Today's Plan:

Learning Target (standard): I will describe geometric and trigonometric angles. I will convert angles from one form into another.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

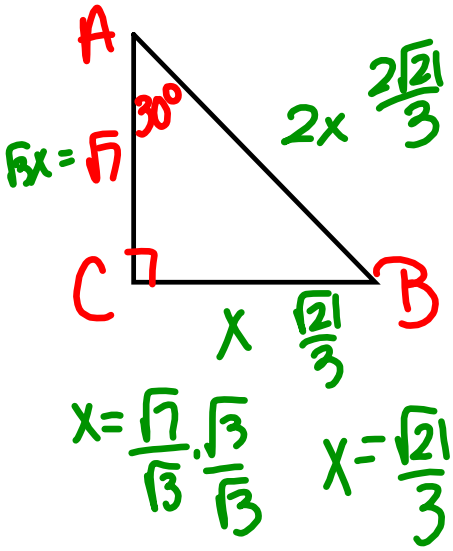
Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Find the trig values for angle A given angle C is 90°.

$\angle A = 30°$

$AC = \sqrt{7}$



$x = \frac{\sqrt{7}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$ $x = \frac{\sqrt{21}}{3}$

$\sin A = \frac{\frac{\sqrt{21}}{3}}{\frac{2\sqrt{21}}{3}} = \frac{\sqrt{21}}{3} \cdot \frac{3}{2\sqrt{21}} = \frac{1}{2}$

$\cos A = \frac{\sqrt{7}}{\frac{2\sqrt{21}}{3}} = \sqrt{7} \cdot \frac{3}{2\sqrt{21}} = \frac{3}{2\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

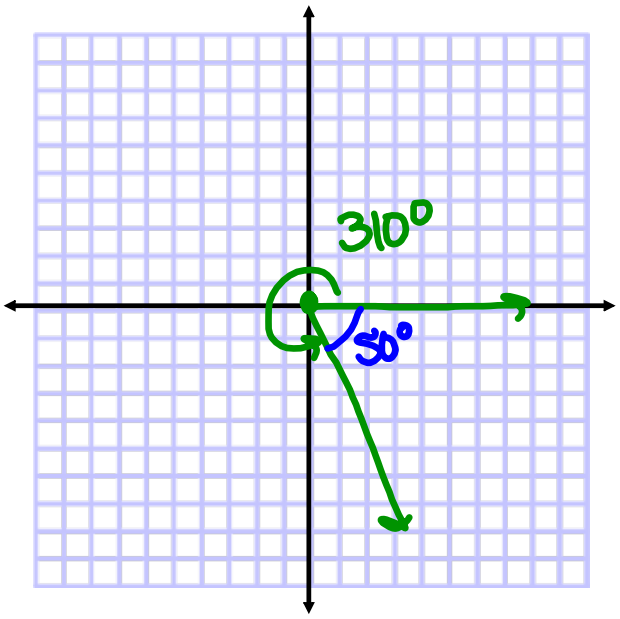
$= \frac{3\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$

$\tan A = \frac{\frac{\sqrt{21}}{3}}{\sqrt{7}}$

$= \frac{\sqrt{21}}{3} \cdot \frac{1}{\sqrt{7}} = \frac{\sqrt{3}}{3}$

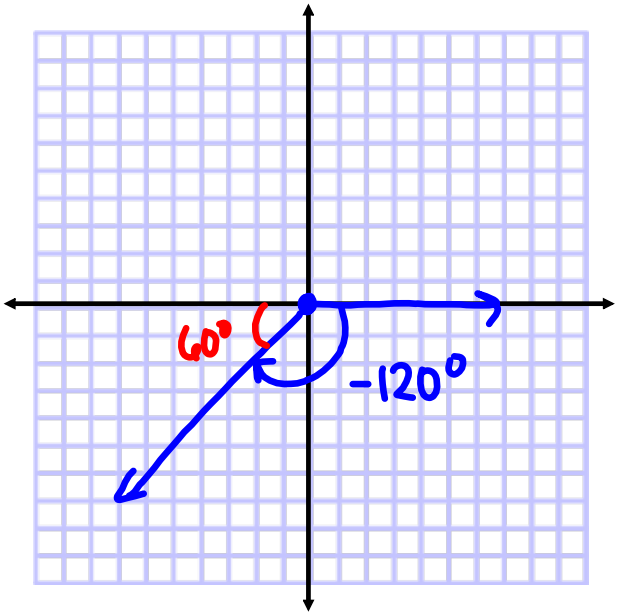
Draw the given angle.

$310°$



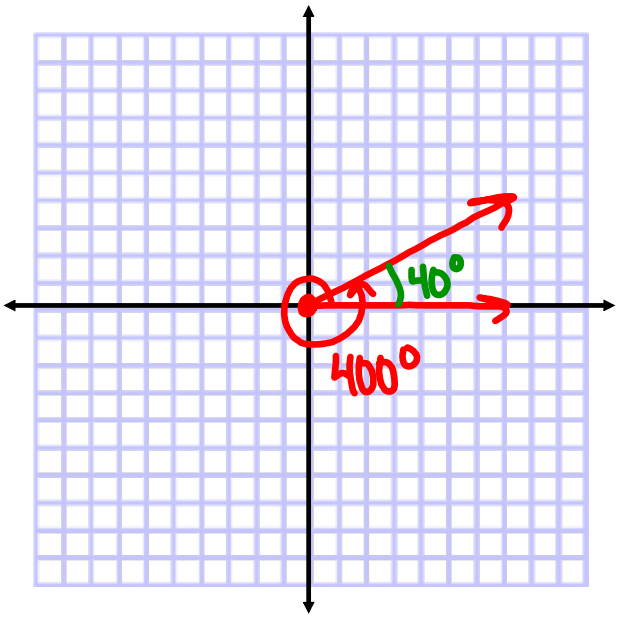
Draw the given angle.

$-120°$



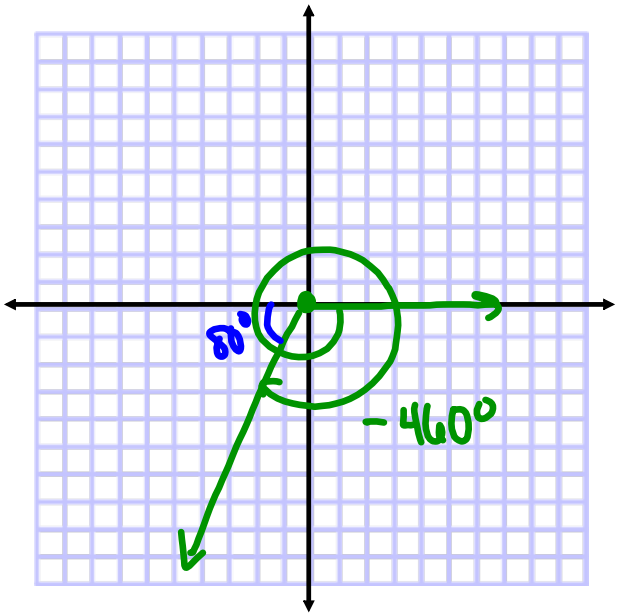
Draw the given angle.

$400°$



Draw the given angle.

$-460°$



Compare & contrast geometric and trigonometric angles.

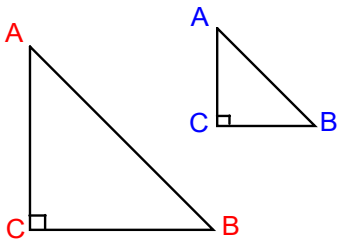
Geometric:

- measures the "distance" between the sides of a polygon or between lines
- measurements can be $0^\circ \leq x \leq 180^\circ$
- units of measure are degrees
- used to find the trig values for ALL angles

Trigonometric:

- measures rotation, direction & magnitude
- measurements can be from negative infinity to infinity
- units of measure can be degrees, degrees-minutes-seconds & radians
- always in standard position
  - on x-y coordinate plane
  - vertex at the origin
  - initial side on positive x-axis

Why are the trigonometric values for a 45° (or 30° or 60°) angle within a right triangle the same regardless of the lengths of the sides of the triangle that the angle is in?



sin A = sin A =

cos A = cos A =

tan A = tan A =

Similar triangles (AAA)

- the triangles have the same angle measures
- corresponding sides of the triangles are proportional to one another
  - the ratio of two sides within one triangle is equal to the ratio of corresponding sides in the other triangle
- the trigonometric values of an angle are the ratios of 2 sides in the triangle

$\therefore$ the trigonometric values of corresponding angles have to be equal

Convert to hours.

1 hour 15 minutes 35 seconds

$1+\frac{15}{60}+\frac{35}{3600}$

$\frac{3600+900+35}{3600} = \frac{4535}{3600} = 1.260 \text{ hrs}$

Convert to hours-minutes-seconds.

5.364 hours 5hrs 21min 50.4sec

$.364 \text{ hr}(60) = 21.84 \text{ min}$

$.84 \text{min}(60) = 50.4 \text{ sec}$

Convert from degrees-minutes-seconds to decimal degrees:

$40^\circ 10' 25'' = 40+\frac{10}{60}+\frac{25}{3600}$

$= \frac{144000+600+25}{3600} = \frac{144625}{3600}$

40.174°

$1^\circ 2' 3''$

$= 1+\frac{2}{60}+\frac{3}{3600}$

$= \frac{3600+120+3}{3600} = \frac{3723}{3600} = 1.034^\circ$

Convert from decimal degrees to degrees-minutes-seconds:

18.255° $18^\circ\ 15'\ 18''$

$.255^\circ(60) = 15.3'$

$.3'(60) = 18''$

-19.99° $-19^\circ\ 59'\ 24''$

$.99^\circ(60) = 59.4'$

$.4'(60) = 24''$

Assignment:

p.378 #1-6, 61-72

* write the problem & show work with necessary units *