Extension of Numbers

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Extension of numbers means writing and understanding large numbers in their expanded form. This process helps us break down a large number by expressing it as the sum of the values of its digits. For example, the number 5,637 can be written as 5,000 + 600 + 30 + 7.

Expanded Form of a Number

To find the expanded form of a number:

- Write each digit of the number in its place value form
- Break down each digit into its place value (thousands, hundreds, tens, ones)
- Add the terms to get the expanded form

For example:

5,637 = 5 × 1,000 + 6 × 100 + 3 × 10 + 7 × 1

Properties of Large Numbers

Place Value: Each digit in a number has a specific place value based on its position.

Order of Magnitude: As you move left from the decimal point, the place values increase by a factor of 10.

Reading Large Numbers: Large numbers are easier to understand when written in their expanded form, as we can clearly see the contribution of each place value.

Example 1

Question: Write 8,423 in expanded form.

Solution:

8,423 = 8 × 1,000 + 4 × 100 + 2 × 10 + 3 × 1

So, the expanded form is: 8,000 + 400 + 20 + 3

Answer: 8,423 = 8,000 + 400 + 20 + 3

Example 2

Question: Write 72,584 in expanded form.

Solution:

72,584 = 7 × 10,000 + 2 × 1,000 + 5 × 100 + 8 × 10 + 4 × 1

So, the expanded form is: 70,000 + 2,000 + 500 + 80 + 4

Answer: 72,584 = 70,000 + 2,000 + 500 + 80 + 4

Summary Points

- Extension of numbers helps in understanding the place value of each digit in a large number.
- The expanded form makes it easier to work with large numbers in mathematical operations.
- Understanding the place value of each digit is crucial for reading and writing large numbers.
- The expanded form helps to see how much each digit contributes to the total value of the number.