## Hello Mummy \& Daddy

I am Ms Indu Jain, the author of this e-book and Founder of my company Key2practice (our logo is No Tuitions Required). At this outset, I am delighted to present this book to you. A teacher and a mother of two children. Living both of these roles gives me the firsthand experience to say that Maths is considered as the most dreadful subject of all to most of the students.

Children fear it - Parents avoid it.

Maths Phobia and lack of concept connection as a result leads them into giving up on the subject and resort to tuitions.

The goal of this e-book is to connect with your child and clarify their Math concepts. By breaking it down in easy steps that Math becomes a subject of self-study (a dream come true for parents).

Phobia and anxiety towards the subject are sometimes a child's own. Sometimes passed down (unknowingly of course) by the parents.

How can this book help you and your child.

1. Parents can use it as a reference guide. As concepts explained in the book are applicable for Grade 1-5.
2. Makes it easy for them to apply Maths in everyday life.
3. Inculcates the habit of self-study and make them independent.
4. Eliminate their Math Phobia.

DO NOT let negative experiences of their past block their learning and understanding Maths.

This e-book is part-1 in the series. If you are looking for a particular concept/topic addressed in our next series.
Do email us the same on key2practice@gmail.com
Wishing a very Happy Easy Maths to you and your child!
Together we can!


## Indu Jain

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Maths Hons. from Lady Sri Ram College for Women and Post graduate from Indian Institute of Technology (IIT Delhi), Rich teaching experience of more than 20 years, Delhi Public School.
Crafted with love by key2practice.


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## Ascending or Descending order



Here numbers increase in value.

In descending order numbers are arranged from BIG to small.


Here numbers decrease in value.

## Predecessor or Successor



## Ordinal numbers (1-100)

An ordinal number tells the position or order of something which is in


Ordinal numbers which end in 'st'

$$
1^{\mathrm{st}}, 21^{\mathrm{st}}, 31^{\mathrm{st}}, 41^{\mathrm{st}}, 51^{\mathrm{st}}, 61^{\mathrm{st}}, 71^{\text {st }}, 81^{\mathrm{st}}, 91^{\text {st }} \text { and so on }
$$

Ordinal numbers which end in 'nd'

$$
2^{\text {nd }}, 22^{\text {nd }}, 32^{\text {nd }}, 42^{\text {nd }}, 52^{\text {nd }}, 62^{\text {nd }}, 72^{\text {nd }}, 82^{\text {nd }}, 92^{\text {nd }} \text { and so on }
$$

Ordinal numbers which end in 'rd'

$$
3^{\text {rd }}, 23^{\text {rd }}, 33^{\text {rd }}, 43^{\text {rd }}, 53^{\text {rd }}, 63^{\text {rd }}, 73^{\text {rd }}, 83^{\text {rd }}, 93^{\text {rd }} \text { and so on }
$$



Rest end in 'th'

| $20^{\text {th }} \leftrightarrow$ Twentieth | $30^{\text {th }} \leftrightarrow$ Thirtieth | $40^{\text {th }} \leftrightarrow$ Fortieth |
| :--- | :--- | :--- |
| $50^{\text {th }} \leftrightarrow$ Fiftieth | $60^{\text {th }} \leftrightarrow$ Sixtieth | $70^{\text {th }} \leftrightarrow$ Seventieth |
| $80^{\text {th }} \leftrightarrow$ Eightieth | $90^{\text {th }} \leftrightarrow$ Ninetieth | $100^{\text {th }} \leftrightarrow$ Hundredth |

How do we read them?
$21^{\text {st }} \longrightarrow$ Twenty first
$23^{\text {rd }} \rightarrow$ Twenty third
$22^{\text {nd }} \longrightarrow$ Twenty second
$24^{\text {th }} \rightarrow$ Twenty fourth and so on

## Roman numbers

Roman numbers originated in Rome. Roman number are formed using seven basic symbols.

## Seven basic symbols.

$1=1$
$X=10$
$C=100$
$V=5$
L = 50
$D=500$
$M=1000$

## Some basic rules

1. A symbol can be repeated maximum 3 times. (तीन से ज्यादा नहीं)

- \| = 2
- III = 3
- XX = 20
- XXX = 30

IIII
Not allowed
2. Only I, X, C and M can be repeated.
3.

 we do subtraction

$$
\left.\begin{array}{rl}
\mathrm{X} & \mathrm{I}=10-1 \\
& =9
\end{array}\right] \begin{aligned}
\mathrm{XC} & =100-10 \\
& =90
\end{aligned}
$$

(W) Roman numerals from 1 to 50


## Few more roman numerals.

| 10 | $X$ | 60 | $L X$ | 200 | $C C$ | 700 | DCC |
| :--- | :--- | ---: | :--- | :--- | :--- | ---: | :--- |
| 20 | $X X$ | 70 | $L X X$ | 300 | $C C C$ | 800 | $D C C C$ |
| 30 | $X X X$ | 80 | $L X X X$ | 400 | $C D$ | 900 | $C M$ |
| 40 | $X L$ | 90 | $X C$ | 500 | $D$ | 1000 | $M$ |
| 50 | $L$ | 100 | $C$ | 600 | $D C$ | 2000 | $M M$ |
|  |  |  |  |  |  | 3000 | $M M M$ |



Dalai Lama XIV

Henry VIII

|  | XI | XII | I |  |
| :--- | :--- | :--- | :--- | :--- |
| X |  |  |  | $I I$ |
| IX |  |  |  | III |
| VIII |  |  |  | IV |
| VIII | VI | V |  |  |



## Place value and Face value

Face value of a digit is the digit itself (irresepctive of its place in the number).

Face value of 4 is 4


Place value of a digits depends upon its position in the number.

4 is in ten thousands place
$\therefore$ Place value of 4 is $4 \times 10,000$

$$
=40,000
$$

6 is in thousands place
$\therefore$ Place value of 6 is $6 \times 1000$

$$
=6000
$$




## Prime numbers

$\rightarrow$ (सिर्फ दो)
A number which has exactly two factors, is a prime number.
For example
5 has only two factors $1 \& 5$
So 5 is a prime number.

To understand meaning of Factors, go to page 8.

A number which has more than two factors, is a composite number.
For example $1,2,3,6$ are factors of 6 . ( 6 has more than two factors.) So 6 is a composite numbers.

Prime numbers from 1 to 20.

| Number | Factors | Number of Factors | Prime or Composite | Number | Factors | Number of Factors | Prime or Composite |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 1 | 1 |  | 16 | 1, 2, 4, 8, 16 | 5 | Composite |
| 2 | 1, 2 | 2 | Prime | 17 | 1,17 | 2 | Prime |
| 3 | 1,3 | 2 | Prime | 18 | 1, 2, 3, 6, 9, 18 | 6 | Compos |
| 4 | 1, 2, 4 | 3 | Composite | 19 | 1,19 | 2 | Prime |
| 5 | 1,5 | 2 | Prime | 20 | $1,2,4,5,10,20$ | 7 | Composite |
| 6 | 1, 2, 3, 6 | 4 | Composite |  |  |  |  |
| 7 | 1,7 | 2 | Prime |  |  |  |  |
| 8 | 1, 2, 4, 8 | 4 | Composite |  |  |  |  |
| 9 | 1,3, 9 | 3 | Composite |  |  |  |  |
| 10 | 1, 2, 5, 10 | 4 | Composite |  |  |  |  |
| 11 | 1, 11 | 2 | Prime |  |  |  |  |
| 12 | 1, 2, 3, 4, 6, 12 | 6 | Composite |  |  |  |  |
| 13 | 1,13 | 2 | Prime |  |  |  |  |
| 14 | 1, 2, 7, 14 | 4 | Composite |  |  |  |  |
| 15 | 1, 3, 5, 15 | 4 | Composite |  |  |  |  |
| $1$ |  | Prime number |  |  |  |  |  |
| It has |  | These have |  |  |  |  |  |
| exactly one factor |  | (सिर्फ दो) |  |  |  |  |  |

Prime numbers from 1 to 100.


## Let's check 71



$$
71+1=72 \quad 71-1=70
$$

If either of 72 or 70 is divisible by 6 , than 71 is a prime number.
12
$6 \longdiv { 7 2 }$

- 6

12

- 12
$0 \rightarrow$
remainder = 0
means 6 divides 72
71 is a prime number.


Add 1
$93+1=94$

We always check divisibilty by 6 here

If either of 94 or 92 is divisible by 6 , than 93 is a composite number.
15
$6 \longdiv { 9 4 }$
15
$6 \longdiv { 9 2 }$
$-\frac{6}{34}$
$-\frac{6}{32}$

- 30
$\xrightarrow{4}$ remainder $\neq 0$
- 30
6 does not divide both 94 \& 92
$\therefore 93$ is a composite number.


## Check 3505 is prime or composite.

3505-1 = 3504
$6 \longdiv { 5 8 4 }$
$-30$
$-\frac{48}{24}$
$-\frac{24}{0 \rightarrow}$
remainder $=0$
means 6 divides 3504
$\therefore 3505$ is a prime number.

$$
3505+1=3506
$$

$$
\begin{array}{r}
584 \\
6 \longdiv { 3 5 0 6 }
\end{array}
$$

-30
50
-48
26
$\xrightarrow{-24}$

(इसे चेक करने की जरुरत नही है क्योंकि 3505 Prime number है, यह बात पता चल चुकी है)

2 is the only prime number which is even. Rest all prime number are odd.

## Factor and Multiples


here, 3 is factor
of 15
a factor here, 5 is factor of 15 here, 15 is multiple of 3 and 5 both

Factors are those numbers which are multiplied to get a product.

Here 24 is a multiples of $2,3 \& 4$

## (") How to find multiples of a number ?

For example Multiples of 3 .
Perform skip counting of 3 to find multiples of 3 .
Multiples of 3 are 3, 6, $9,12,15,18,21,24,27,30,33,36,39 \ldots$
Here 2, 3 \& 4 are factors of 24

## How many multiples can a number have ?

Multiples of a number are infinite that means you can go on finding multiples as many as you want.

How to check a number is a factor of another given number.
For example Check if 6 a factor of 252 ?

$$
\begin{aligned}
& \frac{42}{6 \longdiv { 2 5 2 }} \\
& -\frac{24}{12} \\
& -12 \\
& \underline{0} \text { remainder }=0
\end{aligned}
$$

Since remainder comes out to be zero, We say 6 is a factor of 252.



## When a number is expressed as a product of its factors, it is called factorisation.

## Check is it prime factorisation or not?

$24=2 \times 3 \times 4$ (This is factorisation of 24)
$24=2 \times 3 \times 4 \rightarrow$ This is not a prime factorisation
( 3 Check is it prime factorisation or not?
$24=2 \times 2 \times 2 \times 3$ (This is also factorisation of 24)
$24=\underset{\downarrow}{2} \times \underset{\downarrow}{2} \times \underset{\downarrow}{2} \times 3 \rightarrow$ All prime factorisation
This is prime factorisation


Let's make it more clear through an example :-

$\qquad$
This is not a prime
factorisation

This is not a prime factorisation
This is not a prime
factorisation

This is prime factorisation
This is not a prime
factorisation

अगर सभी Factors, prime हो, तो ही Prime factorisation होता है

A number can play the role of a factor as well as a multiple. How?
(एक नंबर कभी Factor हो सकता है, और कभी Multiple भी)
(6) $=2 \times 3$
$12=6 \times 2$
Here 6 is a multiple.
Here 6 is a factor.
(यहाँ 6 multiple है ) (यहाँ 6 factor है)
Method to find prime factorsation. How to find prime factor of a number?

## Method 1 Factor tree method.

Find prime factors of 240 (यहाँ तीन तरह से करके दिखाया है) Answer will come out same.


Prime factors of 240 are 2,3 and 5
Prime factorisation of $240=2 \times 2 \times 2 \times 2 \times 3 \times 5$

## Method 2 Division method.

Find prime factors of $400 \& 420$.


## LCM - Least Common Multiple

Multiples of 2 are 2, 4, 6, 8, 10, 12., 14, 16, 18. .
Multiples of 3 are $3,6,9,12$, 15, 18, 21, 24, $27, \ldots \ldots \ldots$
Common multiples of 2 and 3 are $6,12,18, \ldots \ldots$ (जो दोनों में हो)
Least common multiple of 2 and 3 is 6
(जो दोनों में हो और सबसे छोटा हो )
Multiples of 2 are $2,4,6,8,10,12.14,16,18,20,22$, 24. Multiples of 3 are $3,6,9,12$, 15, 18, 21, 24, 27, $\ldots \ldots \ldots$
Multiples of 4 are $4,8,12$, 16, 20, 24. 28, 32, $\ldots \ldots \ldots$
Common multiples of 2, 3 and 4 are 12, 24, . . . . .
(जो तीनो में हो)
Least common multiple of 2,3 and 4 is (जो तीनो में हो और सबसे छोटा हो )

## Finding LCM by Division Method



LCM of 12, 15 and $18=2 \times 3 \times 2 \times 3 \times 5=180$

## Fractions



To understand fractions, it is necessary to understand whole first and how a whole is divide into equal parts.

## $\because$ A Whole



A Whole


Not a Whole


## A Whole Divided into Equal Parts



Divided into equal parts


Divided into unequal parts


Divided into equal parts


Divided into unequal parts

## What is a fraction?

It is a special type of number. It shows how many parts of a whole are selected.
There is a method to write a fraction.


Fraction of shaded and unshaded parts.


4 parts are selected out of total 9 parts

$\begin{aligned} & \text { Fraction of } \\ & \text { shaded parts }\end{aligned}=\frac{4}{9}$
shaded parts

Number of total parts

Number of unshaded parts
Fraction of unshaded parts $=\frac{5}{9}$

> Number of total parts


5 parts are selected out of total 9 parts


7 parts are selected out of total 9 parts

Number of shaded parts

Fraction of
Fraction of

shaded parts $=\frac{5}{9}$
 shaded parts $=\frac{7}{9}$

Number of total parts


Fraction of red apples

$$
=\frac{9}{15}
$$

Number of total apples


Number of green apples
Fraction of
green apples $=\frac{6}{15}$
Number of total apples

## Numerator and Denominator

Special names are given to these numbers on top and bottom of a fraction.

$$
\begin{aligned}
\frac{4}{9} & \longrightarrow \text { NUMERATOR } \\
& \text { DENOMINATOR }
\end{aligned}
$$

## Types of Fractions

## Unit fractions

In these fractions numerator is always 1.
For example $\frac{1}{3}, \frac{1}{7}, \frac{1}{15}, \frac{1}{3}$ etc.


## Proper fractions

In these fractions, numerator is always smaller than the denominator.
For example

$$
\begin{gathered}
\frac{3}{7}, \quad \frac{4}{9}, \quad \frac{1}{3}, \quad \frac{2}{25}, \quad \frac{25}{151} \text { etc. } \\
(3<7) \quad(4<9) \quad(1<3) \quad(2<25) \quad(25<151) \\
\text { Numerator }<\text { Denominator }
\end{gathered}
$$

Improper fractions
In these fractions, numerator is always greater than the denominator.
For example

$$
\begin{gathered}
\frac{4}{3}, \quad \frac{11}{7}, \quad \frac{100}{51}, \quad \frac{41}{20} \text { etc. } \\
(4>3)(11>7) \quad(100>51) \quad(41>20) \\
\text { Numerator }>\text { Denominator }
\end{gathered}
$$



## Mixed fractions

These fractions are combinations of a whole number and a fraction.


## How to convert an improper fraction to mixed fraction.

$$
\frac{11}{7}=? \quad \begin{aligned}
& 7 \longdiv { 1 1 } \\
& -\frac{7}{4}
\end{aligned} \begin{aligned}
& \text { Quotient } \\
& 0
\end{aligned}
$$

This is quotient

Remember, denominator remains same
One more example Convert $\frac{52}{3}$ into mixed fraction.
$17 \rightarrow$ quotient
3 $\longdiv { 5 2 }$
$-\frac{3}{22}$

- 21
$1 \rightarrow$ remainder


Remember, denominator remains same


How to convert a mixed fraction into improper fraction.
Convert $3 \frac{2}{7}$ into improper fraction.

$$
3 \frac{2}{7}=\frac{23}{7}
$$




Remember, denominator remains same

## Reciprocal

Reciprocal of a number is fpond by interchanging numerator and denominator.

## Means

Numerator becomes denominator

## For example

Denominator becomes numerator

Reciprocal of $\frac{2}{3}=\frac{3}{2} \rightarrow$ This was denominator but now it is numerator

Reciprocal of $\frac{4}{7}=\frac{7}{4}$

Reciprocal of $\frac{1}{8}=\frac{8}{1} \quad\left(\frac{8}{1}\right.$ can also be written as simply 8$)$

Reciprocal of $5=\frac{1}{5} \quad\left(\therefore 5\right.$ is equal to $\left.\frac{5}{1}\right)$

## Half, One third, a Quarter

When a whole is divided into two equal parts, each part is one-half or half of the whole.


Numeric form of half is $\frac{1}{2}$

When a whole is divided into three equal parts, each part is one-third.


Numeric form of one-third is $\frac{1}{3}$
When a whole is divided into four equal parts, each part is one-fourth.


Numeric form of one-fourth is $\frac{1}{4}$ or one-fourth is also know as a quarter

## Divisibility test

## Divisibility test by 2



ends with 6 ends with 8

All these numbers are divisible by 2.

$\therefore 36945$ is also divisible by 3 .

Check if 289148 is divisible by 3 or not?
$2+8+9+1+4+8=\xrightarrow{32}$ not a multiple of $3 /$ not divisible by 3 .
$\therefore 289148$ is not divisible by 3 .

## Divisibility test by 5



These numbers are divisible by 5.

Check if 255007 is divisible by 5 or not?
255007 $\longrightarrow$ not a multiple of $5 /$ not divisible by 5 .
$\therefore 255007$ is not divisible by 7 .


For example $1489 \xrightarrow{24}$ divisible by 4
$\therefore 148924$ is also divisible by 4
0
 den

## (W) Divisibility test by 6



For example Check if 192246 is divisible by 6 or not?
192246 ends with 6
$1+9+2+2+4+6=24 \rightarrow$ divisible by 3
$\therefore$ It is divisible by 2 .
$\therefore$ It is divisible by 3 .


## Divisibility test by 9


$\therefore 194751$ is divisible by 9 .

## Do this and Become champion!

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