

## Creating and Solving Equations: Day 3

### Unit 1: Extending the Number System

1. The Hoopeston Education Association placed \$4500 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 \$750 yearly to the fund.

B. If the HEA wants to have \$9000 in the fund before they start giving away 2 yearly scholarships, how many years would they have to save for?

2. The Hoopeston Area High School Soccer Team participates in a “Kick” Cancer game annually. This year the team manages to get \$2500 in donations from throughout our communities.

A. Coach Klaber sells “Kick” Cancer t-shirts for \$20 each for additional support for the cause. Write an equation that will model the total funds raised,  $D$ , if he sells  $n$  shirts.

B. How much money would Coach Klaber raise if he sells 150 shirts.

3. A recently discovered strain of bacteria is found to double every 15 minutes.

A. Write an equation that will model the population,  $p$ , of the bacteria after  $t$  hours if there is only 7 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 625,000 micrometers and you were prescribed some medication.

A. If the medication cuts the level of bacteria in half every 4 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 half a foot with velocity of 83 feet per second.

B. What height will the ball be at after being in the air for 4 seconds?

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 height of a water balloon if a student drops it from a bridge with a height of 300 feet.

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