THIRD SPACE LEARNING

8th Grade Georgia State Test

State Test Grade 8

Grade 8

Questions

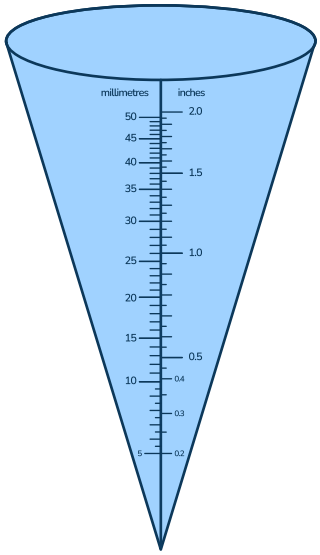
Name: ..... Class: .....

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

1 Which equation represents the graph of a line on the coordinate plane that has an x-intercept of (2, 0) and a y-intercept of (0, 6)?

A. $y = 6x - 2$
B. $y = -2x - 6$
C. $y = -3x + 6$
D. $y = \frac{1}{3}x + 2$

2



A cone shaped rain gauge has a volume of 27.7 inches^3. The height is 5 inches. What is the diameter of the rain gauge? Round to the nearest tenth.

A. 5.3 inches
B. 2.3 inches
C. 2.7 inches
D. 4.6 inches

3 The points A(–2, 2) and B(3, –18) are plotted on the coordinate plane. What is the distance between the points?

A. $5\sqrt{17}$
B. 425
C. 25
D. $\sqrt{257}$

---

4 What is the solution to the system of equations:

$y - x = -12$

$3x - y = 1$

$x =$ _____ and $y =$ _____

---

5 Which expressions have a value of $\frac{1}{8}$? Select all the correct answers.

A. $\frac{2^2}{2^5}$

B. $(2^3)^{-2}$

C. $2^{-6} + 2^3$

D. $(2^4)^{-1}$

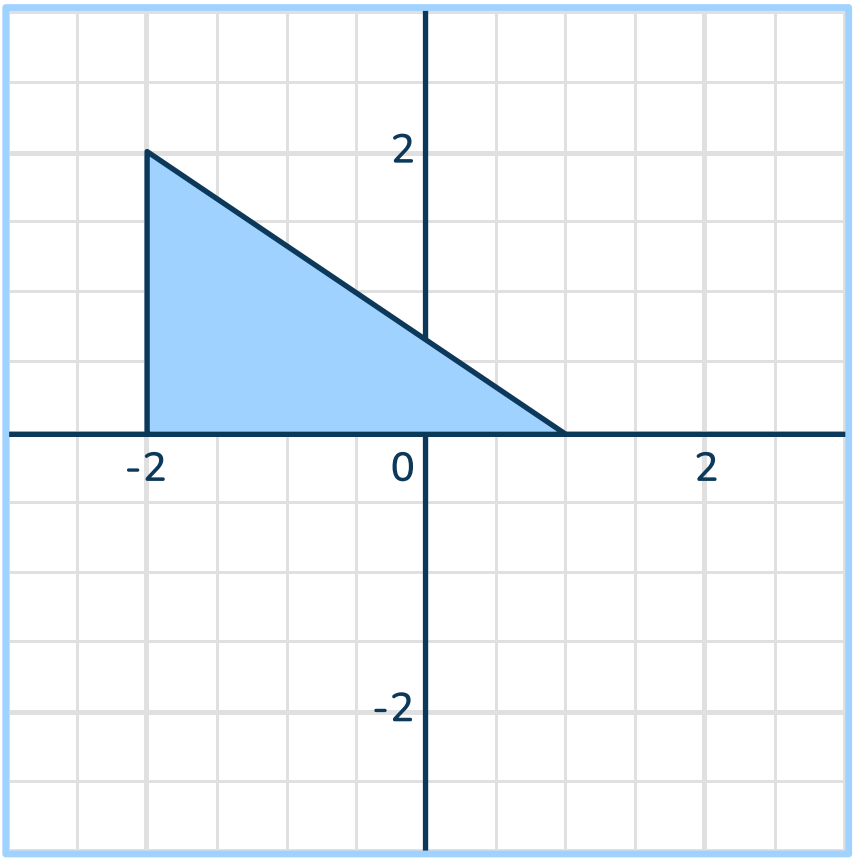
E. $2^4 \times 2^{-7}$

6 Given $5 - wx = 9$, solve for x.

$x =$ _____

---

7 What is the length of the hypotenuse of the triangle?



A. 6 units

B. $\sqrt{13}$ units

C. 4 units

D. $\sqrt{52}$ units

8 **Step 1:** $5(4 - b) > -7b$
Step 2: $20 - 5b > -7b$
Step 3: $20 > -2b$
Step 4: $-10 < b$
Which property is shown by step 3?

A. Distributive property
B. Associative property
C. Subtraction property of equality
D. Addition property of equality

---

9 The population of Bellview is 1.1×10^3 people. The population of Atlanta is 6.2×10^6 people. Which comparison statement is true?

A. Bellview is about 50 times smaller than Atlanta.
B. Atlanta is about 6 times larger than Bellview.
C. Bellview is about 6,000 times smaller than Atlanta.
D. Atlanta is about 500 times larger than Bellview.

---

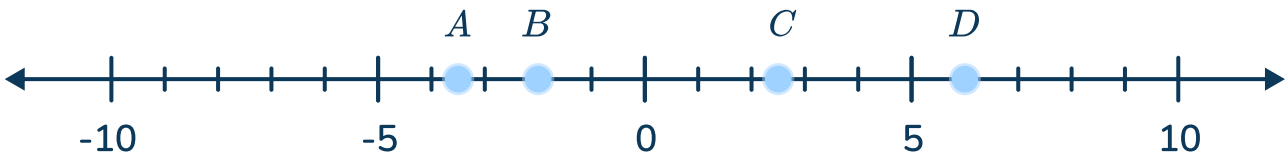
10 The expression represents the total cost of Talia's cell phone plan after x months. Talia paid a one-time fee when she joined and she pays the same amount for the plan each month. Talia also gets a 10% new member discount on the total cost.

$0.9(55x + 35)$

What does the term 35 represent?

A. The amount of money Talia pays in total each month.
B. The one-time fee.
C. The new member discount.
D. The cost of the plan per month.

11 Which point is closest to $-\sqrt{12}$?



---

12 Use the number bank to complete each statement about the expression: $5x - y^2 + 4$

The coefficient is _____.
There are ____ terms in the expression.
There are ____ operations in the expression.

Number bank : 1, 2, 3, 4, 5

---

13 Fran has read 35 books so far this year. For the rest of the year Fran's goal is to read 5 books per week. How many weeks, w, will it take Fran to read at least 100 books?

A. $w \geq 13$
B. $w \leq 15$
C. $w < 13$
D. $w > 15$

14 Write $0.\overline{8}$ as a fraction.

$0.\overline{8}$ = ——

---

15 There are two price options at a bowling alley. The cost in dollars, y, and the hours, x, are represented by the equations.

- Hourly cost: y = \$8 + \$14x
- Daily cost: y = \$50

When is the total cost for the hourly and daily pass the same?

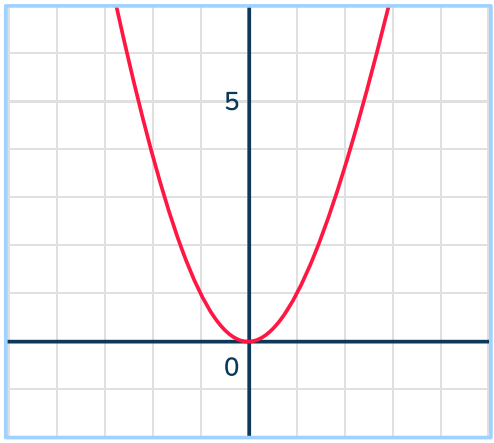
A. 2 hours
B. 3 hours
C. 3.5 hours
D. 4 hours

16 The table and the equation both show a different relationship between y and x.

Relation A

x	y
2	-14
3	-11
5	-5
8	8
12	23

Relation B



Which statement about the relations is true?

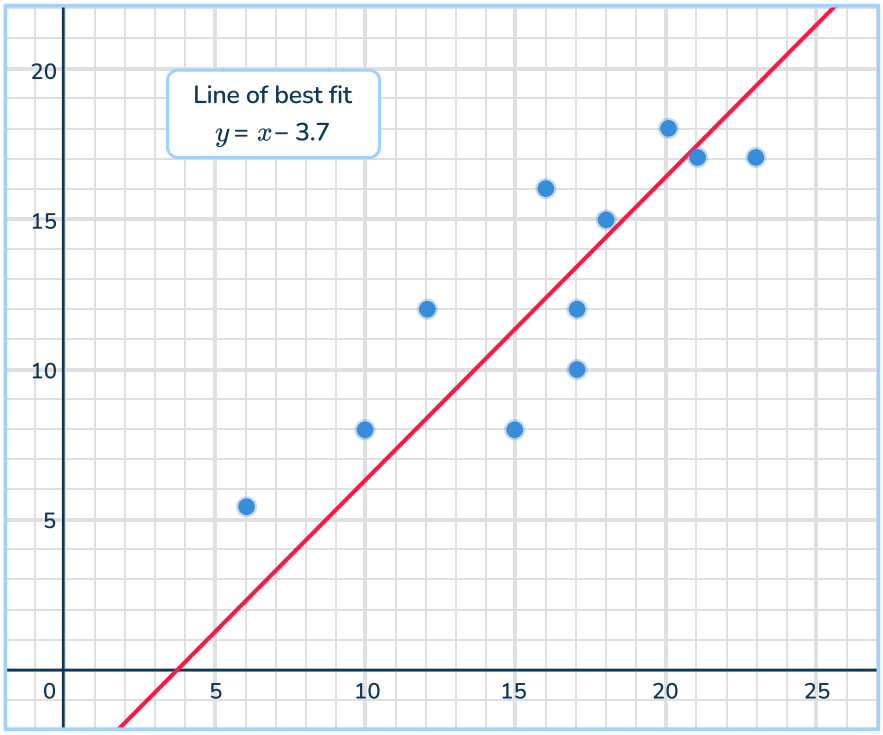
A. Neither relation is a function.

B. Both relations are functions.

C. The table is a function, but the graph is not.

D. The graph is a function, but the table is not.

17



What is the predicted value for $x = 10$?

$y =$ _____

18 Which system of equations has infinite solutions?

A. $y = -5x - 5$
$y = 5x + 5$

B. $10y = x + 3$
$-x + 10y = 6$

C. $9x - 9y = 27$
$x = y + 3$

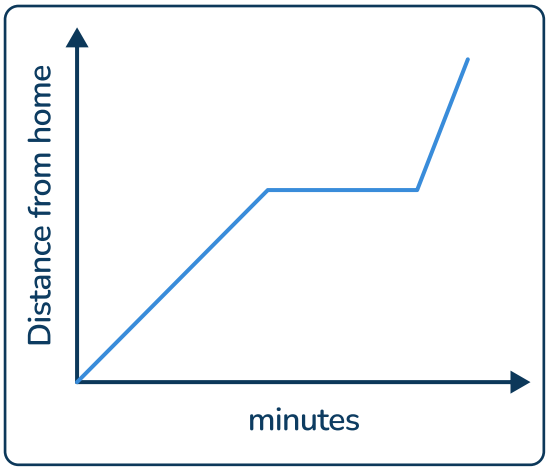
D. $x + y = 8$
$x - 8 = y$

---

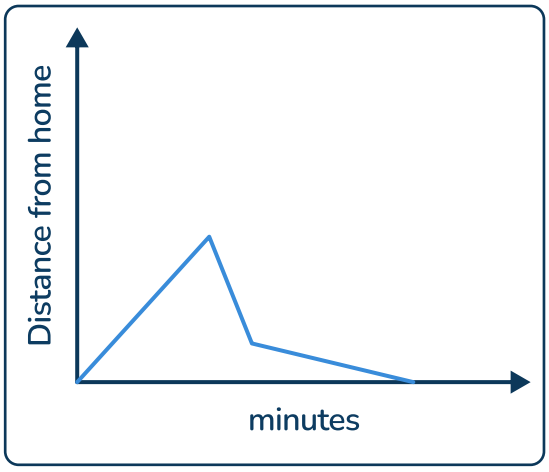
19 Daniel left home on his bike to go to the library. He spent some time at the library. Then he returned home, biking faster than he did going to the library.

Which is a graph of the function described above?

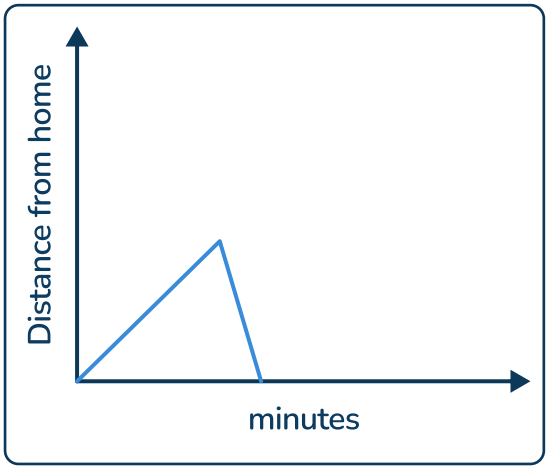
A.



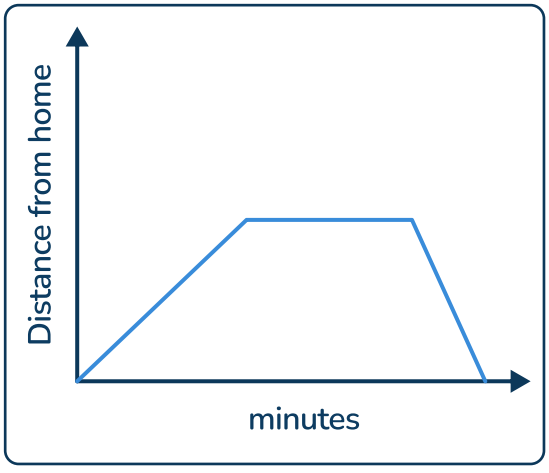
B.



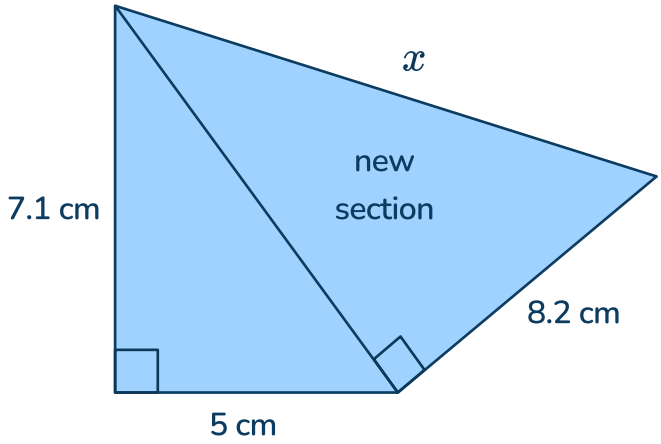
C.



D.



20 Victor is adding another section to his garden.



What is the length of side x? Round to the nearest tenth.

A. 8.7 cm
B. 11.9 cm
C. 13.2 cm
D. 9.3 cm

---

21 Use the answer bank to complete the table.

Equal to 4	Equal to 8

Answer bank : $\sqrt{8^2}$, $-\sqrt{64}$, $\sqrt[3]{64}$, $-\sqrt[3]{64}$, $\sqrt{8}$, $(\sqrt{2})^4$, $(-\sqrt{4})^2$, 4^{-2}

22 Which set of coordinates does NOT represent a function?

A. {(9, 0), (0, 9), (6, 5), (5, 6)}

B. {(1, $\frac{1}{2}$), (2, $\frac{1}{2}$), (3, $\frac{1}{2}$), (4, $\frac{1}{2}$)}

C. {(6, 2), (-6, -2), (9, –18), (–4, 12)}

D. {(–6, 0), (7, 1), (–6, 1), (0,0)}

---

23 Gina is comparing the price of dog food at two different stores.

Dog Market	The Pet Place
Pay $20 for a membership and then $25 for each 30-pound bag of dog food.	Pay $30 for each 30-pound bag of dog food.

Which statement is true about x bags?

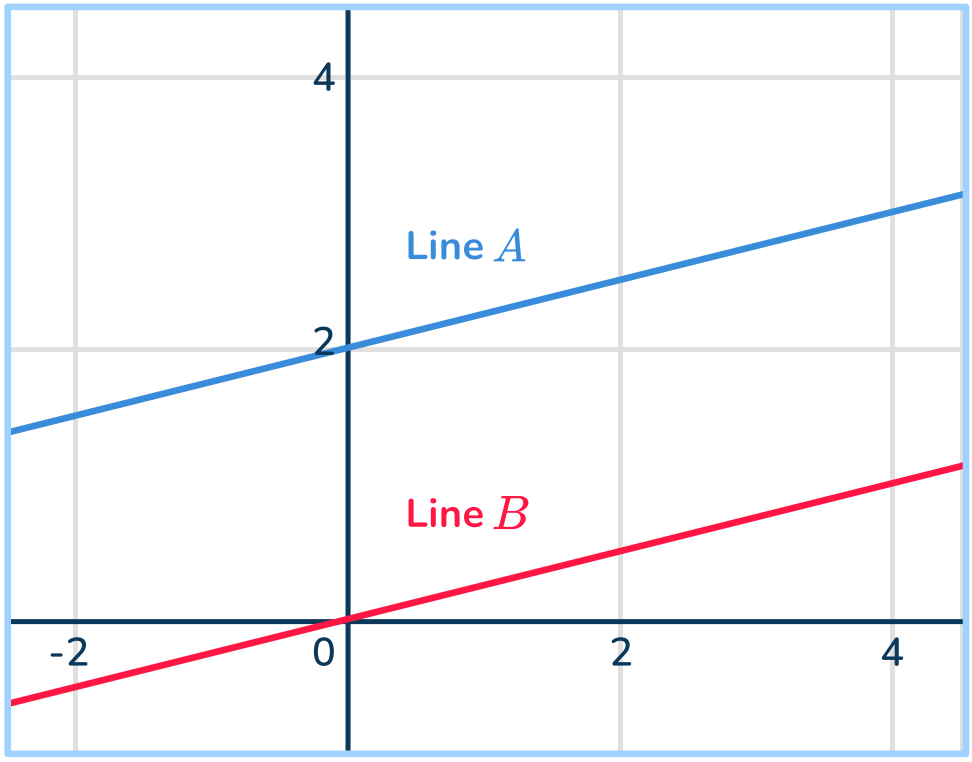
A. For $x > 4$ the Pet Place costs less.
B. For $x < 4$ the Dog Market costs more.
C. For $x \geq 4$ the Dog Market costs more.
D. For $x \geq 4$ the Pet Place costs less.

24 The diameter of a basketball is 24 cm. What is the volume of the basketball, in cm^3? Round to the nearest whole number.

A. 7,238
B. 57,906
C. 5,429
D. 43,429

---

25 Which statements about the two lines shown in the graph are true? Select all the correct answers.



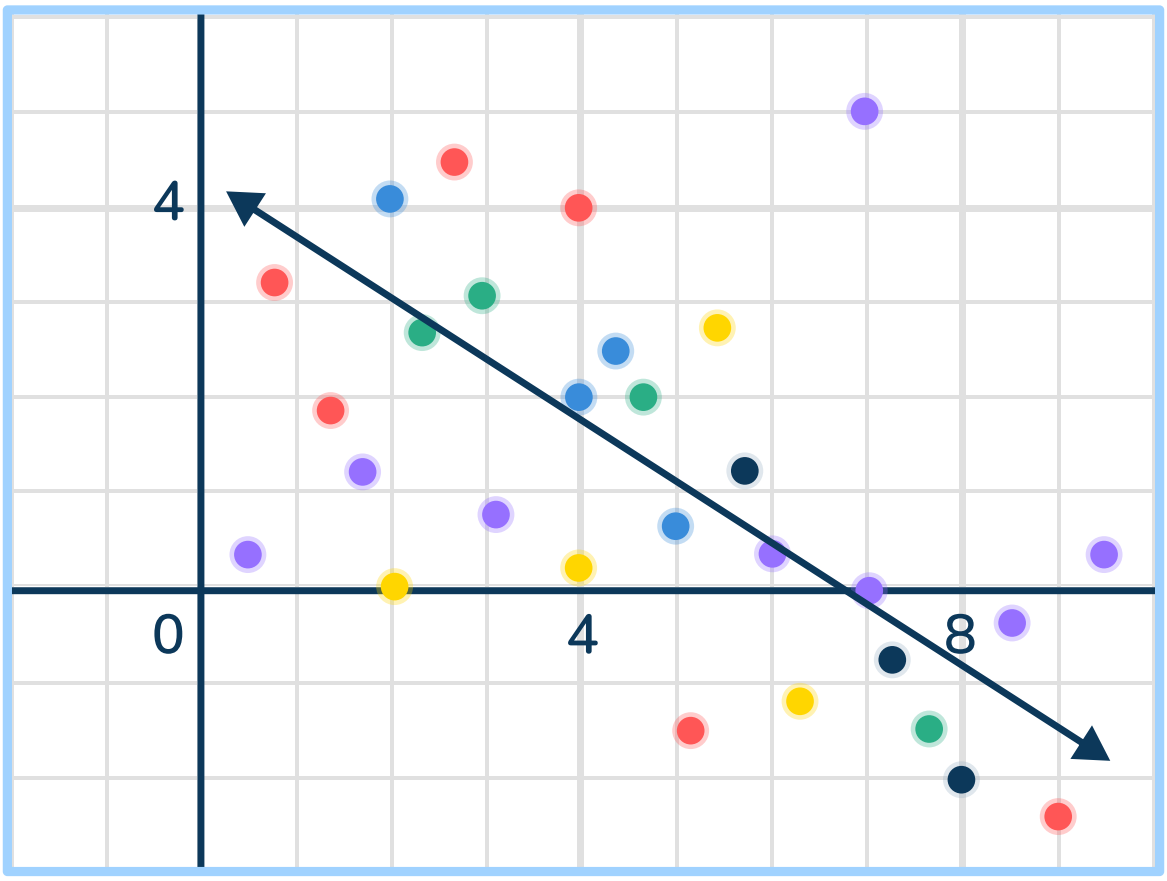
A. The y-intercept of Line A is 2 above the y-intercept of Line B.
B. As a system, Line A and Line B have no solutions.
C. Line A and Line B represent proportional relationships.
D. In Line A, for each +1 change is x, there is a +4 change in y.
E. The slope of Line B is $\frac{1}{4}$, which is the same as its unit rate.

26 The volume of a cube with side length s is $V = s^3$. Why is this a non-linear function? Select all the correct answers.

A. Each side length s does not have exactly one output.
B. Each side length s has exactly one output.
C. The graph of $V = s^3$ forms a curved line.
D. The graph of $V = s^3$ forms a straight line.
E. All equations, including $V = s^3$, are functions.

---

27 Jessriel sketched a line of best fit for the data.



Write the equation for the approximated line of best fit.

$y =$ _____

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

A. 10π

B. $\frac{2}{3}$

C. $\sqrt{7^2}$

D. $\sqrt{8}$

E. $\sqrt[3]{64}$

---

29 The equation $3 + 2x = y$ models the total height of a plant in inches, x weeks after it is planted. What is the meaning of the slope of the graph?

A. The predicted number of weeks the plant has been growing.
B. The maximum height the plant can grow.
C. The inches the plant grows associated with each week.
D. The predicted starting height of the plant.

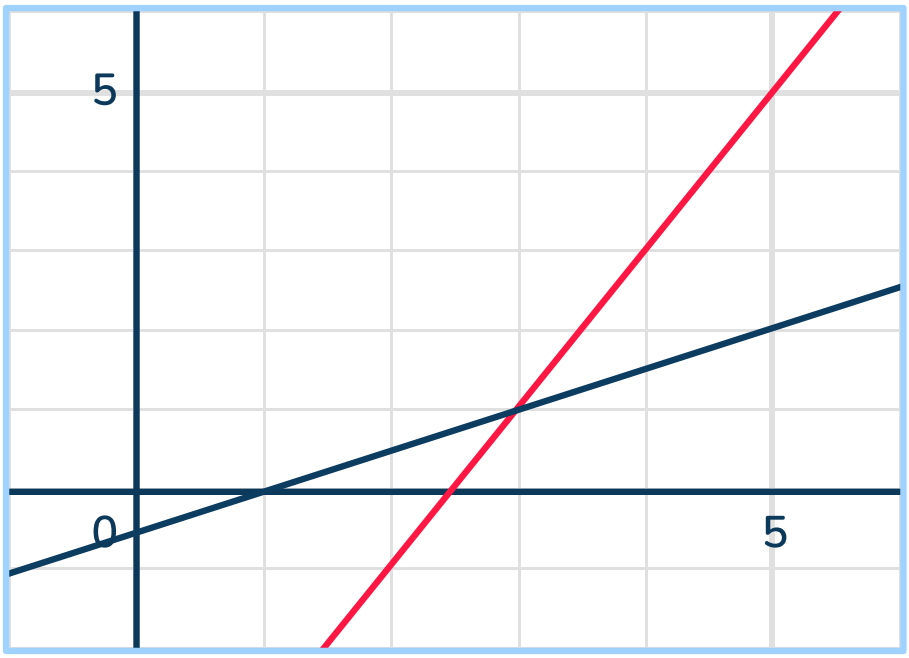
---

30 Complete the sentence using the word bank.

A system of two lines with the same _____, but different _____ are parallel and have no solutions.

Word bank : slope, y-intercepts, factors, proportion, terms

31 The graph shows a system of equations.



Use the equation bank to fill in the equations. Then write the solution to the system.

Equation: _____ Equation:_____ Solution: (_____, _____)

Equation bank : $2x - y = 5$, $x - 2y = 1$, $4x - 2y = 8$, $x - 7y = 14$

---

32 **Function A:** $y = 4x - 50$

Function B:

x	0	2	4	6
y	-50	-46	-42	-46

Which comparison statement is correct?

A. Both functions have a slope of 4.
B. Both functions are increasing.
C. Both functions are linear.
D. Both functions have a y-intercept of –50.

33 $\sqrt[3]{r} = \frac{1}{8}$

Solve for r.

A. $\sqrt{\frac{1}{8}}$

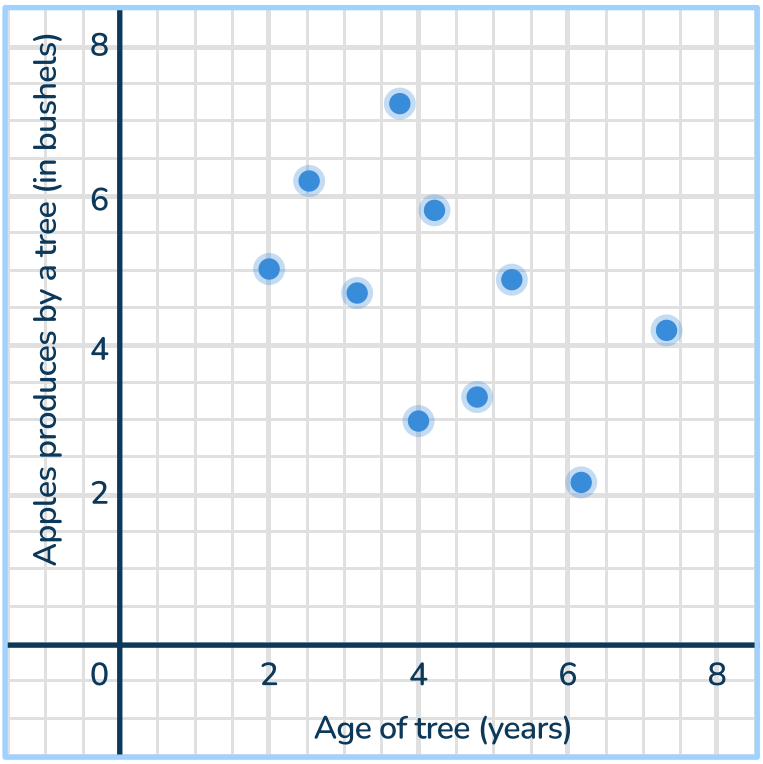
B. $\frac{1}{2}$

C. $\frac{1}{512}$

D. $\frac{1}{64}$

---

34 Jenny collected data on the apple trees in her orchard.



The line of best fit is $-0.4x + 6.5 = y$.

Which best explains the slope within the context?

A. With each additional year, Jenny's apple trees each produce 0.4 of a bushel less.

B. The number of apple trees that Jenny has decreases each year by 0.4 trees.

C. A tree at 0 years, Jenny's apple trees would produce 6.5 apples.

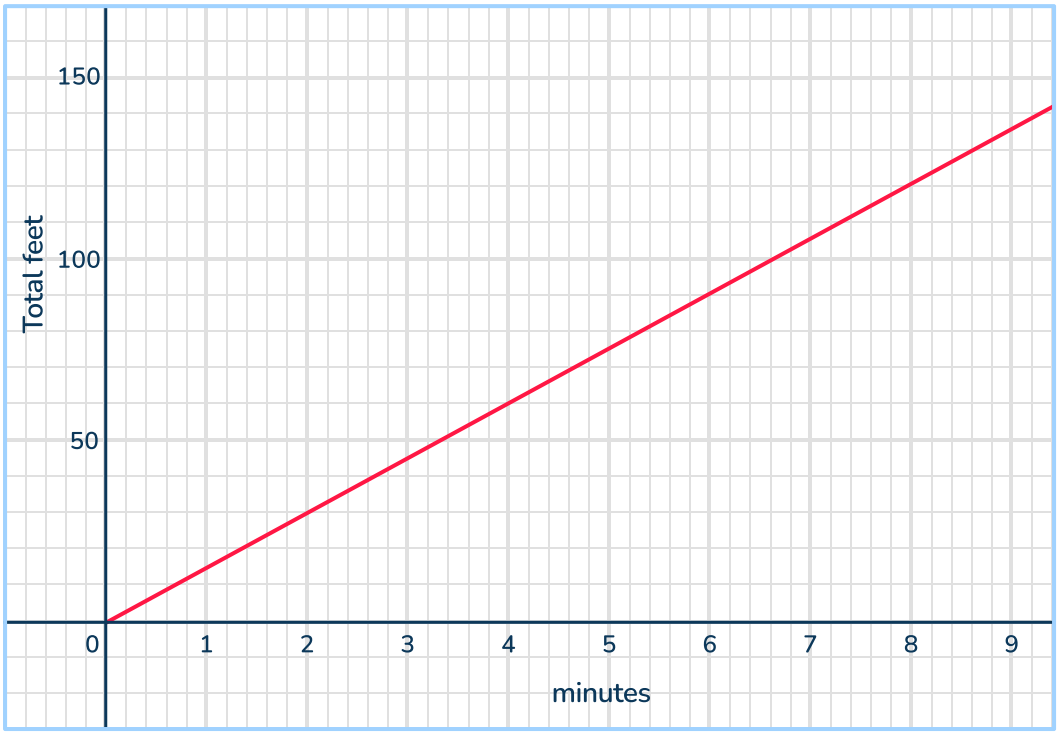
D. Each year, the total that Jenny's apple trees produce grows by 0.4 bushels.

35 A robot travels at 15 feet per minute. Which representation shows all possible solutions?

A.

Minutes	1	2	3	4
Total feet	15	30	45	60

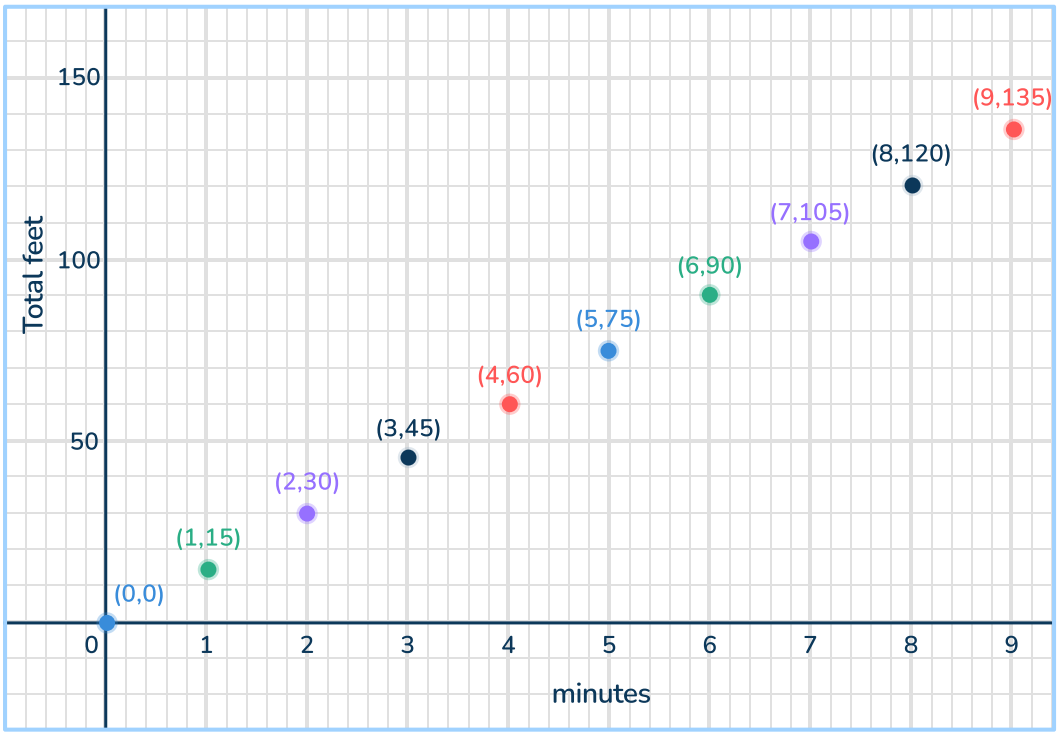
B.



C.

Minutes	0	0.1	0.2	0.3	0.4	0.5	0.6
Total feet	0	0.15	0.3	0.45	0.6	0.75	0.9

D.



36 Hector is comparing two laundromats. E-Z Wash charges $4 per load of laundry. Wash-n-Dry charges a flat $2 fee and then $4 per load of laundry. Which statements are true about the graphs of each? Select all the correct answers.

A. E-Z Wash's line has a greater slope than Wash-n-Dry.
B. Wash-n-Dry's line goes through the origin, but Jay's Laundromat does not.
C. Wash-n-Dry's line is always 2 above E-Z Wash's line.
D. E-Z Wash is a proportional relationship and Wash-n-Dry is not.
E. Both E-Z Wash and Wash-n-Dry are linear.

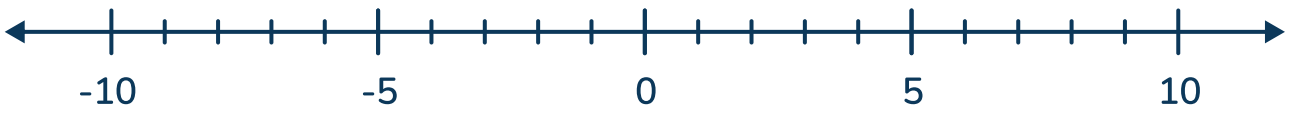
---

37 Which expression is equal to $\frac{4^4}{4^6}$?

A. 4^{10}
B. $4^{\frac{2}{3}}$
C. 4^{-2}
D. $\sqrt[2]{4}$

---

38 Show about where $3\sqrt{5}$ is on the number line.



39 A grain of rice weighs about 2×10^{-2} grams. An elephant weighs 5×10^{6} grams. Which statement about the relationship is true?

A. A grain of rice weighs 3×10^{4} times the weight of an elephant.
B. An elephant weighs 2.5×10^{8} times the weight of a grain of rice.
C. A grain of rice weighs 3×10^{-8} times the weight of an elephant.
D. An elephant weighs 7×10^{-4} times the weight of a grain of rice.

---

40 $4x + 8(x - 7) = -2x$
Which value for x makes the equation true?

A. 0
B. 4
C. $4\frac{2}{3}$
D. $-\frac{1}{2}$

---

41 The formula $C = 2\pi r$ is used to find the circumference of a circle, where r is the radius of the circle. Which equation will calculate the radius, r, if the circumference, C, is known?

A. $r = C \bullet 2\pi$
B. $r = \frac{\pi}{2C}$
C. $r = \frac{C}{2\pi}$
D. $r = C \bullet \frac{2}{\pi}$

42 The equation shows the zero exponent rule: $\frac{a^3}{a^3} = a^0$

Which statement is true about a^0?

A. Any number divided by itself is 1, so $a^0 = 1$.
B. Any number multiplied by 0 is 0, so $a^0 = a \times 0 = 0$.
C. Since a can be any number, $a^0 = a$.
D. a^0 is one less a than a^1, so $a^0 = a^1 - a$.

---

43 Quinn is a cashier at a bookstore. When customers check out, Quinn asks them to join the store's rewards club. For every customer that joins, Quinn gets a $15 bonus.

The function $f(x)$ calculates the total bonus Quinn receives for x customers that join the store's rewards club.
Which set of numbers is the appropriate domain for $f(x)$?

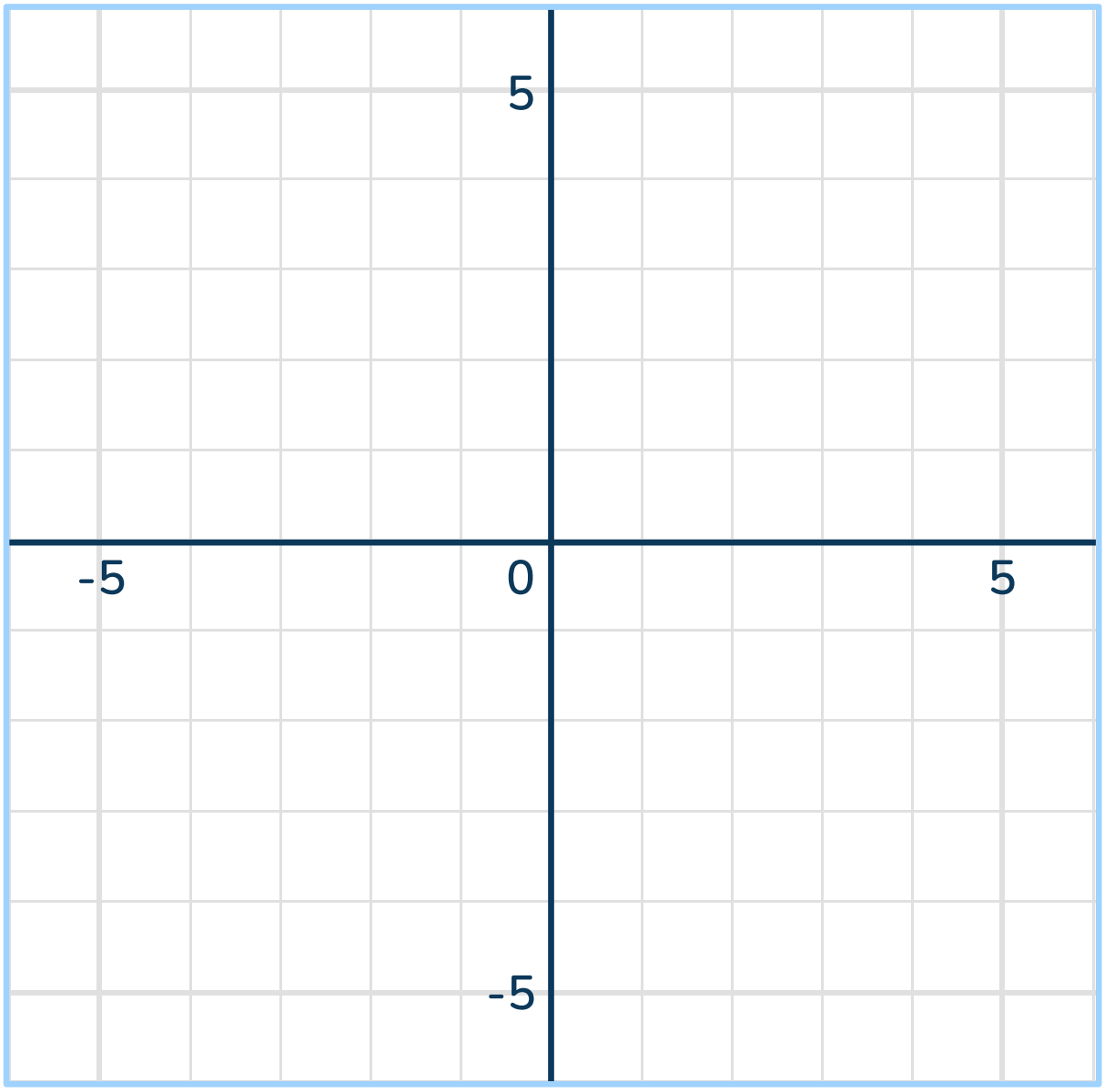
A. real numbers
B. positive real numbers
C. integers
D. positive integers

44 Which linear equation passes through the origin and (–3, –6)?

A. $-3x - 6 = y$
B. $y + 6 = 2(x + 3)$
C. $-3x + 6y = 0$
D. $2(x - 0) = y - 6$

---

45 Graph $y = -\frac{1}{3}x - 1$.



46 Gabriella owns a car repair shop. The table below shows the total cost for the amount of hours worked. Which linear equation represents the information in the table?

Hours worked, x	Total cost, y
0	\$45
2	\$155
4	\$265
6	\$375

A. $y = 55x + 45$
B. $y = 110x + 45$
C. $y = 45x$
D. $y = 77.5x$

---

47 The distance from New York City to Atlanta is about 5.5×10^7 inches. The distance from Atlanta to Los Angeles is about 1.4×10^8 inches. About how many inches farther is Atlanta from Los Angeles than New York City?

A. 8.5×10^7
B. 5.3×10^1
C. 4.1×10^8
D. 5.36×10^9

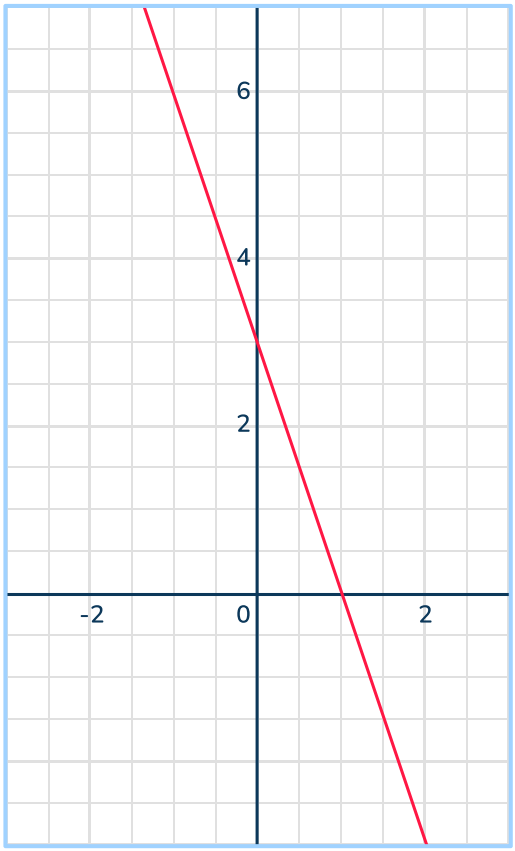
48 $4(2x - 9) + 40 = \frac{1}{3}(12 + 24x)$

How many solutions does the equation have?

A. 0
B. 1
C. 2
D. Infinite

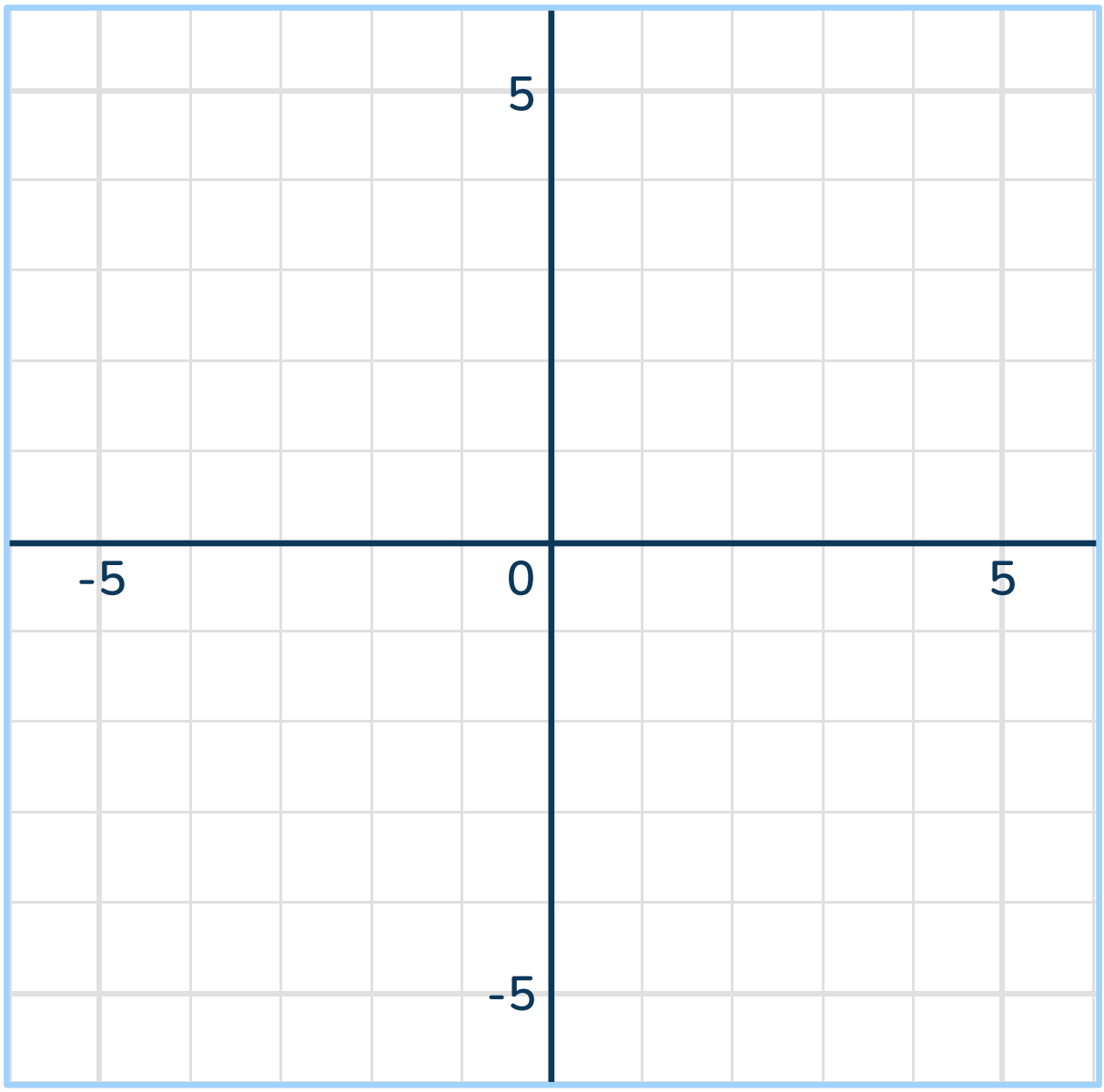
---

49 Which statements about the line are true? Select all the correct answers.



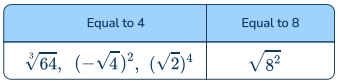
A. For every increase in 1 unit of x, y decreases by 3.
B. The rate of change is positive, because the line is increasing.
C. The y–intercept is where $y = 0$.
D. The line shown is the line $-3x = y$ shifted up by 3.
E. The y–coordinate of the y–intercept and slope are equal.

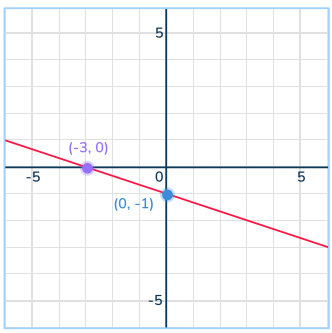
50 Sketch a system of linear equations whose solution is (–2, 4).

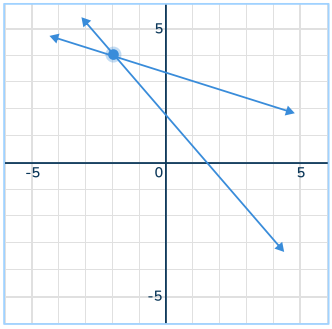


Answer Key

Item number	Correct answer	Standard(s)	DOK
1	C	**8.FGR.5.7**	DOK 2
2	D	**8.GSR.8.4**	DOK 2
3	A	**8.GSR.8.3**	DOK 1
4	x = -5.5 and y = -17.5	**8.FGR.7.4**	DOK 1
5	A, E	**8.NR.2.1**	DOK 1
6	$x = -\frac{4}{w}$	**8.PAR.3.5**	DOK 1
7	B	**8.GSR.8.2**	DOK 1
8	D	**8.PAR.3.4**	DOK 1
9	C	**8.NR.2.3**	DOK 2
10	B	**8.PAR.3.1**	DOK 2
11	A	**8.NR.1.2**	DOK 2
12	The coefficient is 5. There are 3 terms in the expression. There are 4 operations in the expression.	**8.PAR.3.1**	DOK 1
13	A	**8.PAR.3.3**	DOK 2
14	$\frac{8}{9}$	**8.NR.1.1**	DOK 1
15	B	**8.FGR.7.1**	DOK 2

Item number	Correct answer	Standard(s)	DOK
16	B	**8.FGR.5.1**	DOK 1
17	$y = 6.3$	**8.FGR.6.2**	DOK 1
18	C	**8.FGR.7.4**	DOK 1
19	D	**8.FGR.5.2**	DOK 2
20	B	**8.GSR.8.2**	DOK 2
21		**8.NR.2.2**	DOK 1
22	D	**8.FGR.5.1**	DOK 1
23	B	**8.FGR.7.1**	DOK 2
24	A	**8.GSR.8.4**	DOK 1
25	A, B, E	**8.PAR.4.1, 8.FGR.7.2**	DOK 2
26	B, C	**8.FGR.5.2**	DOK 1
27	$y = -\frac{3}{5}x + 4\frac{1}{5}$	**8.FGR.6.1**	DOK 1
28	A, D	**8.NR.1.1**	DOK 1
29	C	**8.FGR.6.3**	DOK 2
30	A system of two lines with the same slope, but different y–intercepts are parallel and have no solutions.	**8.FGR.7.5**	DOK 2

Item number	Correct answer	Standard(s)	DOK
31	Equation: $2x - y = 5$ Equation: $x - 2y = 1$ Solution: (3, 1)	**8.FGR.5.6, 8.FGR.7.2**	DOK 2
32	D	**8.FGR.5.4**	DOK 2
33	C	**8.NR.2.2**	DOK 1
34	A	**8.FGR.6.4**	DOK 2
35	B	**8.PAR.4.2**	DOK 1
36	C, D, E	**8.PAR.4.1**	DOK 2
37	C	**8.NR.2.1**	DOK 1
38		**8.NR.1.2**	DOK 1
39	B	**8.NR.2.4**	DOK 2
40	B	**8.PAR.3.2**	DOK 1
41	C	**8.PAR.3.6**	DOK 1
42	A	**8.NR.2.1**	DOK 2
43	D	**8.FGR.5.3**	DOK 1
44	B	**8.FGR.5.5**	DOK 1
45		**8.FGR.5.9**	DOK 1

Item number	Correct answer	Standard(s)	DOK
46	A	**8.FGR.5.7**	DOK 2
47	A	**8.NR.2.4**	DOK 2
48	D	**8.PAR.3.2**	DOK 1
49	A, D	**8.FGR.5.8**	DOK 2
50	 Answers will vary, but should intersect at (–2, 4).	**8.FGR.7.2, 8.FGR.7.3**	DOK 2

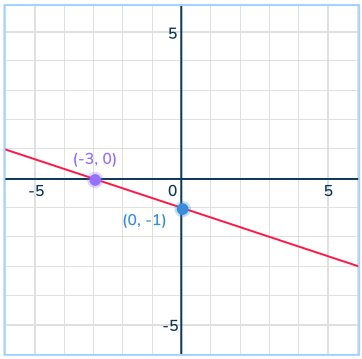
ANSWERS SORTED BY COMPETENCIES

7.NR.1 (Numerical R8.NR.1 (Numerical Reasoning Competency 1)easoning Competency 1)			
11	A	**8.NR.1.2**	DOK 2
14	$\frac{8}{9}$	**8.NR.1.1**	DOK 1
28	A, D	**8.NR.1.1**	DOK 1
38		**8.NR.1.2**	DOK 1
42	A	**8.NR.2.1**	DOK 2

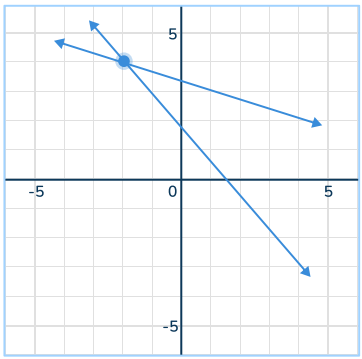
8.NR.2 (Numerical Reasoning Competency 2)			
5	A, E	**8.NR.2.1**	DOK 1
9	C	**8.NR.2.3**	DOK 2
21	Equal to 4: $\sqrt[3]{64}$, $(-\sqrt{4})^2$, $(\sqrt{2})^4$ Equal to 8: $\sqrt{8^2}$	**8.NR.2.2**	DOK 1
33	C	**8.NR.2.2**	DOK 1
37	C	**8.NR.2.1**	DOK 1
39	B	**8.NR.2.4**	DOK 2
47	A	**8.NR.2.4**	DOK 2
48	D	**8.PAR.3.2**	DOK 1

8.PAR.3 (Patterning & Algebraic Reasoning Competency 3)			
6	$x = -\frac{4}{w}$	**8.PAR.3.5**	DOK 1
8	D	**8.PAR.3.4**	DOK 1
10	B	**8.PAR.3.1**	DOK 2
12	The coefficient is 5. There are 3 terms in the expression. There are 4 operations in the expression.	**8.PAR.3.1**	DOK 1
13	A	**8.PAR.3.3**	DOK 2
40	B	**8.PAR.3.2**	DOK 1
41	C	**8.PAR.3.6**	DOK 1

8.PAR.4 (Patterning & Algebraic Reasoning Competency 4)			
25	A, B, E	**8.PAR.4.1, 8.FGR.7.2**	DOK 2
35	B	**8.PAR.4.2**	DOK 1
36	C, D, E	**8.PAR.4.1**	DOK 2

8.FGR.5 (Functional & Graphical Reasoning Competency 5)			
1	C	**8.FGR.5.7**	DOK 2
16	B	**8.FGR.5.1**	DOK 1
19	D	**8.FGR.5.2**	DOK 2
22	D	**8.FGR.5.1**	DOK 1
26	B, C	**8.FGR.5.2**	DOK 1
31	Equation: $2x - y = 5$ Equation: $x - 2y = 1$ Solution: (3, 1)	**8.FGR.5.6, 8.FGR.7.2**	DOK 2
32	D	**8.FGR.5.4**	DOK 2
43	D	**8.FGR.5.3**	DOK 1
44	B	**8.FGR.5.5**	DOK 1
45		**8.FGR.5.9**	DOK 1
46	A	**8.FGR.5.7**	DOK 2
49	A, D	**8.FGR.5.8**	DOK 2

8.FGR.6 (Functional & Graphical Reasoning Competency 6)			
17	$y = 6.3$	**8.FGR.6.2**	DOK 1
27	$y = -\frac{3}{5}x + 4\frac{1}{5}$	**8.FGR.6.1**	DOK 1
29	C	**8.FGR.6.3**	DOK 2
34	A	**8.FGR.6.4**	DOK 2

8.FGR.7 (Functional & Graphical Reasoning Competency 7)			
4	$x = -5.5$ and $y = -17.5$	**8.FGR.7.4**	DOK 1
15	B	**8.FGR.7.1**	DOK 2
18	C	**8.FGR.7.4**	DOK 1
23	B	**8.FGR.7.1**	DOK 2
30	A system of two lines with the same slope, but different y–intercepts are parallel and have no solutions.	**8.FGR.7.5**	DOK 2
50	 Answers will vary, but should intersect at (–2, 4).	**8.FGR.7.2, 8.FGR.7.3**	DOK 2

8.GSR.8 (Geometric & Spatial Reasoning Competency 8)			
2	D	**8.GSR.8.4**	DOK 2
3	A	**8.GSR.8.3**	DOK 1
7	B	**8.GSR.8.2**	DOK 1
20	B	**8.GSR.8.2**	DOK 2
24	A	**8.GSR.8.4**	DOK 1

Do you have a group of students who need a boost in math?

Each student could receive a personalized lesson every week from our specialist one-on-one math tutors.

- Differentiated instruction for each student
- Aligned to your state's standard
- Scaffolded learning to close gaps

Speak to us

thirdspacelearning.com/us/

+1 929-298-4593

hello@thirdspacelearning.com

THIRD SPACE LEARNING