THIRD SPACE LEARNING

8th Grade CCSS State Test

Common Core 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, 8)?

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

2 A sphere has a diameter of 10.2 cm. What is the volume of the sphere rounded to the nearest tenth?

A. 4,445.2 cm^3
B. 108.9 cm^3
C. 435.6 cm^3
D. 555.7 cm^3

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3 The points A(-2, 2) and B(3, -8) are plotted on the coordinate plane. What is the distance between the points?

A. $5\sqrt{5}$
B. 125
C. $\sqrt{225}$
D. 5

---

4 What is the solution to the equation?
$-2.5\ (\ 3x - 2\ ) = 2.5x + 1.5$

A. $x = -6.5$
B. $x = 3.5$
C. $x = 0.35$
D. $x = -0.65$

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5 Which expressions have a value of $\frac{1}{64}$? Select all the correct answers.

A. $\frac{2^2}{2^8}$

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

C. $2^{-8} + 2^2$

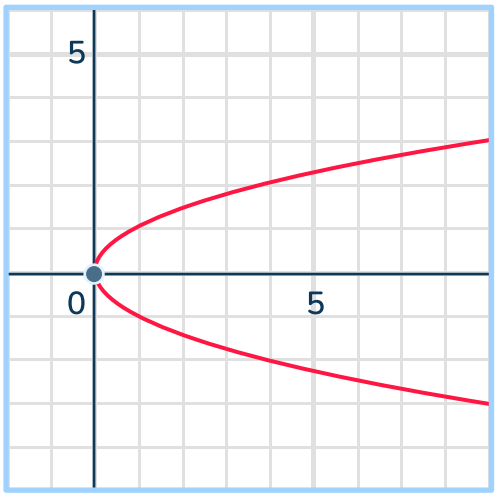
D. $(2^5)^{-1}$

E. $2^8 \times 2^{-2}$

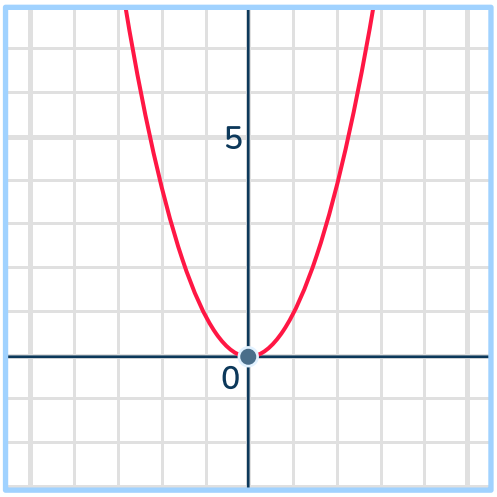
---

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

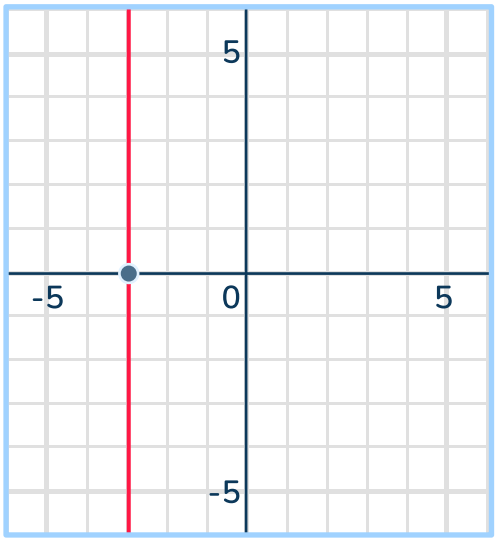
A.



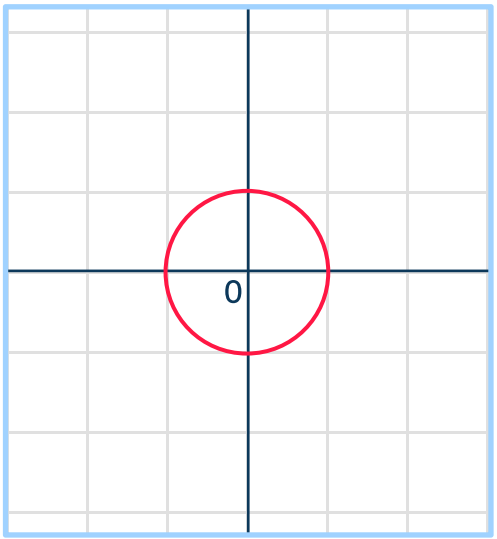
B.



C.



D.



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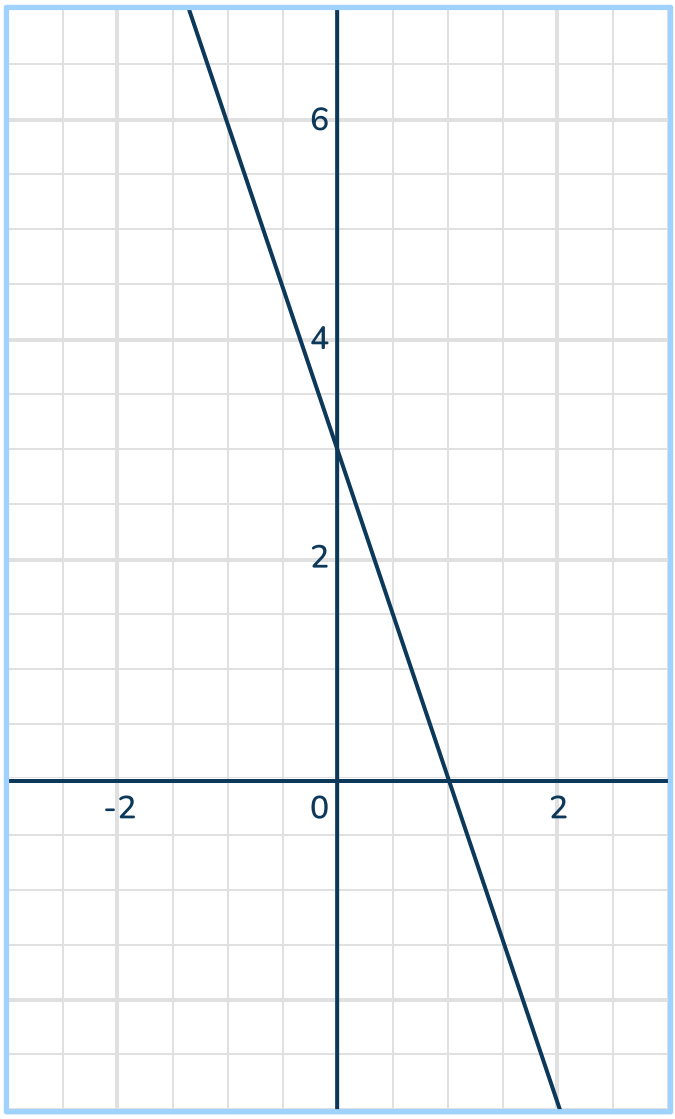
7 Which equation represents the line on the coordinate plane?



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

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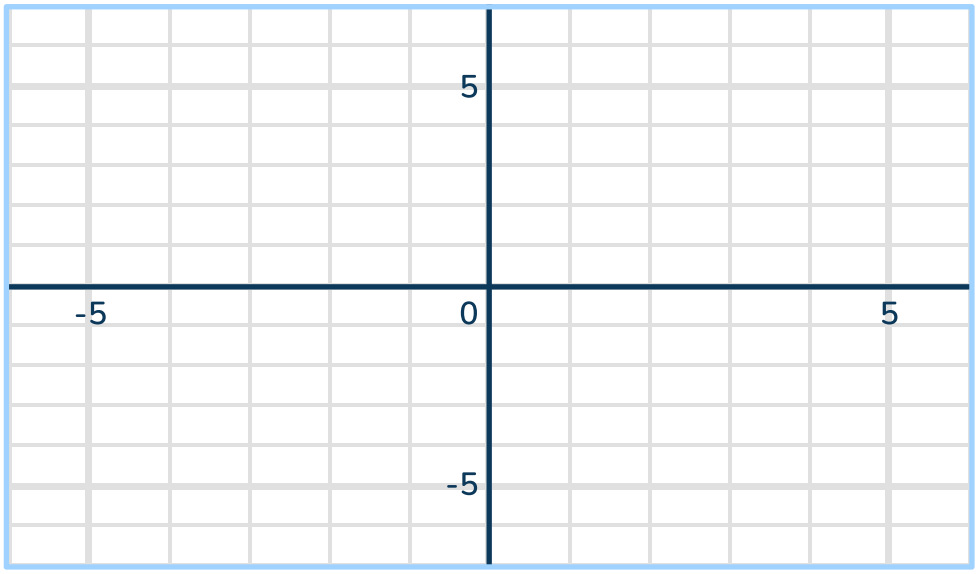
8 △TGS with vertices T(0, 1), G(–2, 3), and S(–4, –1) will be rotated 180° about the origin. What will be the coordinates of S'?



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

---

9 What is the value of the expression below?

$$\frac{0.5 \times 10^{3}}{2.5 \times 10^{7}}$$

A. 2×10^{-5}
B. 0.2×10^{4}
C. 0.5×10^{-5}
D. 5×10^{4}

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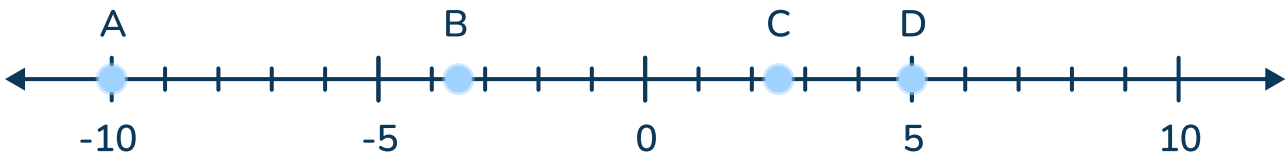
10 Pentagon ABCDE has point D(-3, 0.5). If Pentagon ABCDE is reflected over the y-axis, to form Pentagon A'B'C'D'E', what would be the coordinate of D'?

A. D'(–3, 0.5)
B. D'(3, –0.5)
C. D'(–3, –0.5)
D. D'(3, 0.5)

---

11 Which point is closest to $\sqrt{10}$?



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

A.

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

B.

x	1	2	3	4
y	$\frac{1}{2}$	$1\frac{1}{4}$	2	$2\frac{3}{4}$

C.

x	2	3	4	5
y	-1	-3	-7	-13

D.

x	0	1	2	4
y	-5	-3	-1	3

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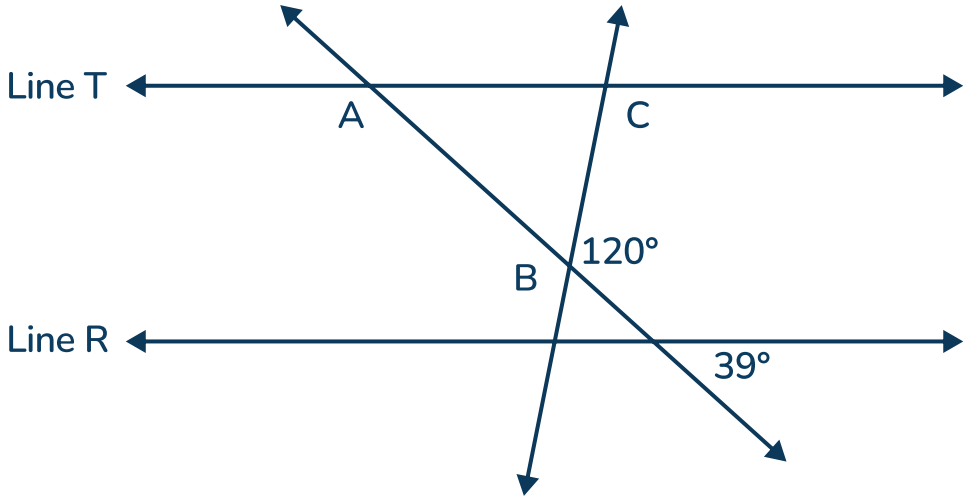
13 Line T and Line R are parallel lines, cut by two transversals.



What interior angles make up the triangle ABC?

A. 120°, 39° and 21°
B. 60°, 39° and 81°
C. 60°, 39° and 21°
D. 120°,39° and 81°

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14 The 6th and 7th graders at River Valley High School are required to take a foreign language class, either Spanish or Mandarin.

	Spanish	Mandarin
6th graders	61	45
7th graders	78	x

If 36% of 6th and 7th graders take Mandarin, what is the value of x?

A. 33
B. 217
C. 28
D. 66

---

15 The distance from New York City to Jersey City is about 2.5×10^5 inches. The distance from New York City to Los Angeles is about 7.2×10^4 times farther. About how many inches is the distance from New York City to Los Angeles?

A. 1.8×10^{10}
B. 18×10^9
C. 3.7×10^1
D. 0.37×10^2

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

Function A

x	y
2	-14
3	-11
5	-5

Function B

$y = 2x + 3$

Which statement about the functions is true?

A. The rate of change of Function A is less than the rate of change of Function B because -3 <2.
B. The rate of change of Function A is greater than the rate of change of Function B because 3 > 2.
C. The rate of change of Function A is less than the rate of change of Function B because -14 < 7.
D. The rate of change of Function A is greater than the rate of change of Function B because -14 > -7.

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17 A container is in the shape of a cylinder that has a diameter of 8 inches and a height of 1.5 feet. Which equation can be used to find the volume of the container in cubic inches?

A. $V = \prod (8)^2 (1.5)$
B. $V = \prod (4)^2 (18)$
C. $V = \prod (1.5)^2 (8)$
D. $V = \prod (8)^2 (18)$

---

18 Which system of equations has infinite solutions?

A. $y = -2x - 4$
$y = 2x + 4$
B. $x + y = 2.5$
$x + 2.5 = y$
C. $2y = x + 4$
$-x + 2y = 8$
D. $5x - 5y = 2$
$x = y + 0.4$

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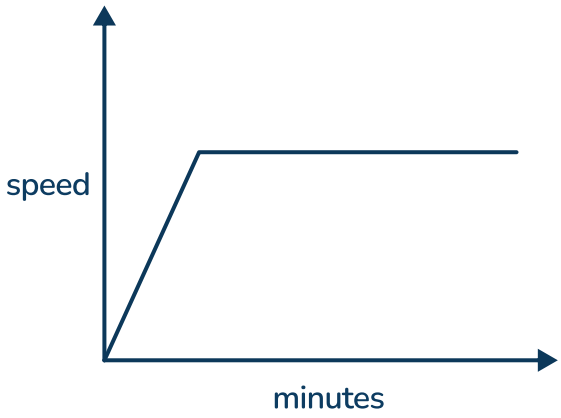
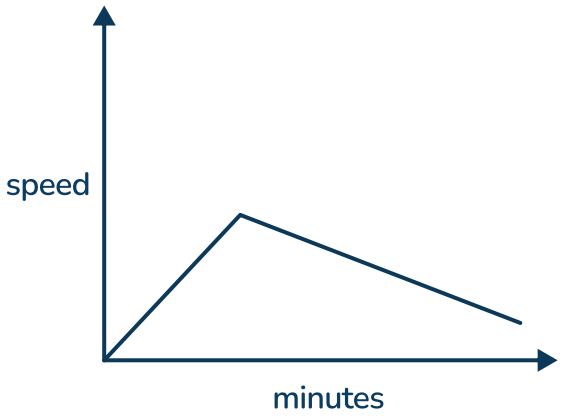
19 The speed of a car was measured in minutes. It was parked and then immediately began to increase its speed. The speed continued to increase for a few minutes, and then the speed stayed the same for the rest of the time.

Which is a graph of the function described above?

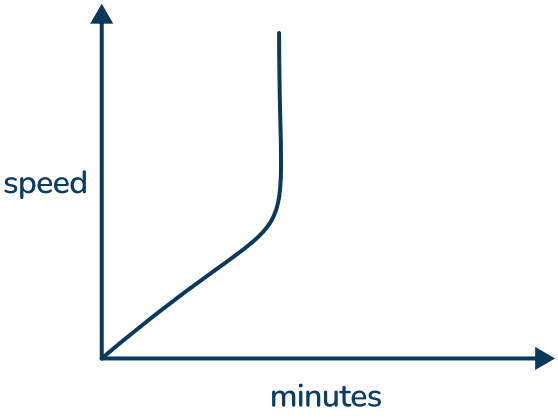
A.



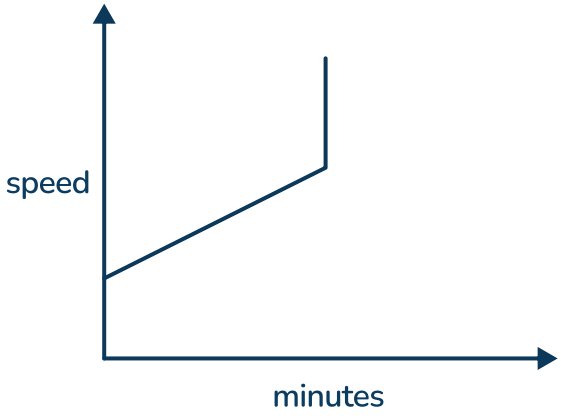
C.



B.



D.



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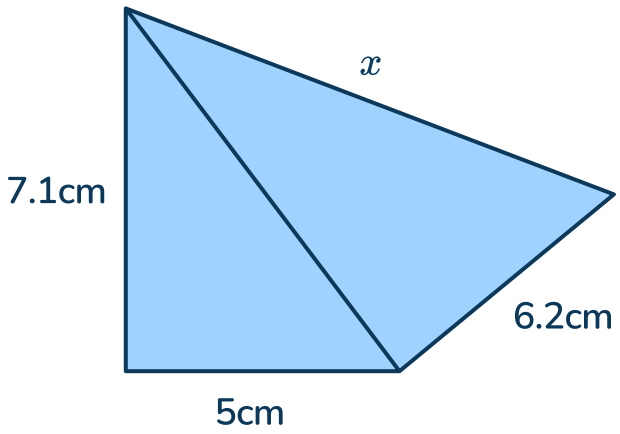
20 Solve for x. Round to the nearest tenth.



A. 8.7 cm
B. 10.7 cm
C. 75.4 cm
D. 9.3 cm

---

21 Which expressions are equal to –3? Select all the correct answers.

A. $\sqrt{9}$
B. $\sqrt{3}$
C. $\sqrt[3]{27}$
D. $\sqrt[3]{-27}$
E. $\sqrt{-9}$

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22 Which set of coordinates does not represent a function?

A. {(9, 0), (0, 9), (6, 5)}
B. $\{(1,\frac{1}{2}), (2,\frac{1}{2}), (3,\frac{1}{2})\}$
C. {(6, 2), (-6, -2), (6, 10)}
D. {(0, 0), (7, 1), (-6, 1)}

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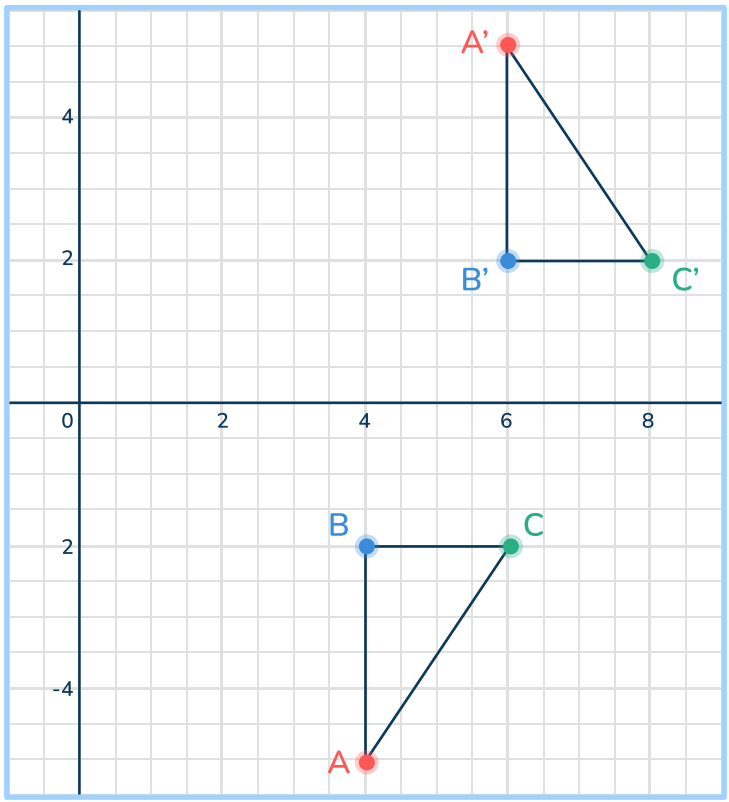
23 Which sequence of transformations maps triangle ABC to triangle A'B'C'?



A. Reflection over the line $y = x$ followed by a translation of 2 units up.
B. Translation of 2 units right followed by a reflection over the y-axis.
C. Reflection over the y-axis followed by a translation of 2 units up.
D. Reflection over the x-axis followed by a translation of 2 units right.

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24 Jo runs her family's plumbing business. The table below shows the service charges for the amount of hours worked. Which linear equation represents the information in the table?

Hours worked, x	Total amount of money charged, y
0	\$75
2	\$165
4	\$255
6	\$345

A. $y = 45x + 75$
B. $y = 90x + 75$
C. $y = 90x$
D. $y = 45x$

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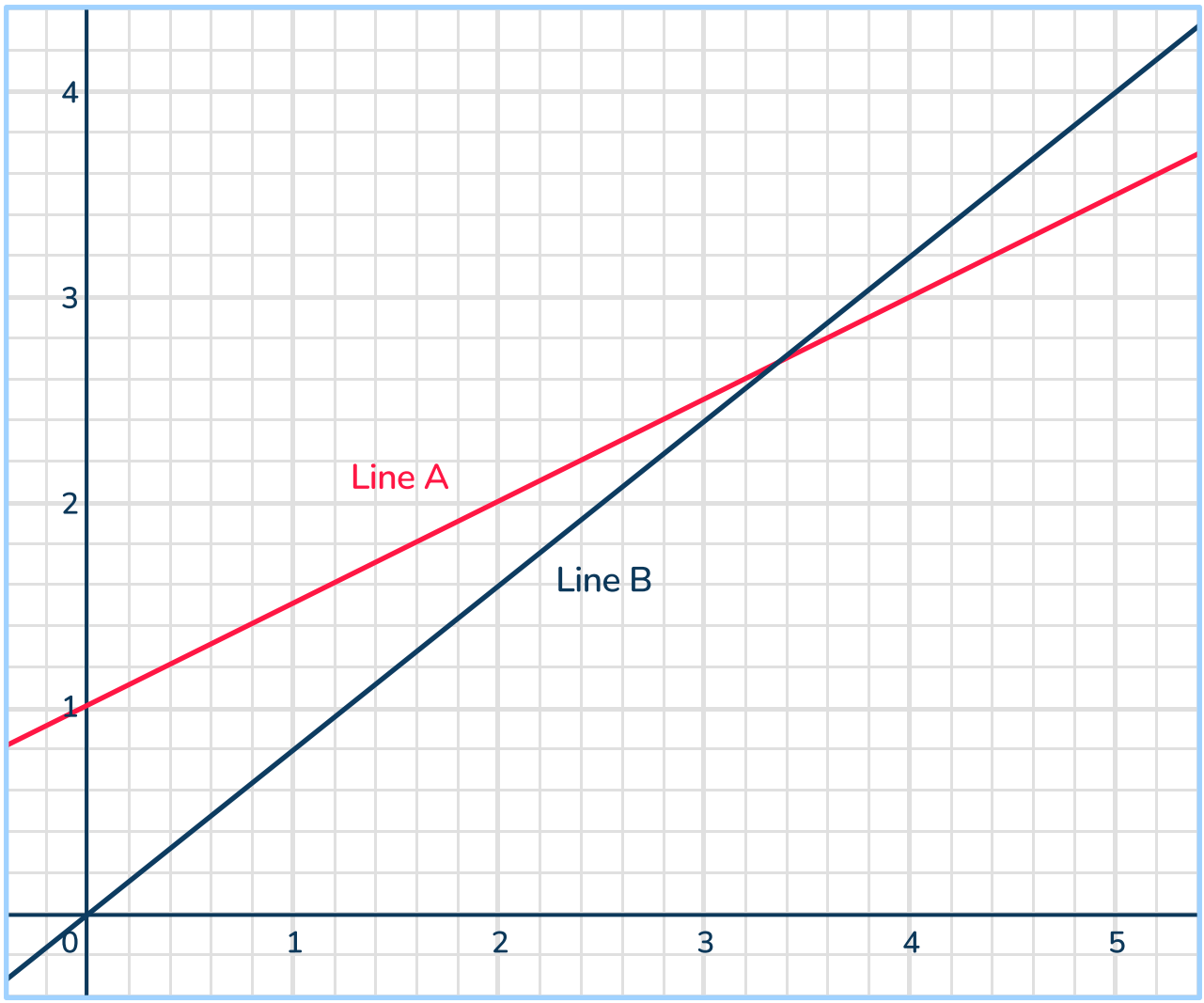
25



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

A. Line A and Line B represent proportional relationships..
B. In Line B, for each +1 change in x, there is a $+\frac{5}{4}$ change in y.
C. The slope of Line B is greater than the slope of Line A.
D. The slope of Line A is 2, which is the same as its unit rate.
E. As a system, Line A and Line B have one solution.

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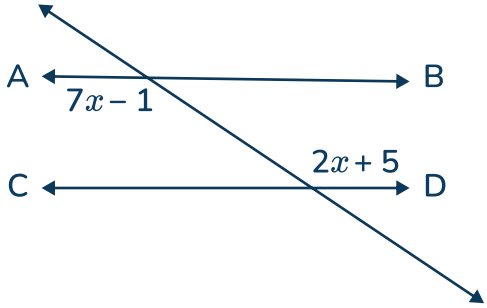
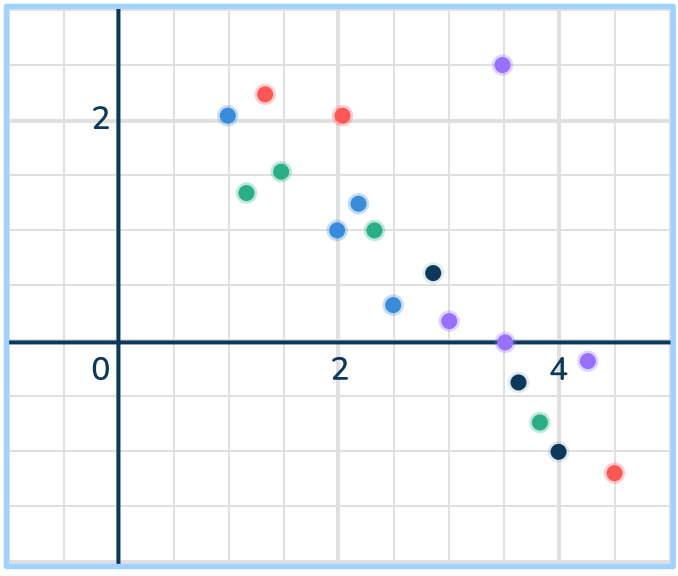
26 Line AB and line CD are parallel. What is the value of x, rounded to the nearest tenth?



A. 18.6
B. 19.6
C. 1.2
D. 35.2

---

27 Which expressions are equal to –3? Select all the correct answers.



Which statement about the scatter plot is NOT true?

A. In general, x and y have a negative association
B. The relationship between x and y looks linear.
C. There appears to be 1 outlier.
D. The line of best fit will have a positive slope.

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

A. $\frac{1}{3}$
B. 4π
C. $\sqrt{5^2}$
D. $\sqrt{12}$
E. $\sqrt[3]{27}$

---

29 The equation $5.6 - 0.3x = y$ models the mass of an ice cube in grams after it sits for x minutes on a table at room temperature.
What is the meaning of the y-intercept?

A. The minutes the ice cube has been on the table.
B. The grams of mass the ice loses per minute.
C. The starting mass of the ice cube.
D. The minutes it takes for the ice cube to melt completely.

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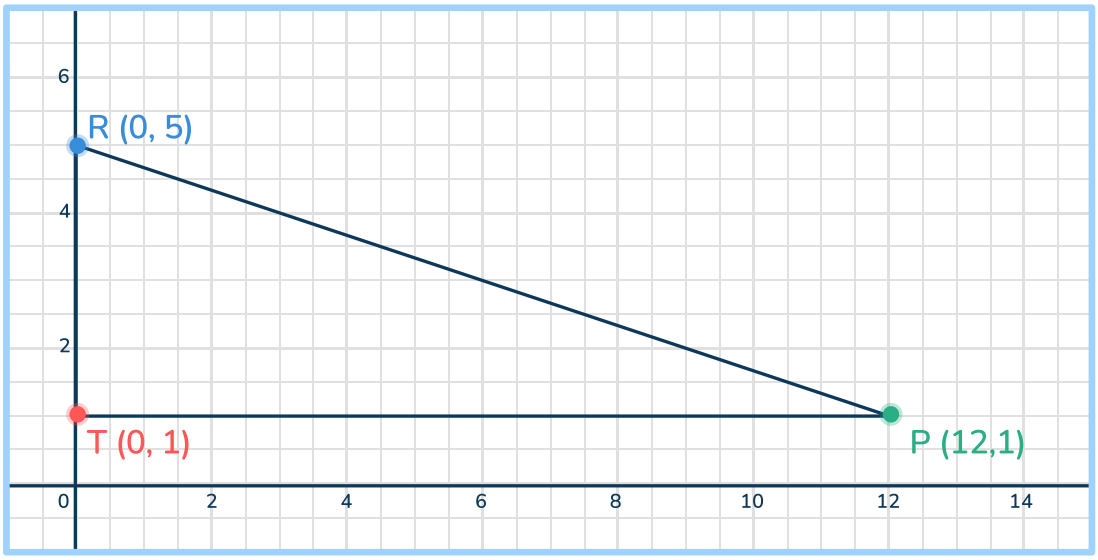
30



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

Which strategies lead to the correct answer? Select all the correct answers.

A. Calculate $\sqrt{4^2 + 12^2}$ and multiply the positive root by $\frac{3}{4}$.
B. Multiply each coordinate by $\frac{3}{4}$ and then find the perimeter of the new triangle.
C. Calculate the square root of $5^2 + 12^2$ and multiply the positive root by $\frac{3}{4}$.
D. Shift each vertex of the triangle down $\frac{3}{4}$ units, then count the units from R' to P'.
E. Multiply (0,5) and (12,1) by $\frac{3}{4}$ and then calculate the positive root of $\sqrt{9^2 + 13^2}$

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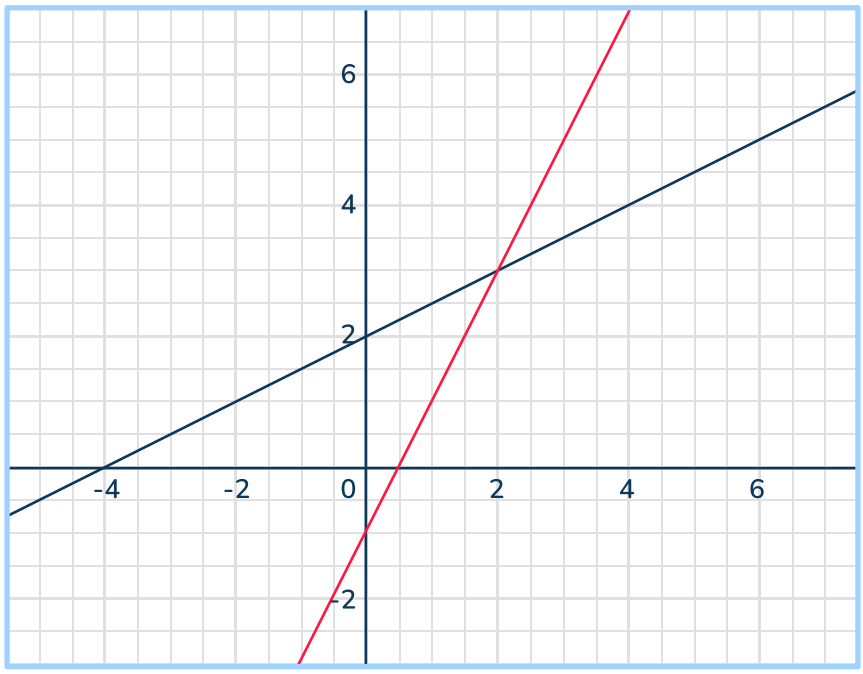
31 How many solutions does the system of linear equations have?



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

---

32 **Function A:** $-2x + 50$

Function B:

x	0	2	4	6
y	50	48	46	50

Which comparison statement is correct?

A. Both functions are decreasing.
B. Both functions have a slope of –2.
C. Both functions have a y-intercept of 50.
D. Both functions are linear.

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33 $\sqrt[3]{p} = 8$

Solve for p.

A. 2

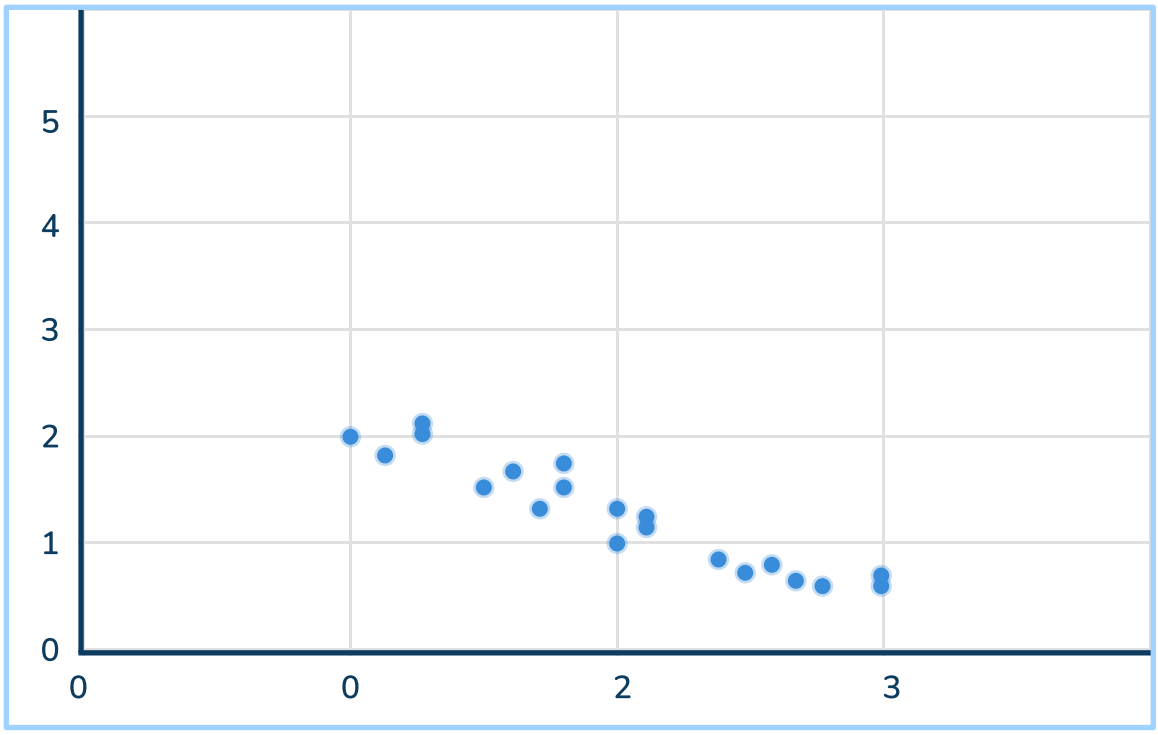
B. 512

C. 64

D. $\sqrt{8}$

---

34 Which equation shows a line of best fit for the data?



A. $-0.8x + 2.75 = y$

B. $0.7x + 3 = y$

C. $2.8 - x = y$

D. $x - 1 = y$

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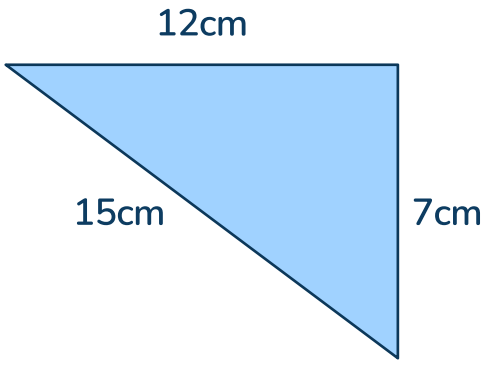
35 Decide whether the triangle is acute, right or obtuse.



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

---

36 Simplify $\dfrac{2a^4\,(a^2)}{\frac{1}{2}a^3}$.

A. a^3
B. $4a^2$
C. a^5
D. $4a^3$

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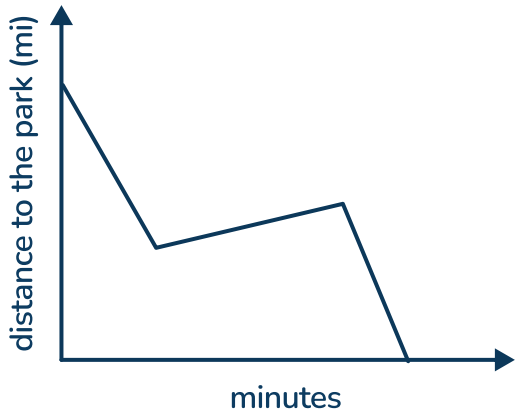
37 The graph shows the distance a car is from the park.



Which statement about the function is true?

A. As the minutes increased, the car's distance from the park decreased.
B. The car started off at the park and then drove away.
C. During the middle of the drive the car was moving away from the park.
D. The car got close to the park, but never arrived.

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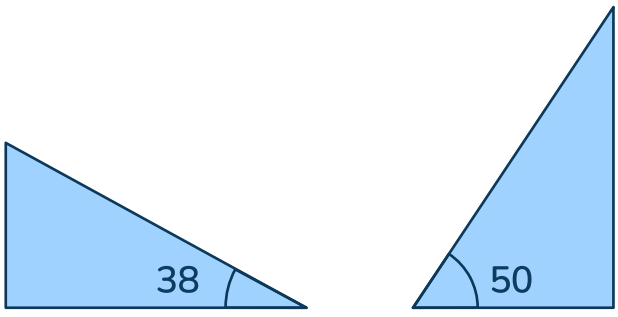
38 Are the triangles similar? Why or why not?



A. Yes, because they are both right triangles.
B. No, because one has a larger height than the other.
C. Yes, because the corresponding sides have the same ratio.
D. No, because the corresponding angles are not equal.

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39 Write 7,080,000,000,000 in scientific notation.

A. 7.08×10^{12}
B. 7.8×10^{13}
C. 708×10^{11}
D. 7.8×10^{14}

---

40 What value for k will make the equation have no solution?
$8x - 26 + 2 = k\left(\frac{1}{2}x - 9\right)$

A. 8
B. 16
C. $-\frac{1}{2}$
D. 0

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Standard: 8.EE.7b
DOK 3
Short Answer Response - 4 points

41 Eduardo solved the equation below.

$2.2(3x - 1.5) - 0.6 = -1.4(2x - 7)$
Step 1: $6.6x - 3.3 - 0.6 = -2.8x - 9.8$
Step 2: $6.6x - 3.9 = -2.8x - 9.8$
Step 3: $3.8x - 3.9 = -9.8$
Step 4: $3.8x = -5.9$
Step 5: $x = -1.5526...$

Explain how Eduardo solved it, including if he made any errors. If so, correct the error(s).

_____

_____

_____

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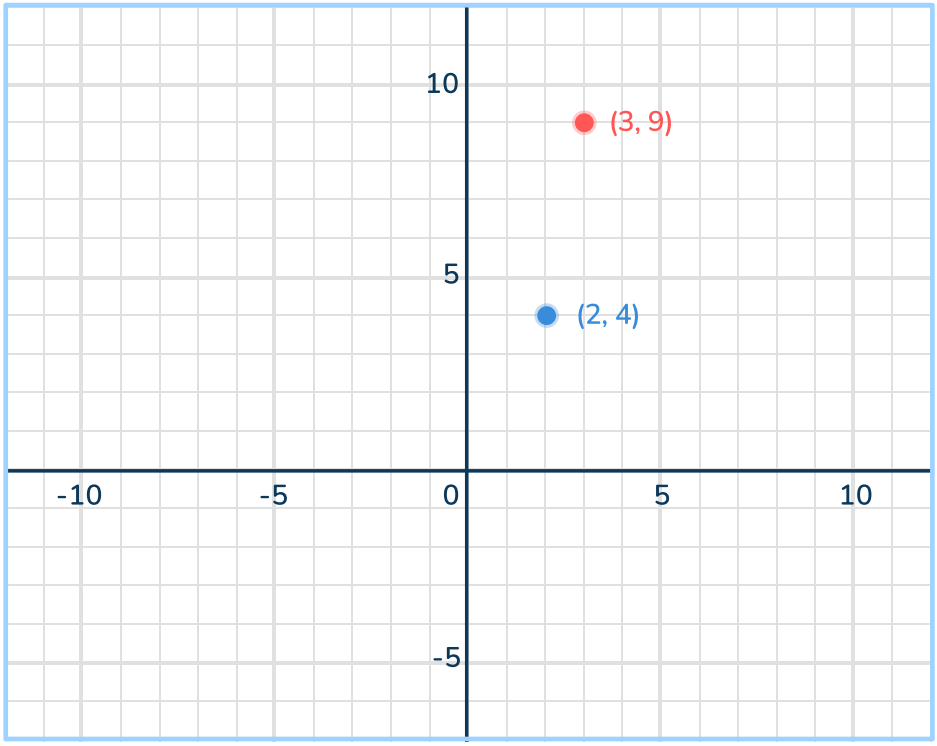
Standard: 8.F.1, 8.F.3
DOK 3
Short Answer Response - 4 points

42



A math class is looking at the graph above. Students in the class make the following comments:

- Freya says the coordinates represent a linear function.
- Marco says the coordinates represent a nonlinear function.
- Henry says the coordinates do not represent a function.

For each student, decide what third coordinate would be to prove their statement to be correct. Explain.

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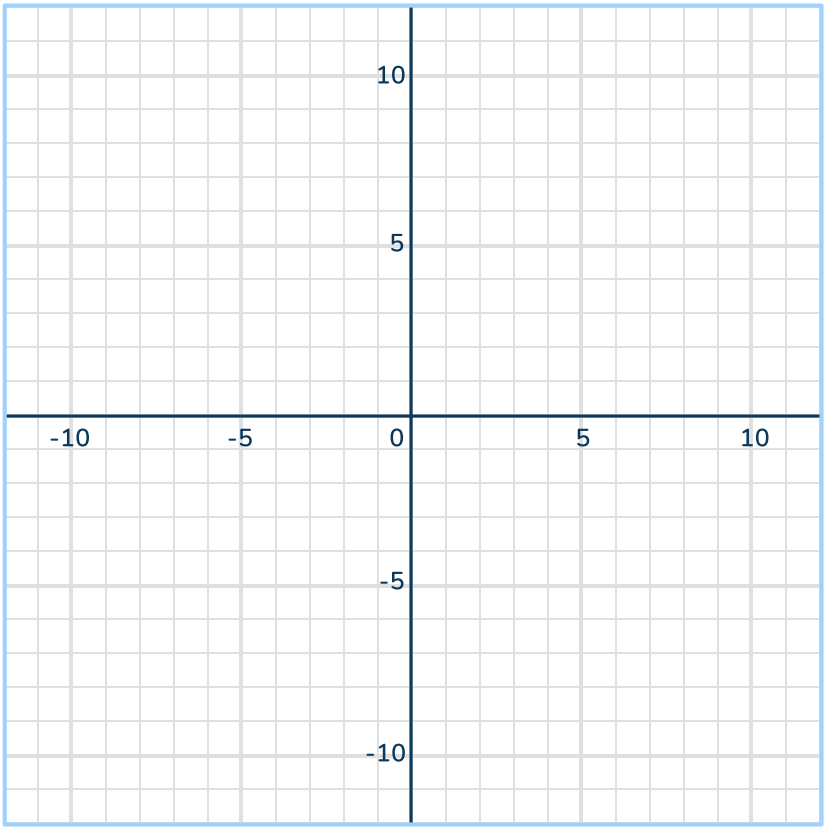
Standard: 8.G.A.3, 8.G.4
DOK 3
Short Answer Response - 4 points

43 Quadrilateral ABCD has points A(-4, 3), B(-4, -2), C(3, 3), and D(3, -2). The quadrilateral is dilated by a scale factor of 1.5 and then reflected over the line $y = x$.

Draw the new quadrilateral.



Compared to the original, explain whether the new shape is congruent, similar or neither. Include the effects of the dilation and reflection in your explanation.

_____

_____

_____

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Answer Key - Multiple Choice

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

Item number	Correct answer	Standard(s)	DOK
20	B	**8.G.7**	DOK 2
21	A, D	**8.EE.2**	DOK 1
22	C	**8.F.1**	DOK 1
23	D	**8.G.3**	DOK 2
24	A	**8.F.4**	DOK 2
25	C, E	**8.EE.5, 8.EE.6, 8.EE.8, 8.F.2**	DOK 2
26	C	**8.G.5**	DOK 1
27	D	**8.SP.1**	DOK 2
28	B, D	**8.NS.1**	DOK 1
29	C	**8.SP.3**	DOK 2
30	A, E	**8.G.3, 8.G.8**	DOK 2
31	B	**8.EE.8a**	DOK 1
32	C	**8.F.2**	DOK 2
33	B	**8.EE.2**	DOK 1
34	A	**8.SP.2**	DOK 2
35	A	**8.G.6**	DOK 1
36	D	**8.EE.1**	DOK 2
37	C	**8.F.5**	DOK 2
38	D	**8.G.4, 8.G.5**	DOK 2
39	A	**8.EE.3**	DOK 1
40	B	**8.EE.7a**	DOK 2

Item number	Correct answer	Standard(s)	DOK
41	Short Answer Response	**8.EE.7b**	DOK 3
42	Short Answer Response	**8.F.1, 8.F.3**	DOK 3
43	Short Answer Response	**8.G.A.3, 8.G.4**	DOK 3

ANSWERS SORTED BY CCSS STRAND

EE			
1	B	**8.EE.6**	DOK 2
4	C	**8.EE.7b**	DOK 2
5	A, B	**8.EE.1**	DOK 2
7	D	**8.EE.6**	DOK 1
9	A	**8.EE.4**	DOK 1
15	A	**8.EE.3**	DOK 2
18	D	**8.EE.8b**	DOK 1
21	A, D	**8.EE.2**	DOK 1
25	C, E	**8.EE.5, 8.EE.6, 8.EE.8, 8.F.2**	DOK 2
31	B	**8.EE.8a**	DOK 1
33	B	**8.EE.2**	DOK 1
36	D	**8.EE.1**	DOK 2
39	A	**8.EE.3**	DOK 1
40	B	**8.EE.7a**	DOK 2
41	Short Answer Response	**8.EE.7b**	DOK 3

F			
6	B	**8.F.1**	DOK 1
12	C	**8.F.3**	DOK 1
16	B	**8.F.2**	DOK 2
19	A	**8.F.5**	DOK 2
22	C	**8.F.1**	DOK 1
24	A	**8.F.4**	DOK 2
32	C	**8.F.2**	DOK 2
37	C	**8.F.5**	DOK 2
42	Short Answer Response	**8.F.1, 8.F.3**	DOK 3

NS			
11	C	**8.NS.2**	DOK 2
28	B, D	**8.NS.1**	DOK 1

G			
2	D	**8.G.9**	DOK 2
3	A	**8.G.8**	DOK 1
8	A	**8.G.3**	DOK 2
10	D	**8.G.3**	DOK 2
13	B	**8.G.5**	DOK 2
17	B	**8.G.9**	DOK 2
20	B	**8.G.7**	DOK 2
23	D	**8.G.3**	DOK 2
26	C	**8.G.5**	DOK 1
30	A, E	**8.G.3, 8.G.8**	DOK 2
35	A	**8.G.6**	DOK 1
38	D	**8.G.4, 8.G.5**	DOK 2
43	Short Answer Response	**8.G.A.3, 8.G.4**	DOK 3

SP			
14	A	**8.SP.4**	DOK 2
27	D	**8.SP.1**	DOK 2
29	C	**8.SP.3**	DOK 2

Item	KEY	Rationale
41	4 points	Student correctly identifies Eduardo's mistakes: • In step 1, Eduardo solves -1.4 x -7 as positive, instead of negative. • In step 3, Eduardo subtracts $2.8x$ instead of adding it. The correct solution is... $2.2(3x - 1.5) - 0.6 = -1.4(2x - 7)$ • **Step 1:** $6.6x - 3.3 - 0.6 = -2.8x + 9.8$ • **Step 2:** $6.6x - 3.9 = -2.8x + 9.8$ • **Step 3:** $9.4x - 3.9 = 9.8$ • **Step 4:** $9.4x = 13.7$ • **Step 5:** $x = 1.45744...$ Student clearly explains how Eduardo solved, the mistakes he made and the student corrects the mistakes.
	3 points	Student correctly identifies Eduardo's mistakes. Student explains how Eduardo solved, the mistakes he made and the student corrects the mistakes, but some parts of the explanation are incomplete or unclear.
	2 points	Student correctly identifies Eduardo's mistakes. Student attempts to explain how Eduardo solved, the mistakes he made and the mistakes, but the explanation is incomplete or unclear.
	1 point	Student correctly identifies one of Eduarod's mistakes. Student explains how Eduardo solved, the mistakes he made and the student corrects the mistake identified, but some parts of the explanation are incomplete or unclear.
	0 points	Response is blank or does not include any correct calculations or explanations.

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Item	KEY	Rationale
42	4 points	Student correctly identifies a coordinate for each student. • Freya: Any coordinate on the line $5x + 6$ • Marco: Any coordinate not on the line $5x + 6$ and is not $x = 2$ or $x = 3$. Students may identify the function x^2, but this is not required. • Henry: Any coordinate with a different y value for $x = 2$ or $x = 3$. The student clearly explains how each coordinate supports the corresponding student's claim.
	3 points	Student correctly identifies a coordinate for each student. The student explains how each coordinate supports the corresponding student's claim, but some parts of the explanation are incomplete or unclear.
	2 points	Student correctly identifies a coordinate for 2 of the 3 students. The student explains how each coordinate supports the corresponding student's claim but makes mistakes in 1 claim.
	1 point	Student correctly identifies a coordinate for 2 of the 3 students. The student attempts to explain how each coordinate supports the corresponding student's claim, but the explanation is incomplete or unclear.
	0 points	Response is blank or does not include any correct calculations or explanations.

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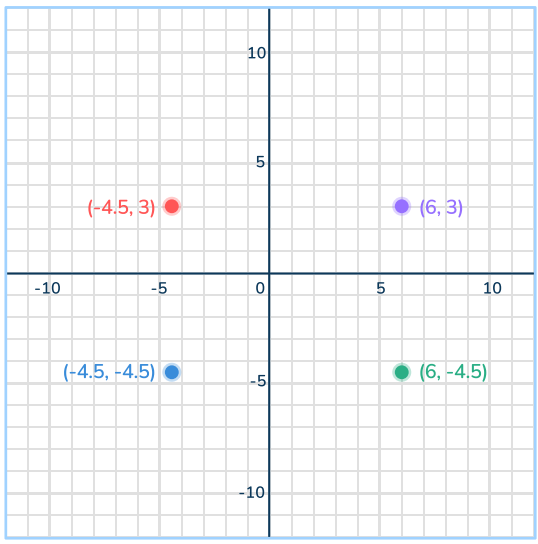
Item	KEY	Rationale
43	4 points	Student correctly identifies the 4 new coordinates.  Student clearly explains that the new shape will be similar, since it was dilated, all the corresponding sides in the original and new shape have the same ratio and the reflection only changes the orientation.
	3 points	Student correctly identifies the 4 new coordinates. The student explains that the new shape will be similar, but some parts of the explanation are incomplete or unclear.
	2 points	Student correctly identifies the 3 out of the 4 new coordinates. Student clearly explains that the new shape will be similar, since it was dilated, all the corresponding sides in the original and new shape have the same ratio and the reflection only changes the orientation.
	1 point	Student identifies less than 3 of the new coordinates. The student attempts to explain how each coordinate supports the corresponding student's claim, but the explanation is incomplete or unclear.
	0 points	Response is blank or does not include any correct calculations or explanations.

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