Name Key

Math 7 Honors

Date Jan 24

Linear Equations

1. Line W and Line Z are represented below.

Line W

$$y = -\frac{1}{16}x + 30$$

$m = \frac{-1}{16}$ $b = (0, 30)$

Line Z

x	0	1	2	3
y	15.8	15.76	15.72	15.68

$m = \frac{-0.04}{1}$ $b = (0, 15.8)$

Which statement comparing these lines is true?

A. The slope of Line W is equal to the slope of Line Z

B. The slope of Line W is less than the slope of Line Z

C. The y-intercept of Line W is equal to the y-intercept of Line Z

D. The y-intercept of Line W is less than the y-intercept of Line Z

2. What is the y-intercept of the linear equation $5y - 10x = -15$?

A. -3

B. -15

C. -2

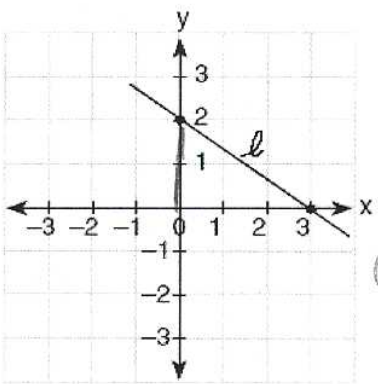
D. 3

$+10x \quad +10x$

$\frac{5y}{5} = \frac{10x}{5} - \frac{15}{5}$

$y = 2x - 3$

3. Write the equation of line ℓ in the accompanying diagram.



$m = \frac{-2}{3}$

$b = (0, 2)$

$y = -\frac{2}{3}x + 2$

x, y

4. If point $(-1, 0)$ is on the line whose equation is $y = 2x + b$, what is the value of the y-intercept?

$0 = 2(-1) + b$

$0 = -2 + b$

$+2 \quad +2$

$2 = b$

A. 1

B. 2

C. 3

D. 0

5. Find the slope of a line that passes through the points $(-3, 3)$ and $(5, 7)$.

A. 2

B. $\frac{1}{2}$

C. -2

D. $-\frac{1}{2}$

$m = \frac{\Delta y}{\Delta x} = \frac{4}{8} = \frac{1}{2}$

6. What is the slope of the line whose equation is $2x + 2y = 7x + 4$?

A. 5

B. $\frac{5}{2}$

C. 2

D. $\frac{2}{5}$

$y = \frac{5}{2}x + 2$

7. If $(x, 3)$ is a point on the line whose equation is $4x + y = -9$, what is the value of x?

A. 3

B. 8

C. -21

D. -3

$4x + 3 = -9$

$4x = -12$

$x = -3$

8. Which equation expresses the relationship between x and y, as shown in the accompanying table?

x	1	3	5
y	5	11	17

$m = \frac{\Delta y}{\Delta x} = \frac{6}{2} = 3$

$y = mx + b$

$5 = 3(1) + b$

$5 = 3 + b$

$2 = b$

A. $y = 3x + 3$

B. $y = 2x + 3$

C. $y = 3x + 2$

D. $y = x + 2$

9. Line segment AB has a slope of $\frac{3}{4}$. If the coordinates of point A are $(2, 5)$, the coordinates of point B could be

use the slope to get the pt

A. (6, 8)

B. (5, 9)

C. (6, 2)

D. (−1, 1)

$m = \frac{3}{4}$

$2 + 4 = 6$

$5 + 3 = 8$

(6, 8)

x y

10. The point $(2, -3)$ is a solution to which equation?

plug "x" & "y" into each equation

A. $2x - 3y = 6$

$2(2) - 3(-3) = 6$

$4 + 6 =$

$10 \neq 6$

C. $x + y = 5$

$2 - 3 = 5$

$-1 \neq 5$

B. $3x + y = 3$

$3(2) - 3 = 3$

$6 - 3 = 3$

$3 = 3$ ✓

D. $x - y = -1$

$2 - (-3) = -1$

$2 + 3 = -1$

$5 \neq -1$

11. In Bellport, the average cost for a gym membership is given by the equation $y = 34.99x + 49$, where y is the total cost, in dollars, for x months of membership. What is the meaning of the y-value when $x = 1$?

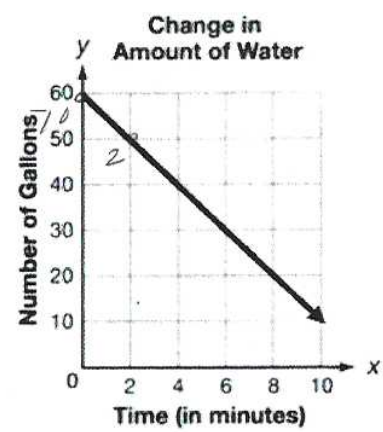
A. The average sign-up fee for a gym membership

B. The average monthly charge for a gym membership

C. The average total cost for the first month of a gym membership

D. The average total cost for the first two months of a gym membership

12. Alexa is cleaning her fish tank. The graph shown represents the rate at which she empties the tank.



Part A Write the equation of this linear function.

$m = \frac{-10}{2} = -5$ $b = (0, 60)$

Answer $y = -5x + 60$

Part B What do the slope and y-intercept mean in this context?

y-intercept is the amount of water in the tank. Slope represents for every min. it empties out 5 gal.

13. Graph the equation $3(y + 1) - 2x = 0$

$3y + 3 - 2x = 0$

$+2x \quad +2x$

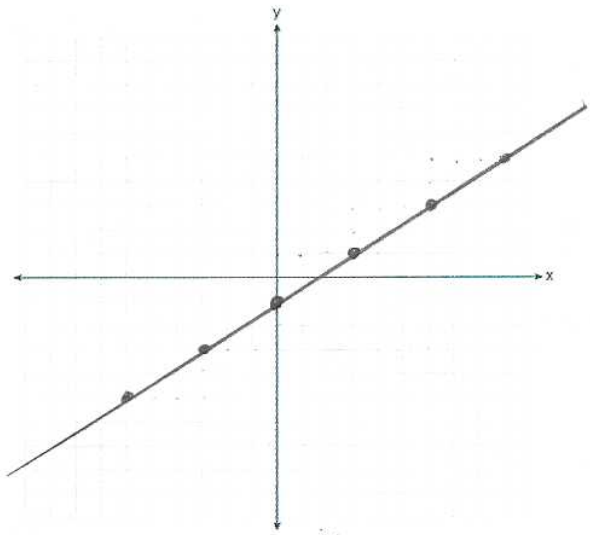
$3y + 3 = 2x$

$-3 \quad -3$

$\frac{3y}{3} = \frac{2x}{3} - \frac{3}{3}$

$y = \frac{2}{3}x - 1$

$m = \frac{2}{3} \quad b = (0, -1)$



x y

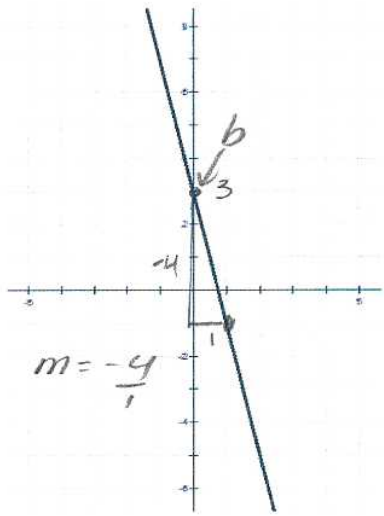
14. Jaden graphed the linear equation shown below. He thinks the point $(7, -25)$ will be on this line. Do you agree? *Show work to justify your answer.*

$y = -4x + 3$

$-25 = -4(7) + 3$

$-25 = -28 + 3$

$-25 = -25$ ✓



15. At Babylon Bowl, Jeff pays \$4 to rent a pair of bowling shoes, and then pays \$5 for each game he bowls.

Part A Graph the amount Jeff will pay to bowl.

Part B Write the equation of this linear function.

Answer $y = 5x + 4$

Part C Use your equation to determine the amount Jeff will pay if he bowls 12 games. *Show your work.* $y = 5(12) + 4$

$y = 60 + 4$

$y = 64$