

Test 5 (Unit 7, 8, and 9)

Question 1 .

The first four terms of a linear pattern are given below.

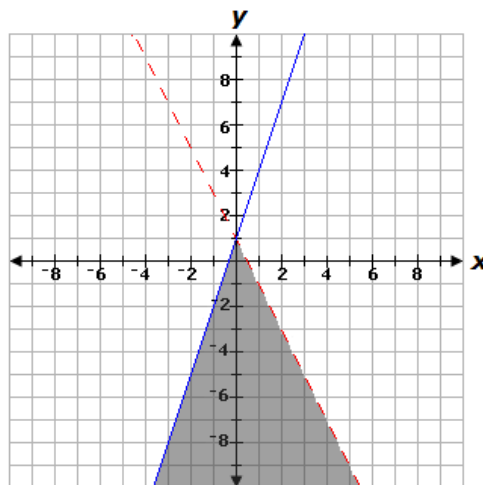
x	y
1	9
2	12
3	15
4	18
5	?

What is the missing term?

- ☐ A. 21
- ☐ B. 24
- ☐ C. 27
- ☐ D. 20

Question 2 .

The solution set to a system of linear inequalities is graphed below.



Which system of linear inequalities has the solution set shown in the graph?

- ☐ A. $y < 3x + 1$
 $y \leq -2x + 1$
- ☐ B. $y \leq 3x + 1$
 $y < -2x + 1$
- ☐ C. $y < 3x + 1$
 $y < -2x + 1$
- ☐ D. $y \leq 3x + 1$
 $y > -2x + 1$

Question 3 .

Simplify.

$$\sqrt{200}$$

- ☐ A. $20\sqrt{10}$
- ☐ B. $100\sqrt{2}$
- ☐ C. $10\sqrt{2}$
- ☐ D. $2\sqrt{10}$

Question 4 .

The table below shows a pattern in the cost of renting a car based on the number of days rented.

Car Rentals

Number of Days (d)	Cost in Dollars (c)
4	161
5	195
6	229
7	263

The pattern continues. Which equation describes the pattern in the cost of renting a car?

- ☐ A. $c = 34d + 25$
- ☐ B. $c = 68d + 43$
- ☐ C. $c = 34d + 127$
- ☐ D. $c = 68d + 25$

Question 5 .

$(-3, 2)$
 $(0, -1)$
 $(6, -7)$
 $(10, -11)$

What is the domain of the set of ordered pairs above?

- ☐ A. $\{-3, 10\}$
- ☐ B. $\{2, -1, -7, -11\}$
- ☐ C. $\{-3, 0, 6\}$
- ☐ D. $\{-3, 0, 6, 10\}$

Question 6 .

The first five terms of a pattern are given below.

23, 30, 37, 44, 51,

Which expression can be used to determine the n^{th} term of the pattern?

- ☐ A. $30 - 7n$
- ☐ B. $16 + 7n$
- ☐ C. $29 - 6n$
- ☐ D. $17 + 6n$

Question 7 .

Do the ordered pairs below represent a relation, a function, both a relation and a function, or neither a relation nor a function?

$(-1, -3)$, $(2, -6)$, $(4, -8)$, $(10, -14)$

- ☐ A. neither a relation nor a function
- ☐ B. function only
- ☐ C. relation only
- ☐ D. both a relation and a function

Question 8 .

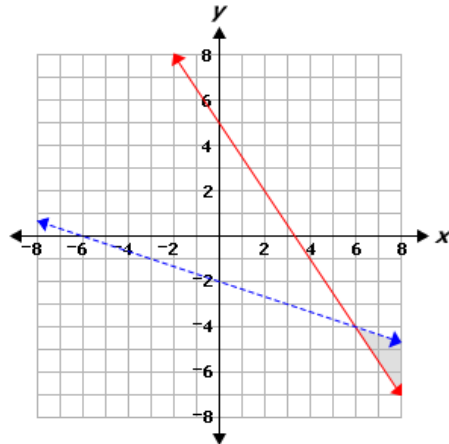
A system of inequalities is shown below.

$$y \leq \frac{-3}{2}x + 5$$

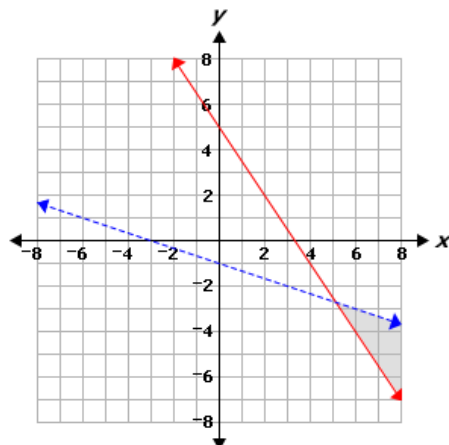
$$x + 3y > -6$$

Which graph represents the system?

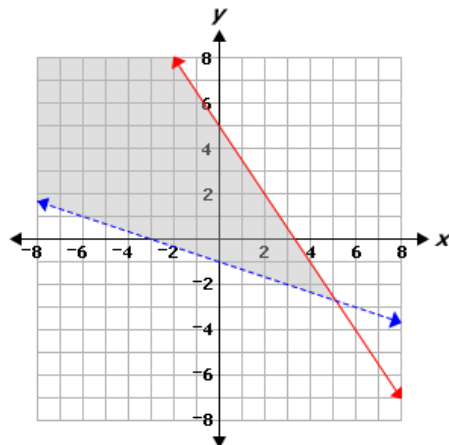
☐ A.



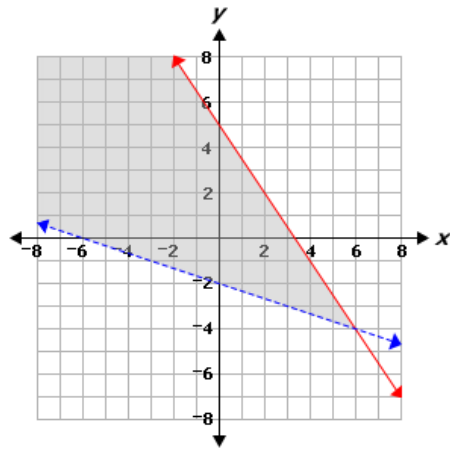
☐ B.



☐ C.



☐ D.



Question 9 .

Use elimination to find the solution to the system of equations.

$$2x + 3y = 12$$

$$7x - 8y = -32$$

- ☐ A. $x = -\frac{8}{7}, y = 3$
- ☐ B. $x = 9, y = -2$
- ☐ C. $x = 0, y = 4$
- ☐ D. $x = 2, y = 16$

Question 10 .

The set of ordered pairs below is a relation.

$$\{(-3, -4), (-1, 0), (2, 1), (5, 3)\}$$

What is the range of the relation?

- ☐ A. $\{-3, -1, 2, 5\}$
- ☐ B. $\{-4, 0, 1, 3\}$
- ☐ C. $\{\text{all real numbers between } -3 \text{ and } 5\}$
- ☐ D. $\{\text{all real numbers between } -4 \text{ and } 3\}$

Question 11 .

The freshman class is planning a field trip. The class can either visit the aviation museum or the local arboretum. At the aviation museum, tickets cost \$19 each, plus a flat rate of \$48 for parking all the buses. At the arboretum, tickets cost \$14 each, plus a flat rate of \$64 for parking all the buses.

Let x represent the number of people going on the field trip, and let y represent the total cost of the field trip. Which system of equations could be used to find how many people can go on either field trip so that both field trips have the same cost?

- ☐ A. $y = 19x + \$14$
 $y = 48x + \$64$
- ☐ B. $y = 19x + \$48$
 $y = 14x + \$64$
- ☐ C. $y = 14x + \$48$
 $y = 19x + \$64$
- ☐ D. $y = 48x + \$19$
 $y = 64x + \$14$

Question 12 .

Solve for x in the two equations below using substitution.

$$12x - 3y = 24$$

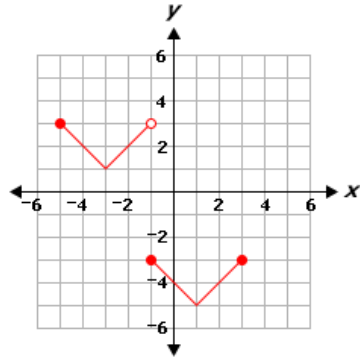
$$24x + 3y = 120$$

- ☐ A. $x = 2$
- ☐ B. $x = 8$
- ☐ C. $x = 4$
- ☐ D. $x = 12$

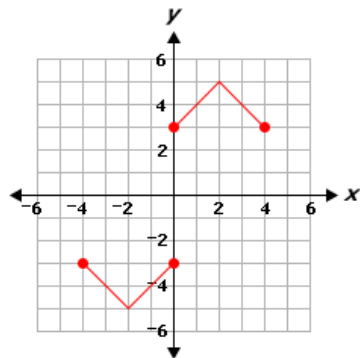
Question 13 .

Which graph shows y as a function of x ?

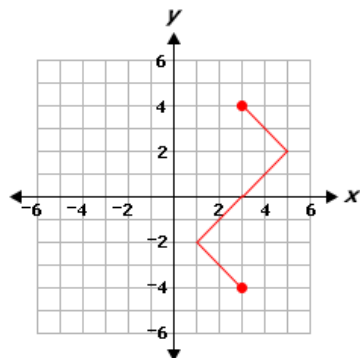
☐ A.



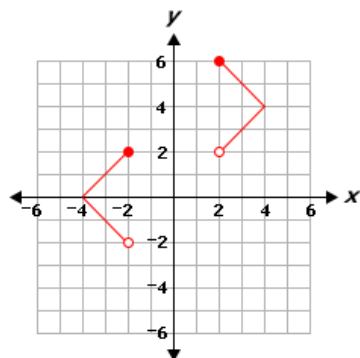
☐ B.



☐ C.



☐ D.



Question 14 .

Do the ordered pairs below represent a relation, a function, both a relation and a function, or neither a relation nor a function?

$(-3,2)$, $(1,-6)$, $(5,-14)$, $(10,-24)$

- ☐ A. function only
- ☐ B. relation only
- ☐ C. neither a relation nor a function
- ☐ D. both a relation and a function

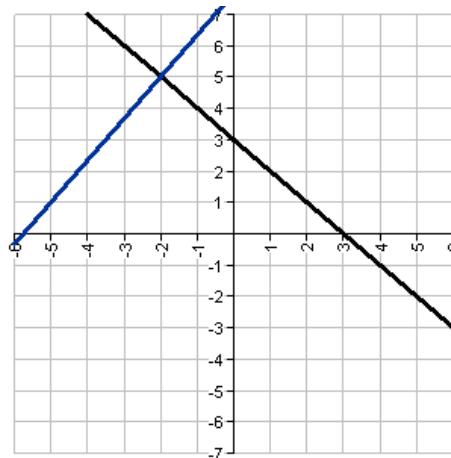
Question 15 .

The following system of equations is graphed below.

$$-3x - 3y = -9$$

$$-4x + 3y = 23$$

Find the solution to the system.



- ☐ A. $x = -2, y = 6$
- ☐ B. $x = -1, y = 5$
- ☐ C. $x = -2, y = 5$
- ☐ D. $x = 5, y = -2$

Question 16 .

Which of the following relations is a function?

- ☐ A. (8, 1), (-1, 4), (3, 1), (8, 2)
- ☐ B. (3, 0), (-1, 3), (8, 1), (-1, 5)
- ☐ C. (3, 4), (-1, 2), (8, 1), (-7, 2)
- ☐ D. (3, 4), (-1, 6), (3, 3), (-7, 2)

Question 17 .

According to the table below, what is the domain of the data?

input	output
14	2,744
16	4,096
18	5,832
20	8,000
22	10,648

- ☐ A. 14, 12, 10, 8, 6
- ☐ B. 2,744, 4,096, 5,832, 8,000, 10,648
- ☐ C. 3, 5, 7, 9, 11
- ☐ D. 14, 16, 18, 20, 22

Question 18 .

Rick and Casey are buying fish at the local market for their restaurants. Rick buys 5 brook trout for x dollars each and 2 rainbow trout for y dollars each and pays \$160 for the fish. Casey buys 3 brook trout for x dollars each and 4 rainbow trout for y dollars each and pays \$194 for the fish. The system of equations shown below represents this situation.

$$5x + 2y = 160$$

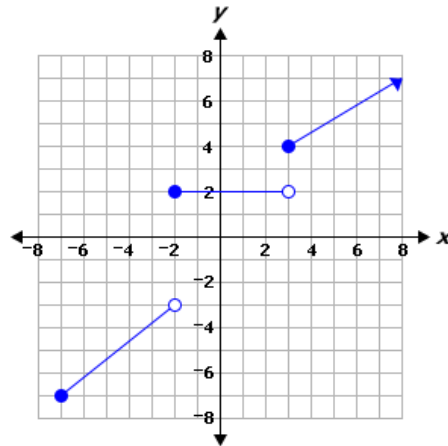
$$3x + 4y = 194$$

Which statement is true?

- ☐ A. Casey spent 3 times as much on brook trout than he did on rainbow trout.
- ☐ B. Rick spent more money on rainbow trout than he did on brook trout.
- ☐ C. Casey paid \$18 for each rainbow trout.
- ☐ D. A rainbow trout costs \$17 more than a brook trout.

Question 19 .

The graph of a function is shown below.



Which value is **not** in the domain of the function?

- ☐ A. -8
- ☐ B. -7
- ☐ C. 3
- ☐ D. 8

Question 20 .

Simplify the following expression.

$$\frac{x^2 - 4x + 3}{x - 1}$$

- ☐ A. $x - 1$
- ☐ B. $x^2 - 17x - 4$
- ☐ C. $x^2 - 9x - 2$
- ☐ D. $x - 3$

Question 21 .

Mary is buying soil and plants for her garden. The soil costs \$4 per bag and the plants cost \$10 each. She wants to buy at least 5 items, and can spend no more than \$100.

Which system of inequalities can be used to determine the number of bags of soil (s) and the number of plants (p) Mary can buy for her garden?

- ☐ A. $p + s \geq 5$
 $10s + 4p \leq 100$
- ☐ B. $p + s \leq 5$
 $4s + 10p \geq 100$
- ☐ C. $p + s \leq 5$
 $10s + 4p \geq 100$
- ☐ D. $p + s \geq 5$
 $4s + 10p \leq 100$

Question 22 .

The first five terms of a linear pattern are given below.

12, 15, 18, 21, 24, ...

What is the next term of the pattern?

- ☐ A. 29
- ☐ B. 26
- ☐ C. 27
- ☐ D. 28

Question 23 .

Jonathan deposits between 15% and 25% of the money he makes from mowing lawns into a savings account each month. This can be represented by the system of inequalities shown below, where y is the amount deposited into savings, in dollars, and x is the amount of money he makes mowing lawns, in dollars.

$$y > 0.15x$$

$$y < 0.25x$$

Which of the following is a true statement?

- ☐ **A.** When the amount of money he makes mowing lawns (x) is \$125, the amount deposited into savings (y) must be between \$187.50 and \$312.50.
- ☐ **B.** When the amount of money he makes mowing lawns (x) is \$108, the amount deposited into savings (y) must be between \$4.32 and \$7.20.
- ☐ **C.** When the amount deposited into savings (y) is \$9.75, the amount of money he makes mowing lawns(x) must be between \$39 and \$65.
- ☐ **D.** When the amount deposited into savings (y) is \$18.75, the amount of money he makes mowing lawns (x) must be between \$281.25 and \$468.75.

Answers

1. A
2. B
3. C
4. A
5. D
6. B
7. D
8. D
9. C
10. B
11. B
12. C
13. A
14. D
15. C
16. C
17. D
18. D
19. A
20. D
21. D
22. C
23. C