

Math 3 Advanced

Determine the math model (equation) for the contextual problem, then solve the problem.

1. A small city has a population of 32,000 people. If the population growth rate averages 8% over the next 15 years, what will the population be in 15 years?
2. A scientist determines that there are 1200 bats in a cave. He hypothesizes that the number of bats is increasing at 12% per month. At this rate, how many bats will inhabit the cave in 2 years?
3. A coffee shop sells a new type of drink. It starts by selling 850 drinks per week. If the sales for this drink increase at a rate of 5% per week, how many drinks per week will they sell in 3 months (12 weeks) time?
4. Yosemite Sam invests \$150,000 in a friend's business. If the investment grows at 7% per year, what will be the value of the business in 20 years?
5. A gold mining stock is bought at \$50 per share. The country experiences a near total economic collapse, and the gold mining stock goes up at 15% per month. How much will this stock be worth 3 years after it was bought?
6. A collector's edition 1965 Mustang fastback was purchased for \$40,000. If the value of the car increases at 12% per year, what will the car be worth in fifteen years?
7. A painting by an artist was purchased for \$500. After the artist's death, the painting increased in value at 22% per year. How much does it appear that the painting will be worth in six years?
8. A sculpture was valued at \$2,000. Shortly thereafter it started increasing in value by 35% per year. What will be its estimated value in ten years?
9. A strain of bacteria double every 10 minutes. A scientist started with 50 bacteria. How many will there be in 24 hours?
10. A strain of bacteria double every 30 minutes. A scientist started with 200 bacteria. How many would there be in 7 days?