**40.** ⬇ **TAKS REASONING** The amount of time t (in seconds) it takes a simple pendulum to complete one full swing is called the period of the pendulum and is given by

$t = 2\pi\sqrt{\dfrac{\ell}{32}}$ where ℓ is the length of the pendulum (in feet).

  a. Apply A visitor at a museum notices that a pendulum on display has a period of about 11 seconds. About how long is the pendulum? Use 3.14 for π and round your answer to the nearest foot.

  b. Explain Does increasing the length of a pendulum increase or decrease its period? *Explain.*
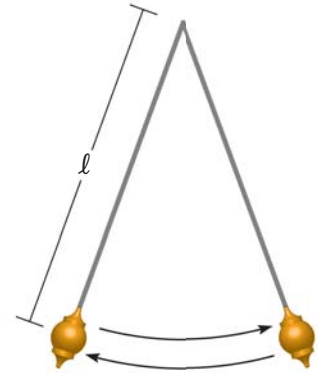
41. CHALLENGE The frequency f (in cycles per second) of a string of an

electric guitar is given by the equation $f = \dfrac{1}{2\ell}\sqrt{\dfrac{T}{m}}$ where ℓ is the length of

the string (in meters), T is the string's tension (in newtons), and m is the string's mass per unit length (in kilograms per meter). The high E string of a particular electric guitar is 0.64 meter long with a mass per unit length of 0.000401 kilogram per meter. How much tension is required to produce a frequency of about 330 cycles per second? Would you need more or less tension if you want to create the same frequency on a string with greater mass per unit length? *Explain.*
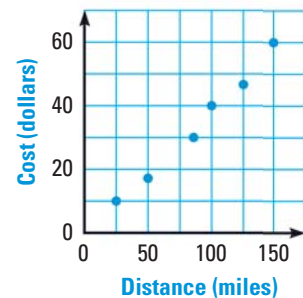

⬇ MIXED REVIEW FOR TAKS

42. ⬇ **TAKS PRACTICE** The scatter plot represents the cost of several bus trips as a function of the distance, in miles, traveled during each trip. Which additional point would be most surprising given the existing data? *TAKS Obj. 2*

  A (40, 17)   **B** (70, 28)

  C (95, 48)   **D** (125, 50)

QUIZ *for Lessons 11.1–11.3*

1. Graph the function $y = \sqrt{x - 3}$ and identify its domain and range. Compare the graph with the graph of $y = \sqrt{x}$. *(p. 710)*

Simplify the expression. *(p. 719)*

2. $\sqrt{150}$

3. $\sqrt{2c^2} \cdot \sqrt{8c}$

4. $(7 + \sqrt{5})(2 - \sqrt{5})$

5. $\dfrac{14}{\sqrt{2}}$

6. $\sqrt{\dfrac{98}{x^6}}$

7. $\sqrt{\dfrac{80x^3}{5y}}$

Solve the equation. Check for extraneous solutions. *(p. 729)*

8. $\sqrt{x} - 15 = 0$

9. $\sqrt{4x - 7} = \sqrt{2x + 19}$

10. $\sqrt{6x - 5} = x$