Name _____

HW L4-3

1. Jeremy buys a "Love it" at Cold Stone Creamery and selects mix-ins. The cost of his ice cream is given by $c(m) = 0.99m + 5.29$ where $c(m)$ is the cost in dollars of the ice cream with m mix-ins.

   a. What does the 5.29 represent in the context of this problem?

   b. What does the 0.99 represent in the context of this problem?

   c. Describe how the cost of the ice cream changes with each additional mix-in.

2. Inflation rates describe the overall increase in prices from year to year. From 1960 to 2021 , the cost of purchasing a certain item can be modeled by the function $f(x) = 70(1.038)^x$ where $f(x)$ represents the cost of the item, in dollars, x years after 1960 .

   a. What does the 70 mean in the context of this problem?

   b. What does the 1.038 mean in the context of this problem?

   c. Describe how the cost of the item changes from year to year.

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3. Let f be a function with a y -intercept of 8 and a constant rate of change of 5 . Let g be a function with a y -intercept of 8 and a constant proportion of 5 .

a. Write an equation for $f(x)$.

b. Write an equation for $g(x)$.

c. Compare $f(2)$ and $g(2)$.

d. Are there any values of x for which $f(x) > g(x)$? Explain your reasoning.

4. For a function f , it is known that $f(2) = 18$ and $f(4) = 8$.

a. Write an equation for $f(x)$ if f is a linear function.

b. Write an equation for $f(x)$ if f is an exponential function.

5. Consider the five figures shown. Is the number of dots in the n^{th} Figure best described by an arithmetic sequence, a linear function, a geometric sequence, or an exponential function? Explain.

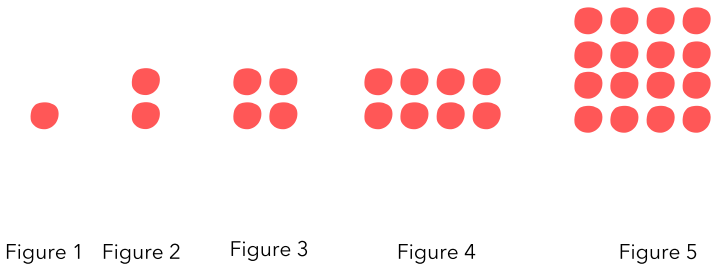

Figure 1 Figure 2 Figure 3 Figure 4 Figure 5

6. Selected values of a function g are given in the table. Does g appear to be a linear function, an exponential function, or neither? Explain.

x	-2	0	2	4	6
$g(x)$	200	160	128	90	72

7. A local ice-skating rink charges $\$2.50$ per hour of skating and a fixed cost for renting ice skates. When Brock rents ice skates and skates for 3 hours, he pays a total of $\$10.50$. Use this information to write an equation relating the total cost of ice skating, C , with the number of hours spent ice-skating, h .

8. Selected values of a function f are given in the table.

x	-11	-7	a
$f(x)$	24	36	54

a. If f is an exponential function, what is the value of a ?

b. If f is a linear function, what is the value of a ?