Name: Guide Date: _____

Comparing Functions

The tables below each represent a different function. Use these functions to answer questions 1 – 5.

f(x)

x	-2	-1	0	1	2
f(x)	9	5	1	-3	-7

g(x)

x	-2	-1	0	1	2
f(x)	0.25	1	4	16	64

h(x)

x	-2	-1	0	1	2
f(x)	5	3	3	5	9

1. What is the equation of the exponential function?
   g(x) It is being multiplied by 4.
2. Which function is a quadratic?
3. What is the equation of the linear function?
   F(x) It is adding -4.
4. Which function has a common difference?
5. Which function has a common ratio?
   g(x) Exponentials have common ratios.

Given the functions, determine the following:

$f(x) = 4x$ $g(x) = x^2$ $h(x) = 3^x$

6. Which function is greater at x = 4?
7. Which function has a common ratio?
   h(x). See #5
8. Write the equation of f(x) if it is reflected, shifts right 6, and shifts up 5.
9. Which function is considered an even function?
   g(x). It has an even exponent
10. Which function has end behavior of "As $x \to -\infty$, $y \to \infty$"?

11. Which table of values represents a linear relationship?

X	-1	0	1	2	3
Y	-3	-2	1	6	13

X	-3	-2	-1	0	1
Y	-3	-1	1	3	5

X	-1	0	1	2	3
Y	-1	0	1	8	27

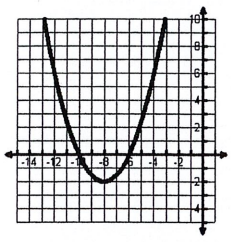
Which one has a common difference?

12. The quadratic function f(x) has these characteristics:

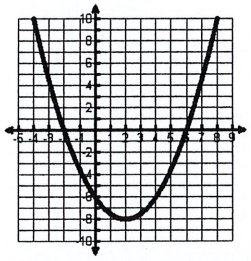
- The vertex is located at $(8, -2)$.
- The range is $[-2, \infty)$.

Which graph could be f(x)?

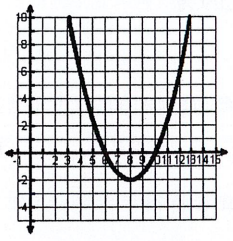
A.



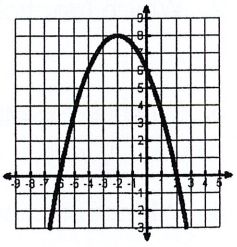
B.



C.



D.



13. If the number of bacteria in a colony doubles every 210 minutes and the population is currently 8,000 bacteria, what will the population be in 630 minutes and is it modeled by a linear function or an exponential function?

times 2 means common ratio
means exponential

a. 24,000; linear function

b. 24,000; exponential function

$\frac{630}{210} = 3$ doublings

c. 64,000; linear function

d. 64,000; exponential function

$y = a(b)^x$

$y = 8000(2)^3 = 64{,}000$

14. Examine the given sequence. Which statement is not correct?

10, 12, c, ...

A. If c =14, the relationship is linear and f(x) = 2x + 8 for x ={1, 2, 3, ...}

B. If c = 14, the relationship is linear and $a_n = 10 + 2(n - 1)$ for n = {1, 2, 3, ...}

C. If c = 14.4, the relationship is exponential and $f(x) = 10(1.2)^{(x-1)}$ for x = {1, 2, 3, ...}

D. If c = 14.4, the relationship is exponential and $a_1 = 10$ and $a_{n+1} = a_n + 1.2$ for n = {1, 2, 3, ...}