Do NOT Affix Student ID Label Here

A

Student Name _____

School Name _____

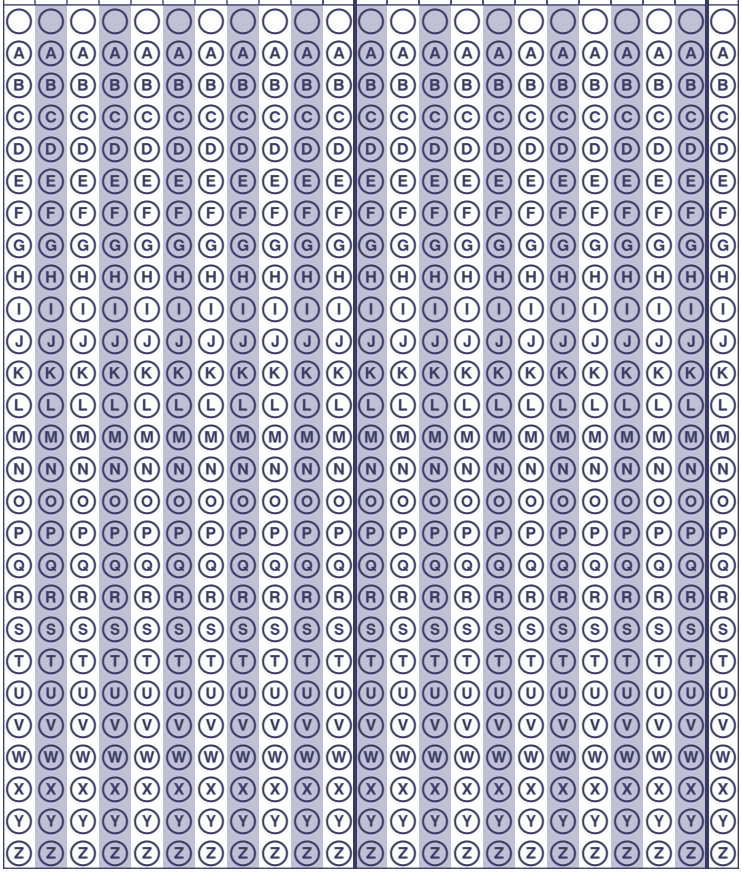
District Name/LEA _____

Grade 8

Mathematics

End-of-Year Assessment Practice Test

B Last Name | First Name | MI



C

Place the Student ID Label Here

D Gender

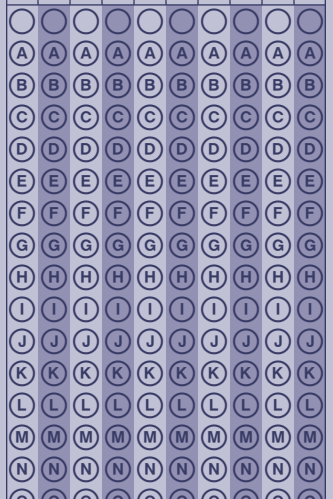
◯ Female ◯ Male

E Date of Birth

Day	Month	Year
0 1 2 3	◯ Jan	0 1 2
0 1 2 3 4 5 6 7 8 9	◯ Feb	0 1 2
0 1 2 3 4 5 6 7 8 9	◯ Mar	0 1 2
0 1 2 3 4 5 6 7 8 9	◯ Apr	0 1 2 3
0 1 2 3 4 5 6 7 8 9	◯ May	0 1 2 3 4
0 1 2 3 4 5 6 7 8 9	◯ Jun	0 1 2 3 4 5
0 1 2 3 4 5 6 7 8 9	◯ Jul	0 1 2 3 4 5 6
0 1 2 3 4 5 6 7 8 9	◯ Aug	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7 8 9	◯ Sep	0 1 2 3 4 5 6 7 8
0 1 2 3 4 5 6 7 8 9	◯ Oct	0 1 2 3 4 5 6 7 8 9
	◯ Nov	
	◯ Dec	

School Use Only

F State Student Identifier



Unit 1

Directions:

Today, you will be taking Unit 1 of the Grade 8 Mathematics End-of-Year Assessment Practice Test.

Read each question carefully. Some questions will ask you to choose one correct answer, while others will ask you to choose more than one correct answer. Mark your answers by filling in the circles in your test booklet for the answers you choose.

Do not make any stray marks in the test booklet. If you need to change an answer in your test booklet, be sure to erase your first answer completely.

Calculator Directions:

In the first section of this unit, you may not use a calculator. You will not be allowed to return to the non-calculator section of the test after you have started the calculator section of the test.

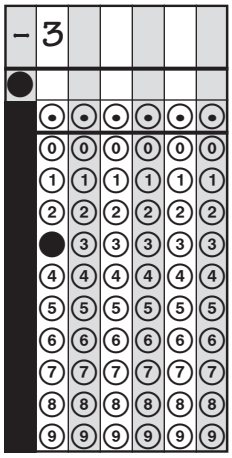
If you do not know the answer to a question, skip it and go on. If you finish the non-calculator section of Unit 1 early, you may review your answers and any questions you may have skipped in the non-calculator section ONLY.

Do NOT go on to the calculator section in Unit 1 until directed to do so.

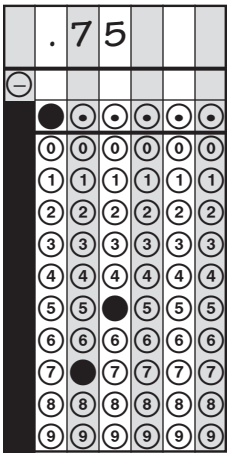
Directions for Completing the Answer Grids

1. Work the problem and find an answer.
2. Write your answer in the boxes at the top of the grid.
   - Print only one digit or symbol in each box. You may not need all the boxes to enter an answer, but do not leave a blank box in the middle of an answer.
3. Under each box in which you wrote your answer, fill in the bubble that matches the number or symbol you wrote above.
   - Fill in one and ONLY one bubble for each box. Do not fill in a bubble under an unused box.
   - Fill in each bubble by making a solid mark that completely fills the circle.
   - Fractions cannot be entered into an Answer Grid and will not be scored. Enter fractions as decimals.
4. See below for examples on how to correctly complete an answer grid.

To answer −3 in a question, fill in the answer grid as follows:



To answer .75 in a question, fill in the answer grid as follows:



GO ON TO NEXT PAGE

Unit 1 - Section 1 (Non-Calculator)

This unit has two sections: a non-calculator and a calculator section.

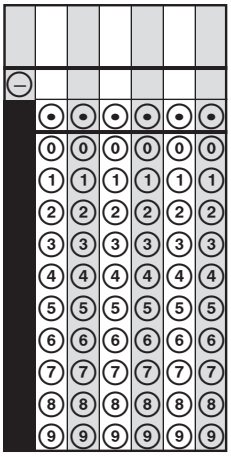
You will now take the first section of this unit in which you may not use a calculator. You will not be allowed to return to the non-calculator section of the test after you have started the calculator section. You will need to finish both sections within the allotted testing time.

Once you finish the non-calculator section, read the directions in your test booklet on how to continue.

1. Solve for x.

$$9(3 - 2x) = 2(10 - 8x)$$

Enter your answer in the box.



2. Which decimal is the equivalent of $\frac{6}{11}$?

Ⓐ $0.18\overline{3}$

Ⓑ $0.1\overline{83}$

Ⓒ $0.5\overline{4}$

Ⓓ $0.\overline{54}$

3. Two lines are graphed on the same coordinate plane. The lines only intersect at the point $(3, 6)$. Which of these systems of linear equations could represent the two lines?

Select **all** that apply.

Ⓐ $\begin{cases} x = 3 \\ y = 6 \end{cases}$

Ⓑ $\begin{cases} x = 6 + y \\ y = 3 + x \end{cases}$

Ⓒ $\begin{cases} y = 3x - 3 \\ y = x - 1 \end{cases}$

Ⓓ $\begin{cases} x = 3 + y \\ y = 6 + x \end{cases}$

Ⓔ $\begin{cases} y = x + 3 \\ y = 2x \end{cases}$

Use the information provided to answer Part A and Part B for question 4.

In a coordinate plane, triangle ABC has vertices $A(1, 1)$, $B(1, 5)$, and $C(5, 1)$.

4. Part A

Triangle ABC is reflected across the x-axis, resulting in triangle $A'B'C'$.

What are the coordinates of point B'?

Ⓐ $(-5, 1)$

Ⓑ $(-1, 5)$

Ⓒ $(1, -5)$

Ⓓ $(5, -1)$

Part B

Triangle $A'B'C'$ is then dilated by a scale factor of 2 with the origin as the center of dilation, resulting in triangle $A''B''C''$.

What is the length, in units, of $\overline{A''B''}$?

Ⓐ 2

Ⓑ 4

Ⓒ 6

Ⓓ 8

5. A relationship between x and y is defined by the equation $y = -\frac{4}{3}x + \frac{1}{3}$, where x is the input and y is the output. Which statements about the relationship are true?

Select **each** correct statement.

Ⓐ y is a function of x.

Ⓑ The graph of the relationship is a line.

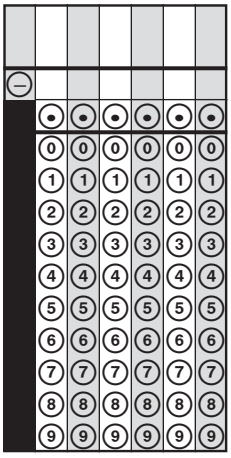
Ⓒ When the input is -3, the output is 4.

Ⓓ When the input is -2, the output is 3.

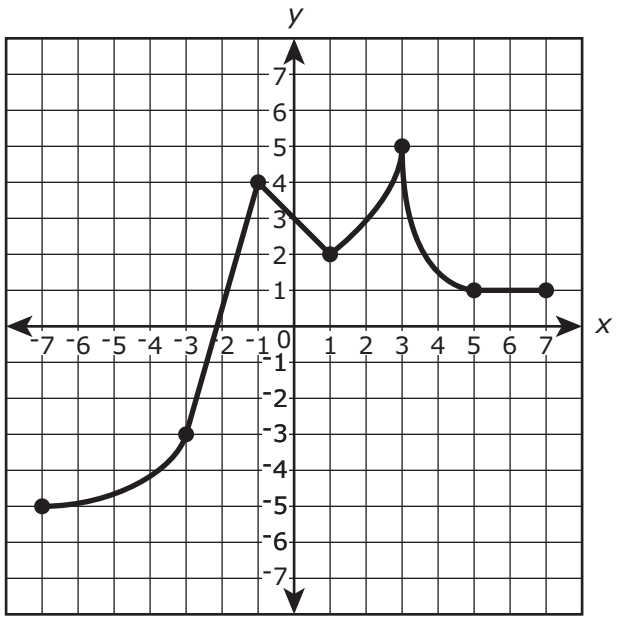
Ⓔ The y-intercept of the relationship is $(0, 1)$.

6. The body of a 154-pound person contains approximately 2×10^{-1} milligrams of gold and 6×10^{1} milligrams of aluminum. Based on this information, the number of milligrams of aluminum in the body is how many times the number of milligrams of gold in the body?

Enter your answer in the box.



7. The graph shows y as a function of x.



For which intervals is the function decreasing?

Select **all** that apply.

Ⓐ $-7 < x < -3$

Ⓑ $-3 < x < -1$

Ⓒ $-1 < x < 1$

Ⓓ $1 < x < 3$

Ⓔ $3 < x < 5$

Ⓕ $5 < x < 7$

8. Which system of equations has infinitely many solutions?

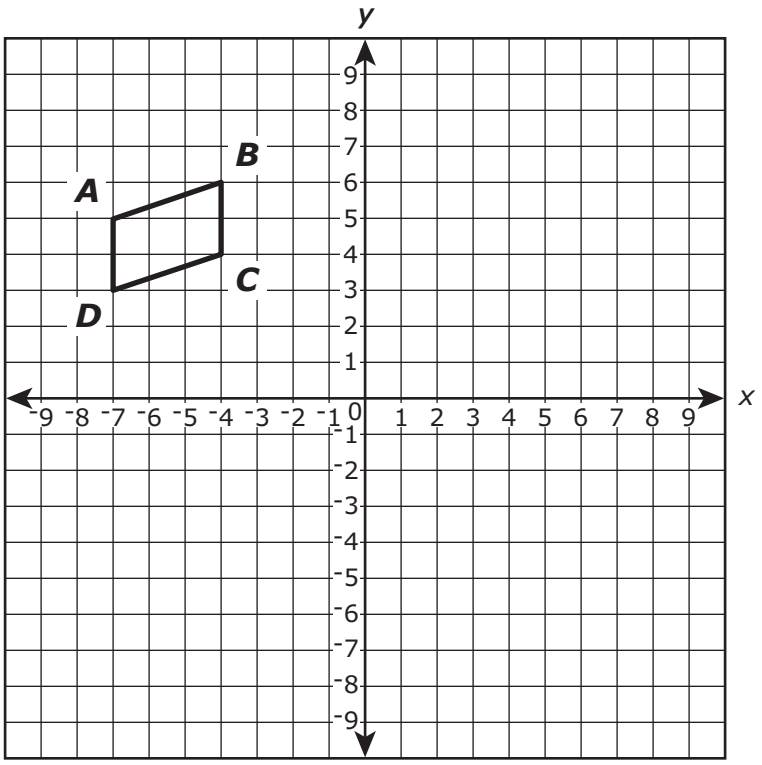
Ⓐ $\begin{cases} y = -x \\ 8y = -8x \end{cases}$

Ⓑ $\begin{cases} y = 3x + 1 \\ y = -4 \end{cases}$

Ⓒ $\begin{cases} x + y = 4 \\ 3x + 3y = 1 \end{cases}$

Ⓓ $\begin{cases} y = 2x + 1 \\ y = 5 - x \end{cases}$

9. Parallelogram $ABCD$ is shown on the coordinate plane.



Parallelogram $A'B'C'D'$ (not shown) is the image of parallelogram $ABCD$ after a rotation of 180° about the origin.

Which statements about parallelogram $A'B'C'D'$ are true?

Select **each** correct statement.

Ⓐ $\overline{A'B'}$ is parallel to $\overline{B'C'}$.

Ⓑ $\overline{A'B'}$ is parallel to $\overline{A'D'}$.

Ⓒ $\overline{A'B'}$ is parallel to $\overline{C'D'}$.

Ⓓ $\overline{A'D'}$ is parallel to $\overline{B'C'}$.

Ⓔ $\overline{A'D'}$ is parallel to $\overline{D'C'}$.

10. Which equation has **both** 4 and −4 as possible values of y?

Ⓐ $y^2 = 8$

Ⓑ $y^3 = 8$

Ⓒ $y^2 = 16$

Ⓓ $y^3 = 64$

11. When the input to a function is −2, the output is 4.

Which statement about this function **must** be true?

Ⓐ An input of −2 has infinitely many possible outputs.

Ⓑ An input of −2 has exactly one possible output.

Ⓒ An output of 4 has infinitely many inputs.

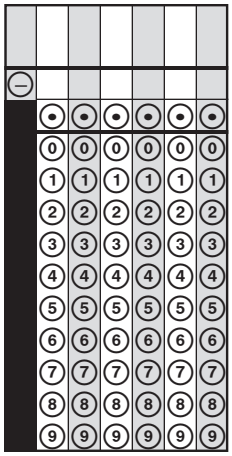
Ⓓ An output of 4 has exactly one input.

12. A system of equations is shown.

$$\begin{cases} x = 10 \\ 3x + 5y = 20 \end{cases}$$

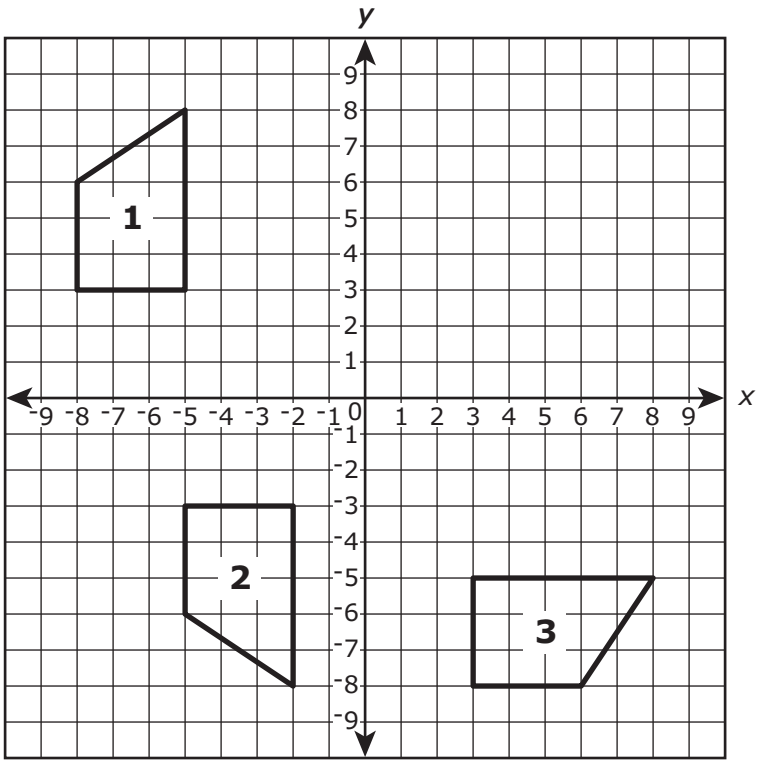
In the system of equations, what is the value of y?

Enter your answer in the box.



Use the information provided to answer Part A and Part B for question 13.

Three congruent figures are shown in the coordinate plane.



13. Part A

Which statement describes a possible sequence of transformations that transforms figure 1 into figure 2?

Ⓐ a reflection across the *x*-axis, followed by a translation 2 units to the left

Ⓑ a reflection across the *x*-axis, followed by a translation 3 units to the right

Ⓒ a rotation 180° clockwise about the origin, followed by a translation 2 units to the left

Ⓓ a rotation 180° clockwise about the origin, followed by a translation 3 units to the right

Part B

Figure 3 can also be created by transforming figure 1 with a sequence of two transformations.

Which statement describes a possible sequence of transformations that transforms figure 1 into figure 3?

Ⓐ a rotation 180° clockwise about the origin, followed by a translation 2 units to the left

Ⓑ a rotation 90° clockwise about the origin, followed by a reflection across the *x*-axis

Ⓒ a rotation 180° clockwise about the origin, followed by a reflection across the *y*-axis

Ⓓ a rotation 90° clockwise about the origin, followed by a translation 3 units to the right

14. Which expressions are equivalent to $\frac{3^{-8}}{3^{-4}}$?

Select **all** that apply.

Ⓐ 3^{-12}

Ⓑ 3^{-4}

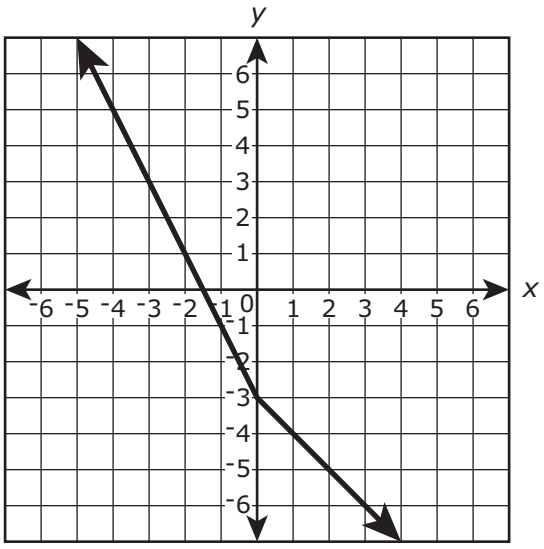
Ⓒ 3^{2}

Ⓓ $\frac{1}{3^{2}}$

Ⓔ $\frac{1}{3^{4}}$

Ⓕ $\frac{1}{3^{12}}$

15. The graph of a nonlinear function is shown on the coordinate plane. In the graph, y is a function of x.



When the input of the function is -4, what is the output of the function?

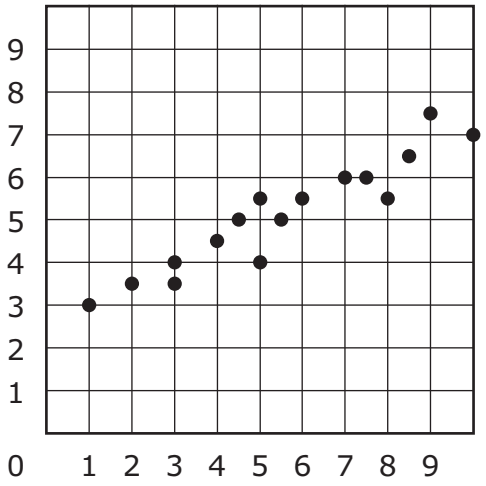
Ⓐ -5

Ⓑ -1

Ⓒ 1

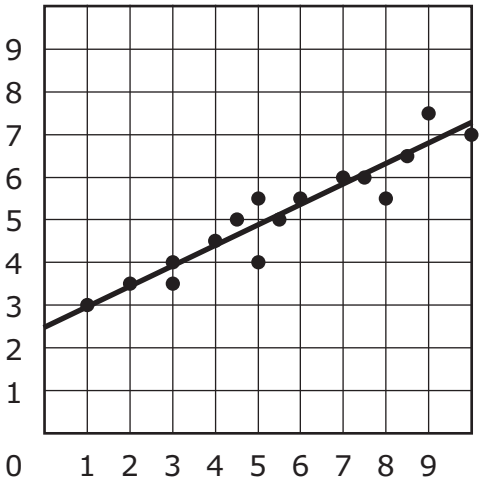
Ⓓ 5

16. A scatter plot is shown on the coordinate plane.

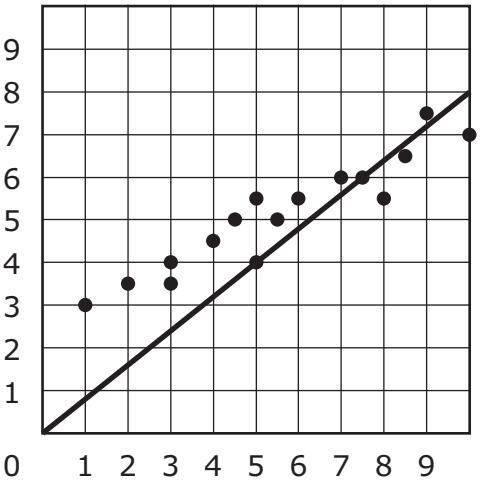


Which of these **most closely** approximates a line of best fit for the data in the scatter plot?

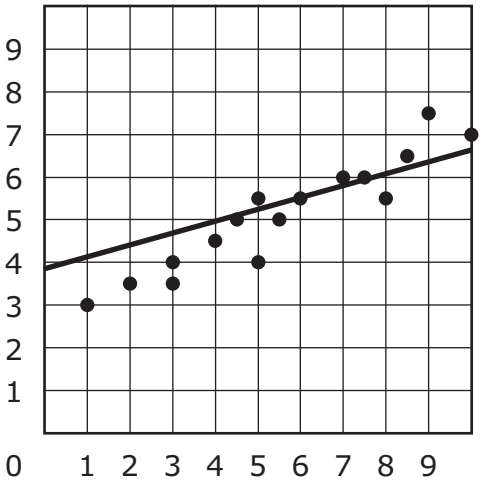
Ⓐ



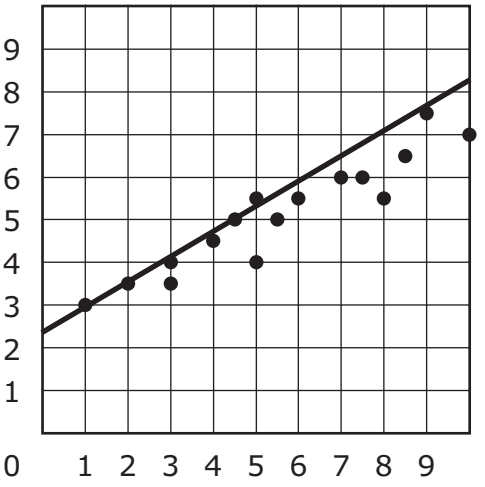
Ⓑ



Ⓒ



Ⓓ



GO ON ▶

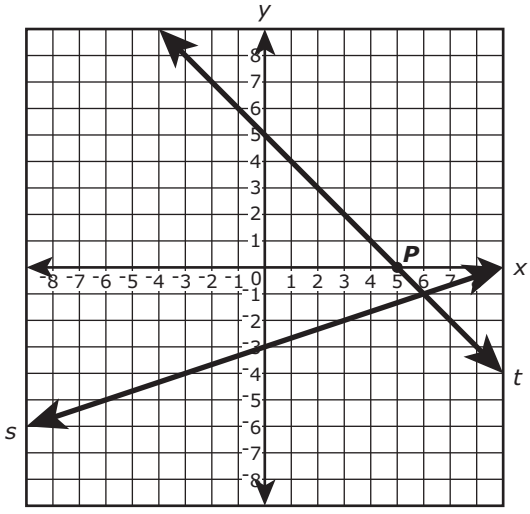
17. The equation of line s is $y = \frac{1}{3}x - 3$.

The equation of line t is $y = -x + 5$.

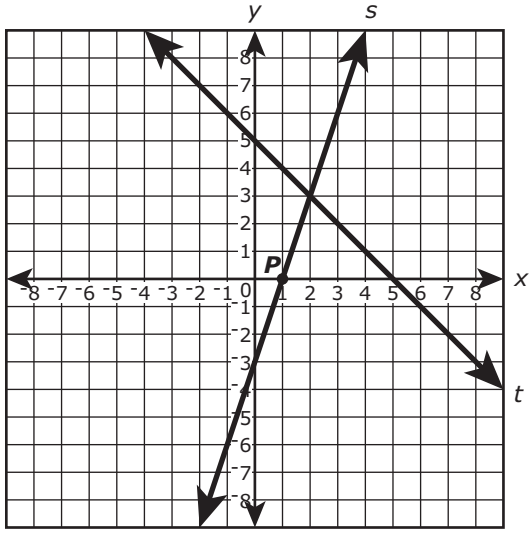
The equations of lines s and t form a system of equations. The solution to the system of equations is located at point P.

Which graph correctly shows line s, line t, and point P?

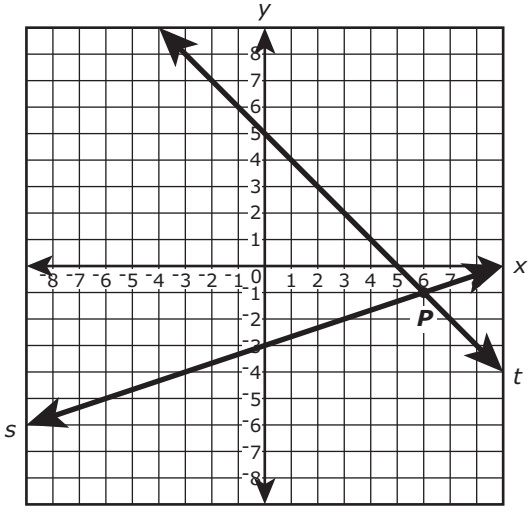
Ⓐ



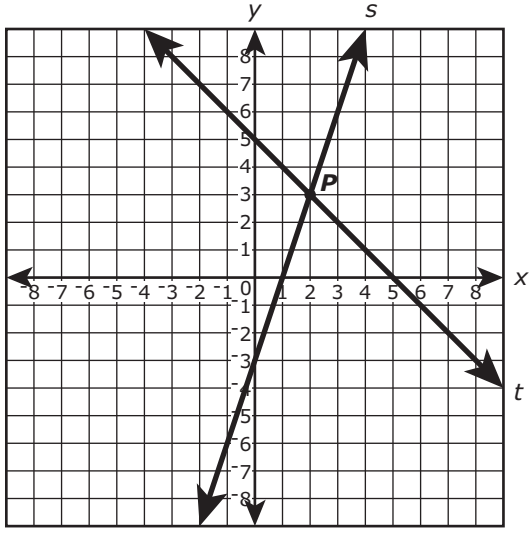
Ⓑ



Ⓒ



Ⓓ



18. Which equations define y as a nonlinear function of x?

Select **all** that apply.

Ⓐ $y = 7.4x$

Ⓑ $y = 2x + 5^2$

Ⓒ $y = 10x^2$

Ⓓ $y = 5x - 3$

Ⓔ $y = \frac{x}{2}$

Ⓕ $y = 2x^3 + 1$

19. What value of x makes the equation true?

$$\frac{1}{5}(2x - 10) + 4x = -3(\frac{1}{5}x + 4)$$

Ⓐ $-\frac{2}{5}$

Ⓑ $-1\frac{1}{5}$

Ⓒ -2

Ⓓ $-5\frac{5}{9}$

20. Which statement **best** describes the value of $\sqrt{8}$?

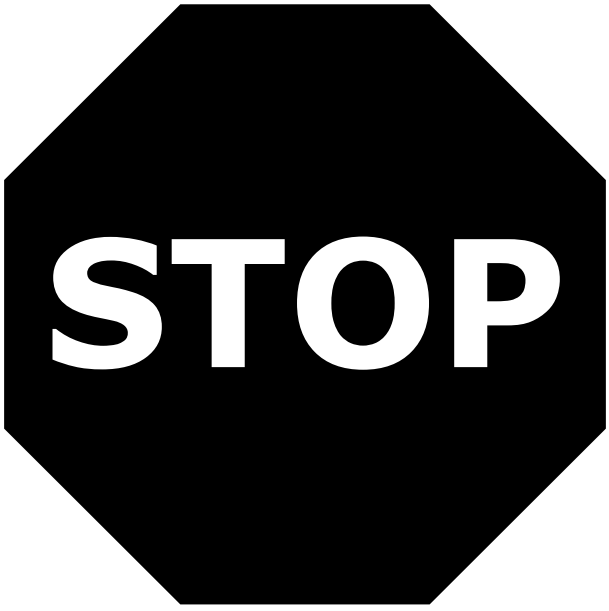
Ⓐ The value of $\sqrt{8}$ is between 2 and 2.5.

Ⓑ The value of $\sqrt{8}$ is between 2.5 and 3.

Ⓒ The value of $\sqrt{8}$ is between 3 and 3.5.

Ⓓ The value of $\sqrt{8}$ is between 3.5 and 4.

STOP



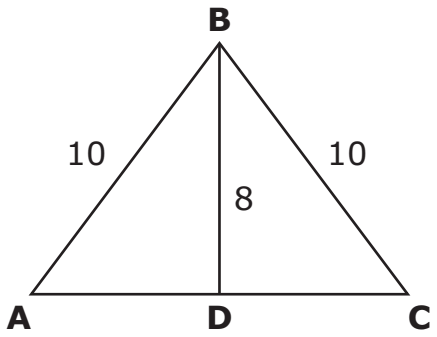
You have come to the end of the non-calculator section in Unit 1 of the test.

- **If you have time, review your answers in the non-calculator section ONLY. You will not be allowed to return to the non-calculator section once you have received your calculator.**
- **Then, raise your hand to receive your calculator before going on to the calculator section.**

Unit 1 - Section 2 (Calculator)

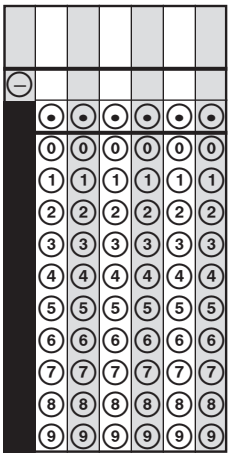
Once you have received your calculator, continue with the calculator section.

21. In $\triangle ABC$, $\overline{BD}$ is perpendicular to $\overline{AC}$. The dimensions are shown in centimeters.



What is the length, in centimeters, of $\overline{AC}$?

Enter your answer in the box.



GO ON ▶

Use the information provided to answer Part A and Part B for question 22.

Filipo is building a rectangular sandbox for his younger brother. The length of the sandbox is 1 foot longer than twice the width of the sandbox. The perimeter of the sandbox is 29 feet.

22. Part A

Which equation could be used to determine w, the width, in feet, of the sandbox?

Ⓐ $w + w + 2 = 29$

Ⓑ $w + 2w + 1 = 29$

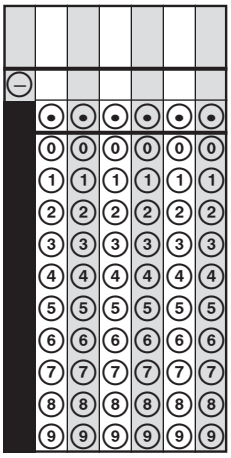
Ⓒ $2w + 2(w + 2) = 29$

Ⓓ $2w + 2(2w + 1) = 29$

Part B

What is the width, in feet, of the sandbox?

Enter your answer in the box.



23. The table shows the results of a random survey of students in grade 7 and grade 8. Every student surveyed gave a response. Each student was asked if he or she exercised less than 5 hours last week or 5 or more hours last week.

	Less than 5 Hours	5 or More Hours
Grade 7 Students	49	63
Grade 8 Students	58	51

Based on the results of the survey, which statements are true?

Select **each** correct statement.

Ⓐ More grade 8 students were surveyed than grade 7 students.

Ⓑ A total of 221 students were surveyed.

Ⓒ Less than 50% of the grade 8 students surveyed exercised 5 or more hours last week.

Ⓓ More than 50% of the students surveyed exercised less than 5 hours last week.

Ⓔ A total of 107 grade 7 students were surveyed.

Use the information provided to answer Part A through Part D for question 24.

A chemist has two acid solutions. Solution A contains 10% acid, and solution B contains 30% acid. He will mix the two solutions to make 10 liters of a third solution, solution C, containing 25% acid.

The system of equations shown can be used to represent this situation.

$$\begin{cases} x + y = 10 \\ 0.10x + 0.30y = 2.5 \end{cases}$$

24. Part A

Which statement about the system of equations is true?

Ⓐ In the system of equations, x represents the number of liters of acid in solution A, and y represents the number of liters of acid in solution B.

Ⓑ In the system of equations, x represents the number of liters of acid in solution B, and y represents the number of liters of acid in solution A.

Ⓒ In the system of equations, x represents the number of liters of solution A in solution C, and y represents the number of liters of solution B in solution C.

Ⓓ In the system of equations, x represents the number of liters of solution B in solution C, and y represents the number of liters of solution A in solution C.

Part B

What does the expression $0.30y$ represent?

Ⓐ the number of liters of acid in solution C that come from solution A

Ⓑ the number of liters of acid in solution C that come from solution B

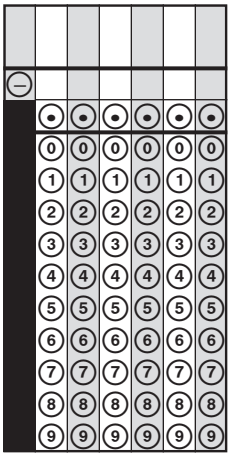
Ⓒ the number of liters of solution A in solution C

Ⓓ the number of liters of solution B in solution C

Part C

If the system of equations is graphed in a coordinate plane, what is the *x*-coordinate of the intersection of the two lines?

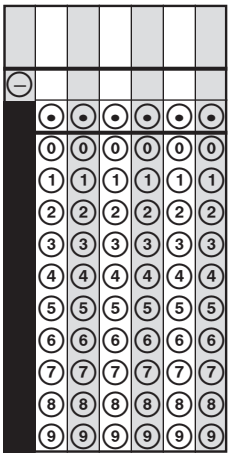
Enter your answer in the box.



Part D

What is the number of liters of solution B the chemist mixes with solution A to create solution C containing 25% acid?

Enter your answer in the box.



25. Function A and Function B are linear functions. Function A is represented by the table of values. Function B is represented by the equation.

Function A

x	y
1	2
3	10
4	14
7	26

Function B

$y = 3x + 4$

Which statements about the properties of Function A and Function B are true?

Select **each** correct statement.

Ⓐ The y-intercept of Function A is equal to the y-intercept of Function B.

Ⓑ The y-intercept of Function A is less than the y-intercept of Function B.

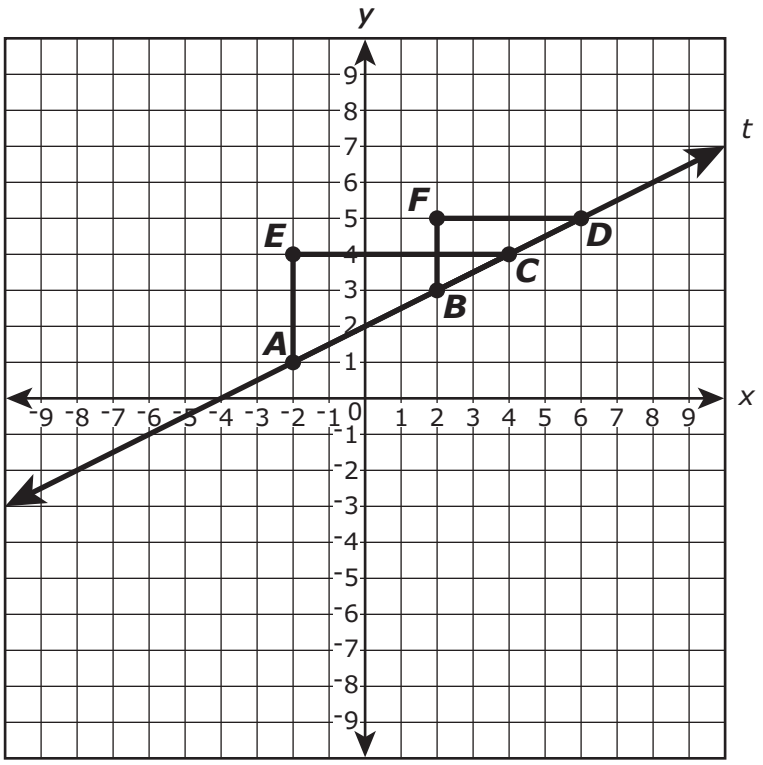
Ⓒ The y-intercept of Function A is greater than the y-intercept of Function B.

Ⓓ The rate of change of Function A is equal to the rate of change of Function B.

Ⓔ The rate of change of Function A is less than the rate of change of Function B.

Ⓕ The rate of change of Function A is greater than the rate of change of Function B.

26. Line t and $\triangle ECA$ and $\triangle FDB$ are shown on the coordinate plane.



Which statements are true?

Select **all** that apply.

Ⓐ The slope of $\overline{AC}$ is equal to the slope of $\overline{BC}$.

Ⓑ The slope of $\overline{AC}$ is equal to the slope of $\overline{BD}$.

Ⓒ The slope of $\overline{AC}$ is equal to the slope of line t.

Ⓓ The slope of line t is equal to $\frac{EC}{AE}$.

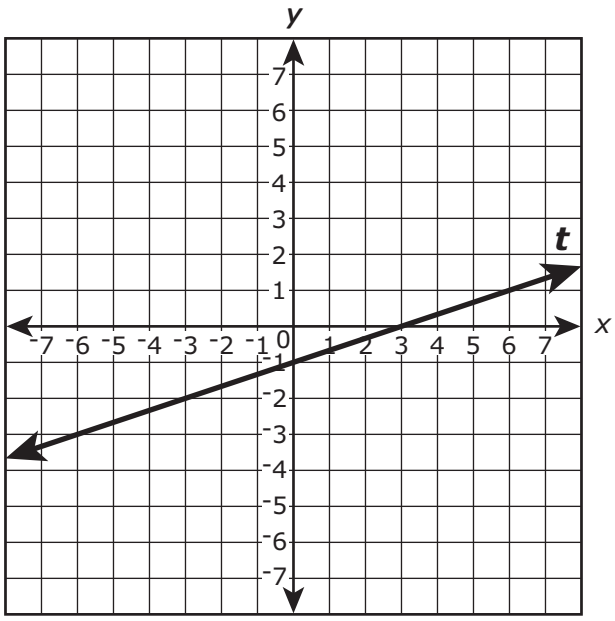
Ⓔ The slope of line t is equal to $\frac{FB}{FD}$.

Ⓕ The slope of line t is equal to $\frac{AE}{FD}$.

GO ON ▶

Use the information provided to answer Part A through Part D for question 27.

Line *t* is shown in the coordinate plane.



27. Part A

What is the slope of line *t*?

Ⓐ 3

Ⓑ $\frac{1}{3}$

Ⓒ $-\frac{1}{3}$

Ⓓ -3

Part B

What is the y-intercept of line t?

Ⓐ -1

Ⓑ $-\frac{1}{3}$

Ⓒ $\frac{1}{3}$

Ⓓ 3

Part C

Line s (not shown) has the same slope and passes through the point $(0, 4)$. Which table represents 4 points on line s?

Ⓐ

x	y
−6	2
−3	3
0	4
3	5

Ⓑ

x	y
−6	−14
−3	−5
0	4
3	13

Ⓒ

x	y
−6	6
−3	5
0	4
3	3

Ⓓ

x	y
−6	22
−3	13
0	4
3	−5

Part D

Which equation could represent line *s*?

Ⓐ $y = -\frac{1}{3}x + 4$

Ⓑ $y = -3x + 4$

Ⓒ $y = 3x + 4$

Ⓓ $y = \frac{1}{3}x + 4$

28. Relationship A is defined by the equation $y = 9x$.

Some values of relationship B are shown in the table.

Relationship B

x	y
0	0
3	34.5
5	57.5
8	92

Both relationships represent a direct proportion between x and y. The rate of change of relationship B is how many units greater than the rate of change of relationship A?

Ⓐ 1.5

Ⓑ 2.5

Ⓒ 25.5

Ⓓ 43.5

Use the information provided to answer Part A and Part B for question 29.

Eric planted a seedling in his garden and recorded its height each week. The equation shown can be used to estimate the height, h, in inches, of the seedling by the end of each week, w, after it was planted.

$$h = \frac{3}{4}w + \frac{9}{4}$$

29. Part A

What does the slope of the graph of the equation $h = \frac{3}{4}w + \frac{9}{4}$ represent?

Ⓐ the height, in inches, of the seedling after w weeks

Ⓑ the height, in inches, of the seedling when Eric first planted it

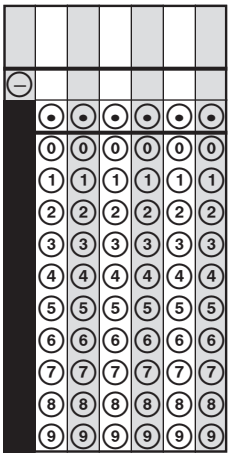
Ⓒ the increase in the height, in inches, of the seedling each week

Ⓓ the total increase in the height, in inches, of the seedling after w weeks

Part B

The equation $h = \frac{3}{4}w + \frac{9}{4}$ estimates the height of the seedling to be 8.25 inches after how many weeks?

Enter your answer in the box.



30. Function A is a linear function. Some values of Function A are shown in the table.

Function A

x	y
−1	−5
3	3
5	7
6	9

Function B is a linear function with a y-intercept of 3 and an x-intercept of -5.

Which statement is true?

Ⓐ The slope of Function A is greater than the slope of Function B, and the y-intercept of Function A is greater than the y-intercept of Function B.

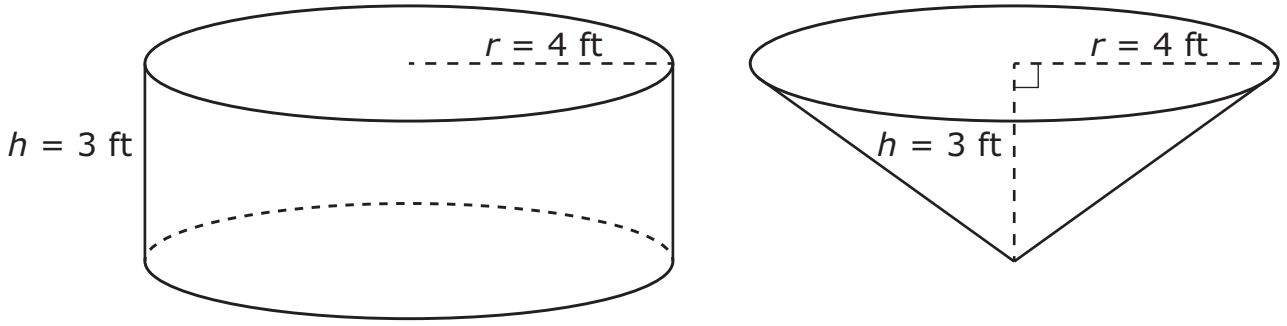
Ⓑ The slope of Function A is less than the slope of Function B, and the y-intercept of Function A is greater than the y-intercept of Function B.

Ⓒ The slope of Function A is greater than the slope of Function B, and the y-intercept of Function A is less than the y-intercept of Function B.

Ⓓ The slope of Function A is less than the slope of Function B, and the y-intercept of Function A is less than the y-intercept of Function B.

Use the information provided to answer Part A and Part B for question 31.

The figure shows a right-circular cylinder and a right-circular cone. The cylinder and the cone have the same base and the same height.



31. Part A

What is the volume, in cubic feet, of the cone?

Ⓐ 12π

Ⓑ 16π

Ⓒ 36π

Ⓓ 48π

Part B

What is the ratio of the cone's volume to the cylinder's volume?

Ⓐ $\frac{1}{1}$

Ⓑ $\frac{1}{2}$

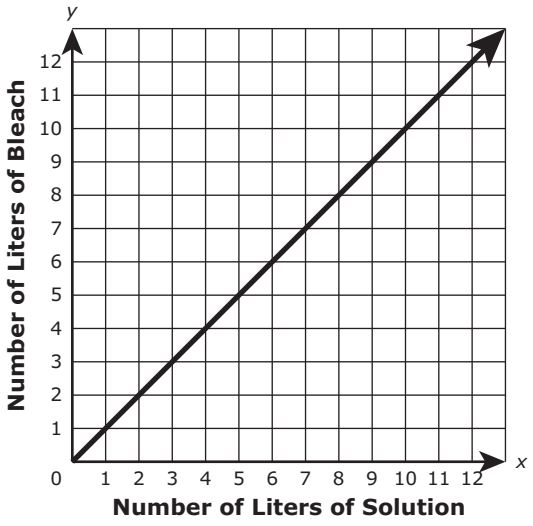
Ⓒ $\frac{1}{3}$

Ⓓ $\frac{1}{4}$

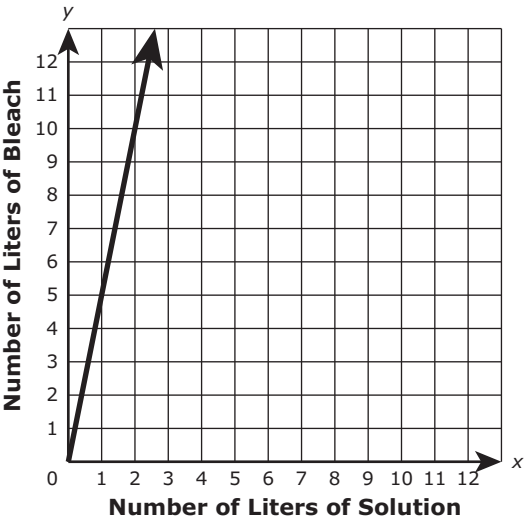
32. A solution is 20% bleach.

Which graph represents the number of liters of bleach, y, contained in x liters of solution?

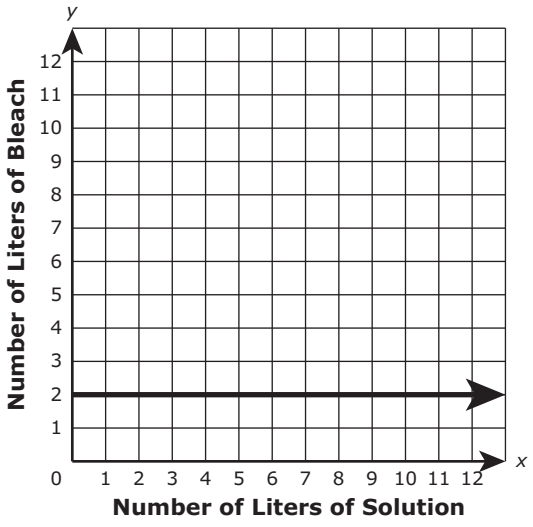
Ⓐ



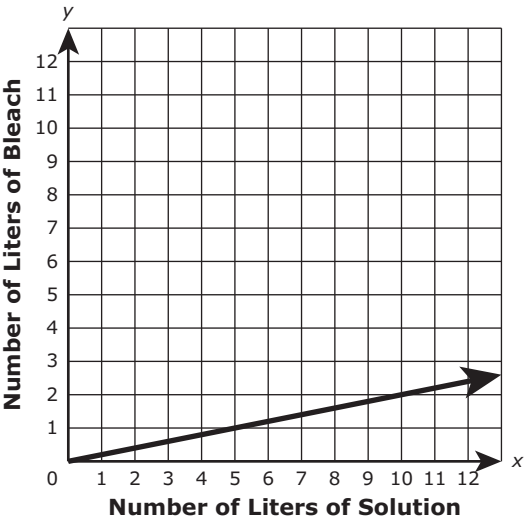
Ⓑ



Ⓒ



Ⓓ



GO ON ▶

33. The erosion rate along a section of the coast is approximately 3 feet per year. Which of these **best** approximates this rate of erosion?

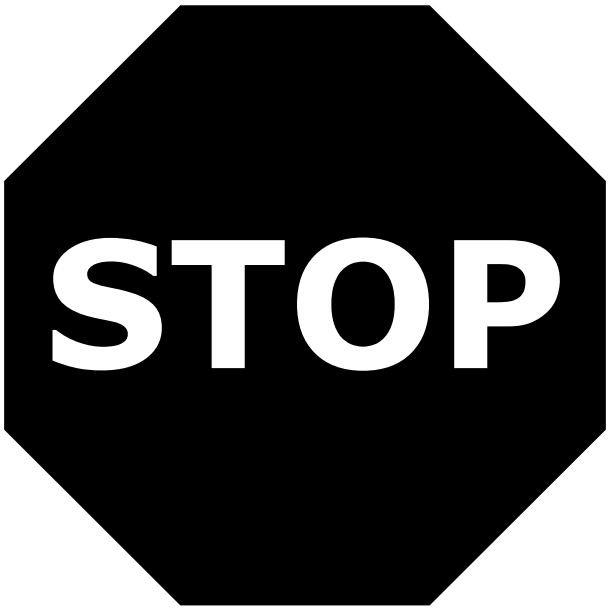
Ⓐ 9.9×10^{-2} inches per day

Ⓑ 9.9×10^{-2} inches per month

Ⓒ 9.9×10^{-2} feet per day

Ⓓ 9.9×10^{-2} feet per month

STOP



You have come to the end of the calculator section in Unit 1 of the test.

- **Review your answers in the calculator section of Unit 1 only.**
- **Then, close your test booklet and raise your hand to turn in your test materials.**

8 - MTH

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