Name: _____ Date: _____
Teacher: _____ Section: _____

Test: *Exponential Functions & Sequences*

Part I: *Multiple Choice* (4 points each)

_____1) Which type of function is shown in the table below?

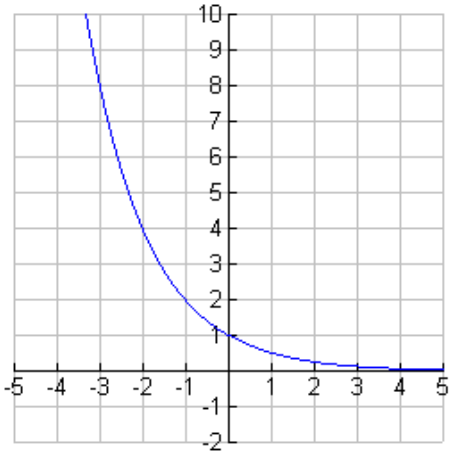
x	1	2	3	4
y	−4	−8	−16	−32

(A) Exponential
(B) Absolute Value
(C) Linear
(D) Quadratic

_____2) The value of a stock $s(t)$ after t years is represented by the function $s(t) = 2{,}000\ (1.07)^t$. The function represents which of the following?

(A) 7% decay
(B) 1.07% decay
(C) 7% growth
(D) 1.07 % growth

_____3) Which equation represents the function shown in the accompanying graph?



(A) $f(x) = 3 \cdot (½)^x$
(B) $f(x) = 3 \cdot 2^x$
(C) $f(x) = (½)^x$
(D) $f(x) = 2^x$

_____4) Which statement below best describes the sequence 192, 48, 12, 3... ?

(A) geometric with a common ratio of ¼
(B) geometric with a common ratio of 4
(C) arithmetic with a common difference of ¼
(D) arithmetic with a common difference of 4

_____5) Which situation could be modeled by an exponential function?

(A) a bank account with deposits totaling $100 per month
(B) the cost of cell phone service that charges a base amount plus twenty cents per minute
(C) the population of bacteria that doubles every 4.5 hours
(D) a tree is three feet tall and grows at a rate of 15 inches per year

_____6) If $f(x) = 3 \cdot 2^x$ and $g(x) = f(x) + 2$, how will the graph of $f(x)$ be transformed to form $g(x)$?

(A) translated up 2 units
(B) translated down 2 units
(C) translated right 2 units
(D) translated left 2 units

_____7) Evaluate the function $f(x) = -6 \cdot (½)^x$ when $x = -8$.

(A) -1536
(B) 1536
(C) -24
(D) 24

_____8) The number of bacteria in a petri dish $n(s)$ after s seconds is represented by the function $n(s) = 125\ (1.15)^s$. What does the 125 represent?

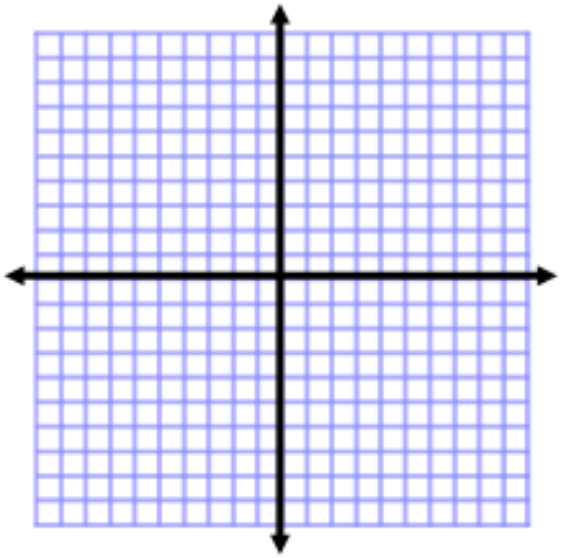
(A) growth factor of 125%
(B) decay factor of 125%
(C) initial number of 125 bacteria
(D) 125 seconds

_____9) The weight of the waste in the local landfill is currently at 75,000 pounds. The weight increases by 1.3% each year. If this pattern continues, which expression can be used to find the weight of the waste after x years?

(A) $75000(1 + 0.\ 13)^x$
(B) $75000(1 – 0.013)^x$
(C) $75000(1 + 1.3)^x$
(D) $75000(1 + 0.013)^x$

Part II: *Show All Work*

10) a) Graph $f(x) = \left(\frac{1}{3}\right)^x$ *(5 points)*



b) What is the range of the function? *(3 points)*

c) Is this an example of exponential growth or decay? Explain based on the equation or the graph. *(3 points)*

11) a) In a local area, the government intends to reduce the coyote population by 10% each year. If the coyote population in now estimated to be 3,000, write an equation to model the number of coyotes in *x* years. *(3 points)*

b) What is the difference in the number of coyotes that will remain after 3 years and 5 years? *(9 points)*

12) The table below represents the number of times a certain YouTube video was watched per hour after it went viral.

Hours	1	2	3	4
Number of Views	123	369	1107	3321

a) Write an exponential equation that models the table. *(5 points)*

b) Explain how you determined the equation. *(3 points)*

c) Use this equation to predict the number of views after 12 hours. *(3 points)*

13) Write an exponential equation that models the graph below. *(6 points)*