

Write the letter for the correct answer in the blank at the right of each question.

1. The system of equations $y = 2x - 3$ and $y = 4x - 3$ has
 A. exactly one solution. C. infinitely many solutions.
 B. no solution. D. exactly two solutions.

1. A

Choose the correct description of each system of equations.

- F. consistent and independent H. consistent and dependent
 G. inconsistent J. inconsistent and dependent

2. F

2. $x + 2y = 7$
 $3x - 2y = 5$

3. $2x + 3y = 10$
 $4x + 6y = 20$

3. H

To solve each system of equations, which expression could be substituted for x into the first equation?

4. $3x - 5y = 14$
 $x + 4y = 10$

A. $10 - 4y$ C. $4y + 10$
 B. $\frac{1}{4}x + \frac{5}{2}$ D. $-\frac{1}{4}x + \frac{5}{2}$

4. A

5. $2x + 7y = 10$
 $x - 2y = 15$

F. $\frac{1}{2}x + 15$ H. $\frac{1}{2}x - 15$
 G. $2y + 15$ J. $2y - 15$

5. G

6. The first equation of the system is multiplied by 2. $2(6x - 5y = 21)$
 By what number would you multiply the second equation to eliminate the x variable by adding? $4x + 7y = 15$

- A. 3 B. -3 C. 2 D. -2

6. B

7. The first equation of the system is multiplied by 4. $4(2x + 5y = 16)$
 By what number would you multiply the second equation to eliminate the y variable by adding? $8x - 4y = 10$

- F. 5 G. -5 H. 2 J. -2

7. F

For Questions 8 and 9, solve each system of equations.

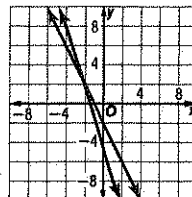
8. $4x - 3y = 14$ $4x - 3(-3x + 4) = 14$ A. (1, 1) C. (5, 2)
 $y = -3x + 4$ $4x + 9x - 12 = 14$ B. (-4, -10) D. (2, -2)

9. $4x - 3y = 8$ $13x = 20$ F. (-2, 1) H. (2, 0)
 $2(2x + 5y = -9)$ $x = 2$ G. (0, -83) J. $(\frac{1}{2}, -2)$

8. D9. J

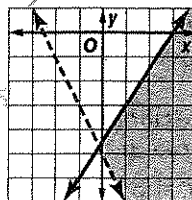
10. Which system of equations is graphed?

A. $2x + y = 1$ C. $2x + y = 1$
 $-3x - y = 3$ $3x - y = 3$
 B. $2x + y = -1$ D. $2x + y = -1$
 $3x - y = 3$ $-3x - y = 3$

10. D

11. Which system of inequalities is graphed?

A. $2x + y \geq 5$ H. $2x - y \leq 5$
 $3x + 2y \leq 9$ $3x + 2y < 9$
 G. $2x + y > -5$ J. $-2x + y > 5$
 $3x - 2y \geq 9$ $3x - 2y \leq 9$

11. G

Chapter 3 Test, Form 2B (continued)

12. Find the coordinates of the vertices of the figure formed by the system $x \geq 0$, $y \geq -2$, and $2x + y \leq 4$.

A. $(3, -2), (0, 4), (0, -2)$

C. $(0, 0), (0, 4), (2, 0)$

B. $(-2, 0), (4, 0), (-2, 3)$

D. $(-2, 3), (0, 4), (0, -2)$

12. A

For Questions 13–15, use the system of inequalities $y \geq 1$, $y - x \leq 6$, and $x + 2y \leq 6$. (graph)

13. Find the coordinates of the vertices of the feasible region. (graph)

F. $(-6, 0), (-2, 4), (6, 0)$

H. $(-5, 1), (-2, 4), (4, 1)$

G. $(0, 1), (0, 3), (4, 1)$

J. $(-5, 1), (-2, 4), (0, 3), (0, 1)$

13. H

14. Find the maximum value of $f(x, y) = 2x + y$ for the feasible region. (graph)

A. 0

B. 11

C. 9

D. 8

14. C

15. Find the minimum value of $f(x, y) = 2x + y$ for the feasible region.

F. -10

G. 0

H. -9

J. -4

15. H

16. What is the value of z in the solution of the system of equations?

$2x + 3y - z = 12$

$4x - y + z = -3$

$-2x + 2y + z = 3$

A. -1

B. 12

C. 3

D. -2

16. D

Tickets to a golf tournament are sold in advance for \$40 each, and on the day of the event for \$50 each. For the tournament to occur, at least 2000 of the 8000 tickets must be sold in advance.

17. Let a represent the number of advance tickets sold and d represent the number sold on the day of the tournament. Which system of inequalities represents the number of tickets sold? (2000, 6000) (2000, 0) (8000, 0)

F. $a \geq 2000, d \geq 0, a + d \leq 8000$

H. $a \geq 0, d \geq 0, a + d \leq 8000$

G. $a \geq 0, d \geq 0, a + d \leq 2000$

J. $a \leq 40, d \leq 50, a + d \leq 2000$

17. F

18. How many advance tickets should be sold to maximize revenue? $f(a, d) = 40a + 50d$

A. 6000

B. 2000

C. 4000

D. 8000

18. B

A local gas station sells low-grade (ℓ), mid-grade (m), and premium (p) gasoline. Mid-grade gasoline costs \$0.10 per gallon more than low-grade, $\rightarrow m = .10 + \ell$ and premium gasoline costs \$0.10 per gallon more than mid-grade $\rightarrow p = .10 + m$ gasoline. Five gallons of low-grade gas cost \$9. $\rightarrow 5\ell = 9$

19. Which system of equations represents the cost of each type of gasoline?

F. $5\ell + m = 9, m = \ell + 0.10, p = m + 0.10$

G. $5\ell = 9, m = \ell - 0.10, p = m - 0.10$

H. $5\ell = 9, m = \ell + 0.10, p = m + 0.10$

J. $0.10\ell + 0.10m + 5p = 9, 0.10\ell + m = 0, 0.10m + p = 0$

19. H

20. What is the cost of one gallon of premium gasoline?

A. \$1.80

B. \$1.90

C. \$2.00

D. \$2.10

20. C

Bonus Solve the system of equations.

$a + b = 6$

$c + d = 4$

$f + a = 2$

$b + c = 5$

$d + f = 3$

B: (2, 4, 1, 3, 0)