

Name:

Class:

Date:

Question #1

An economist predicts that the number of employees with a certain company will increase by 50% each year. There are 600 employees now. According to the economist's prediction, how many employees will be with the company exactly 3 years from now?

- A) 900
- B) 1350
- C) 1500
- D) 2025

Question #2

A botanist predicts that the height of a certain tree will increase by 2% every year. If the height of the tree is now 50 feet, what is its predicted height 2 years from now?

- A) 50.04 feet
- B) 51 feet
- C) 52 feet
- D) 52.02 feet

Question #3

A biologist predicts that the height of a certain tree will increase exponentially with time, tripling every 60 years. The tree is now 5 meters tall. According to the biologist's prediction, in how many years would the tree become 45 meters tall?

- A) 120
- B) 180
- C) 540
- D) 800

Question #4

Mr. Andrews is saving to buy a violin that costs \$1,000. He has already saved \$450 and decides to put all of this money into a new savings account. The money in this account will earn 6% interest, which is compounded quarterly. Which model would be appropriate to determine how many years, y , Mr. Andrews will have to wait until he has earned enough money in this account to buy the violin?

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

A = amount of money accumulated after n years, including interest, P = principal amount (the initial amount deposited), r = annual rate of interest, n = number of times the interest is compounded per year, and t = number of years the amount is deposited

- A) $1,000 = 450\left(\frac{1.06}{4}\right)^{4y}$
- B) $450 = 1,000\left(\frac{1.06}{4}\right)^y$
- C) $450 = 1,000\left(1 + \frac{0.06}{4}\right)^{4y}$
- D) $1,000 = 450\left(1 + \frac{0.06}{4}\right)^{4y}$

Question #5

The present value of an antique is \$200. The value of the antique 4 years ago was \$189.50 and increases every year by a constant factor, p .

Which equation represents the scenario *correctly*?

- A $200(4)^p = 189.50$
- B $200(p)^4 = 189.50$
- C $189.50(4)^p = 200$
- D $189.50(p)^4 = 200$