

If 21% Of A Number Is 27, Find 7% Of That Number.

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Understanding percentage problems is fundamental in mathematics, especially when dealing with real-world scenarios such as discounts, profit calculations, and data analysis. One common type of problem involves finding an unknown percentage of a number when a certain percentage of that number is known. Today, we will explore a specific example: if 21% of a number is 27, how do we find 7% of that same number? This problem not only develops your understanding of percentages but also enhances your problem-solving skills through algebraic reasoning.

In this comprehensive guide, we will break down the problem step-by-step, explain the underlying concepts, and provide multiple strategies to arrive at the solution. We will also discuss related concepts, tips for solving similar problems, and practice questions to reinforce your learning. Whether you're preparing for exams or just want to strengthen your math skills, this article is designed to be clear, detailed, and easy to follow.

Understanding the Problem

Before jumping into calculations, it's crucial to understand what the problem is asking and identify the key pieces of information.

Restating the problem

- "If 21% of a number is 27" means that 0.21 times the unknown number equals 27.
- The goal is to find 7% of the same number, which means 0.07 times the number.

Key information

- Known percentage and value: 21% of the number = 27
- Unknown: The original number
- What to find: 7% of that number

Converting Percentages to Decimals

Percentages are often easier to work with when converted into decimal form.

Conversion process

- To convert a percentage to a decimal, divide by 100.

Example:

- $21\% = 21 \div 100 = 0.21$
- $7\% = 7 \div 100 = 0.07$

Why convert?

- Working with decimals simplifies multiplication.
- It standardizes the calculation process.

Step-by-Step Solution

Now, let's proceed to solve the problem systematically.

Step 1: Set up the equation based on the given information

Let the unknown number be denoted as (x) .

Given:

$21\% \text{ of } x = 27$

which translates to:

$0.21 \times x = 27$

Step 2: Solve for the unknown number (x)

Rearrange the equation:

$x = \frac{27}{0.21}$

Calculate:

$x = \frac{27}{0.21}$

$x = 128.57$ (rounded to two decimal places)

Alternatively, you can perform the division directly or use a calculator for precision.

Step 3: Find 7% of the number (x)

Now that we've determined (x) , we can find 7% of (x) :
 $0.07 \times x = 0.07 \times 128.57$

Calculate:

$$0.07 \times 128.57 = 9.00$$

Answer:

7% of the number is 9.

Alternative Methods for Solving the Problem

While the above method is straightforward, there are other approaches that can be useful, especially in different contexts.

Method 1: Using Ratios

- Since 21% corresponds to 27, the ratio of the percentage to the value is:
 $\frac{27}{0.21}$
- To find 7%, set up a proportion:
 $\frac{27}{0.21} = \frac{X}{0.07}$
- Cross-multiplied:
 $27 \times 0.07 = X \times 0.21$
- Solve for (X) :
 $X = \frac{27 \times 0.07}{0.21}$
 $X = \frac{1.89}{0.21} = 9$
- Again, the same result.

Method 2: Using Proportions

- The problem involves proportional relationships:
 $\frac{21}{100}$ corresponds to 27
- Find the number (x) :
 $x = \frac{27 \times 100}{21}$
 $x = \frac{2700}{21} \approx 128.57$
- Then calculate 7%:
 $0.07 \times 128.57 \approx 9$

Understanding the Concept of Percentage Problems

This problem exemplifies a common approach to percentage problems: translating percentages into decimal form and setting up algebraic equations. Let's explore some related concepts.

Key concepts involved

- **Percentage of a number:** Finding a part of a total expressed as a percentage.
- **Unknown quantity:** When the percentage and part are known, the total can be determined.
- **Scaling:** Once the total is known, other percentages of the total can be easily computed.

Important tips

1. Always convert percentages to decimal form before calculations.
2. Set up equations based on the problem's relationships.
3. Double-check calculations, especially when dealing with fractions or decimals.
4. Remember that percentages are parts per hundred, which simplifies understanding ratios.

Practical Applications of Percentage Calculations

Understanding how to manipulate percentages is vital in many real-life situations:

Common scenarios include:

- Calculating discounts and sale prices.
- Determining interest rates on savings accounts or loans.
- Analyzing data in surveys and research.
- Calculating tips and service charges.
- Understanding tax calculations.

For example:

If a product's discount is 21% and the discounted price is known, you can find the original price and then determine other discounts or taxes based on percentages.

Practice Problems

To reinforce your understanding, here are some similar problems:

1. If 30% of a number is 45, find 10% of that number.
2. A student scored 81 marks, which is 90% of the total marks. Find the total marks.
3. 18% of a number is 36. What is 5% of that number?
4. In a class, 25% of students are absent. If 15 students are absent, how many students are in the class?
5. If 15% of a number is 24, what is 25% of that number?

Answers to practice problems:

1. 10% of the number = 15
2. Total marks = 90
3. The number = 200; 5% of that number = 10
4. Total students = 60
5. The number = 160; 25% of that number = 40

Summary

In this article, we've explored how to solve a percentage problem step-by-step:

- Restated the problem and identified key information.
- Converted percentages into decimals for easier calculations.
- Set up algebraic equations to find the unknown number.
- Calculated the value of 7% of that number.

The key takeaway is understanding the relationship between percentages and the total quantity, which allows you to solve a variety of problems efficiently. With practice, you can approach similar percentage problems confidently and accurately.

Final Thoughts

Mastering percentage problems is an essential skill in mathematics, with numerous applications in everyday life. By understanding how to set up equations and manipulate percentages, you can solve complex problems with ease. Keep practicing different types of percentage questions to build your confidence and proficiency in this fundamental area of mathematics.

Remember, the key steps involve converting percentages to decimals, setting up correct equations, and performing accurate calculations. Applying these principles consistently will improve your problem-solving skills and mathematical understanding.

Meta Description:

Learn how to solve the problem: If 21% of a number is 27, find 7% of that number. Step-by-step explanation, alternative methods, applications, and practice questions included.

Frequently Asked Questions

What is the first step to find the number when 21% of it equals 27?

Set up the equation: 21% of the number = 27, which translates to $0.21 \times x = 27$.

How do you solve for the number in the equation $0.21 \times x = 27$?

Divide both sides by 0.21: $x = 27 / 0.21$.

What is the value of the number when 21% of it is 27?

The number is $x = 27 / 0.21 \approx 128.57$.

How do you find 7% of the number once you know the number?

Calculate 7% of the number by multiplying the number by 0.07.

What is 7% of the number if the number is approximately 128.57?

7% of the number is $0.07 \times 128.57 \approx 9.00$.

Can you verify the calculation of 7% of the number?

Yes, multiplying 128.57 by 0.07 gives approximately 9, confirming the calculation.

What is the final answer to the problem 'If 21% of a number is 27, find 7% of that number'?

7% of the number is approximately 9.

Additional Resources

If 21% Of A Number Is 27, Find 7% Of That Number

Understanding percentages is fundamental in mathematics, especially in real-world contexts like finance, statistics, and everyday problem-solving. One common type of problem involves finding an unknown percentage of a given number, based on a known percentage value. Today, we delve into a specific example: if 21% of a number is 27, how can we determine what 7% of that same number equals? This question not only tests basic algebraic skills but also offers insight into proportional reasoning and percentage calculations.

In this article, we will explore the methodology behind solving such problems step-by-step, clarify key concepts, and demonstrate how to approach similar questions with confidence. Whether you're a student seeking to improve your math skills or someone interested in practical applications of percentages,

this detailed guide will serve as a comprehensive resource.

Understanding the Problem: Breaking Down the Question

The problem statement is straightforward but packed with essential information:

- Given: 21% of a certain number is 27.
- Find: 7% of that same number.

Let's analyze what this means:

- The phrase "21% of a number" indicates that a certain unknown number (let's call it N) is being multiplied by 21%, which is equivalent to 0.21 in decimal form.
- The result of this operation is 27, meaning:
 $0.21 \times N = 27$
- The goal is to find what 7% of the same number would be, which is:
 $0.07 \times N$

This problem requires us first to find the value of N , then calculate 7% of that value.

Converting Percentages to Decimals: The Foundation of Calculation

Before solving the problem, it's vital to understand how to convert percentages into decimal numbers:

- Percentages are parts per hundred.
- To convert a percentage to a decimal, divide the percentage by 100.
- For example:
 $21\% = 21 \div 100 = 0.21$
 $7\% = 7 \div 100 = 0.07$

Using decimals simplifies multiplication, making calculations straightforward.

Step-by-Step Solution Process

Let's walk through the process of solving the problem systematically:

Step 1: Set up the equation based on the given information

From the problem statement:

$$21\% \text{ of } N = 27$$

Expressed mathematically:

$$0.21 \times N = 27$$

Step 2: Solve for N

To find the value of N:

$$N = 27 \div 0.21$$

Performing this division:

$$N = 27 \div 0.21$$

Calculating:

$$N = 128.57 \text{ (rounded to two decimal places)}$$

This is the total number we are seeking.

Step 3: Calculate 7% of the number N

Now, to find 7% of N:

$$0.07 \times N = 0.07 \times 128.57$$

Performing the multiplication:

$$0.07 \times 128.57 \approx 9.00$$

Final answer:

7% of the number is approximately 9.00

Summary of steps:

1. Convert known percentage to decimal.
2. Set up the algebraic equation.
3. Solve for the unknown number.
4. Convert the desired percentage to decimal.
5. Multiply the decimal by the number to find the percentage value.

Deeper Insights: Why This Method Works

This approach exemplifies a fundamental principle in percentage problems: translating percentages into decimal multipliers simplifies calculations. The key idea is that percentages are ratios relative to 100, and converting them into decimals allows for straightforward algebraic manipulation.

Why does dividing 27 by 0.21 give the total number?

Because $0.21 \times N = 27$ implies $N = 27 \div 0.21$. This isolates N, directly solving for the total.

How is this method applicable to other percentage problems?

Any problem involving a known percentage of a quantity can be approached by setting up an algebraic equation, converting percentages to decimals, and solving accordingly.

Additional Tips for Handling Percentage Problems

- Always convert percentages into decimals before performing calculations.
- Use algebraic equations to relate unknowns efficiently.
- Be mindful of units and decimal precision, especially in financial contexts.
- Double-check your calculations to avoid errors, particularly during division.

Extensions and Practical Applications

Understanding how to manipulate percentages is essential across various fields:

- Finance: Calculating interest, discounts, or profit margins.
- Statistics: Interpreting data proportions.
- Shopping: Determining discounts or final prices.
- Science: Expressing concentrations or probabilities.

Let's consider a real-world scenario to illustrate the importance of these skills:

Scenario:

A store offers a 21% discount on a product, and the discounted price is \$27. You want to know the original price of the product and how much it would cost with a 7% discount.

Solution:

- Find the original price using the method above (which is $N \approx \$128.57$).
- Calculate 7% of the original price: $0.07 \times 128.57 \approx \9.00 .

This demonstrates how understanding percentages enables consumers and professionals to make informed decisions.

Common Mistakes and How to Avoid Them

While solving percentage problems appears straightforward, errors can occur. Common pitfalls include:

- Incorrect conversion of percentages to decimals:

Ensure to divide by 100, not multiply.

- Misreading the problem:

Confirm which percentage relates to which part of the problem.

- Arithmetic errors during division or multiplication:

Use a calculator for accuracy, especially with decimals.

- Rounding too early:

Keep calculations precise until the final step to avoid compounding rounding errors.

Being attentive to these details enhances accuracy and confidence in problem-solving.

Conclusion: Mastering Percentage Problems with Confidence

The question "If 21% of a number is 27, find 7% of that number" encapsulates a fundamental mathematical skill: translating percent-based information into algebraic expressions and solving for unknowns. By converting percentages into decimals, setting up equations, and performing straightforward calculations, you can efficiently tackle a broad range of similar problems.

Mastering these techniques not only improves your mathematical literacy but also equips you with practical tools applicable in everyday decision-making, financial planning, and data analysis. With practice, these methods become second nature, empowering you to approach percentage-based questions with clarity and confidence.

Remember, the key steps are: understand the problem, convert percentages to decimals, set up the algebraic equation, solve for the total, and then find the desired percentage. With this framework, you're well on your way to solving any percentage problem that comes your way.

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