CBSE Class 7 Maths Notes Chapter 9 Rational Numbers: A rational number in math is any number that can be written as a fraction, where the denominator (the bottom number) is not zero. This includes fractions where both the numerator (top number) and denominator are integers (whole numbers). When we divide a rational number, the result can be a decimal that either ends or repeats. In this article, we'll discuss what rational numbers are, their properties and forms, and the difference between rational and irrational numbers. We'll also work through some examples to help understand the concepts better.

To plot rational numbers on a number line, we need to simplify them and express them as decimals. The Revision Notes for Class 7 Maths Chapter 9 are designed based on the NCERT curriculum by experts at Physics Wallh. These notes provide step-by-step solutions, highlighting important formulas and shortcuts. They are created to help students understand concepts faster and more effectively. .

CBSE Class 7 Maths Notes Chapter 9 Rational Numbers PDF

You can access the PDF of CBSE Class 7 Maths Chapter 9 Rational Numbers Notes through the provided link below. These notes cover important topics related to rational numbers, helping you understand how to work with them effectively. From understanding the basics to performing operations and solving problems, these notes provide a comprehensive overview of the chapter. Whether you're studying for exams or simply looking to strengthen your math skills, these notes are a valuable resource.

CBSE Class 7 Maths Notes Chapter 9 Rational Numbers PDF

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What is a Rational Number?

A rational number is a type of number that can be expressed as the quotient or fraction of two integers, where the denominator (the bottom number) is not zero. In other words, it's any number that can be written in the form of p/q, where p and q are integers and q is not equal to zero. Rational numbers can include whole numbers, integers, and fractions. For example, 1/2, 5, and -3/4 are all examples of rational numbers.

Types of Rational Numbers

There are two main types of rational numbers based on the signs of their numerators and denominators:

1. **Positive Rational Numbers**: These are rational numbers where both the numerator and denominator are either positive or negative. For example, 2/3, -4/5, and 7/-8 are positive rational numbers.
2. **Negative Rational Numbers**: These are rational numbers where the numerator and denominator have opposite signs. For instance, -3/4, 5/-6, and -8/7 are negative rational numbers.

Equivalent Rational Numbers

Equivalent rational numbers are numbers that have the same overall value but are represented differently. In other words, they are different fractions that represent the same portion of a whole.

To find equivalent rational numbers, you can multiply or divide both the numerator and the denominator of a fraction by the same nonzero integer. This operation does not change the value of the fraction but changes its representation. For example:

- 1221 is equivalent to 2442 because 12×22=2421×22=42.
- 3553 is equivalent to 610106 because 35×22=61053×22=106.

Both sets of fractions represent the same proportion of a whole, but they are written in different forms.

Arithmetic Operations on Rational Numbers

1. **Addition**: To add rational numbers, we need a common denominator. For example, 1/2 + 3/4 = 5/4.
2. **Subtraction**: Similar to addition, we require a common denominator to subtract rational numbers. For example, 1/2 - 3/4 = -1/4.
3. **Multiplication**: When multiplying rational numbers, multiply the numerators and denominators. For instance, 1/2 × 3/4 = 3/8.
4. **Division**: To divide rational numbers, multiply the first fraction by the reciprocal of the second. For example, 1/2 ÷ 3/4 = 4/6 = 2/3.

Multiplicative Inverse of Rational Numbers

Multiplication of rational numbers involves multiplying the numerators together and the denominators together. This operation follows the same rules as multiplying fractions.

For example:

- 12×34=1×32×4=3821×43=2×41×3=83
- 23×45=2×43×5=81532×54=3×52×4=158

Multiplication of rational numbers is straightforward and can be done by simply multiplying the numerators and denominators together.

Properties of Rational Numbers

- Operations like addition, subtraction, and multiplication of rational numbers always result in rational numbers.
- A rational number remains the same if both the numerator and denominator are multiplied or divided by the same factor.
- Adding zero to a rational number leaves it unchanged.
- Rational numbers are closed under addition, subtraction, and multiplication.

Finding Rational Numbers Between Two Rational Numbers

There are various methods to find rational numbers between two given rational numbers. One approach is to find equivalent fractions and then identify rational numbers between them. Another method involves finding the mean value between the two given rational numbers.

Understanding rational numbers and their properties is crucial in mathematics as they form the basis for many mathematical concepts and calculations.

Rational Numbers Between 2 Rational Numbers

To find rational numbers between two given rational numbers, we can take their average. Here are two methods to find rational numbers between two rational numbers:

Method 1: Find the Average:

1. Add the two given rational numbers.
2. Divide the sum by 2.
3. The result is a rational number between the two given rational numbers.

For example, if we want to find a rational number between 1331 and 2332:

- 13+23=33=131+32=33=1
- 1÷2=121÷2=21

So, 1221 is a rational number between 1331 and 2332.

Method 2: Find Equivalent Fractions:

1. Find the least common multiple (LCM) of the denominators of the given rational numbers.
2. Create equivalent fractions with the same denominator that are between the given rational numbers.

For example, if we want to find rational numbers between 1441 and 3443:

- LCM of 4 is 4.
- Equivalent fractions between 1441 and 3443 with denominator 4 are 24=1242=21 and 3443.
- So, 1221 is a rational number between 1441 and 3443.

These methods help us find rational numbers between any two given rational numbers.