Additional Problems: Linear & Exponential Sequences

**Arithmetic Sequences**

1. What common ratio is being solved in the exponential function f(x) = 50(1.5)^x-1?
2. What common ratio is being solved in the exponential function f(x) = 200(.75)^x-1?
3. A bacteria population triples every day. If the population of bacteria is 20 at the end of the first day, how many bacteria will there be after five days?
   1. The initial number of bacteria is \_\_\_\_\_\_.
   2. The common ratio is \_\_\_\_\_\_.
   3. The number of bacteria after five days is \_\_\_\_\_.
4. A certain type of algae population quadruples every week. If the population of algae is 15 at the end of the first week, how many algae will there be after six weeks?
   1. The initial number of algae is \_\_\_\_\_\_.
   2. The common ratio is \_\_\_\_\_\_.
   3. The number of algae after six weeks is \_\_\_\_\_.
5. Use the table to answer the question.

|  |  |
| --- | --- |
| Minutes | Messages Sent |
| 0 | 0 |
| 1 | 2 |
| 2 | 4 |
| 3 | 8 |
| 4 | 16 |

The table shows how a text message spread. What point should be graphed to represent the third term in the geometric sequence?

* 1. (4, 16)
  2. (3, 8)
  3. (2, 4)
  4. (3, 4)

1. Use the table to answer the question.

|  |  |
| --- | --- |
| Minutes | Messages Sent |
| 0 | 1 |
| 1 | 5 |
| 2 | 25 |
| 3 | 125 |
| 4 | 625 |

The table shows the growth of a bacteria culture. What point should be graphed to represent the third term in the geometric sequence?

* 1. (4, 625)
  2. (3, 125)
  3. (2, 25)
  4. (3, 25)

1. Write a function to represent the geometric sequence 2, 8, 32, . . . .
   1. f(x) = 2(4)^x-1
   2. f(x) = 4(2)^x-1
   3. f(x) = 2(4)^x
   4. f(x) = 4(2)^x
2. Write a function to represent the geometric sequence 5, 20, 80, . . . .
   1. f(x) = 5(4)^x-1
   2. f(x) = 4(5)^x-1
   3. f(x) = 5(4)^x
   4. f(x) = 4(5)^x
3. Every year that a piece of equipment is used, it loses value. If the equipment loses 10 percent of its value each year and its beginning value is $15,000, what will the value of the equipment be after three years?
   1. $10,935
   2. $12,150
   3. $10,935
   4. $9,000
4. A laptop depreciates in value by 20 percent each year. If the initial value of the laptop is $1,200, what will the value of the laptop be after four years?
   1. $491.52
   2. $768
   3. $491.52
   4. $614.40