

**Practice: Exponential Function**  
**MATH 404 CST**

Name: \_\_\_\_\_

Remember the equation for an exponential function:  $y = a(c)^x$

Solve the following word problems – show all your work.

1. A hockey card is worth \$50. It appreciates in value at a rate of 2% per year. How much will it be worth in 16 years?

2. A hypothetical strain of bacteria doubles every 2 hours. If you start with a population of 200 bacteria, how many will you have after 3 days?

3. La Prairie has a population of 23 500. Its population increases by 2.5% every year. Cadiac has 32 600 people and its population increases at a rate of 2% per year. Which town has more people after 15 years? By how much?

4. A car is worth \$24 600. Its value depreciates at a rate of 3.2% per year. What will be its value in 7 years?

5. You deposit \$1500 in an account that pays 5% interest yearly. How much money do you have after 6 years?

6. If I have \$500 in my account after 4 years investing at 2.5%, how much money did I start with?

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Name: Answers.

Remember the equation for an exponential function:  $y = a(c)^x$   
Solve the following word problems – show all your work.

1. A hockey card is worth \$50. It appreciates in value at a rate of 2% per year. How much will it be worth in 16 years?

$$c = 1.02$$

$$y = 50(1.02)^{16} = \$68.64$$

2. A hypothetical strain of bacteria doubles every 2 hours. If you start with a population of 200 bacteria, how many will you have after 3 days?

→ 12 times per day

$$\rightarrow 3 \times 12 = 36 \text{ times}$$

$$y = 200(2)^{36} = 1.37 \times 10^{13}$$

3. La Prairie has a population of 23 500. Its population increases by 2.5% every year. Candiac has 32 600 people and its population increases at a rate of 2% per year. Which town has more people after 15 years? By how much?

$$\text{La Prairie: } y = 23500(1.025)^{15} \approx 34035$$

$$\text{Candiac: } y = 32600(1.02)^{15} \approx 43875$$

$$43875 - 34035 = 9840$$

4. A car is worth \$24 600. Its value depreciates at a rate of 3.2% per year. What will be its value in 7 years?

$$c = 0.968$$

$$y = 24600(0.968)^7 = \$19591.27$$

5. You deposit \$1500 in an account that pays 5% interest yearly. How much money do you have after 6 years?

$$y = 1500(1.05)^6 = \$2010.14$$

6. If I have \$500 in my account after 4 years investing at 2.5%, how much money did I start with?

$$c = 1.025$$

x	y
0	452.98
1	
2	
3	
4	500
5	

$\left. \begin{array}{l} \rightarrow \div 1.025 \\ \rightarrow \div 1.025 \\ \rightarrow \div 1.025 \end{array} \right\}$   
 $\rightarrow \div 1.025$