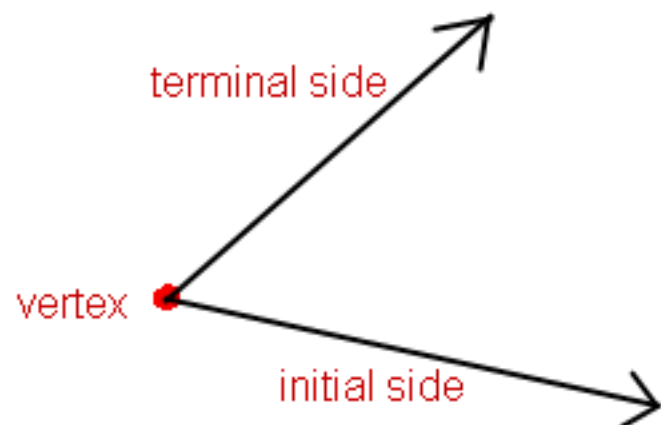


## Trig--Lesson 5.1--Angles and Degree Measure

Welcome to the wonderful world of trigonometry...I LOVE it!!  
Read page 274 for a short introduction



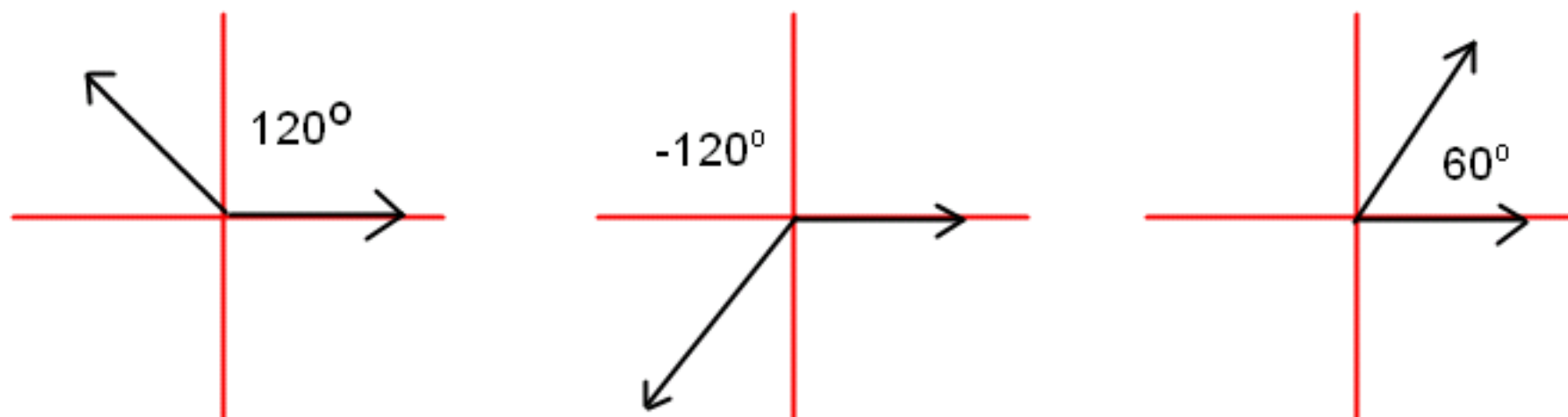
The measure of an angle tells us the **direction** of the rotation and the **amount** of the rotation necessary to move from the initial side to the terminal side (p.277)

A counterclockwise rotation is a + angle measure

A clockwise rotation is a - angle measure

$\alpha$ ,  $\beta$  and  $\theta$  are all greek letters that we use as variables to represent unknown angle measures

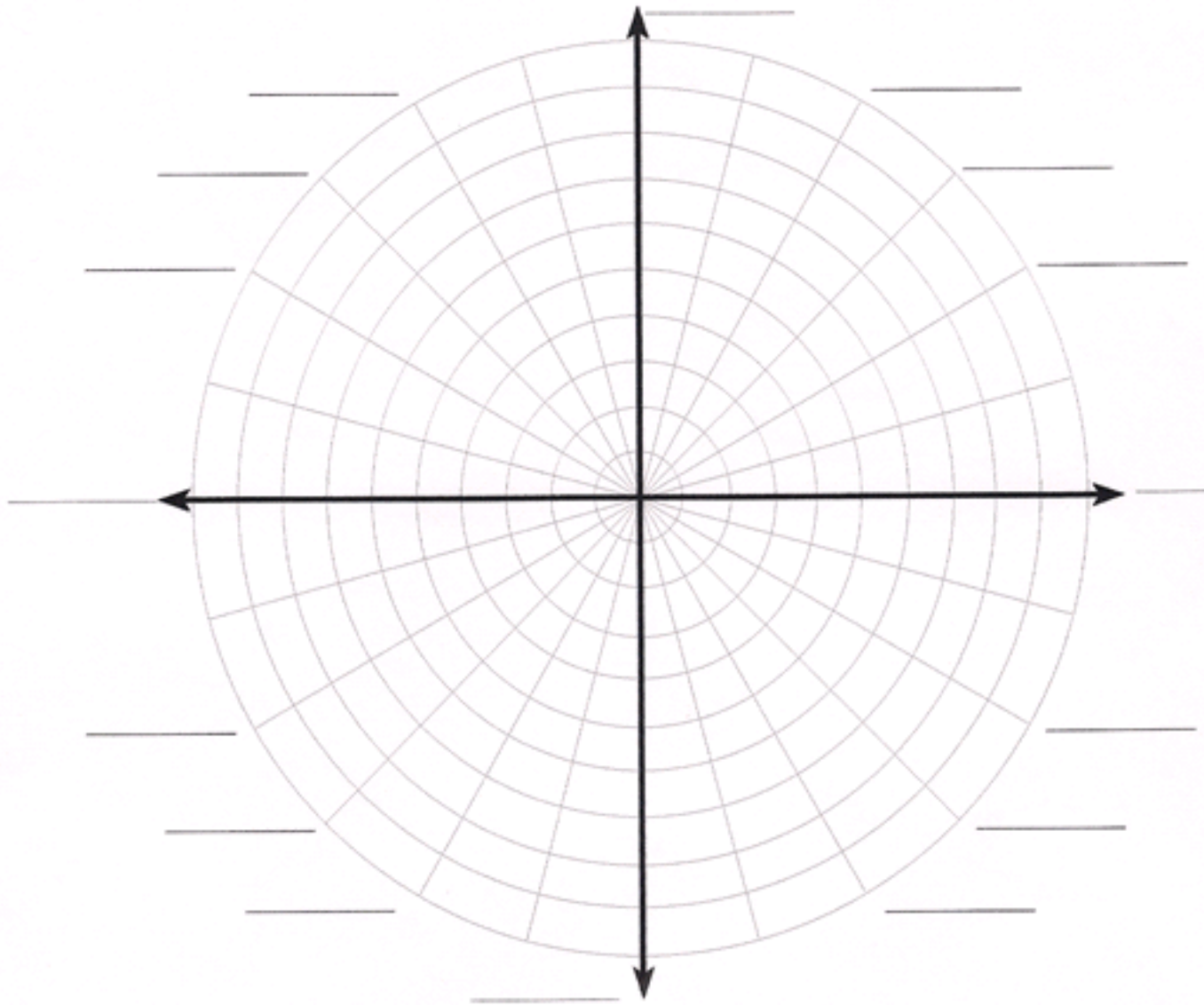
An angle with its vertex at the origin and its initial side along the positive x-axis is in **STANDARD POSITION**.



-All of the angles above are in **standard position**

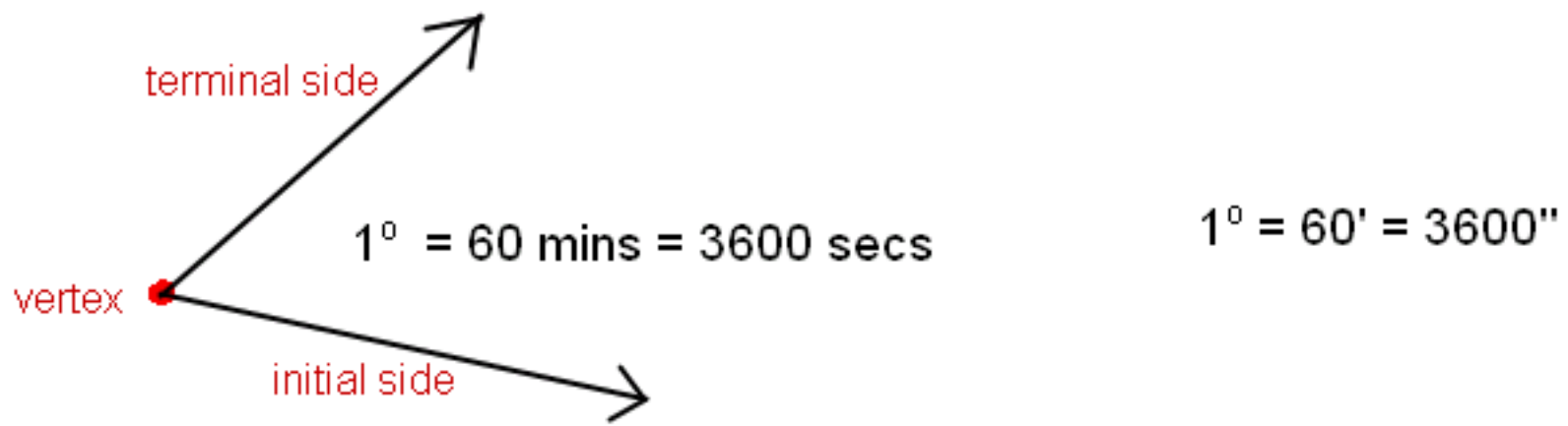
The units of measure for an angle is **degree** and **radian**. We'll study the radian in chap. 6!

**Familiarize yourself with the angle measures b/t  $0^\circ$  and  $360^\circ$**



The degree is divided into 60 equal parts known as **minutes** (just like the hour)

Each minute is divided into 60 equal parts known as **seconds** (just like the minute)



EX:  $5^\circ = 5 \times 60' = 300'$  (Compare with time: 5 hrs =  $5 \times 60 = 300$  mins)

How would you change  $5.735^\circ$  to degrees, minutes and seconds??

To change 3.5 yrs to yrs and months:  $3 + .5(12)$

To change 8.25 hrs to hrs and mins:  $8 + .25(60)$

To change 8.28 hrs to hrs, mins, and secs:  $8 + .28(60) = 8 \text{ hr } 16.8 \text{ min}$   
 $= 8 \text{ hr} + 16 \text{ min} + .8(60)$   
 $= 8 \text{ hr } 16 \text{ min } 48 \text{ secs}$

EX: Change  $15.735^\circ$  to degrees, minutes and seconds.

$$\begin{aligned} 15.735^\circ &= 15^\circ + .735^\circ = 15^\circ + .735(60) = 15^\circ 44.1' \\ &= 15^\circ + 44' + .1(60) \\ &= 15^\circ 44' 6'' \end{aligned}$$

To change from DMS just do the opposite:  $15^{\circ} 44' 6'' = 15 + 44/60 + 6/3600 = 15.735^{\circ}$

Change from DMS to degrees:  $39^{\circ} 5' 34''$

AE



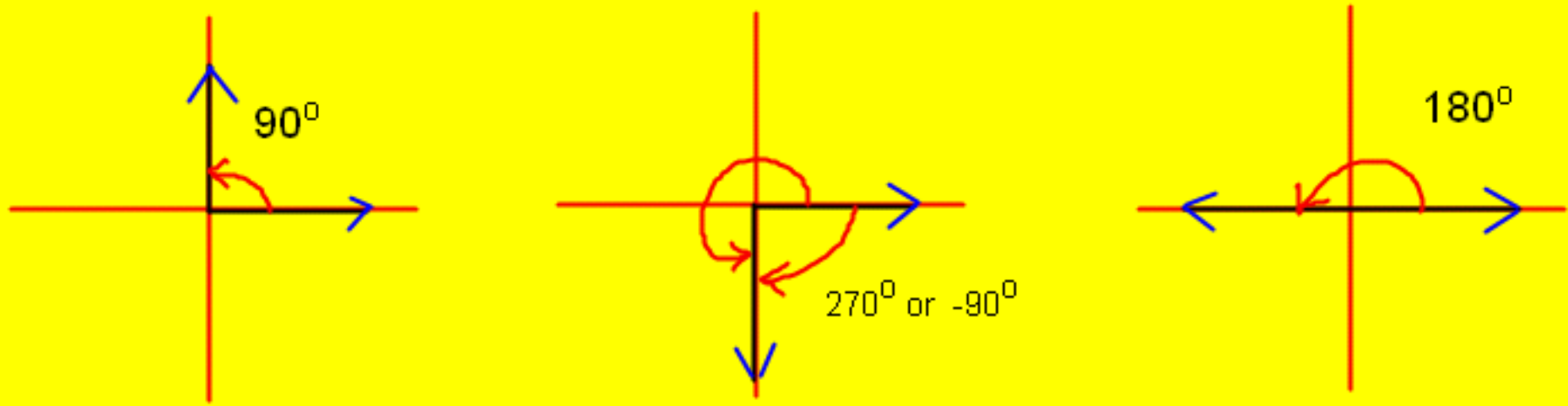
**NOW**, let's do this with BOTH calculators...look for these buttons:

TI-83 >>> angle  
APPS

TI-30X >>> ° ' "

NOTE: to get " do alpha then +

A quadrantal angle is one in which the terminal side of the angle lies on one of the axes



Two angles in standard position are called coterminal angles IF they have the same **terminal side**. (NOTE: coterminal angles are important!!!)

EX:  $0^\circ$  and  $360^\circ$      $30^\circ$  and  $750^\circ$      $45^\circ$  and  $-315^\circ$      $45^\circ$  and  $405^\circ$      $30^\circ$  and  $-330^\circ$

Can you name all angles that are coterminal with  $45^\circ$ ?

|

|

Find one positive and one negative angle that is coterminal with:

$120^\circ$

AE

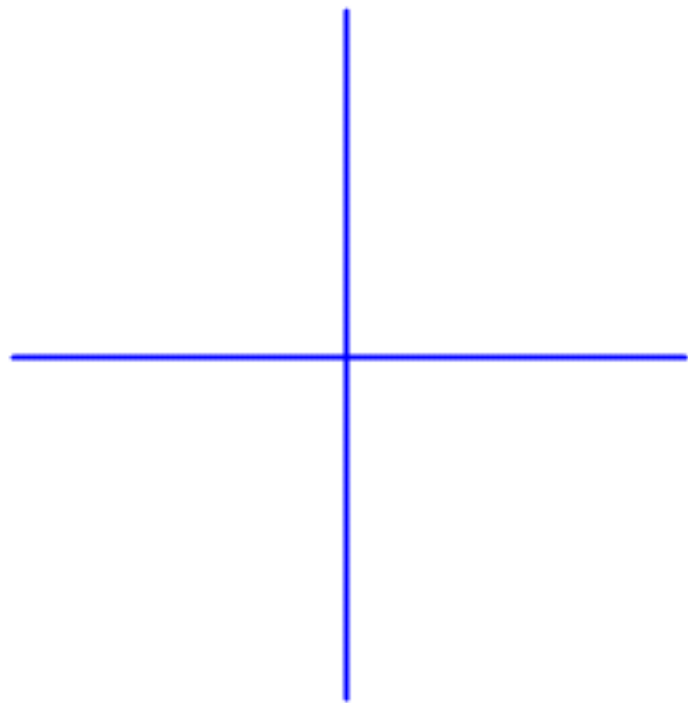
$775^\circ$

AE

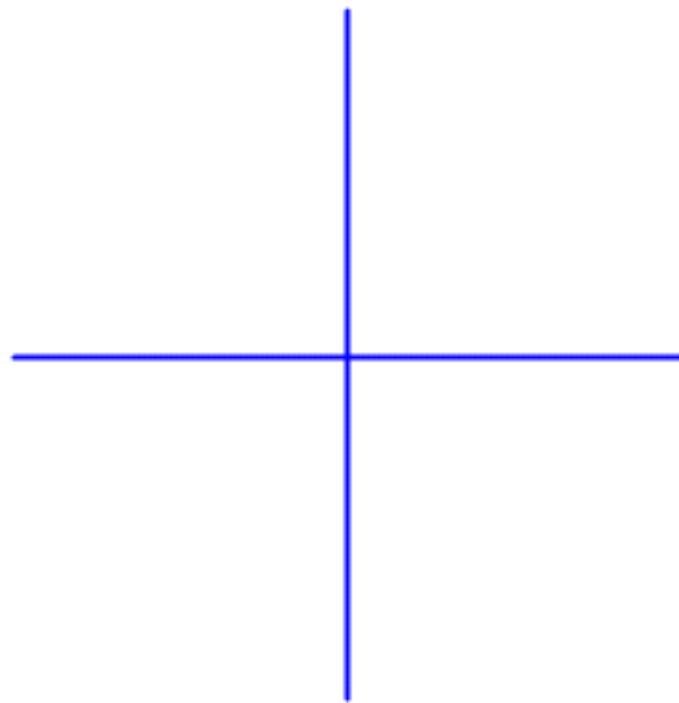
$-1297^\circ$

AE

A reference angle is an ACUTE angle formed by the terminal side of the given angle and the X-AXIS. (pg 280)



Find reference angle for  $210^\circ$



Find reference angle for  $300^\circ$

A reference angle is an ACUTE angle formed by the terminal side of the given angle and the X-AXIS. (pg 280)

