

7. Answers may vary. Sample: The equation represents an exponential function because the independent variable  $x$  is an exponent.
8. 6
9. Linear; there is a common difference of 225.
10. Exponential; there is a common ratio of 2.
11. average rate of change
12. Sample answer: A population of 12 frogs doubles every month.
13. Paul assumed that the function's average rate of change is constant. However, the function is exponential so the rate of change is different over each interval. In this case, the average rate of change is increasing.
14. 2; It costs an additional \$2 to make each bracelet.
15. About 1.26; about 2.05; about 3.34; During the first 10 months, the hummingbird population increases about 1.26 per month. During the second 10 months, the hummingbird population increases about 2.05 per month. During the third 10 months, the hummingbird population increases about 3.34 per month.
16.
  - a. The graph of a linear function will be a straight line.
  - b. The rule for a linear function can be written in the form  $y = mx + b$ .
  - c. If consecutive values have a common difference for both the input values and output values, the function is linear.
17. The common ratio is 2. So the table represents an exponential function.
20. The common difference is  $-21$ . So the table represents a linear function. The common difference means the bathtub is draining at a rate of 21 gallons per minute.
21.
  - a. There is a common ratio of 0.94.
  - b. Because there is a common ratio, the situation can be modeled by an exponential function.
  - c. 6%