DECIMAL FRACTIONS

- **A fraction is a part of whole and is written as $\frac{a}{b}$, where 'a' and 'b' are integers and b $\neq$ 0 Ex: $\frac{2}{3}$**
- The upper trem 'a' is called as "numerator" and lower term 'b' is called the "denominator".Thus $\boldsymbol{Fraction = \frac{\text{Numerator}}{\text{Demominator}}}$
- Value of fraction remains unaltered if it is multiplied and divided by same number

Decimal Fraction is a fraction with denominator can be expresses as 10 or some higher power of 10. i.e.,10, 100, 1000, 10000.....Ex: 5/10, 56/100.

Decimal Fraction 3471/100 = 34.71 read as thirty four point seven one and 34 is the integral part and 0.71 is the decimal part.

Adding or removing zeros at its extreme right will not change the value of fraction Ex: 4.3=4.300; 3.6800=3.68

Converting Decimal Fraction to Vulgar Fraction:

a) Remove decimal point and write resulting number as numerator and in denominator add as many zeros to right of one (1) as decimal places in given number $\boldsymbol{Ex: 0.088 = \frac{8}{1000}}$

b) Reduce to simplest form $\frac{8}{1000} = \frac{11}{125}$

Converting Given Fraction to Decimal Fraction:

a) When the denominators of the given fraction is 10, 100, 1000…
Counting from extreme right to left, mark the decimal point after as many digits of the numerator as there are zeros in the denominator. $\boldsymbol{Ex: \frac{259}{1000} = 0..0259}$

b) When the denominators of the given fraction is other than 10, 100, 1000…
Divide in an ordinary way and mark the decimal point in the quotient just after the divisor of unit digit is completed.
After this, any number of zeros (one by one) can be placed to complete division.

DECIMAL PLACES: The number of figures that follow the decimal point is called the number of decimal places

"ROUNDING OFF DECIMAL NUMBERS":
Retain as many digits after decimal point and omit the remaining, out of these increase last retained digit by 1 if it is greater than or equal to 5 **Ex: 3.9642 correct to two decimal point = 3.96**

"SIGNIFICANT FIGURES": They are the number of digits used to express the number with precision.
Ex: 3.9640 No. of significant digit = 5
Ex:122 No. of significant digit = 3

OPERATIONS ON DECIMALS

- **Addition/ Subtraction**: Add/ Sub from the right side, as done in the usual addition or subtraction (empty places may be filled up by zeros) . In the result, the decimal point is placed under decimal points of numbers added / subtracted.
- **Multiplication**:
  a) **By 10,100, 1000 etc. –** Shift the decimal point, in the multiplicand to the right by as many digits as there are zeros in the multiplier $\boldsymbol{Ex: 3.29 \times 10 = 32.9}$
  b) **By whole number or by another decimal number –** Multiply and in product, decimal point is fixed by counting as many digits from the right as there are decimal places in both multiplicand and multiplier.
  $\boldsymbol{Ex: .26 \times 18 = 4.68\ ;\ 0.2 \times 0.0004 = 0.00008}$
- **Division**
  a) By 10,100, 1000 etc. – Shift the decimal point, in the multiplicand to the left by as many digits as there are zeros in the multiplier $\boldsymbol{Ex: 3.29 \div 10 = 0.329}$
  b) By whole number- Divide in normal manner, in quotient insert decimal point while just crossing over decimal point in dividend $\boldsymbol{Ex: 0.945 \div 9 = 0.105}$
  c) by another decimal number – Shift the decimal points of the dividend and divisor both by as many equal number of digits, so that divisor converts into whole number. The division is then carried out as in case (b)
  $\boldsymbol{Ex\ 5.625 \div 1.25 = \dfrac{5.625}{1.25} = \dfrac{562.5}{125} = 4.5}$

(i) • In division, if the dividend is exactly divisible without no remainder, the quotient is called **"terminating decimal"**

(ii) In a division, if the remainder does not finish (terminate) no matter how long the dision is continued, then it is **"non terminating decimal"**

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(iii) • Non terminating repeating decimal is called **"recurring decimal"**