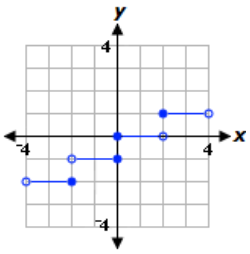
Algebra 1 Final 2019

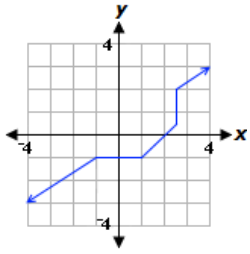
Question 1 .

Which graph represents a function?

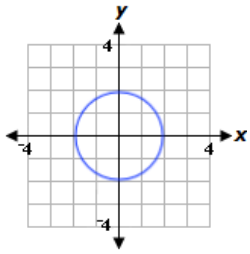
A.



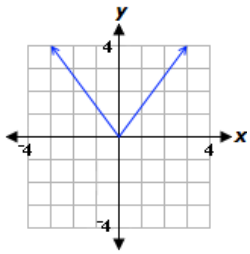
B.



C.



D.



Question 2 .

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}

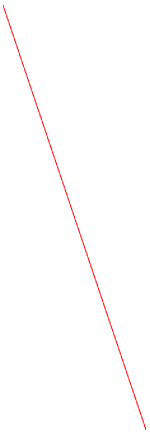
B. {⁻4, 0, 1, 3}

C. {all real numbers between ⁻3 and 5}

D. {all real numbers between ⁻4 and 3}

Question 3 .

All points from which of the following patterns would be contained on the given graph?



- **A.** 0 , 3 , 6 , 9 , ...
- **B.** -8 , -13 , -18 , -23 , ...
- **C.** -6 , -9 , -12 , -15 , ...
- **D.** -7 , -11 , -15 , -19 , ...

Question 4 .

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.

$$5x + 2y = 160$$

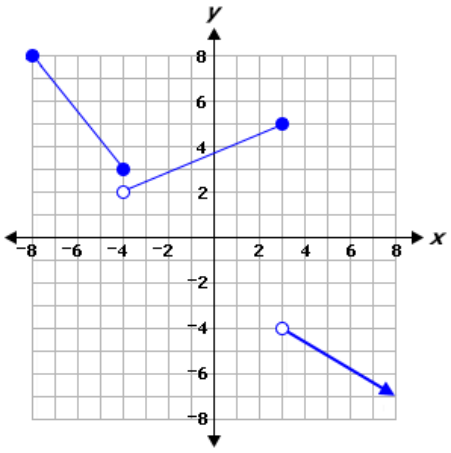
$$3x + 4y = 194$$

Which statement is true?

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

Question 5 .

The graph of a function is shown below.



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

- **A.** 2
- **B.** 3
- **C.** 5
- **D.** 8

Question 6 .

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

$$4x + y = 15$$
$$2x - 2y = 0$$

- **A.** $x = 7, y = 7$
- **B.** $x = 3, y = 3$
- **C.** $x = -2, y = 23$
- **D.** $x = 7, y = -13$

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?

(-4,7) , (1,-3) , (6,-13) , (9,-19)

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

Question 8 .

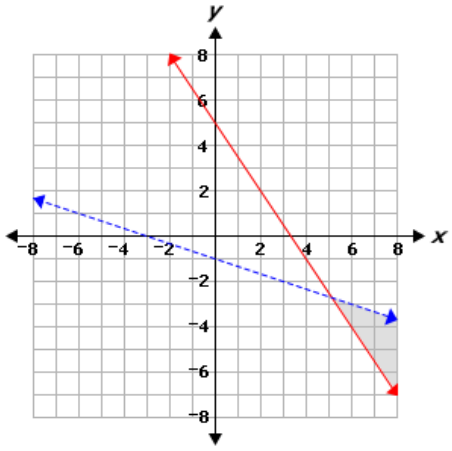
A system of inequalities is shown below.

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

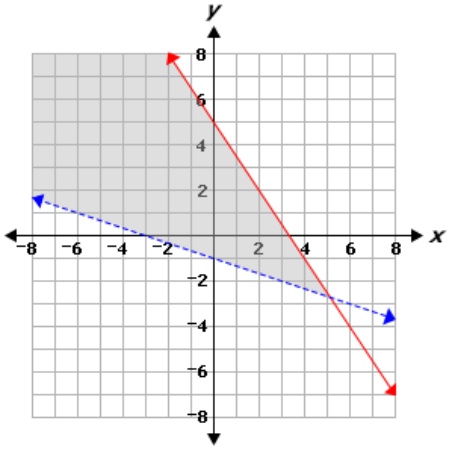
$$x + 3y > -6$$

Which graph represents the system?

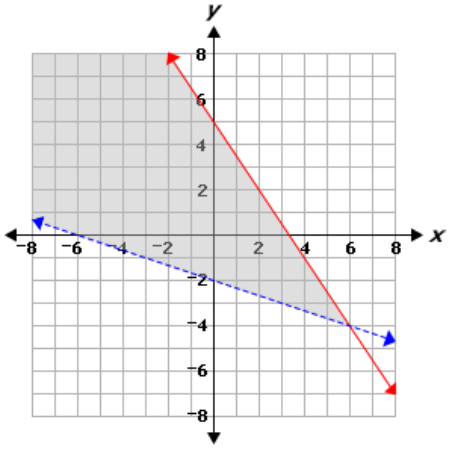
A.



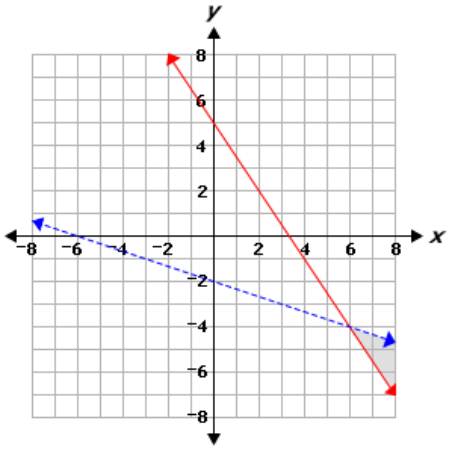
B.



C.



D.



Question 9 .

The number of cars sold last year by different salespeople at a dealership are shown in the stem-and-leaf plot below.

Cars Sold

5	8
6	2 5 5 8
7	0 1 3 3 6 6 6 7
8	0 1 1

Key
6 | 5 = 65 cars

What was the mean number of cars sold by a sales person last year?

A. 71

B. 72

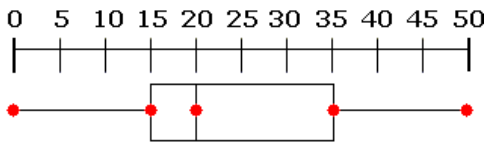
C. 73

D. 76

Question 10 .

At six o'clock on Monday night, each customer at Fitorama is asked how many minutes they've worked out so far that evening. Their responses are represented by the following data.

Workout Minutes



What percentage of customers had worked out 20 minutes so far?

A. 50%

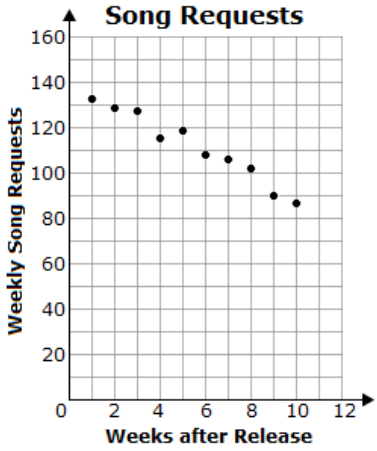
B. 75%

C. 25%

D. 35%

Question 11 .

A radio station director recorded the number of times a certain song was requested each week after it was released. The results are shown in the scatter plot.



Based on the line of best fit, **about** how many times will the song be requested 14 weeks after it has been released?

- **A.** 42
- **B.** 56
- **C.** 68
- **D.** 88

Question 12 .

Lisa is making baby blankets to donate to a local hospital. The table below shows the relationship between the number of blankets made and the number of hours spent making the blankets.

Baby Blankets

Number of Blankets	Hours Spent Making Blankets
1	$1\frac{3}{4}$
2	$3\frac{1}{2}$
3	$5\frac{1}{4}$

Based on the relationship shown in the table, how many more hours does Lisa spend making 12 blankets than she does making 3 blankets?

- **A.** $10\frac{3}{4}$
- **B.** $15\frac{3}{4}$
- **C.** 21
- **D.** $26\frac{1}{4}$

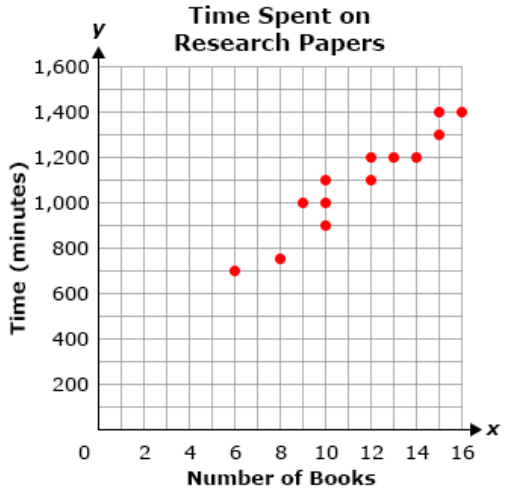
Question 13 .

In a bag of keys, there are 12 silver keys, 6 black keys, 11 copper keys, and 4 painted keys of various colors. One key is drawn out at random. What is the probability that the key that is drawn is silver or copper?

- **A.** $\frac{4}{11}$
- **B.** $\frac{6}{11}$
- **C.** $\frac{1}{3}$
- **D.** $\frac{23}{33}$

Question 14 .

The scatter plot below shows the total time (y), in minutes, 13 students spent working on their research papers based on the number of books (x) they used as resources.

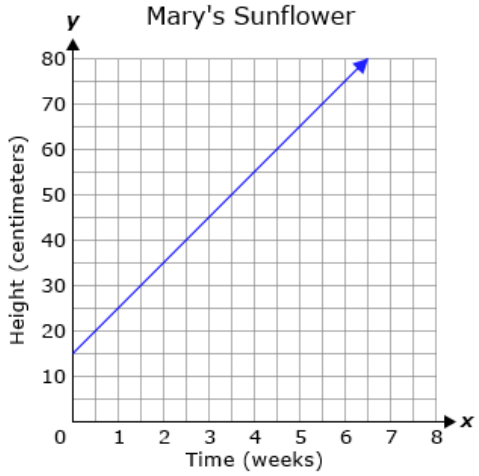


Based on the scatter plot, which equation represents the line of best fit for the time the students spent working on research papers?

- **A.** $y = 87.5x$
- **B.** $y = 87.5x + 700$
- **C.** $y = 70.28x$
- **D.** $y = 70.28x + 285.21$

Question 15 .

Mary bought a young sunflower plant at a nursery and planted it in her garden. The graph below describes the relationship between the number of weeks (x) since she planted the sunflower in her garden and the average height (y), in centimeters, of the plant that week.



What was the height of the sunflower when Mary planted it in her garden, and at what rate is it growing?

- **A.** The sunflower was 10 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 15 centimeters per week.
- **B.** The sunflower was 15 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 5 centimeters per week.
- **C.** The sunflower was 25 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 10 centimeters per week.
- **D.** The sunflower was 15 centimeters tall when Mary planted it in her garden, and it is growing at a rate of 10 centimeters per week.

Question 16 .

Which statement describes the rate of change of the following function?

$$f(x) = 7x + 2$$

- **A.** The function has a contant rate of change, increasing for all x at a rate of 7.
- **B.** The function has a varying rate of change when $x > 2$.
- **C.** The function has a constant rate of change, increasing for all x at a rate of 2.
- **D.** The function has a varying rate of change when $x > 7$.

Question 17 .

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

Question 18 .

What is the equation of the line that has a slope of 2 and passes through the point (6,6)?

- **A.** $y + 6 = -2(x + 6)$
- **B.** $y + 6 = -2(x - 6)$
- **C.** $y - 6 = 2(x + 6)$
- **D.** $y - 6 = 2(x - 6)$

Question 19 .

A frozen yogurt stand charges per ounce of frozen yogurt purchased. There is an extra charge for a waffle bowl. The total cost (*c*), in dollars, for *f* ounces of frozen yogurt in a waffle bowl, is described by the function $c = 0.45f + 1$.

Which statement is true?

- **A.** Each ounce of frozen yogurt costs $0.45 and a waffle bowl is $1 extra.
- **B.** The cost of 0.45 ounce of frozen yogurt in a waffle bowl is $1.45.
- **C.** The cost of 0.45 ounce of frozen yogurt in a waffle bowl is $1.
- **D.** Each ounce of frozen yogurt costs $1 and a waffle bowl is $0.45 extra.

Question 20 .

The table below shows values of y as a function of x.

x	y
2	8
6	15
10	22
22	43
30	57

Which linear equation describes the relationship between x and y?

- **A.** $y = 0.57x + 6.86$
- **B.** $y = 0.57x + 8$
- **C.** $y = 1.75x + 4.5$
- **D.** $y = 1.75x + 8$

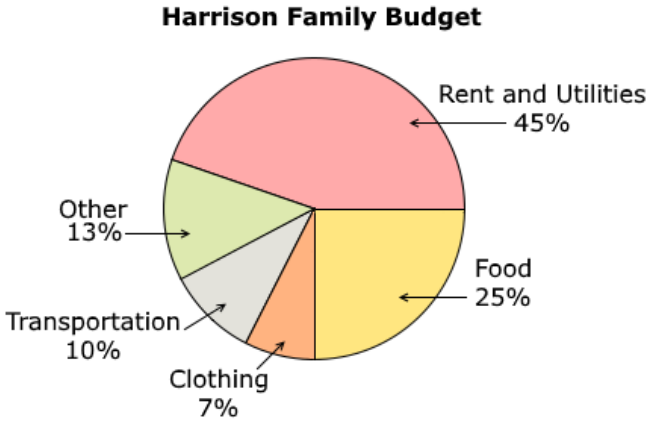
Question 21 .

A music teacher records the amount of time her students practice their instruments each day. The first quartile of the teacher's data is 25 minutes. The third quartile is 33 minutes. Which statement **must** be true?

- **A.** Exactly 25% of the students practice their instruments for exactly 25 minutes in a day.
- **B.** Exactly 50% of the students practice their instruments for 29 minutes or less in a day.
- **C.** About 50% of the students practice their instruments for 33 minutes or more in a day.
- **D.** About 25% of the students practice their instruments for 25 minutes or less in a day.

Question 22 .

The Harrison family records their yearly budget in a circle graph.



If the Harrison family's yearly income is $87,000, how much money will they **most likely** spend on food?

- **A.** $3,480
- **B.** $6,090
- **C.** $21,750
- **D.** $39,150

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