are equal
$9(15) - 4 = \angle ODN$	Substitute 15 for x
$125 - 4 = \angle ODN$	Multiply
$121 = \angle ODN$	Subtrace



Complementary Angles are angles that add up to 90 degrees.

Example: The complement of an angle is 3.5 times smaller that the supplement of an angle. Find the measure of the angle.

Let $x =$ the angle
 $180 - x =$ supplement of the angle
 $90 - x =$ complement of the angle

The complement times 3.5 equals the supplement.

$$\begin{aligned} (90 - x)(3.5) &= (180 - x) \\ 315 - 3.5x &= 180 - x \\ 135 &= 2.5x \\ \mathbf{x} &= \mathbf{54^\circ} \end{aligned}$$

Check: $180^\circ - 54^\circ = 126^\circ$

$$90^\circ - 54^\circ = 36^\circ$$

$$36^\circ \cdot 3.5 = 126^\circ$$

therefore, the solution is correct