# Estimation

## The Roman numerals :

| Hindu Arabic number | Roman equivalent |
|---|---|
| I | 1 |
| II | 2 |
| III | 3 |
| IV | 4 |
| V | 5 |
| VI | 6 |
| VII | 7 |
| VIII | 8 |
| IX | 9 |
| X | 10 |

| Roman number | Hindu Arabic number |
|---|---|
| L | 50 |
| C | 100 |
| D | 500 |
| M | 1000 |
| XL | 40 |
| LX | 60 |
| XCIX | 99 |

The rules for the system are :
- If a symbol is repeated, its value is added as many times as it occurs: XX is 20 and XXX is 30
- A symbol is not repeated more than three times. But the symbols V, L and D are never repeated
- If a symbol of smaller value is written to the right of a symbol of greater value, its value gets added to the value of greater symbol :
  VI = 5 + 1 = 6, XII = 10 + 2 = 12  and LXV = 50 + 10 + 5 = 65
- If a symbol of smaller value is written to the left of a symbol of greater value, its value is subtracted from the value of the greater symbol.
  IV = 5 – 1 = 4, IX = 10 – 1 = 9 and  XL= 50 – 10 = 40, XC = 100 – 10 = 90
- The symbols V, L and D are never written to the left of a symbol of greater  value, i.e. V, L and D are never subtracted
- The symbol I can be subtracted from V and X only
- The symbol X can be subtracted from L, M and C only

## Estimation:
- Useful in approximating numbers and performing operations of addition , subtraction, multiplication and division with approximated values : gives a rough approximate
- Helps in quickly verifying the result of mathematical operations when actual values are considered
- Numbers 1 to 49 are closer to 0 than to 100, and rounded off to 0
- Numbers 51 to 99 are closer to 100 than to 0, and rounded off to 100
- Number 50 is equidistant from 0 and 100 both and rounded off as 100
- Numbers 1 to 499 are nearer to 0 than to 1000, and rounded off as 0
- Numbers 501 to 999 are nearer to 1000 than 0 and rounded off as 1000

- Number 500 is also rounded off as 1000
- The estimation procedure depends on the degree of accuracy required and how quickly the estimate is needed.
- The general rule for multiplication : Round off each factor to its greatest place, then multiply the rounded off factors

## Conversion:

| Prefix | Meaning |
|---|---|
| kilo | 1000 times larger |
| centi | 100 times smaller |
| milli | 1000 times smaller |

- 1 kilometre = 1000 metres
- 1 metre = 100 centimetres
- 1metre = 1000 millimetres
- 1 centimetre = 10 millimetres