7-4A Lesson Master

USES Objectives E and F

In 1-5, multiple choice. Tell if the situation described is:

A  exponential growth     B  exponential decay
C  constant increase       D  constant decrease

1. Every year, there are 5% fewer patients with the disease.

2. With better techniques, farmers are able to increase their output 3% each year.

3. Each year, there are 30 fewer students in the school.

4. In a single-elimination tournament, half of the teams are eliminated in each round of play.

5. Every time Joan took the test her score increased points.

6. Amalgamated Industries receives hundreds of applications for each job opening. Their selection process is to review applications and discard 50% of them. This is repeated until only one applicant is left. Let \( n \) = the number of times that half the applications are discarded.

   a. Write an expression of the form \( b \cdot g^n \) to describe the number of people left after the applications have been reviewed \( n \) times.

   b. If 512 people apply for a job, how many are left when \( n = 4 \)?

REPRESENTATIONS Objective H

7. It seems like there are coffee stores on every corner in some neighborhoods. At the right is a table that shows the total number of coffee stores each year since 1987.

   a. Create a scatterplot on your calculator. Does the data appear to be linear or exponential?

   b. Using regression, find an equation to fit the data. Let \( x \) = the number of years since 1987.

   c. Use your equation from Part b to predict how many stores there will be in 2013.

   d. In what year will there be more than 20,000 stores?