

## Ray - half line

positive angle  
counterclockwise  
rotation

negative angle  
clockwise  
rotation

positive angle

## Standard position

positive

negative

If the terminal side lies in the quadrant, we say that  $\theta$  lies in that quadrant.  
If the terminal side lies on the x or y axis, we say that  $\theta$  is a quadrantal angle.

## Degrees

- one revolution (unit circle) is 360 degrees

1 degree =  $1/360$  revolutions

90 degrees =  $90/360$  or  $1/4$  revolutions

180 degrees -  $180/360$  or  $1/2$  revolutions

Ex. 1 Draw angles (in degrees)

a) 45

b) -90

c) 405

Read p. 371

1 counterclockwise revolution = 360 degrees

1 degree = 60 minutes and 1 minute = 60 seconds

Ex.2 Converting between degrees, minutes, seconds and decimal forms.

a) convert  $50^{\circ} 6' 21''$  to a decimal in degrees

b) convert 21.256 to the D M' S'' form (round to the nearest second)

$$s = r$$

Ex. Find length of the arc of a circle of radius 2 meters subtended (intercepted) by a central angle of 0.25 radians

$$1 \text{ revolution} = 2\pi r \text{ radians}$$

### **Relating Degrees & Radians**

$$1 \text{ revolution} = 2\pi r \text{ radians}$$

$$360 \text{ degrees} = 2\pi \text{ radians}$$

Ex. Convert from degrees to radians

a) 60

b) 150

c) 45

Ex. Finding distance between 2 cities

Find the distance between Glasgow (48° 9' North Latitude) & Albuquerque (35° 5' North Latitude). Assume radius of earth is 3960 miles. There is a drawing of this on pg. 375.

## **Area of a Sector**

$$A = \frac{1}{2} r^2 \theta$$

Ex. Find area of the sector of a circle of radius 2 feet formed by an angle of 30 degrees (round to 2 decimals)