NAME _____ DATE _____ PERIOD _____

**EXPONENTIAL GROWTH & DECAY** KR 10-11

For each problem, give (a) the formula with the correct numbers substituted, and (b) the answer.

1. Sara bought 5 fish. Every month the number of fish she has doubles. How many fish will Sara have after 4 months if she keeps all of them and the fish stay healthy?

2. A population of 450 animals decreases at an annual rate of 16% per year. Find the number of animals left after 5 years.

3. A piece of equipment costs $50,000 new, but depreciates 15% per year in each succeeding year. Find its value after 10 years.

4. On the day you were born, Uncle Peyton gave your parents a piece of sports memorabilia valued at $75. If past trends continue, it should appreciate in value 12% per year. If you sell it on your $18^{th}$ birthday, what can you expect the sale price to be?

5. A general rule-of-thumb for used car dealers is that the trade-in value of a car decreases by 30% each year. How much will a $25,000 car be worth in 6 years?

6. Cobalt-60 has a half-life of about 5 years. About how much of an 8-gram sample will remain after 30 years?

7. Radioactive carbon-14 has a half-life of 5730 years. How much of a 100-gram sample will remain after 11,460 years?

8. If the U.S. population was about 226 million n 1980, and is growing at a rate of about 1.1% per year, what will the population be in 2010?

9. The average temperature at a weather station is 45°. If global warming studies are correct, the temperature should increase by 3% per decade. What can you expect the average temperature to be in 60 years?

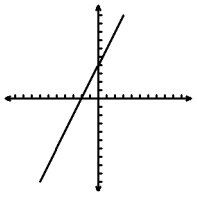
10. Your parents want you to do some work around the house on a regular basis. You get them to agree to pay you $0.01 on the first day, $0.02 the second, $0.04 the third, $0.08 the fourth, and so on. How much will they owe you on the $30^{th}$ day? (Did they agree to your offer?)

Match the equation, graph, and description.

11. $y = 15 + 3x$
12. $y = .5(1.2)^x$
13. $y = 15 - .3x$
14. $y = 4(.5)^x$

A. exponential growth
B. exponential decay
C. linear increase
D. linear decrease

I.



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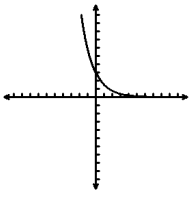

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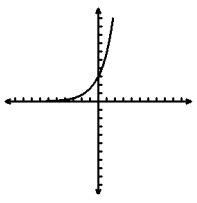

IV.