**Algebra 1 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**HW: Compare Linear and Exponential Functions Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**1. Determine whether each problem would be modeled by a linear model or an exponential model. Circle the word LINEAR or EXPONENTIAL. Then, write the function.**

1. The relationship between the distance driven and total cost when a taxi driver charges a fee of $2.50 and $1.50 for each additional mile.

 Linear or exponential? *y* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The relationship between the number of bacteria and time when a culture of 2,000 bacteria triples every four hours.

 Linear or exponential? *y* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The relationship between the altitude of a hot air balloon and time when the hot air balloon takes off at 5,500 feet above sea level and rises 120 feet every minute.

Linear or exponential? *y* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. You drink a beverage with 120 mg of caffeine. Each hour, the caffeine in your system decreases by about 12%. Linear or exponential? *y* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**2. Decide whether the table represents a linear or exponential function. Circle either linear or exponential. Then, write the function to represent the table**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *x* | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| *y* | 50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 |

 **a.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *x* | -2 | -1 | 0 | 1 | 2 | 3 | 4 |
| *y* | .4 | .6 | .9 | 1.35 | 2.025 | 3.0375 | 4.55625 |

 **b.**

**3. Write a scenario to represent each given function.**

 **a.** y = 5,000(1.05)x

 **b.** y = -3x + 600