

Name: _____

Date: _____

1.

Joyce needs to gather data that can be modeled with a linear function. Which situation would give Joyce the data she needs?

- A. the area of a square and the length of its side
- B. the area of a circle and the length of its radius
- C. the perimeter of a square and the length of its side
- D. the volume of a cylinder and the length of its radius

2. The Arcadia Theater charges \$4 for adult tickets and \$3 for student tickets. Mr. Steele purchased 9 tickets (some student and some adult) for \$31. Which system of equations could be used to find a , the number of adult tickets, and s , the number of student tickets Mr. Steele purchased?

A.
$$\begin{cases} a + s = 31 \\ 4a + 3s = 9 \end{cases}$$

B.
$$\begin{cases} 4a + 3s = 31 \\ a + s = 9 \end{cases}$$

C.
$$\begin{cases} 3a + 4s = 31 \\ a + s = 9 \end{cases}$$

D.
$$\begin{cases} 3a + 4s = 9 \\ a + s = 31 \end{cases}$$

Permission has been granted for reproduction by the Virginia Department of Education
© Virginia Department of Education

3.

Michael runs 3.5 miles in 30 minutes. If he continues at this rate for 2 hours, determine his rate of change.

- A. 3.5 miles/hour
- B. 7 miles/hour
- C. 14 miles/hour
- D. 10 miles/hour

4. Abby has 20 boxes numbered 1 to 20. She needs to take out the boxes that are even numbered and are also numbered with a multiple of 3. Which set shows all the numbers of the boxes Abby needs to take out?

- A. {2, 3}
- B. {6, 12, 18}
- C. {3, 6, 9, 12, 15, 18}
- D. {2, 4, 6, 8, 10, 12, 14, 16, 18, 20}

5. A delivery service company maintains several vehicles. The table summarizes the cost for auto insurance related to the number of vehicles insured.

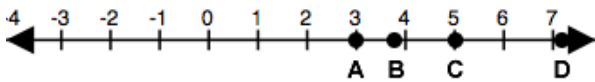
Number of Vehicles	Cost (\$)
1	1,700
2	2,200
3	2,700
4	3,200
5	3,700
6	4,200

Using the equation of a line of best fit for the data, which is the closest estimate of the total cost of insuring eight vehicles?

- A. \$5,050
- B. \$5,200
- C. \$5,500
- D. \$5,950

*Permission has been granted for reproduction by the Virginia Department of Education
© Virginia Department of Education*

6.

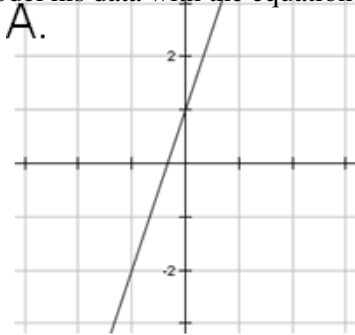


The length of a square's diagonal is $\sqrt{15}$ cm. Which letter on the number line represent this value?

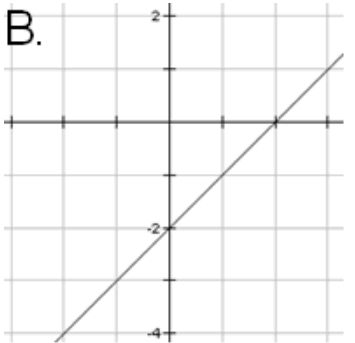
- A. A
- B. B
- C. C
- D. D

7.

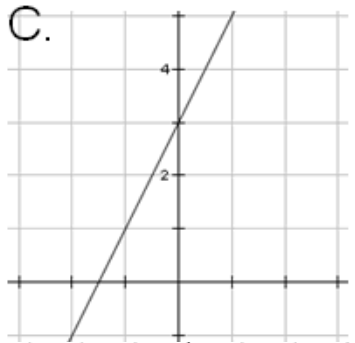
Isaac collected data for an experiment. The water level of his experiment increased at a constant rate. Isaac could model his data with the equation $-3x + y = 1$. Which is the graph of Isaac's data?



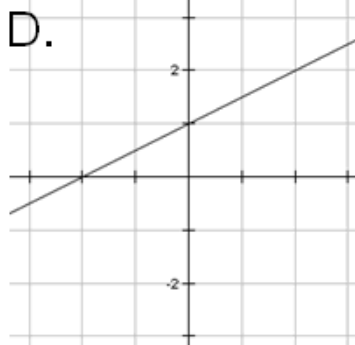
A.



B.



C.



D.

8.

The volleyball team is having a carwash fundraiser. The cost of each carwash is \$5. They are also selling season ticket packages to their upcoming volleyball season for \$40 each. The goal of the team is to make at least \$2000 from the combined totals of the two fundraisers. So far, the team has sold 41 season ticket packages.

How many cars must they wash in order to meet the team goal of \$2000?

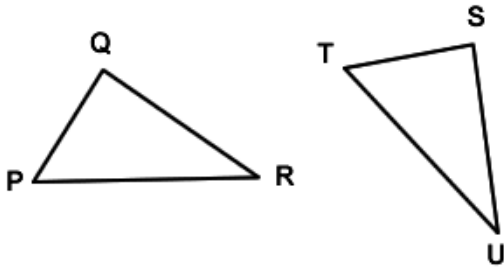
- A. 728 cars.
 - B. 328 cars.
 - C. 72 cars.
 - D. 47 cars.
-

9.

Why is one of the square roots of any positive number less than zero?

- A. because a negative number times a negative number is a positive number
 - B. because a negative number times a negative number is a negative number
 - C. because a negative number times a positive number is a negative number
 - D. because a negative number times a positive number is a positive number
-

10.



A city park has two congruent flowerbeds. The flowerbeds are shown as triangles PQR and STU. Which angle is congruent to $\angle P$?

- A. $\angle R$
 - B. $\angle S$
 - C. $\angle T$
 - D. $\angle U$
-

11.

Amy needed to rent a car for a day so she researched two rental companies. Company A charges a flat rate of \$25 plus \$0.15 for every mile she drove the car. Company B charges a flat rate of \$50 plus \$0.05 for every mile she drove the car. If Amy had to drive a total of 370 miles, which rental car company would be a better deal and by how much?

- A. Company A by \$12
 - B. Company A by \$80.50
 - C. Company B by \$12
 - D. Company B by \$68.50
-

12.

A square-shaped playground has an area of 290 ft^2 . Approximately, how long is one side of the playground?

- A. 12 ft
 - B. 17 ft
 - C. 36 ft
 - D. 73 ft
-

13.

3, 5, 7, 9, 11, 13,...

The arithmetic sequence represents the values from $x = 1$ through $x = 6$. Which linear function matches this sequence?

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

14.

3, 7, 11, 15, 19,...

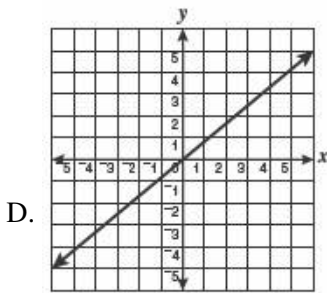
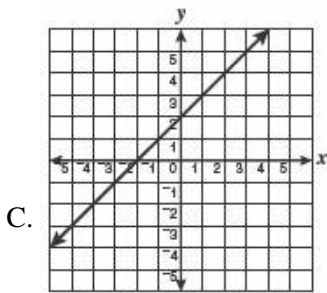
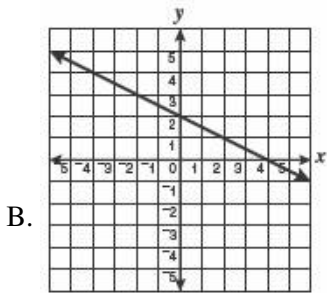
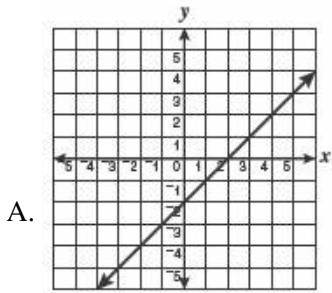
The arithmetic sequence for $x = 1$ through $x = 5$ is shown. Determine the slope of the associated linear function.

- A. -4
 - B. $-\frac{1}{4}$
 - C. $\frac{1}{4}$
 - D. 4
-

15.

x	y
-3	-1
0	2
3	5

Which graph corresponds to this table?



16.

When graphed, which situation's data would be linear?

- A. The temperature of the roof of a house every hour for 24 hours.
 - B. A person's body temperature every hour for a year.
 - C. The temperature of water rising 3°F every hour.
 - D. The daily temperature of a city for a year.
-

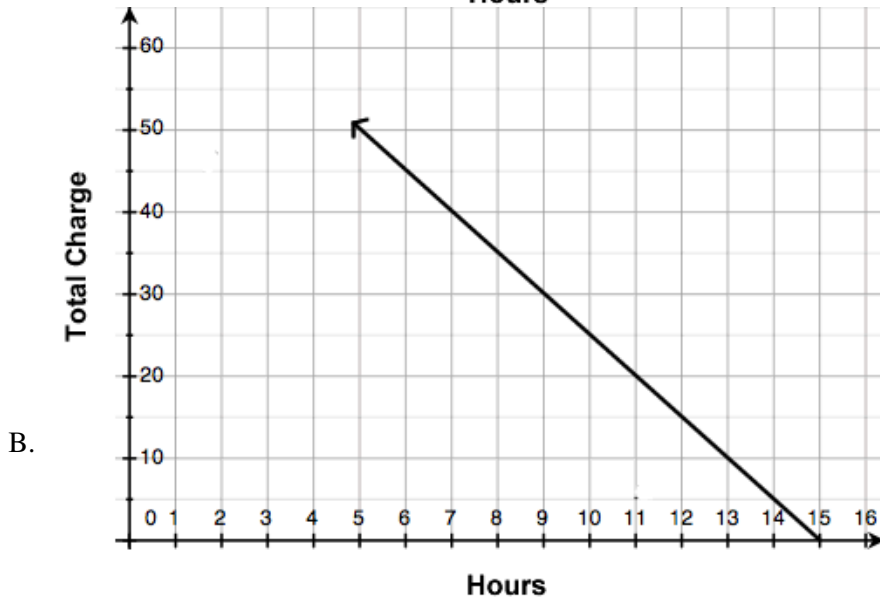
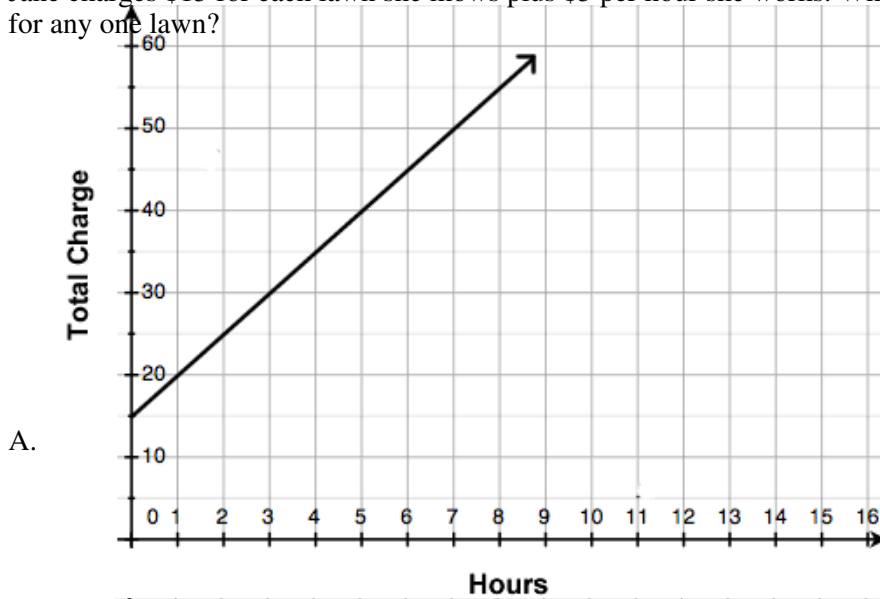
17.

Joanne has $2a^3$ number of animals. Ronnie has $3a^3$ number of animals. Odessa has a^4 number of animals. How many animals do Joanne, Ronnie, and Odessa have altogether?

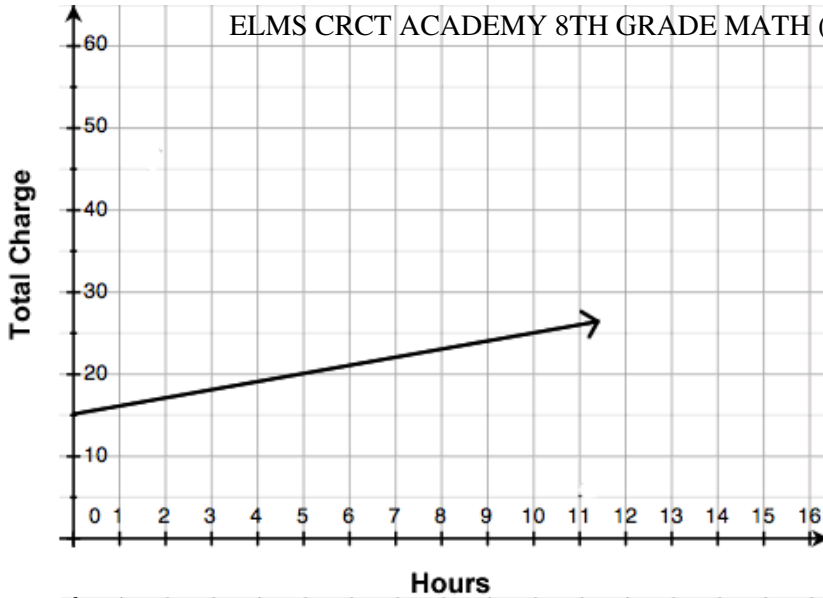
- A. $5a^{10}$
 - B. $6a^{10}$
 - C. $5a^3 + a^4$
 - D. $6a^3 + a^4$
-

18.

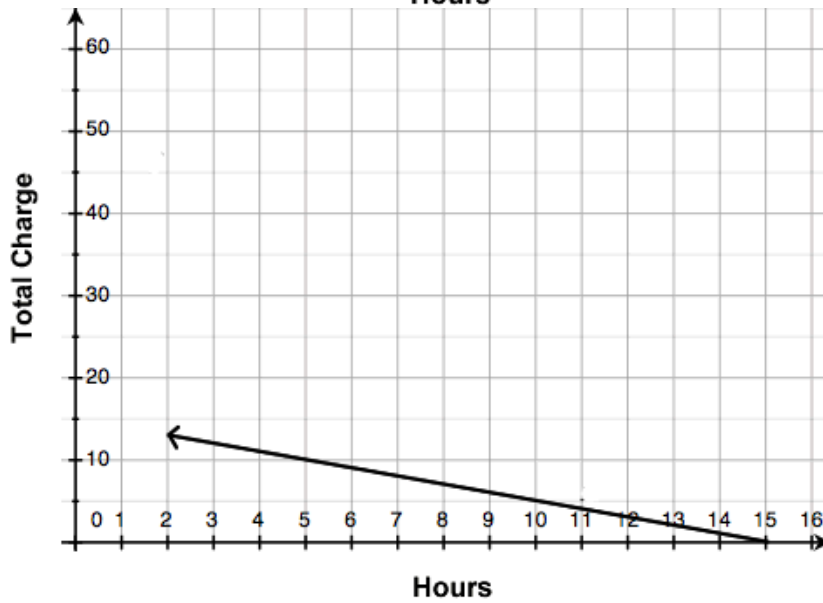
Jane charges \$15 for each lawn she mows plus \$5 per hour she works. Which graph models how much Jane charges for any one lawn?



C.



D.

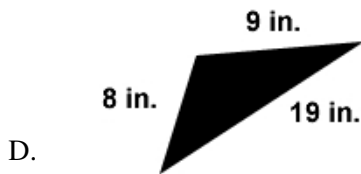
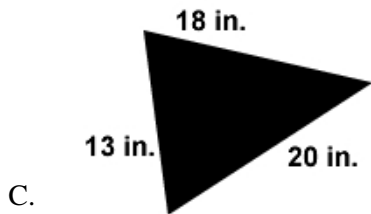
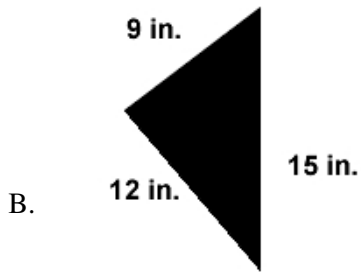
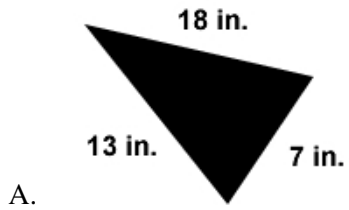


19. Wrangell–St. Elias National Park and Preserve in Alaska covers 13,200,000 acres. What is 13,200,000 written in scientific notation?

- A. 1.32×10^5
- B. 1.32×10^6
- C. 1.32×10^7
- D. 1.32×10^8

20.

Alyssa is building a birdhouse. She needs a right triangle for the roof. Which triangle should Alyssa use?



21.

Adrian has a square bedroom. The area of the room is 169 ft^2 . What is the length of one side of Adrian's bedroom?

- A. $6 \frac{1}{2}$ ft
 B. 13 ft
 C. $42 \frac{1}{4}$ ft
 D. $84 \frac{1}{2}$ ft
-

22.

Hours since 12 am	Number of times she heard a car horn
2	6
3	8
4	10
5	12
6	14
7	16
9	20
10	22
12	?
13	28
15	30

Jenny wanted to know if people were more likely to beep their horns at a certain time during the day. One night she recorded the number of times she heard a car horn during one hour intervals. What should be the value of the missing y-coordinate so that the data can be modeled with a linear function?

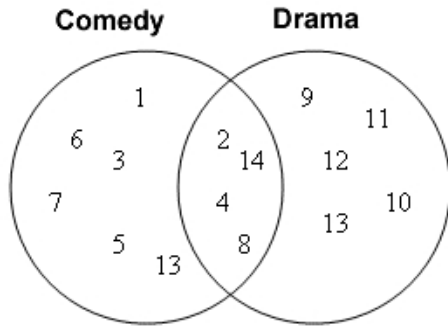
- A. 24
 B. 25
 C. 26
 D. 27
-

23.

A jet ski rental company charges a \$50 deposit and \$30 for each hour on the jet ski. Mark has \$140 dollars. Write an inequality that represents the maximum number of hours that Mark can ride the jet ski.

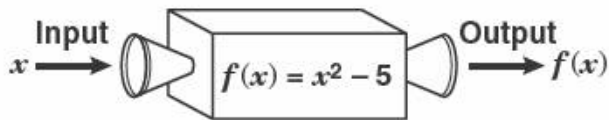
- A. $80h \geq 140$
 B. $30h \geq 190$
 C. $50 + 30h \leq 140$
 D. $50 + 30h < 90$
-

24.



Students were asked for their favorite type of television show, comedy, drama, or both. Each student was given a number and placed in the Venn Diagram. Which group of students is the complement of Comedy ?

- A. 1, 3, 5, 6, 7, 13
- B. 1, 2, 3, 4, 5, 6, 7, 8, 13, 14
- C. 2, 4, 8, 9, 10, 11, 12, 13, 14
- D. 9, 10, 11, 12, 13



25.

When the input is $\frac{1}{3}$, what is the output?

- A. $-\frac{29}{6}$
- B. $-\frac{44}{9}$
- C. $-\frac{14}{3}$
- D. $\frac{46}{9}$

Answer Key

1. C) the perimeter of a square and the length of its side

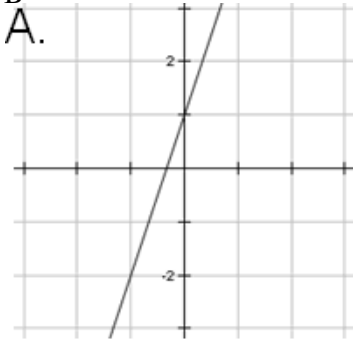
2. B)
$$\begin{cases} 4a + 3s = 31 \\ a + s = 9 \end{cases}$$

3. B) 7 miles/hour

4. B) {6, 12, 18}

5. B) \$5,200

6. B) B



7. A)

8. C) 72 cars.

9. A) because a negative number times a negative number is a positive number

10. B) $\angle S$

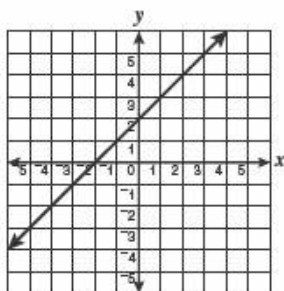
11. C) Company B by \$12

12. B) 17 ft

13. A) $y = 2x + 1$

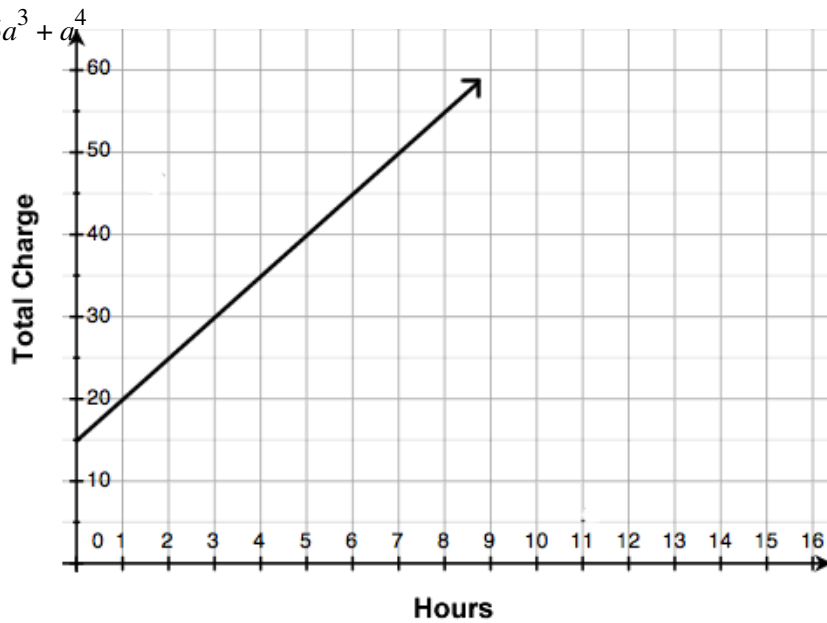
14. D) 4

15. C)



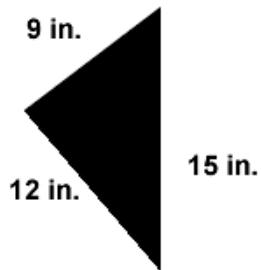
16. C) The temperature of water rising 3°F every hour.

17. C) $5a^3 + a^4$



18. A)

19. C) 1.32×10^7



20. B)

21. B) 13 ft

22. C) 26

23. C) $50 + 30h \leq 140$

24. D) 9, 10, 11, 12, 13

25. B) $-\frac{44}{9}$