

Creating and Solving Equations: Day 2

Unit 1: Extending the Number System

1. The Hoopeston Education Association placed \$2000 into a savings account a scholarship that can be applied for by anyone going into the education field of study in college.

A. Write an equation that will model the amount in the scholarship fund, A , if the association plans to invest \$500 yearly to the fund.

B. If the HEA wants to have \$10000 in the fund before they start giving away 2 yearly scholarships, how many years would they have to save for?

2. In 2010 Mr. Brewer walked in the American Heart Association Heart Walk in honor of Team Khloe and managed to collect \$700 in donations in just one week of planning.

A. Write an equation that will model the total amount of money Mr. Brewer has raised, p , from receiving n donations at \$25 each.

B. How many people would need to make a donation in order for Team Khloe to raise a total of \$8000 for the American Heart Association over the past few years?

3. A recently discovered strain of bacteria is found to double every 30 minutes.

A. Write an equation that will model the population, p , of the bacteria after t hours if there is only 5 micrometers found to begin with.

B. What will be the size of the population be after 12 hours?

4. The physicians at Carle tell you that you have an infection growing from a cold you've had for a while. When first diagnosed your bacteria level was 450,000 micrometers and you were prescribed some medication.

A. If the medication cuts the level of bacteria in half every 2 hours, write an equation showing the level of bacteria, $L(t)$, after t hours.

B. Will your body be free from the bacteria after one day? If not, what level of the bacteria is still in your body?

5. The height of an object thrown or dropped can be found by plugging into the equation

$$h(t) = -16t^2 + v_0t + h_0$$

A. Write the equation that would model the height of a ball, $h(t)$, if it is kicked from an initial height of 1 foot with velocity of 96 feet per second.

B. If the ball will reach its highest point after 3 seconds, what is the maximum height that the ball will reach?

6. The height of an object thrown or dropped can be found by plugging into the equation

$$h(t) = -16t^2 + v_0t + h_0$$

A. Write the equation that would model the height of a rain drop, if it is dropped from the windshield of a commercial jet flying at 40,000 feet.

B. How long will it take for that raindrop to hit the head of a 6 foot tall man?