

Objective 1: Basic Terminology.



2 distinct points determine a line AB

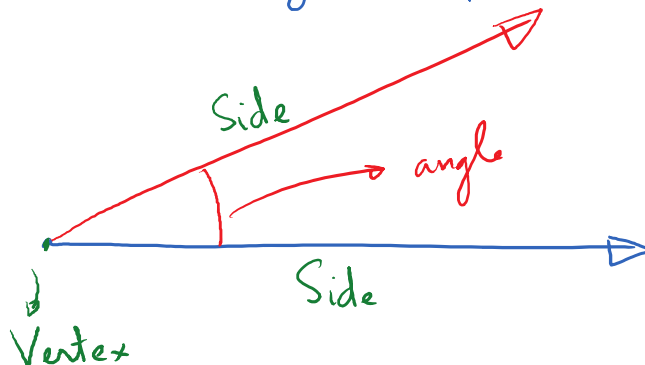
The line segment AB is a portion of the line between A and B, including the points A and B



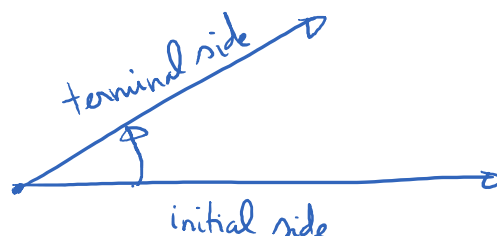
Ray AB is the portion of line AB that starts at A and continues through B and on past B



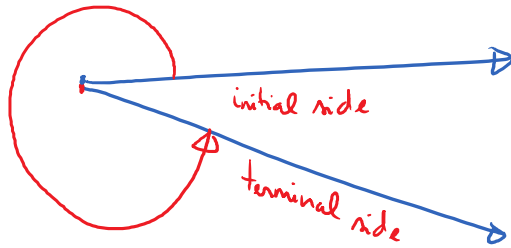
An angle consists of 2 rays in a plane with a common endpoint



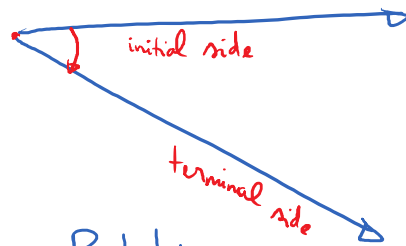
An angle's measure is generated by a rotation



Sign Convention for angles

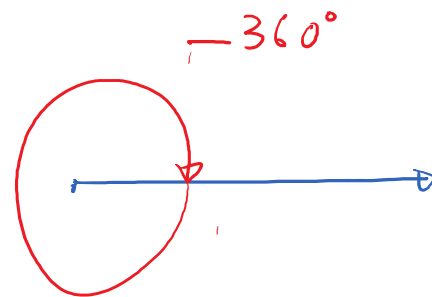
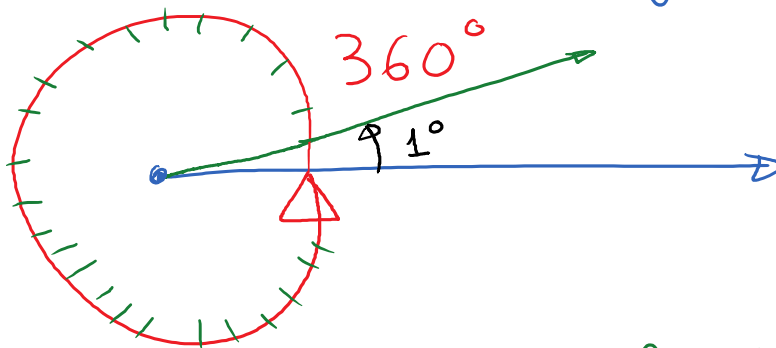


Rotation is counterclockwise $\rightarrow$ positive angle

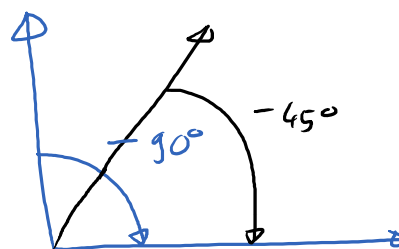
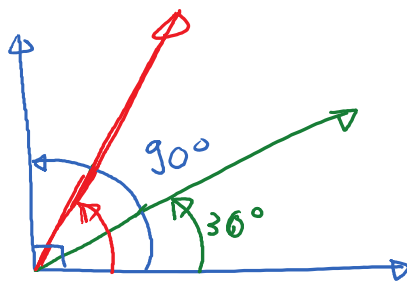


Rotation is clockwise $\rightarrow$ negative angle

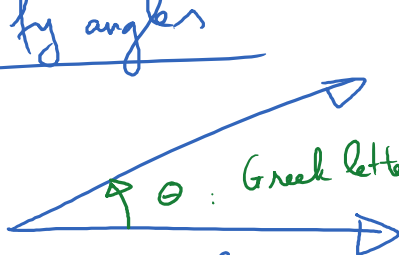
The most common unit for measuring angle is the degree



Divide 360° into 360 equal parts

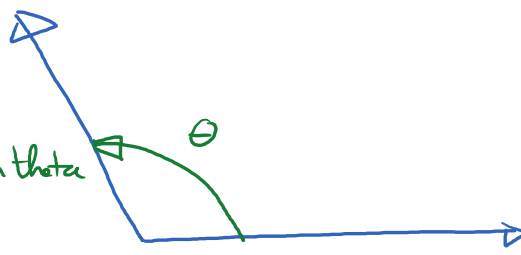


Classify angles



Acute Angle

$$0^\circ < \theta < 90^\circ$$

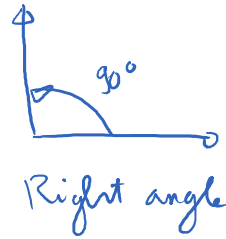
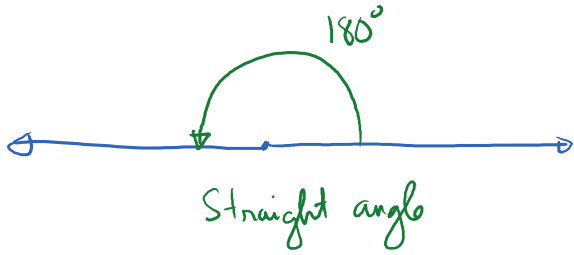


Obtuse Angle

$$90^\circ < \theta < 180^\circ$$

U - U - U

$$90^\circ < \theta < 180^\circ$$



2 angles are called complementary angles if their sum equal to 90° .

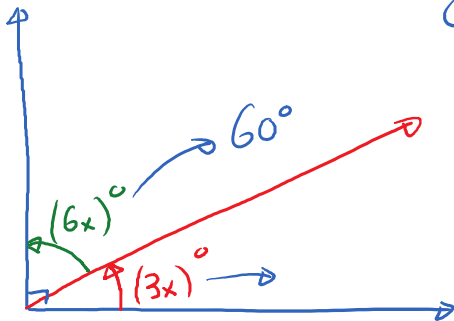
E.g. 35° and 55° are complementary angles.



2 angles are supplementary if their sum equals 180°

E.g. 91° and 89° are supplementary angles.

E.g.

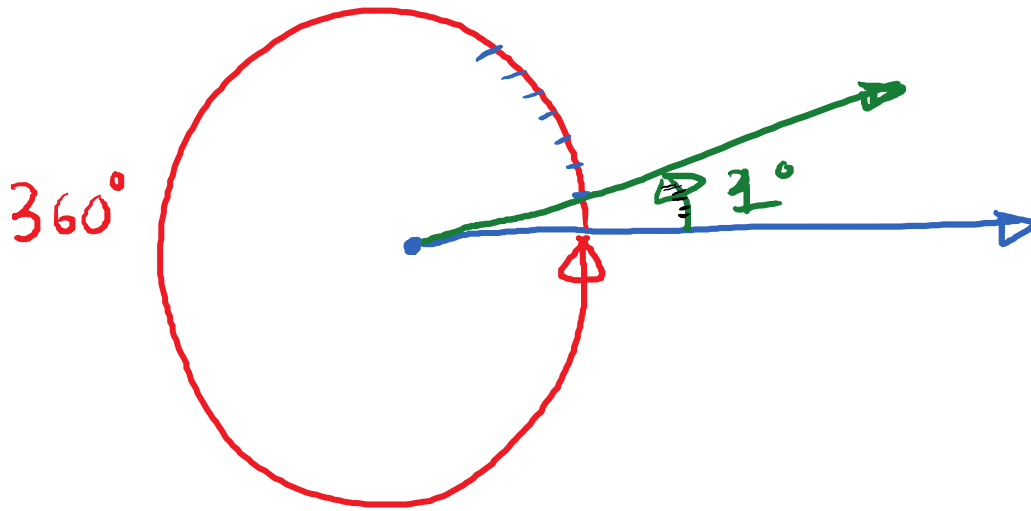


Q: Find x ?

$$6x + 3x = 90^\circ$$

$$9x = 90^\circ$$

$$10^\circ$$



Degrees, Minutes and Seconds

$$1 \text{ degree} = 60 \text{ minutes} \quad \left| \quad 1 \text{ minute} = \left(\frac{1}{60} \right) \text{ degree}$$

$$1^{\circ} = 60' \quad \left| \quad 1' = \left(\frac{1}{60} \right)^{\circ}$$

$$1 \text{ minute} = 60 \text{ seconds} \quad \left| \quad 1'' = \left(\frac{1}{60} \right)' \right. \\ \left. 1' = 60'' \quad \left| \quad = \left(\frac{1}{3600} \right)^{\circ} \right.$$

Convert between degrees, minutes and seconds to decimal degrees and vice versa.

E.g. (a) Convert $74^{\circ} 08' 14''$ into decimal degrees to nearest thousandths.

$$\begin{aligned} 74^{\circ} 08' 14'' &= 74^{\circ} + 8' + 14'' \\ &= 74^{\circ} + \frac{8}{60} + \frac{14}{3600} \\ &= 74.137^{\circ} \end{aligned}$$

(b) Convert 34.817° into degrees, minutes and seconds form.

$$\begin{aligned} 34.817^{\circ} &= 34^{\circ} + 0.817^{\circ} \\ &= 34^{\circ} + (0.817^{\circ}) \cdot (60') \\ &= 34^{\circ} + 49.02' = 34^{\circ} + 49' + 0.02' \end{aligned}$$

$$= 34^{\circ} + 49' + (0.02') \cdot (60'') = 34^{\circ} + 49' + 1.2'' \approx 34^{\circ}49'1''$$