

Exponential Growth and Decay Practice

Name _____ Class Period _____

1. A family of roaches increases by 6.1% a day. There are originally 5 roaches.
 - a) Write a formula that models this situation.
 - b) How many roaches are in the house after 30 days? 10 **weeks**?
 - c) How many days did it take to have 175 roaches in the house?
2. A \$125,000 house is currently depreciating by 2% a year.
 - a) Write a formula that models this situation.
 - b) What will be its value in 3 years if the economy doesn't change?
 - c) How many years will it take to have a value less than \$100,000?
3. Your grandma's diamond ring appreciates according to the equation: $A = 850(1.07)^t$
 - a) What was the initial value of the ring?
 - b) What is the percent of increase or growth rate?
 - c) What is the growth factor?
 - d) How much is the ring worth in 20 years?
4. You put \$3500 in a savings account and it grows by 5.2% a year.
 - a) Write a model for the situation.
 - b) What is the growth rate for the model?
 - c) How much money is in the account after 18 years?

5. Today you have 180 songs on your phone. The number of songs on your phone grows on average by a growth factor of 1.2 per week.
- Write a model for this situation.
 - How many songs are on your phone in 22 weeks?
 - Estimate how many weeks it will take to have 30,000 songs on your phone.
6. In 1965 the federal debt of the US was \$322.2 billion. During the next 30 years, the debt increased by about 10.2% per year. About how much was the federal debt in 1980?
7. You buy a laptop for \$780. Each year the value of the laptop decreases by 5%.
- Find the value of the laptop after 4 years.
 - You plan to get rid of the laptop after its worth falls below \$400. When will that be?
8. The population of Indonesia was 191,256,000 in 2005 and was growing at a rate of 1.9% per year. Predict the population of Indonesia in 2015.
9. Between 2009 and 2011, the population of one city decreased at a rate of 3.9% per year. The population in 2009 was 574,283. Find the city's population in 2011.
10. A dye is injected into the pancreas during a certain medical procedure. A physician injects 0.3 grams of dye, and a healthy pancreas will secrete 4% of the dye each minute. Predict the amount of dye remaining in a healthy pancreas 30 minutes after the injection.