Question ID 4e00f906

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

ID: 4e00f906

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

A. 14

B. 65

C. 86

D. 250

ID: 4e00f906 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 635e58a2

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

If $9(4 - 3x) + 2 = 8(4 - 3x) + 18$, what is the value of $4 - 3x$?

A. -16

B. -4

C. 4

D. 16

Correct Answer: D

Rationale

Choice D is correct. The value of $4 - 3x$ can be found by isolating this expression in the given equation. Subtracting 2 from both sides of the given equation yields $9(4 - 3x) = 8(4 - 3x) + 16$. Subtracting $8(4 - 3x)$ from both sides of this equation yields $9(4 - 3x) - 8(4 - 3x) = 16$, which gives $1(4 - 3x) = 16$, or $4 - 3x = 16$. Therefore, the value of $4 - 3x$ is 16.

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

Choice B is incorrect. This is the value of x, not $4 - 3x$.

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

Question Difficulty: Medium

Question ID 70474bfb

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

Each side of a 30-sided polygon has one of three lengths. The number of sides with length 8 centimeters (cm) is 5 times the number of sides n with length 3 cm. There are 6 sides with length 4 cm. Which equation must be true for the value of n?

A. $5n + 6 = 30$

B. $6n + 6 = 30$

C. $8n + 3n + 4n = 30$

D. $8(5n) + 3n + 4(6) = 30$

Correct Answer: B

Rationale

Choice B is correct. It's given that each side of a 30-sided polygon has one of three lengths. It's also given that the number of sides with length 8 centimeters (cm) is 5 times the number of sides n with length 3 cm. Therefore, there are $5 \times n$, or $5n$, sides with length 8 cm. It's also given that there are 6 sides with length 4 cm. Therefore, the number of 3 cm, 4 cm, and 8 cm sides are n, 6, and $5n$, respectively. Since there are a total of 30 sides, the equation $n + 6 + 5n = 30$ represents this situation. Combining like terms on the left-hand side of this equation yields $6n + 6 = 30$. Therefore, the equation that must be true for the value of n is $6n + 6 = 30$.

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: Hard

Question ID 46eabc75

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

A manager is responsible for ordering supplies for a shaved ice shop. The shop's inventory starts with $4,500$ paper cups, and the manager estimates that 70 of these paper cups are used each day. Based on this estimate, in how many days will the supply of paper cups reach $1,700$?

A. 20

B. 40

C. 60

D. 80

Correct Answer: B

Rationale

Choice B is correct. It's given that the shop's inventory starts with $4,500$ paper cups and that the manager estimates that 70 of these paper cups are used each day. Let x represent the number of days in which the estimated supply of paper cups will reach $1,700$. The equation $4,500 - 70x = 1,700$ represents this situation. Subtracting $4,500$ from both sides of this equation yields $-70x = -2,800$. Dividing both sides of this equation by -70 yields $x = 40$. Therefore, based on this estimate, the supply of paper cups will reach $1,700$ in 40 days.

Choice A is incorrect. After 20 days, the estimated supply of paper cups would be $4,500 - 70(20)$, or $3,100$ cups, not $1,700$ cups.

Choice C is incorrect. After 60 days, the estimated supply of paper cups would be $4,500 - 70(60)$, or 300 cups, not $1,700$ cups.

Choice D is incorrect. After 80 days, the estimated supply of paper cups would be $4,500 - 70(80)$, or $-1,100$ cups, which isn't possible.

Question Difficulty: Easy

Question ID 29dee068

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

ID: 29dee068

$$\tfrac{1}{3}(x+6) - \tfrac{1}{2}(x+6) = -8$$

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

ID: 29dee068 Answer

Correct Answer: 42

Rationale

The correct answer is 42. The expression $(x+6)$ is a factor of both terms on the left-hand side of the given equation. Therefore, the given equation can be written as $(x+6)\left(\tfrac{1}{3} - \tfrac{1}{2}\right) = -8$, or $(x+6)\left(-\tfrac{1}{6}\right) = -8$. Multiplying each side of this equation by -6 yields $x + 6 = 48$. Subtracting 6 from each side of this equation yields $x = 42$. Therefore, the value of x that is the solution to the given equation is 42.

Question Difficulty: Medium

Question ID 370ac92d

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

$$-49x = -98x$$

How many solutions does the given equation have?

A. Zero

B. Exactly one

C. Exactly two

D. Infinitely many

Correct Answer: B

Rationale

Choice B is correct. Adding $98x$ to each side of the given equation yields $49x = 0$. Dividing each side of this equation by 49 yields $x = 0$. This means that 0 is the only solution to the given equation. Therefore, the given equation has exactly one solution.

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: Hard