



THIRD SPACE
LEARNING

8th Grade North Carolina State Practice Math Test

North Carolina Practice Test
Grade 8

Grade 8

Questions

Name:

Class:

Date:

Score:

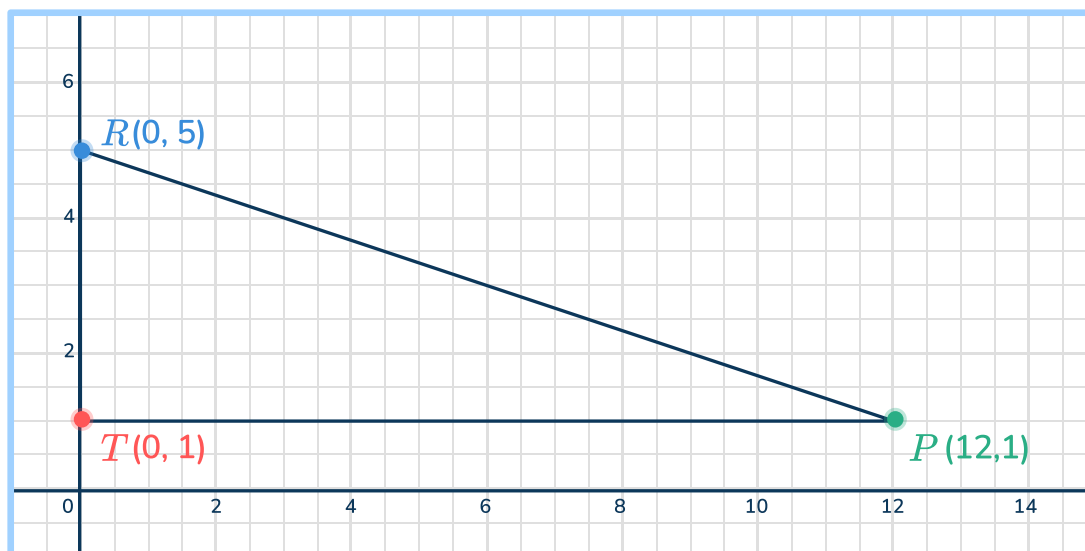
No Calculator For Questions 1 - 15



- 1 A container is in the shape of a cylinder that has a diameter of 13 inches and a height of 1.75 feet. Which equation can be used to find the volume of the container in cubic inches?

- A. $V = \pi(6.5)^2(1.75)$
- B. $V = \pi(4)^2(21)$
- C. $V = \pi(1.75)^2(8)$
- D. $V = \pi(6.5)^2(21)$

2



If the triangle is dilated by $\frac{1}{4}$, what is the distance from R' to P'?

Which strategy leads to the correct answer?

- A. Multiply each coordinate by $\frac{1}{4}$ and then find the perimeter of the new triangle.
- B. Calculate the square root of $5^2 + 12^2$ and multiply the positive root by $\frac{1}{4}$.
- C. Calculate $\sqrt{4^2 + 12^2}$, and multiply the positive root by $\frac{1}{4}$.
- D. Shift each vertex of the triangle down 14 units, then count the units from R' to P'.

- 3 The points A(-1, 2) and B(4, -10) are plotted on the coordinate plane. What is the distance between the points?

A. $\sqrt{73}$
B. 13
C. $\sqrt{17}$
D. 12

- 4 What is the value of x in the equation $x^2 + 7 = 56$?

A. $\sqrt{56}$
B. 49
C. $\sqrt{7}$
D. ± 7

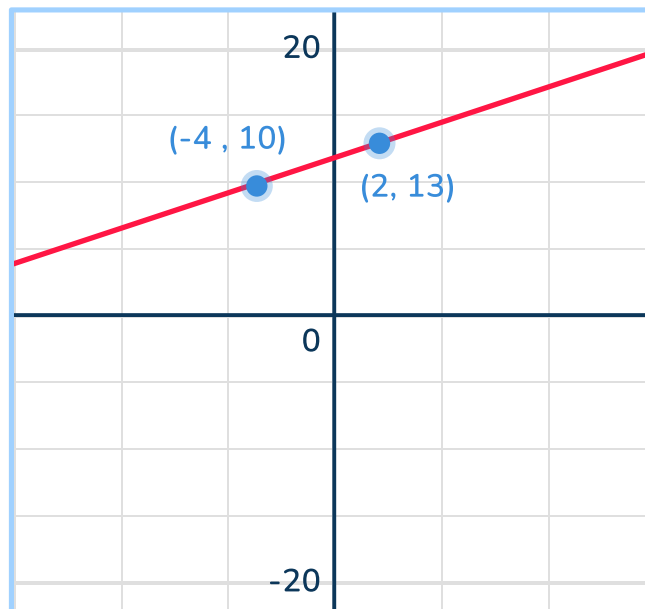
- 5 Which expression has a value of $\frac{1}{125}$?

A. $\frac{5^2}{5^5}$
B. $(5^3)^{-5}$
C. $5^{-8} + 5^5$
D. $5^4 \times 5^{-6}$

6 Which number is irrational?

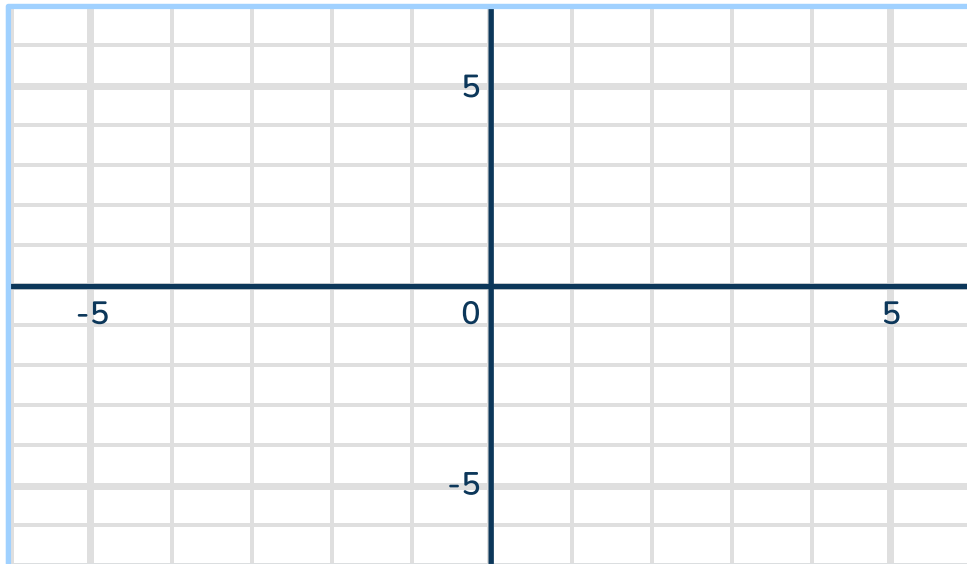
- A. $\frac{1}{9}$
- B. $\sqrt{5^2}$
- C. $\sqrt{14}$
- D. $\sqrt[3]{27}$

7 Which equation represents the line on the coordinate plane?



- A. $y = 3x + 12$
- B. $y = \frac{1}{2}x + 11.5$
- C. $y = 3x + 11.5$
- D. $y = \frac{1}{2}x + 12$

- 8 $\triangle TGS$ with vertices $T(1, 1)$, $G(-2, 2)$, and $S(-3, -1)$ will be rotated 180° about the origin. What will be the coordinates of S' ?



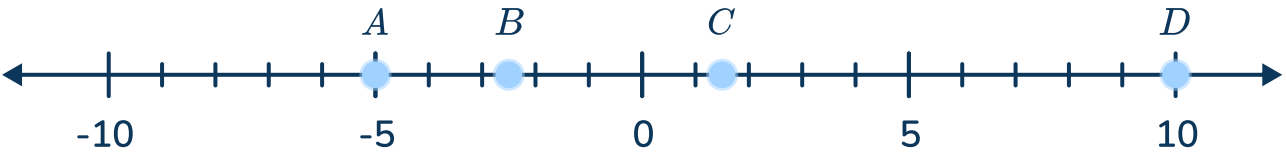
- A. $(3, 1)$
- B. $(1, 3)$
- C. $(-1, -3)$
- D. $(-3, -1)$

-
- 9 What is the value of the expression below?

$$\frac{0.4 \times 10^4}{1.6 \times 10^8}$$

- A. 0.00004
- B. 0.000025
- C. 400,000
- D. 25,000

10 Which point is closest to $\sqrt{5}$?



For questions 11–15, write your answers in the boxes given. In each box, write only one number or symbol.

- 11** A line passes through the points $(-3,4)$ and $(7,8)$. What is the slope of the line?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., –, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

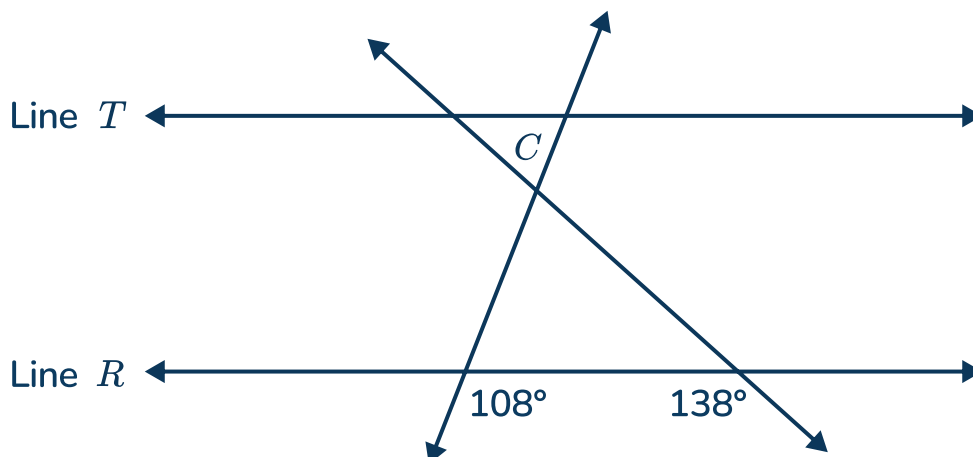
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- 12** Solve for the value of p in the equation $p^4 + 9 = 25$.

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., –, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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



What is the measurement of angle C, in degrees?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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- 14 $-1.5(4x - 8) = 5x + 6.5$

What is the solution to the equation?

- For no solution, write 0 as the answer.
- For infinite solutions, write / as the answer.
- For one solution, write the solution as the answer.

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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15 The total area of two equivalent squares is 162 ft^2 . What is the perimeter of the rectangle formed by joining two sides of the squares?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., −, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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THIS IS THE END OF CALCULATOR INACTIVE QUESTIONS

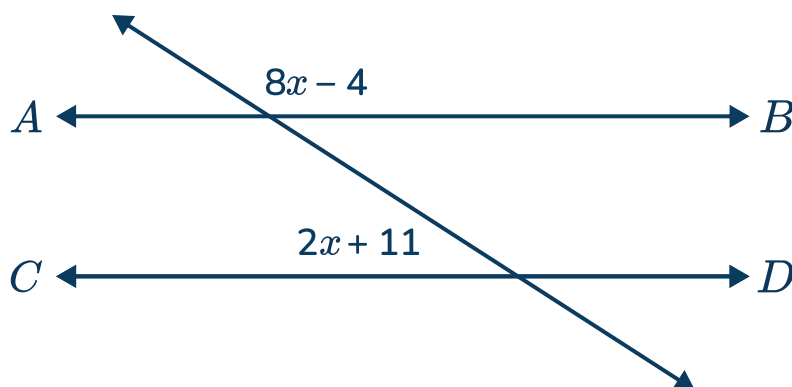
THIS IS THE BEGINNING OF CALCULATOR ACTIVE QUESTIONS

Calculator Can Be Used For Questions 16 - 45



For questions 16–20, write your answers in the boxes given. In each box, write only one number or symbol.

- 16 Line AB and line CD are parallel. What is the value of x ?



Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., −, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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- 17 Solve for x :

$$3(x - 6.1) = 0.8x + 12.5$$

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., −, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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- 18 $3 \cdot 10^a = m$

$$9 \cdot 10^b = n$$

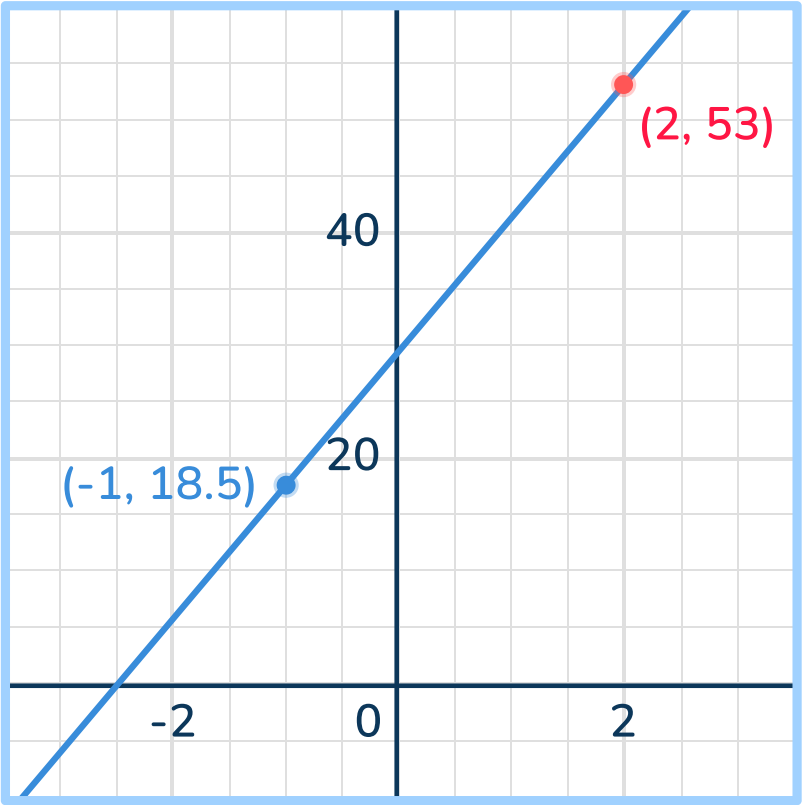
In the equations above, a and b are positive integers.

The value n is 300,000 times greater than m . What is the difference between m and n ?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., −, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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19

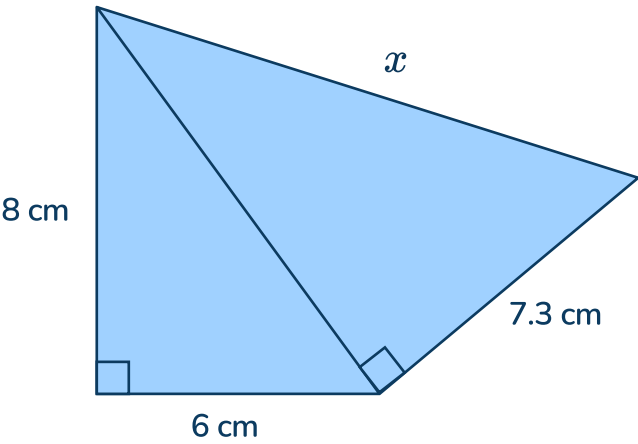


What is the rate of change of the linear function?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., –, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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20 Solve for x . Round to the nearest tenth.



Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., −, and / are allowed in the answer box. Mixed numbers must be entered as an improper fraction or decimal.

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21 The 6th and 7th graders and River Valley High School are required to take either Art or Band class.

	Art	Band
6th graders	61	81
7th graders	78	x

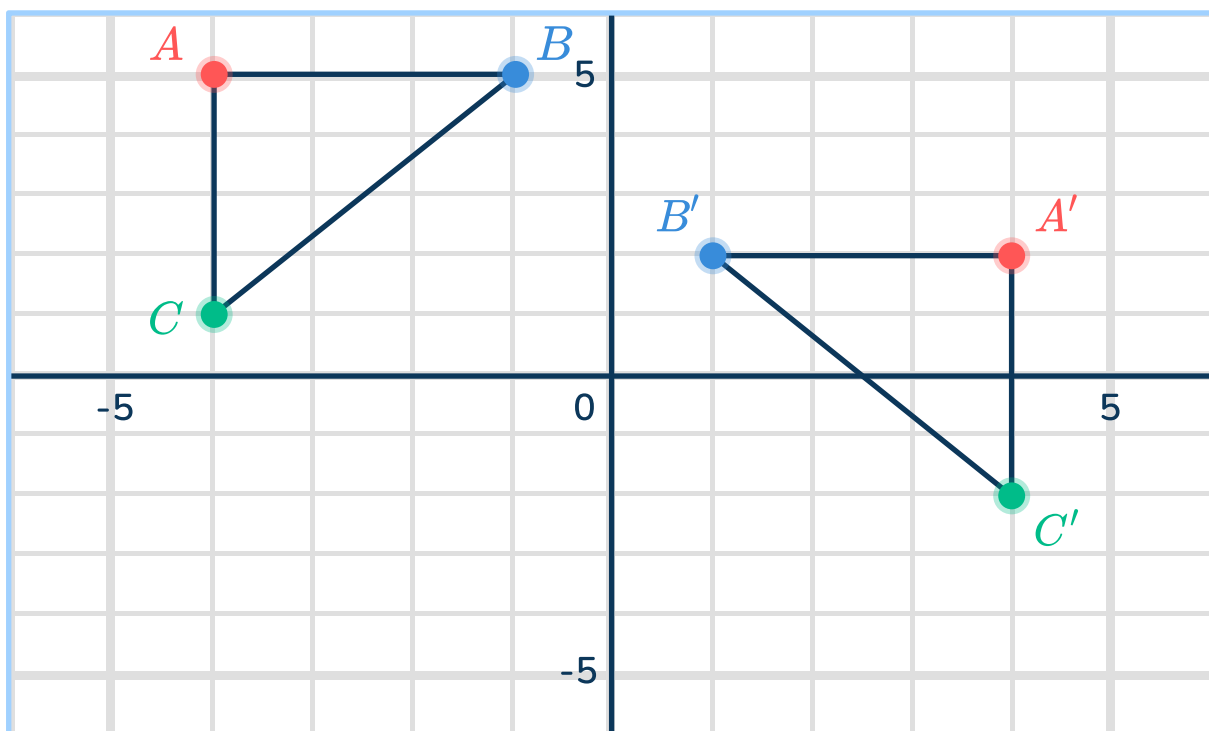
If 44% of 6th and 7th graders take art, what is the value of x ?

- A. 96
- B. 58
- C. 99
- D. 102

22 Which set of coordinates does **not** represent a function?

- A. $\{(6, 2), (-6, -2), (6, 10), (-10, 6)\}$
- B. $\{(8, 0), (0, 8), (6, 5), (5, 6)\}$
- C. $\{(0, 0), (1, 1), (2, 2), (3, 8)\}$
- D. $\{(1, \frac{1}{2}), (2, \frac{1}{2}), (3, \frac{1}{2}), (4, \frac{1}{2})\}$

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



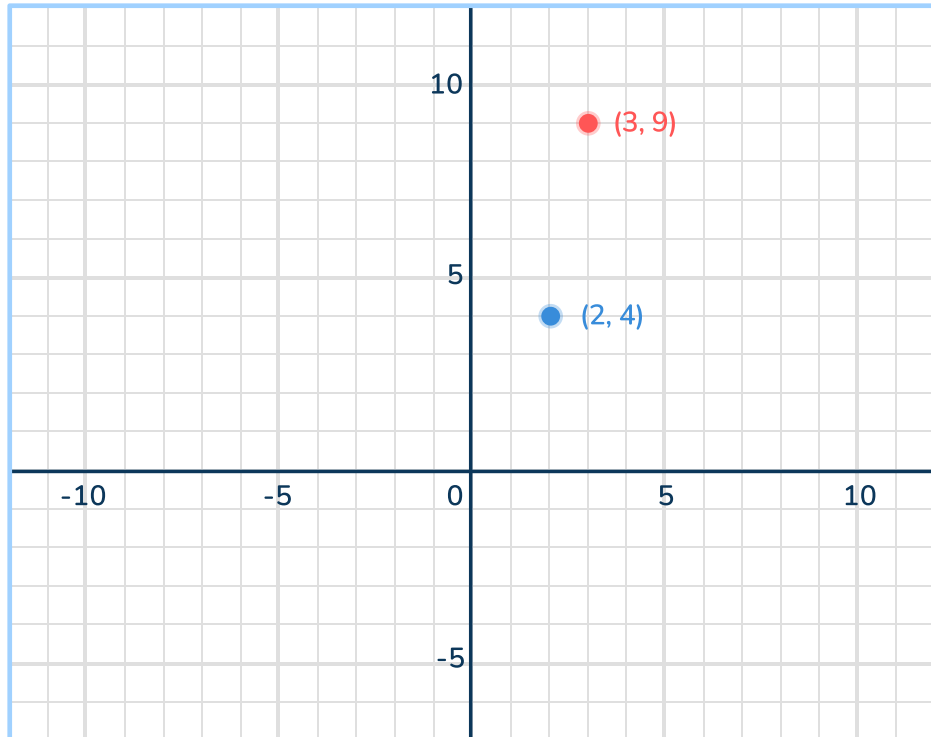
- A. Reflection over the line $y = x$ followed by a translation of 3 units down.
- B. Translation of 3 units right followed by a reflection over the y -axis.
- C. Reflection over the y -axis followed by a translation of 3 units down.
- D. Reflection over the x -axis followed by a translation of 3 units right.

24 Aurora runs her family’s construction business. The table below shows what 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	\$89
2	\$309
4	\$529
6	\$740

- A. $y = 220x + 89$
- B. $y = 220x$
- C. $y = 110x + 89$
- D. $y = 110x$

25



Mya is creating a nonlinear function on the graph above. Which ordered pair could be added to Mya's graph?

- A. (3, 6)
- B. (1, -1)
- C. (2, 9)
- D. (1, 1)

26 Jonah wants to buy some books. He compares the prices of two stores.

Books Galore

Number of books	3	5	11	15
Total price (plus shipping)	28.99	44.99	92.99	124.99

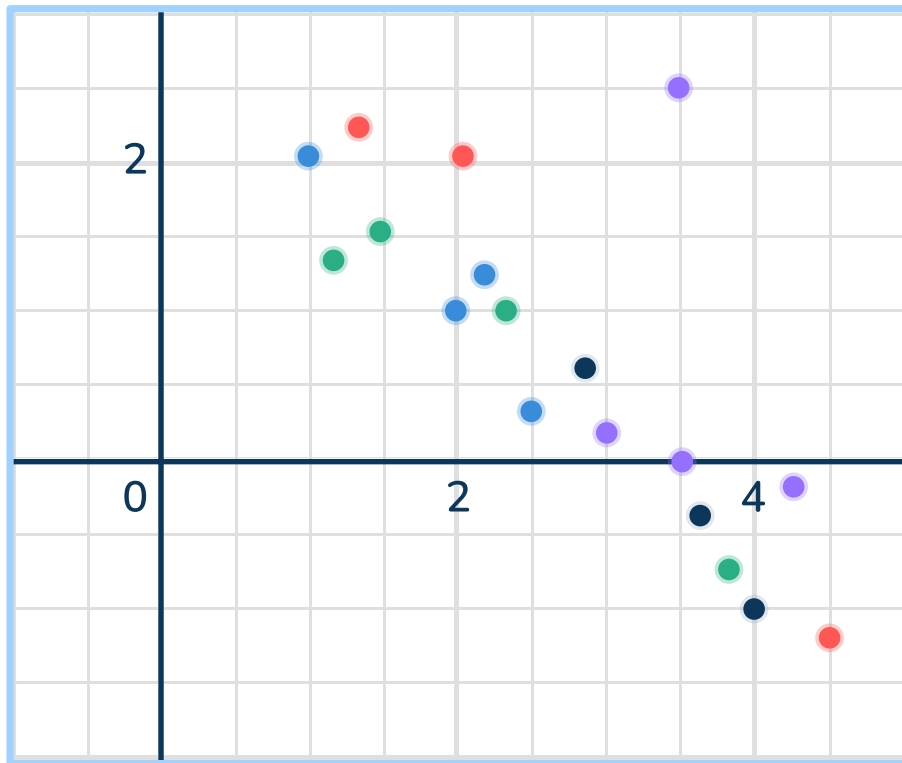
The Corner Bookstore

Each book costs \$7 and it costs \$12.50 to ship the books.

Which statement about the book stores is true?

- A. Books Galore charges \$9.49 more for shipping.
- B. The Corner Bookstore charges \$7.51 more for shipping.
- C. Books Galore charges \$16 more per book.
- D. The Corner Bookstore charges \$1 more per book.

27

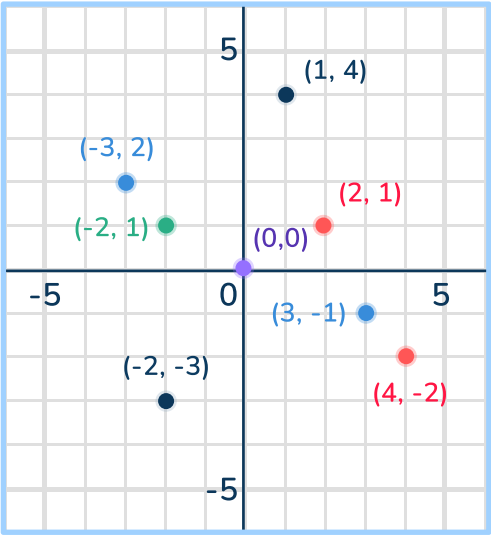


Which statement about the scatter plot is true?

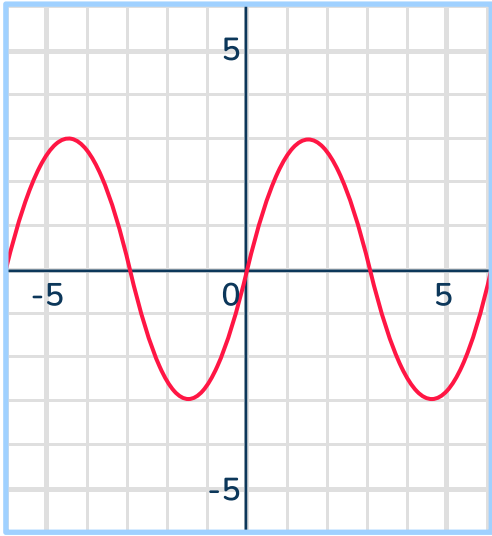
- A. The variables x and y do not appear to have an association
- B. The relationship between x and y looks nonlinear.
- C. There appears to be 1 outlier.
- D. The line of best fit will have a positive slope.

28 Which graph shows a function?

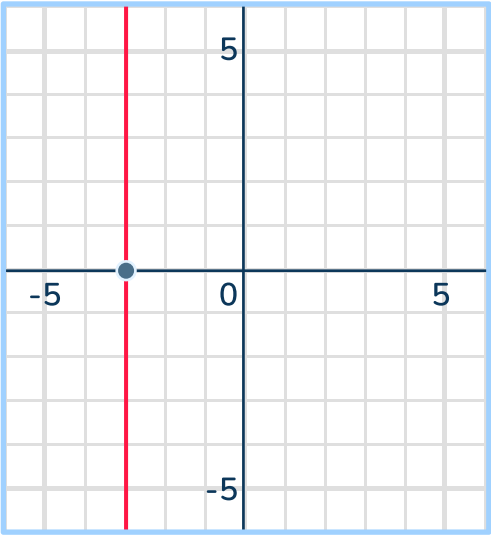
A.



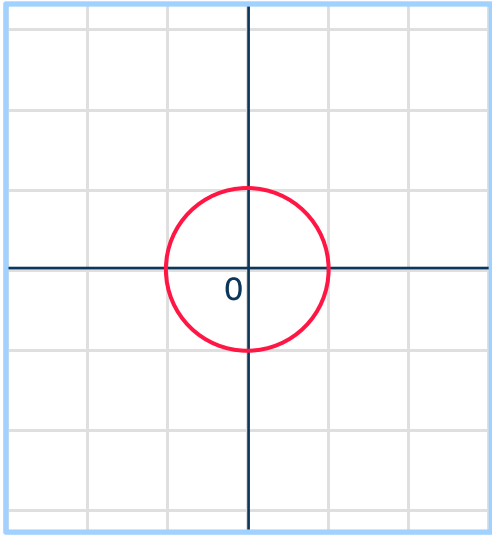
B.



C.



D.



- 29 The equation $7.6 - 0.2x = y$ models the gallons of soup left in a pot after x servings have been poured into small bowls. What is the meaning of the y -intercept?
- A. The number of servings of soup that have been poured into small bowls.
 - B. The gallons of soup that are poured into a small bowl for 1 serving.
 - C. The gallons of soup that were in the pot, before any soup was poured out.
 - D. The maximum number of servings of soup that can be poured from the pot.
-

- 30 A ball has a diameter of 12.4 cm. What is the *approximate* volume of the ball?

- A. 998 cm^3
- B. $7,986 \text{ cm}^3$
- C. 161 cm^3
- D. 483 cm^3

- 31 Talia has \$150 in her bank account and she adds \$18 each week. Liam has \$89 in his bank account and he adds \$20 each week. After 9 weeks, what is the difference in Talia and Liam's bank accounts?

A. \$59
B. \$312
C. \$269
D. \$43

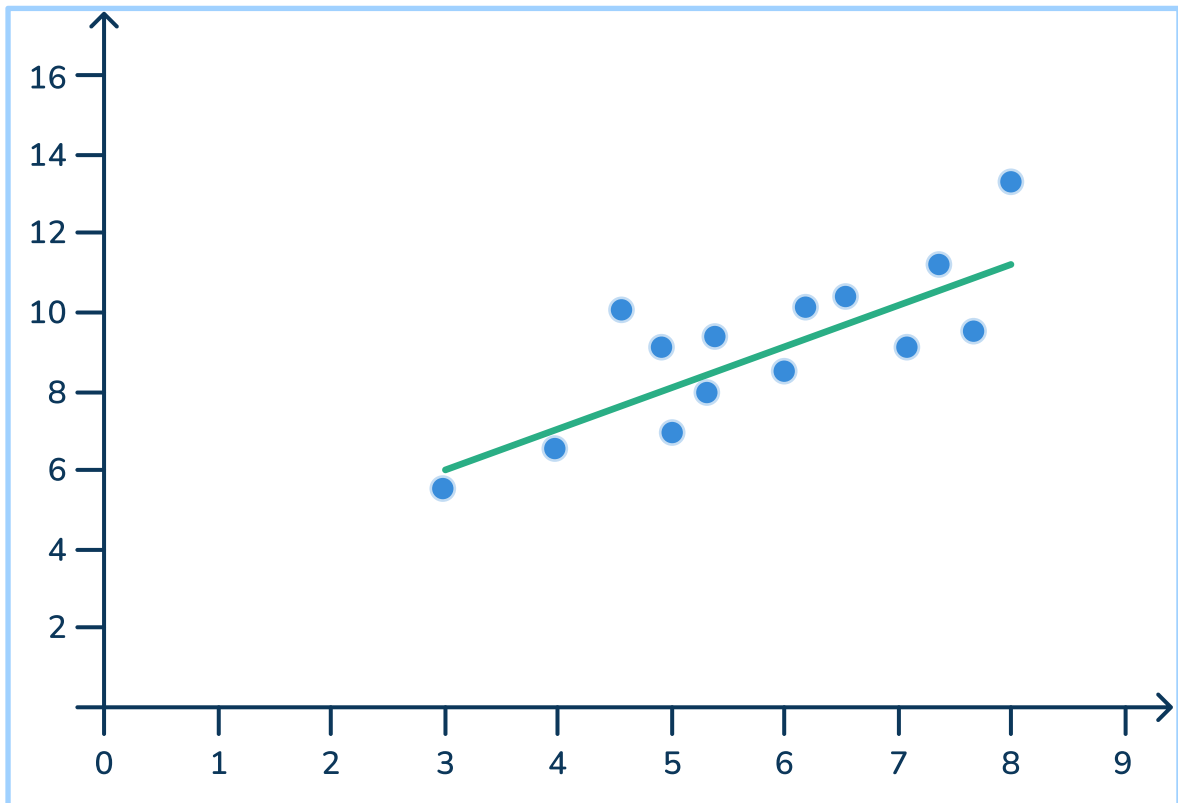
- 32 Which equation represents the graph of a line on the coordinate plane that has an x -intercept of $(2, 0)$ and a y -intercept of $(0, 8)$?

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

- 33 $\sqrt[3]{p} = 64$
Solve for p .

A. 4
B. 262,144
C. $21\frac{1}{3}$
D. $\sqrt{64}$

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

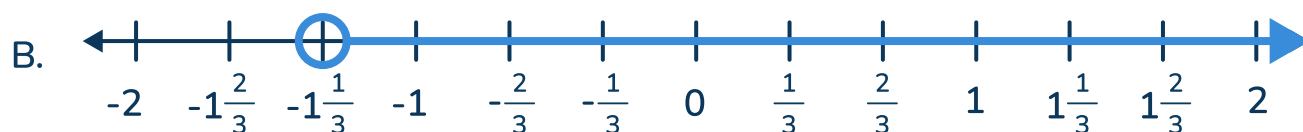
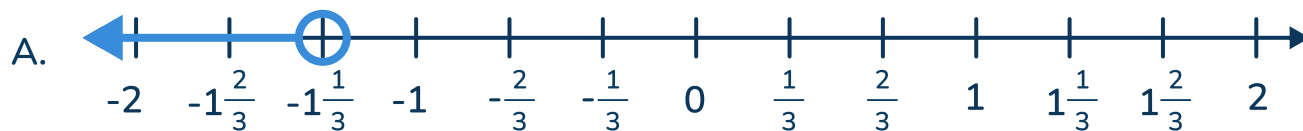


- A. $1.1x + 2.9 = y$
- B. $-0.9x + 4 = y$
- C. $1.8 + x = y$
- D. $2x + 3.1 = y$

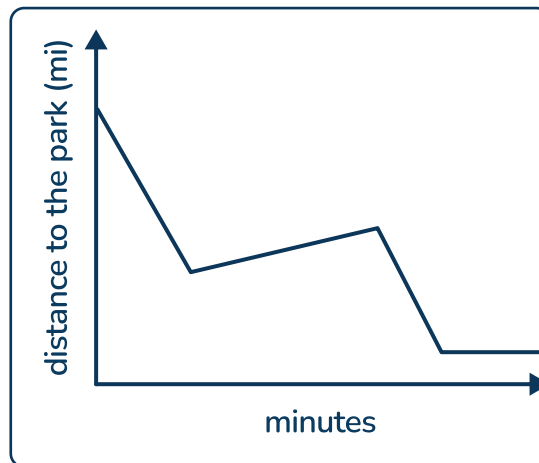
- 35 The distance from New York City to Albany is about 9.6×10^6 kilometers. The distance from New York City to Tokyo is about 4.3×10^8 kilometers. About how many times farther is the distance from New York City to Tokyo than Albany?

- A. 4.5×10^1
- B. 4.48×10^3
- C. 2.2×10^2
- D. 2.23×10^3

- 36 Which graph shows the solution to $\frac{8m + 4}{3} > \frac{1}{6}m - 2$?



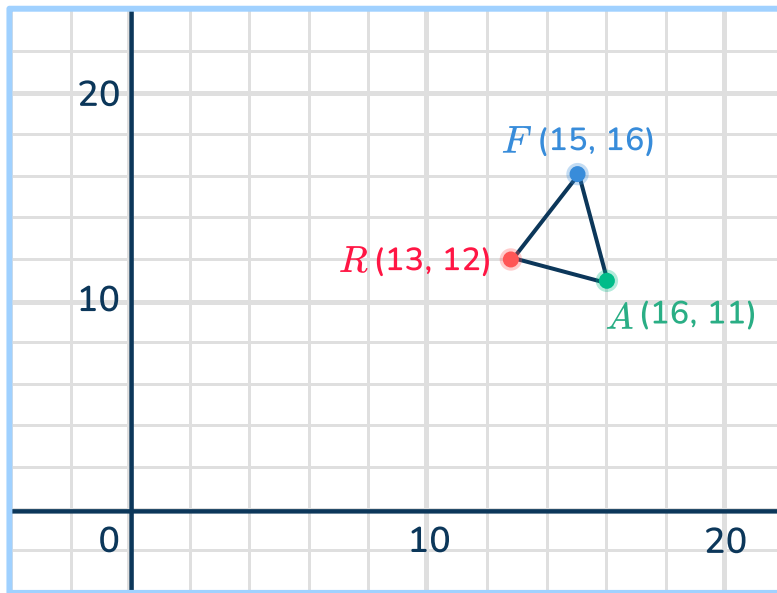
- 37 The graph shows the distance a car is from the park.



Which statement about the function is true?

- A. As the minutes increased, the car's distance from the park always decreased.
- B. The car started off at the park and then drove away.
- C. The car took 3 different streets to get to the park.
- D. The car got close to the park, but never arrived.

38



Triangle $R'F'A'$ is similar to the triangle shown above. What are the coordinates of $R'F'A'$?

- A. $R'(6.5, 6)$; $F'(7.5, 8)$; $A'(8, 6.5)$
- B. $R'(15, 13)$; $F'(17, 17)$; $A'(18, 12)$
- C. $R'(5.2, 4.8)$; $F'(6, 6.4)$; $A'(6.4, 4.4)$
- D. $R'(12, 13)$; $F'(16, 15)$; $A'(11, 16)$

39 Write 3,050,000,000,000 in scientific notation.

- A. 3.05×10^{12}
- B. 3.5×10^{13}
- C. 305×10^{11}
- D. 3.5×10^{14}

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

$$12x - 5 = k\left(\frac{2}{3}x - 4\right)$$

- A. 18
- B. 8
- C. $-\frac{2}{3}$
- D. 0

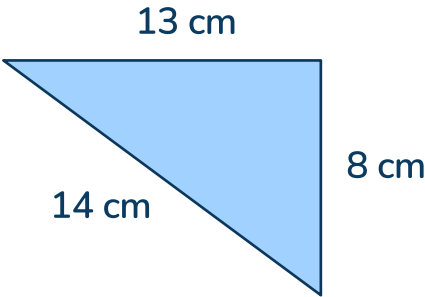
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- 41 Pentagon ABCDE has point D(−4, 2.5). If Pentagon ABCDE is reflected over the y -axis, to form Pentagon A'B'C'D'E', what would be the coordinate of D'?

- A. D'(4, 2.5)
- B. D'(−4, 2.5)
- C. D'(2.5, −4)
- D. D'(−2.5, −4)

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

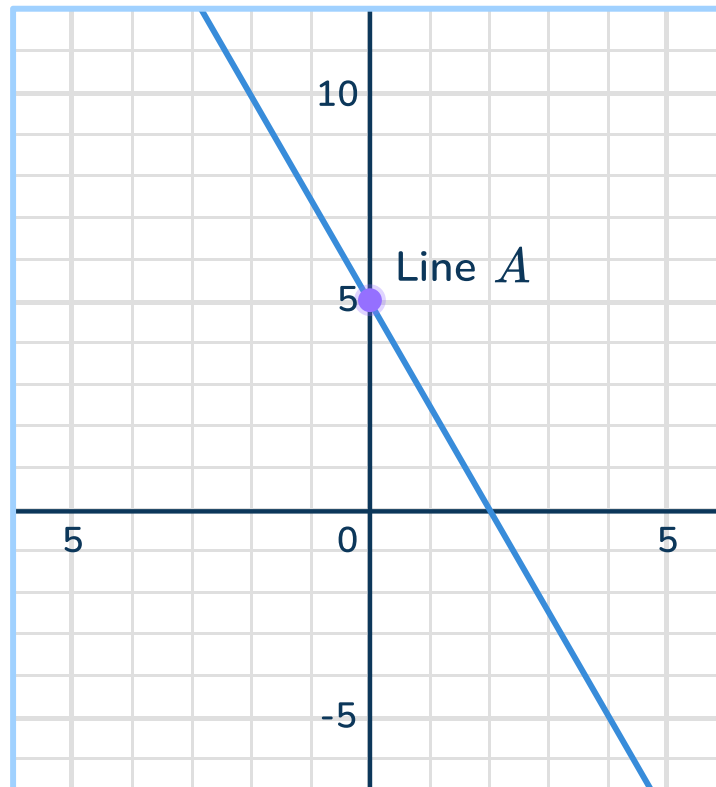
- A.
- | | | | | |
|-----|----|----|----|----|
| x | -4 | -2 | 0 | 2 |
| y | 13 | 18 | 23 | 28 |
- B.
- | | | | | |
|-----|----|----|-----|-----|
| x | 3 | 4 | 5 | 6 |
| y | -2 | -9 | -16 | -25 |
- C.
- | | | | | |
|-----|----------------|----------------|----------------|---|
| x | 1 | 2 | 3 | 4 |
| y | $1\frac{1}{2}$ | $1\frac{2}{3}$ | $1\frac{5}{6}$ | 2 |
- D.
- | | | | | |
|-----|---|----|------|------|
| x | 0 | 2 | 3 | 5 |
| y | 0 | -1 | -1.5 | -2.5 |

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



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

44

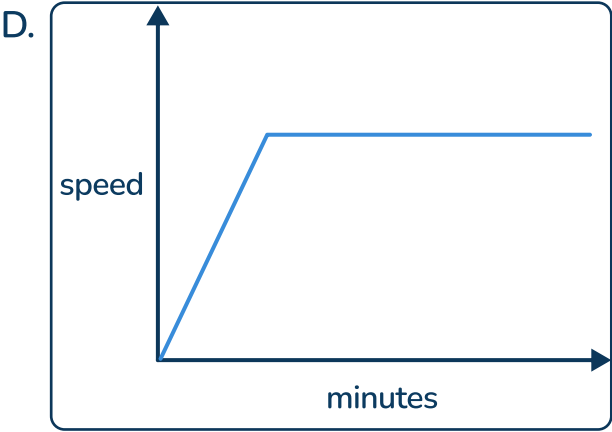
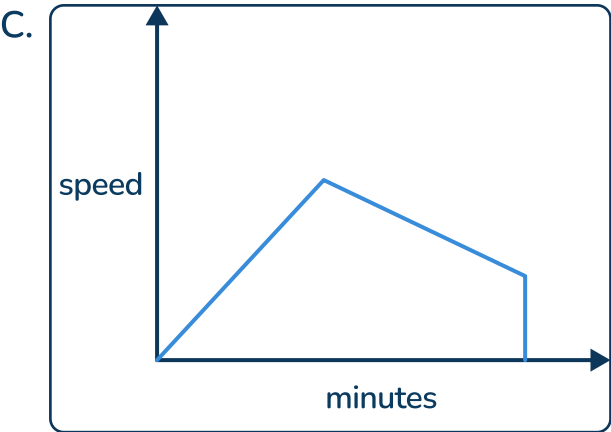
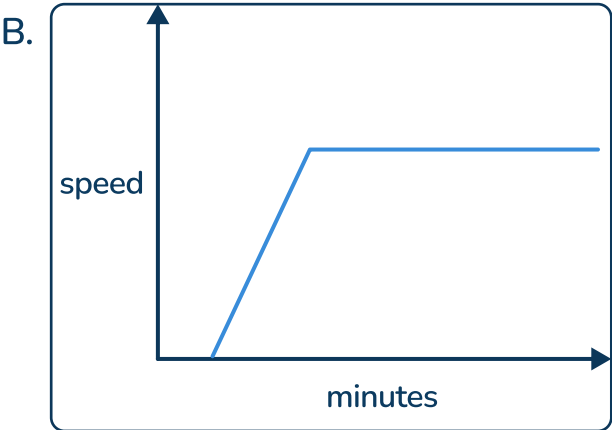
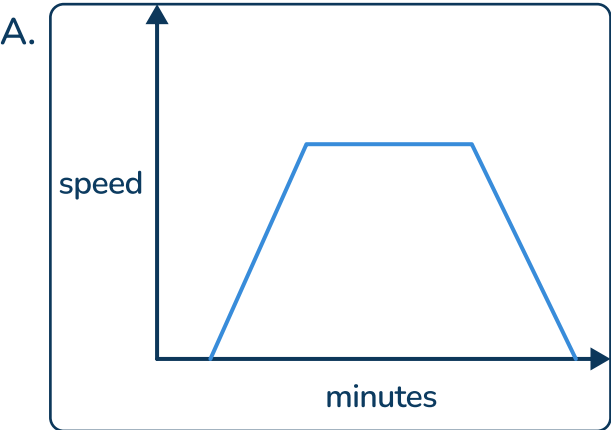


Which statement about Line A is true?

- A. The slope of Line A is half of the line $y = 5x - 5$
- B. The y - intercept of Line A is the same as the line $y = 5x + 2.5$
- C. Line A is parallel to the line $y = -2.5x + 0.5$
- D. The point $(-1, 6.75)$ is on Line A

45 The speed of a runner was measured in minutes. At first, the runner was standing still. After some minutes, they began to increase their speed for some minutes. Finally their speed stayed the same for the rest of the time.

Which is a graph of the function described above?



Answer Key - Multiple Choice

Item number	Correct answer	Standard(s)	DOK
1	D	NC.8.G.9	DOK 2
2	C	NC.8.G.3, NC.8.G.8	DOK 2
3	B	NC.8.G.8	DOK 1
4	D	NC.8.EE.2	DOK 1
5	A	NC.8.EE.1	DOK 2
6	C	NC.8.NS.1, NC.8.EE.2	DOK 1
7	D	NC.8.F.4	DOK 1
8	A	NC.8.G.3	DOK 2
9	B	NC.8.EE.4	DOK 1
10	B	NC.8.NS.2	DOK 2
11	$\frac{4}{10}$ or 0.4	NC.8.F.4	DOK 1
12	± 2	NC.8.EE.2	DOK 2
13	66	NC.8.G.5	DOK 2
14	$\frac{1}{2}$ or 0.5	NC.8.EE.7	DOK 2
15	54	NC.8.EE.2	DOK 3
16	17.3	NC.8.G.5	DOK 1
17	14	NC.8.EE.7	DOK 1

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Item number	Correct answer	Standard(s)	DOK
18	5	NC.8.EE.3	DOK 3
19	11.5	NC.8.F.4	DOK 1
20	12.4	NC.8.G.7	DOK 2
21	A	NC.8.SP.4	DOK 2
22	A	NC.8.F.1	DOK 1
23	C	NC.8.G.3	DOK 2
24	C	NC.8.F.4	DOK 2
25	D	NC.8.F.1, NC.8.F.3	DOK 2
26	B	NC.8.F.2	DOK 2
27	C	NC.8.SP.1	DOK 2
28	B	NC.8.F.1	DOK 1
29	C	NC.8.SP.3	DOK 2
30	A	NC.8.G.9	DOK 2
31	D	NC.8.EE.8	DOK 1
32	B	NC.8.F.4	DOK 2
33	B	NC.8.EE.2	DOK 1
34	A	NC.8.SP.2	DOK 2
35	A	NC.8.EE.4	DOK 2

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Item number	Correct answer	Standard(s)	DOK
36	B	NC.8.EE.7	DOK 2
37	D	NC.8.F.5	DOK 2
38	B	NC.8.G.4	DOK 2
39	A	NC.8.EE.3	DOK 1
40	A	NC.8.EE.7	DOK 2
41	A	NC.8.G.3	DOK 2
42	B	NC.8.F.3	DOK 1
43	A	NC.8.G.6	DOK 1
44	C	NC.8.F.2	DOK 2
45	B	NC.8.F.5	DOK 2

ANSWERS SORTED BY STRAND

NS			
6	C	NC.8.NS.1, NC.8.EE.2	DOK 1
10	B	NC.8.NS.2	DOK 2

EE			
4	D	NC.8.EE.2	DOK 1
5	A	NC.8.EE.1	DOK 2
9	B	NC.8.EE.4	DOK 1
12	± 2	NC.8.EE.2	DOK 2
14	$\frac{1}{2}$ or 0.5	NC.8.EE.7	DOK 2
15	54	NC.8.EE.2	DOK 3
17	14	NC.8.EE.7	DOK 1
18	5	NC.8.EE.3	DOK 3
31	D	NC.8.EE.8	DOK 1
33	B	NC.8.EE.2	DOK 1
35	A	NC.8.EE.4	DOK 2
36	B	NC.8.EE.7	DOK 2
39	A	NC.8.EE.3	DOK 1
40	A	NC.8.EE.7	DOK 2

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F			
7	D	NC.8.F.4	DOK 1
11	$\frac{4}{10}$ or 0.4	NC.8.F.4	DOK 1
19	11.5	NC.8.F.4	DOK 1
22	A	NC.8.F.1	DOK 1
24	C	NC.8.F.4	DOK 2
25	D	NC.8.F.1, NC.8.F.3	DOK 2
26	B	NC.8.F.2	DOK 2
28	B	NC.8.F.1	DOK 1
32	B	NC.8.F.4	DOK 2
37	D	NC.8.F.5	DOK 2
42	B	NC.8.F.3	DOK 1
44	C	NC.8.F.2	DOK 2
45	B	NC.8.F.5	DOK 2

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G			
1	D	NC.8.G.9	DOK 2
2	C	NC.8.G.3, NC.8.G.8	DOK 2
3	B	NC.8.G.8	DOK 1
8	A	NC.8.G.3	DOK 2
13	66	NC.8.G.5	DOK 2
16	17.3	NC.8.G.5	DOK 1
20	12.4	NC.8.G.7	DOK 2
23	C	NC.8.G.3	DOK 2
30	A	NC.8.G.9	DOK 2
34	A	NC.8.SP.2	DOK 2
38	B	NC.8.G.4	DOK 2
41	A	NC.8.G.3	DOK 2
43	A	NC.8.G.6	DOK 1




SP			
21	A	NC.8.SP.4	DOK 2
27	C	NC.8.SP.1	DOK 2
29	C	NC.8.SP.3	DOK 2
34	A	NC.8.SP.2	DOK 2

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