

**(A) Lesson Objectives**

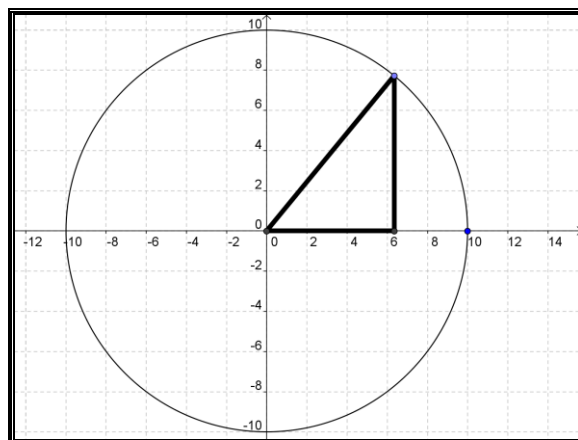
- Review the 2 special triangles and the exact trig ratios of special angles  $30^\circ$ ,  $45^\circ$ , &  $60^\circ$ .
- Introduce the “Cartesian” versions of the primary trig ratios  $\rightarrow \sin(\theta) = \frac{y}{r}$ ,  $\cos(\theta) = \frac{x}{r}$ ,  $\tan(\theta) = \frac{y}{x}$
- Determine the primary trig ratios of angles measuring  $90n^\circ$
- Determine the trig ratios of  $2^{\text{nd}}$ ,  $3^{\text{rd}}$ ,  $4^{\text{th}}$  quadrant angles that arise from our special triangles/angles
- Sketch the sinusoidal functions using the accumulated data from objectives (a) – (d)
- Introduce new terminology associated with angles in standard position

**(B) Review of Special Triangles & Angles**

<p><math>45^\circ - 45^\circ - 90^\circ</math> Triangle</p>	<p><math>30^\circ - 60^\circ - 90^\circ</math> triangle</p>	
<p><math>\sin(45^\circ) =</math> <math>\cos(45^\circ) =</math> <math>\tan(45^\circ) =</math></p>	<p><math>\sin(30^\circ) =</math> <math>\cos(30^\circ) =</math> <math>\tan(30^\circ) =</math></p>	<p><math>\sin(60^\circ) =</math> <math>\cos(60^\circ) =</math> <math>\tan(60^\circ) =</math></p>

**(C) “Cartesian Version” of Trig Ratios**

- We will now place our triangles/angles into the Cartesian plane and introduce the idea of “angles in standard position”





**(F) Second Quadrant Angles**

- a. New Terms:
  - i. Principle Angle →
  - ii. Related Acute Angle →
  
- b. Draw an angle of  $120^\circ$ .
- c. Draw the “special triangle” that corresponds to this angle of rotation.
- d. Determine the values of the primary trig ratios of a  $120^\circ$  angle.
  
- e. Draw an angle of  $135^\circ$ .
- f. Draw the “special triangle” that corresponds to this angle of rotation.
- g. Determine the values of the primary trig ratios of a  $135^\circ$  angle.
  
- h. Draw an angle of  $150^\circ$ .
- i. Draw the “special triangle” that corresponds to this angle of rotation.
- j. Determine the values of the primary trig ratios of a  $150^\circ$  angle.

**(G)Third Quadrant Angles**

- a. Draw an angle of  $210^\circ$ .
- b. Draw the “special triangle” that corresponds to this angle of rotation.
- c. Determine the values of the primary trig ratios of a  $210^\circ$  angle.
  
- d. Draw an angle of  $225^\circ$ .
- e. Draw the “special triangle” that corresponds to this angle of rotation.
- f. Determine the values of the primary trig ratios of a  $225^\circ$  angle.
  
- g. Draw an angle of  $240^\circ$ .
- h. Draw the “special triangle” that corresponds to this angle of rotation.
- i. Determine the values of the primary trig ratios of a  $240^\circ$  angle.

**(H)Fourth Quadrant Angles**

- a. Draw an angle of  $300^\circ$ .
- b. Draw the “special triangle” that corresponds to this angle of rotation.
- c. Determine the values of the primary trig ratios of a  $300^\circ$  angle.
  
- d. Draw an angle of  $315^\circ$ .
- e. Draw the “special triangle” that corresponds to this angle of rotation.
- f. Determine the values of the primary trig ratios of a  $315^\circ$  angle.
  
- g. Draw an angle of  $330^\circ$ .
- h. Draw the “special triangle” that corresponds to this angle of rotation.
- i. Determine the values of the primary trig ratios of a  $330^\circ$  angle.

**(I) Graphs of Sinusoidal Functions**

- a. Summary Table
- b. Unit Circle Diagram
- c. Graphs of  $y = \sin(x)$ ,  $y = \cos(x)$ ,  $y = \tan(x)$  functions

	0°	30°	45°	60°	90°	120°	135°	150°	180°
sin(x)									
cos(x)									
tan(x)									

	180°	210°	225°	240°	270°	300°	315°	330°	360°
sin(x)									
cos(x)									
tan(x)									

