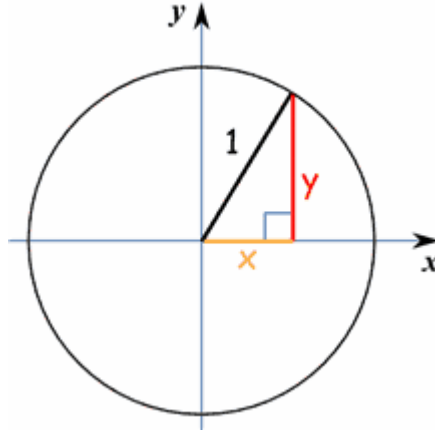


The Unit Circle and Reference Angles
Module 3, Unit 6, Lesson 4

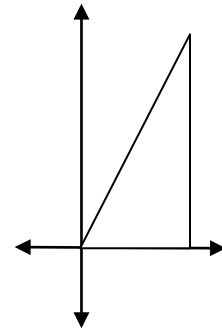
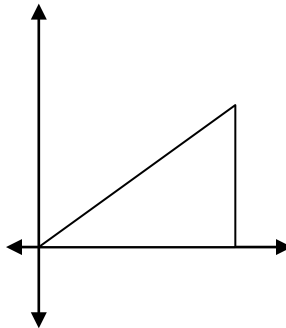
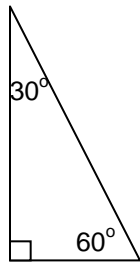
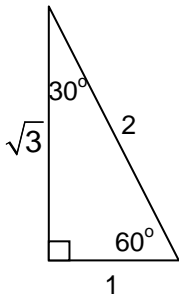
Unit Circle

A unit circle is a circle of **radius 1**.

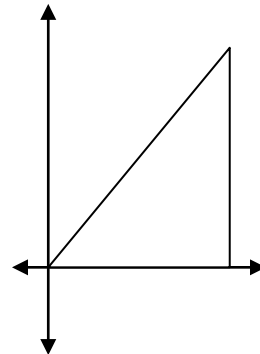
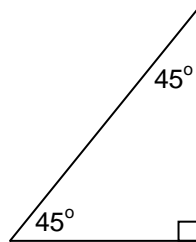
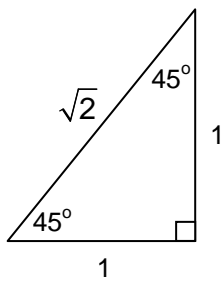


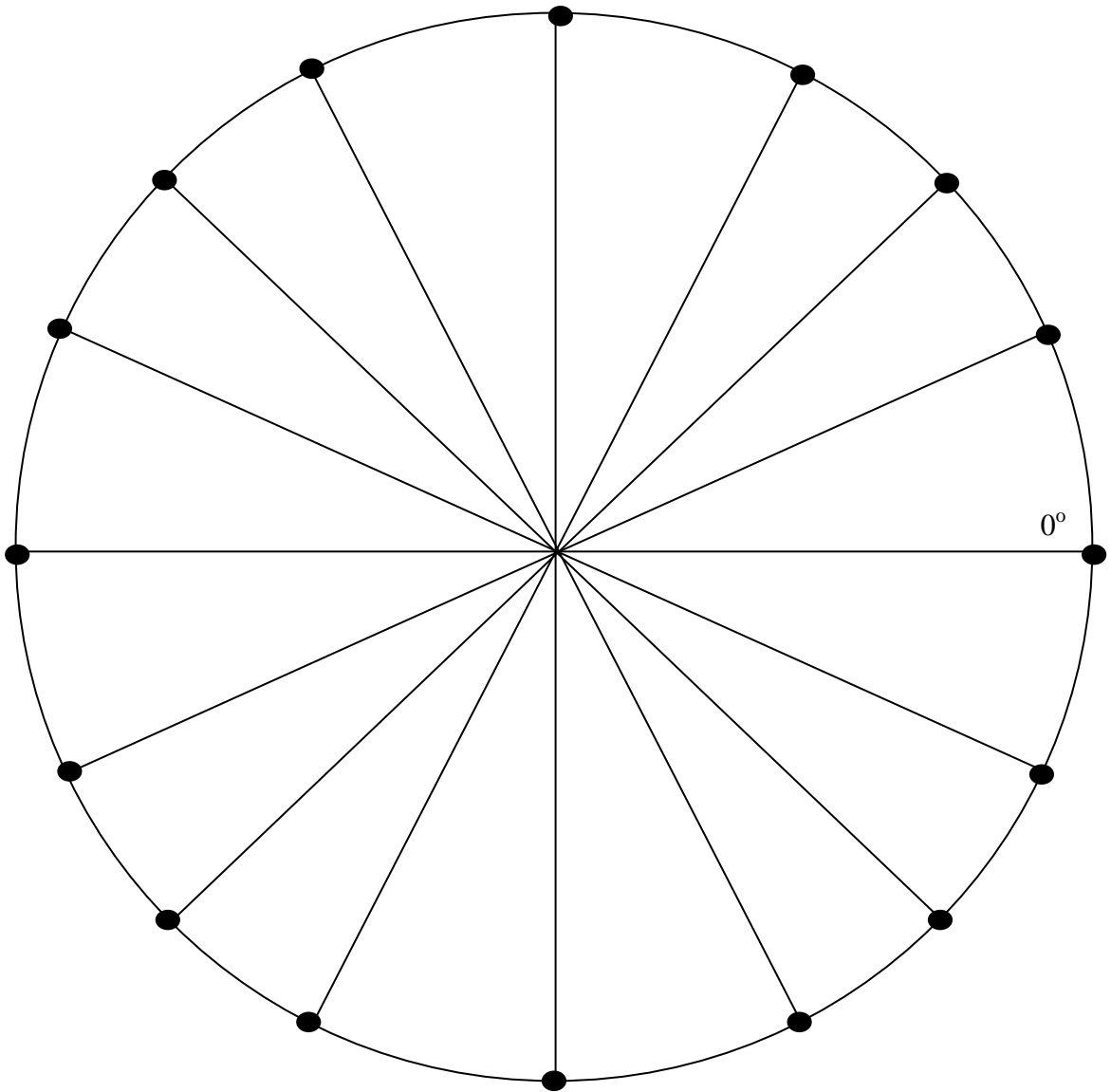
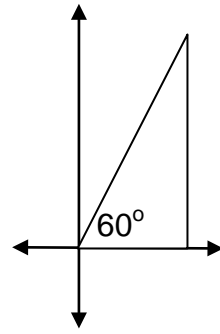
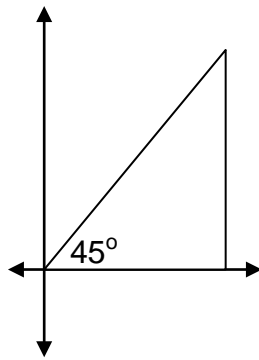
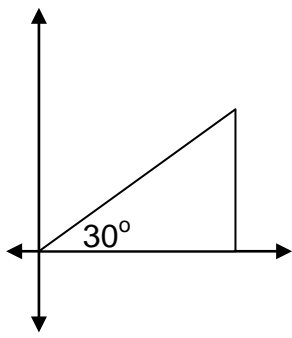
Triangles on the Unit Circle

30° – 60° – 90° Triangles



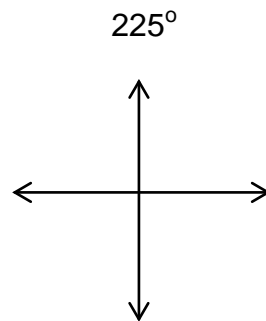
45° – 45° – 90° Triangles





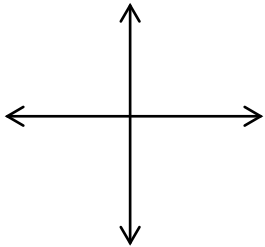
Creating Reference Triangles on the Unit Circle

1. Draw the terminal side of the angle.
2. Connect a point on the terminal side to x-axis.
 - a. Remember to either draw up or down to the x-axis.
3. Determine the reference angle and label.

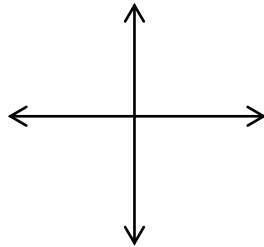


Example 1: Draw and label the reference triangle for each angle.

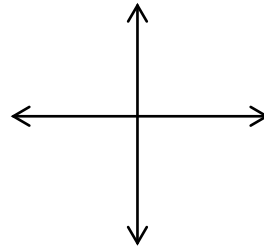
a. -315°



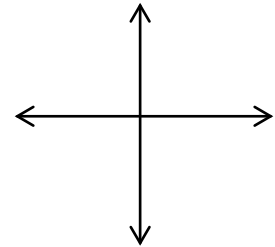
b. 210°



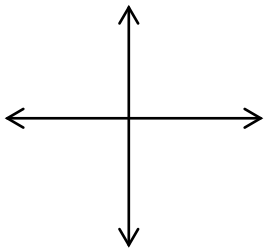
c. -45°



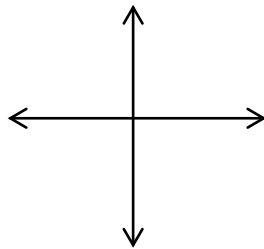
d. -135°



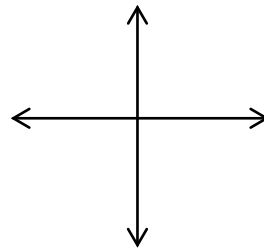
e. 120°



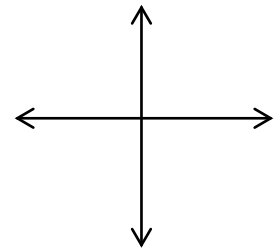
f. -240°



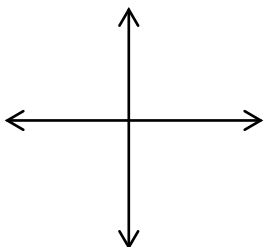
g. 300°



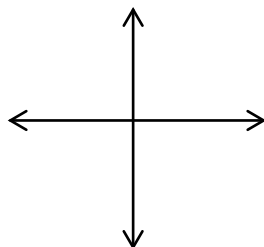
h. -150°



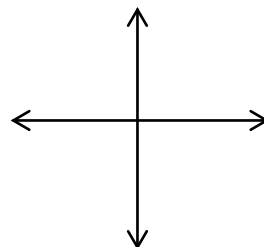
i. 600°



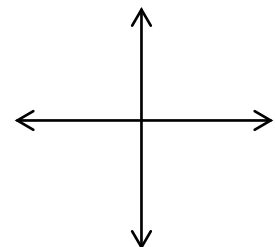
j. -1020°



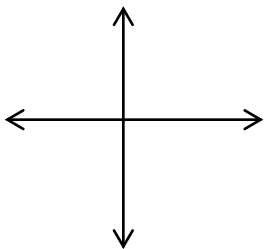
k. 930°



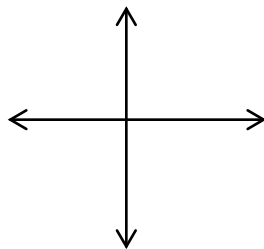
l. -855°



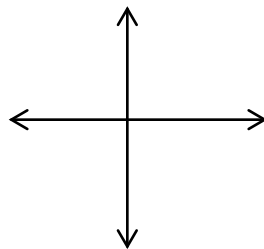
m. $\frac{5\pi}{3}$



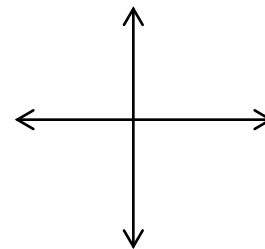
n. $-\frac{3\pi}{4}$



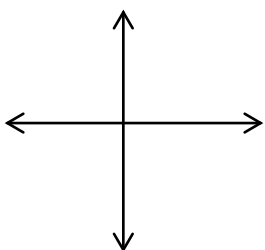
o. $\frac{7\pi}{6}$



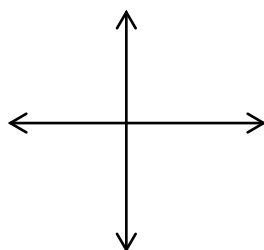
p. $-\frac{2\pi}{3}$



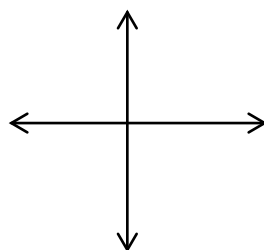
q. $\frac{11\pi}{6}$



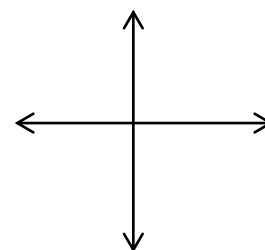
r. $\frac{3\pi}{2}$



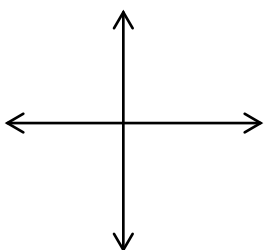
s. $\frac{7\pi}{4}$



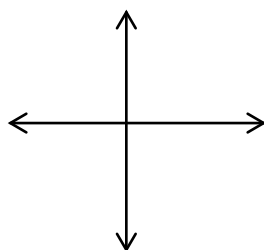
t. $-\frac{\pi}{2}$



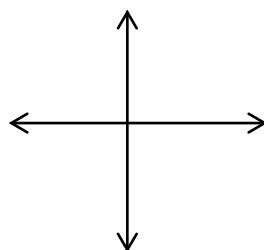
u. $\frac{8\pi}{3}$



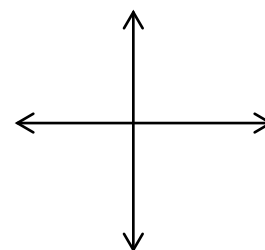
v. $\frac{15\pi}{4}$



w. $\frac{22\pi}{3}$



y. $-\frac{17\pi}{6}$



Example 2: Determine the quadrant where each angle is located without drawing the angle.

a. $\frac{3\pi}{4}$

b. $\frac{11\pi}{6}$

c. $\frac{5\pi}{6}$

d. $\frac{7\pi}{4}$

e. $-\frac{5\pi}{4}$

f. $\frac{7\pi}{6}$

g. $\frac{2\pi}{3}$

h. $-\frac{\pi}{4}$

i. $\frac{5\pi}{3}$

j. $\frac{5\pi}{4}$

k. $\frac{13\pi}{4}$

l. $-\frac{5\pi}{3}$

m. $\frac{4\pi}{3}$

n. $\frac{10\pi}{3}$

o. $-\frac{2\pi}{3}$

p. $-\frac{\pi}{6}$