

Day 6: Growth & Decay**Name:** _____**Practice Assignment**

Directions: Label if the equation represents growth or decay. Then determine the growth/decay factor and growth/decay rate. Remember to write your rate as a percentage.

1) $y = 10(1.35)^x$ _____

Growth/Decay Factor: _____

Growth/Decay Rate: _____

2) $y = 742(0.60)^x$ _____

Growth/Decay Factor: _____

Growth/Decay Rate: _____

3) $y = (1.04)^x$ _____

Growth/Decay Factor: _____

Growth/Decay Rate: _____

4) $y = 7500(0.42)^x$ _____

Growth/Decay Factor: _____

Growth/Decay Rate: _____

5) $y = 50(1+.23)^x$ _____

Growth/Decay Factor: _____

Growth/Decay Rate: _____

6) $y = 1500(0.925)^x$ _____

Growth/Decay Factor: _____

Growth/Decay Rate: _____

Directions: Create an exponential growth/decay model and use it to solve each problem. Make sure your model problem is in simplified form ($y = ab^x$)

7) A new SUV depreciates at a rate of 23% per year. If the original selling price was \$30,000, how much will the vehicle be worth after 4 years?

Model: _____

8) Two bacteria are discovered at the bottom of a shoe. If the bacteria multiply at a rate of 34% per hour, how many bacteria will be present after 48 hours?

Model: _____

9) The number of student athletes at a local high school is 300 and is increasing at a rate of 8% per year. How many students will be at the school in 5 years?

Model: _____

10) A scientist is creating a mathematical model for the breakdown of caffeine in the human body. According to her current model, caffeine is broken down at a rate of 5% each hour. If a person consumes a sample containing 150 milligrams of caffeine, then how much will remain in 7 hours?

Model: _____

11) Riley owns a painting that is valued at \$59,000. If the value of the artwork decreases by 5% every year, how much will it be worth in 14 years?

Model: _____

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

Model: _____

13) 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?

Model: _____