

Name _____

7-4B Lesson Master**Questions on SPUR Objectives**

See pages 452–455 for objectives.

USES Objectives E and F

1. The half-life of beryllium is 13.81 seconds, which means that no matter what mass of beryllium you have, half of that sample decays in 13.81 seconds. Let n = the number of times that half of the mass has decayed.
 - a. Write an expression of the form $b \cdot g^n$ to describe the mass of the sample remaining after half the mass of the sample has decayed n times. _____
 - b. If the original mass is 16 grams, what mass of the sample remains after 41.43 seconds? _____
 - c. If $n = 5$ and there is 1 gram remaining, what was the original mass of the beryllium? _____

2. The value of a new car goes down by 22% the first year and then by 11% for the next 8 years. If a new car costs \$28,055, what is its value after 9 years? _____

- In 3–9, *multiple choice*. Tell if the situation described is:

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

 3. A scientist discovers that for a given species, the population is cut in half every 20 years. _____
 4. As Millie aged past 60 years, she lost $\frac{1}{4}$ inch in height every 5 years. _____
 5. Each year, the student population grows by 50. _____
 6. A discount clothing store has a “sliding-scale” policy. The first week an item is in the store, it is discounted 10%. The second week, it is discounted 20%. The third week, it is discounted 30%; the fourth week, 40%; and so on. _____
 7. Gossip spreads through a school quickly when every student tells two other students. _____
 8. Every month, Keshia adds 5 more stickers to her collection. _____
 9. A savings account earns 5% annual interest, which is then added to the account. _____

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REPRESENTATIONS Objective H

In 10–13, use the table to answer the questions.

The following table shows the year's high close for the Dow Jones Industrial average during the years 1984 to 2000.

Year	Years since 1980	Dow High Close
1984	4	1,286.64
1985	5	1,553.10
1986	6	1,955.57
1987	7	2,722.42
1988	8	2,183.50
1989	9	2,791.41
1990	10	2,999.75
1991	11	3,168.83
1992	12	3,413.21
1993	13	3,794.33
1994	14	3,978.36
1995	15	5,216.47
1996	16	6,560.91
1997	17	8,259.31
1998	18	9,374.27
1999	19	11,497.12
2000	20	11,722.98

10. Create a scatterplot on your calculator with List 1 representing the number of years since 1980, and List 2 representing the Dow Jones high close for that year. Does the data appear to be linear or exponential? _____
11. Using regression, find an equation to fit the data. _____
12. Use your equation from Question 11 to predict the high close for 2009. _____
13. In what year can we predict that the Dow high close will be over 13,000? _____