Expanded Form of a Numeral

The expanded form of a number is the way of writing the number as the sum of each of its digits, multiplied by the place value of the digits. In expanded form, each digit is separated according to its place value (ones, tens, hundreds, thousands, etc.).

For example, the number 3,472 in expanded form would be written as:

3 × 1,000 + 4 × 100 + 7 × 10 + 2 × 1.

How to Write a Number in Expanded Form?

- Identify the place value of each digit in the number (ones, tens, hundreds, thousands).
- Multiply each digit by its corresponding place value.
- Write the sum of all the terms.

For example, for the number 2,549:

- 2 is in the thousands place, so 2 × 1,000 = 2,000.
- 5 is in the hundreds place, so 5 × 100 = 500.
- 4 is in the tens place, so 4 × 10 = 40.
- 9 is in the ones place, so 9 × 1 = 9.
- So, 2,549 in expanded form is 2,000 + 500 + 40 + 9.
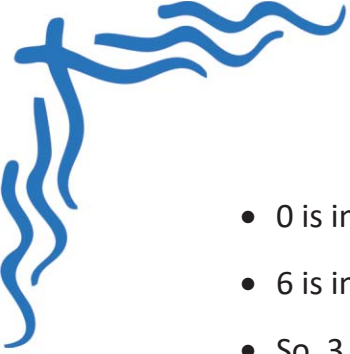
Properties of Expanded Form

- The expanded form breaks a number into the sum of its place values.
- Each digit in a number is multiplied by its place value in the expanded form.
- The expanded form helps to understand the value of each digit in a number.
- Expanded form is a way to show the actual value represented by a number.

Example 1

Question: Write the number 3,406 in expanded form.

   Solution:

- 3 is in the thousands place, so 3 × 1,000 = 3,000.
- 4 is in the hundreds place, so 4 × 100 = 400.

- 0 is in the tens place, so 0 × 10 = 0.
- 6 is in the ones place, so 6 × 1 = 6.
- So, 3,406 in expanded form is:
- 3,000 + 400 + 0 + 6.

Answer: The expanded form of 3,406 is 3,000 + 400 + 0 + 6.

Example 2

Question: Write the number 7,582 in expanded form.

   Solution:

- 7 is in the thousands place, so 7 × 1,000 = 7,000.
- 5 is in the hundreds place, so 5 × 100 = 500.
- 8 is in the tens place, so 8 × 10 = 80.
- 2 is in the ones place, so 2 × 1 = 2.
- So, 7,582 in expanded form is:
- 7,000 + 500 + 80 + 2.

Answer: The expanded form of 7,582 is 7,000 + 500 + 80 + 2.

Summary Points

- The expanded form of a number expresses the number as the sum of its place values.
- Each digit in the number is multiplied by its place value (ones, tens, hundreds, thousands).
- Writing numbers in expanded form helps us understand the value of each digit in the number.
- The expanded form makes it easier to see the contribution of each digit to the total value of the number.