

If \$320 Is Divided Into Two Portions In The Ratio 3:5, The Largest Portions Is

If \$320 Is Divided Into Two Portions In The Ratio 3:5, The Largest Portion Is a fundamental question in mathematics that involves understanding ratios, proportions, and basic algebra. This problem not only tests your ability to divide a sum into parts according to a given ratio but also enhances your comprehension of proportional reasoning, which is applicable in various real-world scenarios such as sharing resources, budgeting, and analyzing data. In this comprehensive guide, we will explore the step-by-step process to determine the largest portion when \$320 is divided into two parts in the ratio 3:5, along with related concepts, practical examples, and tips for mastering similar problems.

Understanding Ratios and Their Significance

What Is a Ratio?

A ratio is a way to compare two quantities, showing how much of one thing there is relative to another. It is expressed as:

- A:b (read as "a to b")
- or as a fraction $\frac{a}{b}$

For example, a ratio of 3:5 means that for every 3 parts of one quantity, there are 5 parts of another.

Why Ratios Matter

Ratios are essential in various fields:

- Cooking: Adjusting ingredient quantities.
- Finance: Comparing expenses or investments.
- Science: Mixing solutions in specific proportions.
- Mathematics: Solving problems involving parts of a whole.

Understanding ratios allows for proportional reasoning, which is crucial for problem-solving across disciplines.

Breaking Down the Problem: Dividing \$320 in the

Ratio 3:5

Step 1: Identify the Total Sum and Ratio Parts

- Total amount to be divided: \$320
- Ratio parts: 3 and 5

$$\text{Total parts} = 3 + 5 = 8$$

Step 2: Find the Value of One Part

- Since the total amount (\$320) corresponds to 8 parts, one part is:

$$\begin{aligned} \text{Value of one part} &= \frac{\text{Total amount}}{\text{Total parts}} = \\ \frac{\$320}{8} &= \$40 \end{aligned}$$

Step 3: Calculate Each Portion

- First portion (3 parts):

$$3 \times \$40 = \$120$$

- Second portion (5 parts):

$$5 \times \$40 = \$200$$

Determining the Largest Portion

Analysis of the Results

- The first portion is \$120
- The second portion is \$200

Since $\$200 > \120 , the larger portion in this division is \$200.

Answer: The Largest Portion Is \$200

This straightforward calculation shows that when dividing \$320 in the ratio 3:5, the larger share is \$200, which corresponds to the part with 5 units.

Practical Examples and Applications

Understanding how to divide amounts in a given ratio is useful in many practical situations. Here are some common examples:

Example 1: Sharing a Prize Money

Suppose a team wins a prize of \$320, and they decide to split it in the ratio 3:5 based on their contributions. The larger share goes to the more contributing member, and they receive \$200.

Example 2: Distributing Resources

A company allocates \$320 for two departments in the ratio 3:5. The marketing department receives \$120, while the R&D department gets \$200.

Example 3: Budgeting in Projects

When planning a project with a budget of \$320, resources are divided based on the ratio 3:5 to allocate funds efficiently.

Related Concepts and Advanced Topics

Proportions and Cross-Multiplication

- When solving ratio problems, cross-multiplication helps verify solutions.
- For example, if you want to check the division:

$$\frac{\text{Part A}}{\text{Part B}} = \frac{3}{5}$$

and the total sum is \$320, then:

$$\text{Part A} + \text{Part B} = \$320$$

- Using the earlier calculation:

```
\[
\$120 + \$200 = \$320
\]
```

which confirms the correctness.

Scaling Ratios

- Ratios can be scaled up or down proportionally. For example, dividing \$640 in the ratio 3:5 would double each portion:

```
\[
\$120 \times 2 = \$240
\]
\[
\$200 \times 2 = \$400
\]
```

Total: \$640

Solving Similar Problems

- Adjust the total sum or the ratio parts.
- Use the same steps: find the total parts, determine the value of one part, then multiply accordingly.

Common Mistakes to Avoid

- Incorrect addition of ratio parts: Always sum the parts before dividing.
- Misinterpretation of ratios: Remember that ratios compare quantities, not necessarily monetary values.
- Ignoring the total sum: Ensure that the sum of the parts equals the total amount.

Practice Problems for Mastery

To solidify understanding, try solving these problems:

1. Divide \$480 into two portions in the ratio 2:7. What is the largest portion?
2. A total of \$150 is shared between two friends in the ratio 4:9. How much

does each receive?

3. In a class, the number of boys and girls is in the ratio 3:4. If there are 56 students in total, how many boys and girls are there?
4. Divide \$560 into three parts in the ratio 1:2:3. What is the largest part?

Solutions involve similar steps:

- Find total parts.
- Calculate the value of each part.
- Multiply to find individual shares.

Summary and Key Takeaways

- Dividing a total amount based on a ratio involves understanding the ratio parts and total sum.
- The process includes: summing the ratio parts, calculating the value of one part, then multiplying by each ratio component.
- When dividing \$320 in the ratio 3:5, the largest portion is \$200.
- Practical applications of ratio division are widespread in everyday life and various professional fields.
- Mastery comes through practice and understanding the underlying principles of ratios and proportions.

Conclusion

Understanding how to divide amounts in specific ratios is a fundamental skill in mathematics that extends beyond classroom exercises into real-world scenarios. When \$320 is divided into two portions in the ratio 3:5, the largest portion is clearly \$200. By mastering the concept of ratios, you can confidently approach similar problems involving sharing, distribution, and proportional reasoning, ensuring accurate and efficient solutions in diverse contexts. Keep practicing with different totals and ratios to strengthen your skills and develop a deeper understanding of proportional relationships.

Frequently Asked Questions

What is the total sum of the parts when \$320 is divided in the ratio 3:5?

The total sum of parts is $3 + 5 = 8$. So, the combined value is \$320.

How much is each part worth when \$320 is divided in the ratio 3:5?

Each part is worth $\$320 \div 8 = \40 .

What is the amount of the larger portion in the ratio 3:5?

The larger portion, corresponding to 5 parts, is $5 \times \$40 = \200 .

What is the smaller portion in the ratio 3:5?

The smaller portion, corresponding to 3 parts, is $3 \times \$40 = \120 .

Which portion is larger when \$320 is divided in the ratio 3:5?

The portion corresponding to 5 parts, which is \$200, is larger.

What is the key concept used to divide a sum in a given ratio?

The key concept is to find the total parts, divide the total amount by this number, then multiply each part by the ratio's individual parts.

How do you determine the largest portion in a ratio division problem?

Identify the ratio's larger part (here, 5), then multiply it by the value of each part (\$40) to find the largest portion (\$200).

Can the method used here be applied to divide any amount in any ratio?

Yes, the method of dividing the total by the sum of ratio parts and then multiplying by each part is universally applicable for ratio divisions.

Additional Resources

If \$320 Is Divided Into Two Portions In The Ratio 3:5, The Largest Portion Is – a question that taps into fundamental concepts of ratio and proportion, which are essential topics in mathematics, especially in the domains of algebra and real-world problem solving. Whether you're a student preparing for exams, a teacher designing lesson plans, or someone interested in understanding how to split quantities fairly or proportionally, grasping how

to divide a sum based on a given ratio is a skill worth mastering. In this guide, we'll explore the problem step-by-step, providing a comprehensive understanding of how to approach and solve such ratio-based division problems efficiently.

Understanding the Basics: What Is a Ratio?

Before diving into the problem, it's important to clarify what a ratio represents. A ratio compares two quantities, indicating how many times one value contains or is contained within the other.

- Definition: A ratio of two numbers, say 3 and 5, written as 3:5, indicates that for every 3 parts of one quantity, there are 5 parts of the other.
- Interpretation: The ratio 3:5 means that the total parts are $3 + 5 = 8$ parts.

The Problem Restated

"If \$320 is divided into two portions in the ratio 3:5, what is the largest portion?"

This question involves:

- Dividing a total amount of \$320
- Into two parts that are proportional to 3 and 5 respectively
- Identifying which part is larger (which, given the ratio, is the one with 5 parts)

Step-by-Step Approach to Solving the Problem

Step 1: Understand the Total Number of Parts

In the ratio 3:5:

- The first portion corresponds to 3 parts
- The second portion corresponds to 5 parts

Total parts = $3 + 5 = 8$ parts

Step 2: Find the Value of One Part

Since the total amount (\$320) is divided into 8 parts:

- Value of one part = Total amount / Total parts
- Value of one part = $\$320 / 8 = \40

This means each 'part' of the ratio is worth \$40.

Step 3: Calculate Each Portion

Using the value of one part:

- First portion (ratio 3): $3 \text{ parts} \times \$40 = \120
- Second portion (ratio 5): $5 \text{ parts} \times \$40 = \200

Conclusion: Which is the Largest Portion?

From the calculations:

- The first portion (3 parts): \$120
- The second portion (5 parts): \$200

The largest portion is \$200, which corresponds to the ratio part of 5.

Additional Insights and Related Concepts

1. Verifying the Total

Adding the two portions:

$$\$120 + \$200 = \$320$$

which matches the total amount, confirming the correctness of the division.

2. Understanding the Significance of the Ratio

- The ratio 3:5 indicates that the larger share is associated with 5 parts.
- Since the parts are proportional to the ratio, the larger ratio number always corresponds to the larger portion.

3. General Formula for Dividing an Amount in a Given Ratio

If a total amount T is divided into two parts with ratio $a:b$, then:

- First part = $(a / (a + b)) \times T$
- Second part = $(b / (a + b)) \times T$

Applying to our example:

- First part = $(3 / 8) \times 320 = \$120$
- Second part = $(5 / 8) \times 320 = \$200$

Extending the Concept: Dividing into Multiple Ratios

While our problem focuses on two parts, the same principles extend to dividing an amount into multiple parts with different ratios.

Example: Dividing \$320 into three parts in the ratio 2:3:5

- Total parts = $2 + 3 + 5 = 10$
- Value of one part = $\$320 / 10 = \32
- Portions:
- First: $2 \times \$32 = \64
- Second: $3 \times \$32 = \96
- Third: $5 \times \$32 = \160

Practical Applications of Ratio Division

Understanding how to divide amounts based on ratios has numerous real-world applications:

- Financial Planning: Distributing income or investments proportionally
- Resource Allocation: Dividing resources among departments or projects
- Cooking and Recipes: Adjusting ingredient quantities based on ratio
- Construction and Manufacturing: Splitting materials or costs proportionally

Common Mistakes to Avoid

- Forgetting to sum the ratio parts: Always add the parts to find the total number of parts.
- Incorrectly calculating the value of one part: Ensure you divide the total amount by the total parts, not just by one part.
- Mixing up ratio parts: Keep track of which part corresponds to which quantity, especially in multi-part ratios.
- Ignoring the total sum check: Always verify that the sum of the divided portions equals the original total.

Summary

- To divide a sum based on a ratio:
- Find the total number of parts by adding the ratio components.
- Calculate the value of one part by dividing the total sum by the total parts.
- Multiply the value of one part by each ratio component to find individual portions.
- In the case of dividing \$320 into parts 3:5:
- Total parts = 8

- Value of each part = \$40
- Largest portion (ratio 5) = $5 \times \$40 = \200

Final Note

Mastering ratio division not only helps solve straightforward math problems but also enhances problem-solving skills applicable in real-world situations. Always remember to interpret ratios correctly, perform the calculations systematically, and verify your answers for accuracy.

If \$320 Is Divided Into Two Portions In The Ratio 3:5, The Largest Portion Is \$200.

If 320 Is Divided Into Two Portions In The Ratio 3 5 The Largest Portions Is

If 320 Is Divided Into Two Portions In The Ratio 3 5 The Largest Portions Is

Related Articles

- [A Secondary Character Who Functions As A Contest To A Major Character Is A\(n\)](#)
- [A Wise Man Once Said, "300 Reduced By 3 Times My Age Is 84." What Is His Age?](#)
- [A Material With A High Dielectric Constant Increases The Capacitance. True False](#)

[Back to Home](#)