3.06 Exponential Growth and Decay Additional Practice Key

**Solve the problems below. Then, compare your answers and work to the 3.06 Exponential Growth and Decay Additional Practice Key.**

1. A new car is priced at $22,000. It depreciates at a rate of 18% a year. What is the value of the car after 10 years?

Identify the following:

Initial amount: $22,000

Annual rate of loss: 18%

Time: 10 years

Write a model with V representing the car’s value after 10 years using the depreciation formula

V = 3023.86

The car will be worth $3,023.86 after 10 years.

2. A type of bacteria increases by the given model, where *t* is the time measured in hours. Find the amount of bacteria cells after 5 hours.

Identify the following:

Initial amount: 500

Growth factor: 0.354

Time: 5 hours

A = 2,935.427

3. The population of a town is 17,000 and is predicted to increase at a rate of 3.5% per year during the coming years. According to this prediction, what will the population of the town be in 10 years?

Identify the following:

Initial population: 17,000

Growth factor: 3.5%

Time: 10 years

Write a model with P being the population after 10 years using the formula

P = 23,980

4. Match each answer choice below to the question it answers.

A. Compute the compound interest for $10,500 at 7% for 15 years at 4 times a year.

B. Compute the compound interest for $20,000 at 2% for 10 years at 12 times a year.

C. Compute the compound interest for $15,000 at 1.5% for 5 years at 2 times a year.

Answer choices:

I. $16,163.74

II. $24,423.99

III. $29,734.07

Answers: A: III.

B. II.

C. I.

5. Match each answer choice below to the question it answers.

A. You deposit $5000 in an account that pays 4% annual interest. Find the balance after 5 years if the interest is compounded continuously.

B. You deposit $3000 in an account that pays 5% annual interest. Find the balance after 10 years if the interest is compounded continuously.

Answer choices:

I. $4,946.16

II. $6,107.01

Answers: A: II.

B. I.

6. Match each answer choice below to the question it answers.

A. A new car is priced at $35,000. It depreciates at a rate of 15% per year. What is the value of the car after 10 years?

B. A new car is priced at $28,000. It depreciates at a rate of 20% per year. What is the value of the car after 5 years?

C. A new car is priced at $25,000. It depreciates at a rate of 18% per year. What is the value of the car after 3 years?

Answer choices:

I. $6,890.60

II. $9,175.04

III. $13,784.20

Answers: A. I.

B. II.

C. III.