

Complete this table:

$$(\cos \theta, \sin \theta) \quad \tan \theta = \frac{\sin \theta}{\cos \theta}$$

Angle (degrees) <sup>o</sup>	sin $\theta$	cos $\theta$	tan $\theta$	Angle (radians)
0° (1, 0)	0	1	$\frac{0}{1} = 0$	0
30° ( $\frac{\sqrt{3}}{2}, \frac{1}{2}$ )	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$	$\frac{\pi}{6}$
45° ( $\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}$ )	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{1} = 1$	$\frac{\pi}{4}$
60° ( $\frac{1}{2}, \frac{\sqrt{3}}{2}$ )	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{1} = \sqrt{3}$	$\frac{\pi}{3}$
90° (0, 1)	1	0	$\frac{1}{0} = \text{undef.}$	$\frac{\pi}{2}$
120° ( $-\frac{1}{2}, \frac{\sqrt{3}}{2}$ )	$\frac{\sqrt{3}}{2}$	$-\frac{1}{2}$	$-\sqrt{3}$	$\frac{2\pi}{3}$
135° ( $-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}$ )	$\frac{1}{\sqrt{2}}$	$-\frac{1}{\sqrt{2}}$	$-\frac{1}{1} = -1$	$\frac{3\pi}{4}$
150° ( $-\frac{\sqrt{3}}{2}, \frac{1}{2}$ )	$\frac{1}{2}$	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$	$\frac{5\pi}{6}$
180° (-1, 0)	0	-1	$\frac{0}{-1} = 0$	$\pi$
210° ( $-\frac{\sqrt{3}}{2}, -\frac{1}{2}$ )	$-\frac{1}{2}$	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$	$\frac{7\pi}{6}$
225° ( $-\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}$ )	$-\frac{1}{\sqrt{2}}$	$-\frac{1}{\sqrt{2}}$	$-\frac{1}{-1} = 1$	$\frac{5\pi}{4}$
240° ( $-\frac{1}{2}, -\frac{\sqrt{3}}{2}$ )	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{2}$	$-\frac{\sqrt{3}}{-1} = \sqrt{3}$	$\frac{4\pi}{3}$
270° (0, -1)	-1	0	$\frac{-1}{0} = \text{undef.}$	$\frac{3\pi}{2}$
300° ( $\frac{1}{2}, -\frac{\sqrt{3}}{2}$ )	$-\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$-\frac{\sqrt{3}}{1} = -\sqrt{3}$	$\frac{5\pi}{3}$
315° ( $\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}$ )	$-\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	$-\frac{1}{1} = -1$	$\frac{7\pi}{4}$
330° ( $\frac{\sqrt{3}}{2}, -\frac{1}{2}$ )	$-\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$-\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$	$\frac{11\pi}{6}$
360° (1, 0)	0	1	$\frac{0}{1} = 0$	$2\pi$

Use the table and the Unit Circle to help answer these questions about the sine and the cosine:

1. The maximum value of the  $\sin \theta$  is: 1. It occurs at what angle?  $90^\circ$ .
2. The minimum value of the  $\sin \theta$  is: 0. It occurs at what angle?  $0^\circ, 180^\circ$ .
3. As the angle  $\theta$  goes from  $0^\circ$  to  $90^\circ$  the value of the  $\sin \theta$  goes from 0 to 1.
4. As the angle  $\theta$  goes from  $90^\circ$  to  $180^\circ$  the value of the  $\sin \theta$  goes from 1 to 0.
5. As the angle  $\theta$  goes from  $180^\circ$  to  $270^\circ$  the value of the  $\sin \theta$  goes from 0 to -1.
6. As the angle  $\theta$  goes from  $270^\circ$  to  $360^\circ$  the value of the  $\sin \theta$  goes from -1 to 0.
7. The maximum value of the  $\cos \theta$  is: 1. It occurs at what angle?  $0^\circ$ .
8. The minimum value of the  $\cos \theta$  is: 0. It occurs at what angle?  $90^\circ, 270^\circ$ .
9. As the angle  $\theta$  goes from  $0^\circ$  to  $90^\circ$  the value of the  $\cos \theta$  goes from 1 to 0.
10. As the angle  $\theta$  goes from  $90^\circ$  to  $180^\circ$  the value of the  $\cos \theta$  goes from 0 to -1.
11. As the angle  $\theta$  goes from  $180^\circ$  to  $270^\circ$  the value of the  $\cos \theta$  goes from -1 to 0.
12. As the angle  $\theta$  goes from  $270^\circ$  to  $360^\circ$  the value of the  $\cos \theta$  goes from 0 to 1.

$$\frac{\sqrt{2}}{2} = .7071$$

$$\frac{\sqrt{3}}{2} = .8660$$