6ᵗʰ Standard Maths

Knowing Our Numbers

It is easy to count objects in large numbers these days. Also, we are able to communicate large numbers with the help of suitable number names.

In the past, people knew only small numbers. With the progress of human beings, the need for the development of mathematics was realized and consequently, mathematics grew further and faster. People learned how to express large numbers in symbols.

We can count concrete objects with the help of numbers. They help us to know which collection of objects is bigger and consequently we can arrange things in increasing or decreasing order. In previous classes, we have worked with numbers. We know their addition, subtraction, multiplication and division. We have observed patterns in number sequences. In this chapter, we shall review and revise what we have done earlier.

Take two numbers. The number with a greater number of digits is greater. However, if the two numbers have the same number of digits, then the number which has a larger leftmost digit is larger. If this digit also happens to be the same, then we proceed to next digit and use the same criterion and so on.

How many numbers can you make?

While forming numbers from the given digits, we should check carefully

whether the condition under which the numbers are to be formed is satisfied or not. The given condition must essentially be satisfied. Thus, to form the largest number from the given four digits 8,9,4,6 without repeating a single digit, we must be careful to use all the given four digits. As such, the largest number can have 9 only as the leftmost digit.

Shifting digits

Take any three-digit number with different digits and interchange the digit at the hundreds place and the digit at the ones place. We find that the new number is greater than the former number, if the digit at the ones place is greater than the digit at the hundreds place and the new number is smaller than the former number, if in the former number the digit at the ones place is smaller than the digit at the hundreds place.

Introducing 10,000

The smallest 2-digit number is 10 (ten). The largest 2-digit number is 99. The smallest 3-digit number is 100 (one hundred). The largest 3-digit number is 999. The smallest 4-digit number is 1000 (one thousand). The largest 4-digit number is 9999. The smallest 5-digit number is 10,000 (ten thousand). The largest 5-digit number is 99999. The smallest 6-digit number is 1,00,000 (one lakh). The largest 6-digit number is 9,99,999. This carries on for higher digit numbers in a similar fashion.

Revisiting place value

The place value1 of a digit at ones place is the same as the digit. The place value of a digit at tens place is obtained by multiplying the digit by 10. Similarly, the place value of a digit at hundreds place, thousands place, ten

thousands place,... is obtained by multiplying the digit by 100, 1000, 10000, ..., respectively.

Introducing 1,00,000

The greatest five-digit number is 99,999. If we add 1 to this number, we get 1,00,000 which is the smallest six-digit number. It is named as one lakh. It comes next to 99,999.

Also, 10 × 10,000 = 1,00,000

Larger numbers

The greatest six-digit number is 9.99.999. Adding 1 to it, we get 10,00,000 which is the smallest seven-digit number. It is called the ten lakh.

The greatest seven-digit number is 99.99,999. Adding 1 to it, we get 1.00.00.000 which is the smallest eight-digit number. It is called one crore.

Please note that

1 hundred = 10 tens

1 thousand = 10 hundreds = 100 tens

1 lakh = 100 thousands = 1000 hundreds

1 crore = 100 lakhs = 10,000 thousands

An aid in reading and writing large numbers

Shagufta's indicators help us to read and write large numbers. These are also useful in writing the expansions of the numbers. These are as follows:

T La La T Th Th H T O

Commas also help us in reading and writing large numbers. In Indian system of Numeration, we use ones, tens, hundreds, thousands and then lakhs and crores. Commas are used to mark thousands, lakhs and crores. The first

comma comes after hundreds place, second comma comes after ten thousands place and the third comma comes after ten lakh place and markes crore.

Estimation

There are a number of situations in which we do not need the exact quantity but need only an estimate of this quantity. Estimation means approximating a quantity to the desired accuracy.

Estimating to the nearest tens by rounding off

The estimation is done by rounding off the numbers to the nearest tens. Thus, 17 is estimated as 20 to the nearest tens; 12 is estimated as 10 to the nearest tens.

Estimating to the nearest hundreds by rounding off

Numbers 1 to 49 are closer to 0 than to 100. So they are rounded off to 0. Numbers 51 to 99 are closer to 100 than to 0, and so are rounded off to 100. Number 50 is equidistant from 0 and 100 both. It is customary to round it off as 100.

Estimating to the nearest thousands by rounding off

Numbers 1 to 499 are nearer to 0 than 1000, so these numbers are rounded off as 0. The numbers 501 to 999 are nearer to 1000 than 0, so they are rounded off as 1000. Number 500 is customarily rounded off as 1000.

Estimating outcomes of number situations

There are no fixed rules for the estimation of the outcomes of numbers. The

procedure depends on the degree of accuracy required. What is important to know how quickly the estimate is required?

To estimate sum or difference

We round off the given numbers and then find their sum or difference.

To estimate products

We round off the numbers to their greatest places and then carry out the multiplication or division.

When we need to carry out more than one first turn everything inside the brackets into a single operation, we use brackets to avoid confusion. We number and then do the operation outside.

Expanding brackets

We expand brackets systematically maintaining a track of steps.