TEST NAME: **Jan 10 Math 1 (COPY)**
TEST ID: **2789336**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

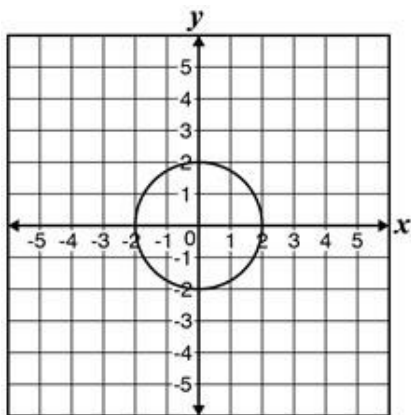Class: _____

Date: _____

1. **Look at the equation below.**

$$y = -Ax + 6$$

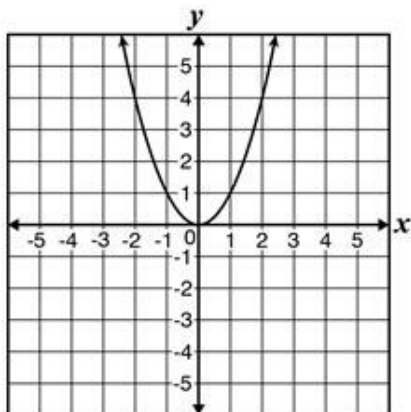   **For what value of *A* will the graph of the equation have an *x*-intercept at (2, 0)?**

   A. 6
   B. 4
   C. 3
   D. 2

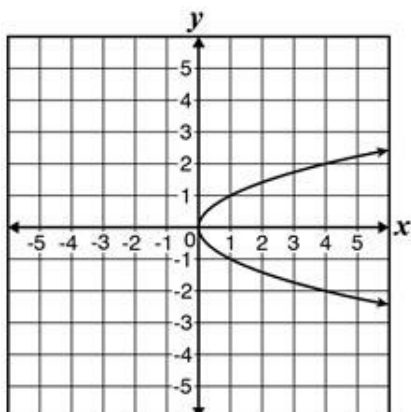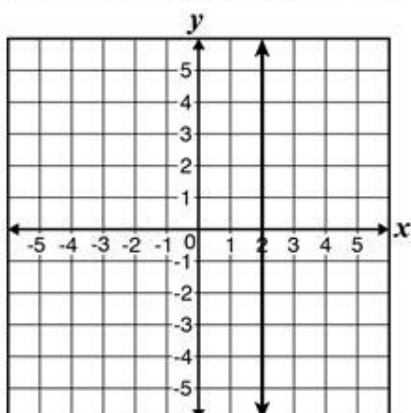2. **Which graph represents a function?**

A.

B.

C.

D.

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3. The function $f(x) = 19,000(0.89)^x$ models the value of a boat x years after its purchase. Which statement correctly describes the value of the boat?

   A. The value is decreasing by 11% per year.

   B. The value is decreasing by 89% per year.

   C. The value is increasing by 11% per year.

   D.
   The value is increasing by 89% per year.

4. A scientist is observing the size of a sample of bacteria. The function $f(t) = 1,000(0.995)^t$ models the size of the sample t hours after the scientist began his observations. Which statement is true about the size of the sample?

   A. The sample is growing at a rate of 99.5% per hour.

   B. The sample is decaying at a rate of 99.5% per hour.

   C. The sample is growing at a rate of 0.5% per hour.

   D. The sample is decaying at a rate of 0.5% per hour.

5. **Given the equation** $-2x + 6y = 24$, **what are the x-intercept and y-intercept of the graph?**

   A. x-intercept $= -12$; y-intercept $= 4$

   B. x-intercept -4; y-intercept $= 12$

   C. x-intercept $= 4$; y-intercept $= -12$

   D. x-intercept $= 12$; y-intercept $= -4$

6. In 2008, the enrollment at Greenwood Elementary School was 865 students. The equation $N = 865(0.92)^t$ can be used to determine the number, N, of students enrolled t years after 2008. Which statement about the change in enrollment is **true**?

   A. The enrollment at Greenwood Elementary School is decaying at the rate of 0.92% each year.

   B. The enrollment at Greenwood Elementary School is growing at the rate of 0.92% each year.

   C. The enrollment at Greenwood Elementary School is decaying at the rate of 8% each year.

   D. The enrollment at Greenwood Elementary School is growing at the rate of 8% each year.

7. **What is the *x*-intercept of the graph of** $3x - y + 6 = 0?$

   A. $(-2, 0)$

   B. $(0, -6)$

   C. $(0, 6)$

   D. $(2, 0)$

8. The area of a right triangle is 24 cm^2. The base of the triangle is $(x + 5)$ cm and the height is $(2x)$ cm. What is the measure of the base of the triangle?

   A. 6 cm

   B. 8 cm

   C. 10 cm

   D. 12 cm

9. If $f(x) = {}^-2(5)^x$, what is $f(2)$?

   A. 100

   B. 20

   C. $^-20$

   D. $^-50$

10. The function $B(t) = 17{,}550(0.88)^t$ models the value of a boat, t years after it was purchased. Which statement is true about the value of the boat?

   A. The value of the boat is increasing by 12% each year.

   B. The value of the boat is increasing by 88% each year.

   C. The value of the boat is decreasing by 12% each year.

   D. The value of the boat is decreasing by 88% each year.

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11. The number of female nurses in a country can be predicted using the function $f(t)=7,300 + 25t$, where t is the number of years since 2000. The number of male nurses can be predicted using the function $m(t) = 2,500(1.02)^t$, where t is the number of years since 2000. **About** how many years will it take before the number of male nurses is expected to exceed the number of female nurses?

A. 60

B. 65

C. 70

D. 75

12. The table below shows some inputs and outputs of function $f(x)$.

x	$f(x)$
1	9
2	13
4	21
8	37
16	69

Which statement **best** describes the function?

A. $f(x)$ is a linear function because x is doubling in each row of the table.

B. $f(x)$ is an exponential function because x is doubling in each row of the table.

C. $f(x)$ is a linear function because $f(x)$ is increasing by 4 for each increase in x by 1.

D. $f(x)$ is an exponential function because $f(x)$ is increasing by 4 for each increase in x by 1.

13. Two functions are listed below.

$$f(x) = 100 + 20x$$
$$g(x) = 20(1.5)^x$$

Which statement is true when $x = 6$?

A. The value of $f(x)$ exceeds the value of $g(x)$ by about 8.

B. The value of $g(x)$ exceeds the value of $f(x)$ by about 8.

C. The value of $f(x)$ exceeds the value of $g(x)$ by about 48.

D. The value of $g(x)$ exceeds the value of $f(x)$ by about 48.

14. Jaymee is making bracelets to sell at her school's craft fair. She makes an initial purchase of $50 of yarn and sells the bracelet for $2 a piece. This situation is best modeled by what type of equation?

A. cubic function

B. exponential function

C. linear function

D. quadratic function

15. Which situation can be modeled by a linear function?

A. the number of members in a club, y, that doubles in size every x years

B. the value of an investment, y, that began with $500 and earns 4.25% interest every x years

C. the height, y, of a ball x seconds after it was hit off a tee at an initial velocity of 60 feet per second

D. the total cost, y, to purchase x tickets to a sporting event if a 20% service charge is added to the cost of each ticket

16. A scientist monitored the growth of two types of bacteria.

- The function $f(x) = 200(1.5)^x$ models the amount of bacteria A x hours after the scientist began monitoring the samples.
- The function $f(x) = 150x + 350$ models the amount of bacteria B x hours after the scientist began monitoring the samples.

Approximately how long will it take the number of bacteria in bacteria A to be larger than bacteria B?

A. 3.4 hours

B. 3.7 hours

C. 4.5 hours

D. 4.7 hours

17. The function $V(t) = 22,000 - 3,400t$ models the value of the Mr. Smith's boat t years after he purchased it in 2009. What does the 22,000 represent?

A. the current value of the boat

B. the value of the boat when Mr. Smith purchased it

C. the amount the value of the boat increases each year Mr. Smith owns it

D. the amount the value of the boat decreases each year Mr. Smith owns it

18. The function $B(h) = 500,000(0.92)^h$ represents the number of bacteria in a petri dish h hours after introducing an antibiotic to the petri dish. Based on the function, which statement is true?

A. The population decays at a rate of 0.92% after introducing the antibiotic.

B. The population decays at a rate of 92% after introducing the antibiotic.

C. The population decays at a rate of 0.08% after introducing the antibiotic.

D. The population decays at a rate of 8% after introducing the antibiotic.

19. A line segment has endpoints at (6, 2) and (14, 6). What are the coordinates of the midpoint of the line segment?

    A. (4, 2)

    B. (8, 4)

    C. (10, 4)

    D. (20, 8)

20. Which equation has a graph that is parallel to the graph of the equation $4x - 2y = {}^-4$?

    A. $y = {}^-2x + 1$

    B. $y = {}^-\frac{1}{2}x + 1$

    C. $y = \frac{1}{2}x + 3$

    D. $y = 2x + 3$

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