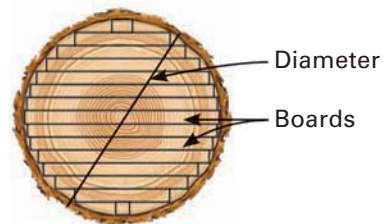61. MULTI-STEP PROBLEM The Doyle log rule is a formula used to estimate the amount of lumber that can be sawn from logs of various sizes. The amount of lumber V (in board feet) is given by $V = \dfrac{L(D-4)^2}{16}$ where L is the length (in feet) of a log and D is the small-end diameter (in inches) of the log.

Diameter
Boards

   a. Solve the formula for D.

   b. Use the rewritten formula to find the diameters, to the nearest tenth of a foot, of logs that will yield 50 board feet and have the following lengths: 16 feet, 18 feet, 20 feet, and 22 feet.

62. ◆ MULTIPLE REPRESENTATIONS A ride at an amusement park lifts seated riders 250 feet above the ground. Then the riders are dropped. They experience free fall until the brakes are activated at 105 feet above the ground.

   a. Writing an Equation Use the vertical motion model to write an equation for the height h (in feet) of the riders as a function of the time t (in seconds) into the free fall.

   b. Making a Table Make a table that shows the height of the riders after 0, 1, 2, 3, and 4 seconds. Use the table to estimate the amount of time the riders experience free fall.

   c. Solving an Equation Use the equation to find the amount of time, to the nearest tenth of a second, that the riders experience free fall.

63. CHALLENGE The height h (in feet) of a dropped object on any planet can be modeled by $h = -\dfrac{g}{2}t^2 + s$ where g is the acceleration (in feet per second per second) due to the planet's gravity, t is the time (in seconds) after the object is dropped, and s is the initial height (in feet) of the object. Suppose the same object is dropped from the same height on Earth and Mars. Given that g is 32 feet per second per second on Earth and 12 feet per second per second on Mars, on which planet will the object hit the ground first? *Explain*.

TAKS **PRACTICE** at classzone.com

MIXED REVIEW FOR TAKS

64. ⬥ TAKS PRACTICE Which equation describes a line that has a slope of -9 and a y-intercept of 11? *TAKS Obj. 3*

   (A) $y = -9(x+11)$ **(B)** $y = -9x + 11$

   (C) $y = 11x - 9$ **(D)** $y = 11(x-9)$

65. ⬥ TAKS PRACTICE Two houses are each built on a square lot. The first lot has a perimeter that is 150% of the perimeter of the second lot. How much greater is the area of the first lot than the area of the second lot? *TAKS Obj. 8*

   (F) 36.5% **(G)** 75% **(H)** 150% **(J)** 225%