Name _____ Date _____

The Power of Algebra Is a Curious Thing

Using Formulas to Determine Terms of a Sequence

1. Greta must volunteer 225 hours for a community service project. She plans to volunteer for 6 hours each week. The sequence shown represents the number of volunteer hours she has left after three weeks have passed.

   225, 219, 213, 207,...

   a. Describe this sequence.

   b. Use a formula to determine how many volunteer hours Greta has left to fulfill her requirement after 33 weeks have passed. Show your work.

   c. Which formula should you use to determine how many volunteer hours Greta has left to fulfill her requirement after 40 weeks have passed? Explain your reasoning.

d. Calculate the number of volunteer hours Greta has left to fulfill her requirement after 40 weeks have passed. Show your work. Explain what your answer means in terms of the problem situation.

2. The half-life of a substance is defined as the period of time it takes for the amount of the substance to decay by half. The sequence below shows the amount of a substance that will be left after a certain number of half-lives have elapsed.

$1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \ldots$

a. Describe this sequence.

b. Calculate how much of the substance will be left after 21 half-lives have elapsed. Show your work. Does your answer make sense in this problem context? Why or why not?