Exponential Growth/Decay Context Problems   Name:_____

1.)   A bank account balance starts with $100, and has an annual interest rate of 4%. How much money is in the account after 12 years?

2.   In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of cell phone users increased by 50% per year after 1985. How many cell phone subscribers were in Centerville in 2000?

3.   Each year the local country club sponsors a tennis tournament. Play starts with 128 participants. During each round, half of the players are eliminated. How many players remain after 5 rounds?

5.   The population of Winnemucca, Nevada, can be modeled by P=6191(1.04)t where t is the number of years since 1990.

   a.   What was the population in 1990?

   b.   By what percent did the population increase by each year?

   c.   When will the population reach 10,000?

6.   You have inherited land that was purchased for $30,000 in 1960. The value of the land increased by approximately 5% per year. What is the approximate value of the land in the year 2015?

7.   During normal breathing, about 12% of the air in the lungs is replaced after one breath.

   a.   Write an exponential decay model for the amount of the original air left in the lungs if the initial amount of air in the lungs is 500 mL.

   b.   How much of the original air is present after 240 breaths?

Algebra 1   Name_____

Unit 8 Review

Find the common ratio, the term named in the problem, the explicit formula, and the recursive formula.

1) $1,\ -3,\ 9,\ -27,\ ...$
   Find a_9

2) $-1,\ -4,\ -16,\ -64,\ ...$
   Find a_9

3) $-1,\ 4,\ -16,\ 64,\ ...$
   Find a_{10}

4) $-3,\ 6,\ -12,\ 24,\ ...$
   Find a_{11}

5) $-2,\ 6,\ -18,\ 54,\ ...$
   Find a_{12}

6) $4,\ 8,\ 16,\ 32,\ ...$
   Find a_{10}

7) $-1,\ -3,\ -9,\ -27,\ ...$
   Find a_{11}

8) $-4,\ -8,\ -16,\ -32,\ ...$
   Find a_{12}

Evaluate each function.

9) $f(n) = 3^n - 2$; Find $f(-1)$

10) $p(x) = 2^{-x-2}$; Find $p(1)$

11) $g(n) = 4^n$; Find $g(2)$

12) $f(x) = 5^{x+1} + 2$; Find $f(-1)$

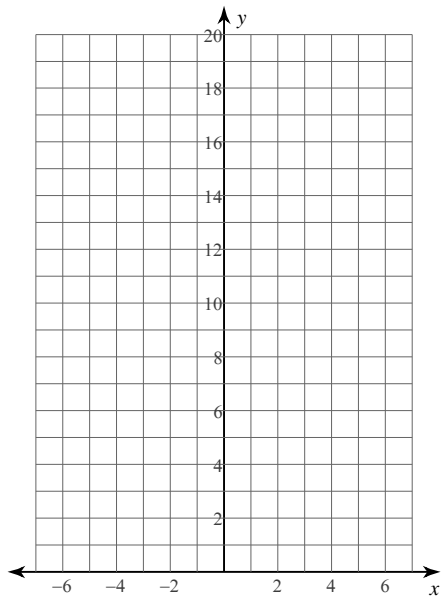13) $f(t) = -2^{t+3}$; Find $f(-1)$

14) $h(n) = 4^{n-1}$; Find $h(0)$
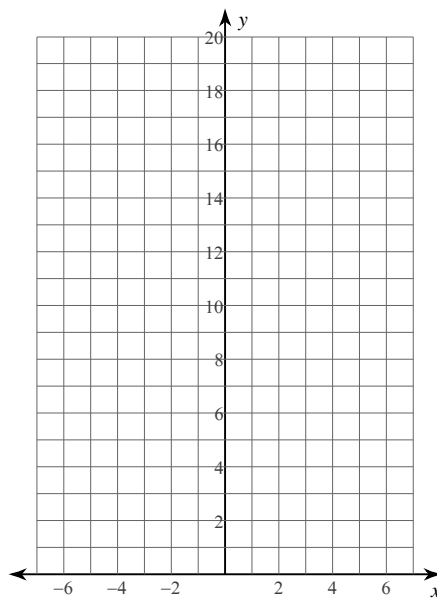
15) $w(n) = 3^n$; Find $w(1)$

16) $f(n) = 3^n - 1$; Find $f(2)$

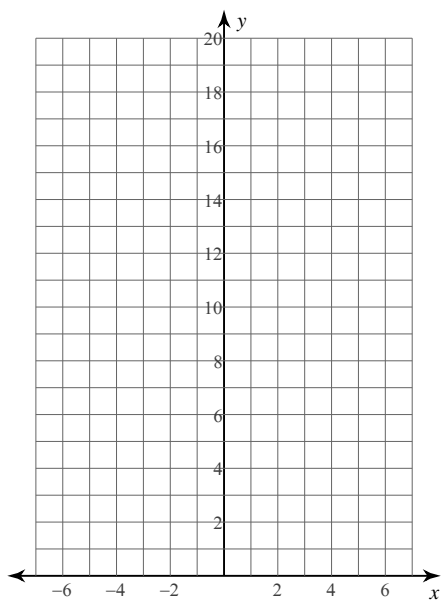**Sketch the graph of each function.**

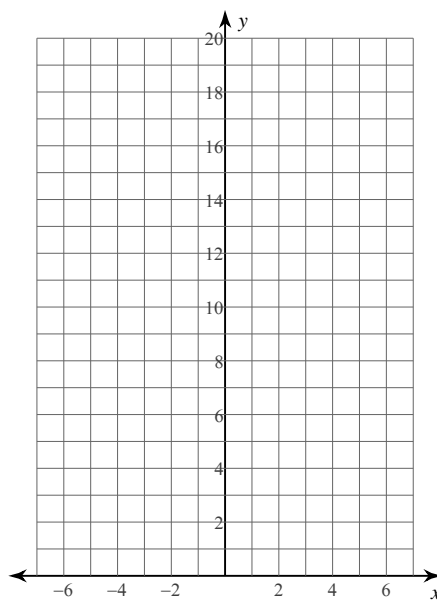17) $f(x) = 3 \cdot 2^x$

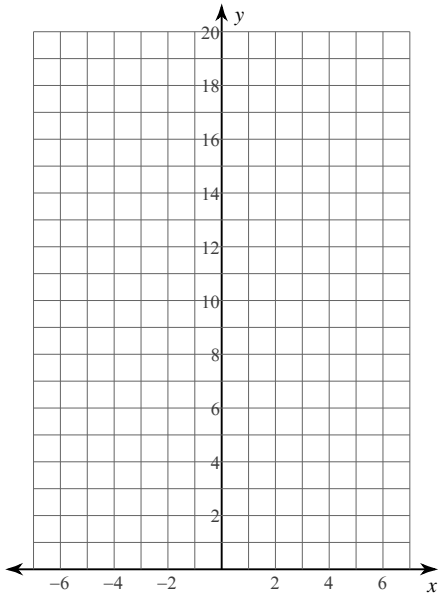18) $f(x) = \dfrac{1}{4} \cdot 2^x$

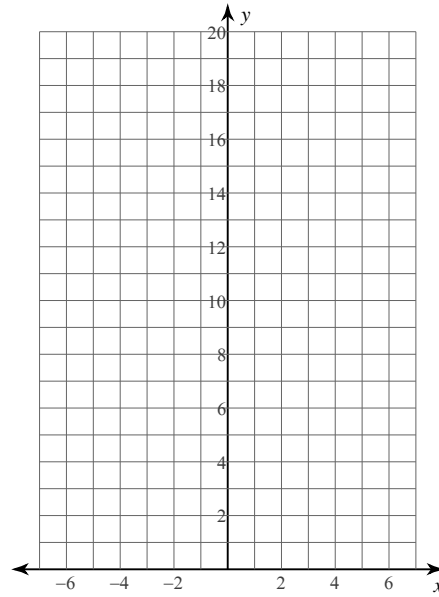

19) $f(x) = 4 \cdot 2^x$

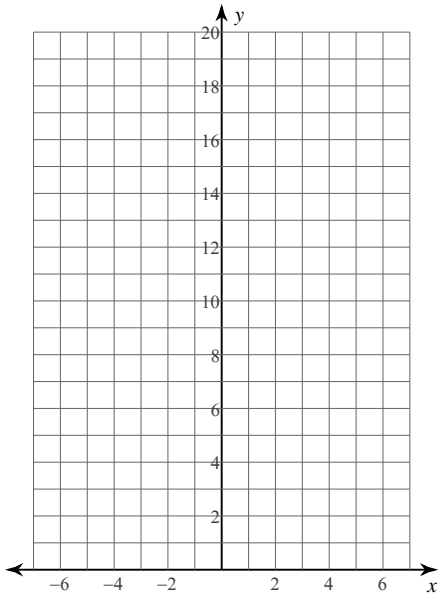20) $f(x) = 2 \cdot 2^x$

21) $f(x) = 2 \cdot \left(\dfrac{1}{2}\right)^x$

22) $f(x) = \dfrac{1}{2} \cdot \left(\dfrac{1}{4}\right)^x$

23) $f(x) = 4 \cdot \left(\dfrac{1}{2}\right)^x$

24) $f(x) = \dfrac{1}{3} \cdot \left(\dfrac{1}{3}\right)^x$