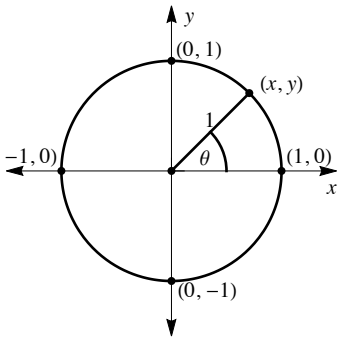
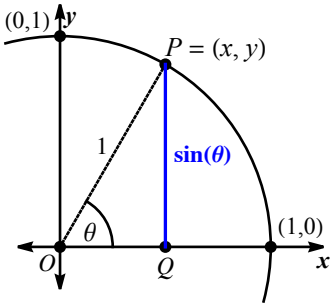
Trigonometry 8: The Definition of Sine

As we said when defining the cosine function, when began looking at points on the unit circle, we started by considering a radial line making an angle with the positive x-axis. We called the angle formed θ and we said the corresponding coordinate point on the unit circle had an x-coordinate x and a y-coordinate y, as shown in this figure:



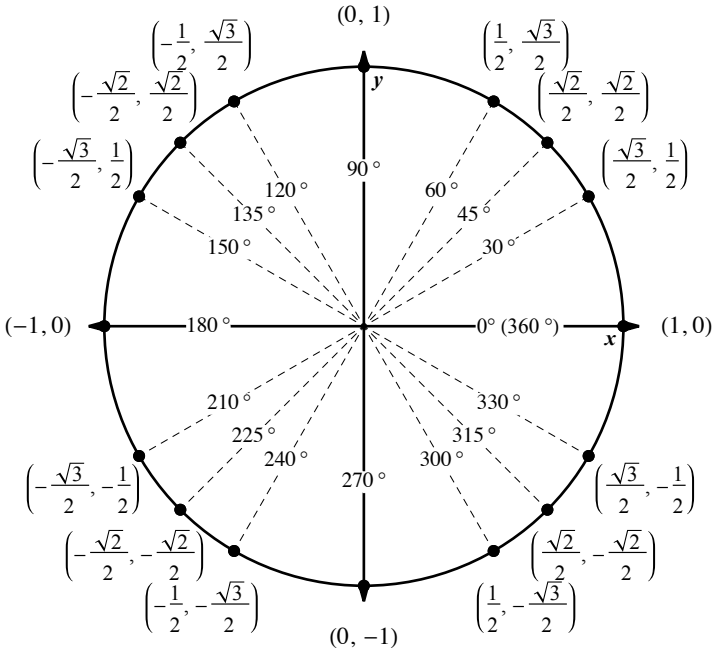
Consider again a Unit Circle with some point (in the first quadrant) with coordinate point $P = (x, y)$. As before, a radial line from this point to the origin (point O) makes an angle θ with the positive x-axis, as shown in the figure below:



Similarly, since it is very cumbersome for mathematicians to have to say "the corresponding y-coordinate for the point on the unit circle when a radial line makes an angle of θ degrees with the x-axis", they instead use shorthand notation:

$$\sin(\theta) = y$$

or, in words, the **sine** of θ is y. Again, sometimes the parentheses are omitted and we use: $\sin\theta = y$.



θ	sin θ	θ	sin θ
0°		180°	
30°		210°	
45°		225°	
60°		240°	
90°		270°	
120°		300°	
135°		315°	
150°		330°	