THIRD SPACE LEARNING

Mock STAAR 8th Grade Assessment

Texas Practice Test Grade 8

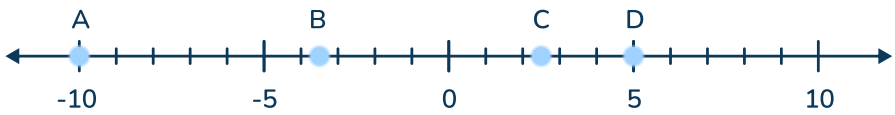
Grade 8

Questions

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

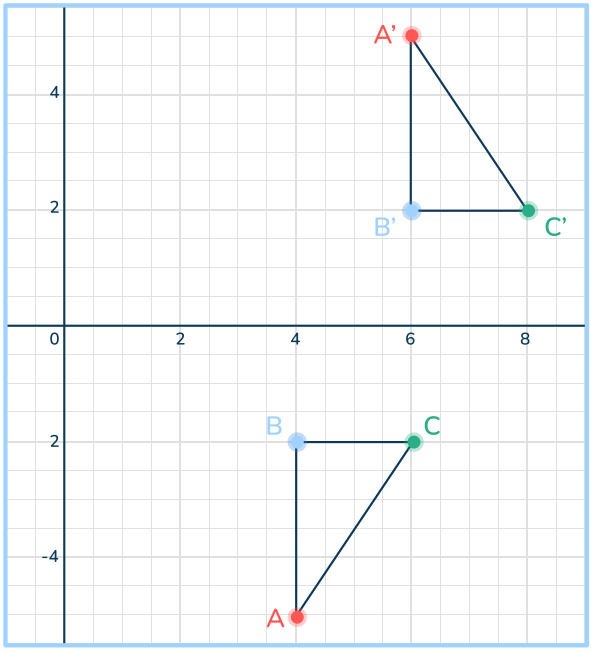
Date: ..... Score: .....

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



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

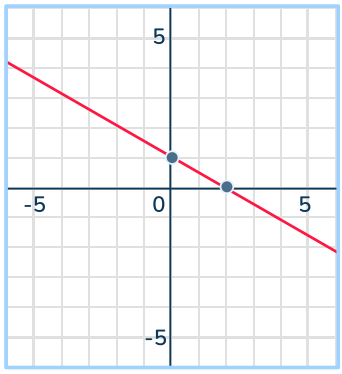
2 Which sequence of transformations maps triangle ABC to triangle A'B'C'?



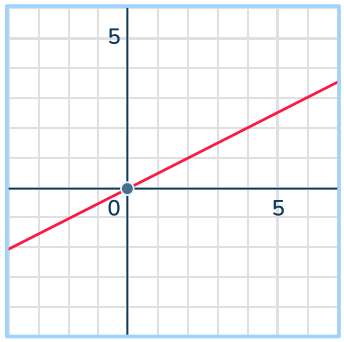
A. Reflection over the line $y = x$ followed by translation of 2 units up.
B. Translation of 2 units right followed by a reflection over the y-axis.
C. Reflection over the y-axis followed by a translation of 2 units up.
D. Reflection over the x-axis followed by a translation of 2 units right.

3 Select the graph that represents a proportional relationship.

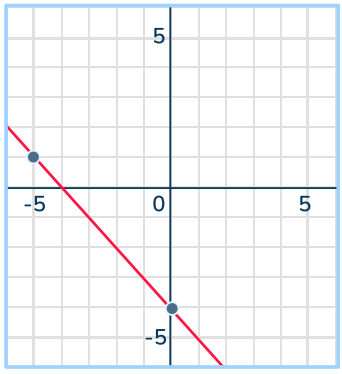
A.



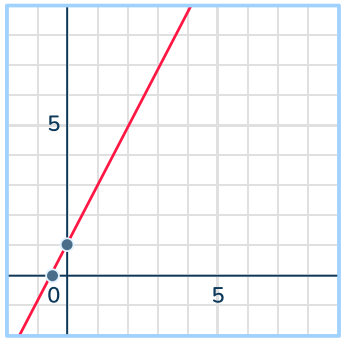
B.



C.



D.



4 Determine the rate of change from the table below.

x	y
-1	0
-4	3
-7	6
-10	9

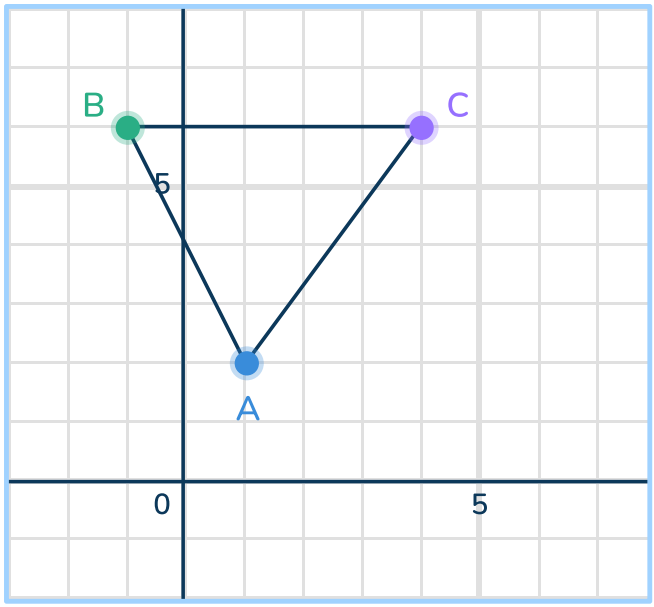
A. 1

B. $-\frac{3}{4}$

C. $\frac{3}{4}$

D. -1

5 Triangle ABC is plotted on the coordinate plane. If triangle ABC is dilated by a scale factor of $\frac{1}{2}$, what is the coordinate of A'?



A. A' (2, 3)

B. A' ($\frac{1}{2}$,1)

C. A' (-$\frac{1}{2}$,3)

D. A' (2,4)

---

6 Select the relation that does NOT represent a function.

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

7 Select the fraction that represents the decimal, $0.\overline{41}$

A. $\frac{41}{99}$

B. $\frac{41}{100}$

C. $\frac{411}{1000}$

D. $\frac{4111}{10000}$

---

8 Daniella runs her own tutoring business. Due to the fact that gas prices are on the rise, Daniella charges all of her customers a $5.00 fee plus $60 an hour. Which function of x models the situation?

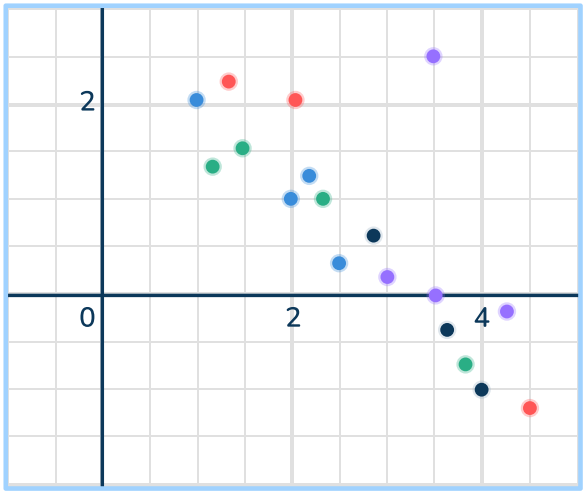
A. $y = 5x + 60$

B. $y = -60x + 5$

C. $y = 60x + 5$

D. $y = -5x + 60$

9



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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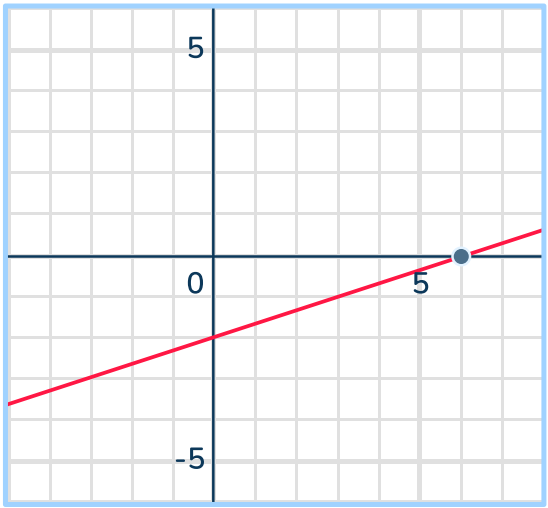
10 Which equation represents the line on the coordinate plane?



A. $y = \frac{1}{3}x - 2$

B. $y = -\frac{1}{3}x - 2$

C. $y = 3x - 2$

D. $y = -3x - 2$

11 Doreen got a new travel coffee mug that is in the shape of a cylinder. The mug has a diameter of 4 inches and a height of 9 inches. Which equation can be used to find the volume of the water bottle in cubic inches?

A. $V = \prod(9)^2(2)$

B. $V = \prod(2)^2(9)$

C. $V = \prod(9)^2(4)$

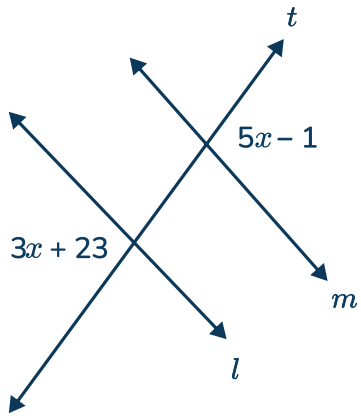
D. $V = \prod(4)^2(9)$

---

12 The points A(-1, 2) and B(3, -8) are plotted on the coordinate plane. What is the distance between the points?

A. 10
B. 9.8
C. 10.8
D. 9

13 In the figure, lines l and m are parallel and t is the transversal. What is the value of x?



A. 24
B. 11
C. 12
D. 8

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14 Gina runs her family's home repair service. The table below shows the service charges for the amount of hours worked. Create a linear equation that represents the information in the table.

Hours worked, x	Total amount of money charged, y
0	$80
1	$105
3	$155
5	$205

A. $y = 25x + 80$

B. $y = -25x + 80$

C. $y = \frac{1}{25}x + 80$

D. $y = -25x - 80$

15 If x and y vary directly and y is 3 when x is 6, find the constant of direct variation.

A. 2

B. 18

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

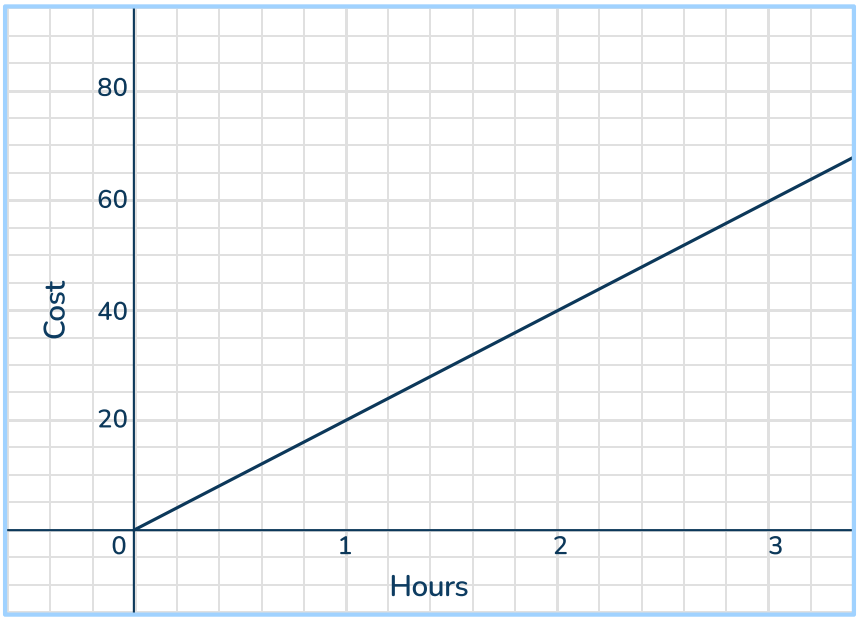
D. $\frac{1}{6}$

---

16 Select the solution to the equation $2(3x - 7) - x = -1(-5x + 14)$

A. No solution
B. $x = -14$
C. $x = 14$
D. Infinite solutions

17 The graph below represents the cost per hour a house painter charges customers. Determine the actual cost, in dollars, per hour.



A. $20 per hour
B. $25 per hour
C. $1.25 per hour
D. $1.20 per hour

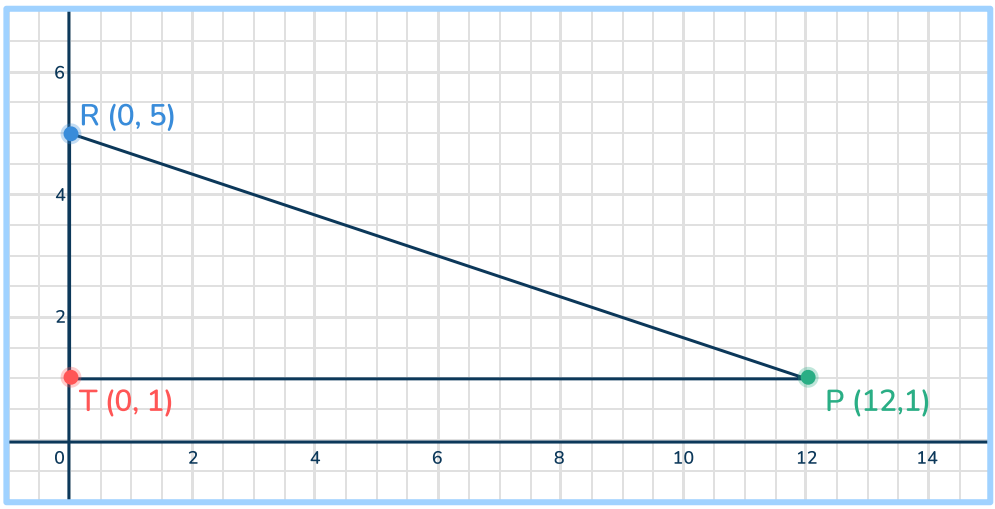
---

18 What value for k will make the equation have no solution?

$$12x - 26 + 2 = k(3x - 9)$$

A. 2
B. 4
C. 6
D. 8

19 If the triangle RTP 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.

- ☐ Calculate $\sqrt{4^2 + 12^2}$, and multiply the positive root by $\frac{3}{4}$.
- ☐ Multiply each coordinate by $\frac{3}{4}$ and then find the perimeter of the new triangle.
- ☐ Calculate the square root of $5^2 + 12^2$ and multiply the positive root by $\frac{3}{4}$.
- ☐ Shift each vertex of the triangle down $\frac{3}{4}$ units, then count the units from R' to P'.
- ☐ 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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20 Debbie and Pete go together to an ice cream shop. Debbie orders a double scoop of vanilla ice cream in a waffle cone and Pete orders a double scoop of chocolate ice cream in a sugar cone. The waffle cone has a diameter of 4 inches and a height of 6 inches. The sugar cone has a diameter of 3 inches and a height of 7 inches. How much more ice cream does the waffle cone hold than the sugar cone?

A. $about\ 14.4\ in^3$
B. $about\ 25.1\ in^3$
C. $about\ 8.7\ in^3$
D. $about\ 34.6\ in^3$

21 Which equation represents the graph of a line on the coordinate plane that has an x-intercept of (-3, 0) and a y-intercept of (0, -9)?

A. $y = 3x + 9$
B. $y = -3x - 9$
C. $y = -3x + 9$
D. $y = 3x - 9$

---

22 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 2 and then reflected over the line $y = x$. What are the coordinates of the final image?

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

- ☐ $\frac{1}{3}$
- ☐ 4π
- ☐ $\sqrt{5^2}$
- ☐ $\sqrt{12}$
- ☐ $\sqrt[3]{27}$

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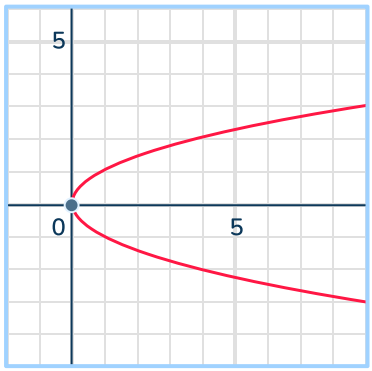
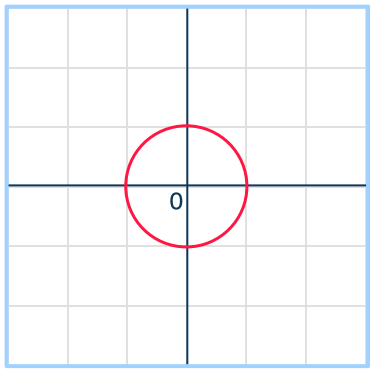
24 Which graph shows y to be a function of x?

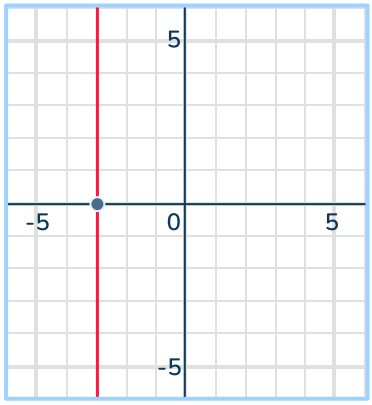
A.



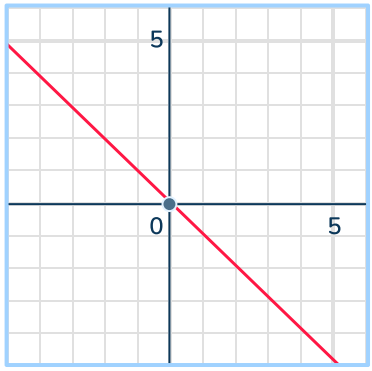
B.



C.



D.



25 Donny wants to invest $1400 at an interest rate of 3.5% for 1 year and Demi wants to invest $1100 at an interest rate of 4% for 1 year. Using simple interest, how much more interest will Donny earn over the year than Demi?

A. $5
B. $4
C. $446
D. $120

---

26 Select all the values for x that make the inequality true.

$x \geq \frac{25}{3}$

- ☐ $7\frac{1}{3}$
- ☐ $\frac{25}{3}$
- ☐ 8
- ☐ 8.5
- ☐ 9
- ☐ $\frac{24}{3}$

27 The value of y is 5 more than the opposite of x. Select all the answers that model this relationship.

- ☐ $y = \frac{1}{x} + 5$
- ☐ $y = -x + 5$
- ☐

x	y
0	5
1	6
2	7

- ☐ $y = x + 5$
- ☐

x	y
0	5
1	4
2	3

---

28 What is the value of the expression below?

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

A. 0.5×10^4
B. 5×10^3
C. 0.5×10^3
D. 5×10^4

29 Linear function A passes through the points (-1, 6) and (5, -7). What is the rate of change of function A?

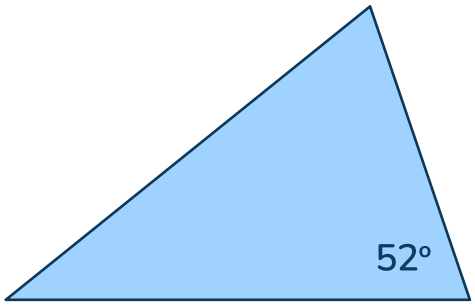
A. $\frac{13}{6}$

B. $-\frac{13}{6}$

C. $\frac{6}{13}$

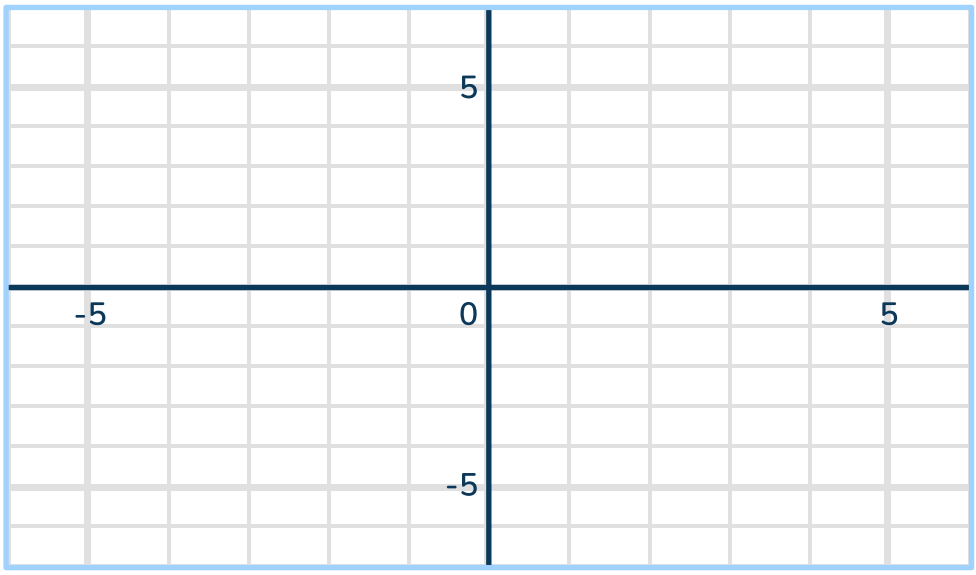
D. $-\frac{6}{13}$

30 If one interior angle of a triangle is given to be 52° What can possibly be the other two angle measures?



A. 52° and 52°
B. 100° and 29°
C. 68° and 60°
D. 60° and 60°

31 △T'G'S' has vertices T'(0, 1), G'(–2, 3), and S'(–4, –1) after it was rotated 180° about the origin. What are the original coordinates of S?



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

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32 Which is the best statement to describe the data in a scatter plot where the y-values are decreasing as the x-values are decreasing?

- ☐ The data can be modeled by a horizontal line.
- ☐ The data cannot be modeled by a line.
- ☐ The data can be modeled by a line with a negative slope.
- ☐ The data can be modeled by a line with a positive slope.

33 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

---

34 Find the solution to the system of equations.

$$3x - 3y = 1$$
$$6x = 6y + 2$$

A. $x = 3, y = 3$
B. $x = -2, y = -2$
C. Infinite solutions
D. No solutions

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

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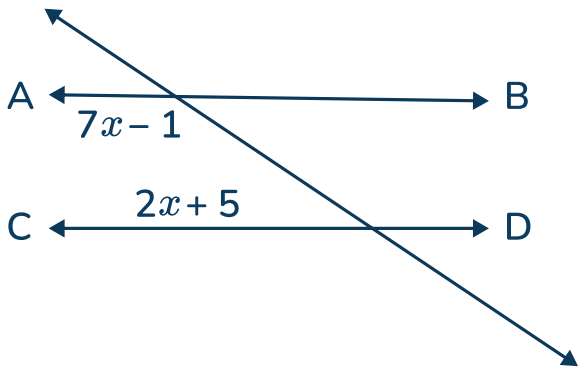
36 Line AB and line CD are parallel. What is the value of x rounded to the nearest tenth?



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

37 What is a possible value for a in the inequality below?

$$6.2 < \sqrt{a} < 8.9$$

A. 25
B. 100
C. 36
D. 49

---

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

Function A

x	y
2	3.5
3	5.25
5	8.75

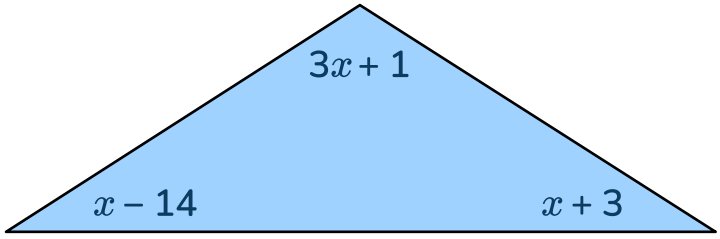
Function B

$y = \frac{3}{2}x$

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 1.75 < 1.5.
B. The rate of change of Function A is greater than the rate of change of Function B because 1.75 > 1.5.
C. The rate of change of Function A is less than the rate of change of Function B because 0.75 < 0.5.
D. The rate of change of Function A is greater than the rate of change of Function B because 1.75 > $1.\overline{5}$.

39 What is the value of x?



A. 38
B. 60
C. 36
D. 34

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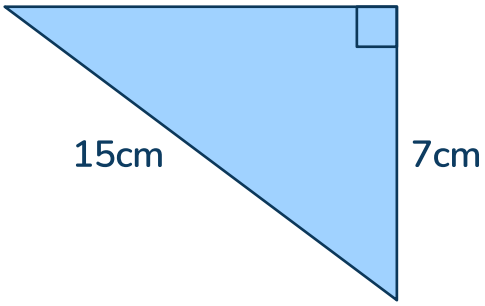
40 What is the missing side of the right triangle rounded to the nearest tenth?



A. 13.3 cm
B. 14.3 cm
C. 16.6 cm
D 15.5 cm

Answers

STAAR Answer Key - 7th Grade					
Item position	Item type	Correct answer	TEKS Alignment	Reporting Category	Readiness or Supporting
1	Multiple choice	B	8.1.2.D	1	Readiness
2	Multiple choice	D	8.3.10.C	3	Readiness
3	Multiple choice	B	8.2.5.F	2	Supporting
4	Multiple choice	D	8.2.4.C	2	Readiness
5	Multiple choice	B	8.3.3.C	3	Readiness
6	Multiple choice	D	8.2.5.G	2	Readiness
7	Multiple choice	A	8.1.2.C	1	Supporting
8	Multiple choice	C	8.2.8.B	2	Supporting
9	Multiple choice	D	8.4.11.A	4	Supporting
10	Multiple choice	A	8.2.5.I	2	Readiness
11	Multiple choice	B	8.3.6.A	3	Supporting
12	Multiple choice	C	8.3.7.D	3	Supporting
13	Multiple choice	C	8.3.8.D	3	Supporting
14	Multiple choice	A	8.2.5.I	2	Readiness
15	Multiple choice	C	8.2.5.E	2	Supporting
16	Multiple choice	D	8.2.8.C	2	Readiness

STAAR Answer Key - 7th Grade					
Item position	Item type	TEKS Alignment	Correct answer(s)	Reporting Category	Readiness or Supporting
17	Multiple choice	A	8.2.4.C	2	Readiness
18	Multiple choice	B	8.2.8.C	2	Readiness
19	Multi-select	See rationale	8.3.7.D	3	Supporting
20	Multiple choice	C	8.3.7.A	3	Readiness
21	Multiple choice	B	8.2.5.I	2	Readiness
22	Open-ended	See rationale	8.3.10.C	3	Readiness
23	Multi-select	4π and $\sqrt{12}$	8.1.2.A	1	Supporting
24	Multiple choice	D	8.2.5.G	2	Readiness
25	Multiple choice	A	8.4.12.D	4	Readiness
26	Multi-select	$\frac{25}{3}$, 8.5, 9	8.2.8.A	2	Supporting
27	Multi-select	See rationale	8.2.5.B	2	Supporting
28	Multiple choice	D	8.1.2.C	1	Supporting
29	Multiple choice	B	8.2.4.C	2	Readiness
30	Multiple choice	C	8.3.8.D	3	Supporting
31	Multiple choice	A	8.3.10.C	3	Readiness
32	Multi-select	See rationale	8.4.11.A	4	Supporting

STAAR Answer Key - 7th Grade					
Item position	Item type	TEKS Alignment	Correct answer(s)	Reporting Category	Readiness or Supporting
33	Multiple choice	A	8.3.7.D	3	Supporting
34	Multiple choice	C	8.2.9.A	2	Supporting
35	Multiple choice	B	8.2.5.I	2	Readiness
36	Multiple choice	D	8.3.8.D	3	Supporting
37	Multiple choice	D	8.1.2.B	1	Supporting
38	Multiple choice	B	8.2.5.I	2	Readiness
39	Multiple choice	A	8.3.8.D	3	Supporting
40	Multiple choice	A	8.3.7.C	3	Readiness

Breakdown of Assessment			
Probability and Numerical Representations	Computations and Numerical Relationships	Geometry and Measurement	Data Analysis and Personal Financial Literacy
4 questions - 10%	16 questions - 40%	14 questions - 35%	6 questions - 15%

Rationales

Item	KEY	Rationale
1	A is incorrect	Students may choose this answer because when taking the square root of a number, you account for the positive and negative root. They may assume $\sqrt{10}$ is -10.
	B is correct	Taking into account the positive and the negative root, the actual $\sqrt{10} \approx \pm$ 3.16
	C is incorrect	Students may choose this answer if they count the marks on the number line incorrectly.
	D is incorrect	Students may choose this answer if they divide 10 in half instead of taking the square root.

Item	KEY	Rationale
2	A is incorrect	Students may choose this answer if they think that a reflection over the line $y = x$ represents a reflection over the x-axis.
	B is incorrect	Students may choose this answer if they confuse a reflection over the y-axis with a reflection over the x-axis.
	C is incorrect	Students may choose this answer if they confuse a vertical translation with a horizontal translation and reflection over the y-axis with a reflection over the x-axis.
	D is correct	This is the correct answer, taking each of the points of triangle ABC and reflecting them over the x -axis and then translating right will map to triangle A'B'C'.

Item	KEY	Rationale
3	A is incorrect	Students may choose this answer if they do not recall that in order for lines to represent a proportional relationship the line must go through the origin.
	B is correct	Lines that go through the origin represent proportional relationships.
	C is incorrect	Students may choose this answer if they do not recall that in order for lines to represent a proportional relationship the line must go through the origin.
	D is incorrect	Students may choose this answer if they do not recall that in order for lines to represent a proportional relationship the line must go through the origin.

Item	KEY	Rationale
4	A is incorrect	A student may choose this answer if they calculate the rate of change incorrectly.
	B is incorrect	A student may choose this answer if they calculate the rate of change incorrectly.
	C is incorrect	A student may choose this answer if they calculate the rate of change incorrectly.
	D is correct	This is the correct answer. Using the points (-1, 0) and (-4, 3) calculating the rate of change is the same as calculating the slope. $$\frac{3-0}{-4-(-1)} = \frac{3}{-3} = -1$$

Item	KEY	Rationale
5	A is incorrect	Students may choose this answer if they confuse the points.
	B is correct	This is the correct answer. A (1, 2) so A' $(\frac{1}{2},1)$
	C is incorrect	Students may choose this answer if they confuse the points.
	D is incorrect	Students may choose this answer if they confuse the scale factor and multiply by 2.

Item	KEY	Rationale
6	A is incorrect	Students may choose this answer if they do not have a strong understanding of relations (sets of points) that make up a function.
	B is incorrect	Students may choose this answer if they do not have a strong understanding of relations (sets of points) that make up a function.
	C is incorrect	Students may choose this answer if they do not have a strong understanding of relations (sets of points) that make up a function.
	D is correct	The relation {(5, 2), (-5, -2), (5, 10)} does not represent a function because there is repetition on the x coordinates and if you graph the points they will form a vertical line. This means the relation fails the vertical line test.

Item	KEY	Rationale
7	A is correct	The steps to convert a repeating decimal to a fraction are as follows: Let x be the repeating decimal written out to several decimal places, $x = 0.414141...$ Multiply both sides of the equation by 100: $100x = 41.41414...$ Subtract the two equations: $100x - x = 41.414141.... - 0.414141...$ $99x = 41$ Solve the equation for x: $x = \frac{41}{99}$
	B is incorrect	A student may choose this answer if they do not recall how to convert a repeating decimal to a fraction.
	C is incorrect	A student may choose this answer if they do not recall how to convert a repeating decimal to a fraction.
	D is incorrect	A student may choose this answer if they do not recall how to convert a repeating decimal to a fraction.

Item	KEY	Rationale
8	A is incorrect	A student may choose this answer if they confuse the rate with the initial amount.
	B is incorrect	A student may choose this answer if they misinterpret the situation and think the rate is negative.
	C is correct	The starting or initial fee is \$5 which is the y-intercept. Then there is a cost of \$60 per hour which represents the rate or the rate of change or the slope. So, the function is: $y = 60x + 5$
	D is incorrect	A student may choose this answer if they confuse the rate and the initial amount and think the rate is negative.

Item	KEY	Rationale
9	A is incorrect	Students may choose this answer if they select what is true instead of what is not true.
	B is incorrect	Students may choose this answer if they select what is true instead of what is not true.
	C is incorrect	Students may choose this answer if they select what is true instead of what is not true.
	D is correct	This is the correct answer because the points are clustered to be in a line with a negative slope, not a positive slope.

Item	KEY	Rationale
10	A is correct	This is the correct answer because from the graph you can see that the y-intercept is -2 and from that point to the next point, you go up 2 units and to the right 6 units. Up 2 units and to the right 6 units represent the slope in the form of $\frac{2}{6}=\frac{1}{3}$ The equation in the form $y = mx + b \; is \; y = \frac{1}{3}x - 2$
	B is incorrect	A student may choose this answer if they think the slope is negative and not positive. Lines that rise to the right have positive slopes, not negative slopes.
	C is incorrect	A student may choose this answer if they invert the slope by putting the horizontal movement over the vertical movement.
	D is incorrect	A student may choose this answer if they invert the slope and put the horizontal movement over the vertical movement and think the slope is negative.

Item	KEY	Rationale
11	A is incorrect	A student may choose this answer if they confuse the radius with the height
	B is correct	The volume of a cylinder is $V = \prod(r^2)(h)$ The radius is 2 and the height is 9. $V = \prod(2)^2(9)$
	C is incorrect	A student may choose this answer if they confuse the radius and the height and use the diameter length instead of the radius.
	D is incorrect	A student may choose this answer if they use the diameter length instead of the radius.

Item	KEY	Rationale
12	A is incorrect	Students may choose this answer if they do not calculate the distance correctly.
	B is incorrect	Students may choose this answer if they do not calculate the distance correctly.
	C is correct	This is the correct answer. The student can use the distance formula or the Pythagorean Theorem to calculate the distance between the points. $\sqrt{(-1-3)^2+(2-(-8))^2}$ $\sqrt{(-4)^2+(10)^2}$ $\sqrt{16+100} = \sqrt{116} = 10.8$
	D is incorrect	Students may choose this answer if they do not calculate the distance correctly.

Item	KEY	Rationale
13	A is incorrect	Students may choose this answer if they struggle with solving equations.
	B is incorrect	Students may choose this answer if they struggle with solving equations.
	C is correct	This is the correct answer. $5x - 1 = 3x + 23$ $2x = 24$ $x = 12$
	D is incorrect	Students may choose this answer if they struggle with solving equations.

Item	KEY	Rationale
14	A is correct	This is the correct answer. Selecting 2 points from the table, (0,80) and (1, 105) the slope is $\frac{105-80}{1-0}=\frac{25}{1}=25$. The y-intercept is identified as (0, 80) So the equation is $y=25x+80$
	B is incorrect	Students may choose this answer if they calculate the rate to be -25 instead of 25.
	C is incorrect	Students may choose this answer if they calculate the rate incorrectly by putting the differences of the x's on top and the differences of the y's on the bottom.
	D is incorrect	Students may choose this answer if they calculate the rate incorrectly and think the initial value is -80.

Item	KEY	Rationale
15	A is incorrect	Students may choose this answer if they calculate the constant of variation incorrectly.
	B is incorrect	Students may choose this answer if they calculate the constant of variation incorrectly.
	C is correct	x and y vary directly and the equation of direct variation is $y=kx$, so substitute 3 for y and 6 for x and solve for k the constant of variation. $3=6k$ $\frac{1}{3}=k$
	D is incorrect	Students may choose this answer if they calculate the constant of variation incorrectly.

Item	KEY	Rationale
16	A is incorrect	A student may choose this if they make calculation errors in solving.
	B is incorrect	A student may choose this if they make calculation errors in solving.
	C is incorrect	A student may choose this if they make calculation errors in solving.
	D is correct	This is the correct answer. $2(3x - 7) - x = -1(-5x + 14)$ $6x - 14 - x = 5x - 14$ $5x - 14 = 5x - 14$ $-14 = -14$ True so infinite solutions.

Item	KEY	Rationale
17	A is correct	From the graph, you can see that it is a proportional relationship with the rate of change or slope as 20 units up over 1 unit right. The rate of change represents the unit rate which in this case is $20 per hour.
	B is incorrect	Students might choose this answer if they misinterpret the graph.
	C is incorrect	Students might choose this answer if they misinterpret the graph.
	D is incorrect	Students might choose this answer if they misinterpret the graph.

Item	KEY	Rationale
18	A is incorrect	Students may choose this answer if they struggle with identifying when equations have no solution.
	B is correct	This is the correct answer. If $k = 4$ then, $12x - 26 + 2 = k(3x - 9)$ $12x - 26 + 2 = 4(3x - 9)$ $12x - 24 = 12x - 36$ $-24 \neq -36$, so no solution.
	C is incorrect	Students may choose this answer if they struggle with identifying when equations have no solution.
	D is incorrect	Students may choose this answer if they struggle with identifying when equations have no solution.

Item	KEY	Rationale
19	Calculate $\sqrt{4^2 + 12^2}$, and multiply the positive root by $\frac{3}{4}$. Multiply (0,5) and (12,1) by $\frac{3}{4}$ and then calculate the positive root of $\sqrt{9^2 + 13^2}$.	To find the distance between the new points after the dilation you either find the original distance between the points and then multiply it by the scale factor $\frac{3}{4}$. OR You can find the new set of ordered pairs first by multiplying each point by $\frac{3}{4}$ and then finding the distance between R' and P'.

Item	KEY	Rationale
20	A is incorrect	A student may choose this answer if they do not read the question carefully because it is the volume of the sugar cone.
	B is incorrect	A student may choose this answer if they do not read the question carefully because it is the volume of the waffle cone.
	C is correct	This is the correct answer. Waffle cone volume: $V = \frac{1}{3} \prod r^2 h$ $V = \frac{1}{3} \prod (2^2)(6)$ $V = 25.1 in^3$ Sugar cone volume: $V = \frac{1}{3} \prod r^2 h$ $V = \frac{1}{3} \prod (1.5^2)(7)$ $V = 16.4 in^3$ Find the difference between the volumes. 25.1 - 16.4 = 8.7 8.7 in^3
	D is incorrect	A student may choose this answer if they use the diameter length to find the volume instead of the radius length.

Item	KEY	Rationale
21	A is incorrect	A student may choose this answer if they struggle with writing equations of lines.
	B is correct	This is the correct answer. The slope of the line is -3: $m = \frac{0-(-9)}{-3-0} = \frac{9}{-3} = -3$ The y-intercept is -9. So the equation is $y = -3x - 9$
	C is incorrect	A student may choose this answer if they struggle with writing equations of lines.
	D is incorrect	A student may choose this answer if they struggle with writing equations of lines.

Item	KEY	Rationale
22	2 points	To receive 2 points, students need to correctly identify each of the coordinates. A(-4, 3) → A'(-8, 6) → **A''(6, -8)** B(-4, -2) → B'(-8, -4) → **B''(-4, -8)** C(3, 3) → C'(6, 6) → **C''(6, 6)** D(3, -2) → D'(6, -4) → **D''(-4, 6)**
	1 point	Students will receive 1 point if they make a minor calculation error for one or two of the coordinates.
	0 points	Students will receive 0 points if they leave the response blank, or cannot demonstrate understanding.

Item	KEY	Rationale
23	4π and $\sqrt{12}$	An irrational number is a number that cannot be expressed as a ratio of integers. 4π and $\sqrt{12}$ cannot be expressed as a ratio of integers because they are both non-terminating, non-repeating decimals.

Item	KEY	Rationale
24	A is incorrect	Students may choose this answer if they do not have a strong understanding of functions.
	B is incorrect	Students may choose this answer if they do not have a strong understanding of functions.
	C is incorrect	Students may choose this answer because they might think all lines are functions.
	D is correct	This is the correct answer because it is a linear function.

Item	KEY	Rationale
25	A is correct	Calculating simple interest in both scenarios. Donny: $I = prt$ $I =$ 1400 (0.035) (1) $I =$ \$49 Demi: $I = prt$ $I =$ 1100 (0.04) (1) $I =$ \$44 Find the difference between the interests. \$49 - \$44 - \$5
	B is incorrect	Students may choose this answer if they calculate the difference incorrectly.
	C is incorrect	Students may choose this answer if they do not convert the percents to decimals correctly.
	D is incorrect	Students may choose this answer if they do not convert the percents to decimals correctly.

Item	KEY	Rationale
26	$\frac{25}{3}$ 8.5 9	$\frac{25}{3}$ is equivalent to $8.\overline{3}$ or $8\frac{1}{3}$ so the numbers that are greater than or equal to $\frac{25}{3}$ are $\frac{25}{3}$, 8.5, and 9.

Item	KEY	Rationale
27	$y = -x + 5$ x | y 0 | 5 1 | 4 2 | 3	The value of y is 5 more than the opposite of x is represented by $y = -x + 5$ because the opposite of x is -x. Both the equation and table represent this relationship.

Item	KEY	Rationale
28	A is incorrect	Students may choose this answer if they struggle with division with decimals.
	B is incorrect	Students may choose this answer if they struggle with division with exponents.
	C is incorrect	Students may choose this answer if they struggle with division with exponents and decimals.
	D is correct	This is the correct answer. $\frac{2.5 \times 10^7}{0.5 \times 10^3} = 5 \times 10^4$ Divide the decimal numbers and subtract the exponents.

Item	KEY	Rationale
29	A is incorrect	Students may choose this answer if they make a minor mistake when finding the slope.
	B is correct	This is the correct answer. $\frac{-7-6}{5-(-1)} = \frac{-13}{6}$ The slope is the rate of change.
	C is incorrect	Students may choose this answer if they struggle with finding the slope.
	D is incorrect	Students may choose this answer if they struggle with finding the slope.

Item	KEY	Rationale
30	A is incorrect	Students may choose this answer if they struggle with understanding that all angles in a triangle sum to 180°.
	B is incorrect	Students may choose this answer if they struggle with understanding that all angles in a triangle sum to 180°.
	C is correct	This is the correct answer because 52 + 68 + 60 = 180.
	D is incorrect	Students may choose this answer if they struggle with understanding that all angles in a triangle sum to 180°.

Item	KEY	Rationale
31	A is correct	S' has coordinates (-4, -1) after a 180 degree rotation which means the original point was (4, 1). The rule for rotating a point 180 degrees about the origin is $(x, y) \rightarrow (-x, -y)$
	B is incorrect	A student may choose this answer if they cannot remember the rule.
	C is incorrect	A student may choose this answer if they cannot remember the rule.
	D is incorrect	A student may choose this answer if they cannot remember the rule.

Item	KEY	Rationale
32	The data can be modeled by a line with a positive slope.	When the x-values decrease as the y-values decrease the points will form a line that has a positive slope.

Item	KEY	Rationale
33	A is correct	This is the correct answer. The student can use the distance formula or the Pythagorean Theorem to calculate the distance between the points. $\sqrt{(-2-3)^2+(2-(-8))^2}$ $\sqrt{(-5)^2+(10)^2}$ $\sqrt{25+100}=5\sqrt{5}$
	B is incorrect	Students may choose this answer if they forget to include the radical.
	C is incorrect	Students may choose this answer if they struggle with finding the distance between points and forget to square the differences first.
	D is incorrect	Students may choose this answer if they struggle with finding the distance between points.

Item	KEY	Rationale
34	A is incorrect	Students may choose this answer if they struggle with solving a system of equations.
	B is incorrect	Students may choose this answer if they struggle with solving a system of equations.
	C is correct	Solving the system using elimination: $3x - 3y = 1$ $6x = 6y + 2$ $3x - 3y = 1$ $6x - 6y = 2$ $2(3x - 3y = 1)$ $6x - 6y = 2$ $6x - 6y = 2$ $6x - 6y = 2$ These lines coincide meaning there are infinite solutions.
	D is incorrect	Students may choose this answer if they struggle with solving a system of equations.

Item	KEY	Rationale
35	A is incorrect	A student may choose this answer if they confuse the signs.
	B is correct	This is the correct answer because the slope is: $m = \frac{8-0}{0-2} = \frac{8}{-2} = -4$ The y-intercept was given to be (0,8) So the equation in $y = mx + b$ form is: $y = -4x + 8$
	C is incorrect	A student may choose this answer if they calculate slope incorrectly.
	D is incorrect	A student may choose this answer if they struggle with writing equations of lines.

Item	KEY	Rationale
36	A is incorrect	Students may choose this answer if they struggle with angle relationships formed by parallel lines.
	B is incorrect	Students may choose this answer if they struggle with angle relationships formed by parallel lines.
	C is incorrect	Students may choose this answer if they struggle with angle relationships formed by parallel lines.
	D is correct	This is the correct answer. The angles are consecutive interior angles which means they sum to 180. $7x - 1 + 2x + 5 = 180$ $9x + 4 = 180$ $9x = 176$ $x = 19.6$

Item	KEY	Rationale
37	A is incorrect	Students may choose this answer if they struggle with finding perfect squares.
	B is incorrect	Students may choose this answer if they struggle with finding perfect squares.
	C is incorrect	Students may choose this answer if they struggle with finding perfect squares.
	D is correct	This is the correct answer. $\sqrt{49} = 7$ and 7 falls into the range of values.

Item	KEY	Rationale
38	A is incorrect	A student may choose this answer if they mix up the greater than and less than sign.
	B is correct	This is the correct answer because the rate of change of Function A is 1.75 and the rate of change of Function B is 1.5. $1.75 > 1.5$
	C is incorrect	Students may choose this answer if they struggle to identify the rate of change of the functions.
	D is incorrect	Students may choose this answer if they struggle to identify the rate of change of the functions.

Item	KEY	Rationale
39	A is correct	This is the correct answer. $x - 14 + 3x + 1 + x + 3 = 180$ $5x - 10 = 180$ $5x = 190$ $x = 38$
	B is incorrect	Students may choose this answer if they struggle with solving equations.
	C is incorrect	Students may choose this answer if they struggle with solving equations.
	D is incorrect	Students may choose this answer if they struggle with solving equations.

Item	KEY	Rationale
40	A is correct	This is the correct answer. $15^2 = 7^2 + x^2$ $225 = 49 + x^2$ $176 = x^2$ $\sqrt{176} = x$ $13.2664 = x$
	B is incorrect	Students may choose this answer if they struggle with the Pythagorean Theorem.
	C is incorrect	Students may choose this answer if they struggle with the Pythagorean Theorem.
	D is incorrect	Students may choose this answer if they struggle with the Pythagorean Theorem.

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