THIRD SPACE LEARNING

8th Grade FL BEST 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 (3, 0) and a y-intercept of (0, 6)?

A. $y = 2x - 6$
B. $y = -2x + 6$
C. $y = 2x + 6$
D. $y = -2x - 6$

2 Solve the expression.

$$(2^3 - \sqrt{49}) - (-\frac{1}{4})^2$$

A. $1\frac{1}{16}$

B. $\frac{15}{16}$

C. $25\frac{1}{16}$

D. $\frac{1}{16}$

3 The points A(1,–3) and B(6,4) are plotted on the coordinate plane. What is the distance between the points?

A. $\sqrt{74}$
B. 12
C. $2\sqrt{12}$
D. $\sqrt{24}$

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4 What is the solution to the equation?

$$-6.5(2x - 3) = 2.5x + 4$$

A. x = 7.4
B. x = -2.1
C. x = 1
D. x = -1

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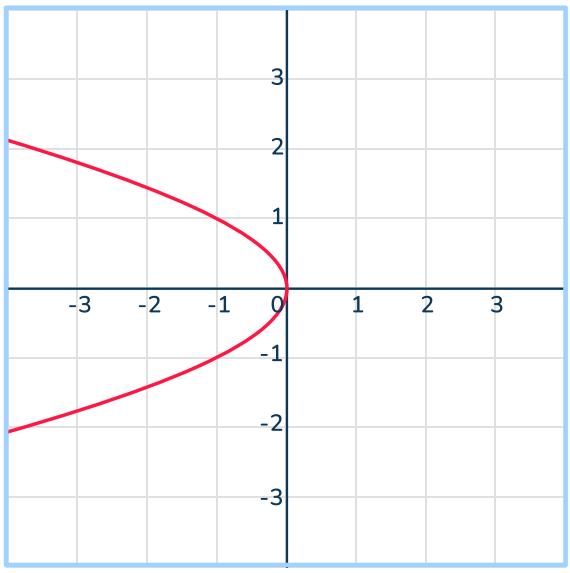
5 Which expressions have a value of $\frac{1}{81}$? Select all the correct answers.

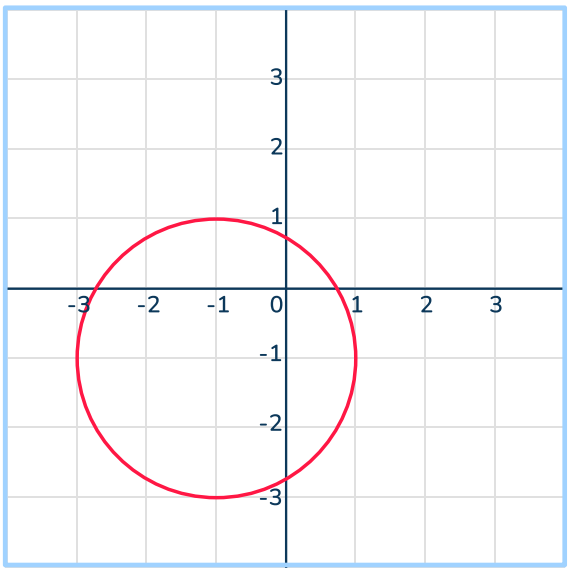
A. $\frac{3^2}{3^6}$
B. $(3^4)^{-2}$
C. $3^{-6} + 3^2$
D. $(3^3)^{-3}$
E. $3^{-6} \times 3^2$

6 Which graph represents y as a function of x?

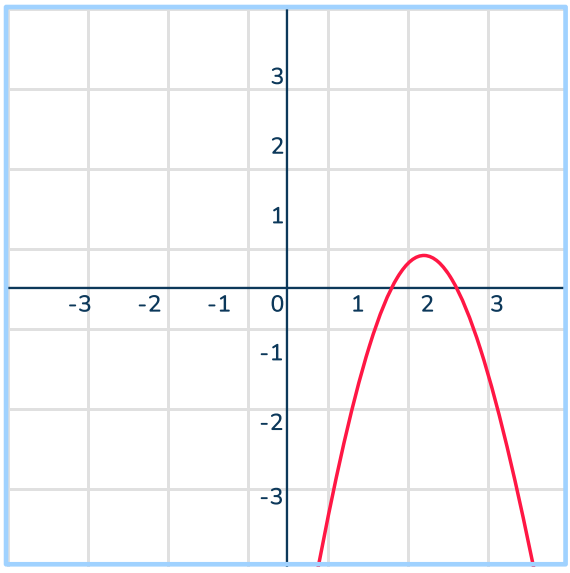
A.



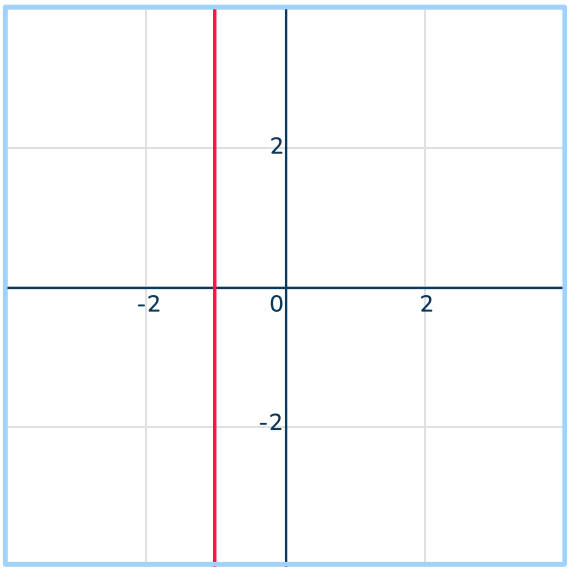
B.



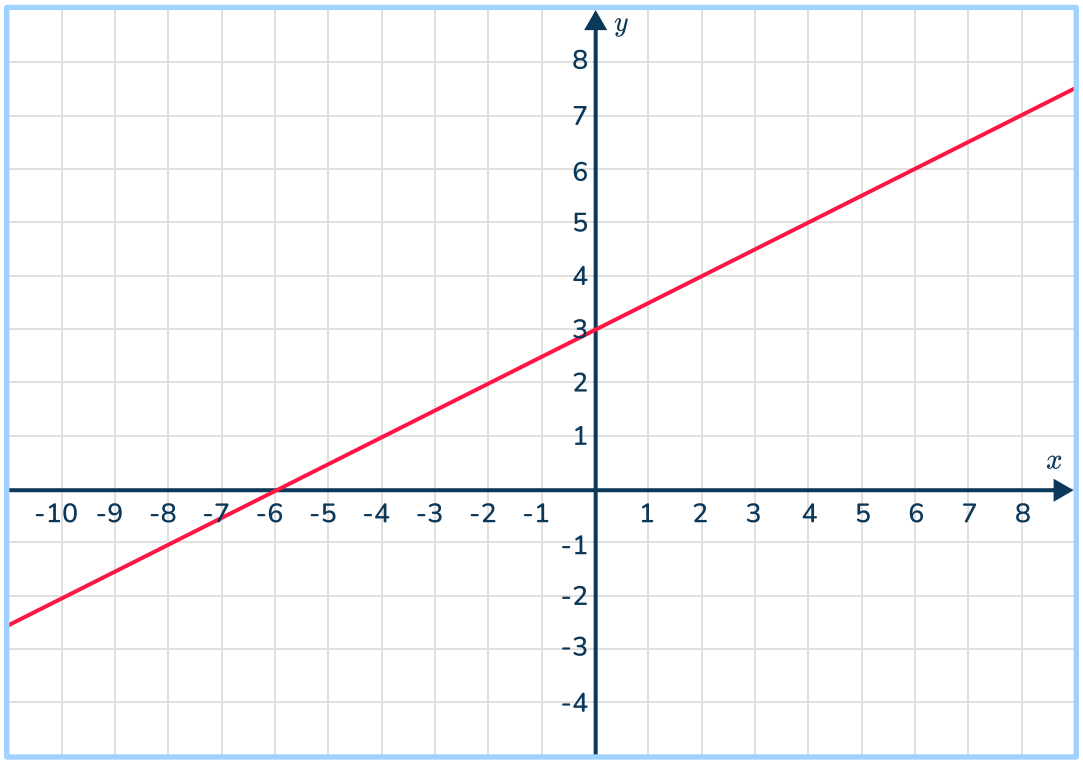
C.



D.



7 Which equation represents the line on the coordinate plane?



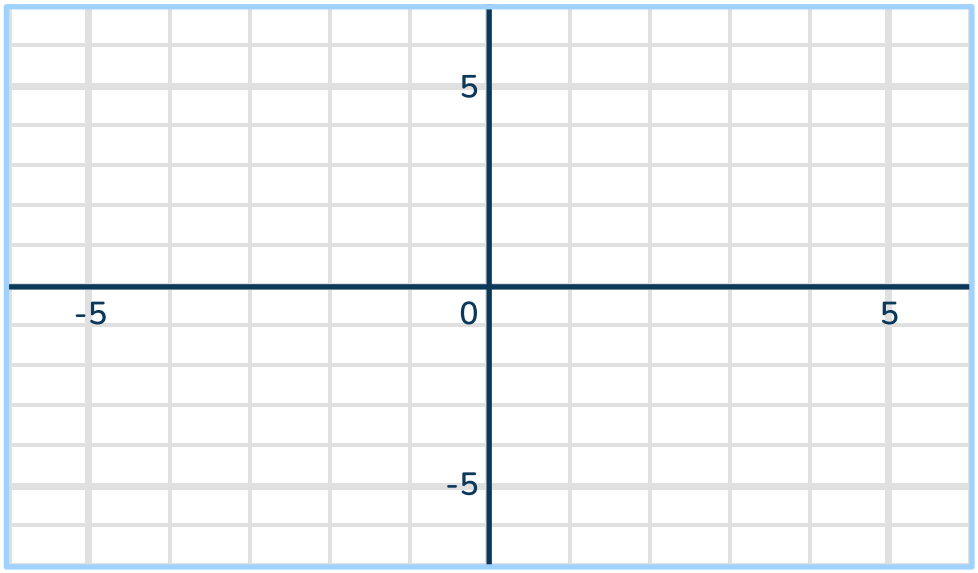
A. $y = 2x - 3$

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

C. $y = 2x + 3$

D. $y = \frac{1}{2}x + 3$

8 △QRS with vertices Q(-5, 1), R(0, 2), and S(–3, –4) will be rotated 180° about the origin. What will be the coordinates of S'?



A. (–3, 4)
B. (–4, 3)
C. (3, 4)
D. (4, –3)

---

9 What is the value of the expression below?

$$\frac{0.8 \times 10^4}{4 \times 10^6}$$

A. 2×10^{-3}
B. 0.2×10^2
C. 0.2×10^3
D. 2×10^{-2}

10 Hexagon FGHIJK has point H(4, -2). If Hexagon FGHIJK is reflected over the x-axis to form Hexagon F'G'H'I'J'K', what would be the coordinates of H'?

A. H' (-4, -2)
B. H' (4, 2)
C. H' (-4, 2)
D. H' (4, -2)

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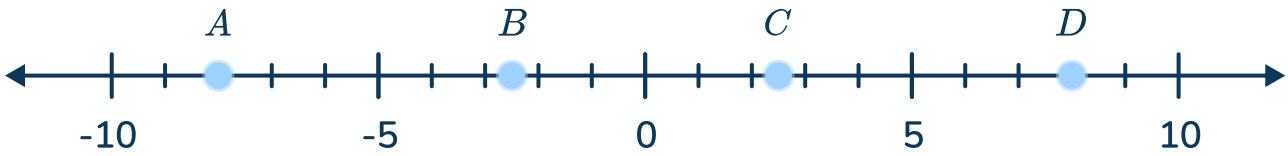
11 Which point is closest to $\sqrt{8}$?



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

A.

x	-3	-2	1	0
y	4	9	14	19

B.

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

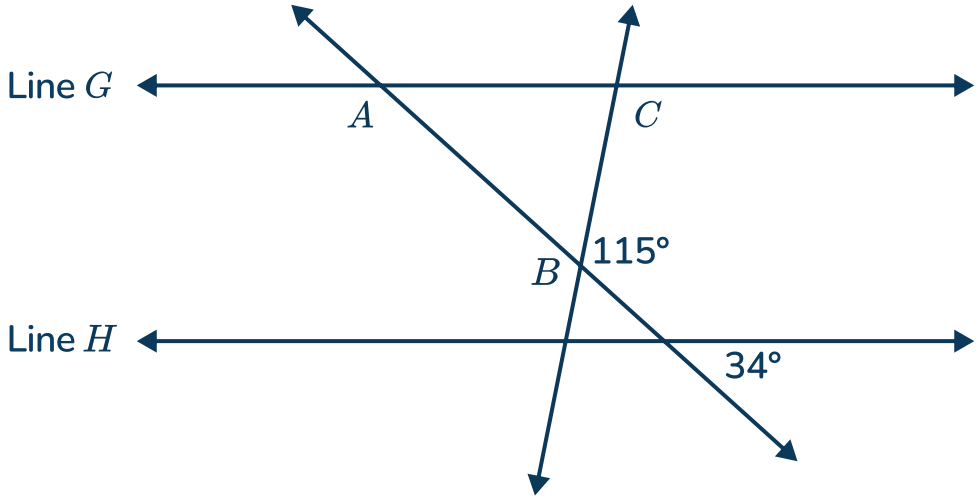
C.

x	0	1	2	4
y	-6	-4	-2	2

D.

x	2	3	4	5
y	-2	-4	-8	-14

13 Line G and Line H are parallel lines, cut by two transversals.



What interior angles make up the triangle ABC?

A. 115°, 34° and 21°
B. 65°, 34° and 81°
C. 60°, 34° and 21°
D. 120°,34° and 81°

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14 Emily has a fair six-sided die. If she rolls the die twice, what is the probability that she rolls a 4 at least once in those two rolls?

A. $\frac{2}{6}$

B. $\frac{1}{12}$

C. $\frac{11}{36}$

D. $\frac{12}{36}$

15 The distance from Boston to Cambridge is about 3.6×10^4 inches. The distance from Boston to San Francisco is about 5.4×10^3 times farther. About how many inches is the distance from Boston to San Francisco?

A. 1.944×10^8
B. 1.9×10^7
C. 19.44×10^8
D. $1{,}944 \times 10^{-8}$

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16 The table below shows the number of tickets sold (x) and the total revenue (y) for a charity fundraiser:

Tickets Sold (x)	Total Revenue (y)
10	$150
20	$300
30	$450
40	$600

What is the slope?

A. 10
B. 5
C. 15
D. 30

17 Simplify the expression.

$$(1.5x + 2.4)(3.2x - 0.6)$$

A. $9.18x$ - 0.6
B. $4.8x^2 + 6.78x - 1.44$
C. $4.7x^2 + 1.8$
D. $4.8x^2 + 4.32x - 1.44$

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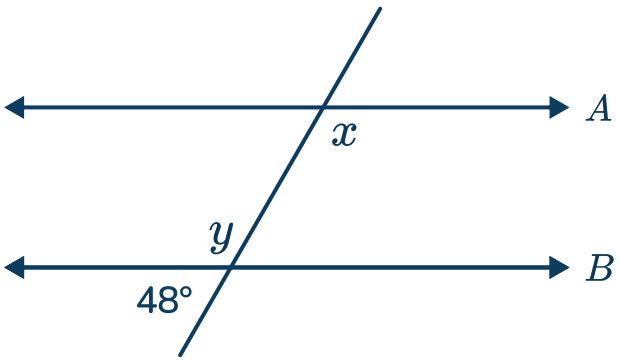
18 Find the angle measure of x.

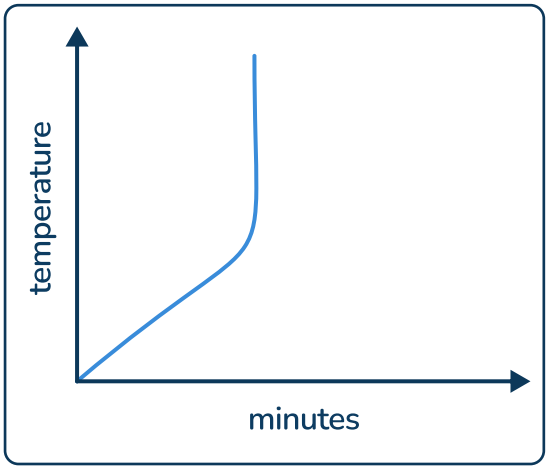


A. 180°
B. 48°
C. 42°
D. 132°

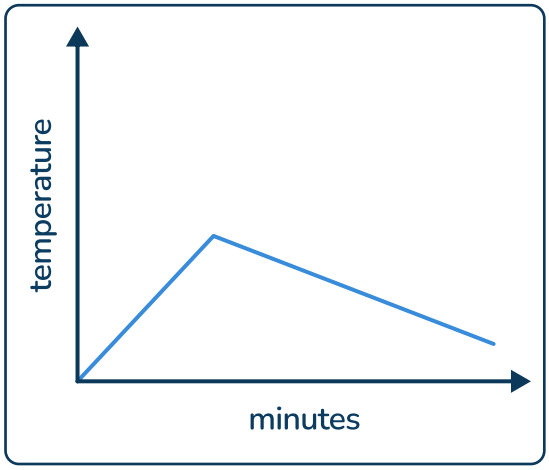
19 The temperature of a cup of coffee was recorded over time. Initially, the coffee was at room temperature. It began to heat up steadily as the coffee maker was turned on. After a few minutes, the temperature continued to rise but at a slower rate until it reached a steady high temperature. The temperature then remained constant for the rest of the time.

Which is a graph of the function described above?

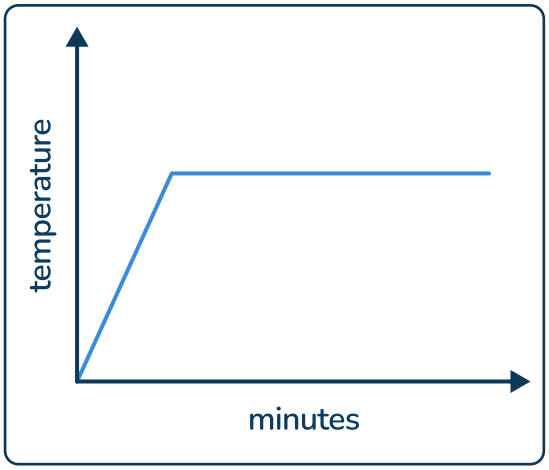
A.



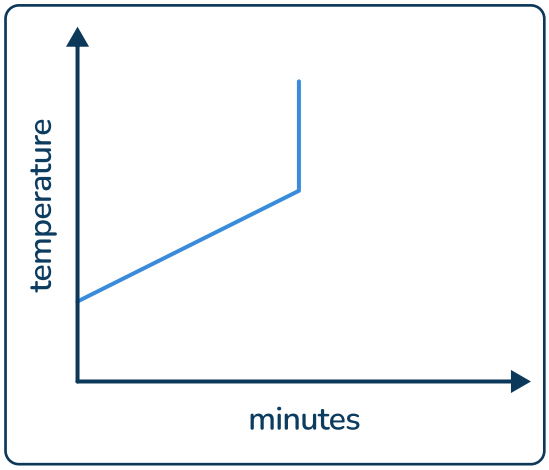
B.



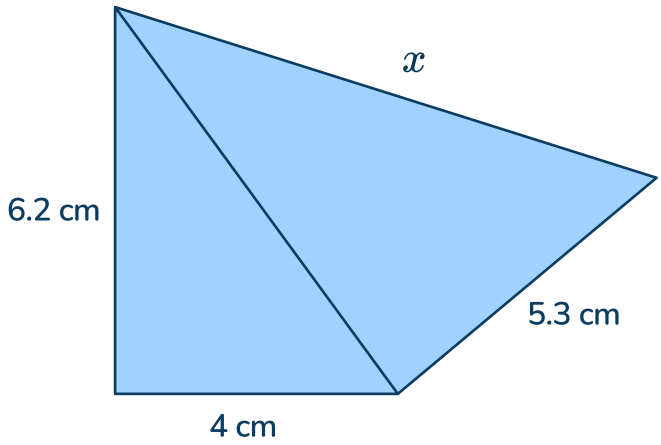
C.



D.



20 Solve for x. Round to the nearest tenth.



A. 8.7 cm
B. 9.1 cm
C. 8.2 cm
D. 9.3 cm

---

21 Which expression is equal to –2?

A. $\sqrt{4}$
B. $\sqrt[3]{8}$
C. $\sqrt[3]{-8}$
D. $\sqrt{-8}$

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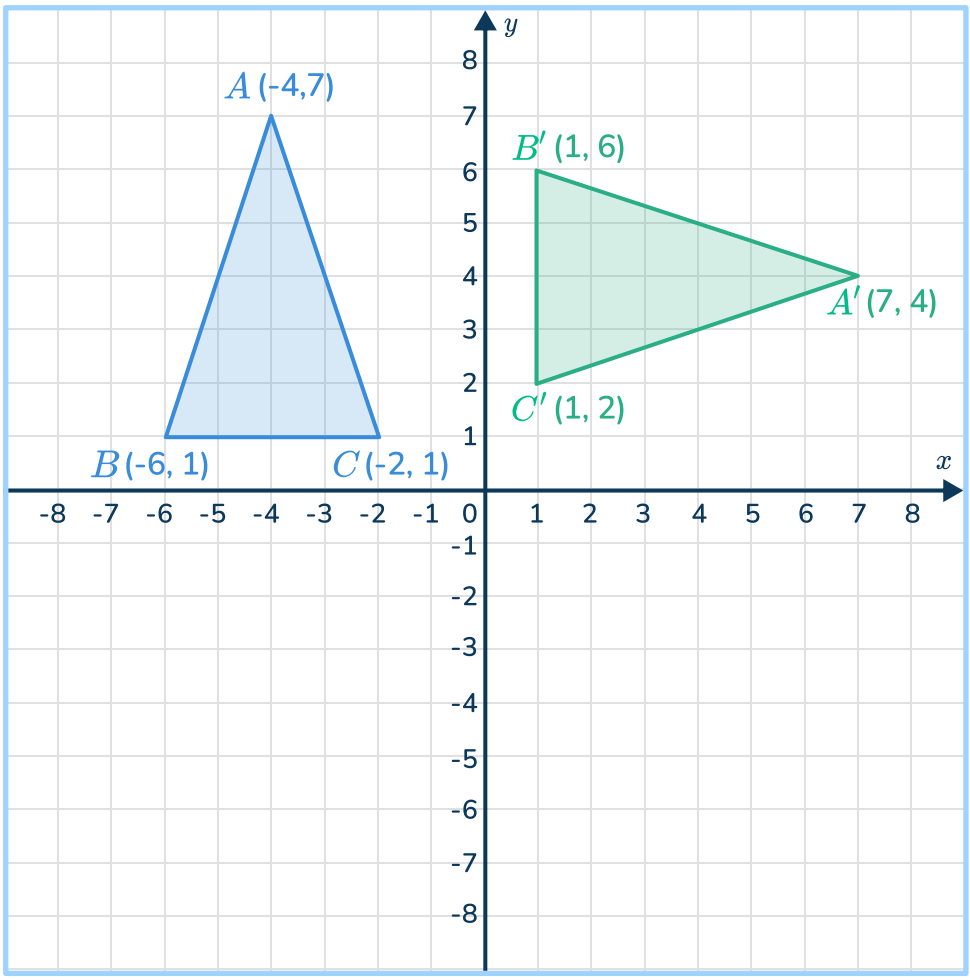
22 Which set of coordinates does not represent a function?

A. {(4, 0), (0, 4), (8, 6)}
B. {(2, $\frac{1}{4}$), (3, $\frac{1}{4}$), (4, $\frac{1}{4}$)}
C. {(5, 1), (-5, -1), (5, 9)}
D. {(0, 0), (6, 0), (-6, 1)}

23 Which transformation maps triangle ABC to triangle A'B'C'?



A. Rotation of 180° about the origin.
B. Dilation with scale factor 1.5.
C. Reflection over the y-axis.
D. Rotation of 90° about the origin.

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24 A fair coin is flipped twice. Which of the following shows the sample space for this experiment?

A. {H, T}
B. {HH, HT, TH, TT}
C. {HH, HT, TT}
D. {H, H, T, T}

25 Consider the following system of linear equations:

$$2x + 3y = 12$$
$$x - y = 1$$

Which of these ordered pairs satisfy both equations in the system?

A. (2, 4)
B. (3, 2)
C. (4, 1)
D. (1, 5)

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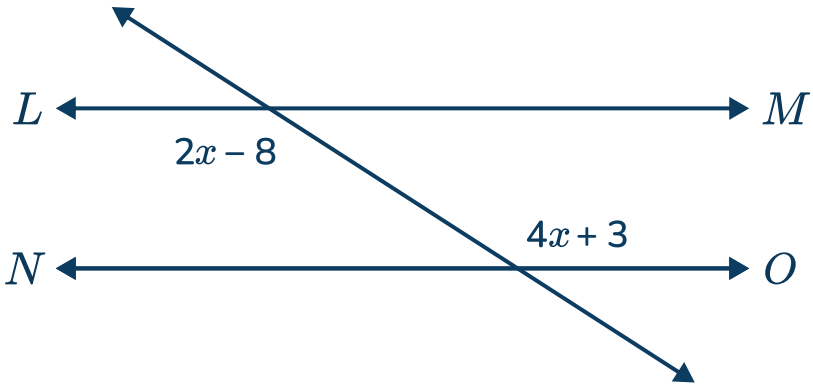
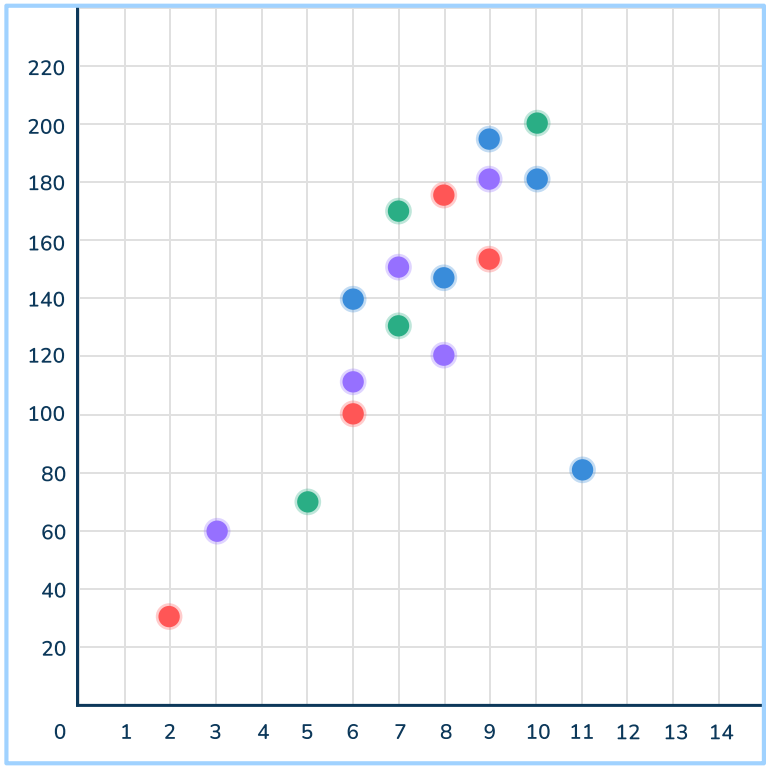
26 Line LM and line NO are parallel. What is the value of x?



A. -22
B. 2.5
C. -5.5
D. -3.5

27



Which statement about the scatter plot is NOT true?

A. In general, x and y have a positive 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 negative slope.

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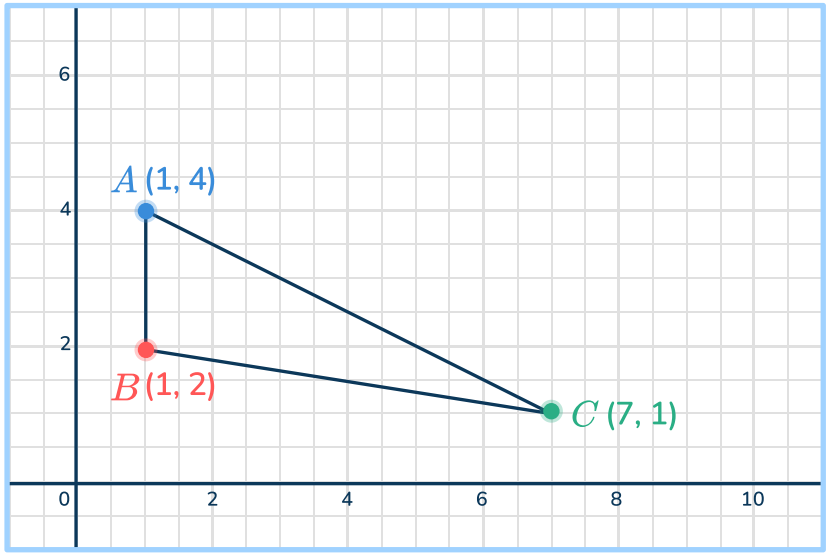
28 Which numbers are irrational? Select all the correct answers.

A. $\sqrt{50}$
B. $\frac{2}{5}$
C. $\sqrt{8^2}$
D. 2Π
E. $\sqrt[3]{64}$

29 The equation $12.5\text{-}0.7x = y$ models the height of a plant in centimeters after it has been growing for x weeks. What is the meaning of the y-intercept?

A. The number of weeks the plant has been growing.
B. The initial height of the plant.
C. The rate at which the plant grows per week.
D. The total height the plant will reach after it stops growing.

30

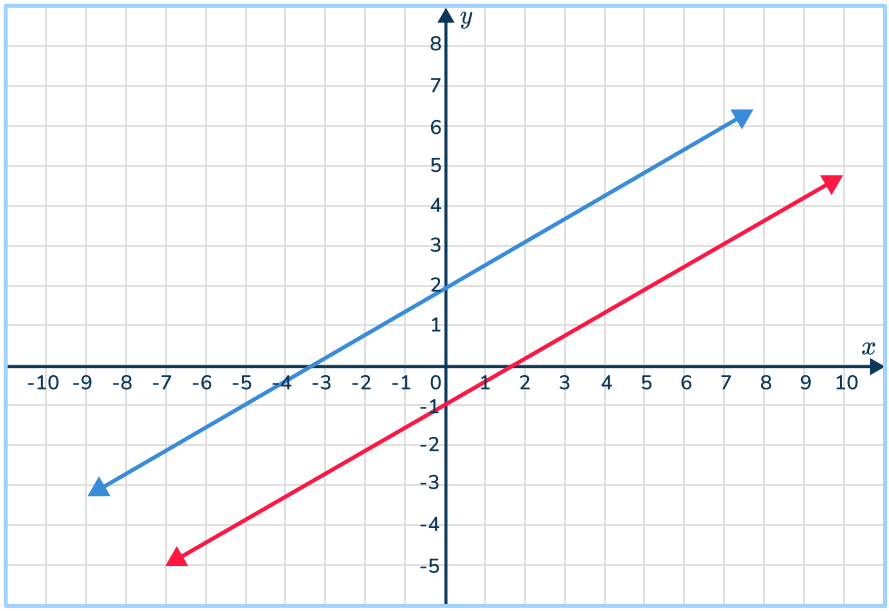


If the triangle is dilated by $\frac{1}{2}$, what is the distance from B' to C'?

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

A. Calculate the square root of $6^2 + 1^2$ and multiply the positive root by $\frac{1}{2}$.
B. Calculate $\sqrt{6^2 + (-1)^2}$, and multiply the positive root by $\frac{1}{2}$.
C. Multiply each coordinate by $\frac{1}{2}$ and then find the perimeter of the new triangle.
D. Shift each vertex of the triangle down $\frac{1}{2}$ units, then count the units from B' to C'.
E. Multiply (1,1) and (7,1) by $\frac{1}{2}$ and then calculate the positive root of $\sqrt{3^2 + (-0.5)^2}$

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



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

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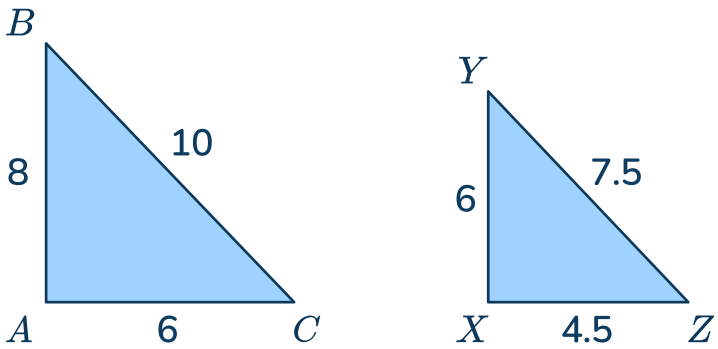
32 Triangle XYZ is the image of triangle ABC after a dilation. What is the scale factor of the dilation?



A. 2
B. 0.25
C. $\frac{3}{4}$
D. $1\frac{1}{3}$

33 $\sqrt[3]{p} = 4$

Solve for p.

A. 2
B. 16
C. 64
D. $\sqrt{4}$

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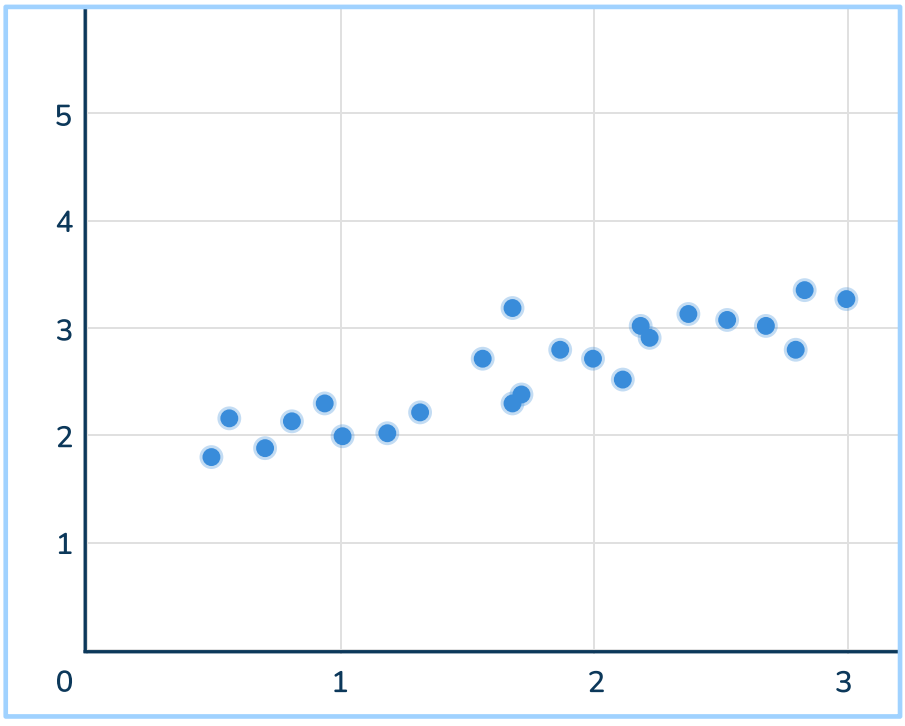
34 Which equation shows a line of best fit for the data?



A. $0.5x + 1.75 = y$
B. $2x + 2 = y$
C. $1.5 - x = y$
D. $0.5x - 1.5 = y$

35 You are given three side lengths: 9 cm, 12 cm, and 15 cm. Can these side lengths form a right triangle?

A. Yes, because $9^2 + 12^2 = 15^2$
B. No, because $9^2 + 12^2 \neq 15^2$
C. No, because $12^2 + 9^2 = 15^2$
D. Yes, because $9^2 + 15^2 \neq 12^2$

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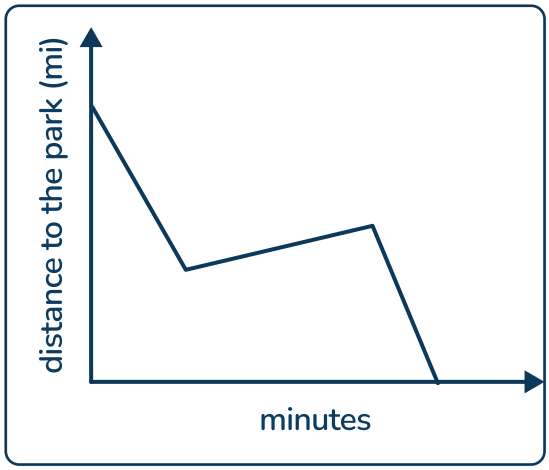
36 Simplify $\frac{3a^2(a^4)}{\frac{1}{2}a^3}$.

A. $1.5a^3$
B. $6a^2$
C. $1.5a^2$
D. $6a^3$

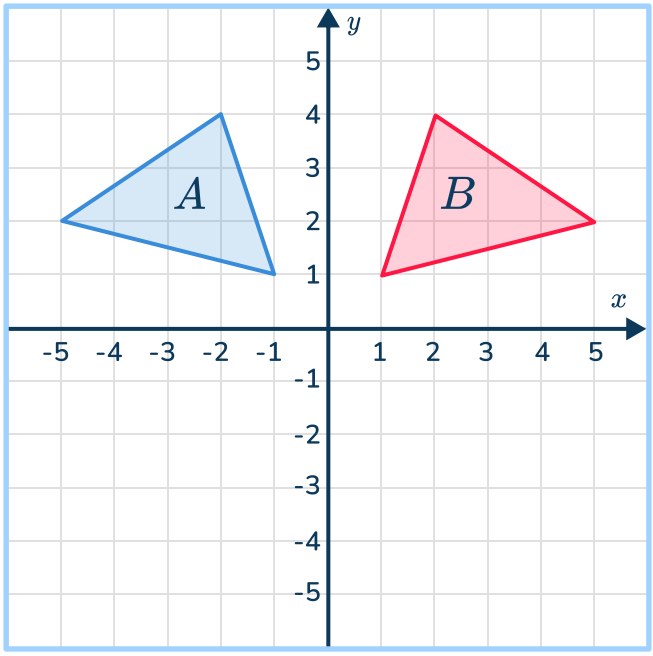
37 The graph shows the distance a runner is from a park.



Which statement about the function is true?

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

38 The preimage (triangle A) and image (triangle B) below have been generated by a single transformation. Which transformation is shown?



A. rotation
B. reflection
C. dilation
D. translation

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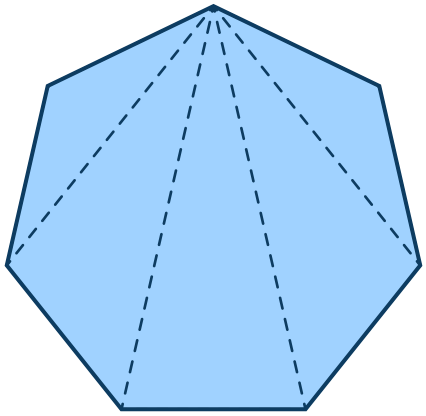
39 Write 4,120,000,000,000 in scientific notation.

A. 4.12×10^{12}
B. 4.12×10^{10}
C. 412×10^{11}
D. $41.2. \times 10^{10}$

40 Isaac drew a regular polygon with 7 sides. He decomposed the polygon into triangles as shown below.

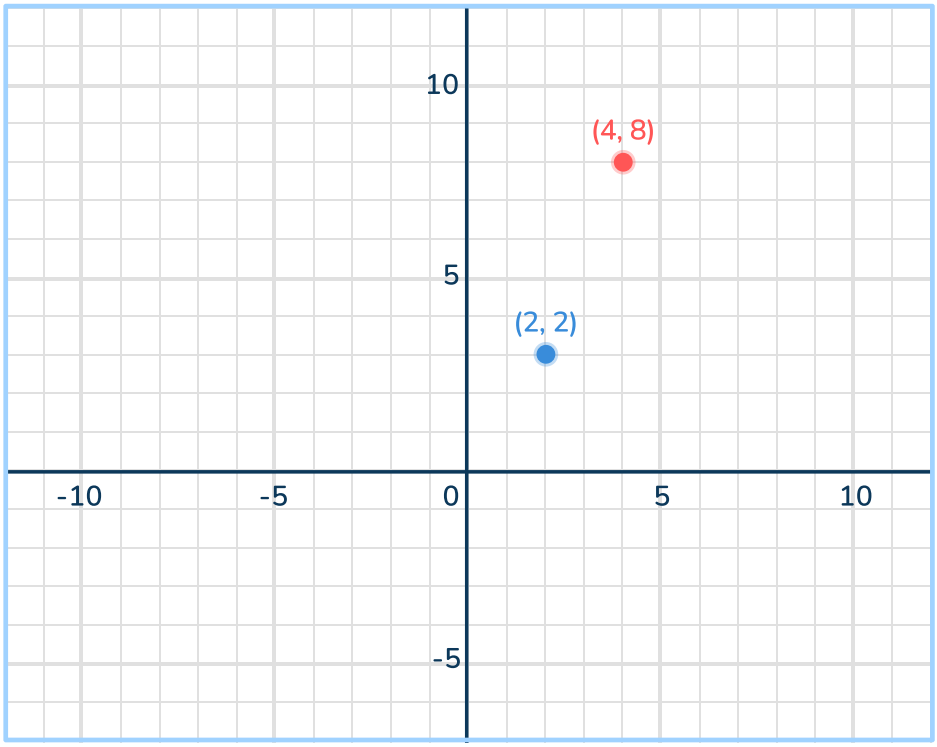
What is the sum of the interior angles of Isaac's polygon?



A. 1260°
B. 420°
C. 300°
D. 900°

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

41



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

- Allie says the coordinates represent a linear function.
- Mason says the coordinates represent a nonlinear function.
- Reagan says the coordinates do not represent a function.

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

_____

_____

_____

_____

Standard: MA.8.GR.2.4
DOK 3
Short Answer Response - 4 points

42 On a sunny afternoon, Piper casts a 3-foot-long shadow on the ground. She is 5.5 feet tall. At the same time, a nearby tree casts a shadow that is 24 feet long. How tall is the tree?

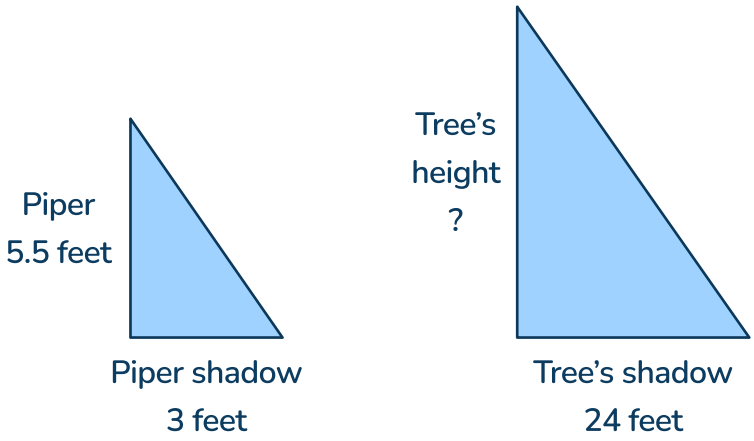
Part A: Draw and label the similar triangles described in the situation.

Answer

Part B: Find the height of the tree.

Answer

Item	KEY	Rationale
41	4 points	Student correctly identifies a coordinate for each student. • **Allie**: A point like (6,14) would support that the coordinates lie on a linear function because it falls on the line defined by the linear relationship between the given points. • **Mason**: A point like (4, 12) would prove Mason's statement that the coordinates represent a nonlinear function. If this point does not lie on the line defined by the given points, it suggests the relationship is not linear. • **Reagan**: Points with repeated x-values like (4,10) or (2,5) would prove that the coordinates do not represent a function, confirming Reagan's statement. Multiple y-values for the same x-value demonstrate that the set of coordinates does not satisfy the definition of a function. 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.

Item	KEY	Rationale
42	4 points	Student correctly draws and labels the triangles and finds the height of the tree.  To solve– 1. Set up the proportion: $\frac{Piper's\ height}{Piper's\ shadow\ length} = \frac{Tree's\ height}{Tree's\ shadow\ length}$ $\frac{5.5\ feet}{3\ feet} = \frac{x}{24\ feet}$ 2. Solve for the height of the tree: Cross-multiply to solve for x. $5.5 \times 24 = 3x$ $132 = 3x$ $x = \frac{132}{3}$ $x = 44$ The tree is 44 feet tall.
	3 points	Student finds the correct height of the tree and draws the model correctly, but does not fully label the model OR does not fully show their work.
	2 points	Student either draws the model correctly OR finds the height of the tree. Student may not fully show their work but attempts to with 1-2 mistakes.

Item	KEY	Rationale
	1 point	Student does not find the correct answer and does not draw the model correctly, although makes an attempt. The student attempts to draw the model and/or solve the problem, but the model or work shown is incomplete or unclear.
	0 points	Response is blank or does not include any correct calculations or explanations.

Answer Key - Multiple Choice

Item number	Correct answer	Standard(s)	DOK
1	B	**MA.8.AR.3.3**	DOK 2
2	A	**MA.8.NSO.1.7**	DOK 1
3	A	**MA.8.GR.1.2**	DOK 2
4	C	**MA.8.AR.2.1**	DOK 1
5	A, E	**MA.8.AR.1.1**	DOK 1
6	C	**MA.8.F.1.1**	DOK 1
7	D	**MA.8.AR.3.3**	DOK 1
8	C	**MA.8.GR.2.3**	DOK 2
9	A	**MA.8.NSO.1.5**	DOK 1
10	B	**MA.8.GR.2.3**	DOK 2
11	C	**MA.8.NSO.1.2**	DOK 1
12	D	**MA.8.F.1.2**	DOK 1
13	B	**MA.8.GR.1.5**	DOK 2
14	C	**MA.8.DP.2.2**	DOK 1
15	A	**MA.8.NSO.1.6**	DOK 2
16	C	**MA.8.AR.3.2**	DOK 2
17	B	**MA.8.AR.1.2**	DOK 1
18	D	**MA.8.GR.1.4**	DOK 2
19	C	**MA.8.F.1.3**	DOK 2

Item number	Correct answer	Standard(s)	DOK
20	B	**MA.8.GR.1.1**	DOK 2
21	C	**MA.8.AR.2.3**	DOK 1
22	C	**MA.8.F.1.1**	DOK 1
23	D	**MA.8.GR.2.3**	DOK 2
24	B	**MA.8.DP.2.1**	DOK 1
25	B	**MA.8.AR.4.1**	DOK 1
26	C	**MA.8.GR.1.5**	DOK 2
27	D	**MA.8.DP.1.1**	DOK 2
28	A, D	**MA.8.NSO.1.1**	DOK 1
29	B	**MA.8.AR.3.5**	DOK 2
30	A, B, E	**MA.8.GR.2.3, MA.8.GR.1.2**	DOK 2
31	A	**MA.8.AR.4.2**	DOK 2
32	C	**MA.8.GR.2.2**	DOK 2
33	C	**MA.8.AR.2.3**	DOK 1
34	A	**MA.8.DP.1.3**	DOK 2
35	A	**MA.8.GR.1.3**	DOK 1
36	D	**MA.8.AR.1.1**	DOK 2
37	C	**MA.8.F.1.3**	DOK 2
38	B	**MA.8.GR.2.1**	DOK 2
39	A	**MA.8.NSO.1.4**	DOK 1
40	D	**MA.8.GR.1.6**	DOK 2

Item number	Correct answer	Standard(s)	DOK
41	Short Answer Response	**MA.8.F.1.1 , MA.8.F.1.2**	DOK 3
42	Short Answer Response	**MA.8.GR.2.4**	DOK 3

ANSWERS SORTED BY FL BEST STRAND

NSO			
Item number	Correct answer	Standard(s)	DOK
2	A	**MA.8.NSO.1.7**	DOK 1
9	A	**MA.8.NSO.1.5**	DOK 1
11	C	**MA.8.NSO.1.2**	DOK 1
15	A	**MA.8.NSO.1.6**	DOK 2
28	A, D	**MA.8.NSO.1.1**	DOK 1
39	A	**MA.8.NSO.1.4**	DOK 1

AR			
Item number	Correct answer	Standard(s)	DOK
1	B	**MA.8.AR.3.3**	DOK 2
4	C	**MA.8.AR.2.1**	DOK 1
5	A, E	**MA.8.AR.1.1**	DOK 1
7	D	**MA.8.AR.3.3**	DOK 1
16	C	**MA.8.AR.3.2**	DOK 2
17	B	**MA.8.AR.1.2**	DOK 1
21	C	**MA.8.AR.2.3**	DOK 1
25	B	**MA.8.AR.4.1**	DOK 1
29	B	**MA.8.AR.3.5**	DOK 2
31	A	**MA.8.AR.4.2**	DOK 2
33	C	**MA.8.AR.2.3**	DOK 1
36	D	**MA.8.AR.1.1**	DOK 2

F			
Item number	Correct answer	Standard(s)	DOK
6	C	**MA.8.F.1.1**	DOK 1
12	D	**MA.8.F.1.2**	DOK 2
19	C	**MA.8.F.1.3**	DOK 2
22	C	**MA.8.F.1.1**	DOK 1
37	C	**MA.8.F.1.3**	DOK 2
41	Short Answer Response	**MA.8.F.1.1 , MA.8.F.1.2**	DOK 3

GR			
Item number	Correct answer	Standard(s)	DOK
3	A	**MA.8.GR.1.2**	DOK 2
8	C	**MA.8.GR.2.3**	DOK 2
10	B	**MA.8.GR.2.3**	DOK 2
13	B	**MA.8.GR.1.5**	DOK 2
18	D	**MA.8.GR.1.4**	DOK 2
20	B	**MA.8.GR.1.1**	DOK 2
23	D	**MA.8.GR.2.3**	DOK 2
26	C	**MA.8.GR.1.5**	DOK 2
30	A, B, E	**MA.8.GR.2.3, MA.8.GR.1.2**	DOK 2
32	C	**MA.8.GR.2.2**	DOK 2
35	A	**MA.8.GR.1.3**	DOK 1
38	B	**MA.8.GR.2.1**	DOK 2
40	D	**MA.8.GR.1.6**	DOK 2
42	Short Answer Response	**MA.8.GR.2.4**	DOK 3

DP			
Item number	Correct answer	Standard(s)	DOK
14	C	**MA.8.DP.2.2**	DOK 1
24	B	**MA.8.DP.2.1**	DOK 1
27	D	**MA.8.DP.1.1**	DOK 2
34	A	**MA.8.DP.1.3**	DOK 2

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