Question ID 097e10f5

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

ID: 097e10f5 1.1

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

Question ID 997bec28

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

ID: 997bec28 1.2

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

Question ID 6ac23de7

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

ID: 6ac23de7 1.3

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

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

Question ID 7392dfc1

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

ID: 7392dfc1 1.4

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

Question ID 93954cfa

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

ID: 93954cfa 1.5

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

Question ID 3d04de9c

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

ID: 3d04de9c 1.6

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

Question ID 60f71697

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

ID: 60f71697

1.7

$$8x = 88$$

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

Question ID 550b352c

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

ID: 550b352c

1.8

$10 = 2x + 4$

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

Question ID ed18c4f7

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

ID: ed18c4f7 1.9

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

Question ID 12255364

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

ID: 12255364 1.10

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

Question ID d9d83c02

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

ID: d9d83c02 1.11

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

Question ID 7a987ae4

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

ID: 7a987ae4 1.12

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

Question ID 9ff10b3b

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

ID: 9ff10b3b 1.13

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

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

ID: 4e77195b 1.14

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

Question ID 4f7981a0

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

ID: 4f7981a0

1.15

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

Question ID 46f68129

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

ID: 46f68129 1.16

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

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

ID: e53870b6

1.17

$6x + k = 6x + 5$

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

Question ID 70774aa4

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

ID: 70774aa4 1.18

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

Question ID a9c04a21

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

ID: a9c04a21

1.19

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

Question ID 590f2187

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

ID: 590f2187

1.20

If $3x - 27 = 24$, what is the value of $x - 9$?

A. 1

B. 8

C. 24

D. 35

ID: 590f2187 Answer

Correct Answer: B

Rationale

Choice B is correct. Dividing each side of the given equation by 3 yields $x - 9 = 8$. Therefore, the value of $x - 9$ is 8.

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

Choice C is incorrect. This is the value of $3x - 27$, not $x - 9$.

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

Question Difficulty: Easy

Question ID 59afe8db

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

ID: 59afe8db

1.21

$3x + 5(x + 4) = 76$ What value of x is the solution to the given equation?

A. 7

B. 8

C. 56

D. 72

ID: 59afe8db Answer

Correct Answer: A

Rationale

Choice A is correct. Applying the distributive property on the left-hand side of the given equation yields $3x + 5x + 20 = 76$, or $8x + 20 = 76$. Subtracting 20 from each side of this equation yields $8x = 56$. Dividing each side of this equation by 8 yields $x = 7$.

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. This is the solution to the equation $x + 4 = 76$, not $3x + 5x + 4 = 76$.

Question Difficulty: Easy

Question ID c7d7980e

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

ID: c7d7980e

1.22

$13x = 112 - x$ What value of x is the solution to the given equation?

ID: c7d7980e Answer

Correct Answer: 8

Rationale

The correct answer is 8. Adding x to both sides of the given equation yields $14x = 112$. Dividing both sides of this equation by 14 yields $x = 8$.

Question Difficulty: Easy

Question ID 2e98b1df

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

ID: 2e98b1df

1.23

On the first day of a semester, a film club has 90 members. Each day after the first day of the semester, 10 new members join the film club. If no members leave the film club, how many total members will the film club have 4 days after the first day of the semester?

A. 400

B. 130

C. 94

D. 90

ID: 2e98b1df Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the film club has 90 members on the first day of a semester, and 10 new members join the film club each day after the first day of the semester. This means that after 4 days, 4×10, or 40, new members will have joined the club. Adding 40 members to the original 90 club members yields 130 members. Thus, the film club will have 130 total members 4 days after the first day of the semester.

Choice A is incorrect. This is the number of members that will have joined the film club 4 days after the first day of the semester if 100 new members, not 10, join the film club each day.

Choice C is incorrect. This is the number of members the film club will have 4 days after the first day of the semester if 1 new member, not 10, joins the film club each day.

Choice D is incorrect. This is the number of members the film club has on the first day of the semester.

Question Difficulty: Easy

Question ID 40ba6288

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

ID: 40ba6288

1.24

If $3x = 30$, what is the value of $3x - 12$?

A. -2

B. 18

C. 22

D. 42

ID: 40ba6288 Answer

Correct Answer: B

Rationale

Choice B is correct. Subtracting 12 from each side of the given equation yields $3x - 12 = 30 - 12$, or $3x - 12 = 18$. Therefore, the value of $3x - 12$ is 18.

Choice A is incorrect. This is the value of $x - 12$, not $3x - 12$. Choice C is incorrect. This is the value of $x + 12$, not $3x - 12$.

Choice D is incorrect. This is the value of $3x + 12$, not $3x - 12$.

Question Difficulty: Easy