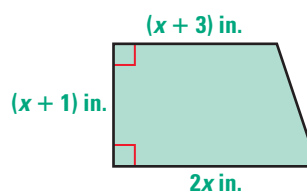


1. **MULTI-STEP PROBLEM** Different masses (in kilograms) are hung from a spring. The distances (in centimeters) that the spring stretches are shown in the table.

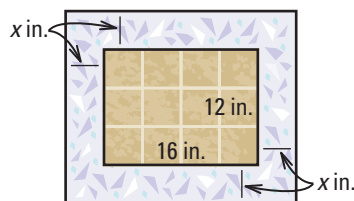
Mass (kilograms)	Distance (centimeters)
1	2.6
2	5.2
3	7.8
4	10.4
5	13.0

- a. Tell whether the data can be modeled by a *linear function*, an *exponential function*, or a *quadratic function*.
- b. Write an equation for the function.
2. **MULTI-STEP PROBLEM** In slow-pitch softball, the ball is pitched in an underhand motion. A batter in a softball game is pitched a ball that has an initial height of 2 feet above the ground and an initial vertical velocity of 35 feet per second.
- a. Write an equation for the height h (in feet) of the ball as a function of the time t (in seconds) after it is pitched.
- b. The batter hits the ball when it is 2.5 feet above the ground. How long after the ball is pitched is the ball hit? Round your answer to the nearest tenth of a second.
3. **SHORT RESPONSE** Part of a cheerleading routine involves throwing a flyer straight up into the air and catching her on the way down. The flyer begins this stunt with her center of gravity 4.5 feet above the ground, and she is thrown with an initial vertical velocity of 30 feet per second. Will her center of gravity reach a height of 20 feet? *Explain*.
4. **OPEN-ENDED** In Exercise 3, suppose the flyer wants to have her center of gravity reach a height of at least 25 feet above the ground. Give an initial vertical velocity that will accomplish this.

5. **SHORT RESPONSE** For the period 1990–2000, the sales y (in billions of dollars) of computers, computer accessories, and computer software can be modeled by the function $y = -0.05x^2 + 2.2x + 7$ where x is the number of years since 1990.
- a. Write and graph a system of equations to determine the number of values of x that correspond to $y = 24$.
- b. Were there any years during the period 1990–2000 in which the sales reached 24 billion dollars? *Explain*.
6. **GRIDDED ANSWER** The trapezoid below has an area of 54 square inches. What is the value of x ?



7. **SHORT RESPONSE** You have 24 feet of fencing that you are using to make a rectangular dog pen. You want the dog pen to enclose 150 square feet. Is it possible for the 24 feet of fencing to enclose a rectangular area of 150 square feet? *Explain*.
8. **EXTENDED RESPONSE** You are making a tiled tabletop with a uniform mosaic tile border as shown.



- a. Write an equation for the area A (in square inches) of the border.
- b. You have enough mosaic tiles to cover 130 square inches. What should the width of the border be? Round your answer to the nearest inch.
- c. *Explain* why you could ignore one of the values of x in part (b).