

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div><div></div><div></div><div></div></div>

ID: 097e10f5

What value of p satisfies the equation $5p + 180 = 250$?

- A. 14
- B. 65
- C. 86
- D. 250

ID: 097e10f5 Answer

Correct Answer: A

Rationale

Choice A is correct. Subtracting 180 from both sides of the given equation yields $5p = 70$. Dividing both sides of this equation by 5 yields $p = 14$. Therefore, the value of p that satisfies the equation $5p + 180 = 250$ is 14.

Choice B is incorrect. This value of p satisfies the equation $5p + 180 = 505$.

Choice C is incorrect. This value of p satisfies the equation $5p + 180 = 610$.

Choice D is incorrect. This value of p satisfies the equation $5p + 180 = 1,430$.

Question Difficulty: Easy

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ID: 997bec28

The perimeter of an isosceles triangle is **83** inches. Each of the two congruent sides of the triangle has a length of **24** inches. What is the length, in inches, of the third side?

ID: 997bec28 Answer

Correct Answer: 35

Rationale

The correct answer is **35**. It's given that the perimeter of an isosceles triangle is **83** inches and that each of the two congruent sides has a length of **24** inches. The perimeter of a triangle is the sum of the lengths of its three sides. The equation $24 + 24 + x = 83$ can be used to represent this situation, where x is the length, in inches, of the third side. Combining like terms on the left-hand side of this equation yields $48 + x = 83$. Subtracting **48** from both sides of this equation yields $x = 35$. Therefore, the length, in inches, of the third side is **35**.

Question Difficulty: Easy

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ID: 6ac23de7

$\frac{4x}{5} = 20$

In the equation above, what is the value of x ?

- A. 25
- B. 24
- C. 16
- D. 15

ID: 6ac23de7 Answer

Correct Answer: A

Rationale

Choice A is correct. Multiplying both sides of the equation by 5 results in $4x = 100$. Dividing both sides of the resulting equation by 4 results in $x = 25$.

Choice B is incorrect and may result from adding 20 and 4. Choice C is incorrect and may result from dividing 20 by 5 and then multiplying the result by 4. Choice D is incorrect and may result from subtracting 5 from 20.

Question Difficulty: Easy

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ID: 7392dfc1

Which of the following is equivalent to $4x + 6 = 12$?

- A. $2x + 4 = 6$
- B. $x + 3 = 3$
- C. $3x + 2 = 4$
- D. $2x + 3 = 6$

ID: 7392dfc1 Answer

Correct Answer: D

Rationale

Choice D is correct. Dividing each side of the original equation by 2 yields $\frac{4x+6}{2} = \frac{12}{2}$, which simplifies to $2x + 3 = 6$.

Choice A is incorrect. Dividing each side of the original equation by 2 gives $2x + 3 = 6$, which is not equivalent to $2x + 4 = 6$. Choice B is incorrect. Dividing each side of the original equation by 4 gives $x + \frac{3}{2} = 3$, which is not equivalent to $x + 3 = 3$. Choice C is incorrect. Dividing each side of the original equation by 3 gives $\frac{4}{3}x + 2 = 4$, which is not equivalent to $3x + 2 = 4$.

Question Difficulty: Easy

Assessment	Test	Domain	Skill	Difficulty
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ID: 93954cfa

One pound of grapes costs \$2. At this rate, how many dollars will c pounds of grapes cost?

A. $2c$

B. $2 + c$

C. $\frac{2}{c}$

D. $\frac{c}{2}$

ID: 93954cfa Answer

Correct Answer: A

Rationale

Choice A is correct. If one pound of grapes costs \$2, two pounds of grapes will cost 2 times \$2, three pounds of grapes will cost 3 times \$2, and so on. Therefore, c pounds of grapes will cost c times \$2, which is $2c$ dollars.

Choice B is incorrect and may result from incorrectly adding instead of multiplying. Choice C is incorrect and may result from assuming that c pounds cost \$2, and then finding the cost per pound. Choice D is incorrect and could result from incorrectly assuming that 2 pounds cost \$ c , and then finding the cost per pound.

Question Difficulty: Easy

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ID: 3d04de9c

A principal used a total of **25** flags that were either blue or yellow for field day. The principal used **20** blue flags. How many yellow flags were used?

- A. **5**
- B. **20**
- C. **25**
- D. **30**

ID: 3d04de9c Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that a principal used a total of **25** blue flags and yellow flags. It's also given that of the **25** flags used, **20** flags were blue. Subtracting the number of blue flags used from the total number of flags used results in the number of yellow flags used. It follows that the number of yellow flags used is **25 – 20**, or **5**.

Choice B is incorrect. This is the number of blue flags used.

Choice C is incorrect. This is the total number of flags used.

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

Question Difficulty: Easy

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ID: 60f71697

$8x = 88$

What value of x is the solution to the given equation?

- A. 11
- B. 80
- C. 96
- D. 704

ID: 60f71697 Answer

Correct Answer: A

Rationale

Choice A is correct. Dividing both sides of the given equation by 8 yields $x = 11$. Therefore, 11 is the solution to the given equation.

Choice B is incorrect. This is the solution to the equation $x + 8 = 88$.

Choice C is incorrect. This is the solution to the equation $x - 8 = 88$.

Choice D is incorrect. This is the solution to the equation $\frac{x}{8} = 88$.

Question Difficulty: Easy

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ID: 550b352c

$10 = 2x + 4$

How many solutions exist to the equation shown above?

- A. None
- B. Exactly 1
- C. Exactly 3
- D. Infinitely many

ID: 550b352c Answer

Correct Answer: B

Rationale

Choice B is correct. Subtracting 4 from each side of the given equation yields $6 = 2x$, or $x = 3$, so the equation has a unique solution of $x = 3$.

Choice A is incorrect. Since 3 is a value of x that satisfies the given equation, the equation has at least 1 solution. Choice C is incorrect. Linear equations can have 0, 1, or infinitely many solutions; no linear equation has exactly 3 solutions. Choice D is incorrect. If a linear equation has infinitely many solutions, it can be reduced to $0 = 0$. This equation reduces to $x = 3$, so there is only 1 solution.

Question Difficulty: Easy

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ID: ed18c4f7

Cathy has n CDs. Gerry has 3 more than twice the number of CDs that Cathy has. In terms of n , how many CDs does Gerry have?

- A. $3n - 2$
- B. $3n + 2$
- C. $2n - 3$
- D. $2n + 3$

ID: ed18c4f7 Answer

Correct Answer: D

Rationale

Choice D is correct. The term $2n$ represents twice the number of CDs that Cathy has, and adding 3 represents 3 more than that amount.

Choices A and B are incorrect. The expression $3n$ represents three times the number of CDs that Cathy has. Choice C is incorrect. Subtracting 3 represents 3 fewer than twice the number of CDs that Cathy has.

Question Difficulty: Easy

Assessment	Test	Domain	Skill	Difficulty
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ID: 12255364

A gym charges its members a onetime **\$36** enrollment fee and a membership fee of **\$19** per month. If there are no charges other than the enrollment fee and the membership fee, after how many months will a member have been charged a total of **\$188** at the gym?

- A. **4**
- B. **5**
- C. **8**
- D. **10**

ID: 12255364 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that a gym charges its members a onetime **\$36** enrollment fee and a membership fee of **\$19** per month. Let x represent the number of months at the gym after which a member will have been charged a total of **\$188**. If there are no charges other than the enrollment fee and the membership fee, the equation $36 + 19x = 188$ can be used to represent this situation. Subtracting **36** from both sides of this equation yields $19x = 152$. Dividing both sides of this equation by **19** yields $x = 8$. Therefore, a member will have been charged a total of **\$188** after **8** months at the gym.

Choice A is incorrect. A member will have been charged a total of $36 + 19 \times 4$, or **\$112**, after **4** months at the gym.

Choice B is incorrect. A member will have been charged a total of $36 + 19 \times 5$, or **\$131**, after **5** months at the gym.

Choice D is incorrect. A member will have been charged a total of $36 + 19 \times 10$, or **\$226**, after **10** months at the gym.

Question Difficulty: Easy

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ID: d9d83c02

For what value of w does
 $w - 10 = 2(w + 5)$?

- A. 5
- B. 0
- C. -15
- D. -20

ID: d9d83c02 Answer

Correct Answer: D

Rationale

Choice D is correct. To solve the equation, use the distributive property to multiply on the right-hand side of the equation which gives $w - 10 = 2w + 10$. Subtract w from both sides of the equation, which gives $-10 = w + 10$. Finally, subtract 10 from both sides of the equation, which gives $-20 = w$.

Choices A and B are incorrect and may result from making sign errors. Choice C is incorrect and may result from incompletely distributing the 2 in the expression $2(w + 5)$.

Question Difficulty: Easy

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ID: 7a987ae4

If $\frac{2n}{5} = 10$, what is the value of $2n - 1$?

- A. 24
- B. 49
- C. 50
- D. 99

ID: 7a987ae4 Answer

Correct Answer: B

Rationale

Choice B is correct. Multiplying both sides of the given equation by 5 yields $2n = 50$. Substituting 50 for $2n$ in the expression $2n - 1$ yields $50 - 1 = 49$.

Alternate approach: Dividing both sides of $2n = 50$ by 2 yields $n = 25$. Evaluating the expression $2n - 1$ for $n = 25$ yields $2(25) - 1 = 49$.

Choice A is incorrect and may result from finding the value of $n - 1$ instead of $2n - 1$. Choice C is incorrect and may result from finding the value of $2n$ instead of $2n - 1$. Choice D is incorrect and may result from finding the value of $4n - 1$ instead of $2n - 1$.

Question Difficulty: Easy

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ID: 9ff10b3b

If $\frac{1}{2}x - \frac{1}{6}x = 1$, what is the value of x ?

- A. -4
- B. $\frac{1}{3}$
- C. 3
- D. 6

ID: 9ff10b3b Answer

Correct Answer: C

Rationale

Choice C is correct. To make it easier to add like terms on the left-hand side of the given equation, both sides of the equation can be multiplied by 6, which is the lowest common denominator of $\frac{1}{2}$ and $\frac{1}{6}$. This yields $3x - x = 6$, which can be rewritten as $2x = 6$. Dividing both sides of this equation by 2 yields $x = 3$.

Choice A is incorrect and may result from subtracting the denominators instead of numerators with common denominators to get $-\frac{1}{4}x$, rather than $\frac{1}{3}x$, on the left-hand side of the equation. Choice B is incorrect and may result from rewriting the given equation as $\frac{1}{2}x = \frac{1}{6}$ instead of $2x = 6$. Choice D is incorrect and may result from conceptual or computational errors.

Question Difficulty: Easy

Question ID 4e77195b

1.14

Assessment	Test	Domain	Skill	Difficulty
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ID: 4e77195b

If $2 + x = 60$, what is the value of $16 + 8x$?

ID: 4e77195b Answer

Correct Answer: 480

Rationale

The correct answer is **480**. Multiplying both sides of the given equation by 8 yields $8(2 + x) = 8(60)$, or $16 + 8x = 480$. Therefore, if $2 + x = 60$, the value of $16 + 8x$ is **480**.

Question Difficulty: Easy

Assessment	Test	Domain	Skill	Difficulty
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ID: 4f7981a0

If $3x + 2 = 8$, what is the value of $9x + 6$?

ID: 4f7981a0 Answer

Rationale

The correct answer is 24. Multiplying both sides of the given equation by 3 yields $3(3x + 2) = 24$. Using the distributive property to rewrite the left-hand side of this equation yields $9x + 6 = 24$.

Question Difficulty: Easy

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	■ □ □

ID: 46f68129

A librarian has 43 books to distribute to a group of children. If he gives each child 2 books, he will have 7 books left over. How many children are in the group?

- A. 15
- B. 18
- C. 25
- D. 29

ID: 46f68129 Answer

Rationale

Choice B is correct. Subtracting the number of books left over from the total number of books results in $43 - 7 = 36$, which is the number of books distributed. Dividing the number of books distributed by the

number of books given to each child results in $\frac{36}{2} = 18$.

Choice A is incorrect and results from dividing the total number of books by the number of books given to each child, $\frac{43}{2} \approx 22$, then subtracting the number of books left over from the result, $22 - 7 = 15$. Choice C is incorrect and results from adding the number of books left over to the total number of books, $43 + 7 = 50$, then

dividing the result by the number of books given to each child, $\frac{50}{2} = 25$. Choice D is incorrect and results

from dividing the total number of books by the number of books given to each child, $\frac{43}{2} \approx 22$, then adding the number of books left over, $22 + 7 = 29$.

Question Difficulty: Easy

Question ID e53870b6

1.17

Assessment	Test	Domain	Skill	Difficulty
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ID: e53870b6

$$6x + k = 6x + 5$$

In the given equation, k is a constant. If the equation has infinitely many solutions, what is the value of k ?

ID: e53870b6 Answer

Rationale

The correct answer is 5. Subtracting $6x$ from both sides of the given equation gives $k = 5$, so for any value of x , $6x + k = 6x + 5$ if and only if $k = 5$. Therefore, if the given equation has infinitely many solutions, the value of k is 5.

Question Difficulty: Easy

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear equations in one variable	<div><div></div><div></div><div></div></div>

ID: 70774aa4

If $5x = 20$, what is the value of $15x$?

- A. 7
- B. 12
- C. 23
- D. 60

ID: 70774aa4 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that $5x = 20$. Multiplying both sides of this equation by 3 yields $15x = 60$. Therefore, the value of $15x$ is 60.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Assessment	Test	Domain	Skill	Difficulty
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ID: a9c04a21

What is the solution to the equation $2x + 3 = 7$?

- A. 1
- B. 1.5
- C. 2
- D. 4

ID: a9c04a21 Answer

Correct Answer: C

Rationale

Choice C is correct. Subtracting 3 from both sides of the given equation yields $2x = 4$. Dividing both sides by 2 results in $x = 2$.

Choices A and B are incorrect and may result from computational errors. Choice D is incorrect. This is the value of $2x$.

Question Difficulty: Easy