Question ID 208a94ec

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 208a94ec

$$x = 5$$
$$y = x - 8$$

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: 208a94ec 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: Medium

Question ID d6c9105a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: d6c9105a

$$s + 7r = 27$$
$$r = 3$$

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: d6c9105a 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 $s + 73 = 27$, 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: Medium

Question ID 5e1de275

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 5e1de275

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

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: 5e1de275 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: Medium

Question ID 597c738a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 597c738a

$$4x = 20$$
$$-3x + y = -7$$

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

A. -27

B. -13

C. 13

D. 27

ID: 597c738a Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that $4x = 20$ and $-3x + y = -7$ is a system of equations with a solution x, y. Adding the second equation in the given system to the first equation yields $4x + (-3x + y) = 20 + -7$, which is equivalent to $x + y = 13$. Thus, the value of $x + y$ is 13.

Choice A is incorrect. This represents the value of $-2x + y - 1$.

Choice B is incorrect. This represents the value of $-x + y$.

Choice D is incorrect. This represents the value of $2x + y + 1$.

Question Difficulty: Medium

Question ID f3850e72

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: f3850e72

$$x + y = 18$$
$$5y = x$$

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: f3850e72 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 $53 = x$ 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 $52 = 16$, 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 $51 = 17$, 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 $50 = 18$, which is not true. Therefore, $18, 0$ is not a solution to the given system of equations.

Question Difficulty: Medium

Question ID e5f3a684

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: e5f3a684

$$4x - 3y = 5$$
$$x = 8$$

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

A. $(8, 9)$

B. $(8, -24)$

C. $(8, -9)$

D. $(8, 24)$

ID: e5f3a684 Answer

Correct Answer: A

Rationale

Choice A is correct. The second equation in the given system is $x = 8$. Substituting 8 for x in the first equation in the given system yields $4(8)$ - $3y = 5$, or 32 - $3y = 5$. Subtracting 32 from both sides of this equation yields -$3y =$ - 27. Dividing both sides of this equation by -3 yields $y = 9$. Therefore, the solution (x, y) to the given system of equations is $(8, 9)$.

Choice B 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: Medium

Question ID 774b593a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 774b593a

$$y = 4x - 9$$
$$y = 19$$

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: 774b593a 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.

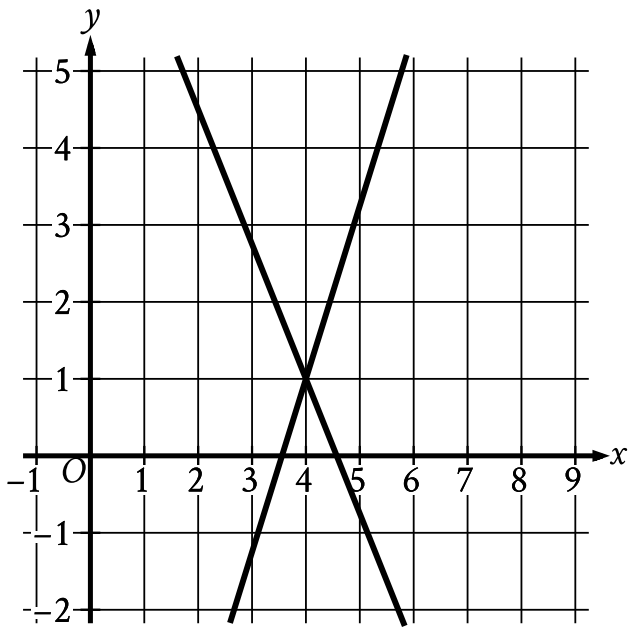
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Medium

Question ID 745d532f

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 745d532f



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: 745d532f 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: Medium

Question ID 10b92bc2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 10b92bc2

$$3x = 12$$
$$-3x + y = -6$$

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: 10b92bc2 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 $3x + \left(-3x + y \right) = 12 + -6$, 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: Medium

Question ID ad576a19

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: ad576a19

$$5x = 15$$
$$-4x + y = -2$$

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

A. -17

B. -13

C. 13

D. 17

ID: ad576a19 Answer

Correct Answer: C

Rationale

Choice C is correct. Adding the second equation of the given system to the first equation yields $5x + -4x + y = 15 + -2$, which is equivalent to $x + y = 13$. So the value of $x + y$ is 13.

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

Choice B is incorrect. This is the value of $-(x + y)$.

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

Question Difficulty: Medium

Question ID b76ba2c5

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: b76ba2c5

$$y = -3x$$
$$4x + y = 15$$

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

A. 1

B. 5

C. 15

D. 45

ID: b76ba2c5 Answer

Correct Answer: C

Rationale

Choice C is correct. The given system of linear equations can be solved by the substitution method. Substituting -$3x$ for y from the first equation in the given system into the second equation yields $4x + -3x = 15$, or $x = 15$.

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. This is the absolute value of y, not the value of x.

Question Difficulty: Medium

Question ID bed1ca47

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: bed1ca47

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: bed1ca47 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: Medium

Question ID 7f40c1d6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Algebra	Systems of two linear equations in two variables	

ID: 7f40c1d6

$$x = 8$$
$$x + 3y = 26$$

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

ID: 7f40c1d6 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: Medium