

Review #1

- 1 A material decays at the rate of 0.09% per year. How long will the material take so that only 7% of the original material is left?
- 2 Jane bought a diamond ring for \$6,000. If the value of the ring increases at a constant rate of 2.79% per year, how much will the ring be worth in twenty years?
- 3 Bill invested \$1,900 in a four year CD that pays eight percent compounded monthly. What is the compound interest and amount that will be in the bank after four years?
- 4 Bill invested \$6,500 in a five year CD that pays eight percent compounded annually. What is the compound interest and amount that will be in the bank after five years?
- 5 The number of bacteria in a culture grows from 46 to 248 in 1 hour and 8 minutes. How many bacteria will be present in 8 hours and 23 minutes?
- 6 The half-life of a radioactive substance is two hundred twelve days. How many days will it take for seventy-seven percent of the substance to decay?
- 7 Bill has a government bond that will be worth 14,242.30 in ten years. The bond has an interest rate of 8% that is compounded semiannually. What is the present value of the bond?
- 8 The local government projects that the town will grow at a constant rate of thirty-seven percent per year. At this rate, how many years will it take the town's population to be six times its current size?
- 9 The local government projects that the town will grow at a constant rate of four percent per year. At this rate, how many years will it take the town's population to double?
- 10 Anthony bought a government savings bond for \$1,600. He was told that when the bond can be cashed in 8 years that he would get \$2,688.04. If the interest on the bond is compounded annually, what is the interest rate on the bond?
- 11 The Party Bank offers a three CD that pays 4.13% interest compounded continuously. Albert deposited \$4,180. How much will Albert's account be worth in three years?
- 12 A certain material decays at a rate of 0.66% per year. How much of 310 grams of the material will decay in 23 years?
- 13 Amy created a chart that shows the population of a town will increase to 41,622 people from a current population of 10,077 people. The rate of increase is an annual increase of 4.16%. Amy forgot to include on the graph the number of years this increase will take. How many years should Amy add to the chart?
- 14 Paul bought \$5,886 worth of office equipment. The government allows for office equipment to be depreciated at an annual rate of 6.6% per year. How long will it take for Paul to depreciate the equipment forty percent?
- 15 Amy bought a diamond ring for \$7,000. If the value of the ring increases at a constant rate of 3.89% per year, how much will the ring be worth in twenty-seven years?
- 16 A bacteria population doubles every four minutes. If the population begins with one cell, how long will it take to grow to 1,073,741,824 cells?
- 17 A bacteria population doubles every seven minutes. If the population begins with one cell, how long will it take to grow to 4,096 cells?

18 The Arctic Bank pays 5.8% interest compounded quarterly. What is the effective annual percentage rate (APR)?

19 A certain material decays at a rate of 0.34% per year. How much of 120 grams of the material will be left in 12 years?

20 The number of bacteria in a culture grows from 52 to 238 in 1 hour and 24 minutes. How many bacteria will be present in 7 hours and 56 minutes?

21 Greg currently pays a \$610 premium for health insurance. If the premium increases at an annual rate of 6.04% per year, how many years will it take for the premium to be \$2,350.35?

22 Michael borrowed \$320 from Jill five months ago. Today, Michael paid Jill back \$346.67. What is the simple annual interest rate that Michael paid?

23 The half-life of a radioactive substance is one hundred nine days. How many days will it take for seventy-three percent of the substance to decay?

24 A material decays at the rate of 0.084% per year. How long will the material take so that only 43% of the original material is left?

25 Greg bought a gold coin for \$8,000. If the value of the ring increases at a constant rate of 2.73% per year, how many years will it be for the ring to be worth \$23,495.33?

26 Michael spent \$1,000 on a credit card this month. The credit card charges 20.42% interest compounded continuously. If Michael does not have to pay any monthly minimums and makes no payments, how long will it take until Michael owes the credit card company \$3,000?

27 Bert's investment in a bank account will be worth \$4,429.30 in eight months. The current value of Albert's account is \$4,200. If the bank pays a fixed rate that is compounded monthly, how much will the account be worth in four years?

28 A chilled jello salad that has a temperature of 43°F is taken from the refrigerator and placed on the dining room table in a room that is 68°F . After 12 min, the temperature of the salad is 55°F . What will the temperature of the salad be after 20 min? **59.6**

29 A cup of coffee with temperature 105°F is placed in a freezer with temperature 0°F . After 5 min, the temperature of the coffee is 70°F . What will its temperature be after 10 min? **46.7**