Understanding Ratios, Fractions, and Percents

What is a Ratio? 🤔

- A ratio compares two or more quantities
- Written as $a : b$ or a/b
- Example: In a class of 30 students, 18 are girls and 12 are boys
  - Girl:Boy ratio = 18:12 = 3:2

Real-World Ratios 🌎

- Recipe ingredients (2 cups sugar : 3 cups flour)
- Map scales (1 inch : 100 miles)
- Screen aspect ratios (16:9)

From Ratios to Fractions ➗

- A fraction is a special type of ratio
- It compares a part to the whole
- Example: In our class of 30 students
  - Girls: $\frac{18}{30} = \frac{3}{5}$ of the class
  - Boys: $\frac{12}{30} = \frac{2}{5}$ of the class

Equivalent Fractions 🔄

- Different fractions that represent the same amount
- Multiply or divide numerator and denominator by same number

Introduction to Percents %

- Percent means "per hundred"
- It's a ratio comparing something to 100
- Example: $50\% = \frac{50}{100} = \frac{1}{2}$

Converting Fractions to Percents

1. Convert fraction to decimal
    - Divide numerator by denominator
2. Multiply by 100
3. Add the $\%$ symbol

Example:

- $\frac{3}{4} = 0.75 = 75\%$

Real-World Applications 🌍

- Sales and discounts (25% off)
- Test scores ($90/100 = 90\%$)
- Statistics (75% of students prefer math)
- Battery life (50% remaining)

Summary

- Ratios compare quantities
- Fractions are part-to-whole ratios
- Percents are ratios compared to 100
- They're all connected! 🔄

Practice Problems

1. If 15 out of 44 students like pizza, what percent is that?
2. Convert the ratio $32 : 99$ to a fraction, to a decimal, and to a percent.
3. What's bigger: $\frac{32}{81}$ or 40%?

More Challenging Problems

1. Six pepperoni circles will exactly fit across the diameter of a 12-inch pizza when placed. If a total of 24 circles of pepperoni are placed on this pizza without overlap, what fraction of the pizza is covered by pepperoni?

More Challenging Problems

2. The top of one tree is 16 feet higher than the top of another tree. The heights of the two trees are in the ratio $3:4$. In feet, how tall is the taller tree?

More Challenging Problems

3. Of the 500 balls in a large bag, 80% are red and the rest are blue. How many of the red balls must be removed from the bag so that 75% of the remaining balls are red?

More Challenging Problems

4. The lengths of the sides of a triangle in inches are three consecutive integers. The length of the shortest side is 30% of the perimeter. What is the length of the longest side?