

Name: \_\_\_\_\_

Date: \_\_\_\_\_

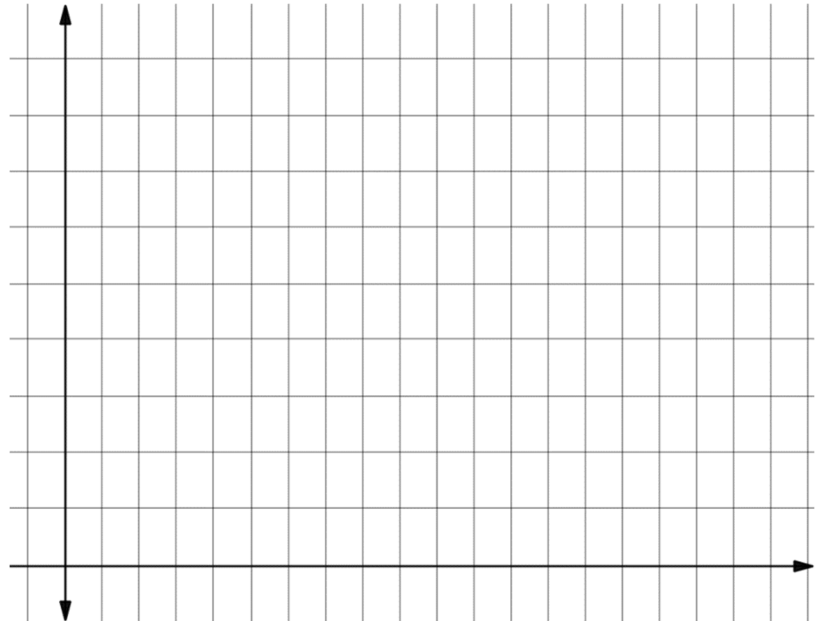
**Learning Goal 5.1**

Graphing primary trigonometric functions, including transformations and characteristics.

**More Questions**

1. A tack is stuck in the top of a wheel with a diameter of 65 cm. When the wheel is moving slowly it rotates 12 times per minute.

- Sketch a graph of showing the path of the tack for 15 sec.
- Write an equation to model the path of the tack.
- State the domain and range of the function.
- At what time did the tack reach a height of 24 cm in its first revolution? (round to nearest hundredth of a second.)
- How high was the tack 12 seconds after the wheel began to move?



2. The depth of the water in a harbor can be modeled by the function

$$h(t) = 3 \sin \frac{\pi(t-2)}{6.4} + 7$$

where  $h$  is the ocean depth in meters and  $t$  is the time of day.

- How deep is the water at 8:17 pm?
- At what time(s) does the depth reach 9 m in a 24 hour period?