

DPI~AIG Professional Development Webinar Series

Partnership with NCSSM

Advanced Content for Teachers of Advanced Learners in Math and Science

Session 2: Using Recursion to Explore Real-World Problems

Tuesday, November 27, 2012

3:45 – 4:45

Start with Pass the Candy Activity

Example 1:

You have a headache and decide to take a 200-mg over-the-counter headache medicine tablet to relieve it. The ibuprofen in the pill is absorbed into your system and stays there until it is metabolized and filtered out by the liver and kidneys. Every 4 hours, your body removes 67% of the ibuprofen that was in your body at the beginning of that 4-hour time period.

How much of the ibuprofen will have remained in your system 24 hours after taking the 200-mg tablet?

Example 2:

Suppose that you deposit \$1200 into an account that earns 4% annual interest and that the account pays you the interest at the end of each year.

- a. How much will you have in the account after 10 years?
- b. Write a set of recursive equations to model the balance of the account after n years. Then write a closed form function for the balance of the account t years after the money is deposited.

Example 3:

The Fish and Wildlife Division monitors the trout population in a stream that is under its jurisdiction. Its research indicates that natural predators, together with pollution and fishing, are causing the trout population to decrease at a rate of 20% per month. The Division proposes to introduce additional trout each month to replenish the stream. Assume the current population is 300. Use recursive equations, tables and graphs to investigate the following questions.

- a. What will happen to the trout population over the next 10 months with no replenishment program?
- b. What is the long-term result of introducing 100 trout into the stream each month?

Resources

Links for NCSSM Recursion Materials

<http://www.dlt.ncssm.edu/stem/content/lesson-1-introduction-recursion>

Links for DPI Math Resources (HS Math Wiki)

<http://maccss.ncdpi.wikispaces.net/High+School>