Task

Student Text Page
478

Suggested Timing
60–75 min

Tools
- grid paper
- graphing calculator
- computer
- *The Geometer's Sketchpad®*
- *Fathom™*

Related Resources
- G–1 Grid Paper
- T–2 *The Geometer's Sketchpad®* 4
- T–3 *Fathom™*
- BLM 8–11 Task: Modelling a Damped Pendulum Rubric

Ongoing Assessment
- Use **BLM 8–11 Task: Modelling a Damped Pendulum Rubric** to assess student achievement.

Modelling a Damped Pendulum

Teaching Suggestions

This performance task is designed to assess the specific expectations covered in Chapter 8.

The following Math Process Expectations can be assessed.

- Problem Solving
- Reasoning and Proving
- Reflecting
- Selecting Tools and Computational Strategies
- Connecting
- Representing
- Communicating

Level 3 Sample Response

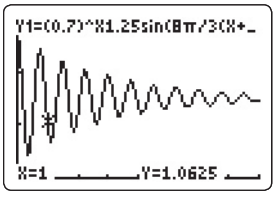
a) This graph represents periodic motion like other sinusoidal graphs, however it decays as time moves on. The top and the bottom of the curve looks like it decays following an exponential function if you just look at the series of relative maximum and relative minimum points.

b) The amplitude looks like 1.25 at the beginning of the graph and the period looks like $\frac{3}{4}$ units.

$$y = 1.25\sin\left(\frac{8\pi}{3}\left(x + \frac{3}{16}\right)\right) + 1.5,\ x \geq 0$$

c) $y = (0.7)^x,\ x \geq 0$

d) $y = (0.7)^x\ 1.25\sin\left(\frac{8\pi}{3}\left(x + \frac{3}{16}\right)\right) + 1.5,\ x \geq 0$



The match is fairly close to the one shown.

e) The periodic motion is damped by the effect of friction; it slows down over time. Other real-world examples might be the motion of a swing or a bouncing ball.