

Angles, Unit Circle, and Trig Graphs – The Unit Circle and Exact Value

- **unit circle** → a circle with a _____ centered at the _____ and has equation _____

- terminal point → _____
- reference number → _____
- cosine function → _____
- sine function → _____

Refer to **TRIG CHART / UNIT CIRCLE SHEET** to label parts of the Unit Circle:

- 1.) Complete the TRIG CHART → Use the 45 – 45 – right Δ and the 30 – 60 – right Δ
For quadrant angles (0° and 90°), use your calculator

(Make sure to rationalize the denominator → EXAMPLE: $\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$)

- 2.) Label the degree measure ABOVE each pt on the Unit Circle (only use increments of 30° , 45° , 60°)

- 3.) Label the radian measure BELOW each pt on the Unit Circle (convert degree measure to radians)

- 4.) Draw diagonal lines through pairs of points that have the same reference number (angle):

a.) 30° and 210°	b.) 45° and 225°	c.) 60° and 240°
150° and 330°	135° and 315°	120° and 300°
Ref Angle = 30°	Ref Angle = 45°	Ref Angle = 60°

- 5.) Label the terminal point (x , y) of each degree/radian measure → ($x = \cos \theta$, $y = \sin \theta$)

- 6.) Also add the following to your sheet: Quadrant #'s and where sin, cos, tan are positive and negative.

Steps to Find Exact Value of an Angle: Some answers contain radicals (**NO decimal answers**)

- 1.) Find the reference angle B – Use the “Coloring Coding key” to help determine this.
 - 2.) Use Trig Chart to look up value using reference angle B.
 - 3.) Use “Signs” Diagram of Trigonometric Functions to determine is value is positive or negative
- * If finding the exact value of a quadrant angle (90° , 180° , 270° , or 360°) → use values in terminal points

Examples: Using your TC/UC Sheet, find the exact value. Remember – NO DECIMALS!!!!

1.) $\sin 135^\circ =$ _____	2.) $\cos 210^\circ =$ _____	3.) $\cos 360^\circ =$ _____	4.) $\tan - 780^\circ =$ _____
5.) $\sin 390^\circ =$ _____	6.) $\tan 270^\circ =$ _____	7.) $\tan 150^\circ =$ _____	8.) $\cos 315^\circ =$ _____
9.) $\tan\left(\frac{7\pi}{6}\right) =$ _____	10.) $\cos\left(\frac{2\pi}{3}\right) =$ _____	11.) $\sin(-3\pi) =$ _____	12.) $\tan\left(\frac{15\pi}{4}\right) =$ _____