

Can Someone Please Help Me Figure This Out. $(y-6)+8 Y=13$

Can Someone Please Help Me Figure This Out. $(y-6)+8 Y=13$ is a common expression students encounter when dealing with algebraic equations. If you're struggling to understand how to solve this type of problem, you're not alone. Many learners find algebra challenging at first, but with a clear step-by-step approach, you can master solving equations like this one. In this article, we'll explore how to solve the equation $(y - 6) + 8y = 13$, break down each step, and provide tips to help you understand the process better.

Understanding the Equation $(y - 6) + 8y = 13$

Before jumping into the solution, it's important to understand what the equation represents and the basic principles involved.

Breaking Down the Equation

- The given equation is $(y - 6) + 8y = 13$.
- It involves a variable y , which we need to solve for.
- The expression combines a binomial $(y - 6)$ with a term $(8y)$.

Key Concepts to Know

- Combining like terms
- Isolating the variable
- Simplifying expressions
- Solving for y

Step-by-Step Guide to Solving $(y - 6) + 8y = 13$

Let's go through the process systematically.

Step 1: Remove Parentheses

- Since $(y - 6)$ is in parentheses, and there's no multiplication outside, you can write it as is.
- The expression simplifies to $y - 6 + 8y = 13$.

Step 2: Combine Like Terms

- Identify the terms involving y : y and $8y$.
- Combine them: $y + 8y = 9y$.
- The equation now becomes: $9y - 6 = 13$.

Step 3: Isolate the Variable Term

- To solve for y , first move the constant term to the other side.
- Add 6 to both sides:

- $9y - 6 + 6 = 13 + 6$

- $9y = 19$

Step 4: Solve for y

- Divide both sides by 9 to isolate y :

- $y = 19 / 9$

Step 5: Final Answer and Interpretation

- The solution is $y = 19/9$, which is an improper fraction.
- As a decimal, $y \approx 2.111\dots$

Additional Tips for Solving Similar Equations

To improve your skills in solving equations like $(y - 6) + 8y = 13$, consider the following tips:

1. Always Simplify First

- Remove parentheses and combine like terms early to make the equation easier to work with.

2. Maintain Balance

- Whatever operation you perform on one side of the equation, do the same on

the other side to keep it balanced.

3. Practice with Different Types of Equations

- Work on equations with variables on both sides, fractions, and coefficients to build versatility.

4. Use Visual Aids

- Drawing number lines or algebra tiles can help visualize the problem, especially for beginners.

Common Mistakes to Avoid

Being aware of typical errors can help you avoid pitfalls when solving algebraic equations.

1. Forgetting to Combine Like Terms

- Always check for terms involving the same variable before simplifying.

2. Losing Track of the Equation Balance

- Remember to perform the same operation on both sides of the equation at every step.

3. Incorrectly Dividing or Multiplying

- When dividing or multiplying both sides, ensure you're applying it to the entire side, not just part of it.

Practice Problems to Reinforce Learning

Try solving these similar equations to build confidence:

1. $(x - 4) + 5x = 20$

2. $2y + 3 = 15$

3. $(3z - 2) + 4z = 18$

4. $5a - 10 = 0$

5. $(b + 3) + 2b = 12$

Work through each step carefully, applying the same principles outlined above.

Conclusion: Mastering Algebra Equations

Understanding how to solve equations like $(y - 6) + 8y = 13$ is essential for progressing in algebra and higher-level mathematics. The key steps involve simplifying expressions, combining like terms, isolating the variable, and performing inverse operations. Remember, practice makes perfect—so keep working on different problems, and you'll gain confidence in tackling similar algebraic challenges.

If you're still feeling stuck, consider seeking help from teachers, tutors, or online resources. Many educational websites offer interactive lessons and practice problems that can further solidify your understanding. Don't hesitate to ask for help—solving these equations is a skill that improves with patience and practice.

By following this guide and practicing regularly, you'll be well on your way to confidently solving equations like $(y - 6) + 8y = 13$ and beyond.

Frequently Asked Questions

How do I solve the equation $(y - 6) + 8y = 13$?

First, combine like terms: $y + 8y = 9y$. The equation becomes $9y - 6 = 13$. Then, add 6 to both sides: $9y = 19$. Finally, divide both sides by 9: $y = 19/9$.

What is the value of y in the equation $(y - 6) + 8y = 13$?

The value of y is $19/9$ or approximately 2.11.

Can you explain the steps to solve $(y - 6) + 8y = 13$?

Yes. First, distribute if needed (not necessary here). Combine like terms: $y + 8y = 9y$. The equation becomes $9y - 6 = 13$. Add 6 to both sides: $9y = 19$.

Divide both sides by 9: $y = 19/9$.

Is the equation $(y - 6) + 8y = 13$ linear?

Yes, it is a linear equation in terms of y , as it can be simplified to $y(1 + 8) = 13 + 6$, which is linear.

What type of equation is $(y - 6) + 8y = 13$?

It is a linear algebraic equation in one variable.

How can I check if $y = 19/9$ is the correct solution?

Substitute $y = 19/9$ back into the original equation: $(19/9 - 6) + 8(19/9)$ and verify that the sum equals 13. After calculation, it confirms the solution is correct.

Additional Resources

Can Someone Please Help Me Figure This Out. $(y-6)+8Y=13$

In the world of algebra, equations can sometimes seem like cryptic puzzles, challenging even the most seasoned math enthusiasts. One such problem that often leaves students scratching their heads is the linear equation: $(y - 6) + 8y = 13$. While it appears straightforward at first glance, understanding how to solve such an equation thoroughly requires a step-by-step approach and a grasp of fundamental algebraic principles. This article aims to dissect this equation, clarify its components, and guide you through a clear, logical process to find the value of y . Whether you're a student brushing up on algebra or someone seeking a refresher, this comprehensive guide will help demystify the problem and equip you with the tools to conquer similar equations confidently.

Understanding the Equation: Breaking Down the Components

Before diving into the solution, it's essential to understand what the equation represents and identify its key components.

Equation: $(y - 6) + 8y = 13$

This is a linear equation involving a single variable, y . The equation combines a binomial expression $(y - 6)$ with a term $8y$, set equal to 13.

Key components:

- Variable: y
- Constants: 6, 8, 13
- Operators: Addition (+), subtraction (-), and equality (=)

The goal is to find the value of y that makes the equation true—that is, the number for y that balances both sides of the equation.

Step 1: Expand and Simplify the Equation

The first step in solving the equation is to simplify it as much as possible.

Original equation:

$$(y - 6) + 8y = 13$$

Step-by-step:

1. Distribute and combine like terms:

- The term $(y - 6)$ is already simplified, but we can write it explicitly as $y - 6$.
- The other term is $8y$.

2. Combine the y terms:

$$(y) + 8y = 9y$$

3. Rewrite the entire equation:

$$9y - 6 = 13$$

Now, the equation is much cleaner and easier to solve.

Step 2: Isolate the Variable

The next step is to isolate y on one side of the equation.

Equation:

$$9y - 6 = 13$$

Add 6 to both sides to move the constant term to the right:

$$9y - 6 + 6 = 13 + 6$$

Simplifies to:

$$9y = 19$$

Divide both sides by 9 to solve for y :

$$y = 19 / 9$$

Step 3: Express the Solution

The solution to the equation is:

$$y = 19/9$$

This is an improper fraction, which can also be expressed as a decimal:

$$19/9 \approx 2.111\dots$$

Or as a mixed number:

$$2 \frac{1}{9}$$

Interpreting the Result: What Does the Solution Mean?

The value $y = 19/9$ (or approximately 2.11) is the specific number that, when substituted back into the original equation, makes both sides equal. To verify, let's perform a quick check.

Step 4: Verification – Substituting Back into the Original Equation

Original equation:

$$(y - 6) + 8y = 13$$

Substitute $y = 19/9$:

Calculate $(y - 6)$:

$$(19/9) - 6$$

Express 6 as a fraction with denominator 9:

$$6 = 54/9$$

So,

$$(19/9) - (54/9) = (19 - 54)/9 = (-35)/9$$

Next, compute $8y$:

$$8 (19/9) = (8 \cdot 19)/9 = 152/9$$

Now, sum the results:

$$(-35/9) + (152/9) = (152 - 35)/9 = (117)/9 = 13$$

Since the sum equals 13, the original equation holds true, confirming our solution.

Broader Context: Why Is Solving Such Equations Important?

Solving linear equations like $(y - 6) + 8y = 13$ isn't just an academic exercise; it has practical implications across various fields:

- Engineering: Calculating forces or currents in circuits.
- Economics: Determining break-even points.
- Computer Science: Algorithm development involving linear relationships.
- Everyday Problem Solving: Budgeting, planning, and data analysis.

Being comfortable with algebraic manipulations enables one to approach real-world problems methodically and confidently.

Common Challenges and How to Overcome Them

While the steps outlined above are straightforward, learners often encounter specific hurdles:

1. Misunderstanding distribution: Remember that parentheses indicate the terms inside are to be combined directly unless multiplication is involved.
2. Forgetting to perform inverse operations: Always do the opposite operation to isolate the variable (e.g., addition vs. subtraction, multiplication vs. division).
3. Confusing fractions and decimals: Convert as needed to simplify calculations and verify solutions more easily.
4. Skipping verification: Always substitute your solution back into the original equation to confirm accuracy.

Tips for success:

- Write each step clearly and check your work.
- Practice similar problems to build confidence.
- Use graphing tools or algebra calculators for additional verification.

Extending Your Algebra Skills: Next Steps

Once you've mastered solving simple linear equations like $(y - 6) + 8y = 13$, consider exploring:

- Equations with variables on both sides: e.g., $3x + 5 = 2x + 7$
- Quadratic equations: e.g., $y^2 - 5y + 6 = 0$
- Systems of equations: solving for multiple variables simultaneously
- Word problems: translating real-world scenarios into algebraic equations

These skills build on the foundation established here and are essential for tackling more complex mathematical challenges.

Final Thoughts: Embracing the Problem-Solving Process

The process of solving $(y - 6) + 8y = 13$ exemplifies the logical reasoning and systematic approach central to algebra. By understanding the structure of the equation, simplifying step-by-step, and verifying solutions, learners develop confidence and proficiency. Remember, encountering difficult problems is a normal part of learning—what matters is approaching them patiently and methodically. With practice and persistence, equations that once seemed daunting become manageable puzzles, opening doors to higher-level mathematical understanding and real-world problem-solving.

If you ever find yourself thinking, “Can someone please help me figure this out?” remember that breaking down the problem, applying fundamental principles, and verifying your work are your best tools. With these strategies, you’ll not only solve equations like $(y - 6) + 8y = 13$, but also develop a problem-solving mindset that applies across many disciplines and challenges.

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