1. Calculate the slope of a line which is parallel to the line passing through the points $(-2, 4)$ and $(4, -4)$

A. -4

B. $-\frac{7}{12}$

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

D. $-\frac{5}{6}$

E. $-\frac{4}{3}$

F. $-\frac{5}{3}$

G. $-\frac{13}{12}$

H. Undefined

2. A section of road has a 1% grade. What is the change in elevation on this section of road covering a horizontal distance of 500 m?

A. The change in elevation is 75 m.

B. The change in elevation is 5 m.

C. The change in elevation is 55 m.

D. The change in elevation is 35 m.

E. The change in elevation is 65 m.

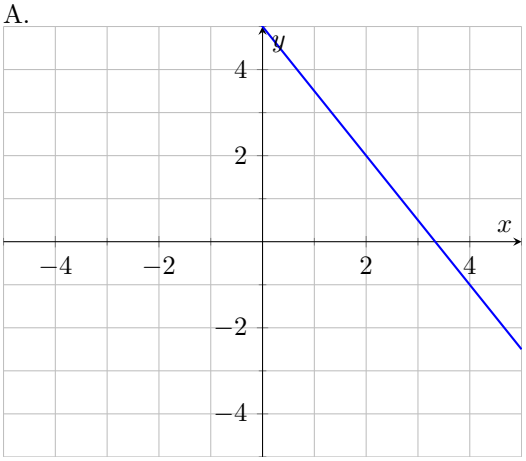
F. The change in elevation is 25 m.

G. The change in elevation is 45 m.

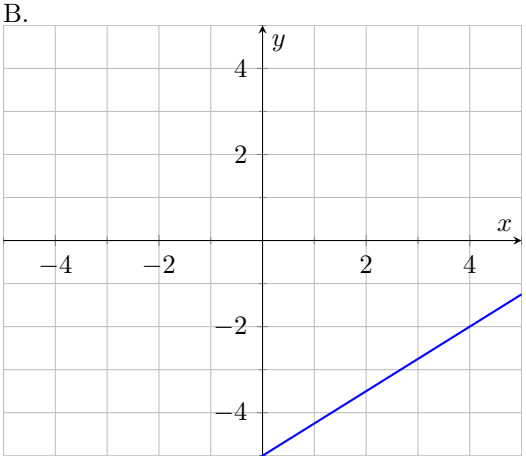
H. The change in elevation is -5 m.

3. Using the slope and y-intercept, and pencil and paper, graph the line $f(x) = \frac{3}{2}x + 5$.

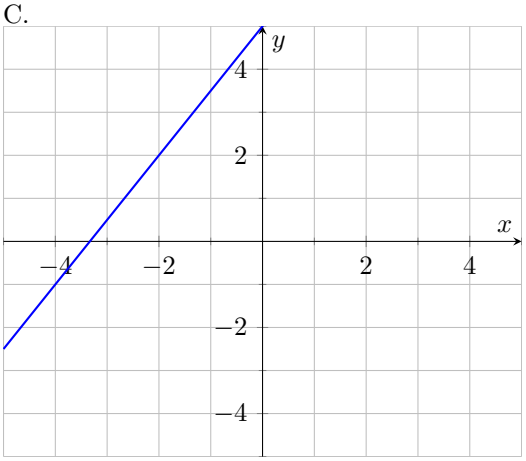
A.



B.

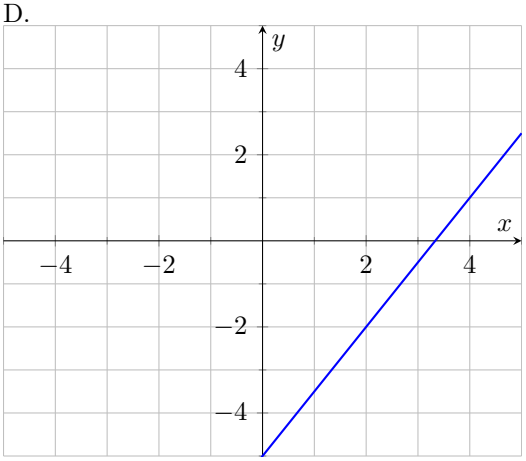


C.

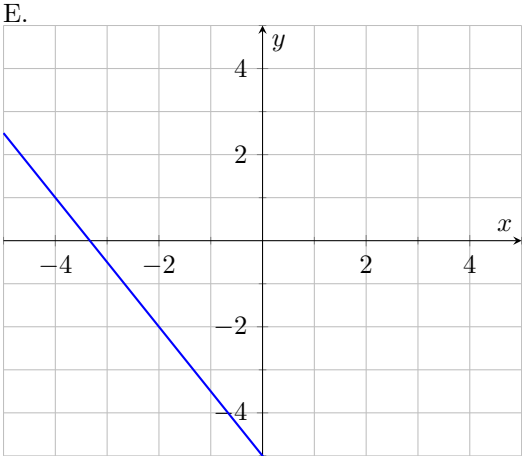


MORE OPTIONS ON THE NEXT PAGE

D.



E.



4. Use the given table of values for a linear function to determine the equation of this line in slope-intercept form

x	y
0	4
2	8
4	12
6	16
8	20

A. The equation of the line is $f(x) = -2x - 3$.

B. The equation of the line is $f(x) = 2x + 3$.

C. The equation of the line is $f(x) = 2x + 1$.

D. The equation of the line is $f(x) = 2x + 2$.

E. The equation of the line is $f(x) = 2x - 2$.

F. The equation of the line is $f(x) = 2x + 4$.

G. The equation of the line is $f(x) = -2x + 5$.

H. The equation of the line is $f(x) = 2x - 5$.

5. Use the slope-intercept form of each line to determine the number of solutions of the system $\left\{ \begin{array}{l} y = \frac{1}{2}x - 4 \\ y = \frac{1}{2}x - 3 \end{array} \right\}$; then classify each system as a consistent system of independent equations, an inconsistent system, or a consistent system of dependent equations.

A. The system has one solution. Therefore, it is an inconsistent system of dependent equations.

B. The system has no solutions. Therefore, it is an inconsistent system of equations.

C. The system has infinitely many solutions. Therefore, it is a consistent system of dependent equations.

D. The system has infinitely many solutions. Therefore, it is an inconsistent system of dependent equations.

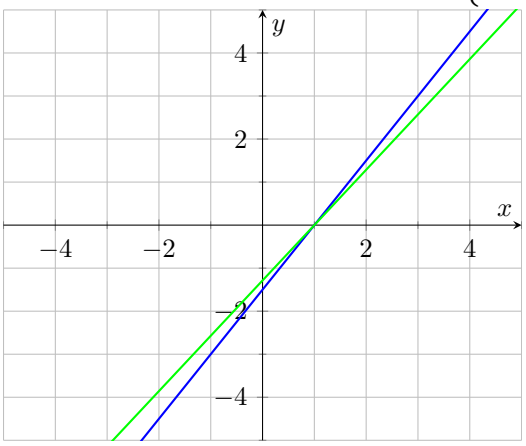
E. The system has one solution. Therefore, it is a consistent system of independent equations.

F. The system has two solutions. Therefore, it is a inconsistent system of dependent equations.

G. The system has two solutions. Therefore, it is a consistent system of independent equations.

H. The system has no solutions. Therefore, it is a consistent system of independent equations.

6. Solve the system of linear equations $\left\{ \begin{array}{l} -9x + 7y = -9 \\ 3x - 2y = 3 \end{array} \right\}$ by using the graph below.



A. $(0, -1)$.

B. $(-1, -2)$.

C. $(3, 2)$.

D. $(-2, -3)$.

E. $(2, 1)$.

F. $(1, 0)$.

7. Solve the following linear system by substitution. $\left\{ \begin{array}{l} \frac{x}{2} - \frac{y}{4} = -\frac{1}{2} \\ \frac{x}{5} - \frac{y}{8} = -\frac{1}{10} \end{array} \right\}$

A. $(-2, -3)$.

B. $(-7, -8)$.

C. $(-6, -7)$.

D. There is no solution.

E. There are infinitely many solutions.

F. $(0, -1)$.

G. $(-4, -5)$.

H. $(-3, -4)$.

8. Solve the following linear system by substitution. $\left\{ \begin{array}{l} 2x - y = 4 \\ x - y = 0 \end{array} \right\}$

A. $(5, 5)$.

B. There are infinitely many solutions.

C. $(3, 3)$.

D. There is no solution.

E. $(6, 6)$.

F. $(0, 0)$.

G. $(4, 4)$.

H. $(7, 7)$.

9. Solve the following linear system by the addition method. $\left\{ \begin{array}{l} x - y = -4 \\ 2x - y = 1 \end{array} \right\}$

A. $(9, 13)$.

B. There is no solution.

C. $(3, 7)$.

D. $(4, 8)$.

E. There are infinitely many solutions.

F. $(5, 9)$.

G. $(1, 5)$.

H. $(8, 12)$.

10. Solve the following linear system by the addition method. $\left\{ \begin{array}{l} -9x - 9y = -3 \\ 3x + 3y = -2 \end{array} \right\}$

A. $(-3, 1)$.

B. $(-2, 2)$.

C. $(2, 6)$.

D. $(1, 5)$.

E. There are infinitely many solutions.

F. There is no solution.

G. $(0, 4)$.

H. $(3, 7)$.

11. Billy Bob is mixing up a batch of his famous "Mother Lode Mountain Punch." Here's Billy Bob's secret recipe:

1. Lots of sugar.
2. Several Kool Aid drink mix packets.
3. Pure mountain spring water.
4. Bourbon.

Now, Billy Bob is a bright, well-liked fellow, but he doesn't remember any algebra, so he needs a little help. Billy Bob is planning a hootenanny and needs to know how much of the mixed Sugar Kool Aid drink (no alcohol) and bourbon (41 percent alcohol) he needs to mix together to make 40 gallons of Mother Lode Mountain Punch which is 13 percent alcohol. Round your final numbers to the nearest tenth of a gallon.

A. Billy Bob needs to mix 27.3 gallons of Kool Aid and 12.7 gallons of moonshine.

B. Billy Bob needs to mix 26.4 gallons of Kool Aid and 13.6 gallons of moonshine.

C. Billy Bob needs to mix 27 gallons of Kool Aid and 13 gallons of moonshine.

D. Billy Bob needs to mix 26.8 gallons of Kool Aid and 13.2 gallons of moonshine.

E. Billy Bob needs to mix 26.6 gallons of Kool Aid and 13.4 gallons of moonshine.

F. Billy Bob needs to mix 28.1 gallons of Kool Aid and 11.9 gallons of moonshine.

G. Billy Bob needs to mix 27.1 gallons of Kool Aid and 12.9 gallons of moonshine.

H. Billy Bob needs to mix 27.5 gallons of Kool Aid and 12.5 gallons of moonshine.

12. A jet plane and a refueling plane that are 500 mi apart head toward each other so that the jet can refuel. The jet flies 250 mi/h faster than the tanker. Suppose they meet in 35 minutes. Letting r_1 be the speed of the jet, and r_2 be the speed of the refueller, write a system of equations which models this situation. (Warning: Use consistent units of measurement.)

A. The system is $\left\{ \begin{array}{c} r_1 + r_2 = 250 \\ \frac{7}{12}r_1 + \frac{7}{12}r_2 = 500 \end{array} \right\}$.

B. The system is $\left\{ \begin{array}{c} r_1 = r_2 + 250 \\ \frac{7}{12}r_1 + \frac{7}{12}r_2 = 500 \end{array} \right\}$.

C. The system is $\left\{ \begin{array}{c} r_1 + r_2 = 250 \\ 35r_1 + 35r_2 = 500 \end{array} \right\}$.

D. The system is $\left\{ \begin{array}{c} r_1 = r_2 + 250 \\ \frac{7}{12}r_1 + \frac{7}{12}r_2 = \frac{7}{12} \cdot 500 \end{array} \right\}$.

E. The system is $\left\{ \begin{array}{c} r_1 + r_2 = 250 \\ \frac{7}{12}r_1 + \frac{7}{12}r_2 = \frac{7}{12} \cdot 500 \end{array} \right\}$.

F. The system is $\left\{ \begin{array}{c} r_1 + r_2 = 250 \\ 35r_1 + 35r_2 = 35 \cdot 500 \end{array} \right\}$.

G. The system is $\left\{ \begin{array}{c} r_1 = r_2 + 250 \\ 35r_1 + 35r_2 = 500 \end{array} \right\}$.

H. The system is $\left\{ \begin{array}{c} r_1 = r_2 + 250 \\ 35r_1 + 35r_2 = 35 \cdot 500 \end{array} \right\}$.

13. Solve the following linear inequality $x + 3 > -x$.

A. $x > -\frac{3}{4}$

B. $x > 6$

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

D. $x > \frac{1}{2}$

E. $x > \frac{9}{2}$

F. $x > -\frac{1}{2}$

G. $x > -3$

H. $-\frac{3}{8} < x$

14. Solve the following linear inequality $1 \leq 3x - 4$.

A. $\frac{10}{3} \leq x$

B. $-\frac{5}{3} \leq x$

C. $x \geq \frac{5}{3}$

D. $\frac{20}{3} \leq x$

E. $x \geq \frac{5}{12}$

F. $-\frac{5}{9} \leq x$

G. $-5 \leq x$

H. $5 \leq x$

15. Solve the following linear inequality $-3x - 5 < 3x + 4$.

A. $\frac{3}{8} < x$

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

C. $-\frac{3}{8} < x$

D. $x > \frac{3}{2}$

E. $x > 3$

F. $x > -\frac{3}{2}$

G. $x > -\frac{9}{2}$

H. $\frac{9}{2} < x$

16. Solve the following linear inequality $0(2x-4) \leq 4(-3x-1)$.

A. $x \geq -\frac{1}{12}$

B. $x \geq \frac{1}{3}$

C. $x \geq \frac{1}{12}$

D. $x \geq -1$

E. $x \geq 1$

F. $x \leq -\frac{1}{3}$

G. $x \geq \frac{1}{9}$

H. $x \geq \frac{1}{6}$

17. Solve the following linear inequality $5x - 2 > 5$ OR $4x + 3 < -1$ and express you answer in interval notation.

A. $x \in (-\infty, -\frac{3}{4}) \cap (\frac{33}{20}, \infty)$

B. $x \in (-\infty, -\frac{13}{5}) \cup (-5, \infty)$

C. $x \in (-\infty, -5) \cap (-\frac{13}{5}, \infty)$

D. $x \in (-\infty, -1) \cup (\frac{7}{5}, \infty)$

E. $x \in \mathbb{R} = (-\infty, \infty)$

F. $x \in (-\infty, \frac{26}{15}) \cap (-\frac{2}{3}, \infty)$

G. $x \in (-\infty, -2) \cap (\frac{7}{5}, \infty)$

H. $x \in (-\infty, \frac{26}{15}) \cup (-\frac{2}{3}, \infty)$

18. Solve the following linear inequality $2x + 2 \geq -5$ AND $x < 1$.

A. $-\frac{9}{2} < x < 0$

B. The inequality is true for all values of x. Therefore, it is a contradiction.

C. $x \geq -\frac{1}{2}$ OR $x < 4$

D. $-\frac{7}{2} < x < 1$

E. $-\frac{7}{2} \leq x < 1$

F. $1 < x \leq -\frac{7}{2}$

G. $0 < x < -\frac{9}{2}$

H. $1 \leq x \leq -\frac{7}{2}$

19. Solve the following inequality $|x + 2| < 1$.

A. $-\frac{3}{2} < x < -\frac{1}{3}$

B. $x < -\frac{3}{2}$ or $x > -\frac{1}{3}$

C. $-3 < x < -1$

D. $x < \frac{1}{4}$ or $x > 1$

E. $x < -3$ or $x > -1$

F. $x < -9$ or $x > -3$

G. $\frac{1}{4} < x < 1$

H. $-9 < x < -3$

20. Solve the following inequality $|-3(x-2)+5(3x-4)| \geq 5$.

A. $-\frac{3}{8} \leq x \leq \frac{19}{24}$

B. $x \leq -\frac{3}{8}$ or $x \geq \frac{19}{24}$

C. $-\frac{9}{4} \leq x \leq \frac{19}{36}$

D. $\frac{3}{4} \leq x \leq \frac{19}{12}$

E. $x \leq -\frac{9}{4}$ or $x \geq \frac{19}{36}$

F. $\frac{3}{2} \leq x \leq \frac{19}{4}$

G. $x \leq \frac{3}{4}$ or $x \geq \frac{19}{12}$

H. $x \leq \frac{3}{2}$ or $x \geq \frac{19}{4}$

Answers

1. E.
2. B.
3. C.
4. F.
5. B.
6. F.
7. H.
8. G.
9. F.
10. F.
11. A.
12. B.
13. C.
14. C.
15. F.
16. F.
17. D.
18. E.
19. C.
20. G.