# Angles

Positive angles
(open counterclockwise)
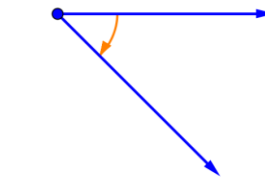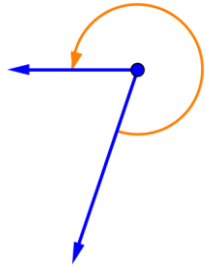
Negative angle
(opens clockwise)

| Acute $0° < \theta < 90°$ | Right $\theta = 90°$ | Obtuse $90° < \theta < 180°$ | Straight $\theta = 180°$ |
|---|---|---|---|

70°  20°

60°  30°

120°  60°

97°  83°
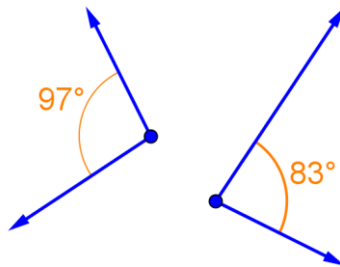
Complementary angles add up to _____.          Supplementary angles add up to _____.

## Angle Measurements

How do we measure angles smaller than $1°$?
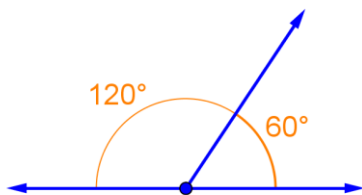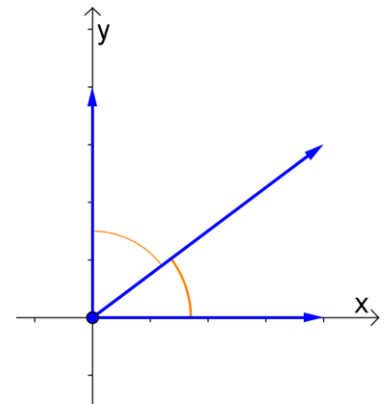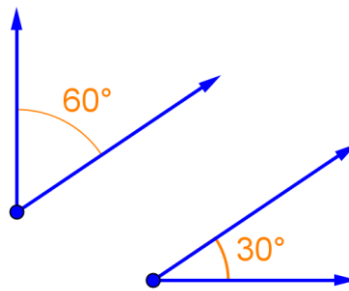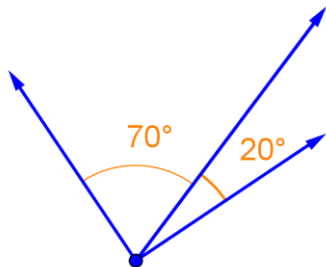
$1° = 60'$   (1 degree equals 60 minutes)
$1' = 60''$   (1 minute equals 60 seconds)

Latitude/longitude coordinates often use this system.  You are here:
34°02'45.4"N   (34.045940)
117°50'46.3"W  (-117.846183)

**Ex 1.**
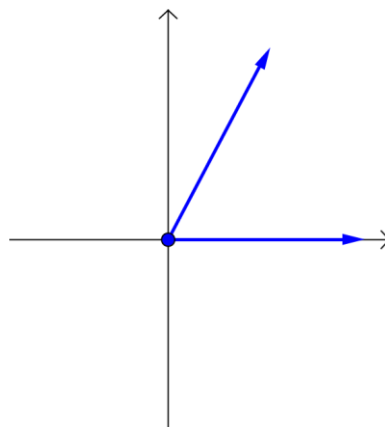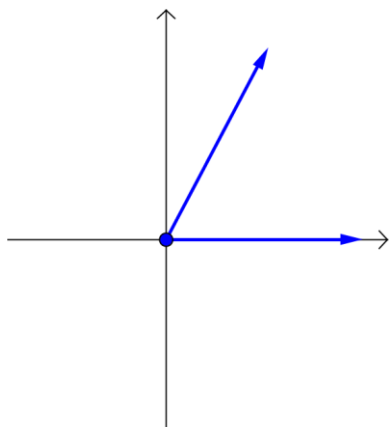Convert $105°20'32''$ to decimal degrees to the nearest thousandth.

**Ex 2.**
Convert $85.263°$ to degrees, minutes, and seconds to the nearest second.

If you turn around so you're facing the same direction, that's _____ degrees.
If you do it twice, that's _____ degrees.



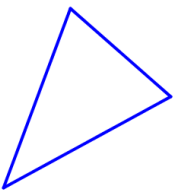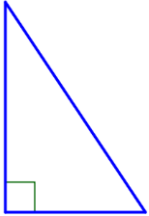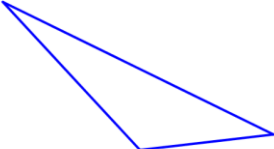Two angles that differ by a multiple of $360°$ are called _____.

**Ex 3.**
Find the angle of least positive measure (not equal to the given measure) that is coterminal with each angle.

$908°$

$-75°$

## Triangles

The sum of the angles of a triangle is _____.

| | | |
|---|---|---|
|  |  |  |
| Acute triangle | Right triangle | Obtuse triangle |

Note:  The acute angles of a right triangle are _____.

| | | |
|---|---|---|
|  |  |  |
| Equilateral triangle | Isosceles triangle | Scalene triangle |

## Practice

1. Find the measure of each unknown angle in the figure below.  (Hint:  what do the angles add up to?)



2. Convert $34°51'35''$ to decimal degrees to the nearest thousandth.

3. Convert $-25.485°$ to degrees, minutes, and seconds to the nearest second.

4. Find the angle of least positive measure (not equal to the given measure) that is coterminal with each angle.
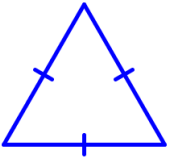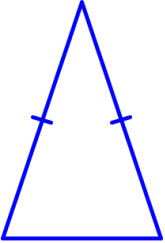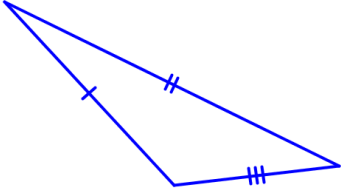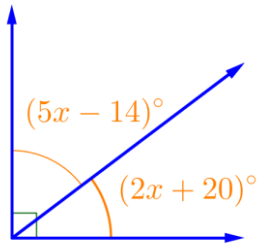
a) $-98°$

b) $541°$

c) $8440°$