

Set Up A Proportion And Solve Each Problem. Round Each Answer To The Nearest Tenths. 5) What Is 35% Of

**Set Up A Proportion And Solve Each Problem. Round Each Answer To The Nearest Tenths.
5) What Is 35% Of**

Understanding how to set up a proportion and solve problems involving percentages is an essential skill in mathematics that applies to everyday situations such as calculating discounts, tips, interest rates, and more. When tasked with finding a percentage of a number, the most effective method is often to set up a proportion, which allows you to solve for an unknown variable systematically. This article provides a comprehensive guide on how to set up proportions to solve percentage problems, with a specific focus on calculating 35% of a given number, rounded to the nearest tenth. Whether you're a student learning these concepts for the first time or someone seeking a refresher, this guide will help you master the process.

Understanding Percentages and Proportions

What Is a Percentage?

Percentages represent parts per hundred; they are a way to express ratios or fractions in a standardized form. For example, 35% means 35 parts out of 100, which can be written as the fraction $\frac{35}{100}$ or the decimal 0.35.

What Is a Proportion?

A proportion is an equation that states two ratios are equivalent. It generally takes the form:

$$\frac{a}{b} = \frac{c}{d}$$

where a , b , c , and d are numbers, and b and d are not zero. Setting up proportions allows us to solve for unknown quantities when the ratios are related.

How to Set Up a Proportion to Find a Percentage of a Number

When asked to find a certain percentage of a number, the key is to relate the percentage to the whole and the part you're trying to find.

The general steps are:

1. Identify the known values:

- The percentage value (e.g., 35%)
- The total or whole amount (the number you want to find a percentage of)

2. Convert the percentage to a decimal or fraction:

- For 35%, convert it to 0.35 (decimal) or 35/100 (fraction)

3. Set up the proportion:

$$\frac{\text{Part}}{\text{Whole}} = \frac{\text{Percentage}}{100}$$

or equivalently,

$$\frac{\text{Part}}{\text{Whole}} = \text{Percentage (as a decimal)}$$

4. Solve for the unknown:

- If the problem asks for the part (what is 35% of a number), set the proportion accordingly and cross-multiply to solve for the part.

Example:

Suppose you want to find 35% of 120.

Set up the proportion:

$$\frac{\text{Part}}{120} = 0.35$$

Solve for Part:

$$\text{Part} = 0.35 \times 120$$

Calculate:

$$\text{Part} = 42.0$$

Thus, 35% of 120 is 42.0, rounded to the nearest tenth.

Step-by-Step Guide to Solving Percentage Problems

Using Proportions

Step 1: Convert Percentage to Decimal

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

$$\text{Decimal} = \frac{\text{Percentage}}{100}$$

- For 35%, it becomes:

$$0.35$$

Step 2: Set Up the Proportion

- The proportion relates the part (what you're finding), the whole (the total amount), and the decimal form of the percentage.

$$\frac{\text{Part}}{\text{Whole}} = \text{Decimal of Percentage}$$

- For example, to find 35% of 200:

$$\frac{\text{Part}}{200} = 0.35$$

Step 3: Cross-Multiply and Solve

- Cross-multiplied form:

$$\text{Part} = 0.35 \times 200$$

- Calculate:

$$\text{Part} = 70.0$$

- Therefore, 35% of 200 is 70.0, rounded to the nearest tenth.

Step 4: Final Answer

- The answer is expressed rounded to the nearest tenth, which in this case is 70.0.

Practice Problems and Solutions

Below are some practice problems to reinforce the concept of setting up proportions to solve percentage questions.

Problem 1:

What is 35% of 150?

Solution:

Set up the proportion:

$$\frac{\text{Part}}{150} = 0.35$$

Calculate:

$$\text{Part} = 0.35 \times 150 = 52.5$$

Answer: 52.5

Problem 2:

What is 35% of 80?

Solution:

$$\frac{\text{Part}}{80} = 0.35$$

Calculate:

$$\text{Part} = 0.35 \times 80 = 28.0$$

Answer: 28.0

Problem 3:

What is 35% of 250?

Solution:

$$\begin{aligned} & \backslash[\\ & \frac{\text{Part}}{250} = 0.35 \\ & \backslash] \end{aligned}$$

Calculate:

$$\begin{aligned} & \backslash[\\ & \text{Part} = 0.35 \times 250 = 87.5 \\ & \backslash] \end{aligned}$$

Answer: 87.5

Additional Tips for Solving Percentage Problems Using Proportions

- Always convert percentages to decimals before setting up the proportion.
- Remember to cross-multiply when solving for the unknown.
- Round your final answer to the nearest tenth for consistency.
- Practice with different numbers to become comfortable with the process.
- Understand that setting up the proportion is versatile for various percentage problems, including increases, decreases, and parts of a whole.

Applications of Setting Up Proportions in Real Life

- Shopping and Discounts: Calculating how much you save during sales.
- Financial Planning: Determining interest earned or paid over time.
- Cooking and Recipes: Adjusting ingredient quantities based on percentage changes.
- Statistics and Data Analysis: Interpreting percentages in datasets.
- Education: Grading and scoring percentages.

Conclusion

Mastering the skill of setting up proportions to solve percentage problems is invaluable for both academic success and practical everyday applications. By converting percentages to decimals,

Carefully setting up the proportion, and solving systematically, you can find any percentage of a number efficiently and accurately. Remember to round your answers to the nearest tenth to maintain consistency and precision. With practice, solving problems like "What is 35% of a number?" will become second nature, empowering you to handle a wide range of mathematical and real-world situations confidently.

Frequently Asked Questions

What is 35% of 60?

21.0

What is 35% of 80?

28.0

What is 35% of 120?

42.0

What is 35% of 200?

70.0

What is 35% of 45?

15.8

What is 35% of 150?

52.5

What is 35% of 90?

31.5

What is 35% of 300?

105.0

What is 35% of 55?

19.2

What is 35% of 75?

26.3

Additional Resources

Set Up A Proportion And Solve Each Problem. Round Each Answer To The Nearest Tenths.
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Understanding how to set up and solve proportions is an essential skill in mathematics, especially when dealing with percentages. Percentages are a way to express ratios or fractions out of 100, making them a versatile tool in everyday situations—from calculating discounts and interest rates to determining quantities in recipes or budgets. When faced with a problem like “What is 35% of a number?”, the ability to translate this question into a proportion and then solve it accurately becomes invaluable. This article offers a comprehensive exploration of how to set up proportions, solve the associated problems, and interpret the solutions, with a focus on rounding answers to the nearest tenth.

Understanding Percentages and Their Relevance

Before delving into the process of setting up proportions, it's crucial to understand what percentages represent. A percentage is a way to express a part of a whole as a fraction of 100. For example, 35% means 35 out of 100, or $35/100$, which simplifies to 0.35 as a decimal.

Why Are Percentages Important?

- Everyday transactions: Calculating discounts, tips, taxes.
- Data analysis: Interpreting statistics and survey results.
- Financial planning: Computing interest, investments, and savings.
- Educational assessments: Understanding scores and performance metrics.

In mathematical terms, percentages are directly related to fractions and decimals, and the process of finding a percentage of a number involves multiplication. However, setting up a proportion can sometimes simplify the process, especially when dealing with more complex problems or multiple steps.

Setting Up a Proportion for Percentage Problems

A proportion is an equation that states two ratios are equivalent. When solving percentage problems, the key is to relate the part, the whole, and the percentage itself in a proportional relationship. The general structure looks like this:

$$\text{Part} / \text{Whole} = \text{Percentage} / 100$$

This setup allows us to find an unknown quantity, given the other three.

Example of a Basic Proportion:

Suppose you want to find 35% of a number (x) . You can set up the proportion as:

$$\frac{\text{Part}}{\text{Whole}} = \frac{\text{Percentage}}{100}$$

In this case:

- The Part is the amount corresponding to 35% of the number.
- The Whole is the total number you are finding the percentage of.
- The Percentage is 35.

Step-by-step process:

1. Identify what each component represents.
2. Write the proportion based on the known and unknown quantities.
3. Cross-multiply to solve for the unknown.

Applying the Proportion Method to Find 35% of a Number

Let's consider a specific example to illustrate this process:

Problem: What is 35% of 60?

Step 1: Set up the proportion

$$\frac{\text{Part}}{60} = \frac{35}{100}$$

Here, the part represents 35% of 60, which we are trying to find.

Step 2: Cross-multiplied Equation

$$\text{Part} \times 100 = 35 \times 60$$

Step 3: Solve for Part

$$\text{Part} = \frac{35 \times 60}{100}$$

Calculating the numerator:

$$35 \times 60 = 2100$$

Dividing by 100:

$$\text{Part} = \frac{2100}{100} = 21$$

Answer: 35% of 60 is 21.

Since the problem requests rounding to the nearest tenth, the answer is 21.0.

General Formula and Variations

The proportion method can be generalized for different types of problems:

General Formula:

$$\text{Part} = \frac{\text{Percentage} \times \text{Whole}}{100}$$

This formula is derived directly from the proportion setup and simplifies calculations, especially when the whole number is known.

Other Variations:

- Given the part and percentage, find the whole:

$$\text{Whole} = \frac{\text{Part} \times 100}{\text{Percentage}}$$

- Find the percentage when the part and whole are known:

$$\text{Percentage} = \frac{\text{Part} \times 100}{\text{Whole}}$$

The flexibility of setting up proportions allows for easy adaptation to various real-world problems.

Practice Problems and Solutions

To reinforce understanding, consider several practice problems with varied parameters.

Problem 1: What is 35% of 80?

Solution:

Set up the proportion:

$$\frac{\text{Part}}{80} = \frac{35}{100}$$

Cross-multiplied:

$$\text{Part} = \frac{35 \times 80}{100} = \frac{2800}{100} = 28$$

Answer: 35% of 80 is 28.0.

Problem 2: 50 is what percentage of 200?

Solution:

Set up the proportion based on the formula:

$$\text{Percentage} = \frac{50 \times 100}{200} = \frac{5000}{200} = 25$$

Answer: 50 is 25.0% of 200.

Problem 3: Find the whole number if 35% of it is 14.

Solution:

Rearranged formula:

$$\text{Whole} = \frac{\text{Part} \times 100}{\text{Percentage}} = \frac{14 \times 100}{35} = \frac{1400}{35} = 40$$

\]

Answer: The whole number is 40.0.

Problem 4: What is 35% of 123?

Solution:

\[

$$\frac{\text{Part}}{123} = \frac{35}{100}$$

\]

\[

$$\text{Part} = \frac{35 \times 123}{100} = \frac{4305}{100} = 43.05$$

\]

Rounded to the nearest tenth:

Answer: 43.1

Interpreting the Results and Practical Applications

The process of setting up and solving proportions for percentage problems is not merely an academic exercise; it has tangible applications across numerous fields:

- Finance: Calculating interest, discounts, and markups.
- Science: Determining concentration levels or proportions.
- Health and Nutrition: Computing nutrient percentages.
- Education: Analyzing scores and performance statistics.

Rounding answers to the nearest tenth ensures clarity and precision, especially in contexts where slight differences matter, such as financial calculations or scientific measurements.

Common Pitfalls and Tips for Accuracy

While the process appears straightforward, several common mistakes can occur:

- Incorrect proportion setup: Always ensure the ratio relates the part to the whole and the percentage to 100.
- Misplacing values: Confusing numerator and denominator can lead to wrong answers.

- Ignoring units: Be consistent with units, especially if dealing with measurements.
- Rounding errors: Round only after completing all calculations to maintain accuracy.

Tips:

- Write down each step clearly.
- Double-check the setup before solving.
- Use a calculator for multiplications and divisions.
- Always round to the nearest tenth unless otherwise specified.

Conclusion: Mastering Proportions for Percentage Problems

Understanding how to set up a proportion and solve it accurately is a crucial mathematical skill with broad practical implications. Whether you're calculating a percentage of a total, determining the total from a known part, or translating percentages into real quantities, the proportional approach streamlines the process and enhances accuracy. By practicing different problems and paying close attention to the setup, you develop a robust understanding that can be applied confidently in academic, professional, and everyday scenarios.

Remember, the key steps are:

1. Identify the known and unknown quantities.
2. Set up the proportion correctly.
3. Cross-multiply and solve for the unknown.
4. Round the final answer to the nearest tenth.

Developing proficiency with these steps will empower you to solve a wide array of percentage problems efficiently and accurately.

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