The terminal arm of an angle in Quadrant 1 can be successively reflected in both axes to form angles in all 4 quadrants. Each angle is in standard position. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for all 4 angles is the acute angle that the terminal arm makes with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

For example, each of the following angles in standard position have the same reference angle of 30o.

In the previous lesson, the trigonometric ratios of an angle in standard position in Quadrant 1 were related to the coordinates of a point on the terminal arm of the angle. These relationships can be extended to define the primary trigonometric ratios for any angle in standard position.



**Example 1**
The Point B(-2,-4) is on the terminal arm of an angle $θ$ in standard position.

1. Determine the primary trigonometric ratios of $θ$
2. Determine the measure of $θ $to the nearest degree.

The definitions of the trigonometric ratios can be used to determine the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the primary trigonometric ratios of angles related to the special angles \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



**Example 2**

1. State the quadrants in which $\cos(θ=\frac{1}{\sqrt{2}})$
2. Determine which values of $θ$ satisfy $\cos(θ=\frac{1}{\sqrt{2}})$ for 0o$\leq θ\leq $ 360o