Introduction to Ratios, Proportions, and Unit Rates

Student Name: _____

Class: _____

Due Date: _____

Introduction to Ratios, Proportions, and Unit Rates

Learning Objectives:

- Understand the concept of equivalent ratios and proportions
- Apply unit rates to solve real-world problems
- Identify and write equivalent ratios in different forms

What are Ratios?

A ratio is a way of comparing two quantities by division. It can be written in the form a:b, where a and b are the quantities being compared.

Example: 2:3, 4:5, 3:4

Equivalent Ratios

Equivalent Ratio Matching:

1. 2:3 = ___
2. 4:5 = ___
3. 3:4 = ___
4. 2:5 = ___

Equivalent Ratio Word Problems:

1. A recipe for making cookies calls for a ratio of 2 cups of flour to 3 cups of sugar. If you want to make half the recipe, what ratio of flour to sugar will you need?

2. A group of friends want to share some candy in a ratio of 3:5. If they have 24 pieces of candy, how many pieces will each friend get?

Unit Rates

Unit Rate Conversion:

1. 12 miles per 4 hours = ___ miles per hour
2. 18 inches per 3 feet = ___ inches per foot
3. 24 apples per 4 baskets = ___ apples per basket

Real-World Applications:

1. A car travels 250 miles in 5 hours. What is the unit rate of miles per hour?
2. A bakery sells 480 loaves of bread per day. If they operate for 8 hours a day, what is the unit rate of loaves per hour?

Mixed Questions

Mixed Review:

1. A water tank can hold 1200 liters of water. If 3/4 of the tank is already filled, what ratio of the tank is still empty?

2. A group of students want to share some money in a ratio of 2:3. If they have $48, how much will each student get?

Mixed Practice:

1. Write the following ratios in their simplest form: 8:12 = ___

2. Solve the following word problems: A recipe for making cakes calls for a ratio of 3 cups of flour to 2 cups of sugar. If you want to make half the recipe, what ratio of flour to sugar will you need?

Extension Activities

Create Your Own Word Problems:

Create 2-3 word problems that involve equivalent ratios or unit rates. Solve your word problems and explain your reasoning.

Real-World Research:

Research a real-world scenario that involves ratios, proportions, or unit rates (e.g., cooking, finance, science). Write a short report explaining how ratios, proportions, or unit rates are used in this scenario.

Success Criteria

To successfully complete this assignment, ensure that you:

- Have completed all questions in Sections 1-3
- Have shown all necessary calculations and work
- Have answered all questions to the best of your ability
- Have completed the extension activities (if applicable)

Parent/Guardian Notes:

To support your child in completing this assignment:

- Encourage them to read each question carefully and ask for help if needed
- Provide guidance on how to show calculations and work
- Encourage them to use real-world examples to help solve problems
- Set a timer to help them manage their time and complete the assignment within the estimated 30-45 minutes
- Review their work and provide feedback on their understanding of ratios, proportions, and unit rates

Glossary

Glossary:

- Ratio: a way of comparing two quantities by division
- Proportion: a statement that two ratios are equal
- Unit rate: a ratio that has a denominator of 1
- Equivalent ratio: a ratio that has the same value as another ratio

Answers:

Section 1:

1. 2:3 = 4:6
2. 4:5 = 8:10
3. 3:4 = 6:8
4. 2:5 = 4:10

Section 2:

1. 12 miles per 4 hours = 3 miles per hour
2. 18 inches per 3 feet = 6 inches per foot
3. 24 apples per 4 baskets = 6 apples per basket

Advanced Concepts

Learning Objectives:

- Understand the concept of ratio and proportion in different contexts
- Apply unit rates to solve complex problems
- Identify and write equivalent ratios in different forms

What are Equivalent Ratios?

Equivalent ratios are ratios that have the same value, but with different numbers. For example, 2:3 and 4:6 are equivalent ratios.

Example: 2:3, 4:6, 6:9

Real-World Applications

Real-World Scenarios:

1. A bakery sells 250 loaves of bread per day. If they operate for 5 hours a day, what is the unit rate of loaves per hour?
2. A car travels 350 miles in 7 hours. What is the unit rate of miles per hour?

Word Problems:

1. A recipe for making cakes calls for a ratio of 2 cups of flour to 3 cups of sugar. If you want to make half the recipe, what ratio of flour to sugar will you need?
2. A group of friends want to share some candy in a ratio of 3:5. If they have 30 pieces of candy, how many pieces will each friend get?

Mixed Questions

Mixed Review:

1. A water tank can hold 1200 liters of water. If 3/4 of the tank is already filled, what ratio of the tank is still empty?

2. A group of students want to share some money in a ratio of 2:3. If they have $60, how much will each student get?

Mixed Practice:

1. Write the following ratios in their simplest form: 8:12 = ___

2. Solve the following word problems: A recipe for making cookies calls for a ratio of 3 cups of flour to 2 cups of sugar. If you want to make half the recipe, what ratio of flour to sugar will you need?

Extension Activities

Create Your Own Word Problems:

Create 2-3 word problems that involve equivalent ratios or unit rates. Solve your word problems and explain your reasoning.

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Research a real-world scenario that involves ratios, proportions, or unit rates (e.g., cooking, finance, science). Write a short report explaining how ratios, proportions, or unit rates are used in this scenario.

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3. 24 apples per 4 baskets = 6 apples per basket

Conclusion

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In this assignment, you have learned about ratios, proportions, and unit rates. You have practiced solving problems and applying these concepts to real-world scenarios.

What's Next?

In the next assignment, you will learn about more advanced concepts in mathematics, such as algebra and geometry.

Final Thoughts:

Remember to always show your work and explain your reasoning when solving problems. This will help you to understand the concepts better and to communicate your ideas more effectively.

Good Luck!

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Mixed Practice:

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Section 2:

1. 12 miles per 4 hours = 3 miles per hour
2. 18 inches per 3 feet = 6 inches per foot
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Conclusion

Congratulations on completing the Introduction to Ratios, Proportions, and Unit Rates assignment! You have demonstrated your understanding of equivalent ratios, proportions, and unit rates, and applied them to real-world problems.