Name: Date: Period:

Show the appropriate formula, substitution, and calculations on a **separate sheet of paper**. Round your answers to the nearest whole number, unless otherwise instructed, and be sure to answer the question being asked.

1. Bacteria can multiply at an alarming rate when each bacteria splits into two new cells, thus doubling. If we start with only one bacteria which can double every hour, how many bacteria will we have by the end of one day?

2. You have inherited land that was purchased for $30,000 in 1980. The value of the land increased by approximately 5% per year. What is the approximate value of the land in the year 2030?

3. A celebrity has 50,000 followers on Instagram. The number of followers increases by 45% each year. How many followers will they have after 8 years?

4. The radioactive material of thorium decays at the rate of 8% per minute. To the nearest tenth, what part of 10 grams of thorium would be remaining after 5 minutes?

5. In 2020, a Toyota Tundra truck was bought for $34,000 by Sal with an annual depreciation rate of 20%. What would Sal's truck be worth in 2025?

6. A population of bats in a cave has 200 bats. The population is increasing at the rate of 5% annually. Write the function. How many bats live in the cave after 7 years?

7. A house was purchased for $350,000 in the year 2010. The value has been increasing at the rate of 2% per year. Write the function and find the value of the house after 5 years.

8. Andrew spent $3,000 on a new couch. The sofa's worth falls exponentially at a pace of 5% every year. So, how much is the sofa worth after three years?