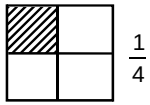
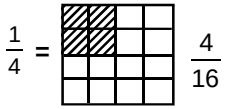
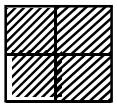


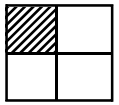
$\frac{1}{4}$



$\frac{1}{4} = \frac{4}{16}$



+



$\frac{5}{4} = 1\frac{1}{4}$

FRACTION

Comparison of two fractions

eg : $\frac{4}{7} \; ? \; \frac{3}{7}$ → Compare numerator
Denominator same

eg : $\frac{5}{4} \; ? \; \frac{5}{3}$ → Numerator same
Compare denominator

eg : $\frac{1}{3} \; ? \; \frac{2}{5}$ → Find L.C.M. of denominators
L.C.M. of (3,5) = 15

$\frac{1 \times 5}{3 \times 5} = \frac{5}{15}$; $\frac{2 \times 3}{5 \times 3} = \frac{6}{15}$

Decimal fraction

Denominator is 10,100 , 1000, 10000 - - - -

eg : $\frac{1}{10}$; $\frac{3}{100}$ e.t.c.

Improper fraction

denominator > numerator

eg : $\frac{7}{5}$

converted into

Mixed fraction

[combination of whole no. and a proper fraction]

$\frac{7}{5} = 1\frac{2}{5}$; $14\frac{2}{3} = \frac{14 \times 3 + 2}{3} = \frac{44}{3}$

Proper fraction

numerator < denominator

eg : $\frac{5}{7}$

Equivalent fractions

$\frac{3}{5} = \frac{3 \times 2}{5 \times 2} = \frac{6}{10}$

$\frac{3}{5} = \frac{3 \times 2}{5 \times 3} = \frac{9}{15}$

$= \frac{3}{5} = \frac{6}{10} = \frac{9}{15}$

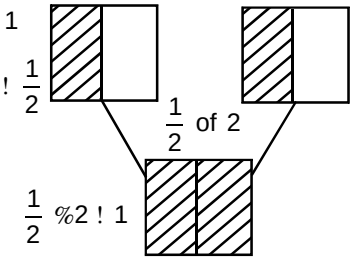
Fraction as an operator

$\frac{1}{2}$ of 1

$\frac{1}{2} \times 1 = \frac{1}{2}$

$\frac{1}{2}$ of 2

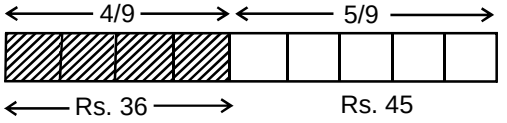
$\frac{1}{2} \times 2 = 1$



$\frac{1}{2}$ of 1

$\frac{1}{2} \times 1 = \frac{1}{2}$

eg : After spending $\frac{4}{9}$ of her money, Nidhi had Rs. 45 left. How much did she spend



Operation on Fraction

Addition

$3\frac{1}{4}$ kg $+$ $1\frac{1}{6}$ kg $\quad \frac{13}{4}$ kg $+$ $\frac{7}{6}$ kg

L.C.M. (4,6) = 12

$\frac{(13 \times 3 + 7 \times 2)\text{kg}}{12} = \frac{53}{12}\text{kg} = 4\frac{5}{12}\text{kg}$

eg : $4\frac{1}{2} \times 3\frac{1}{5} \times \frac{1}{3} = \frac{9}{2} \times \frac{16}{5} \times \frac{1}{3}$

$= \frac{9 \times 16 \times 1}{2 \times 5 \times 3} = \frac{24}{5} = 4\frac{4}{5}$

Subtraction

$2\frac{2}{5} - 1\frac{1}{4} = \frac{12}{5} - \frac{5}{4}$ L.C.M . (5,4) = 20

$\frac{12 \times 4 - 5 \times 5}{20} = \frac{48 - 25}{20} = \frac{23}{20} = 1\frac{3}{20}$

eg : $1\frac{14}{11} \times 14\frac{2}{3} - 2\frac{2}{5} \times 2\frac{1}{4} \quad \frac{15}{11} \times \frac{44}{3} - \frac{12}{5} \times \frac{9}{4}$

$\frac{15 \times 44}{11 \times 3} - \frac{12 \times 9}{5 \times 4} \quad \frac{20}{1} - \frac{27}{5}$

$\frac{20 \times 5 - 27 \times 1}{5} = \frac{73}{5}$

Multiplication

(i) **Fraction by fraction**

$= \frac{\text{Product of numerator}}{\text{Product of denominator}}$

eg : $\frac{3}{4} \times \frac{5}{7} = \frac{3 \times 5}{4 \times 7} = \frac{15}{28}$

(ii) **Fraction by whole number**

$\frac{3}{4} \times 2 = \frac{3}{4} \times \frac{2}{1} = \frac{3 \times 1}{2 \times 1} = \frac{3}{2}$

*Product of two proper fraction is less than each of the fraction.

*Value of ,product of two improper fraction is more then each of the two factions

Division

(i) $3 - \frac{5}{4} = \frac{3}{1} \times \frac{4}{5} = \frac{12}{5}$

(ii) $\frac{5}{4} - 3 = \frac{5}{4} - \frac{3}{1} = \frac{5}{4} \times \frac{1}{3} = \frac{5}{12}$

(ii) $\frac{1}{3} - \frac{5}{6} = \frac{1}{3} \times \frac{6}{5} = \frac{2}{5}$

* Reciprocal or multiplicative inverse of a non-zero faction

$\frac{a}{b}$ is $\frac{b}{a}$ ie $\frac{a}{b} \times \frac{b}{a} = 1$

* Multiplicative inverse of 1 is 1

Reciprocal of 0 does not exist.