Name _____ Date _____ Class _____

Practice B

Exponential Decay

Write an exponential decay function to model each situation. Then find the value of the function after the given amount of time.

1. The population of a town is 2500 and is decreasing at a rate of 3% per year; 5 years _____

2. The value of a company's equipment is $25,000 and decreases at a rate of 15% per year; 8 years _____

3. The half-life of Iodine-131 is approximately 8 days. Find the amount of Iodine-131 left from a 35 gram sample after 32 days. _____

Problem Solving

Exponential Growth and Decay

Write the correct answer.

4. The population of a small Midwestern town is 4500. The population is decreasing at a rate of 1.5% per year. Write an exponential decay function to model this situation. Then find the number of people in the town after 25 years.

4. Each year the local country club sponsors a tennis tournament. Play starts with 128 participants. During each round, half of the players are eliminated. How many players remain after 5 rounds?

7. During normal breathing, about 12% of the air in the lungs is replaced after one breath. Write an exponential decay model for the amount of the original air left in the lungs if the initial amount of air in the lungs is 500 mL. How much of the original air is present after 240 breaths?

8. An adult takes 400 mg of ibuprofen. Each hour, the amount of ibuprofen in the person's system decreases by about 29%. How much ibuprofen is left after 6 hours?

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10. You buy a new computer for $2100. The computer decreases by 50% annually. When will the computer have a value of $600?

11. You drink a beverage with 120 mg of caffeine. Each hour, the caffeine in your system decreases by about 12%. How long until you have 10mg of caffeine?

1. An isotope of cesium (cesium-137) has a half-life of 30 years. If 1.0 g of cesium-137 disintegrates over a period of 90 years, how many g of cesium-137 would remain?

2. Actinium-226 has a half-life of 29 hours. If 100 mg of actinium-226 disintegrates over a period of 58 hours, how many mg of actinium-226 will remain?