TEST NAME: **UGHS_Math_CoordinateAlgebra_Unit3d**
TEST ID: **10598**
GRADE: **Grade 9**
SUBJECT: **Mathematics**
TEST CATEGORY: **Common Assessments**

Student: _____

Class: _____

Date: _____

1. **The temperature, in degrees Fahrenheit, of the face of a heated household iron can be found after _t_ hours of cooling by the formula** $f(t) = 50(2)^{-2t} + 75$. **Which of the following is closest to the temperature of the iron after 0.6 hours of cooling?**

   A. 75.0°F

   B. 96.8°F

   C. 125.0°F

   D. 189.9°F

2. **Which statement represents a situation in which a quantity is changing at a constant rate per unit interval?**

   A. Bacteria in a petri dish triple every 12 hours.

   B. Water in a pool is draining 20 cm^3 every 5 seconds.

   C. Money in a savings account is compounded daily at 3.5% interest.

   D. The braking distance of a car is proportional to the square of its speed.

3. **Values for the function _g(x)_ are shown in the table.**

x	0	1	2	3	4	5
g(x)	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$

   Which statement proves that $g(x)$ is an exponential function?

   A. All values of $g(x)$ are fractions.

   B. All values of $g(x)$ are positive numbers.

   C. The function $g(x)$ decreases by equal factors over equal intervals.

   D. The function $g(x)$ grows by equal differences over equal intervals.

4. **Kelsie gets paid by her employer at a constant rate per hour. Which table could represent the amount, in dollars, that Kelsie was paid during the last 4 weeks?**

A.

Kelsie's Pay

Number of Hours Worked	Amount Paid
40	$400
25	$400
34	$400
46	$400

B.

Kelsie's Pay

Number of Hours Worked	Amount Paid
40	$400
25	$420
34	$440
46	$460

C.

Kelsie's Pay

Number of Hours Worked	Amount Paid
40	$250
25	$340
34	$400
46	$460

D.

Kelsie's Pay

Number of Hours Worked	Amount Paid
40	$400
25	$250
34	$340
46	$460

5. **Values for the function $f(x)$ are shown in the table.**

| x	0	1	2	3	4	5
f(x)	0	3	9	27	81	243

Which statement proves that $f(x)$ is an exponential function?
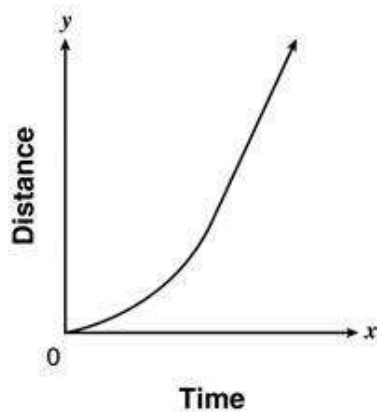
A. All of the values of $f(x)$ are odd numbers.

B. All of the values of $f(x)$ are multiples of 3.

C. The function $f(x)$ grows by equal factors over equal intervals.

D. The function $f(x)$ grows by equal differences over equal intervals.

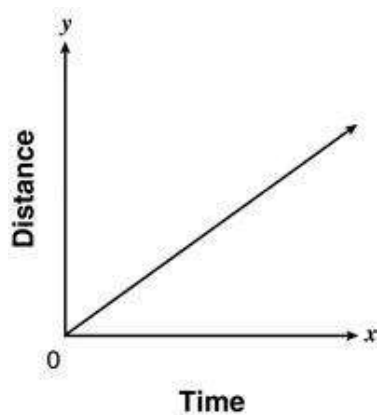6. **Which graph represents the movement of a train whose distance from a starting point changes at a constant rate?**
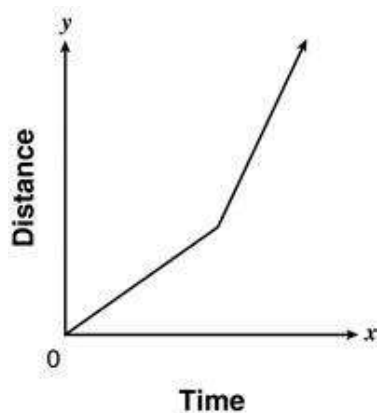
A.

B.

C.

D.

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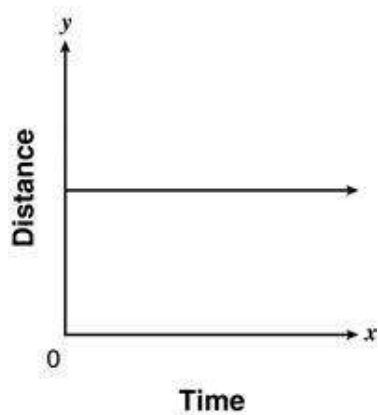
7. **Which of the following situations is not best modeled by a linear function?**

    A.   The height of a ball as it is thrown up in the air and falls back to the ground, as a function of time.

    B.   The total distance run around a track as a function of the number of laps around the track.

    C.   The distance traveled by a train moving at a constant speed, as a function of time.

    D.   The price of a piece of fabric that varies directly with the length of the piece of fabric, as a function of the length.


8. **Which scenario describes a pattern of exponential decay?**

    A.   A backgammon competition has 10 players exiting after each round of games.

    B.   A ping-pong club has had 10, 9, and 8 new members in three years, respectively.

    C.   A billiards organization lost 5%, 4%, and 3% of its members in three years, respectively.

    D.   An elimination chess tournament has half the number of players in each successive round.

9. **At the beginning of an experiment, there are 1000 bacteria in a certain culture. If the number of bacteria triples every day, how many bacteria will be in the culture after 4 days?**

    A.   16,000

    B.   27,000

    C.   81,000

    D.   243,000

10. **What function is represented by the following graph?**
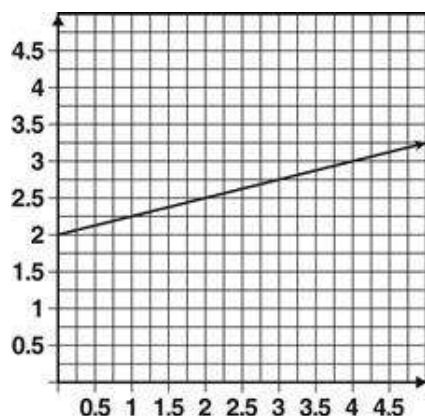
    A. $f(x) = \dfrac{x}{2} + 4$

    B. $f(x) = \dfrac{x}{4} + 4$

    C. $f(x) = \dfrac{x}{4} + 2$

    D. $f(x) = \dfrac{x}{2} + 2$

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11. **The expression** $500(2)^x$ **can be used to determine the size of a population that grows over a period of time. What does 500 represent in the expression?**

   A.   the final size of the population

   B.   the initial size of the population

   C.   the amount of time necessary to double

   D.   the rate at which the population is growing

12. **At a water park the relationship between C, the total cost of admission, and t, the number of tickets purchased, is described by the function** $C = 15t + 2$ **. Which statement is true?**

   A.   An increase of 1 ticket purchased leads to an increase of $2 in total cost.

   B.   An increase of 1 ticket purchased leads to an increase of $15 in total cost.

   C.   An increase of 1 ticket purchased leads to an increase of $17 in total cost.

   D.   An increase of 1 ticket purchased leads to an increase of $30 in total cost.