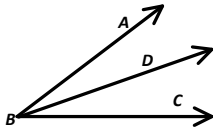# Angle Relationships

Adjacent Angles - Two angles in the same plane that have a common vertex and a common side, but no common interior points.
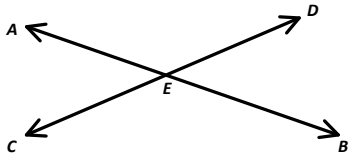

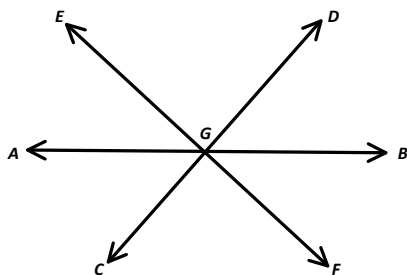Complementary Angles - Two angles that add up to $90°$.

Supplementary Angles - Two angles that add up to $180°$.

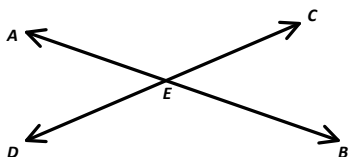| Angle	Complement	Supplement
$40°$		
$25°$		
$100°$		
$200°$		
$x°$		
$(2x)°$		
$\left(\dfrac{1}{2}x\right)°$		

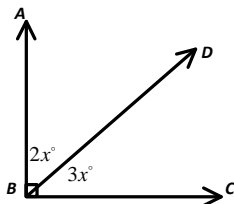Vertical Angles - Two nonadjacent angles formed by intersecting lines.

1. In the accompanying diagram, $\overline{AB}$, $\overline{CD}$ and $\overline{EF}$ intersect at G. If $m\angle DGB = 35°$ and $m\angle CGF = 75°$, find $m\angle AGE$.

E
D
A
G
B
C
F

2. In the accompanying diagram, $\overline{AB}$ and $\overline{CD}$ intersect at point E. If $m\angle CEB = (3x - 14)°$ and $m\angle AED = 31°$, find the value of x.

A
C
E
D
B

3. In the accompanying diagram, $m\angle ABC = 90°$. Find $m\angle ABD$.

A
D
$2x°$
$3x°$
B
C

4. If two supplementary angles are in the ratio of 4:5, find the measure of the larger angle.

5. Two angles are supplementary. The measure of one angle is twice as large as the measure of the other angle. What is the total number of degrees in the measure of the smaller angle?

6. In the accompanying diagram, $\overrightarrow{AB}$ and $\overrightarrow{CD}$ intersect at point E. If $m\angle AED = (2x+11)^\circ$ and $m\angle CEB = (5x-19)^\circ$, find the value of x.
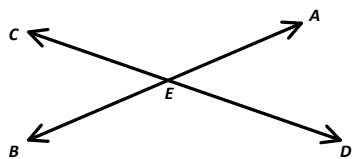
7. The larger of two complementary angles has a measure of $20°$ more than three times the measure of the smaller angle. Find the measure of both angles.

8. In the accompanying diagram, $\overrightarrow{AOB}$ is a straight line, $m\angle AOC = (5x)°$, $m\angle COD = (3x+30)°$ and $m\angle DOB = (2x+10)°$. Find the value of x.
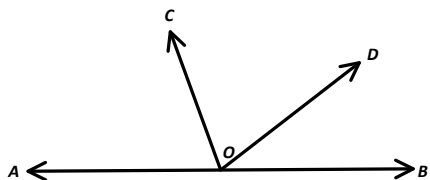
9. The measure of an angle is $44°$ more than the measure of its supplement. Find the measures of the angles.

10. An angle measures 43° less than six times the measure of its complement. Find the measures of the angles.

11. Using the given information, find the values of x, y, $m\angle A$, $m\angle B$, $m\angle C$ and $m\angle D$.

$m\angle A = y - 2$

$m\angle B = 2x + 3$

$m\angle C = 2x - y$

$m\angle D = x - 1$

$\angle A$ and $\angle B$ are complementary.

$\angle C$ and $\angle D$ are complementary.