68. CYLINDRICAL VASE A vase in the shape of a cylinder has a height of 6 inches and a volume of 24π cubic inches. What is the radius of the vase?
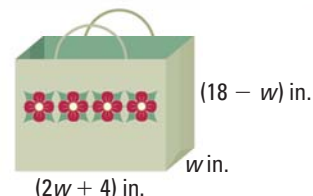
TEXAS @HomeTutor for problem solving help at classzone.com

69. CARPENTRY You are building a birdhouse that will have a volume of 128 cubic inches. The birdhouse will have the dimensions shown.

  a. Write a polynomial that represents the volume of the birdhouse.

  b. What are the dimensions of the birdhouse?

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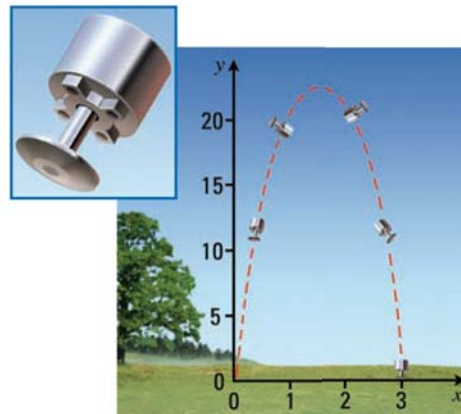
$(w + 4)$ in.

w in. 4 in.

70. BAG SIZE A gift bag is shaped like a rectangular prism and has a volume of 1152 cubic inches. The dimensions of the gift bag are shown. The height is greater than the width. What are the dimensions of the gift bag?

$(18 - w)$ in.

w in.

$(2w + 4)$ in.

71. ➤ **TAKS REASONING** A pallino is the small target ball that is tossed in the air at the beginning of a game of bocce. The height h (in meters) of the pallino after you throw it can be modeled by $h = -4.9t^2 + 3.9t + 1$ where t is the time (in seconds) since you released it.

  a. Find the zeros of the function.

  b. Do the zeros of the function have any meaning in this situation? *Explain* your reasoning.

72. JUMPING ROBOT The path of a jumping robot can be modeled by the graph of the equation $y = -10x^2 + 30x$ where x and y are both measured in feet. On a coordinate plane, the ground is represented by the x-axis, and the robot's starting position is the origin.

  a. The robot's maximum height is 22.5 feet. What is the robot's horizontal distance from its starting point when its height is 22.5 feet?

  b. How far has the robot traveled horizontally when it lands on the ground? *Explain* your answer.

73. ➤ **TAKS REASONING** The width of a box is 4 inches more than the height h. The length is the difference of 9 inches and the height.

  a. Write a polynomial that represents the volume of the box.

  b. The volume of the box is 180 cubic inches. What are all the possible dimensions of the box?

  c. Which dimensions result in a box with the smallest possible surface area? *Explain* your reasoning.

○ = **WORKED-OUT SOLUTIONS**
on p. WS1

➤ = **TAKS PRACTICE AND REASONING**