

Name: _____

Growth and Decay Worksheet #2

1) Commercial non-music radio stations increased at an average annual rate of 3.1% from 1996 to 2000. Commercial radio stations in this format numbered 1262 in 1996.

- What is starting value (y-int) _____
- What is the constant factor (rate of change, make sure to include the 1). _____
- Write an equation that finds the number of radio stations y after x years after 1996. _____
- If the trend continues, predict the number of radio stations in this format for 2020. _____
- In what year will there be over 4000 commercial radio stations? _____

2) In 1990 the forested area of Guatemala was about 34,400 square kilometers. During the 1990's, the forested area decreased at an average rate of 1.7% each year.

- What is starting value (y-int) _____
- What is the constant factor (rate of change, make sure to include the 1.) _____
- Write a rule that finds the forested area y , after x years after 1990. _____
- If this trend continues, predict the forested area in 2015. _____
- Based on this trend, how long will it take for the forested area drop below 12,000 km² _____

3) The Green's bought a beach house in 2010. A rule to predict its future value is $y = 610,000(1.035)^x$.

- How much did they purchase the beach house for? _____
- Is the value increasing or decreasing each year? How do you know? _____
- Find the percent increase or decrease per year for the beach house. _____
- What is the value predicted to be in 2018? _____
- In what year is the house projected to have a million dollar value? _____

4) The population of Osaka, Japan declined at an average annual rate of 0.05% for the five years between 2000 and 2005. The population of Osaka was 10.985 (in millions) in 2005.

- Write a rule that can predict the future population of Osaka, Japan. _____
- Predict the population in 2050. _____
- After how many years will the population drop under 10 million? _____

5) An antique collectable was valued at \$160 in 1999. The value is expected to increase at a rate of 4% each year.

a) Write a rule that can predict the value after x number of years. _____

b) What will be the value of the antique in 2026? _____

c) When will the value be around \$300? _____

6) Tim saved \$750 from a summer job. He plans to spend 10% of his savings each week on various forms of entertainment.

a) Write a rule that will show Tim's saving y , after x number of weeks. _____

b) How much will Tim have in savings after 15 weeks? _____

c) After how many weeks will he have less than a dollar in savings? _____

Compounding Interest

7) The Fresh and Green Company has a savings plan for its employees. If an employee makes an initial contribution of \$1000, the company pays 8% interest compounded quarterly.

a) If an employee participating in the plan withdraws the balance after five years how much will be in the account? _____

b) If an employee participating in the plan withdraws the balance after 35 - years how much will be in the account? _____

8) What is the amount of an investment if \$300 is invested at an interest rate of 6.75% compounded semiannually for 20 years?

9) Determine the amount of an investment if \$3000 is invested at a rate of 4.25% compounded monthly for 40 years.

10) The Jones have a \$12,000 in a savings account. The bank pays 3.5% interest on savings accounts, compounded monthly. Find the balance after 10 years.