Name: _____   Date: _____

Learning Goal 5.1	Graphing primary trigonometric functions, including transformations and characteristics

More Questions

1. At a seaport, the water has a maximum depth of 15 m at $7{:}00$ a.m. The minimum depth of 5 m occurs 6.2 hours later. Assume the relation between the depth of the water and time is a sinusoidal function.

   a. Graph two cycles of the tide cycle.
   b. Write an equation that expresses tide height as a function of the elapsed time, in the form
      $$h(t) = a\sin b(t - c) + d$$
      or
      $$h(t) = a\cos b(t - c) + d$$
   c. What is the period of the function?
   d. Estimate the depth at $11{:}00$ a.m.
   e. Estimate one of the times when the water is 11 m deep.
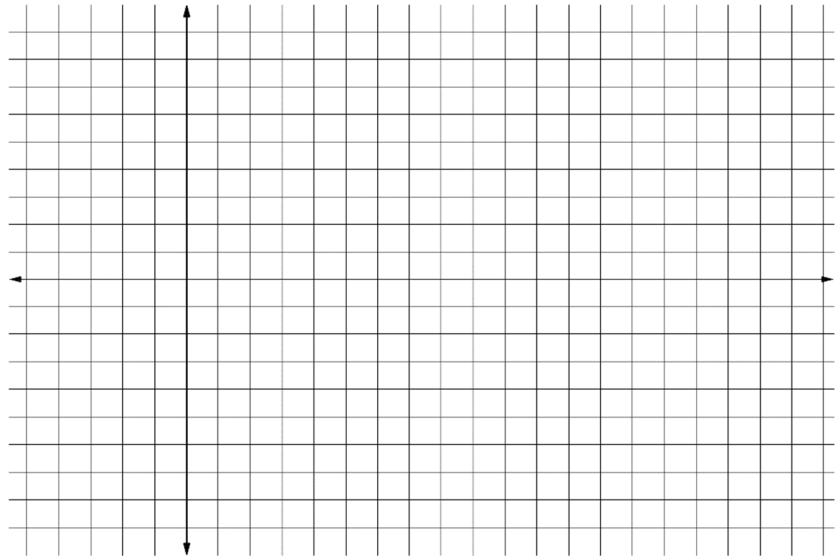
2. The level of a certain hormone in the blood is cyclical over a period of 60 days. The maximum quantity is $600\ \mu L$ and the minimum is $280\ \mu L$. It can be modelled by the equation
   $$q = a\cos bt + c.$$
   a. Sketch the graph to model this situation and hence find the values of a, b and c.
   b. When the hormone level is below $350\ \mu L$ it can be a critical time for a genetically male person with a certain condition. For how long each cycle can a person with this condition be in a critical state?