

Find The Unit Rate. Round To The Nearest Hundredth, If Necessary. \$210 Of 17 Ft² Can Someone Help Me Please

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Understanding how to find the unit rate is essential for making informed decisions, especially when comparing prices, calculating costs, or determining the value of a quantity relative to another. In this article, we will explore how to compute the unit rate when given a total cost and a corresponding quantity, specifically focusing on the example "\$210 for 17 square feet." We'll guide you through the steps to determine the unit rate, explain why rounding to the nearest hundredth is important, and provide practical tips for applying this knowledge in real-world situations.

What Is a Unit Rate?

Definition of Unit Rate

A unit rate is a ratio that compares a quantity to one unit of another quantity, often used to express prices, speeds, densities, and more. It answers the question: "How much per one unit?"

Examples include:

- Cost per item
- Miles per hour
- Price per square foot
- Calories per serving

Importance of Finding the Unit Rate

Calculating unit rates allows you to:

- Compare prices effectively
- Determine the most economical option
- Understand the value of a product or service
- Make informed purchasing decisions

Understanding the Problem: "\$210 of 17 Ft²"

Let's analyze the specific problem:

- Total cost: \$210
- Quantity: 17 square feet (Ft²)

The goal: Find the cost per square foot (unit rate), rounded to the nearest hundredth.

Step-by-Step Guide to Finding the Unit Rate

Step 1: Write the Known Values

- Total cost (numerator): \$210
- Total area (denominator): 17 Ft²

Step 2: Set Up the Division

The unit rate (cost per square foot) is calculated by dividing the total cost by the total area:

$$\text{Unit Rate} = \frac{\text{Total Cost}}{\text{Total Area}}$$

So,

$$\text{Unit Rate} = \frac{210}{17}$$

Step 3: Perform the Division

Using a calculator or manual long division:

$$210 \div 17 \approx 12.3529$$

Step 4: Round to the Nearest Hundredth

Since the problem requests rounding to the nearest hundredth:

- The third decimal digit is 2, which is less than 5, so we round down.
- The rounded value is 12.35.

Final answer:

The cost per square foot is approximately \$12.35.

Practical Applications of Finding the Unit Rate

Knowing how to find the unit rate is valuable in numerous real-world scenarios:

1. Comparing Prices of Different Products

Suppose you see two different paint cans:

- Can A: \$40 for 4 gallons
- Can B: \$50 for 6 gallons

Calculating the cost per gallon:

- Can A: $(40 \div 4 = \$10)$ per gallon
- Can B: $(50 \div 6 \approx \$8.33)$ per gallon

Since Can B is cheaper per gallon, it's a better deal.

2. Estimating Costs for Larger or Smaller Quantities

If you need to paint a specific area, knowing the cost per square foot helps estimate total expenses.

3. Making Cost-Effective Decisions

By comparing unit rates, consumers can choose the most economical options, saving money in the long run.

Additional Examples and Practice Problems

Example 1: Grocery Shopping

A 12-ounce bottle of juice costs \$3.60. Find the cost per ounce, rounded to the nearest hundredth.

Solution:

- Total cost: \$3.60
- Total ounces: 12

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$$\frac{3.60}{12} = 0.30$$

\]

Answer: The juice costs \$0.30 per ounce.

Example 2: Gasoline Cost

A car travels 250 miles on 10 gallons of gasoline. Find the miles per gallon, rounded to the nearest hundredth.

Solution:

- Total miles: 250
- Gallons used: 10

\[

$$\frac{250}{10} = 25.00$$

\]

Answer: The car gets 25.00 miles per gallon.

Tips for Accurate Calculation and Rounding

- Always write down the division clearly.
- Use a calculator for precise results.
- Round to the hundredth by looking at the third decimal digit:
- If it is 5 or higher, round up.
- If it is less than 5, round down.
- Keep extra decimal places during calculations to maintain accuracy until the final step.

Common Mistakes to Avoid

- Forgetting to perform the division correctly.
- Rounding too early before completing calculations.
- Using approximate values without sufficient decimal precision.
- Confusing numerator and denominator in the ratio.

Conclusion: Applying Your Knowledge

Calculating the unit rate is a fundamental skill that empowers you to make smarter decisions in everyday life. Whether you're shopping, planning a project, or analyzing costs, understanding how to find and interpret unit rates helps you compare options effectively. In the example of "\$210 for 17 Ft²," we've demonstrated how to convert total cost and area into a per-unit cost, which is approximately \$12.35 per square foot after rounding to the nearest hundredth.

Remember, practice makes perfect. Try working through different problems with varying quantities and prices to strengthen your skills. With consistent effort, you'll become proficient at quickly calculating unit rates, a valuable tool in both academic and real-world settings.

FAQs

1.

What does rounding to the nearest hundredth mean?

It means rounding the number to two decimal places, which is the hundredths place, ensuring the value is as precise as possible without unnecessary decimal detail.

2.

Why is it important to round the unit rate?

Rounding makes the value easier to interpret and compare, especially when dealing with monetary amounts or measurements that typically use two decimal places.

3.

Can I use the same method for different units?

Yes. The process of dividing the total quantity by the total cost or vice versa applies regardless of units, as long as the units are consistent.

By mastering the process of calculating and rounding unit rates, you can confidently evaluate costs, compare options, and make smarter financial decisions.

Frequently Asked Questions

How do I find the unit rate when given \$210 for 17

square feet?

Divide \$210 by 17 to find the cost per square foot: $210 \div 17 \approx 12.35$. So, the unit rate is approximately \$12.35 per square foot.

What does it mean to round to the nearest hundredth in this context?

Rounding to the nearest hundredth means limiting the decimal to two places. For example, if your calculation is 12.3529, it rounds to 12.35.

Why is finding the unit rate useful in real-life situations?

Finding the unit rate helps compare prices efficiently, such as determining the cost per square foot to compare different flooring options or prices.

Can I use a calculator to find the unit rate easily?

Yes, using a calculator makes dividing \$210 by 17 straightforward and ensures accuracy when rounding to the nearest hundredth.

What are common mistakes to avoid when calculating unit rates?

Common mistakes include forgetting to round to two decimal places, dividing incorrectly, or mixing units. Always double-check your calculations and rounding.

If I wanted to find the price per square foot for a different total, how would I do it?

Divide the new total price by 17 to find the unit rate for that amount. For example, for \$340, divide $340 \div 17 = 20$, so \$20 per square foot.

Additional Resources

Unit Rate Calculation: Understanding and Applying the Concept

When it comes to real-world applications of math, especially involving measurements and costs, understanding how to find the unit rate is an essential skill. Whether you're shopping for materials, comparing prices, or tackling homework problems, mastering the process of calculating and interpreting unit rates can save you money and improve your decision-making.

In this detailed guide, we'll explore the problem: "Find the unit rate for \$210 of 17 ft², rounded to the nearest hundredth." We'll break down each step, discuss the underlying

concepts, and provide practical tips to help you confidently approach similar problems.

What Is a Unit Rate? An Overview

Before diving into calculations, it's important to grasp what a unit rate actually is.

Definition of Unit Rate

A unit rate is a comparison of two quantities where the second quantity is expressed as one unit. It essentially tells you how much of one thing you get per single unit of another thing. Common examples include:

- Cost per item (e.g., dollars per shirt)
- Speed (e.g., miles per hour)
- Density (e.g., grams per cubic centimeter)

Knowing the unit rate allows you to compare different options efficiently, seeing which offers the best value or the most efficient ratio.

Why Are Unit Rates Important?

- Comparison shopping: Determine which product is more economical.
- Understanding measurements: Convert complex ratios into simpler, comparable figures.
- Problem-solving: Break down multi-step problems into manageable parts.

Understanding the Problem: "\$210 of 17 ft²"

Let's interpret the problem carefully:

- Total cost: \$210
- Area involved: 17 square feet (ft²)

Our goal is to find the cost per square foot, which is a classic example of a unit rate: dollars per ft².

Step-by-Step Guide to Find the Unit Rate

The process involves dividing the total cost by the total area to find the cost per unit area.

Step 1: Identify the quantities involved

- Total cost = \$210
- Total area = 17 ft²

Step 2: Set up the division problem

The unit rate (cost per 1 ft²) is calculated as:

$$\text{Unit Rate} = \frac{\text{Total Cost}}{\text{Total Area}}$$

Applying the values:

$$\text{Unit Rate} = \frac{210}{17}$$

Step 3: Perform the division

Calculate:

$$\frac{210}{17} \approx 12.3529$$

This is the precise division result, but typically we round to two decimal places for clarity and practicality in financial contexts.

Step 4: Round to the nearest hundredth

Rounding 12.3529 to two decimal places:

- The third decimal digit is 2, which is less than 5, so we keep the second decimal digit as is.

Final answer:

\[
\boxed{\textbf{\\$12.35 per ft²}}
\]

This means that, on average, the cost is approximately \$12.35 per square foot.

Additional Considerations and Tips

While this problem is straightforward, here are some key points and tips to enhance your understanding and accuracy:

1. Always check units

Ensure that the units of measurement are consistent. In this case, cost in dollars and area in square feet are compatible for division.

2. Use a calculator for division

When dividing large numbers or decimals, a calculator ensures accuracy, especially when rounding to two decimal places.

3. Rounding correctly

- Look at the third decimal place.
- If it's 5 or higher, round up.
- If it's less than 5, keep the second decimal digit as is.

4. Understanding the context

Knowing that the unit rate is in dollars per square foot helps compare this cost to other options or estimates.

Practical Applications of the Unit Rate

Understanding how to find and interpret unit rates is useful in many situations:

1. Home Improvement and Renovation

- Comparing prices of flooring, paint, or tiles based on cost per square foot.
- Budgeting for material quantities and expenses.

2. Shopping and Cost Analysis

- Comparing price per unit for items like fabric, wallpaper, or carpeting.
- Determining which supplier offers the best value.

3. Real Estate and Construction

- Calculating cost per area for land or property.
- Estimating costs for building or remodeling projects.

4. Educational and Homework Contexts

- Practicing problem-solving skills.
- Applying mathematical concepts to real-world scenarios.

Summary and Final Thoughts

Calculating the unit rate involves dividing the total quantity or cost by the total measurement or number of units involved. In our specific case:

- Total cost = \$210
- Total area = 17 ft²

The division yields approximately \$12.3529, which rounds to \$12.35 per square foot when rounded to the nearest hundredth.

Key Takeaways:

- Always identify the quantities involved and their units.
- Set up the division correctly.
- Use a calculator for precise division.
- Round to two decimal places for clarity and practicality.
- Understand the real-world relevance of unit rates to make informed decisions.

Mastering this process enhances your ability to compare options, interpret measurements,

and solve diverse problems involving ratios and rates. Whether you're budgeting, shopping, or studying, knowing how to find and interpret unit rates is a valuable skill.

Remember: Practice makes perfect. Try similar problems with different costs and measurements to build confidence and proficiency in calculating unit rates efficiently and accurately.

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