

Solve The Following Equation. $2+3z+6=14$ Select The Correct Choice Below And, If Necessary, Fill In The

Solve The Following Equation. $2+3z+6=14$ Select The Correct Choice Below And, If Necessary, Fill In The article aims to guide students and learners through the process of solving a linear algebraic equation step by step. Equations like these are fundamental in mathematics, especially in algebra, and mastering their solutions builds a solid foundation for more advanced topics. Whether you're a student preparing for exams or a math enthusiast looking to sharpen your skills, understanding how to approach and solve such equations is essential. In this comprehensive guide, we will analyze the problem, explore different methods for solving it, and provide tips to ensure you select the correct answer confidently.

Understanding the Equation

Before diving into solving the equation, it's crucial to understand what it represents. The given problem is:

$$2 + 3z + 6 = 14$$

This is a linear equation in one variable, z . The goal is to find the value of z that makes this statement true.

Step-by-Step Solution Process

Solving this type of equation involves isolating the variable on one side of the equation. Follow these steps:

1. Combine Like Terms

Look at the constants on the left side: 2 and 6. Combining them simplifies the equation:

$$2 + 6 = 8$$

So, the equation becomes:

$$8 + 3z = 14$$

2. Isolate the Variable Term

Subtract 8 from both sides to get the term with z alone:

$$8 + 3z - 8 = 14 - 8$$

Which simplifies to:

$$3z = 6$$

3. Solve for z

Divide both sides by 3 to find the value of z:

$$3z / 3 = 6 / 3$$

$$z = 2$$

Choosing the Correct Answer

The solution process yields $z = 2$. Now, the next step is to select the correct choice from the options provided (if multiple-choice options are given). For example, if the options are:

- A) 1
- B) 2
- C) 3
- D) 4

Then, clearly, option B) 2 is correct.

Verifying the Solution

To ensure the solution is correct, substitute $z = 2$ back into the original equation:

$$2 + 3(2) + 6 = 14$$

Calculate:

$$2 + 6 + 6 = 14$$

which simplifies to:

$$14 = 14$$

Since both sides are equal, $z = 2$ is indeed the correct solution.

Additional Tips for Solving Similar Equations

1. Always simplify first

Combine like terms on each side to make the equation easier to work with.

2. Perform inverse operations

Use addition/subtraction to move constants, and multiplication/division to isolate variables.

3. Check your solution

Substitute your answer back into the original equation to verify correctness.

4. Be mindful of the signs

Pay attention to positive and negative signs throughout your calculations.

Common Mistakes to Avoid

- Forgetting to combine like terms before solving.
- Failing to perform the same operation on both sides of the equation.
- Miscalculating arithmetic operations, especially division and multiplication.
- Overlooking the importance of verifying the solution.

Practice Problems for Mastery

To reinforce your understanding, try solving these similar equations:

1. $3 + 4x = 19$

2. $5y - 2 = 13$

3. $7 + 2z = 21$

4. $10 - 3a = 4$

Work through each problem step-by-step, following the methods outlined above.

Conclusion

Mastering the process of solving linear equations like $2 + 3z + 6 = 14$ is fundamental in algebra. The key steps involve simplifying the equation, isolating the variable, performing inverse operations, and verifying the solution. Remember to carefully analyze each part of the equation, avoid common mistakes, and practice regularly to develop confidence and accuracy. With consistent effort, you'll be able to approach similar problems with ease and select the correct choices confidently. Whether in academics or real-world applications, solving equations is a vital skill that opens doors to advanced mathematical understanding and problem-solving capabilities.

Frequently Asked Questions

What is the first step to solve the equation $2 + 3z + 6 = 14$?

Combine like terms on the left side to simplify the equation: $2 + 6 + 3z = 14$, which simplifies to $8 + 3z = 14$.

After simplifying the equation to $8 + 3z = 14$, what is the next step?

Subtract 8 from both sides to isolate the term with z : $3z = 14 - 8$.

What is the value of $14 - 8$ in the equation $3z = 14 - 8$?

$14 - 8$ equals 6, so the equation becomes $3z = 6$.

How do you solve for z in the equation $3z = 6$?

Divide both sides of the equation by 3 to find z : $z = 6 / 3$.

What is the value of z after dividing 6 by 3?

$z = 2$.

Which of the following is the correct solution to the equation $2 + 3z + 6 = 14$?

$z = 2$.

If the equation is $2 + 3z + 6 = 14$, what is the value of z after solving?

z equals 2.

Additional Resources

Solve The Following Equation: $2 + 3z + 6 = 14$ is a fundamental algebraic problem that demonstrates how to isolate the variable z and find its value. Mastering how to solve such equations is essential for building a strong foundation in algebra, which is a critical skill in mathematics, science, engineering, and many other fields. In this article, we will walk through a detailed, step-by-step guide to solving this equation, including clear explanations, tips, and common pitfalls to avoid.

Understanding the Problem

Before diving into the solution, it's important to understand what the problem is asking. The equation provided is:

$$2 + 3z + 6 = 14$$

This is a linear algebraic equation in one variable, z . The goal is to find the value of z that makes this equation true. Solving equations like this involves applying algebraic operations to isolate the variable on one side of

the equation.

Step-by-Step Breakdown of the Solution

To solve the equation effectively, we follow a systematic approach:

Step 1: Combine Like Terms

First, look at the constants on the left side of the equation:

$$2 + 6 = 8$$

Rewrite the equation as:

$$8 + 3z = 14$$

This simplification makes it clearer what steps to take next.

Step 2: Isolate the Term with the Variable

Next, subtract 8 from both sides of the equation to move the constant term to the right side:

$$8 + 3z - 8 = 14 - 8$$

Simplifies to:

$$3z = 6$$

Step 3: Solve for the Variable

Now, divide both sides of the equation by the coefficient of z , which is 3:

$$(3z) / 3 = 6 / 3$$

This results in:

$$z = 2$$

Therefore, the solution to the equation $2 + 3z + 6 = 14$ is $z = 2$.

Verifying the Solution

Always verify your solution by substituting it back into the original equation:

Original equation:

$$2 + 3z + 6 = 14$$

Substitute $z = 2$:

$$2 + 3(2) + 6 = 14$$

Calculate:

$$2 + 6 + 6 = 14$$

Sum:

$$14 = 14$$

Since both sides are equal, the solution $z = 2$ is verified and correct.

Selecting the Correct Choice or Filling In the Blank

Many problems of this style present multiple-choice options or blanks to fill in. Based on the steps above, the correct choice or value to fill in is:

- $z = 2$

If the problem is presented as:

"Select the correct choice below and, if necessary, fill in the blank:"

- A) $z = 1$
- B) $z = 2$
- C) $z = 3$
- D) $z = 4$

The correct answer is B) $z = 2$.

Common Mistakes to Avoid

When solving similar equations, keep these common pitfalls in mind:

- Forgetting to combine like terms: Always simplify the equation as much as

possible before isolating the variable.

- Incorrectly applying inverse operations: Remember, addition and subtraction are inverse, as are multiplication and division.
- Not checking the solution: Always substitute your answer back into the original equation.
- Sign errors: Be cautious with negative signs during subtraction and multiplication.

Additional Tips for Solving Linear Equations

- Write down each step clearly: This helps prevent errors and makes it easier to review your work.
- Use inverse operations carefully: To undo addition, subtract; to undo multiplication, divide.
- Keep track of negative signs: Especially when dealing with subtraction or negative coefficients.
- Practice with similar problems: The more you practice, the more intuitive solving becomes.

Summary

In this guide, we demonstrated how to solve the algebraic equation $2 + 3z + 6 = 14$. The key steps involved combining like terms, isolating the variable using inverse operations, and verifying the solution. The process is straightforward but requires careful attention to detail. The solution, $z = 2$, satisfies the original equation, as confirmed by substitution.

By mastering these techniques, you'll be well-equipped to tackle a wide variety of linear equations and develop a solid foundation for more advanced algebraic concepts.

Remember: Always double-check your solutions and understand each step of the process. With practice, solving equations like this will become quicker and more intuitive.

[Solve The Following Equation 2 3z 6 14 Select The Correct](#)

Choice Below And If Necessary Fill In The

Solve The Following Equation $2 - 3z = 6 - 14$ Select The Correct Choice Below And If Necessary Fill In The

Related Articles

- [Type The Correct Answer In The Box.A Restaurant Uses Rectangular Napkins Where The Length, L, Is Twice](#)
- [Source Credibility Is The Extent To Which A Speaker Is Perceived As Competent To Make The Claims He Or](#)
- [Take The Role Of Rosa To Say At What Time Different People Leave In The Morning. Yo Mi Abuela Mara Mis](#)

[Back to Home](#)