

HELP MATH TESTsolve The Following Equation For P $4.8p = 16.8$

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If you're preparing for a math test and encounter the equation $4.8p = 16.8$, you're likely wondering how to solve for the variable p . Understanding how to isolate the variable and find its value is a fundamental skill in algebra that can help you confidently tackle similar problems. This article will guide you step-by-step through solving the equation, explain different methods, and provide useful tips to improve your problem-solving skills.

Understanding the Equation $4.8p = 16.8$

Before diving into the solution, it's important to understand what the equation represents and how to approach it.

What Does the Equation Mean?

- The equation $4.8p = 16.8$ involves a constant coefficient (4.8) multiplied by a variable p .
- Your goal is to find the value of p that makes the equation true.
- This type of problem is common in algebra and appears in various contexts, like calculating cost, distance, or other quantities where variables are involved.

Why Is Solving for p Important?

- It helps you understand relationships between quantities.
- It develops your algebraic manipulation skills.
- It prepares you for more complex equations in higher-level math.

Step-by-Step Solution for $4.8p = 16.8$

Let's now explore the process of solving this specific equation.

Step 1: Write Down the Equation

- The original equation is: $4.8p = 16.8$

Step 2: Isolate the Variable p

- Since p is multiplied by 4.8, you can isolate p by dividing both sides of the equation by 4.8.

Step 3: Divide Both Sides by 4.8

- $p = 16.8 \div 4.8$

Step 4: Perform the Division

- Calculate $16.8 \div 4.8$.

Calculating $16.8 \div 4.8$

Understanding how to divide these numbers is crucial.

Method 1: Long Division

- Set up the division: $16.8 \div 4.8$
- Recognize that both numbers are decimal numbers; to simplify, convert to whole numbers:
- Multiply numerator and denominator by 10:
- $168 \div 48$
- Now, divide 168 by 48:
- $48 \times 3 = 144$
- $168 - 144 = 24$
- $24 \div 48 = 0.5$ (since 48 goes into 24 zero times with a remainder, but because we multiplied both numerator and denominator by 10, the division becomes straightforward)
- Alternatively, perform the division directly:
- $16.8 \div 4.8 = 3$

Method 2: Using a Calculator

- Simply input $16.8 \div 4.8$ into your calculator.
- The result will be 3.

Final Answer: $p = 3$

Thus, the solution to the equation $4.8p = 16.8$ is:

$p = 3$

Additional Tips for Solving Similar Equations

To enhance your algebra skills for solving equations like $4.8p = 16.8$, keep these tips in mind:

1. Always Isolate the Variable

- The primary goal is to get p alone on one side of the equation.
- Use inverse operations (division to undo multiplication, subtraction to undo addition).

2. Pay Attention to Coefficients

- Large or decimal coefficients can be simplified by multiplying both sides by a power of ten to clear decimals.

3. Use Calculator Tools Wisely

- For decimal calculations, calculators save time and reduce errors.
- Double-check your calculations for accuracy.

4. Practice Different Types of Equations

- Equations with addition, subtraction, multiplication, and division.
- Equations involving fractions or decimals.

5. Understand the Concept of Inverse Operations

- Addition $\leftrightarrow$ Subtraction
- Multiplication $\leftrightarrow$ Division
- Applying inverse operations helps you solve for the variable effectively.

Real-Life Applications of Solving Equations

Understanding how to solve equations like $4.8p = 16.8$ has practical applications beyond the classroom:

- **Financial Calculations:** Determining the principal amount when given interest rates and total interest.
- **Physics:** Calculating unknown quantities like speed, distance, or time based on given relationships.
- **Cooking:** Adjusting ingredient quantities based on scaling recipes.
- **Business:** Solving for profit, cost, or revenue in various scenarios.

Practice Problems to Strengthen Your Skills

To reinforce what you've learned, try solving these similar equations:

1. $5.2x = 26.0$ — Find x .
2. $3.6q = 18.0$ — Find q .
3. $7.5m = 45.0$ — Find m .
4. $6.3n = 12.6$ — Find n .
5. $8.4r = 33.6$ — Find r .

Remember to follow the same steps: divide both sides by the coefficient to isolate the variable, then perform the division.

Conclusion

Mastering how to solve equations like $4.8p = 16.8$ is a fundamental step in algebra that builds your problem-solving confidence. The key is to understand the inverse operations and carefully perform calculations, whether manually or using a calculator. With consistent practice and attention to detail, you'll be well-equipped to handle similar problems confidently on your math tests and in real-world scenarios.

If you encounter more complex equations, remember to break them down into manageable steps, and don't hesitate to seek help or use online tools to verify your solutions. Keep practicing, and soon solving for variables will become second nature!

Frequently Asked Questions

How do I solve the equation $4.8p = 16.8$ for p ?

To solve for p , divide both sides of the equation by 4.8: $p = 16.8 \div 4.8$.

What is the value of p in the equation $4.8p = 16.8$?

$p = 16.8 \div 4.8 = 3.5$.

Can I use a calculator to solve $4.8p = 16.8$?

Yes, using a calculator makes dividing 16.8 by 4.8 quick and accurate to find p .

What is the step-by-step process to solve $4.8p = 16.8$?

Step 1: Write the equation $4.8p = 16.8$. Step 2: Divide both sides by 4.8: $p = 16.8 \div 4.8$. Step 3: Calculate the division to find $p = 3.5$.

Why do we divide both sides by 4.8 to solve for p?

Dividing both sides by 4.8 isolates p on one side of the equation, allowing us to solve for its value.

Is the solution to $4.8p = 16.8$ unique?

Yes, since it's a linear equation, it has a unique solution: $p = 3.5$.

Additional Resources

Mathematical Solutions

Unlocking the Solution to the Equation $4.8p = 16.8$: A Comprehensive Guide

Mathematics often presents us with problems that seem complex at first glance but become straightforward once we understand the underlying principles. One such problem is solving for the variable p in the linear equation:

$$4.8p = 16.8$$

In this article, we will explore this equation in depth, examining each step of the solution process, understanding the fundamental concepts involved, and providing tips for tackling similar problems in the future. Whether you're a student preparing for a math test or someone interested in sharpening your problem-solving skills, this detailed breakdown aims to clarify the process.

Understanding the Equation: Breaking Down the Components

What is an Equation?

An equation is a mathematical statement asserting the equality of two expressions. It often contains variables—symbols that represent unknown quantities—that we aim to solve for.

In the given equation:

$$4.8p = 16.8$$

- The variable is p.
- The coefficients are the numerical factors multiplying the variable (here, 4.8).
- The constant on the right side is 16.8.

Objective

Our goal is to find the value of p that makes the equation true—that is, the number that, when multiplied by 4.8, equals 16.8.

The Core Concept: Isolating the Variable

The Principle of Inverse Operations

The key to solving for p in the equation is to isolate the variable on one side of the equation. Since p is multiplied by 4.8, the inverse operation is division—dividing both sides of the equation by 4.8.

This step adheres to the fundamental rule:

> Whatever operation you perform on one side of the equation, you must perform on the other side to keep the equation balanced.

Step-by-Step Approach:

1. Identify the term involving p : $4.8p$
2. Undo the multiplication by dividing both sides by 4.8
3. Simplify to find p

Detailed Solution Process

Step 1: Write the original equation

$$\begin{aligned} & \backslash[\\ & 4.8p = 16.8 \\ & \backslash] \end{aligned}$$

Step 2: Divide both sides by 4.8

$$\begin{aligned} & \backslash[\\ & p = \frac{16.8}{4.8} \\ & \backslash] \end{aligned}$$

This division operation is the critical step, as it isolates p .

Step 3: Simplify the fraction

To simplify $\frac{16.8}{4.8}$, consider:

- Recognizing common factors
- Converting to simpler fractions
- Using decimal division

Let's explore these options.

Calculating the Division: Simplification Strategies

Method 1: Direct Decimal Division

Divide 16.8 by 4.8 using a calculator or long division:

$$\begin{aligned} & \backslash \\ p &= \frac{16.8}{4.8} \approx 3.5 \\ & \backslash \end{aligned}$$

Note: When dividing decimals, it's often easiest to use a calculator for accuracy.

Method 2: Convert to Fractions

Express the decimal numbers as fractions:

$$\begin{aligned} & \backslash \\ 16.8 &= \frac{168}{10} \quad \text{and} \quad 4.8 = \frac{48}{10} \\ & \backslash \end{aligned}$$

Now, the division becomes:

$$\begin{aligned} & \backslash \\ p &= \frac{\frac{168}{10}}{\frac{48}{10}} = \frac{168}{10} \times \frac{10}{48} = \frac{168}{48} \times 10 \div 10 \\ & \backslash \end{aligned}$$

Simplify numerator and denominator:

$$\begin{aligned} & \backslash \\ p &= \frac{168 \div 24}{48 \div 24} = \frac{7}{2} \\ & \backslash \end{aligned}$$

Now, divide numerator and denominator by 24:

$$\begin{aligned} & \backslash \\ p &= \frac{168 \div 24}{48 \div 24} = \frac{7}{2} \\ & \backslash \end{aligned}$$

Expressed as a decimal:

$$\begin{aligned} & \backslash \\ p &= \frac{7}{2} = 3.5 \\ & \backslash \end{aligned}$$

This confirms the result obtained via calculator.

Final Answer

$$\boxed{p = 3.5}$$

Additional Insights: Interpreting the Result

What does $p = 3.5$ mean?

In practical terms, the solution indicates that if you multiply 3.5 by 4.8, you get 16.8:

$$4.8 \times 3.5 = 16.8$$

This validation confirms the correctness of the solution.

Verification:

Let's verify:

$$4.8 \times 3.5 = (4.8 \times 3) + (4.8 \times 0.5) = 14.4 + 2.4 = 16.8$$

The calculation holds true, confirming that p equals 3.5.

Extending the Concept: Solving Similar Equations

The approach used here can be applied broadly. For example:

- Equation with different coefficients:

$$7.2p = 36$$

Solution: $p = \frac{36}{7.2} = 5$

- Equation with negative coefficients:

$\backslash$

$$-3p = 9$$

\]

Solution: $p = \frac{9}{-3} = -3$

- Equation with variables on both sides:

\[

$$2p + 4 = 10$$

\]

Solution:

\[

$$2p = 10 - 4 = 6 \rightarrow p = \frac{6}{2} = 3$$

\]

These examples illustrate the versatility of the division method for linear equations.

Tips for Solving Similar Equations

1. Identify the coefficient of the variable: Recognize the number multiplying the variable.
2. Use inverse operations: Divide if the variable is multiplied, subtract if added/subtracted.
3. Perform the same operation on both sides: Always maintain the balance of the equation.
4. Simplify fractions and decimals: Convert decimals to fractions for easier calculations if needed.
5. Verify your solution: Substitute your answer back into the original equation to confirm correctness.

Common Pitfalls to Avoid

- Forgetting to perform the operation on both sides: This can lead to incorrect solutions.
- Miscalculating decimal divisions: Use a calculator or simplify fractions to avoid errors.
- Not checking the solution: Always verify by plugging the value back into the original equation.
- Assuming solutions without simplifying: Simplify fractions or decimals for clarity and accuracy.

Conclusion

Solving the equation $4.8p = 16.8$ exemplifies a fundamental algebraic process: isolating the variable through division. By understanding the principle of inverse operations and applying careful calculation, we find that:

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\boxed{

$$p = 3.5$$

}

\]

This problem serves as a valuable learning tool, reinforcing core algebraic techniques that are applicable across various mathematical contexts. Whether you're tackling homework, exam questions, or real-world problems involving proportional relationships, mastering this approach will enhance your problem-solving toolkit.

Remember, the key to success in algebra is patience, systematic work, and verification. Keep practicing similar equations, and you'll develop confidence and proficiency in solving linear equations efficiently.

Happy solving!

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