



### Permutations Ex 16.2 Q36

Since a toss of a coin can result in a head or a tail.

- ∴ Total number of possible outcomes in each tossed = 2
- ∴ Total number of possible outcomes in four tossed =  $2 \times 2 \times 2 \times 2 = 2^4 = 16$
- ∴ Total number of possible outcomes in five tossed =  $2 \times 2 \times 2 \times 2 \times 2 = 2^5 = 32$
- ∴ total number of possible outcomes in  $n$  tossed =  $2 \times 2 \times 2 \dots n \text{ times} = 2^n$

### Permutations Ex 16.2 Q37

Total number of digits = 5

Since, the digits can be repeated in the same number.

- ∴ Total numbers of four digits numbers =  $5 \times 5 \times 5 \times 5 = 625$

### Permutations Ex 16.2 Q38

Total number of digits = 5

We cannot have 0 at the hundred's place so, the hundred's place can be digits with any of the 4 digits 1, 3, 5 or 7. So, there are 4 ways of filling the hundred's place.

Since, the digit may be repeated in three digit numbers.

- ∴ Ten's place can be filled with any of the 5 digits in 5 ways
- ∴ unit's place can be filled with any of the 5 digits in 5 ways

Hence, the total number of required numbers =  $4 \times 5 \times 5 = 100$

### Permutations Ex 16.2 Q39

Total number of digits = 6

Clearly, the natural numbers ten's than 1000 can be 3 digits, 2 digits and 1 digit numbers.

Now, 0 cannot be a first digit of the three digit numbers.

So, the hundred's place can be filled with any of the 5 digits 1,2,3....5. So, there are 5 ways of filling the hundred place.

The ten's place can be filled with in any of the 6 digits 0,1,2....5. So, there are 6 ways of filling the ten's place.

The unit's place can be filled with in any of the 6 digits 0,1,2....5. So, there are 6 ways of filling the unit's place.

- ∴ The total number of 3 digit numbers =  $5 \times 6 \times 6 = 180$
- Similarly, the total number of 2 digit numbers =  $5 \times 6 = 30$

Now, 0 is not a natural number

- ∴ the total number of 1digit numbers = 5

- ∴ Total number of natural numbers tens than 1000  
=  $180 + 30 + 5 = 215$ .

### Permutations Ex 16.2 Q40

Total number of digits = 10

each number starts with 67 and no digit appears more than once.

∴ total number of five digit telephone numbers

$$= 1 \times 1 \times 8 \times 7 \times 6 = 336$$

\*\*\*\*\* END \*\*\*\*\*