

## Core Content

<b>Cluster Title: Model periodic phenomena with trigonometric functions.</b>
<b>Standard F.TF.5:</b> Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.
<b>Concepts and Skills to Master</b>
<ul style="list-style-type: none"> <li>Graph trigonometric parent functions.</li> <li>Identify the amplitude, frequency, period, and midline given either an equation or a graph of a trigonometric function.</li> <li>Use trigonometric functions to model real-world problems.</li> </ul>

## Supports for Teachers

<b>Critical Background Knowledge</b>	
<ul style="list-style-type: none"> <li>Transformations of a parent graph (I and II.F.BF.3)</li> <li>Knowledge of unit circle trigonometry (III. F.TF.2)</li> </ul>	
<b>Academic Vocabulary</b>	
periodic, amplitude, midline, frequency, period, phase shift	
<b>Suggested Instructional Strategies</b>	<b>Resources</b>
<ul style="list-style-type: none"> <li>Explore relationship between frequency and period.</li> <li>Explore transformation of trigonometric functions using graphs.</li> </ul>	
<b>Sample Formative Assessment Tasks</b>	
<p><b>Skill-Based Task:</b> The Ferris wheel at Lagoon has a diameter of 21.8 m rotating on a platform 3m above the ground. If it completes one revolution in 40 seconds, sketch a graph of height versus time, extending the graph for more than one revolution.</p>	<p><b>Problem Task:</b> On a summer day in Salt Lake City, Utah the high temperature was <math>92^{\circ}</math> F with an overnight low of <math>64^{\circ}</math> F. Find a sinusoidal function to model the daily temperature for this particular 24 hours. Sketch the graph. Approximate what time(s) of the day the temperature is <math>72^{\circ}</math>. What in the graph would you change as the year goes by?</p>