

Name:

Class:

## Algebra, Unit 5: Practice Summative Assessment

### Question 1

$x$	0	1	2	3
$f(x)$	270	90	30	10

Which function models the relationship shown in the table?

- (A)  $f(x) = 270 \cdot 3^x$
- (B)  $f(x) = 3 \cdot 270^x$
- (C)  $f(x) = 270 \cdot \left(\frac{1}{3}\right)^x$
- (D)  $f(x) = \frac{1}{3} \cdot (270)^x$

### Question 2

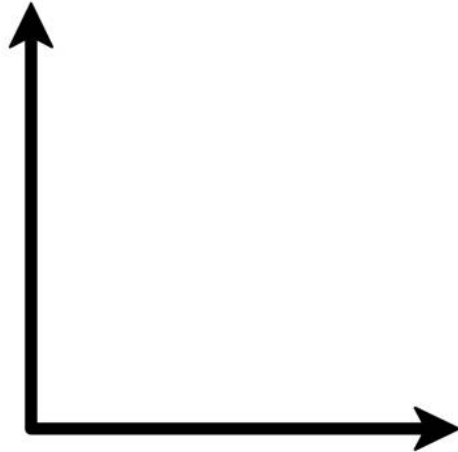
These functions represent the population of four different cities given time,  $t$ , in years.

Which function represents the population that is growing the fastest?

- (A)  $a(t) = 1,000,000 \cdot (0.999)^t$
- (B)  $b(t) = 800,000 \cdot (1.001)^t$
- (C)  $c(t) = 600,000 \cdot (1.101)^t$
- (D)  $d(t) = 400,000 \cdot (1.011)^t$

Question 3

Sketch and label **two** functions on the graph below: one function decreasing exponentially and one function decreasing linearly.



Question 4

A new cupcake business had 100 orders this week and expects to double its number of orders every week for the next few weeks.

Write an equation representing the relationship, where  $x$  is time in weeks, and  $y$  is the number of orders.

### Question 5

On January 20th, volunteers at a local park began to take data about a new algae growing in a pond. The function  $a(t) = 93.75(2.5)^t$  represents the size of the algae growth in square meters  $t$  days since data collection began.

Part A What does 93.75 represent in this situation?

Part B What does 2.5 represent in this situation?

Part C Find  $a(-3)$ .

Part D What does  $a(-3)$  represent in this situation?

Part E A local reporter states “the algae is increasing by 250% every day”. Is that correct?

### Question 6

A highschool student works and saves all summer and now has \$10,000. She initially planned to use that money to help pay for college, but earned an academic scholarship and now can put the money to another use.

#### Part A

She is considering investing some or all of the money in a technology stock fund that expects to increase at a rate of 15% annually. Complete the table.

	If she invests \$1,000	If she invests \$2,000	If she invests \$5,000	If she invests \$10,000
Amount in fund after 5 years				
Amount in fund after 10 years				
Amount in fund after 20 years				
Amount in fund after 50 years				

#### Part B

Her friend says that the stock market is rigged against small investors and that she should just put the money in a savings account. Her local bank's interest rate is 0.3% compounded annually. Complete the table.

	If she saves \$1,000	If she saves \$2,000	If she saves \$5,000	If she saves \$10,000
Amount in bank after 5 years				
Amount in bank after 10 years				
Amount in bank after 20 years				
Amount in bank after 50 years				