

Question ID bd329fe0

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: bd329fe0

$$\begin{aligned}x + y &= 18 \\ 5y &= x\end{aligned}$$

What is the solution (x, y) to the given system of equations?

- A. $(15, 3)$
- B. $(16, 2)$
- C. $(17, 1)$
- D. $(18, 0)$

ID: bd329fe0 Answer

Correct Answer: A

Rationale

Choice A is correct. The second equation in the given system defines the value of x as $5y$. Substituting $5y$ for x into the first equation yields $5y + y = 18$ or $6y = 18$. Dividing each side of this equation by 6 yields $y = 3$. Substituting 3 for y in the second equation yields $5(3) = x$ or $x = 15$. Therefore, the solution x, y to the given system of equations is 15, 3.

Choice B is incorrect. Substituting 16 for x and 2 for y in the second equation yields $5(2) = 16$, which is not true. Therefore, 16, 2 is not a solution to the given system of equations.

Choice C is incorrect. Substituting 17 for x and 1 for y in the second equation yields $5(1) = 17$, which is not true. Therefore, 17, 1 is not a solution to the given system of equations.

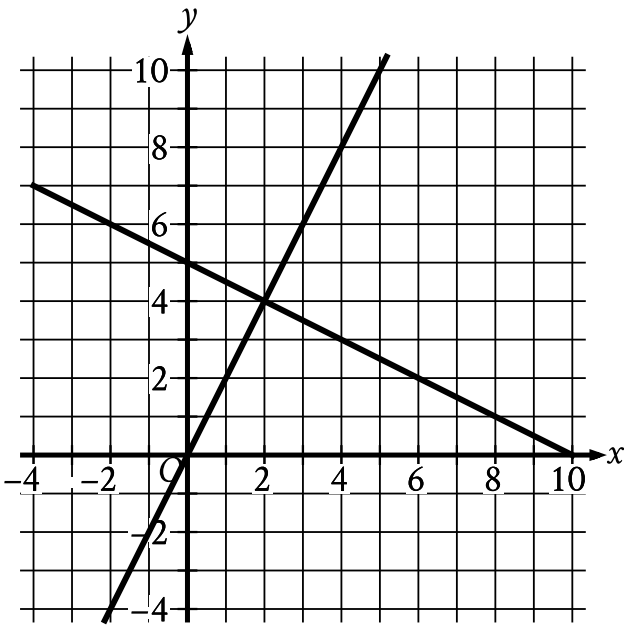
Choice D is incorrect. Substituting 18 for x and 0 for y in the second equation yields $5(0) = 18$, which is not true. Therefore, 18, 0 is not a solution to the given system of equations.

Question Difficulty: Easy

Question ID abe39d7f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: abe39d7f



The graph of a system of linear equations is shown. What is the solution (x, y) to the system?

- A. $(0, 5)$
- B. $(2, 4)$
- C. $(5, 10)$
- D. $(10, 0)$

ID: abe39d7f Answer

Correct Answer: B

Rationale

Choice B is correct. A solution to a system of equations must be the solution to each equation in the system. It follows that if x, y is a solution to the system, the point x, y lies on the graph in the xy -plane of each equation in the system. The point that lies on each graph of the system of linear equations shown is their intersection point 2, 4. Therefore, the solution to the system is 2, 4.

Choice A is incorrect. The point 0, 5 lies on one, but not both, of the graphs of the linear equations shown.

Choice C is incorrect. The point 5, 10 lies on one, but not both, of the graphs of the linear equations shown.

Choice D is incorrect. The point 10, 0 lies on one, but not both, of the graphs of the linear equations shown.

Question ID a0903fed

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: a0903fed

$$y = 12x - 20$$
$$y = 28$$

What is the solution (x, y) to the given system of equations?

- A. $(4, 28)$
- B. $(20, 28)$
- C. $(28, 4)$
- D. $(28, 20)$

ID: a0903fed Answer

Correct Answer: A

Rationale

Choice A is correct. The second equation in the given system is $y = 28$. Substituting 28 for y in the first equation in the given system yields $28 = 12x - 20$. Adding 20 to both sides of this equation yields $48 = 12x$. Dividing both sides of this equation by 12 yields $4 = x$. Therefore, the solution x, y to the given system of equations is 4, 28.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect. This is the solution y, x , not x, y , to the given system of equations.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID f75e6a40

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: f75e6a40

$$\begin{aligned}x &= 10 \\ y &= x + 21\end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of y ?

- A. 2.1
- B. 10
- C. 21
- D. 31

ID: f75e6a40 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given by the first equation in the given system of equations that $x = 10$. Substituting 10 for x in the second equation in the given system yields $y = 10 + 21$, or $y = 31$. Therefore, the value of y is 31.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect. This is the value of x , not the value of y .

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 028a4b2c

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 028a4b2c

$$\begin{aligned}x &= 5 \\ y &= x - 8\end{aligned}$$

Which of the following points (x,y) is the solution to the given system of equations in the xy -plane?

- A. $(0,0)$
- B. $(5,-3)$
- C. $(5,-8)$
- D. $(5,8)$

ID: 028a4b2c Answer

Correct Answer: B

Rationale

Choice B is correct. A solution to a system of equations in the xy -plane is a point x,y that lies on the graph of each equation in the system. The first equation given is $x = 5$. Substituting 5 for x in the second given equation yields $y = 5 - 8$, or $y = -3$. It follows that in the xy -plane, the point 5, - 3 lies on the graph of each equation in the system. Therefore, the solution to the given system of equations in the xy -plane is 5, - 3.

Choice A is incorrect. The point 0,0 doesn't lie on the graph of either equation in the given system.

Choice C is incorrect. The point 5, - 8 doesn't lie on the graph of the second equation in the given system.

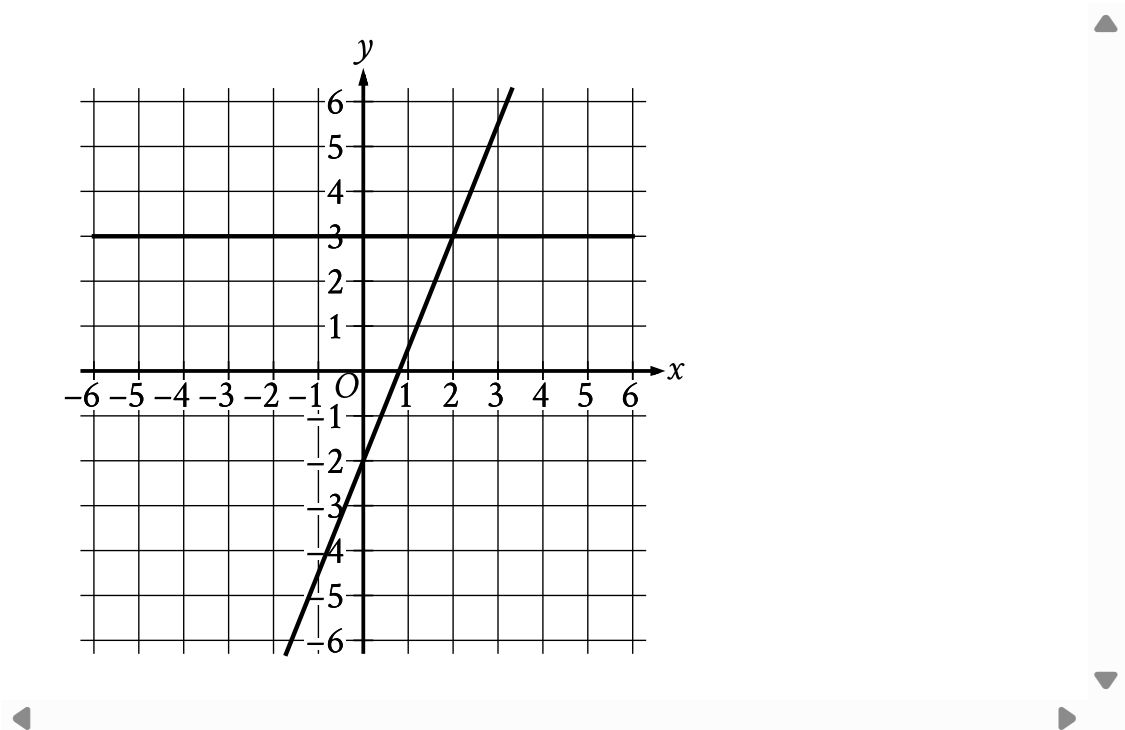
Choice D is incorrect. The point 5,8 doesn't lie on the graph of the second equation in the given system.

Question Difficulty: Easy

Question ID 1e5390fd

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 1e5390fd



The graph of a system of linear equations is shown. What is the solution (x, y) to the system?

- A. $(0, 3)$
- B. $(1, 3)$
- C. $(2, 3)$
- D. $(3, 3)$

ID: 1e5390fd Answer

Correct Answer: C

Rationale

Choice C is correct. The solution to this system of linear equations is represented by the point that lies on both lines shown, or the point of intersection of the two lines. According to the graph, the point of intersection occurs when $x = 2$ and $y = 3$, or at the point 2, 3. Therefore, the solution x, y to the system is 2, 3.

Choice A is incorrect and may result from conceptual or calculation errors.

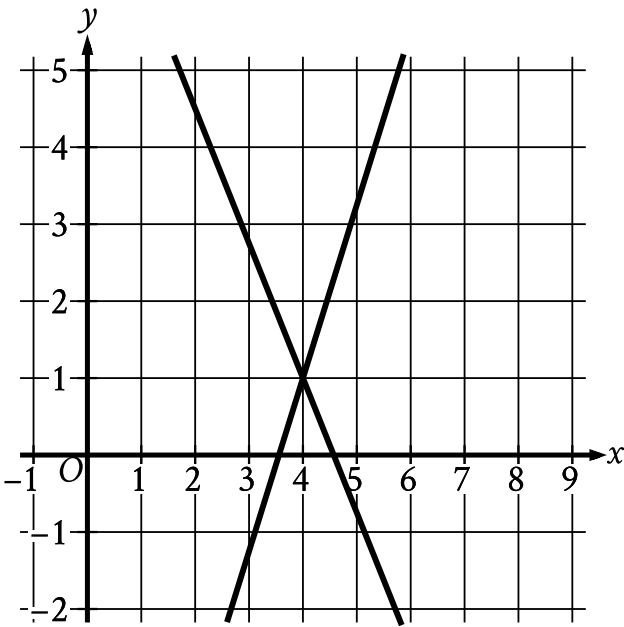
Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question ID 25d0931c

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 25d0931c



The graph of a system of linear equations is shown. The solution to the system is (x, y) . What is the value of x ?

ID: 25d0931c Answer

Correct Answer: 4

Rationale

The correct answer is 4. A solution to a system of equations must satisfy each equation in the system. It follows that if x, y is a solution to the system, the point x, y lies on the graph in the xy -plane of each equation in the system. According to the graph, the point x, y that lies on the graph of each equation in the system is 4, 1. Therefore, the solution to the system is 4, 1. It follows that the value of x is 4.

Question Difficulty: Easy

Question ID 937f7437

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 937f7437

$$\begin{aligned}s + 7r &= 27 \\ r &= 3\end{aligned}$$

What is the solution (r, s) to the given system of equations?

- A. $(6, 3)$
- B. $(3, 6)$
- C. $(3, 27)$
- D. $(27, 3)$

ID: 937f7437 Answer

Correct Answer: B

Rationale

Choice B is correct. The second equation in the given system is $r = 3$. Substituting 3 for r in the first equation in the given system yields $s + 7(3) = 27$, or $s + 21 = 27$. Subtracting 21 from both sides of this equation yields $s = 6$. Therefore, the solution r, s to the given system of equations is 3, 6.

Choice A is incorrect. This is the solution s, r , not r, s , to the given system of equations.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 79b568d3

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 79b568d3

$$\begin{aligned} 3x &= 12 \\ -3x + y &= -6 \end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of y ?

- A. **−3**
- B. **6**
- C. **18**
- D. **30**

ID: 79b568d3 Answer

Correct Answer: B

Rationale

Choice B is correct. Adding the second equation in the given system to the first equation in the given system yields $3x + (-3x + y) = 12 + -6$, which is equivalent to $y = 6$.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID d37842cc

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: d37842cc

$$\begin{aligned}y &= 4 \\ x &= y + 6\end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of x ?

- A. 10
- B. 6
- C. 4
- D. 2

ID: d37842cc Answer

Correct Answer: A

Rationale

Choice A is correct. According to the first equation in the given system, $y = 4$. Substituting 4 for y in the second equation in the given system yields $x = 4 + 6$, or $x = 10$.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect. This is the value of y , not x .

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 800e59a0

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 800e59a0

$$\begin{aligned}x &= 4 \\ y &= 5 - x\end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of y ?

- A. 1
- B. 4
- C. 5
- D. 9

ID: 800e59a0 Answer

Correct Answer: A

Rationale

Choice A is correct. The first equation in the given system of equations is $x = 4$. Substituting 4 for x in the second equation in the given system of equations yields $y = 5 - 4$, or $y = 1$.

Choice B is incorrect. This is the value of x in the solution to the given system of equations, not the value of y .

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID c4f9f99e

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: c4f9f99e

$$\begin{aligned}y &= 4x - 9 \\ y &= 19\end{aligned}$$

What is the solution (x, y) to the given system of equations?

- A. $(4, 19)$
- B. $(7, 19)$
- C. $(19, 4)$
- D. $(19, 7)$

ID: c4f9f99e Answer

Correct Answer: B

Rationale

Choice B is correct. It's given by the second equation in the system that $y = 19$. Substituting 19 for y in the first equation yields $19 = 4x - 9$. Adding 9 to both sides of this equation yields $28 = 4x$. Dividing both sides of this equation by 4 yields $7 = x$. Therefore, since $x = 7$ and $y = 19$, the solution x, y to the given system of equations is 7, 19.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

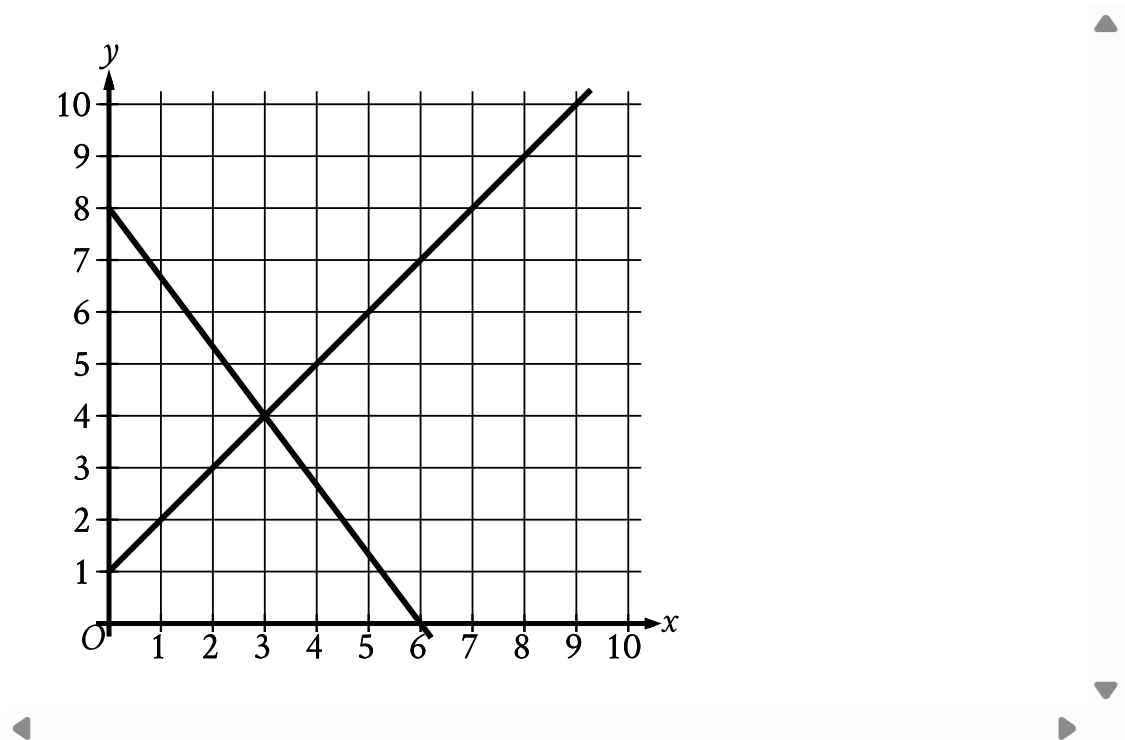
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 4263af26

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 4263af26



The graph of a system of linear equations is shown. What is the solution (x, y) to the system?

- A. $(2, 3)$
- B. $(3, 4)$
- C. $(4, 5)$
- D. $(5, 6)$

ID: 4263af26 Answer

Correct Answer: B

Rationale

Choice B is correct. If a point x, y lies on both lines in the graph of a system of two linear equations, the ordered pair x, y is a solution to the system. The graph shown is the graph of a system of two linear equations, where the two lines in the graph intersect at the point 3, 4. Therefore, the point 3, 4 lies on both lines, so the ordered pair 3, 4 is the solution to the system.

Choice A is incorrect. The point 2, 3 lies on one, not both, of the lines in the graph shown.

Choice C is incorrect. The point 4, 5 lies on one, not both, of the lines in the graph shown.

Choice D is incorrect. The point 5, 6 lies on one, not both, of the lines in the graph shown.

Question ID 2251c98f

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 2251c98f

Connor has c dollars and Maria has m dollars. Connor has 4 times as many dollars as Maria, and together they have a total of \$25.00. Which system of equations represents this situation?

- A. $c = 4m$
 $c + m = 25$
- B. $m = 4c$
 $c + m = 25$
- C. $c = 25m$
 $c + m = 4$
- D. $m = 25c$
 $c + m = 4$

ID: 2251c98f Answer

Correct Answer: A

Rationale

Choice A is correct. It’s given that Connor has c dollars, Maria has m dollars, and Connor has 4 times as many dollars as Maria. This can be represented by the equation $c = 4m$. It’s also given that together, Connor and Maria have a total of \$ 25.00, which can be represented by the equation $c + m = 25$. Therefore, the system consisting of the equations $c = 4m$ and $c + m = 25$ represents this situation.

Choice B is incorrect. The equation $m = 4c$ represents a situation where Maria has 4 times as many dollars as Connor, rather than the situation where Connor has 4 times as many dollars as Maria.

Choice C is incorrect. The equation $c = 25m$ represents a situation where Connor has 25 times, rather than 4 times, as many dollars as Maria. The equation $c + m = 4$ represents a situation where Connor and Maria together have a total of \$ 4.00, rather than \$ 25.00.

Choice D is incorrect. The equation $m = 25c$ represents a situation where Maria has 25 times as many dollars as Connor, rather than the situation where Connor has 4 times as many dollars as Maria. The equation $c + m = 4$ represents a situation where Connor and Maria together have a total of \$ 4.00, rather than \$ 25.00.

Question Difficulty: Easy

Question ID 29f70e3b

Assessment	Test	Domain	Skill	Difficulty
PSAT/NMSQT & PSAT 10	Math	Algebra	Systems of two linear equations in two variables	<div><div></div><div></div><div></div></div>

ID: 29f70e3b

$$\begin{aligned}x &= 8 \\ x + 3y &= 26\end{aligned}$$

The solution to the given system of equations is (x, y) . What is the value of y ?

ID: 29f70e3b Answer

Correct Answer: 6

Rationale

The correct answer is 6. The first equation in the given system is $x = 8$. Substituting 8 for x in the second equation in the given system yields $8 + 3y = 26$. Subtracting 8 from both sides of this equation yields $3y = 18$. Dividing both sides of this equation by 3 yields $y = 6$. Therefore, the value of y is 6.

Question Difficulty: Easy