

Number System

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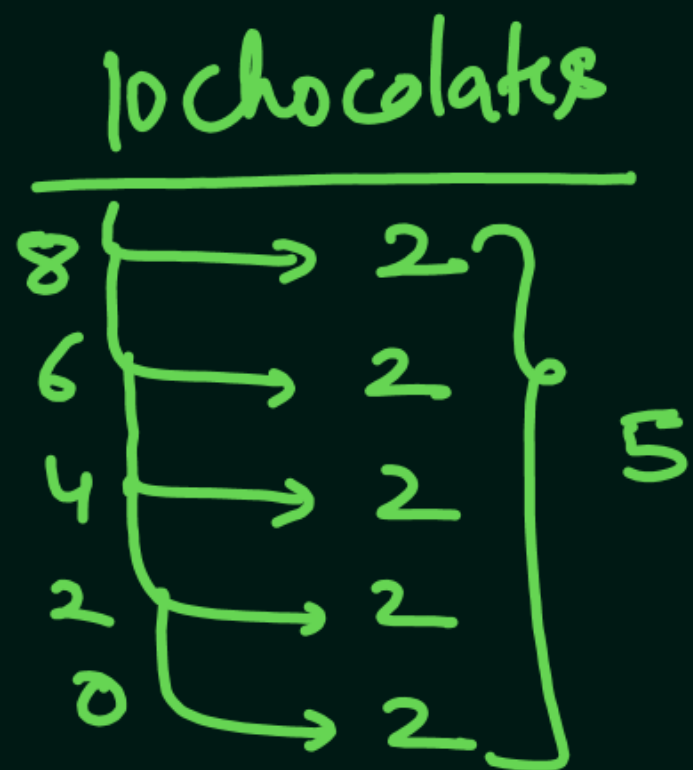
Natural Numbers : $N : 1, 2, 3, 4, \dots, \infty$
(infinity)

Whole Numbers : $W : 0, 1, 2, 3, 4, \dots, \infty.$

Integers : $Z : -\infty, \dots, -2, -1, 0, 1, 2, \dots \infty$

Rational Number : Q

Quotient.



$$\begin{array}{r} \boxed{5} \rightarrow \text{Quotient} \\ 2 \overline{)10} \\ \underline{10} \\ 0 \end{array}$$

$$\begin{array}{r} 2 \text{ Quotient} \\ 4 \overline{)10} \rightarrow \text{dividend} \\ \underline{8} \\ 2 \text{ Remainder} \end{array}$$

divisor

Operations

① Addition = $2+3=5$
= $4+4=8$
= $4+4+4=12$
= $4 \times 3 = 12$

② Multiplication: Repeated Addition.

③ Subtraction = $3-2=1$
 $2-3=$


④ Division = Repeated Subtraction.

$$\boxed{\$2 \mid \$1} +$$

$$\$3 \mid \boxed{\$3}$$

$$3 - 5 = -2$$
$$+4 - 10 = -6$$




$$2 - 3 = -1$$

$$8 - 2 = 6$$
$$2 - 8 = -6$$

$$7 - 3 = 4$$
$$3 - 7 = -4$$

fraction: Part of a whole

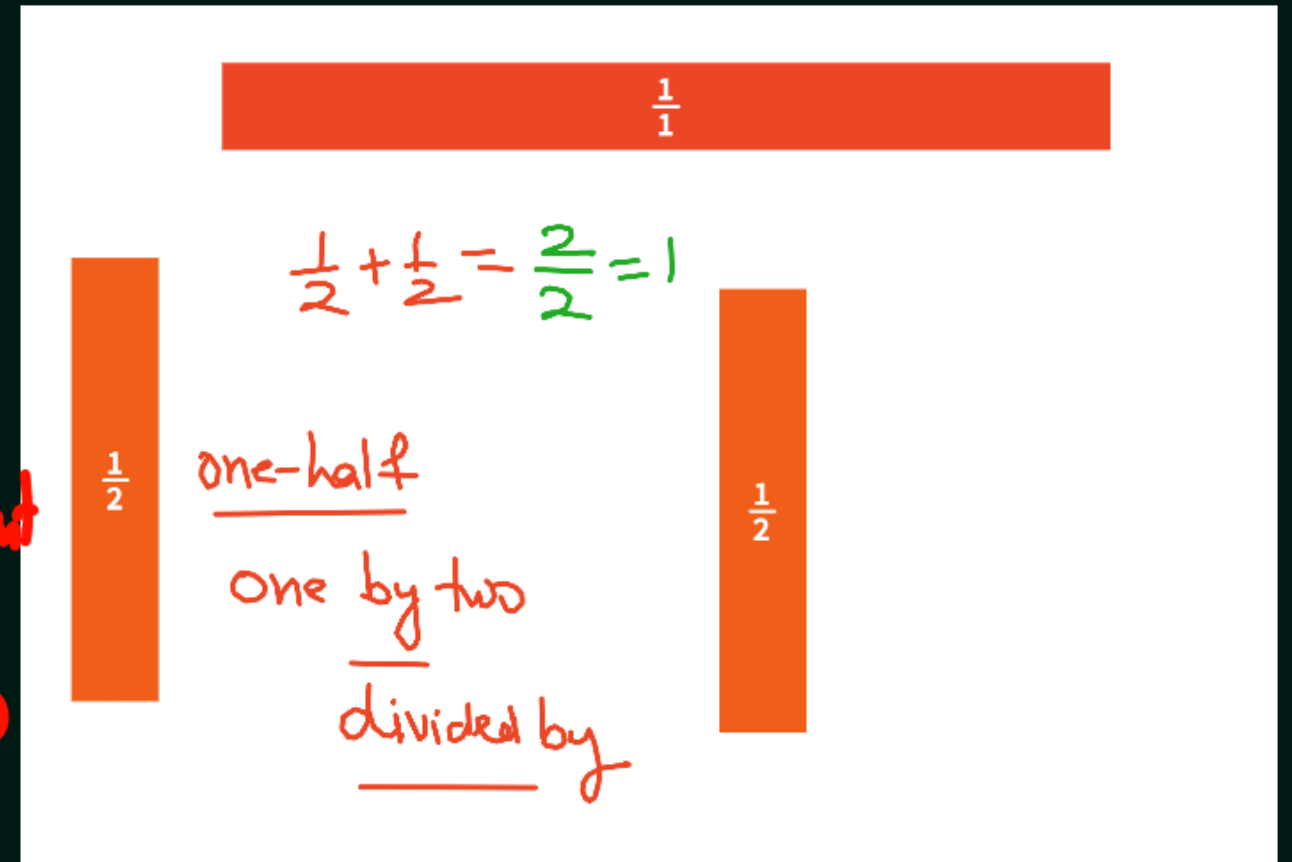
Whole = Counting as a single unit.

100 Apples → 1 whole

$$\begin{array}{r} 2 \\ 50 \overline{) 100} \\ \underline{100} \\ 0 \end{array}$$

$$\frac{50}{100} = \frac{1}{2}$$

Equivalent
fraction
→




$$\frac{1}{1}$$

$\frac{p}{q}$ → numerator
→ denominator

$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$


$$\frac{1}{3}$$

One-third


$$\frac{1}{3}$$

$$\frac{1}{3}$$

Two-thirds


$$\frac{1}{1}$$

$$\frac{2}{4} = \left(\frac{2}{2 \times 2} \right) = \frac{1}{2}$$



two-fourths
one-half



equivalent fractions



two-fourths = one-half

2 Apples + 2 Apples = 4 Apples

two-fifths + two-fifths = 4-fifths

$$\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

① Proper Fraction:

(i) Numerator is always less than denominator.

(ii) The value of proper fraction is always less than 1 whole (unit).

$$\frac{9}{13}$$

$$+ \frac{4}{13}$$

$$\frac{12}{25}$$

$$+ \frac{13}{25} = 1$$

$$\frac{5}{5}$$

$$\frac{6}{6} + \frac{2}{6}$$

$$\frac{7}{9}$$

$$\frac{8}{12} + \frac{4}{12} = \frac{12}{12}$$