

Factoring Word Problems

(2)

1. 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?

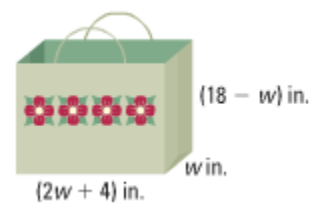
2. You are building a bird house that will have a volume of 128 cubic inches. The bird house will have the dimensions shown.

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



b) What are the dimensions of the birdhouse?

3. 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?



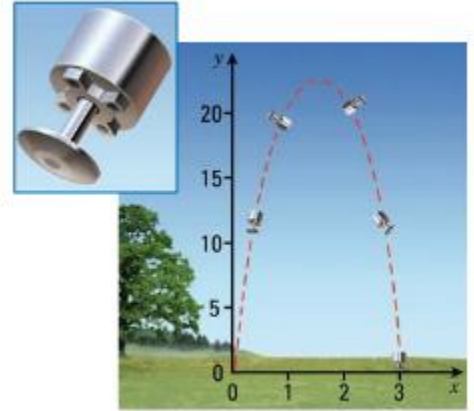
4. A pallino is the small target ball that is tossed in the air at the beginning of a game of bocce. The height, h , (in meters) of the pallino after you throw it can be modeled by the equation $h = -4.9t^2 + 3.9t + 1$ where t is the time (in seconds) since you released it.

a) Find the zeros of the function.

b) Do the zeros of the function have any meaning in this situation? Explain.

5. 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 it is 22.5 feet high?



b) How far has the robot traveled horizontally when it lands on the ground?

6. A grasshopper jumps straight up from the ground with an initial vertical velocity of 8 feet per second.

a) Write an equation that gives the height (in feet) of the grasshopper as a function of time (in seconds) since it leaves the ground.

b) After how many seconds is the grasshopper 1 foot off the ground?

7. A ball is thrown up into the air from a height of 5 feet with an initial vertical velocity of 56 feet per second. How many times does the ball reach a height of 54 feet? Why?