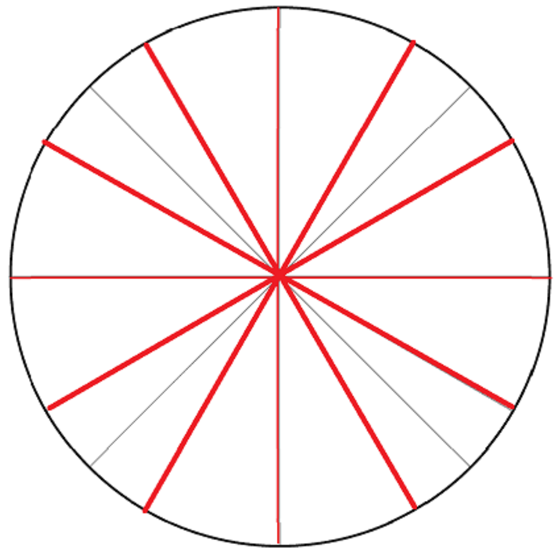
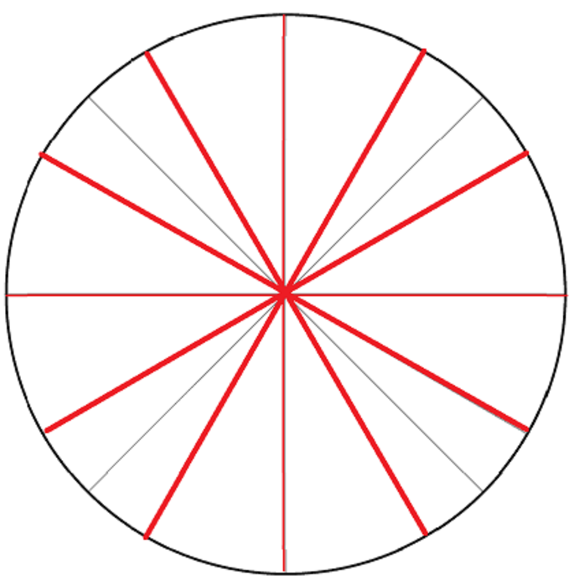
The Unit Circle

The unit circles angles are measured/labeled in both radians and degrees. Knowing how to convert from one form to the other will tremendously help you to memorize the unit circle (which you will need to do) Here is the break down:

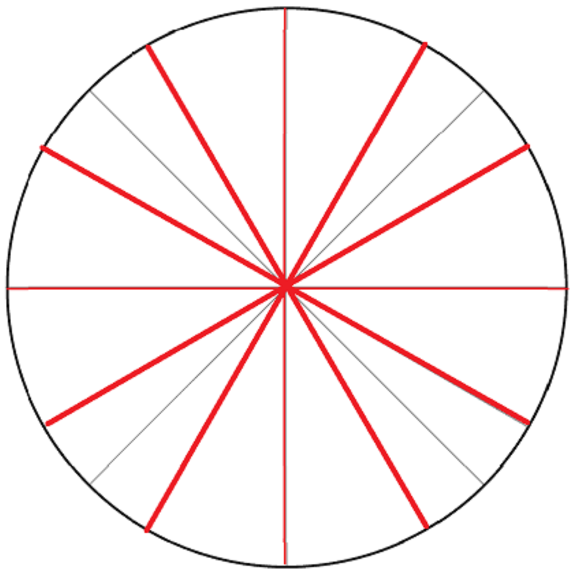
Constructing the unit circle – *radian measures:*

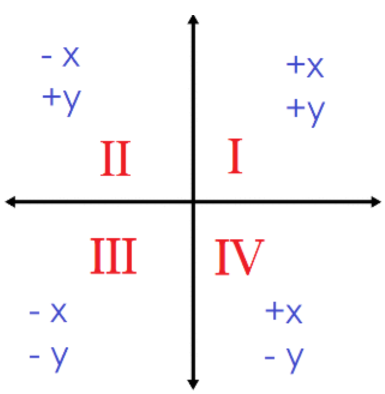


Constructing the unit circle – *degree measures:*



Constructing the unit circle – *coordinate points*





Tips to remember these coordinate points:

** all x and y values in every coordinate point is a fraction whose denominator is 2!!

** quadrant 1

- numerators of x values from 30° – 90° are $\sqrt{3}, \sqrt{2}, \sqrt{1} = 1$ (pattern!)
- numerators of x values 30° – 90° are $\sqrt{1} = 1, \sqrt{2}, \sqrt{3},$ (pattern!) (opposite of numerators of the x values)

** quadrant 2

- Pretend that you fold the unit circle in half along the y axis. The coordinate points of quadrant 1 would line up with the same coordinate points in quadrant 2, only signs will change depending on where x and y values are positive and negative

** quadrant 4

- flip the x and y values in the corresponding points (across in quadrant 2), and add negatives in when necessary

** quadrant 3

- flip the x and y values from quadrant 2 in the corresponding points (across in quadrant 1), and add negatives in when necessary.

Trig Functions

Let t be a real number and let (x, y) be the spot on the unit circle corresponding to t. Then:

$\sin(t) = y$ ("sine of t") $\cos(t) = x$ ("cosine of t") $\tan(t) = \frac{y}{x}, x \neq 0$ ("tangent of t")

$\csc(t) = \frac{1}{y}$ ("cosecant of t") $\sec(t) = \frac{1}{x}$ ("secant of t") $\cot(t) = \frac{x}{y},\ y \neq 0$ ("cotangent of t")