THIRD SPACE LEARNING

8th Grade Tennessee State Practice Math Test

Tennessee Practice Test Grade 8

Grade 8

Questions

Name: ..... Class: .....

Date: ..... Score: .....

No Calculator For Questions 1 - 21

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1 Which equation represents the graph of a line on the coordinate plane that has an x-intercept of (4, 7) and a y-intercept of (0, 8)?

A. $y = 4x - 8$

B. $y = -4x + 8$

C. $y = -\frac{1}{4}x + 8$

D. $y = \frac{1}{4}x - 8$

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2 Which numbers are irrational? Select all the correct answers.

A. $\sqrt{9^2}$

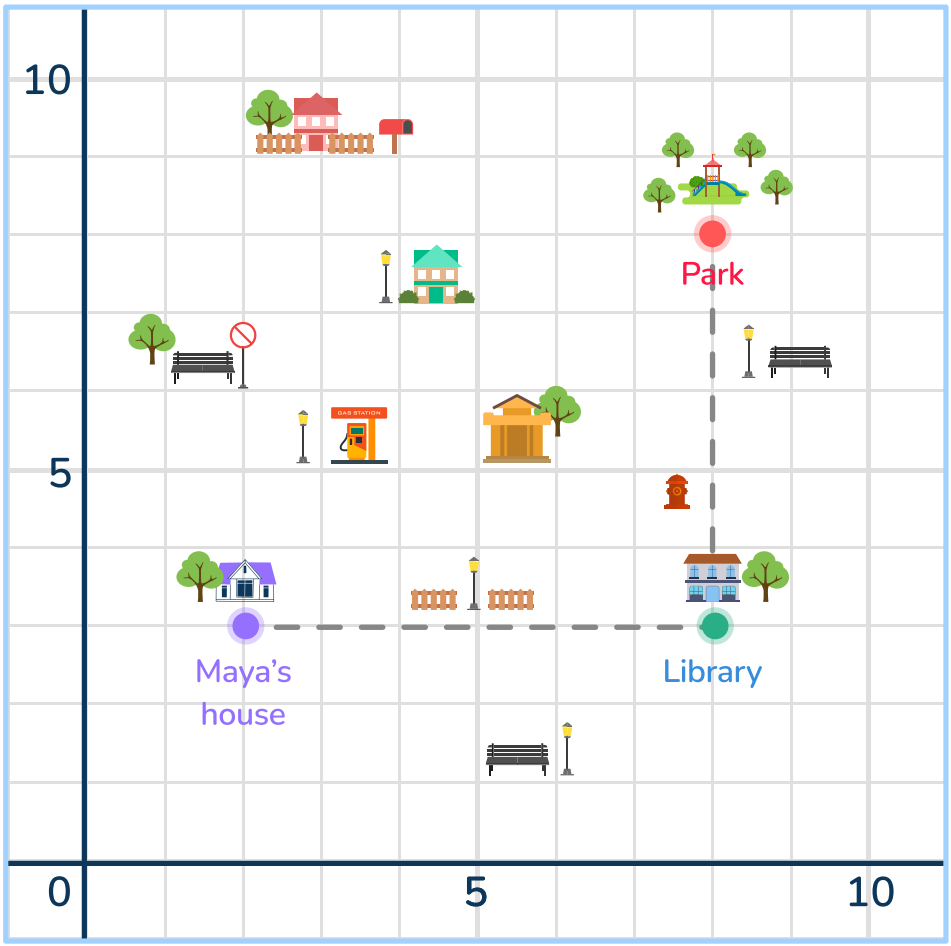
B. $\frac{2}{7}$

C. $\sqrt{8}$

D. $\frac{\pi}{5}$

E. $\sqrt[3]{125}$

3 Maya is looking at a map of her town. Each unit on the map represents 1 mile.

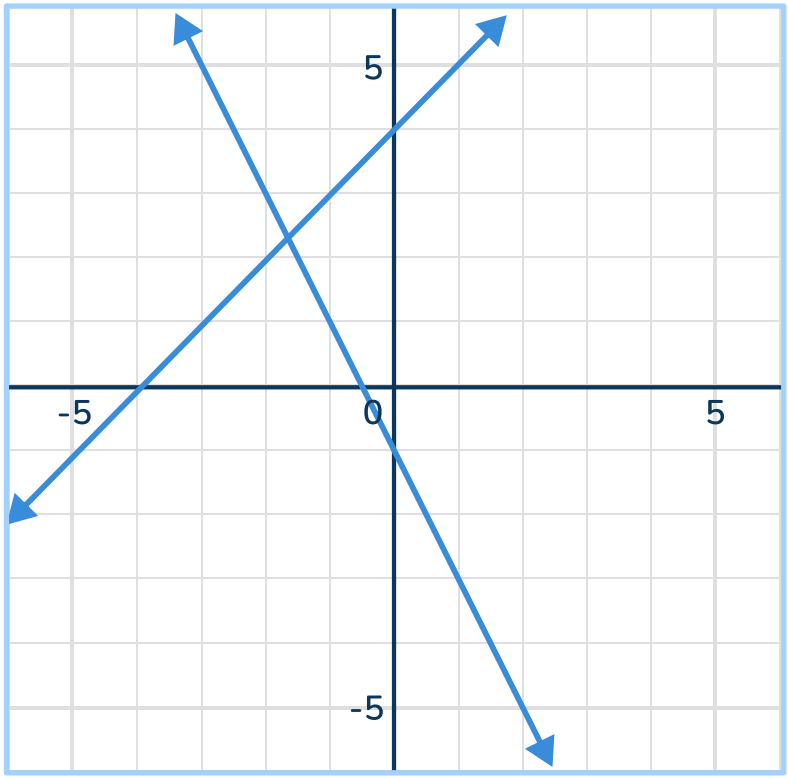


Maya bikes from her house to the library, then to the park and then directly home.

How far did Maya bike?

A. 7.8 miles
B. 15 miles
C. 18.8 miles
D. 11 miles

4 The graph shows two linear equations.



Which point is an approximate solution to the system?

A. (–1.8, 2)
B. (2, –2)
C. (–2.2, 2.3)
D. (–2, 1.8)

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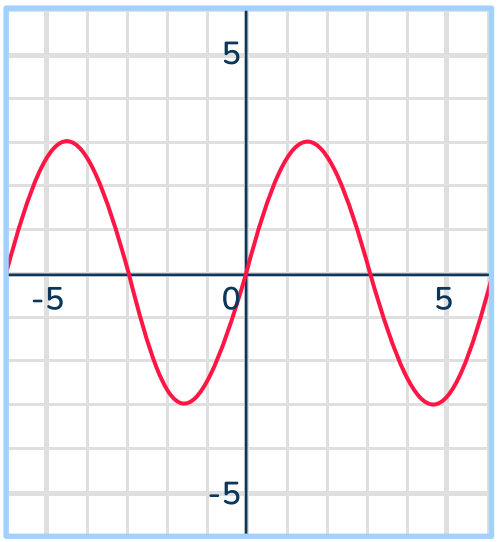
5 Which expressions have a value of $\frac{1}{5^6}$? Select all the correct answers.

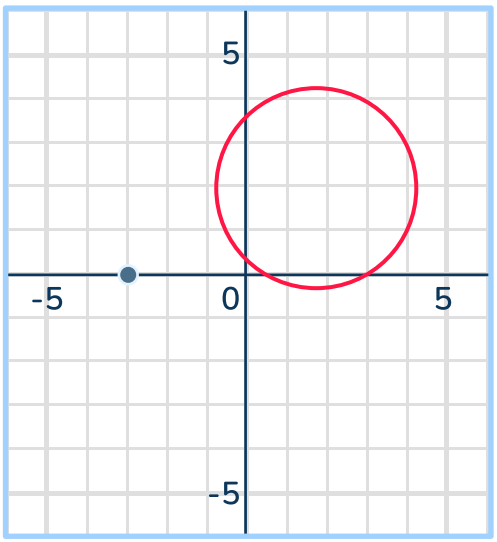
A. $5^{-8} + 5^2$
B. $\frac{5^2}{5^8}$
C. $(5^3)^{-2}$
D. $5^8 \times 5^{-2}$
E. $(5^5)^{-1}$

6 Which graph shows y to be a function of x?

A.



B.



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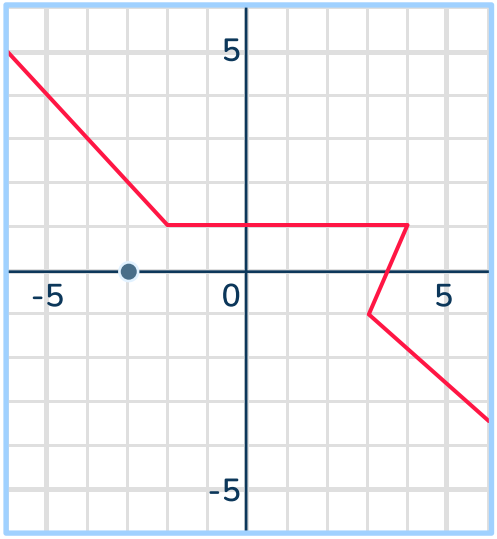
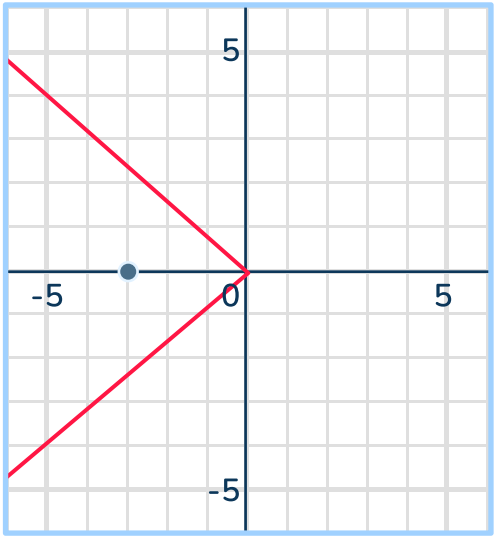


D.



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7 Which equation has exactly **one** solution?

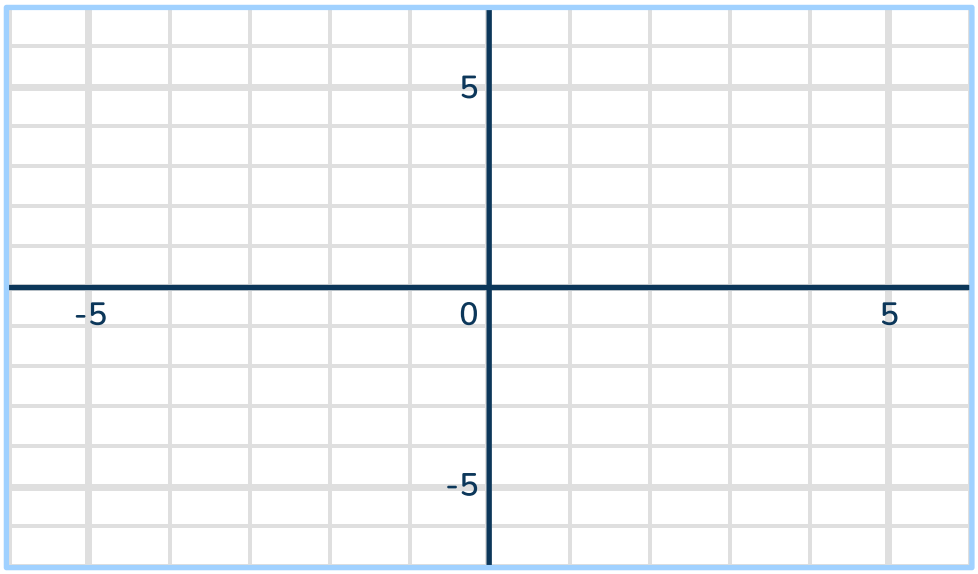
A. $\frac{3}{4}y + 3 = 3 - 3y$

B. $4y + 1 - y = 3y + 1$

C. $3(2y - 4) = 10 + 6y$

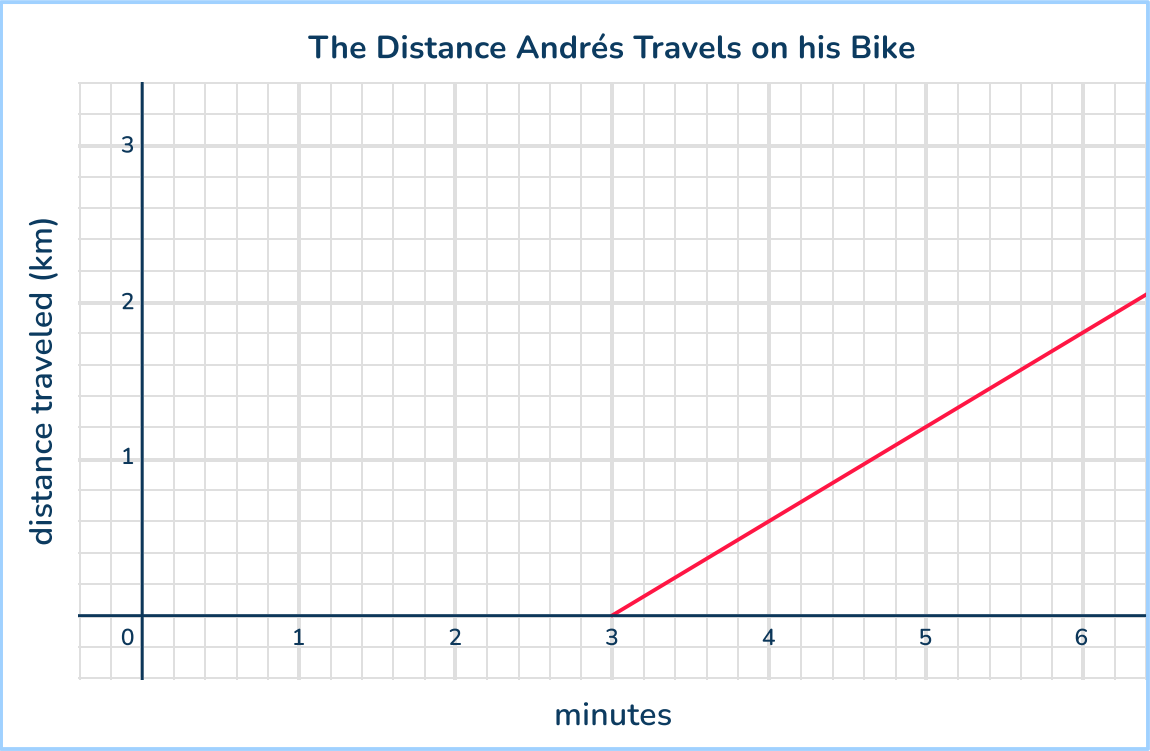
D. $\frac{1}{3}y + 4 = \frac{y + 12}{3}$

8 △TGS with vertices T(0, 1), G(–2, 3), and S(–4, –1) will be rotated 270° clockwise about the origin. What will be the coordinates of S'?



A. (-4, 1)
B. (1, -4)
C. (1, 4)
D. (–1, –4)

9 Helena and Andrés are at the start of a trail. Helena can run 0.15 km every minute. Andrés can bike faster, but he needs extra time to get ready, before biking.

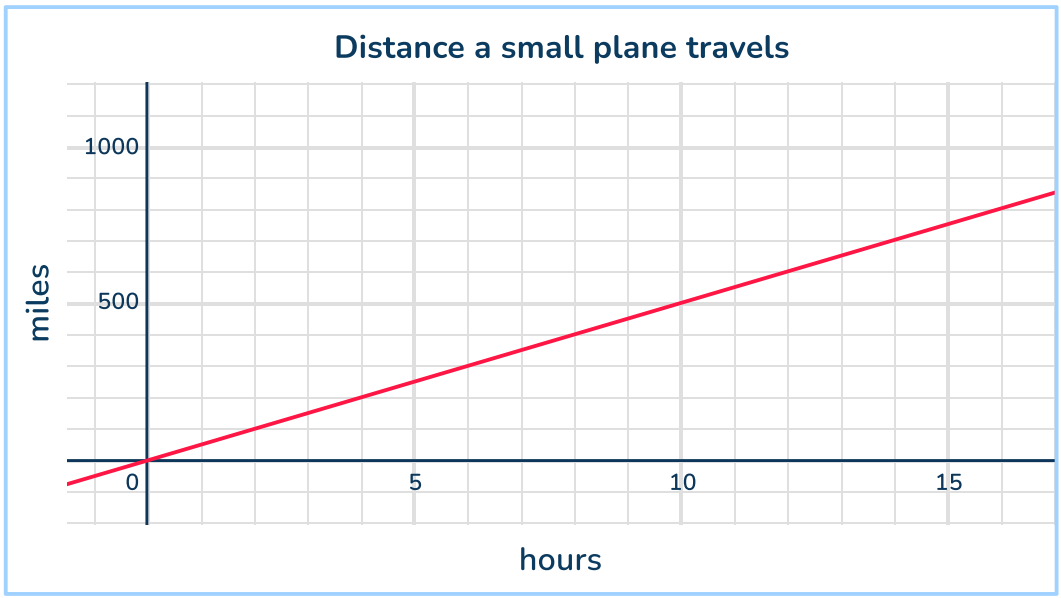


Helena started running at 0 minutes. How much time, in minutes, can she run before Andrés catches up to her?

Write your answer in the box provided.

Answer

10 The graph shows how many miles a small airplane travels, y, given the number of hours it has been flying, x.



What does the slope of the graph represent within the context?

A. The small airplane rises 50 miles higher every hour.
B. The small airplane rises 1 mile higher every 50 hours.
C. The small airplane travels 50 miles every hour.
D. The small airplane travels 1 mile every 50 hours.

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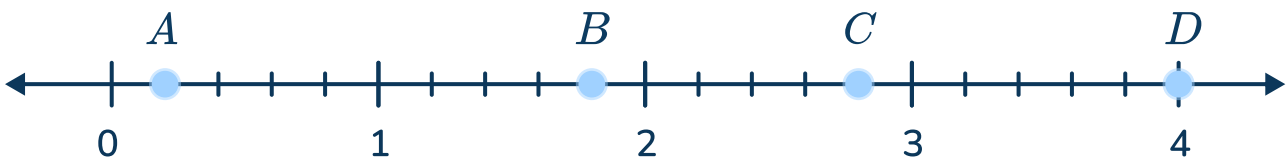
11 Which point is closest to $(\sqrt{2})^3$?



12 The population of Grayfield is 8×10^5 people. The population of Rivermoor is 4×10^7 people. Which comparison statement is true?

A. The population of Grayfield is about 200 times the population of Rivermoor.
B. The population of Rivermoor is about 50 times the population of Grayfield.
C. The population of Grayfield is about 500 times the population of Rivermoor.
D. The population of Rivermoor is about 20 times the population of Grayfield.

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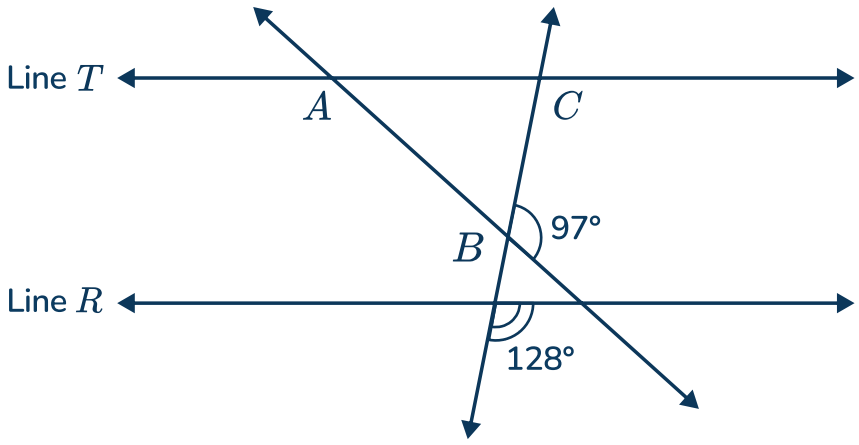
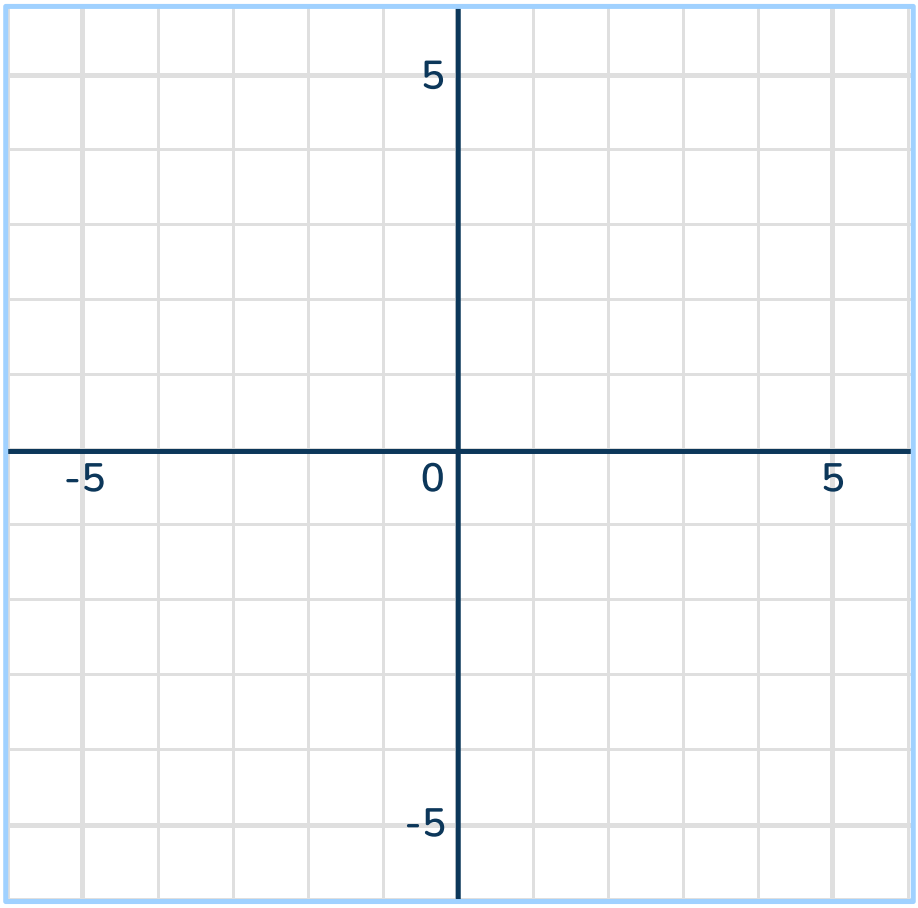
13 Line T and Line R are parallel lines, cut by two transversals.



What interior angles make up the triangle ABC?

A. 128°, 97° and 45°
B. 31°, 52° and 97°
C. 52°, 45° and 83°
D. 135°, 128° and 97°

14 Graph the solution to $4x + 2 > y$.



15 Solve $4^{-2} \times 3^3 =$ ___

Write your answer in the box provided.

Answer

16 The table and the equation show two different linear functions.

Function C:

x	y
2	-14
3	-11
5	-5

Function M:

$y = 2x + 3$

Which statement about the functions is true?

A. The rate of change of Function C is less than the rate of change of Function M, because -14 < 7.
B. The y-intercept of Function C is greater than the y-intercept of Function M, because –8 < –112 .
C. The rate of change of Function C is greater than the rate of change of Function M, because -3 < 2.
D. The y-intercept of Function C is less than the y-intercept of Function M, because –20 < 3.

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17 A container is in the shape of a cylinder that has a diameter of 9 inches and a height of 4.5 feet. Which equation can be used to find the volume of the container in cubic inches?

A. $V = \pi(4.5)^2(4.5 \times 12)$

B. $V = \pi(4.5)^2(4.5)$

C. $V = \frac{1}{3}\pi(4.5)^2(4.5)$

D. $V = \frac{1}{3}\pi(4.5)^2(4.5 \times 12)$

18 Which system of equations has infinite solutions?

A. $4x - 4y = 3$

$x = y + \frac{3}{4}$

B. $y = -5x - 0.6$

$y = 5x + 0.6$

C. $x + 2y = 14$

$x + 7 = y$

D. $2y = x + 8$

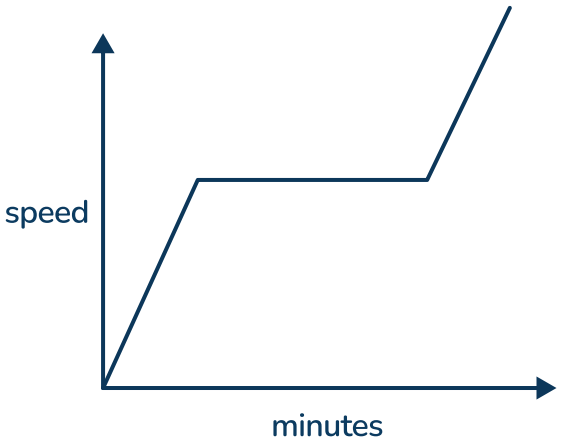
$x - 2y = 8$

19 The speed of a car was measured for some minutes. The actions of the car were:

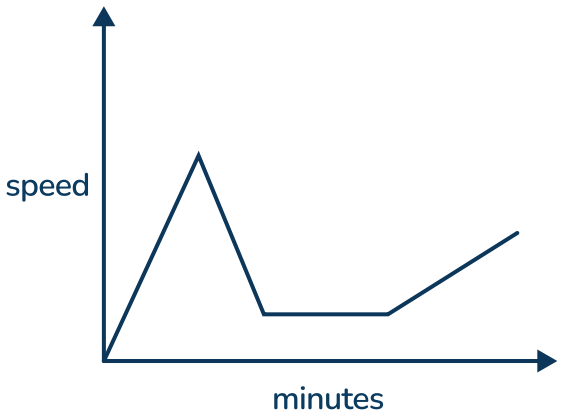
- Started by driving at a constant speed.
- Slowed down to park.
- Stayed parked for a few minutes.
- Then began to slowly increase speed.

Which is a graph of the function described above?

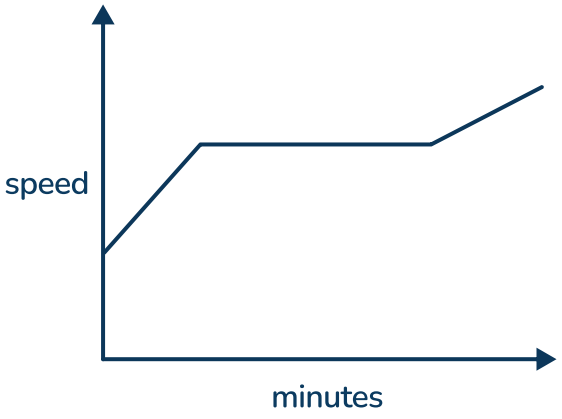
A.



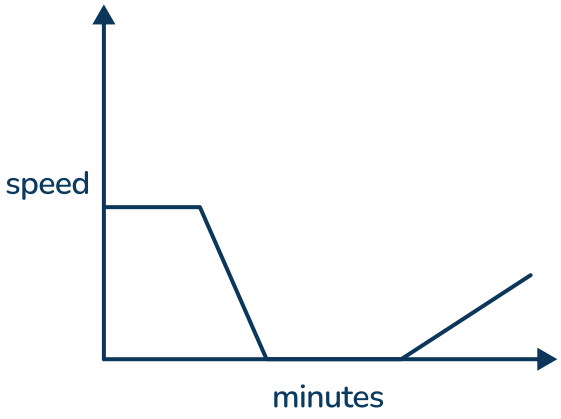
B.



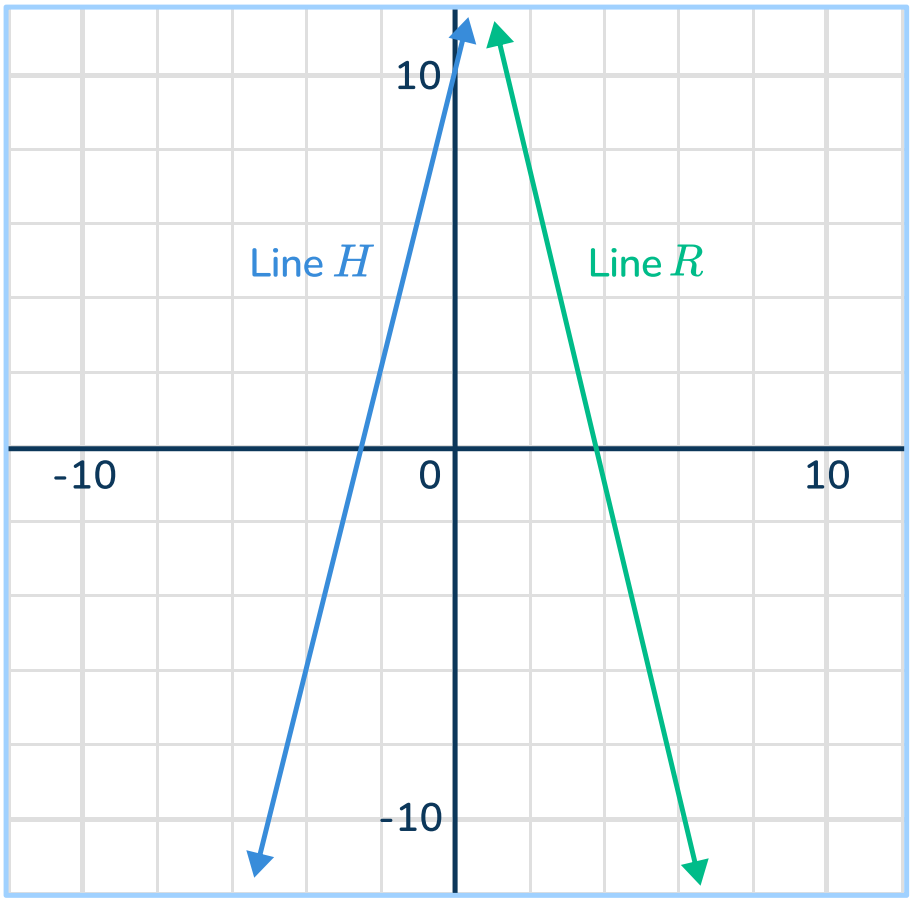
C.



D.



20 A system of two linear equations, Line H and Line R, is shown in the graph.



How many solutions does the system have?

Write your answer in the box provided.

Answer

21 If $m^2 = 0.0049$, what is the value of m?

A. 0.7
B. 0.07
C. 0.007
D. 7.0

THIS IS THE END OF SUBPART 1 OF THE MATH PRACTICE TEST.

Calculator Can Be Used For Questions 22 - 45

YOU MAY USE A CALCULATOR IN SUBPART 2 OF THIS TEST.

22 Which set of coordinates does not represent a function?

A. {(3, 2), (4, 7), (5, 8), (12, 2)}
B. {(–1, 1), (–2, 1), (–3, 1), (4, 4)}
C. {(4, 9), (–4, –9), (9, –4), (4, 6)}
D. {(0, 2), (5, 3), (7, 4), (22, 5)}

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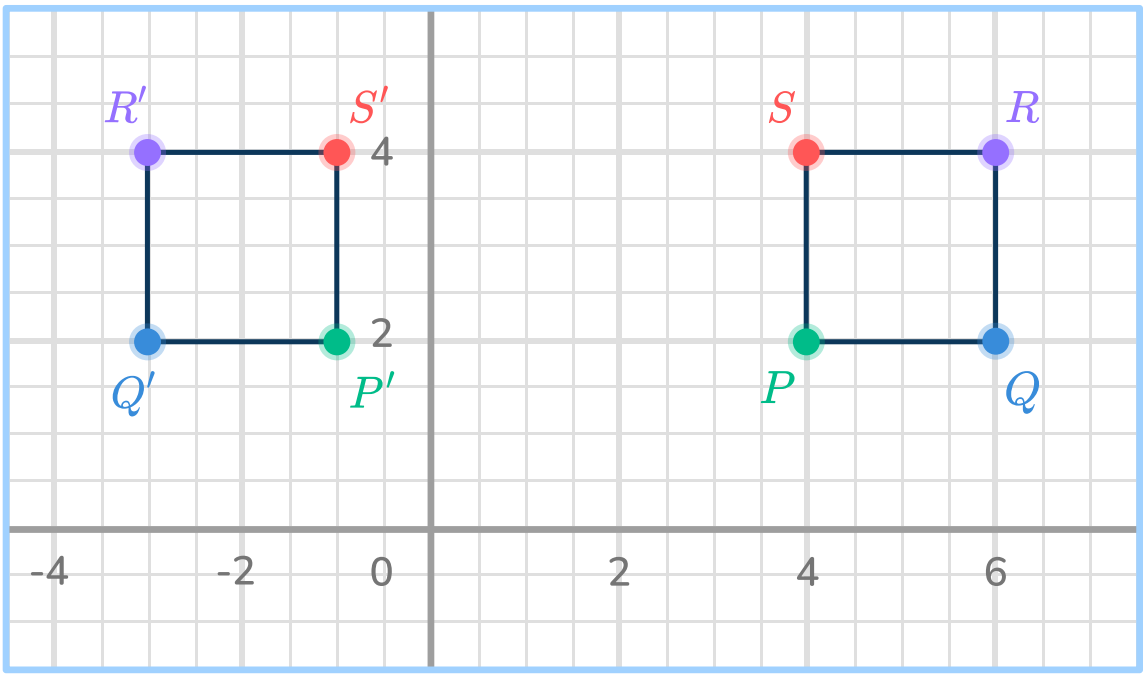
23 Which sequence of transformations maps square QRSP to square Q'R'S'P'?



A. Reflection over the line $y = -x$ followed by a translation of 3 units left.
B. Reflection over the x-axis followed by a translation of 3 units right.
C. Translation of 3 units left followed by a reflection over the y-axis.
D. Rotation of 90° clockwise about the origin followed by a translation of 3 units right.

24 Samira runs her family's construction business. The table below shows total cost for the amount of hours worked. Which linear equation represents the information in the table?

Hours worked, x	Total cost, y
0	$80
2	$230
4	$380
6	$530

A. $y = 150x + 80$
B. $y = 75x + 80$
C. $y = 150x$
D. $y = 75x$

25 The tables represent the cost of two different phone plans.

Plan A

Data Used (GB)	Cost ($)
1	8
2	16
5	40
10	80

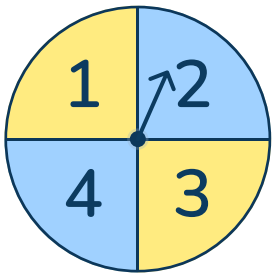
Plan B

Data Used (GB)	Cost ($)
1	15
2	20
5	35
10	60

Which statements about the two plans are true? Select **all** the correct answers.

A. Plan A and Plan B represent proportional relationships.
B. In Plan A, for each +2 change in data used, there is a +16 change in cost.
C. Graphed as a line, the slope of plan B is 5, which is the same as its unit rate.
D. As a system of equations, plan A and plan B have one solution.

26



The spinner has an equal chance of landing on any number. The spinner will be spun twice. What is the probability that the sum of the two spins is more than 5?

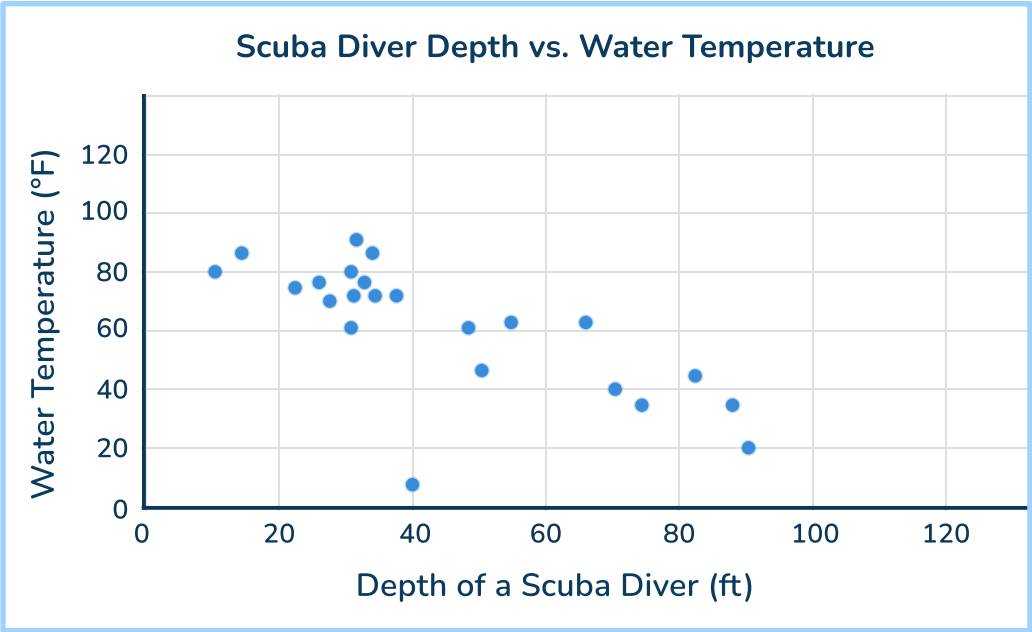
A. $\frac{3}{8}$

B. $\frac{5}{8}$

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

D. $\frac{7}{16}$

27



Which **two** statements about the data shown in the scatterplot are true?

A. The data are clustered between 20 to 40 feet of depth.
B. The data has 3 extreme values.
C. As the depth of the scuba diver increases, so does the water temperature.
D. The data have a positive linear association.
E. The data have a negative linear association.

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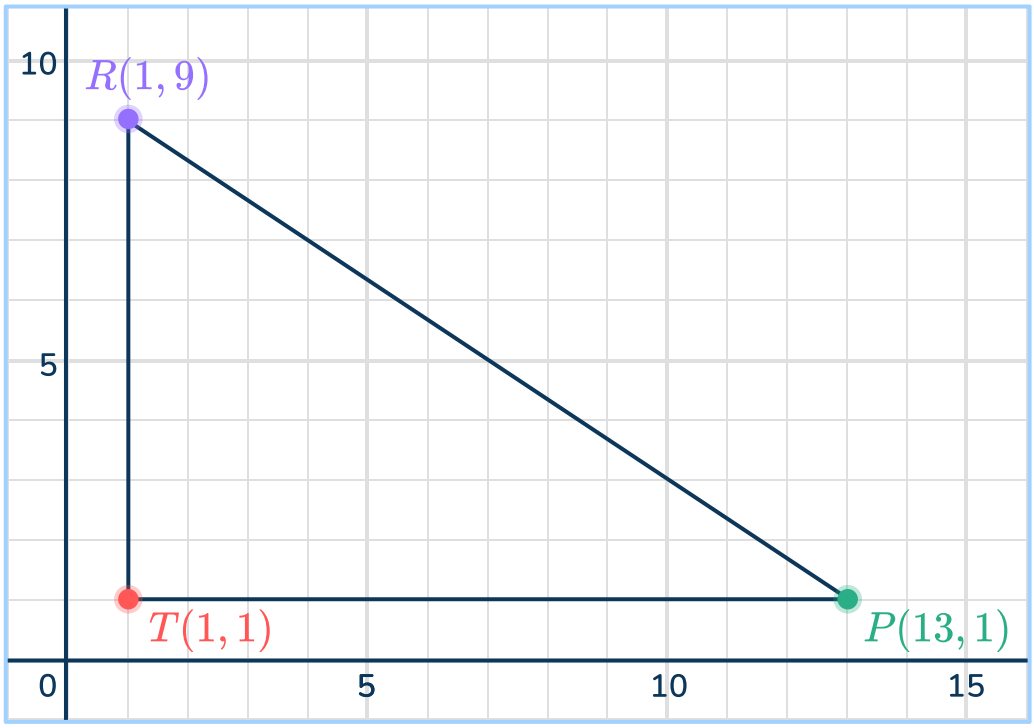
28 A sphere has a diameter of 8 cm. What is the volume of the sphere, rounded to the nearest whole number?

A. 2,144 cm^3
B. 268 cm^3
C. 67 cm^3
D. 134 cm^3

29 The equation $12 - 0.5x = y$ models the height of a candle in centimeters after it burns for x minutes. What is the meaning of the y-intercept in this context?

A. The minutes the candle has been burning.
B. The amount the candle height decreases per minute.
C. The original height of the candle.
D. The time it takes for the candle to burn out completely.

30



If the triangle is dilated by $\frac{3}{4}$, what is the distance from R' to P'?

Which strategies lead to the correct answer?

A. Calculate $\sqrt{8^2 + 12^2}$, and multiply the positive root by $\frac{3}{4}$.

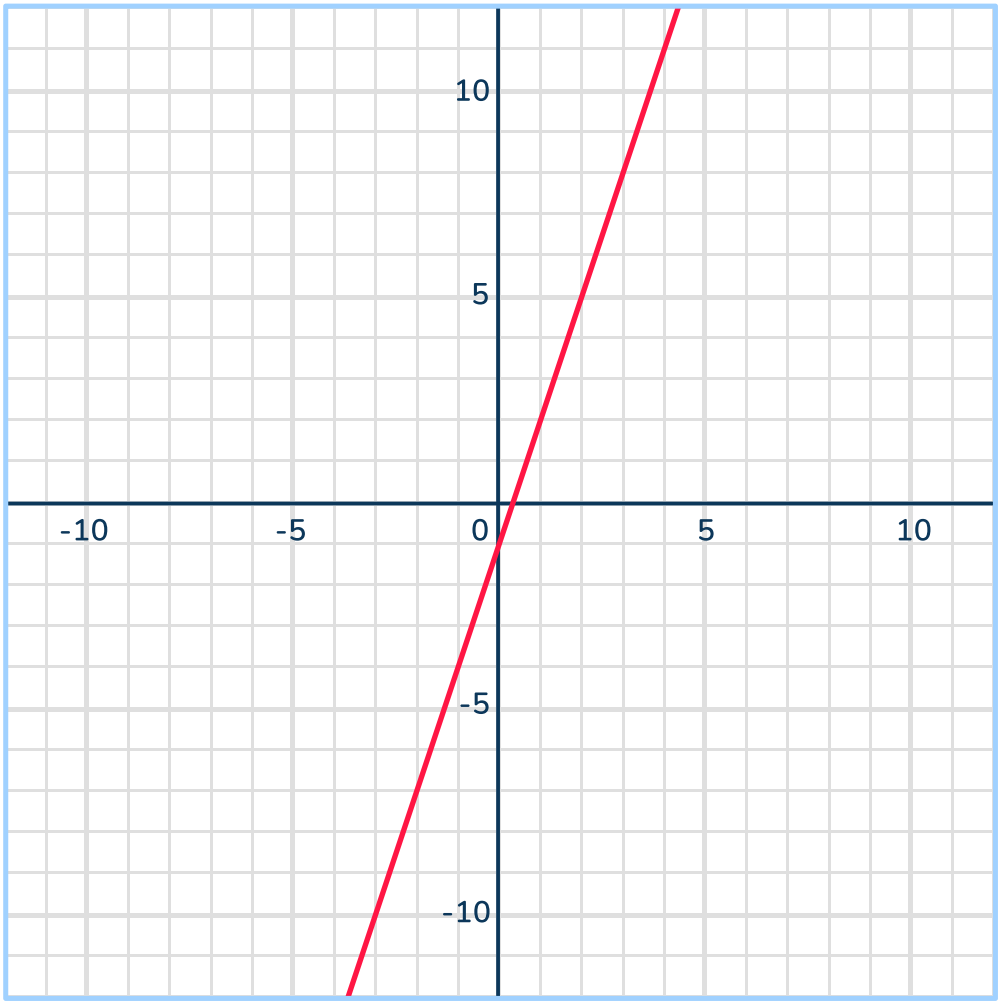
B. Multiply each coordinate by $\frac{3}{4}$ and then square the x-coordinates of R and P.

C. Calculate the square root of $9^2 + 13^2$ and multiply by $\frac{3}{4}$.

D. Shift each vertex of the triangle down $\frac{3}{4}$ units, then count the units from R' to P'.

31 Linear function A and linear function B have 0 solutions. Linear function A is shown on the graph.

LINEAR FUNCTION A



What is a *possible* equation for Linear Function B, in the form $y = mx + b$?

Write your answer in the box provided.

Answer

32 Function C: $-3x + 40$

Function D:

x	0	2	4	6
y	40	34	28	40

Which comparison statements are correct? Select all that apply.

A. Both functions are decreasing.
B. Both functions have a slope of –3.
C. Both functions have a y-intercept of 40.
D. Both functions are linear.

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33 $\sqrt[3]{p} = 27$

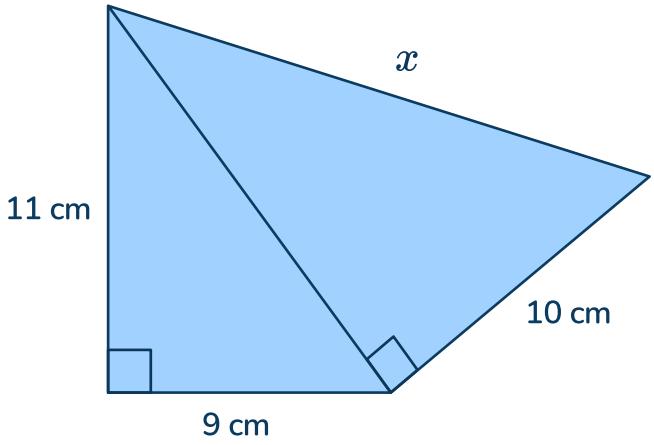
What is the value of p?

A. 81
B. $\sqrt{27}$
C. 19,683
D. 3

THIS IS THE END OF SUBPART 2 OF THE MATH PRACTICE TEST.

YOU MAY USE A CALCULATOR IN SUBPART 3 OF THIS TEST.

34 Solve for x. Round to the nearest whole number.



A. 12 cm
B. 17 cm
C. 15 cm
D. 18 cm

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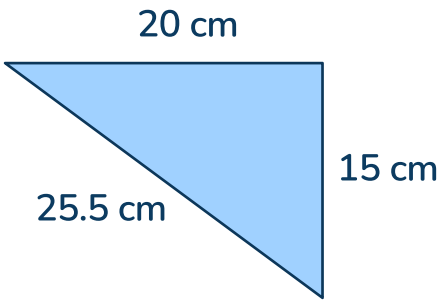
35 Decide whether the triangle is acute, right or obtuse.



A. acute
B. right
C. obtuse
D. More information is needed

36 Simplify $\frac{9b^5(b^2)}{\frac{1}{3}b^5}$.

Write your answer in the box provided.

Answer

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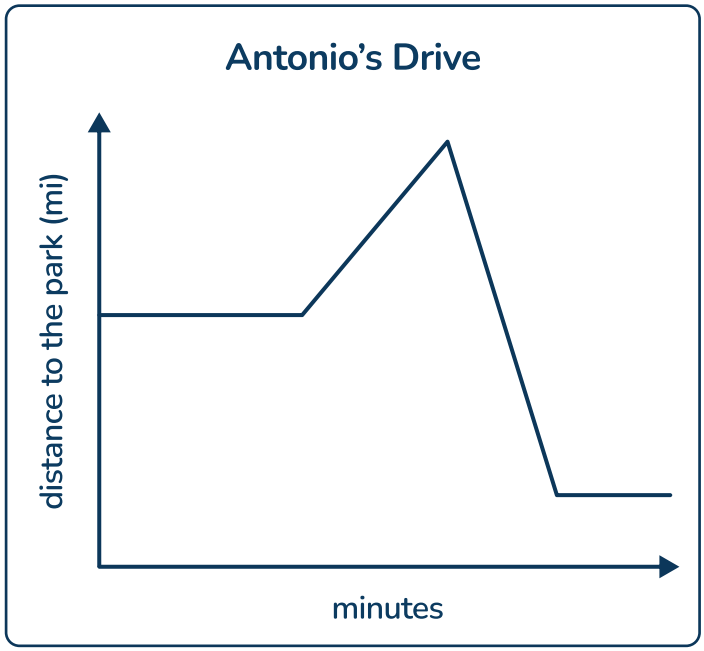
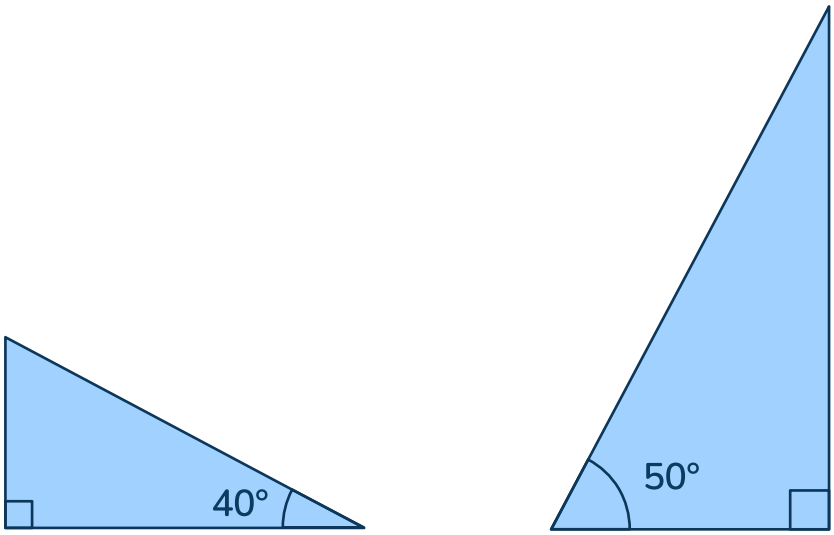
37 The graph shows the distance a car is from the park while Antonio was driving.



Which statement about the function is true?

A. As the minutes increased, Antonio's distance from the park decreased.
B. Antonio started off at the park, drove away, then came back.
C. Antonio's speed was fastest during the middle of the drive.
D. Antonio got close to the park, but never arrived.

38 Are the triangles similar? Why or why not?



A. No, because the corresponding sides have different ratios.
B. Yes, because all right triangles are similar.
C. No, because one has a larger height than the other.
D. Yes, because the corresponding angles are equal.

39 Which table represents y as a nonlinear function of x?

A.

x	-2	-1	0	1
y	3	8	13	18

B.

x	-3	-1	1	3
y	4	8	16	32

C.

x	2	5	8	15
y	-6	0	6	20

D.

x	0	7	14	21
y	0	-3.5	-7	-10.5

---

40 $y = 4x - 9$

$\frac{1}{2}x - 5y = 1\frac{1}{8}$

What is the point of intersection for this system of equations?

Write your answer in the box provided.

Answer

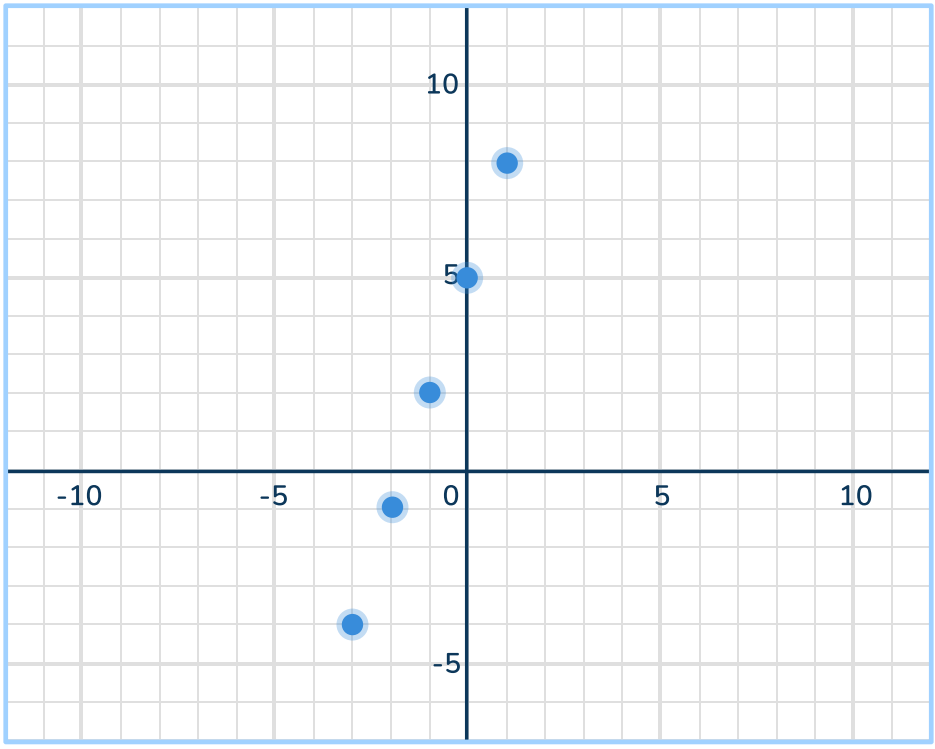
41

Write the equation of the linear function in the form $y = mx + b$ shown by the graph.

Write your answer in the box provided.

Answer

42

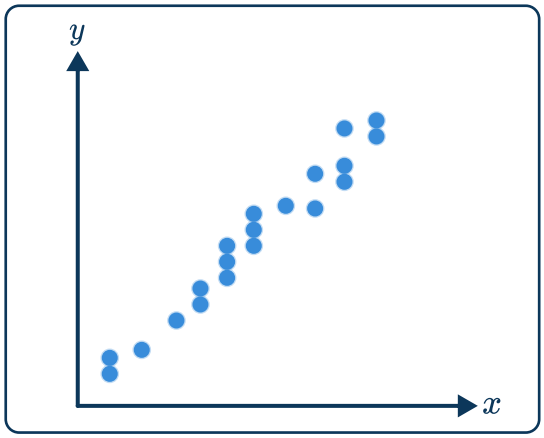


A math class is looking at the graph above. Arjan adds a coordinate and says "Now the graph represents a nonlinear function."

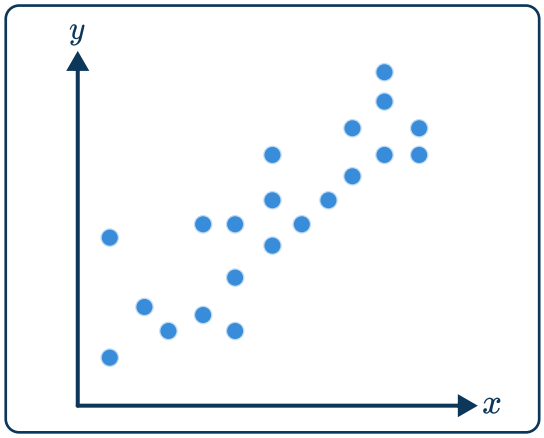
Add **one** point to the graph that makes Arjan's statement true. Label the coordinates of the additional point.

43 Which graph is an example of a weak linear association?

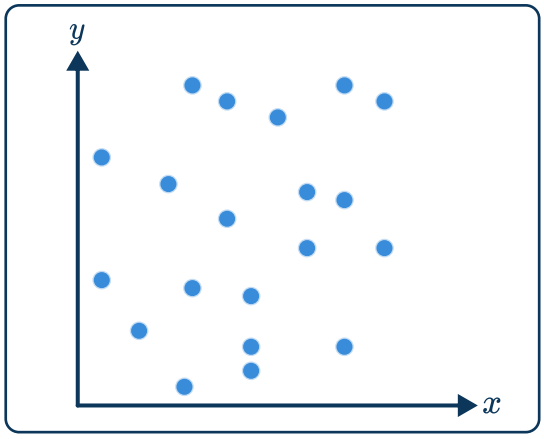
A.



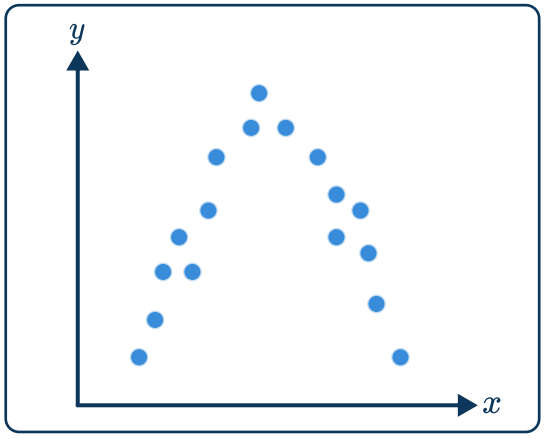
B.



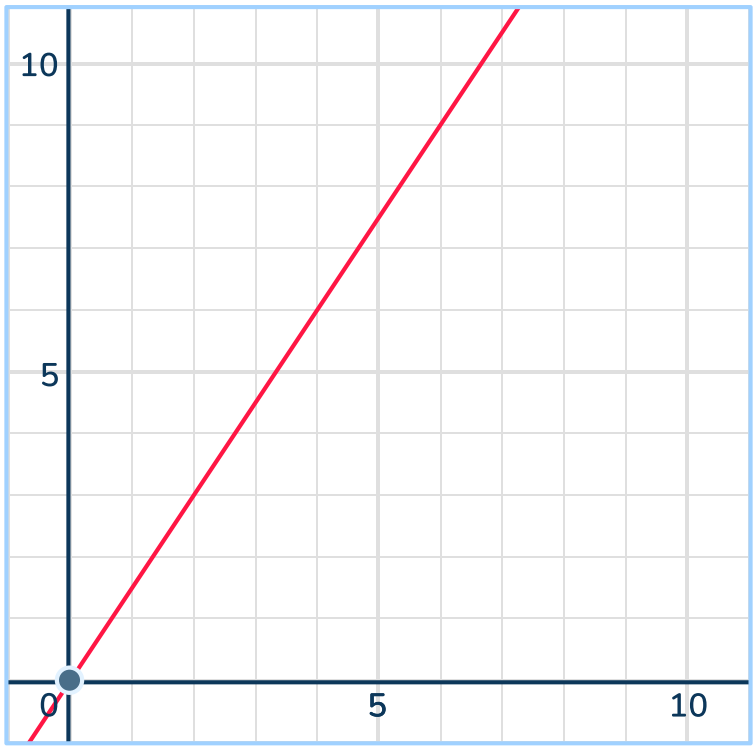
C.



D.



44 The graph shows a proportional relationship.



Which table shows a proportional relationship with the same unit rate as the graph?

A.

x	4	7	10	13
y	2	3.5	5	6.5

B.

x	7.5	10.5	16.5	12
y	5	7	11	8

C.

x	6	12	24	22.5
y	4	8	16	15

D.

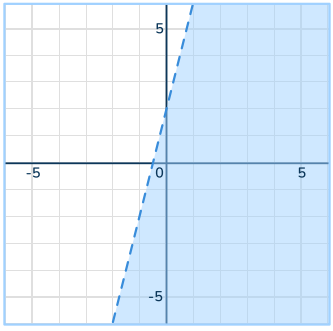
x	9	3	5	20
y	13.5	4.5	7.5	30

45 The distance from the sun to Mercury is about 2.2×10^{11} feet. The distance from the sun to Pluto is about 8.6×10^{4} times farther. About how many feet is the distance from the sun to Pluto?

A. 1.9×10^{16}
B. 6.4×10^{7}
C. 1.08×10^{16}
D. 2.56×10^{6}

THIS IS THE END OF THE TEST.

Answer Key

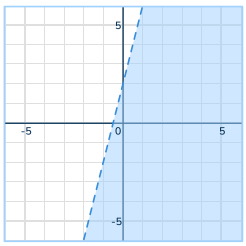
Item number	Correct answer	Standard(s)	DOK
1	C	**8.EE.B.6**	DOK 2
2	C, D	**8.NS.A.1**	DOK 1
3	C	**8.G.B.5**	DOK 2
4	A	**8.EE.C.8b**	DOK 2
5	B, C	**8.EE.A.1**	DOK 2
6	A	**8.F.A.1**	DOK 1
7	A	**8.EE.B.7a**	DOK 1
8	B	**8.G.A.1**	DOK 2
9	4	**8.EE.C.8**	DOK 2
10	C	**8.EE.B.5**	DOK 2
11	C	**8.NS.A.2**	DOK 2
12	B	**8.EE.A.3**	DOK 1
13	C	**8.G.A.2**	DOK 2
14		**8.EE.C.9**	DOK 1

Item number	Correct answer	Standard(s)	DOK
15	$\frac{27}{16}$	**8.EE.A.1**	DOK 1
16	D	**8.F.A.2**	DOK 2
17	A	**8.G.C.6**	DOK 2
18	A	**8.EE.C.8b**	DOK 1
19	D	**8.F.B.5**	DOK 2
20	1	**8.EE.C.8**	DOK 1
21	B	**8.EE.A.2**	DOK 1
22	C	**8.F.A.1**	DOK 1
23	C	**8.G.A.1**	DOK 2
24	B	**8.F.B.4**	DOK 2
25	B, C, D	**8.EE.C.7, 8.F.A.2, 8.F.B.4**	DOK 2
26	A	**8.SP.B.4**	DOK 2
27	A, E	**8.SP.A.1**	DOK 2
28	B	**8.G.C.6**	DOK 2
29	C	**8.SP.A.3**	DOK 2
30	A	**8.G.A.1, 8.G.B.5***	DOK 2
31	$y = 3x + b$, where b is any positive or negative rational number	**8.EE.C.7a**	DOK 2

Item number	Correct answer	Standard(s)	DOK
32	A, B, C, D	**8.F.A.2, 8.F.A.3**	DOK 2
33	C	**8.EE.A.2**	DOK 1
34	B	**8.G.B.4**	DOK 2
35	C	**8.G.B.3**	DOK 1
36	$27b^2$	**8.EE.A.1**	DOK 2
37	D	**8.F.B.5**	DOK 2
38	D	**8.G.A.2**	DOK 2
39	B	**8.F.A.3**	DOK 1
40	(2.25, 0)	**8.EE.C.8b**	DOK 2
41	$y = -2x + 3$	**8.EE.B.6**	DOK 1
42	Any coordinate not on the line $y = 3x + 5$ and the x coordinate is not –3, –2, –1, 0 or 1	**8.F.A.3, 8.F.A.1**	DOK 2
43	B	**8.SP.A.2**	DOK 1
44	D	**8.EE.B.5**	DOK 2
45	A	**8.EE.A.4**	DOK 2

ANSWERS SORTED BY REPORTING CATEGORY

Number Relationships (8.NS.A, 8.EE.A)			
2	C, D	**8.NS.A.1**	DOK 1
5	B, C	**8.EE.A.1***	DOK 2
11	C	**8.NS.A.2**	DOK 2
12	B	**8.EE.A.3***	DOK 1
15	$\frac{27}{16}$	**8.EE.A.1***	DOK 1
21	B	**8.EE.A.2***	DOK 1
33	C	**8.EE.A.2***	DOK 1
36	$27b^2$	**8.EE.A.1***	DOK 2
45	A	**8.EE.A.4***	DOK 2

Expressions and Equations (8.EE.B, 8.EE.C)			
1	C	**8.EE.B.6***	DOK 2
4	A	**8.EE.C.8b***	DOK 2
7	A	**8.EE.B.7a***	DOK 1
9	4	**8.EE.C.8***	DOK 2
10	C	**8.EE.B.5***	DOK 2
14		**8.EE.C.9***	DOK 1
18	A	**8.EE.C.8b***	DOK 1
20	1	**8.EE.C.8***	DOK 1
25	B, C, D	**8.EE.C.7*, 8.F.A.2*, 8.F.B.4***	DOK 2
31	$y = 3x + b$, where b is any positive or negative rational number	**8.EE.C.7a***	DOK 2
40	(2.25, 0)	**8.EE.C.8b***	DOK 2
41	$y = -2x + 3$	**8.EE.B.6***	DOK 1
44	D	**8.EE.B.5***	DOK 2

Functions (8.F.A, 8.F.B)			
6	A	**8.F.A.1***	DOK 1
16	D	**8.F.A.2***	DOK 2
19	D	**8.F.B.5***	DOK 2
22	C	**8.F.A.1***	DOK 1
24	B	**8.F.B.4***	DOK 2
32	A, B, C, D	**8.F.A.2*, 8.F.A.3***	DOK 2
37	D	**8.F.B.5***	DOK 2
39	B	**8.F.A.3***	DOK 1
42	Any coordinate not on the line $y = 3x + 5$ and the x coordinate is not –3, –2, –1, 0 or 1	**8.F.A.3*, 8.F.A.1'**	DOK 2

Geometry and Data (8.G.A, 8.G.B, 8.G.C, 8.SP.A, 8.SP.B)			
3	C	**8.G.B.5***	DOK 2
8	B	**8.G.A.1**	DOK 2
13	C	**8.G.A.2**	DOK 2
17	A	**8.G.C.6**	DOK 2
23	C	**8.G.A.1**	DOK 2
24	B	**8.G.C.6**	DOK 2
26	A	**8.SP.B.4**	DOK 2
27	A, E	**8.SP.A.1**	DOK 2
28	B	**8.G.C.6**	DOK 2
29	C	**8.SP.A.3**	DOK 2
30	A	**8.G.A.1, 8.G.B.5***	DOK 2
34	B	**8.G.B.4***	DOK 2
35	C	**8.G.B.3**	DOK 1
38	D	**8.G.A.2**	DOK 2
43	B	**8.SP.A.2**	DOK 1

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