

Student Name: _____ Date: _____

Class / Period: _____ Teacher: _____

1. A line passes through $(-4, 6)$ and has a slope of $-\frac{3}{5}$. Which equation represents this line in point-slope form?

A. $y + 6 = -\frac{3}{5}(x + 4)$

B. $y - 6 = -\frac{3}{5}(x + 4)$

C. $y - 6 = -\frac{3}{5}(x - 4)$

D. $y - 6 = -\frac{5}{3}(x + 4)$

2. A line passes through $(-2, 5)$ and $(4, 1)$. Which equation in standard form represents this line?

A. $2x + 3y = 19$

B. $3x + 2y = 4$

C. $2x - 3y = 5$

D. $2x + 3y = 11$

3. A line passes through the points $(-4, 7)$ and $(2, -2)$. Which equations represent this line?

Select **TWO** correct answers.

☐ **A.** $y = -\frac{2}{3}x - \frac{2}{3}$

☐ **B.** $3x + 2y = 2$

☐ **C.** $y - 7 = \frac{3}{2}(x + 4)$

☐ **D.** $y = -\frac{3}{2}x - 1$

☐ **E.** $y + 2 = -\frac{3}{2}(x - 2)$

4. The table shows a linear relationship between input x and output y .

Input, x	Output, y
2	1
5	7
8	13

Which equation represents the relationship shown in the table?

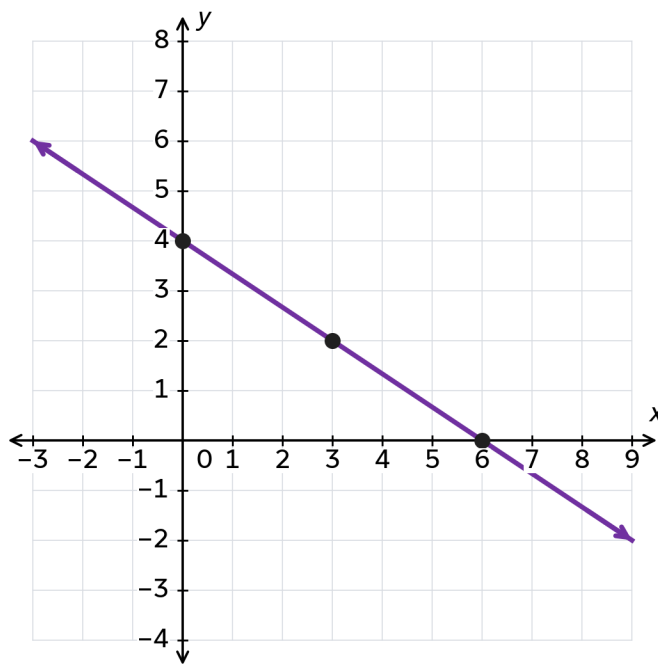
A. $y = 2x - 3$

B. $y = 6x - 11$

C. $y = \frac{7}{5}x$

D. $y = \frac{1}{2}x + 9$

5. The graph shows the linear relationship between the input x and the output y .



Which equation represents the line shown in the graph?

A. $y = -\frac{3}{2}x + 4$

B. $y = \frac{2}{3}x + 4$

C. $y = -\frac{2}{3}x + 4$

D. $y = -\frac{2}{3}x + 6$

6. A tank contains 72 liters of water when a drain is opened. Water then leaves the tank at a constant rate of 12 liters every 4 minutes. Let x represent the number of minutes since the drain opened, and let y represent the liters of water remaining. Complete the equation that models this situation while water remains in the tank.

Circle one choice for each blank.

$$y = [\textit{Blank 1}]x + [\textit{Blank 2}]$$

Blank 1

A. 3

B. -3

C. -12

Blank 2

A. 12

B. 60

C. 72

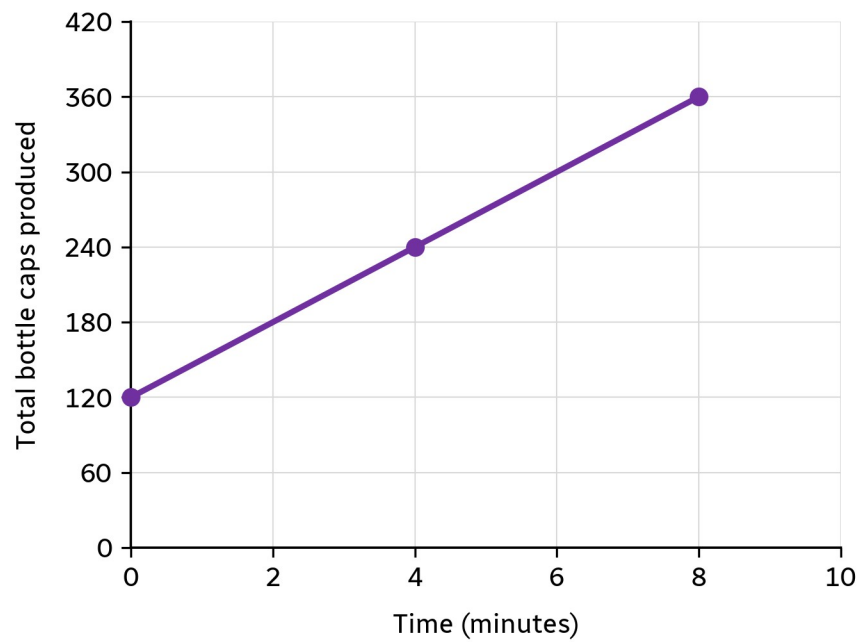
7. Ribbon is unrolled from a spool at a constant rate. The table shows the length of ribbon remaining on the spool at different times.

Time (minutes)	Remaining ribbon (meters)
2	84
5	66
9	42

Which statement describes the rate of change of the length of ribbon remaining on the spool?

- A.** The remaining length increases by 6 meters per minute.
- B.** The remaining length decreases by 6 meters per minute.
- C.** The remaining length decreases by 18 meters per minute.
- D.** The remaining length decreases by 42 meters per minute.

8. The graph models the total number of bottle caps a machine has produced. Time is measured from when an observer starts a timer during the run.



What is the machine's rate of production?

- A.** 30 bottle caps per minute
- B.** 0.5 bottle caps per minute
- C.** 45 bottle caps per minute
- D.** 60 bottle caps per minute

9. The equation represents a linear function with input x and output y .

$$6x + 4y = 20$$

What is the rate of change of y with respect to x ?

A. -6

B. $\frac{3}{2}$

C. $-\frac{2}{3}$

D. $-\frac{3}{2}$

10. The equation sets a sum involving x equal to a difference involving x .

$$-2(3x - 4) + 5x = 3(x + 2) - 10$$

What is the solution to the equation?

A. $x = -1$

B. $x = 0$

C. $x = 3$

D. $x = 6$

11. The linear equation equates two expressions in x .

$$\frac{2}{3}(x - 4) = \frac{1}{2}x + \frac{1}{4}$$

What value of x is the solution?

A. $x = \frac{35}{2}$

B. $x = \frac{7}{2}$

C. $x = \frac{33}{2}$

D. $x = -\frac{29}{2}$

12. Which value is the solution of each equation in the grid?

Mark one box in each row. A solution may be used more than once.

Equation	Solution $x = -2$	Solution $x = 2$	Solution $x = 4$
$3(x+2) = x+10$	☐	☐	☐
$5-x = 3x-3$	☐	☐	☐
$-3(x+6) = 3x-6$	☐	☐	☐

13. A linear inequality in x is shown.

$$-2(3x - 4) + 5 \leq 2x - 11$$

Which inequality represents the complete solution set?

A. $x \leq 3$

B. $x \geq 1$

C. $x > 3$

D. $x \geq 3$

14. Which two inequalities each have the complete solution set $x \leq 4$?

Select **TWO** correct answers.

☐ **A.** $3(2x - 5) \leq 4x - 7$

☐ **B.** $2(x + 5) > 3x + 6$

☐ **C.** $4(x - 1) - 2 \geq 2x + 2$

☐ **D.** $5 - 2(x + 3) \geq x - 13$

☐ **E.** $2(x - 1) + x \leq 2x + 3$

15. The equation gives the output of function f for each input x .

$$f(x) = -3(x + 4) + 7$$

What is the value of $f(-6)$?

- A.** 1
- B.** 13
- C.** 29
- D.** -23

16. The quadratic function f has input x and output $f(x)$. Its domain is all real numbers.

$$f(x) = 2x^2 - 3x + 1$$

Complete the statement with the value of the function at each input.

Circle one choice for each blank.

$f(-2) = [\textit{Blank 1}]$, and $f(3) = [\textit{Blank 2}]$.

Blank 1

A. 15

B. -1

C. 3

Blank 2

A. -2

B. 10

C. 28

17. The function f assigns each valid input x an output using a quotient of two linear expressions.

$$f(x) = \frac{3x - 4}{x + 2}$$

What is $f(4)$?

A. 4

B. 2

C. $\frac{4}{3}$

D. $\frac{3}{4}$

18. The formula below gives the perimeter P of a rectangle with length l and width w .

$$P = 2l + 2w$$

Which equation is equivalent to the formula when solved for l ?

A. $l = \frac{P}{2} - w$

B. $l = \frac{P}{2} - 2w$

C. $l = \frac{P - w}{2}$

D. $l = \frac{P}{2} + w$

19. The value of x depends on a , b , c , and d , where $a \neq c$.

$$ax + b = cx + d$$

Which equation expresses x in terms of the other variables?

A. $x = \frac{d + b}{a - c}$

B. $x = \frac{d - b}{a - c}$

C. $x = \frac{d - b}{a + c}$

D. $x = \frac{b - d}{a - c}$

20. The formula relates P to the variables a , b , c , and d , where $a \neq 0$ and $b \neq c$.

$$P = a(b - c) + d$$

Which two equations correctly isolate their indicated variables?

Select **TWO** correct answers.

☐ **A.** $b = \frac{P + d}{a} + c$

☐ **B.** $d = P - ab - ac$

☐ **C.** $a = \frac{P - d}{b - c}$

☐ **D.** $a = P - \frac{d}{b - c}$

☐ **E.** $c = \frac{ab + d - P}{a}$