Alliance for College-Ready Public Schools

Alliance 2019—2020 Practice Interim Assessment 3: CPM IM1

Directions: Answer all the questions on the test. When you are finished with a question, go on to the next question.

Read questions 1 through 4 and select the best answer.

1 **The water at the end of a pier was 28 meters deep at midnight. As the tide came in, the water depth increased at a rate of 0.012 meters per minute. Which equation can be solved to find *t*, the time in minutes it took the water depth to reach 30 meters?**

A. $\frac{t}{0.012} + 28 = 30$

B. $\frac{t}{0.012} - 28 = 30$

C. $0.012t + 28 = 30$

D. $0.012t - 28 = 30$

2 **Anita is filling a small pool for her kids. Currently, there are 60 gallons of water in the pool and she is filling the pool at a rate of 50 gallons every 5 minutes. The pool holds 200 gallons of water. Which equation represents the amount of minutes (*m*) that it will take to fill the pool?**

A. $-10m + 200 = 60$

B. $-50m + 200 = 60$

C. $-10m + 140 = 60$

D. $-50m + 140 = 60$

3 **On Thursday, a local high school presold tickets for Friday night's basketball game.**

- They presold n student tickets for \$3 each.
- They presold twice as many adult tickets as student tickets.
- Each adult ticket sold for \$5 each.
- They sold 13 more adult tickets at the game.
- The total ticket sales was \$286.

Which equation can be used to determine the number of presold student tickets?

A. $n + (3 + 5)(2n + 13) = 286$

B. $3n + 5(2n + 13) = 286$

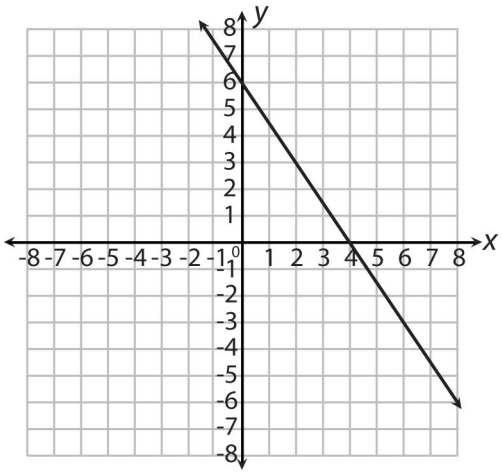
C. $(n + 3) + (n + 5) + 13 = 286$

D. $3n + 5n + 13 = 286$

Go On

4 **Which best represents the graph of the equation $3x - 2y = 6$?**

A.



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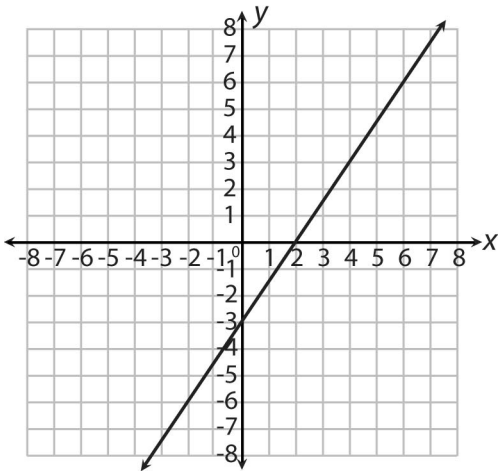

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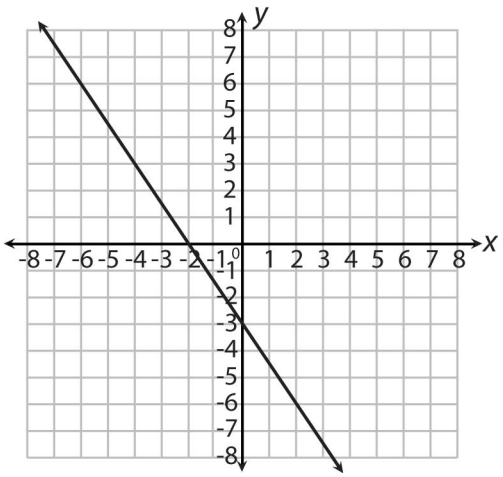

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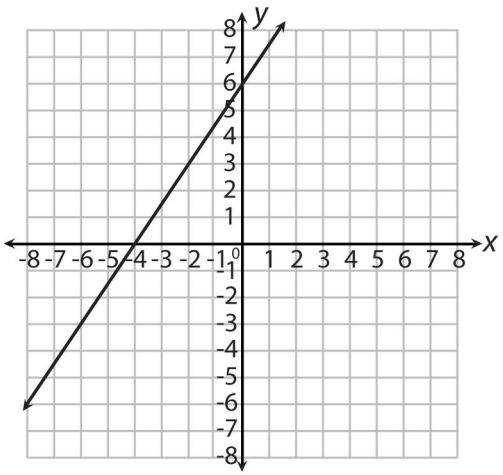


Go On

5 **Two different taxicab companies offer different rates. The Yellow Taxicab Company charges a flat rate of $5.00 plus a rate of $3.00 per mile traveled. The Black Taxicab Company charges a flat rate of $10.00 plus a rate of $2.00 per mile traveled.**
Graph the functions that show the cost of traveling *n* miles with each taxicab.

This question must be answered online.

6 **What is the result of solving this equation for *y*?**

$$ax - by = c$$

Use the on-screen keyboard to type the correct equation in the box below.

This question must be answered online.

Read questions 7 through 10 and select the best answer.

7 **What value of *z* makes this equation true?**

$$10 - 3(z - 2) = 5z + 7$$

A. $z = \frac{3}{2}$

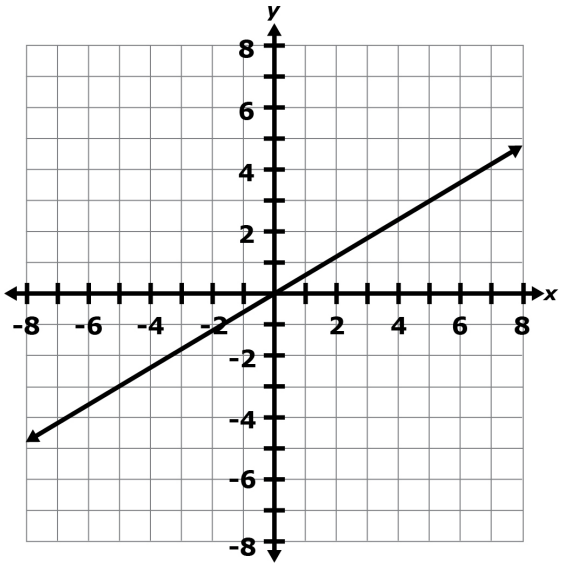
B. $z = \frac{9}{8}$

C. $z = -\frac{9}{2}$

D. $z = -\frac{3}{8}$

Go On

8 **Which of these is a solution to the equation graphed below?**



A. $(-5, 3)$

B. $(-3, -5)$

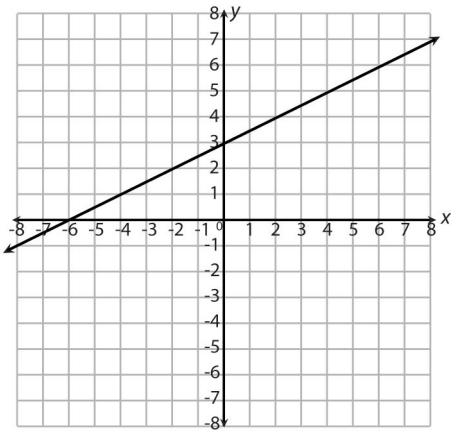
C. $(3, 5)$

D. $(5, 3)$

Go On

9 **Which of the following shows the graph of $y = \frac{1}{2}x + 3$?**

A.



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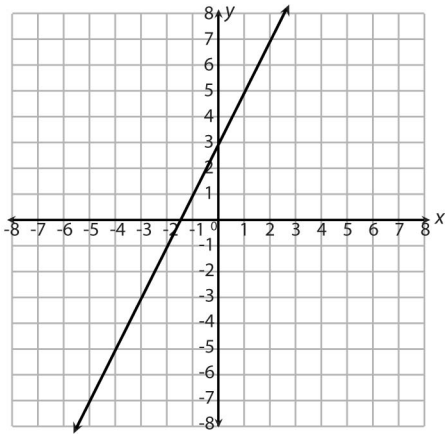

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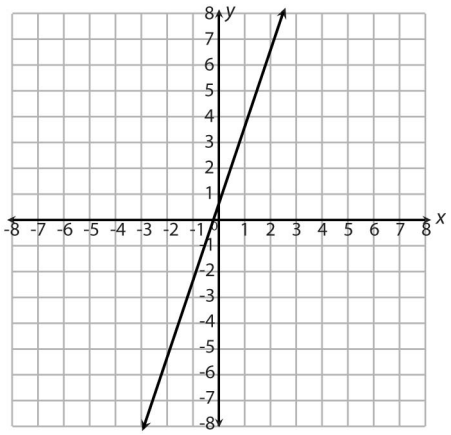

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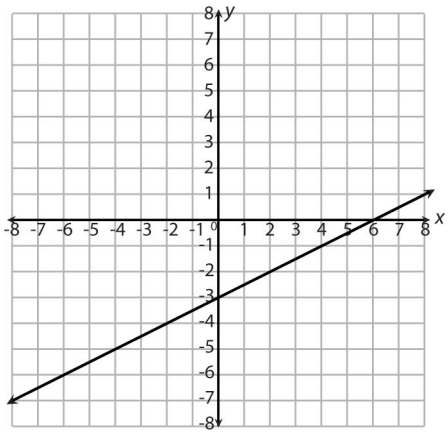

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10 **Michael has a new swimming pool. To maintain it and keep it clean, he has to add chlorine to the water. He adds 28 ounces of chlorine in the first week. Michael then adds 10 ounces of chlorine every Saturday morning in the weeks that follow because 45% of the chlorine in the pool evaporates each week. Michael keeps a record of the amount of chlorine, in ounces, that is in the pool each week, as shown in the table.**

Week	Amount of Chlorine, in ounces
1	28
2	25.4
3	23.97
4	23.18

Let $f(x)$ represent the amount of chlorine in the pool in week x, where . Which of the following equations correctly represents $f(x)$ in terms of for all $x > 1$?

A. $f(x) = -0.45 \cdot f(x-1) + 10$

B. $f(x) = 0.45 \cdot f(x-1) + 10$

C. $f(x) = 0.55 \cdot f(x-1) + 10$

D. $f(x) = 0.55(x-1) + 10$

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11 **Lolita swims laps every day at a local pool. The function $f(w)$ represents the number of laps that she swims each day during week w.**
$f(1) = 10$
$f(w) = 2 + f(w-1)$
Complete the table to show the number of laps Lolita swims each day during the indicated weeks.

This question must be answered online.

Go On

Read questions 12 through 16 and select the best answer.

12 **A sequence is shown below.**

45, 38, 31, 24, 17, ...

Which function defines the n^{th} term of the sequence?

A. $A(n) = 52 - 7n$

B. $A(n) = 52 + 7n$

C. $A(n) = 45 - 7n$

D. $A(n) = 46 - n$

13 **Look at this sequence.**

$$\frac{3}{2}, \frac{9}{4}, \frac{27}{8}, \frac{81}{16}, \ldots$$

Which function represents the sequence? Assume the domain for the function is integers greater than or equal to 1.

A. $h(x) = \left(\frac{2}{3}\right)^x$

B. $h(x) = x^{\frac{2}{3}}$

C. $h(x) = x^{\frac{3}{2}}$

D. $h(x) = \left(\frac{3}{2}\right)^x$

14 **Alfred tried to solve the system of equations shown below.**

$$\begin{cases} 2x - y = 4 \\ 5x + 4y = -10 \end{cases}$$

He concluded that the system has an infinite number of solutions. Which is the BEST evaluation of Alfred's conclusion?

A. He is correct. If the first equation is multiplied by 4 and subtracted from the second equation, the result is $-3x + 8y = -14$, which means the system has an infinite number of solutions.

B. He is incorrect. If the first equation is multiplied by 4 and added to the second equation, the result is $13x = 6$, which leads to exactly one solution.

C. He is correct. Both equations describe lines that have infinitely many solutions.

D. He is incorrect. For any positive value of x, the corresponding value of y is negative, which means the system has no solution.

15 **Two systems of equations are shown below.**

$$\begin{cases} 2x + 3y = 1 \\ 3x - y = -6 \end{cases} \qquad \begin{cases} 6x + 9y = 3 \\ -6x + 2y = c \end{cases}$$

To make the systems equivalent, what must be the value of c in the second system?

A. –12

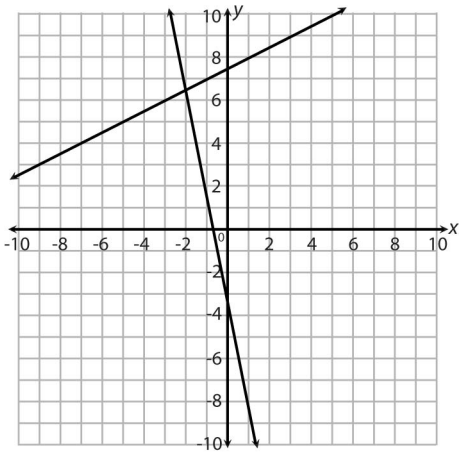
B. –2

C. 3

D. 12

16 **Which graph shows the solution of** $\begin{cases} x - 2y = 15 \\ 10x + 2y = 7 \end{cases}$ **?**

A.



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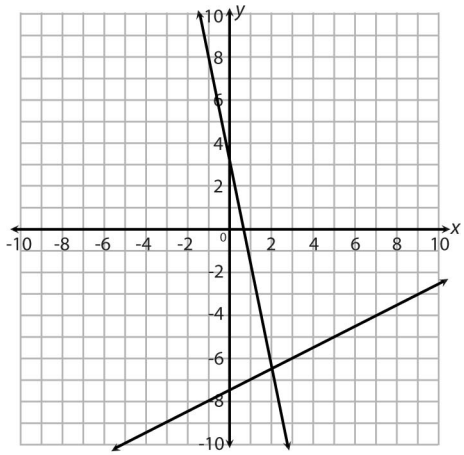

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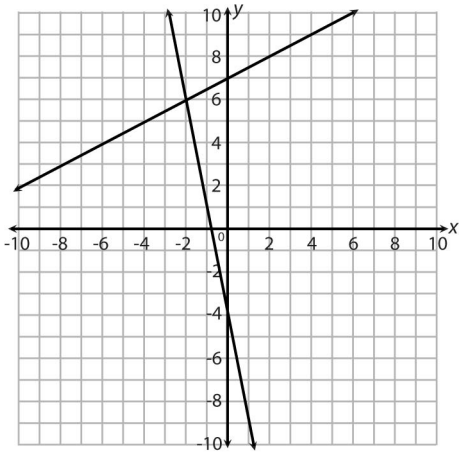

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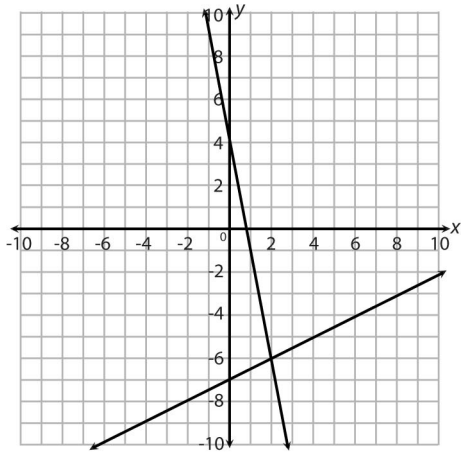


Go On

Complete question 17 in the space shown.

17 **Kara and Ian went shopping for apples, a, and bananas, b. Kara bought 6 apples and 5 bananas for $4.54. Ian bought 3 apples and 7 bananas for $3.17. Their purchases can be modeled by the system of equations.**

$$\begin{cases} 6a + 5b = 4.54 \\ 3a + 7b = 3.17 \end{cases}$$

Solve the system of equations for a and b. Show your work.

Explain what each numerical solution represents.

18 **A triangle is shown on the coordinate plane below.**

Transform this triangle by using the following descriptions to create an image of the triangle.

- Reflect it across the line $y = -1$.
- Then rotate it 90° clockwise around the origin.

Use the segment tool to graph each side of the image of the triangle.

This question must be answered online.

19 **A figure drawn on a coordinate plane has vertices at $(1, 2)$ $(1, 4)$ $(-4, 4)$ and $(-2, 2)$ On the coordinate plane below, plot the vertices of the figure after a rotation of 270° clockwise about the origin.**

This question must be answered online.

Read question 20 and select the best answer.

20 **In $\triangle DEF$, $m\angle D = 48°$ and $m\angle E = 101°$. This triangle is rotated 75° counterclockwise about its center. What is $m\angle F$?**

A. 74°

B. 31°

C. 26°

D. 44°

Question 21 may have more than one correct answer. Select ALL the answers that are correct.

21 **A student claims that two triangles are congruent. Select *each* process that the student can take to justify the claim.**

A. Show that the corresponding sides of the two triangles are congruent.

B. Show that there exists a sequence of rigid motions that carries one triangle onto the other.

C. Show that there is a sequence of rigid motions and dilations that carries one triangle onto the other.

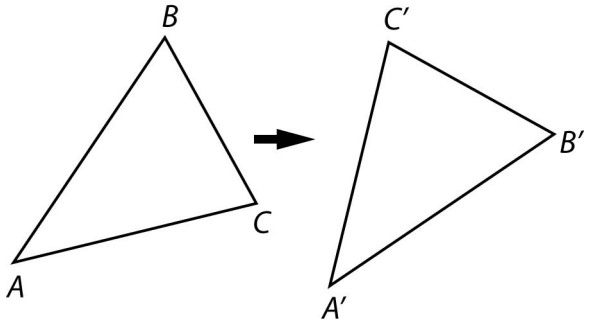
D. Show that the corresponding angles of the two triangles are congruent.

E. Show that there must be a sequence of translations that carries one triangle onto the other.

Go On

Read questions 22 through 23 and select the best answer.

22 **In this diagram, $\triangle ABC$ has been mapped onto $\triangle A'B'C'$ by a series of rigid motions.**



Which statement best describes one way to prove that the triangles are congruent?

A. Rigid motions preserve distance and angle measure. This means that $\overline{AB} \cong \overline{A'B'}$, $\overline{BC} \cong \overline{B'C'}$, and $\angle B \cong \angle B'$, so the triangles are congruent by SAS.

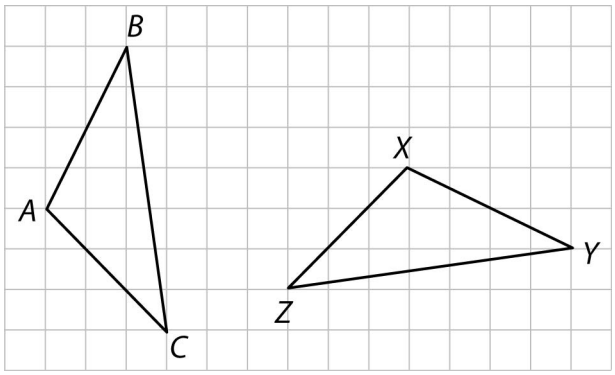
B. Rigid motions preserve distance and angle measure. This means that $\overline{AB} \cong \overline{A'B'}$, $\overline{BC} \cong \overline{B'C'}$, and $\angle A \cong \angle A'$, so the triangles are congruent by SAS.

C. Measure the areas of $\triangle ABC$ and $\triangle A'B'C'$ to confirm that their areas are equal. This means that $\overline{AB} \cong \overline{A'B'}$, $\overline{BC} \cong \overline{B'C'}$, and $\overline{AC} \cong \overline{A'C'}$, so the triangles are congruent by SSS.

D. Measure the perimeters of $\triangle ABC$ and $\triangle A'B'C'$ to confirm that their perimeters are equal. This means that $\overline{AB} \cong \overline{A'B'}$, $\overline{BC} \cong \overline{B'C'}$, and $\overline{AC} \cong \overline{A'C'}$, so the triangles are congruent by SSS.

Go On

23 **$\triangle ABC$ was transformed to create $\triangle XYZ$, both shown below. Kelly thinks that the transformation was a rigid motion, but she is not certain.**



Knowing which of these would allow her to use the SAS congruency postulate to prove that a rigid motion occurred?

A. $\overline{AB} \cong \overline{XY}$, $\overline{BC} \cong \overline{YZ}$, $\angle C \cong \angle Z$

B. $\angle A \cong \angle X$, $\angle B \cong \angle Y$, $\angle C \cong \angle Z$

C. $\overline{AB} \cong \overline{XY}$, $\overline{BC} \cong \overline{YZ}$, $\angle A \cong \angle X$

D. $\overline{AB} \cong \overline{XY}$, $\overline{AC} \cong \overline{XZ}$, $\angle A \cong \angle X$