on his way home, pudge first rode his bike around the perimeter of the park, which took 5 2/5 minutes then it took 8 1/10 minutes to ride home how long did it take pudge to get home

Understanding the Problem: Pudge’s Bicycle Ride

On his way home, Pudge first rode his bike around the perimeter of the park, which took 5 2/5 minutes, then it took 8 1/10 minutes to ride home. How long did it take Pudge to get home? This problem involves understanding and manipulating mixed numbers, as well as applying basic arithmetic to determine total time. To find the total duration of Pudge’s journey, we need to analyze each segment separately and then combine the times. In this article, we will explore the steps involved in solving this problem, converting mixed numbers to improper fractions, performing addition, and interpreting the results.

Breaking Down the Problem

Identifying Each Segment of the Journey

- First Segment: Riding around the park’s perimeter
- Second Segment: Riding from the park to his home

Given Times

1. Time around the park: 5 2/5 minutes
2. Time to ride home: 8 1/10 minutes

What Is Being Asked?

The main question is: *How long did it take Pudge to get home?* Since the first segment involves riding around the park, which is a different route, and the second segment is from the park to home, the total time Pudge spent on his journey includes both segments. However, the problem emphasizes the time to ride home, which is the second segment, and the total journey time if combined.

Converting Mixed Numbers to Improper Fractions

Why Convert to Improper Fractions?

Mixed numbers are convenient for reading but complicate calculations. Converting them to improper fractions simplifies addition, subtraction, and other operations involving fractions.

Converting 5 2/5 to an Improper Fraction

1. Multiply the whole number by the denominator: 5 × 5 = 25
2. Add the numerator: 25 + 2 = 27
3. Write as a fraction: **27/5**

Converting 8 1/10 to an Improper Fraction

1. Multiply the whole number by the denominator: 8 × 10 = 80
2. Add the numerator: 80 + 1 = 81
3. Write as a fraction: **81/10**

Adding the Times: Total Journey Duration

Finding a Common Denominator

To add **27/5** and **81/10**, we need a common denominator. The least common denominator (LCD) of 5 and 10 is 10.

Rewriting Fractions with Common Denominator

1. **27/5**: multiply numerator and denominator by 2 to get **54/10**
2. **81/10** remains the same

Performing the Addition

Now, add the two fractions:

- 54/10 + 81/10 = (54 + 81)/10 = 135/10

Simplifying the Result

Divide numerator and denominator by their greatest common divisor, which is 5:

- 135 ÷ 5 = 27
- 10 ÷ 5 = 2

So, **135/10** simplifies to **27/2**.

Converting the Total Time Back to a Mixed Number

Dividing the Improper Fraction

To interpret the total time, divide 27 by 2:

1. 27 ÷ 2 = 13 with a remainder of 1
2. Expressed as a mixed number: 13 1/2

Final Answer

Therefore, Pudge’s total journey time, combining both segments, is **13 1/2 minutes**.

Interpreting the Results in Context

What Does 13 1/2 Minutes Mean?

The total time of 13 1/2 minutes (or 13 minutes and 30 seconds) indicates that Pudge spent this amount of time traveling from the point he left the park to his home, including his ride around the park perimeter and the final leg home.

Additional Considerations

- Understanding the significance of each segment’s duration helps in planning or estimating travel times.
- If Pudge’s route or speed varies, the actual times might differ, but based on the given data, this is the total time assuming consistent speed.

Summary of the Calculation Steps

1. Convert mixed numbers to improper fractions.
2. Find a common denominator to add fractions.
3. Add the fractions and simplify the result.
4. Convert the sum back into a mixed number for easy interpretation.
5. Interpret the total time in minutes and seconds.

Conclusion: How Long Did Pudge Take to Get Home?

By following the process of converting mixed numbers, adding fractions, and simplifying, we determined that Pudge's total journey time was **13 1/2 minutes**. This comprehensive approach demonstrates the importance of understanding fractions in real-world problems and highlights the steps needed to perform accurate calculations. Whether for a school assignment or just everyday problem-solving, mastering these skills is essential for effective mathematical reasoning.

Frequently Asked Questions

How long did Pudge take to ride around the perimeter of the park?

5 2/5 minutes.

What is the mixed number 5 2/5 expressed as an improper fraction?

27/5.

How long did it take Pudge to ride home after riding around the park?

8 1/10 minutes.

What is 8 1/10 as an improper fraction?

81/10.

How can we find the total time Pudge took to ride home?

Add the time around the park (27/5 minutes) to the time to ride home (81/10 minutes).

What is the common denominator when adding 27/5 and 81/10?

10, since 5 x 2 = 10.

What is the total riding time in minutes after adding both durations?

The total time is 54/10 + 81/10 = 135/10, which simplifies to 13 5/10 or 13.5 minutes.

How long did it take Pudge to get home in minutes?

It took Pudge approximately 13.5 minutes to get home.

Additional Resources

Understanding Pudge’s Journey: A Comprehensive Breakdown of Time and Distance

When analyzing a scenario like Pudge’s bike ride, especially with multiple segments involving fractions of minutes, it’s essential to approach the problem systematically. This detailed review aims to explore every facet of Pudge’s journey, from the initial perimeter ride around the park to the final segment home, dissecting the problem with mathematical precision and contextual understanding.

Introduction to the Scenario

Imagine Pudge, a young cyclist, on a typical afternoon adventure. He begins his journey by riding his bike around the perimeter of a park, then proceeds to his home. The problem provides specific time durations for each segment:

- Perimeter ride: 5 2/5 minutes
- Ride home: 8 1/10 minutes

The core question we seek to answer is: How long did it take Pudge to get home? While

the question might seem straightforward, the inclusion of fractional minutes invites a deeper dive into fractions, conversions, and the importance of precise calculations.

Breaking Down the Times: Converting Fractions to Improper Fractions

The first step in solving problems involving mixed numbers is to convert them into improper fractions. This makes calculations more straightforward.

1. Converting 5 2/5 Minutes

- The mixed number: 5 2/5
- Conversion process:
- Multiply the whole number by the denominator: 5 × 5 = 25
- Add the numerator: 25 + 2 = 27
- Write as an improper fraction: 27/5

Result:
Perimeter ride time = 27/5 minutes

2. Converting 8 1/10 Minutes

- The mixed number: 8 1/10
- Conversion process:
- Multiply the whole number: 8 × 10 = 80
- Add the numerator: 80 + 1 = 81
- Write as an improper fraction: 81/10

Result:
Time to ride home = 81/10 minutes

Calculating Total Time for Pudge’s Journey

The question centralizes on the duration of Pudge’s ride home. Since the times are given separately, understanding the total time spent on the entire trip and, specifically, the segment home, requires proper addition of fractions.

1. Understanding the Components

- Perimeter ride: 27/5 minutes
- Ride home: 81/10 minutes

The total journey time from start to finish is the sum of these two segments, but our primary focus is the time taken specifically to get home, which is already provided as 81/10 minutes.

Expressing Time in a Common Denominator

Adding or comparing fractions is easiest when they share a common denominator.

1. Find the Least Common Denominator (LCD)

- Denominators involved: 5 and 10
- LCD of 5 and 10: 10

2. Convert 27/5 to tenths

- Since 5 × 2 = 10, multiply numerator and denominator by 2:
- 27/5 = (27 × 2)/(5 × 2) = 54/10

Updated times:

- Perimeter: 54/10 minutes
- Home: 81/10 minutes

3. Total journey time:

- Total = 54/10 + 81/10 = (54 + 81)/10 = 135/10 = 13 5/10 minutes

- Simplify 13 5/10 to a mixed number:
- 5/10 reduces to 1/2
- So, total time = 13 1/2 minutes

This calculation confirms Pudge’s entire trip took 13 1/2 minutes, with the segment home being 8 1/10 minutes, as initially provided.

Deep Dive into the Duration of Pudge’s Journey Home

Given the data, the time Pudge took to get home is explicitly provided as 8 1/10 minutes, which we have converted to an improper fraction as 81/10. But to enhance understanding, let’s explore the significance of fractional time measurements and how they might impact real-world scenarios.

1. Interpreting the Fractional Minutes

Fractional minutes are common in real-world time measurements, especially in sports, transportation, or precise timing situations. For Pudge:

- 8 1/10 minutes translates to 8 minutes and 6 seconds (since 1/10 of a minute = 6 seconds).

This breakdown offers a tangible sense of the duration:

- 8 minutes + (1/10 × 60 seconds) = 8 minutes + 6 seconds

Understanding these conversions helps visualize the actual time Pudge spent riding home.

2. Practical Implications

- Speed Considerations: If Pudge's route is known or can be estimated, these times can help calculate his average speed.
- Time Management: Recognizing that fractional minutes are manageable and precise helps in planning and efficiency.

Mathematical Validations and Cross-Checks

To ensure the accuracy of our calculations, multiple validation steps can be employed.

1. Reconfirm the Conversions

- 5 2/5 = 27/5 → multiplied by 2 for common denominator: 54/10
- 8 1/10 = 81/10

2. Summing the Times

- Sum: 54/10 + 81/10 = 135/10 = 13 1/2 minutes

3. Cross-Checking with Decimal Forms

- 27/5 = 5.4 minutes
- 81/10 = 8.1 minutes
- Total: 5.4 + 8.1 = 13.5 minutes, matching the mixed number result

This consistency confirms the reliability of our calculations.

The Broader Context: Why Precise Time Calculations Matter

Understanding and accurately calculating fractional times isn’t just a mathematical exercise; it has real-world relevance:

1. Time Optimization

- For athletes or commuters like Pudge, knowing exact times helps in optimizing routes and schedules.

2. Educational Value

- Learning to handle fractions fosters critical thinking and prepares students for complex problem-solving scenarios.

3. Application in Various Fields

- Engineering, navigation, and even software development often depend on precise time calculations involving fractions.

Conclusion: Summarizing Pudge’s Journey Duration

From the detailed analysis, it’s clear that:

- Pudge’s ride around the park’s perimeter took 5 2/5 minutes, which converts to 27/5 or 54/10 minutes.
- His journey home took 8 1/10 minutes, equivalent to 81/10 minutes.

When combined, the total time Pudge spent biking was 13 1/2 minutes, or 13 minutes and 30 seconds. This precise breakdown demonstrates not only the duration of his trip but also emphasizes the importance of understanding fractions, conversions, and their practical applications.

In essence, Pudge’s ride home specifically took him 8 1/10 minutes, a duration that’s both easy to interpret and applicable in various real-world contexts. Whether for planning, educational purposes, or simply appreciating the nuances of time measurement, this problem exemplifies the value of meticulous calculation and comprehension of fractional time units.

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