

Golden Points

① 1, 2, 3, 4 - 1, 2, 3, 4

② 1, 2, 3, 4 - 1, 2, 3, 4

③ pairs ($1+2 = 27$)

④ Reverse
to toe / Half Reverse
Alphabetical Reverse
value / consonant Reverse

⑤ others

Coding - Decoding

8, 15, 22, 17, 5, 9, 17, 24, 23, 10 from point 1
HOUSE - 1 Q X W J

13, 15, 22, 9, 5, 14, 12, 25, 13, 10
MOVIE - N Q Y M J

16, 18, 9, 13, 5, 7, 15, 11, 20, 18
PRIME - G O K T R

NIGHT - @

PRIME - G O K T R
+2 +2 +2 +2

Point ② following

13, 15, 21, 14, 5, 8, 12, 6, 13, 7, 9, 4
MOUNT - NL F M G

REALS - From pairs

BEAUTY - Y T U A E B

FOUNDS - S D N U O F

total Reverse.

(Next one), Next
consonant

G H
22 15 20 5 18 23 21 22 9 19
V O T E R - W U V I S

D R I V E - F S G W P I

S . 1 3 8 13 10 16 4
E A C H - M J P D
18 1 9 14 19 22 10 25 24 23
R A I N S = Z J X W

SEA - W M J

14 5 2 6 2 13 5 2 11 10 25 1 16 25 1
N A M E S - X A P Y A
 $\text{Total} = 12$

PRIME - M P Y

6 9 24 5 4 25 11 9 18 2 2
F I X E D - X K I R B B

16 15, 20, 14, 5 19
R O U N D S - V Q U R B K

O U R S D N
+1 +2 +3 +4 +5 +6 +7 +8 +9 +10

16 15 16
LOAF — 8,362

LICK — 510,3

JOCK — 0841

JEAN — 9472

LOC — 350

16 17 18 19
AN MGR RS — 16 15 16 11 24
PO DAK X

CHAIRS — 2
3 9 1 9 1 8 1 9

30 - 5 = 25
25 4 11 2
BED — 122

3 1 2
CAB — 37

3 4 4
ADD — 181

25 5 1 8
YEAH — 207
 $(25 \times 8) + 19 = 207$

2 1 1 2 1 1
BULK — 186
25 6 15 16

CORD — →

(Total from
right side x 3)

16 15 16 5
ROUTE — 6
 $(16 + 15 + 16 + 5) = 52$

SHARE — 6

TABLE — →

16 1 9 14
PAIN — 20
16 18 13
HER — 11

Total - 20

TIER — →

19 4 7
N — 2

11 1 2 3 3 5 4
KAW — 5

13 1 1 9 2 8 4
MAN — 4

Total divided by 7

FAMILY * LONG — 24

COUPLE * THE — 18

OVER * HOSPITAL —

(No. of letters x
No. of letters)

19 1 7 5
SAGE — 8
 $(19 + 1 + 7 + 5) = 32$

26 15 14 5
ZONE — 22
 $(26 + 15 + 14 + 5) = 60$

Half sum - half sum
20 - 12
= 8

VERB — →

~~1 3 11~~
BACK → 235215
~~9 5 26 24 16~~

~~3 13 5~~
AME → 2125117
~~21 26 14 22~~

~~9 2 10 8~~
BJH → 1323711
~~20 25 17 19~~

~~2 18 9 14 7~~
BRING → XHQLS
~~5 24 20 18~~
EXTRA → U, BZ

Each Number
add with 26

~~18 15 19 5~~ → 57 × 4 →
ROSE → 228

~~57 × 4 = 228~~
Total No. of letters

~~20 15 12 9 16~~
TULIP → 390

~~4 1 8 12 9 1~~
DAHLIA →

~~2 12 13 11~~
BLACK → AALKC

BROWN → CORONW

COLOR →

~~22 5 9 14 5~~
VEIN → XGKPK

~~12~~
BONE → DQPG

~~3 8 9 12 4~~
CHILD → 6169248

~~24 19 8 7 21 5 19 20~~
GUEST → 142153840

Consonant Double,
Vowel Same number

~~1 14 3 9 5 14 20~~
ANCIENT → EPCIVPG

Reverse of 3
ADVANCE →

CNA TNE

+2

ADVANCE → XFZAGED
~~22 4~~
VDA AEON

+2 .+2

MUSCLE → USMLEC

FINGER → INFREG

By place joints

~~18~~ SIT → 120

~~13~~ MENS → 71

BANK →

* consonant number,
vowels square

6
38

~~2 1 3 11~~
BACK → 235215
~~25 26 24 16~~

~~3 1 13 5~~
CAME → 2125117
~~24 26 14 22~~

~~4 2 10 8~~
GBJH → 1323711
~~20 25 17 19~~

~~2 18 9 14 7~~
BRING → XHQLS
~~24 8 17 12 19~~
~~5 24 20 18 1~~
EXTRA → U, BFG

Each Number
add with 26

~~18 15 19 5~~ → 57 × 4
ROSE → 228

$57 \times 4 = 228$
Total × No. of letters

~~20 15 12 9 16~~
TULIP → 390

~~4 1 8 12 9 1~~
DAHLIA →

~~2 12 1 3 11~~
BLACK → AALKC

BROWN → CORNW

COLOR →

~~22 5 9 14 5~~
VEIN → XGKJP

~~BONE~~ → DQPG

~~3 8 9 12 4~~
CHILD → 6169248
~~24 9 8~~

~~7 21 5 19 20~~
GUEST → 142153840

Consonant Double,
Vowel Same number

~~1 14 3 9 5 14 20~~
ANCIENT → EPCI VPG
Reverse of 3
~~ADVANCE~~ →
CNA TNE
+2

~~2 4 6 8~~
ADVANCE → XFZAGEF
~~22 4 1~~
VDA AEON
+2 . +2

MUSCLE → USMLEC

FINGER → INFREG

By place jump

~~18 19 20~~
SIT → 120

~~13 5 14 19~~
MENS → 71

BANK →

* Consonant number,
vowels square

Number Series

Golden Points

① Numbers / Difference

② Multiplications

③ Follow / Individuals

$$④ x^2, x^3$$

$$\textcircled{a} x^3 + x^2 \quad \textcircled{c} x^3 - x \quad \textcircled{d} x^2 + x$$

$$\textcircled{b} x^3 - x^2 \quad \textcircled{d} x^3 - x \quad \textcircled{e} x^2 - x$$

⑤ others.

$$1) \underbrace{2, 6, 17, 53, 156}_{x^3, x^3-1, x^3+2, x^3-3, x^3+4}$$

$$1) 472 \quad 2) 474$$

$$3) 476 \quad 4) 478$$

51
159

$$2) \underbrace{94, 149, 204, 259, 314}_{55, 55, 55, +55, +55} \quad \underline{369}$$

$$41, 48, 59, 72, 89$$

1) you and I working on a project

→ plurals
are singular

2) you or I am working on a project.

only last one considered

3) The king with all ministers are arriving to the courtyard.

4) The police is arriving soon.

5) This spectacles were not mine.

6) either Raju or his friends were going to Goa.

7) Neither Sushma nor her husband was going to shopping.

8) The quality of mangoes are not good.

9) The captain and the manager of Mumbai Indians is discussing about their failure in IPL.

10) The poor are always honest.

11) Everyone is discussing

options

am is are

was were

Answers

① are ② am ③ is ④ are
⑤ are ⑥ are ⑦ is ⑧ is
⑨ is ⑩ are ⑪ is

In below two subjects we consider first subject King → it's

King

mind

singular so [is]

↓
with
together with

{ along with }

as well as

accompanied by}

if either or neither nor is
Their we consider last subject
only.

TCS NAT Verbal - what's Expected?

A ~~25~~ ²⁵ questions in 25 minutes.

* Topics expected.

* Reading comprehension

* Cloze passage

* Sentence correction (Tenses, Prepositions, Articles, Subject Verb Agreement, pronoun, Agreement, Parallelism, Modifiers etc.)

* Sentence completion

* Vocabulary (synonyms, Antonyms, Idioms, Phrase verbs)

* Voices and Forms of speech

* Parajumbles

1. They only sport we enjoy is — ^{No Article} hockey.

N.A

2. The ~~the~~ ^{6) the} ^{10) & The}

3. a ~~a~~ ^{7) the}

4. person ^{8) The}

5. the N.A ^{9) The} N.A

Plural

The aims of the course ^{makes} me willing to begin

① makes

② ~~were made~~

c) make ✓

d) making

e) had been made

	Singular	Plural
Subject	The	They
	child	children
	man	men
Verbs	main verb is has does comes goes	are Have do come go
	singulars	

- 2) The weight of the apples varies
 3) Student's Minds about the order of structures.

- a) has been confused
 b) have been confused ✓
 c) ~~has~~ are confused
 d) has confused.

- 4) Neither the man nor ~~Johnson~~ convincing of this idea.

- a) had
 b) has
 c) was ✓
 d) have
 e) were

Find the inverse ratio of 5:3

$$\frac{1}{5} : \frac{1}{3}$$

answer = 3:5

$$\frac{1}{5} : \frac{1}{3} \quad \text{LCM} = (15)$$

Find the inverse ratio of ~~$\frac{2}{3}, \frac{3}{5}$~~

~~10 : 9 : 10~~

find the inverse 2, 3, 4

2, 5, 30, 40.

Q) $10, 13, 2, 3$ what should be added to make it a proportion

$$\frac{d}{a} = \frac{b}{c} \Rightarrow \frac{d}{10} = \frac{2}{3}$$

$$b) 26/21$$
$$\frac{20}{60}$$
$$\frac{60}{60}$$

The duplilcate ratio of 2:3 is

$$2^2 : 3^2 = [4:9]$$

The subduplilcate ratio of 9:16

$$[3:4]$$

Triplilcate ratio of 2:3

$$[8:27]$$

The subtriplilcate ratio 64:125 is [4:5]

connectivity ratio

$$A:B = 3:4$$

$$B:C = 4:5$$

$$A:B:C = 3:4:5$$

$$\begin{array}{r} 3 \\ \times \\ 3 \end{array} \quad \begin{array}{r} 2 \\ \times \\ 4 \end{array} \quad \begin{array}{r} a:b \\ b:c \end{array}$$

$$\begin{array}{r} 3 \\ \times \\ 5 \end{array} \quad \begin{array}{r} 4 \\ \times \\ 6 \end{array} \quad \begin{array}{r} c:d \\ \dots \end{array}$$

(A)

$$3 \times 3 \times 5$$

$$5 \times 2 \times 4$$

(B)

$$3 \times 5 \times 2$$

$$2 \times 4 \times 6$$

Q) $10, 13, 2, 3$ what should be added to make proportion

options

(A) 1

(B) 2

(C) 3

(D) 4

$$12, 15, 4, 5$$

$$60 = 60$$

$$11, 14, 3, 4$$

$$44 \neq 42$$

Q) Find the 4th proportion of 25, 30, 40

$$d = \frac{25 \times 40}{30} = 48$$

Q) Find the 3rd proportion

of 25, 30

$$\frac{a}{b} = \frac{b}{c}$$

$$\underline{b^2 = ac}$$

$$30^2 = 25 \times x$$

$$900 = 25x$$

$$x = \frac{900}{25}$$

$$x = 36$$

Find the 3rd proportion of
 $x^2 - y^2, x+y$

$$b^2 = ac$$

$$(x+y)^2 = (x^2 - y^2) c.$$

$$c = \frac{(x+y)^2}{x^2 - y^2}$$

$$c = \frac{(x+y)(x+y)}{(x+y)(x-y)}$$
$$= \frac{x+y}{x-y}$$

Find the proportion of 9, 16

$$b^2 \times \frac{b}{a}$$

$$\frac{16 \times 16}{9}$$

Mean proportion of $0.8, 1.8$

$$b = \sqrt{0.8 \times 1.8}$$

$$= \sqrt{144} = 12$$

P:Q = 4:3, R:Q = 1:2

$$4:3$$

$$2:1$$

$$= 8:6:3$$

$$A:B = \frac{1}{2} : \frac{1}{3}, B:C = \frac{3}{5} : \frac{2}{3}$$

$$A:B:C = ?$$

$$A:B = \frac{1}{2} : \frac{1}{3}$$

$$= \frac{3}{2} = 3:2$$

$$B:C = \frac{3}{5} : \frac{2}{3}$$

$$= 9:10$$

$$A:B = 3:2$$

$$= 9:10$$

Some amount is shared amo.

A:B:C $\frac{1}{3} : \frac{1}{4} : \frac{1}{5}$ A's share is 400

Find the difference b/w B & C.

$$A:B:C = \frac{1}{3} : \frac{1}{4} : \frac{1}{5}$$

$$20 : 15 : 12$$

$$\begin{array}{r} \downarrow 1P = 20 \\ 400 \end{array}$$

$$B = 15P = 300$$

$$C = 12P = 240$$

$$\boxed{\text{Diff} = 60}$$

A sum of money is shared among A, B & C in the ratio $\frac{2}{3} : \frac{3}{4} : \frac{1}{5}$. C's share is 360. Find total share.

$$\begin{array}{r} 40 \quad 45 \\ \hline 80 : 105 : 12 \end{array}$$

600/- is shared b/w A, B & C.

After increasing A = 150/- B = 100/-
C = 50/- Ratios, 5:3:1. find
A's share?

$$\begin{array}{c} \text{A} \quad \text{B} \quad \text{C} \\ \hline 5 : 3 : 1 \end{array}$$

(5+3+1)
9P

$$600 + 150 + 100 + 50 = 600 + 300 = 900$$

(P=100)

$$\frac{5}{9} \times 900 = \boxed{500}$$

2600/- is shared to 3 males &
4 female & 5 boys, 1 male, 1 female
& 1 boy ratios 1:2:3, then find
the share of 1 boy?

$$6P = 2600$$

1P = 433

~~1 boy share = $\frac{1}{6} \times 2600 = 38 = 3 \times 433 = 1299$~~

Male Female boys
1:2:3

3 Male 3:8:15

$$26P = 2600$$

1P = 100

$$1 \text{ boy } \& 15P = \boxed{1500}$$

$$\frac{1500}{15} = \boxed{500}$$

A bag contains 100/. In
that 1/-, 50 P & 25P coins are
in the ratio 5:6:8. find the
no. of 50P coins?

$$\begin{array}{c} 60 \\ 50 \\ 40 \\ 30 \\ 20 \\ 10 \\ 50 \\ 40 \\ 30 \\ 20 \\ 10 \\ 50 \\ 40 \\ 30 \\ 20 \\ 10 \end{array}$$

$$5 : 6 : 8$$

$$100 = 100 \cdot 5 \cdot 6 \cdot 25 \cdot 8$$

$$500 : 300 : 200$$

$$5 : 3 : 2$$

$$\frac{3}{10} \times 100 = 30 \text{ rs.}$$

$$50 \text{ P} = \boxed{60 \text{ rs.}}$$

A bag contains 300/. in the
10/-, 5/-, & 2/- notes are in the
ratio 3:4:5. find the no.
of 5/- notes?

$$\begin{array}{r} 123 \\ 38 \quad 15 \\ \hline 24 \quad 18 \\ 20 \quad 20 \\ \hline 4 \quad 0 \\ 433 \\ 433 \\ 433 \\ \hline 1299 \end{array}$$

$$10 \text{ P } 30 : 20 : 10$$

$$3 : 2 : 1$$

$$\frac{2}{6} \times 300 = \boxed{100}$$

5 notes are 20 ~~20~~ notes

TCS problems

1) A and B together have Rs 120 if $\frac{4}{15}$ of A's amount is equal to $\frac{2}{5}$ of B's amount, how much does B have?

$$\frac{4}{15}A = \frac{2}{5}B$$

~~$\frac{10}{10}$~~

$$\frac{A}{B} = \frac{3}{2}$$

$$\frac{2}{5} \times 120 = 48$$

Sum of money is to be distributed among A, B, C, D in the proportion of 5:2:4:3. If C gets Rs 1000 more than D, what is B's share?

5:2:4:3

$$1P = 1000$$

$$1P = 1000$$

$$14P = 14000$$

$$\frac{2}{14} \times 14000$$

$$= 2000$$

$$\frac{14 \times 1000}{14} = 1000$$

A got twice as many marks in English as in Science. His total marks in English, Science and Mathematics is 180. If the ratio of his ratio of his marks in English and Maths is 2:3

what is his marks in science?

S E : M

1:2:3

$$\frac{1}{6} \times 180 = 30$$

Number-series

Golden points

① Numbers/difference

② multiplications

③ follow/Individual

④ square, cube x^2, x^3

a) x^3+x^2 b) x^3-x^2

c) x^3+x d) x^3-x

e) x^2+x f) x^2-x

(d)

In the below series of numbers what is Next number

4, 9, 19, 34, 54, 79, 109, 141

10, 12, 15, 20, 27, 38, 49, 57

32, 48, 72, 108, 162

5, 10, 16, 26, 45, 80

4, 4, 8, 24, 96, 480

Step-3

X X X
 X X X

2028

$$\begin{array}{r} 12 \times 42 \\ 184 \\ 68 \\ \hline 1806 \end{array}$$

1, 2, 6, 42, 1806

$$\begin{array}{r} 12 \times 13 \\ 36 \\ 1806 \\ \hline 6842 \end{array}$$

4, 5, 12, 39, 160, 805,

$$\begin{array}{r} 2 5 3 12 19 \\ 5, 7, 12, 19, 31, 50, 81 \\ \hline 131 \end{array}$$

* from follow point in golden
 points $5+7=12$, $7+12=19$, $12+19=31$
 $31+50=81$, $50+81$

Step-4

X X X
 X X X

⑤ X X X
 | X X X

* $(24)^2 \rightarrow$ This type of one
 Shortcut = 576

Step 1: $4^2 = 16$

Step 2: $(2 \times 4)^2 = 17$

Step 3: $2^2 = 4$

2, 3, 6, 18, 108

X

* follow with multiply

$2 \times 3 = 6$, $3 \times 6 = 18$, $6 \times 18 = 108$, $18 \times 108 =$

$$\begin{array}{r} 180 \times 18 \\ 864 \\ 108 \\ \hline 1944 \end{array}$$

2, 10, 30, 68, 130, 222

from x^3+x^2

7^3+7

$1^3+1, 2^3+2, 3^3+3, 4^3+4, 5^3+5, 6^3+6$

Shortcut for multiplication

Step-1

X X X
 X X X

Step-2

X X X
 X X X

1, 4, 27, 256, 3125

4 8 7 5 10
 13, 17, 25, 32, 37, 47 58

N₁ 18, 96, 38, 62, 74

61, 52, 63, 94, 46

6x9-2

Squares Yester

42 = 16 reverse 61

5² = 25 reverse 52

4, 8, 9, 64, 25, 216, 49, 512 ?

A&V TCS Questions

2, 6, 17, 53, 156

~~x3+0 x3-1 x3+2 x3-3~~

94, 149, 204, 259, 314

55 55 55 55

41, 48, 59, 72, 89, 108

7 11 13 17 19

12, 30, 66, 138 --- 570

18 36 72

138
66
72 27, 41, 55, 73 91, 113, 135

14 14 18 78 22 22

41
22
14 73
55 18
41

911, 716, 520 — 207

925 186

18 15 44
74, 92, 117 — 188, 234

21 21
76, 55, 97, 99, 118, 143
-21 +42 +2 +19 +25

37, 40, 49, 76, 157

-3 -9 27 81

1219, 707, 1050 — 35
512 343

92
74
239 76 55
188 21 21
42 92 99
234 55 42 92
88 71 26
94 62 49
18 157 26
23 19 31
143 152
118 26
25 23
152 26
81

P

P

Blood Relations

Male denoted as "+"

Female denoted as "-"

Problem is denoted as "="
husband & wife

* Same generation \longleftrightarrow

* Before generation \uparrow

* After generation \downarrow

Model - I

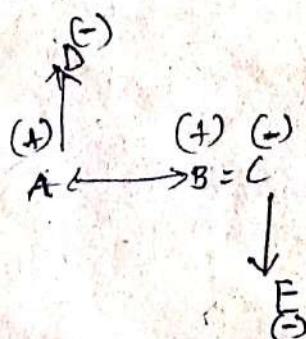
A and B are brothers. C is wife of B. D is mother of A.

E is daughter of C. what is the relation of D to E?

Options

(A) Mother (B) Sister

(C) Aunt (D) Grand Mother



Answer = Grand Mother

$$D \xrightarrow{(-)} A = B \xleftarrow{(+)}$$

$$\downarrow \quad \downarrow \\ C \quad (+)$$



$$A) \text{ wife} \\ F \xrightarrow{(+)} C \xrightarrow{(-)} B \\ A \xleftarrow{(+) \quad (-)} B$$

Model - II

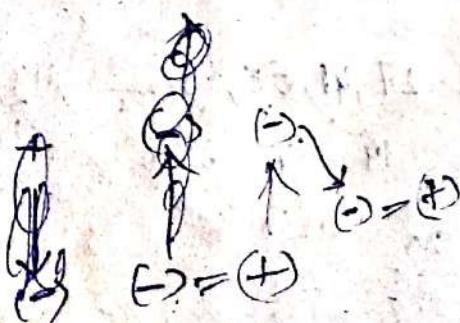
Pointing a photograph Ravi says "She is sister of mother of my daughter's mother's father's wife's only daughter's husband". what is the photo related to Ravi?

of my daughter's mother's father's wife's only daughter's husband". what is the photo related to Ravi?

* You must start with my in the question.

* The "hifens" ends.

* Before my are take it.



Model - III

pointing a photograph Vijay says "Her husband is brother of my son's mother" what is the photograph related to Vijay?

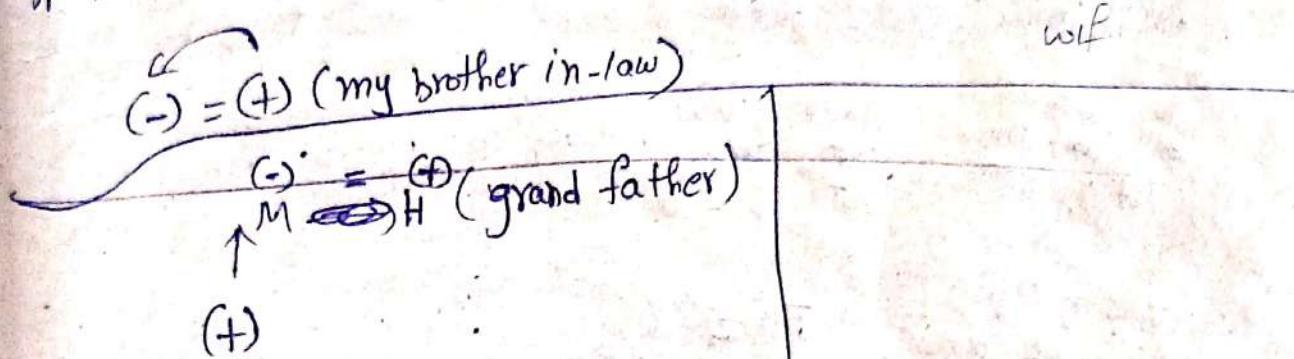
Options

- (A) Brother in law (B) sister
(C) Mother (D) Daughter.

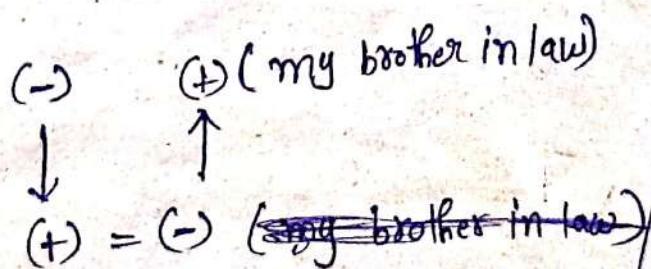
- = +

* in question (is) are very important

* Before (is) 1 relation it is Model II - otherwise Model III



Answer = uncle



(+) (my husband)



(+) (A) Son

Model - IV

① A+B Means 'A' is mother of B

② A-B Means 'A' is brother of B

③ A×B Means 'A' is Husband of B

④ A÷B Means 'A' is Sister of B

Then find the M related to K as a Mother

options

$$① M \div N \times K$$

$$② M+N \times K$$

$$\checkmark ③ M+N-K$$

you
mother brother

$$④ M-N \div K$$

X Bro

you wife Brother

~~you~~ ~~wife~~ ~~Brother~~

$$X T+S-R$$

you Mother Husband

~~you~~ ~~Husband~~ ~~Husband~~

$$T \times S \div R$$

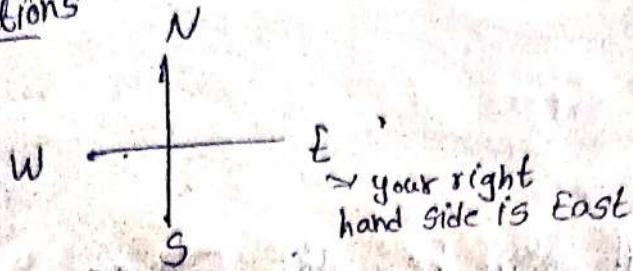
you Husb brother

$$T \div S - R$$

you wife mother

$$T+S \times R$$

Directions



Model - I

Ravi walks to North 20 km. he turn right at 10 km.
he turns left 15 km. he turns right 25 km. once again
he turns right 35 km. what is the distance & direction
from straight starting point?

- (a) 30 km East (b) 35 km East
- (c) 40 km East (d) 45 km East

$$\begin{array}{cccccc} N & E & N & E & N \\ \hline 20 & \frac{10}{10} & \frac{15}{15} & \frac{25}{25} & \frac{35}{35} \end{array}$$

$$\begin{array}{cccccc} W & N & E & S & N \\ \hline 24 & \frac{16}{16} & \frac{24}{24} & \frac{7}{7} & \frac{9}{9} \end{array}$$

Model - II

Kavya walks to East 2 km. she turns right 3 km. she turns
left 4 km. she turns right 5 km. what is the distance
& direction from starting point?

$$\begin{array}{cccccc} E & NE & E & S \\ \hline 2 & \frac{3}{3} & \frac{4}{4} & \frac{5}{5} \end{array}$$

$$\begin{array}{cccccc} E & S \\ \hline 6 & \frac{8}{8} \end{array}$$

$$\begin{aligned} d &= \sqrt{a^2 + b^2} \\ &= \sqrt{2^2 + 8^2} \\ &= \sqrt{100} \end{aligned}$$

Answer

$$\begin{array}{c} SE \\ \hline 10 \end{array}$$

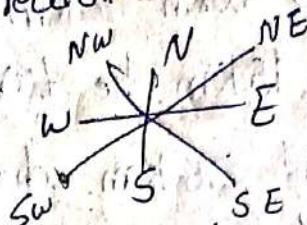
wfE

Model - III



Vijay walks to North 30 km. he walks East 25 km. he walks to South-West 15 km. What is the distance & direction from starting point?

$$\begin{array}{c} \text{N} \nearrow \text{E} \\ 30 \quad 25 \\ \swarrow \quad \searrow \\ \text{NE} \quad \text{SE} \\ 15 \quad 20 \end{array}$$



Answer South-East 20 KM

$$\begin{array}{r} 15+15 = 30 \\ 25+25 = 50 \\ \hline 400 \end{array}$$

is the square
of 20

$$\begin{array}{r} 25 \times 25 = 625 \\ 125 \\ 50 \\ \hline 625 \end{array}$$

$$\begin{array}{c} \text{E} \nearrow \text{S} \\ 16 \quad 12 \\ \swarrow \quad \searrow \\ \text{W} \quad \text{NE} \\ 10 \quad 13 \\ \swarrow \quad \searrow \\ \text{N} \quad \text{E} \\ 12 \quad 5 \end{array}$$

$$\begin{array}{r} 12 \times 12 = 144 \\ 12 \\ \hline 144 \\ 13 \times 13 = 169 \\ 13 \\ \hline 169 \\ 144 \end{array}$$

25 means 5

is the square
of 5

Sentence Correction

* subject verb Agreement

* Modifiers

* Parallelism

* Verb Time Sequence

* Pronoun Antecedent Agreement

* Comparisons

* Prepositions

* Determiners

Modifiers

- * Rishi ate 10 chocolates
- * Rishi driven by hunger ate 10 chocolates

extra information
must be in the
after noun.

↓
Modifier (this part of the sentence gives extra information about Rishi)

Modifier : is that part of the sentence which gives extra information about noun (a) pronoun.

- 1) Hanging on the wall, my mother loved the painting
2) my mother loved the painting hanging on the wall.

- 3) The cook served sandwiches to the lady half-cooked
4) The cook served half-cooked sandwich to the lady.

* if the position of modifier changes, The meaning of the sentence changes totally.

Parallelism

choose the right sentence

- I ate apples, drank Soda and was dancing in the room.
I ate apples, drank Soda and danced in the room.

end with also
V2 past

* All the underlined verbs of action are in simple past tense in the 2nd sentence. So parallelism is followed in the 2nd sentence.

In this sentence two actions are in simple past and third

continuous

Choose the right

Pronoun Antecedent Agreement

- Antecedent - is the noun that the pronoun refers to

* Most of the students have lost his/her mark sheet
Plural
It must be plural

* Most of the students have lost their mark sheets
agree with the noun in terms

The pronoun should number
gender and Person

- if the noun is singular, pronoun should be singular if the noun is plural, the verb is plural

Every student should carry their books

wrong because noun is singular

Every student should carry his/her books

correct sentence

If they ask specifically his/her, by default assume male so (his) is correct

Comparisons

choose the right one

* The view from this building is better than that hotel

* The view from this building is better than the view from

* Seeta's marks are higher than Rahul's marks ✓ so it should also here.

* Seeta's marks are higher than Rahul's Marks ✓

The child left the hand of his father and Ran the Road

They not follow. So
Ran across

option ✓ (A) Across (B) Along (C) On.

Determiners, (which define the quantity of a noun)

- * few
- * Many
- * A few
- * Some
- * little
- * A lot of / lots of
- * A little
- * Any
- * much

1) There are students in the class

- a) few b) a few c) The few

2) There are students who are good at art skill

- a) few b) a few c) The few

3) students who are left in the hostel should come and attend CRT

- a) few b) a few c) The few

Countable noun → few → negative

Uncountable noun → little

few → negative

a few → positive

The few → particular
what over

* Neither of the girls^s ^{verb S} knows that (B) / her teacher (C) / has seen the police report (D).

* open criticism (A) / is best^s (B) / than (C) / secret admiration^(D)

* anyone who want^s (A) / to pursue (B) / higher education (C) / in my wife (D).

* either of the boys^s (A) / may^s take (B) / their seat (C) / in the front of room (D).

* Few of our trainers (A) / have gone (B) / to the college^(C) / to meet the principal (D).

* Varsha recalls her college years (A) / with such nostalgia^(B) / that she often^s lost^s (C) / herself in reminiscence. (D)

* The gymnastic^s team has been practicing (A) / for the last five years (B) / but are^s yet (C) / to win a gold medal^(D).

* He was studying (A) / for a rate of (B) / two practice CATs (C) / per day (D).

* The captain, (A) / along with team, (B) / practices at the ^{so far S} ^{comparison} (C) / everyday (D)

* Sachin scored (A) / more runs (B) / in this match^(C) / than the previous match (D)

* I like (A) / to read books (B) / play the guitar (C) / and ^{to} watch movies (D).

Reading Comprehension

RC strategy

① Read Questions [without option]

② Skim the Paragraph

(Read first 2 lines of each paragraph)

③ Scan the Paragraph (Read quest/question with options)

note keywords and scan that particular paragraph.

Percentages

2. A & B started business with ₹ 10,000/- & ₹ 15,000/- B left the business after 6 months, they got profit of ₹ 35,000. Find the share of A.

$$\frac{A}{10} : \frac{B}{15}$$

$$4 : 3$$

$$7P = 35,000$$

$$1P = 5,000$$

$$A = \boxed{4P = 20,000}$$

3. A & B started a business with ₹ 30,000 & ₹ 20,000/- after 10 months A left the work they got profit of ₹ 66,000/- for $1\frac{1}{2}$ years, Then find the share of A.

$$\frac{A}{30} : \frac{B}{20} \text{ for } 12 \text{ years}$$

$$\frac{4}{30} \times 10 : \frac{6}{20} \times 18$$

$$30 : 36$$

$$5 : 6$$

$$\frac{5}{11} \times 66,000 = 30,000$$

④ A & B started a business with ₹ 6,000/- & ₹ 8,000/- after 6 months B left that business. At the same time C joined with ₹ 16,000. They got profit of ₹ 63,000/- find share of C

$$\begin{array}{c} \text{A} \quad \text{B} \quad \text{C} \\ \hline 6 \times 12 \quad 8 \times 6 \quad 16 \times 6 \\ 72 : 48 : 96 \end{array}$$

3:2:4

$$\begin{array}{r} 7 \\ 4 \times 63,000 \\ \hline 9 \\ = 28,000 \end{array}$$

⑤ A & B started a business with ₹ 20,000/- & ₹ 30,000/- After 6 months, B left that work, after 2 months C joined with ₹ 40,000/- They got profit ₹ 58,800/- find the share of A & C

$$\begin{array}{c} \text{A} \quad \text{B} \quad \text{C} \\ \hline 20 \times 12 \quad 30 \times 6 \quad 40 \times 4 \\ 24 : 18 : 16 \end{array}$$

12:9:8

$$\begin{array}{r} 2 \\ 24 \times 58,800 = 24,000 \\ \hline 296 \end{array}$$

The ratio b/w A & B's investment is 3:5 & the ratio of time is 10:9. what is the ratio of its profits?

$$\begin{array}{c} \text{A} : \text{B} \\ 3 : 5 \times 9 \\ 2 : 3 \end{array}$$

A started a business with ₹ 60,000/- after 4 months, B joined with ₹ 15,000/- They got profit of ₹ 39,000/- per year. Find B's share?

$$\begin{array}{c} \text{A} \quad \text{B} \\ 16 \times 12 \quad 15 \times 8 \end{array}$$

A's investment is double of B's investment. A's time is triple of B's time. They got profit of ₹ 14,000. Find share of A

$$5) \frac{6}{7} \times 14000 = 12000$$

Sum of the student total marks (320 and average marks 22 then find the no. of students)

$$\frac{1320}{22} \text{ sum Avg}$$

$$\begin{array}{r} 1950 \\ 600 \\ \hline 1650 \\ 50 \\ \hline \end{array}$$

In a business, A invested double of B & B invested triple of C. They got profit of 30,000 for 1 year. Find A's share?

$$\frac{A}{6} \frac{B}{3} \frac{C}{1}$$

$$10P = 30,000$$

$$1P = 3000$$

$$A's \text{ Share } 6P = 18000$$

$$\begin{array}{r} 50 \\ 150 \\ 5 \\ \hline 195 \end{array}$$

The average temperature for a week 25°C and first 4 days temperature 22°C then find the average temperature for last 3 days?

$$\begin{array}{ccccccc} 25 & 25 & 25 & 25 & 26 & 25 & 25 \\ S & M & T & W & Th & F & S \\ 22 & 22 & 22 & 22 & 29 & 29 & 29 \end{array}$$

$$19 \rightarrow 30 \quad \frac{19 \times 30}{40} = 57^{\circ}$$

$$\frac{610}{20} = 30.5$$

Averages

A student got 580 marks in 5 subjects. Then find the average marks?

$$\frac{580}{5} =$$

$$5) \begin{array}{r} 580(1) \\ -50 \\ \hline 80 \\ -80 \\ \hline 0 \end{array}$$

$$23 \leftrightarrow 18$$

2) In a class 25 students average is 15 years, then find the sum of their ages?

$$25 \times 15 = 375$$

~~190 mins. to choose 10 marks~~

Part A - Foundation
Part B → Advance

{ numerical }

① Numbers system → 3 or 4 questions

1) divisibility rule, LCM, HCF

2) Simplification (BODMAS Rule)

3) fractions like comparison of fractions

4) Number of factors, units place (Advanced)

② Averages

Arithmetic question - 12-16
Percentage, profit and loss, compound interest, simple interest.

Ratio Proportion (1 or 2)

Ages (must expect 1 q)

Mixtures and Alligation (2)

Time and distance (2 or 2q)

Logarithmic question, probability, mensuration,

③ Verbality section (2nd section)

1) Passage

2) Correction of errors (3-5 questions)

3) Fill in the blanks (3-5 questions)

4) Cloze test

- 1) Coding and decoding (2-3 Qs)
- 2) Number series (2-3 Q)
- 3) Seating puzzle (or) normal puzzles (each have 3 questi)
- 4) Directions and Ranking (1-2 Q)
- 5) Dice (1 Q)
- 6) Sylogism (2 Q)
- 7) Non-Verbal figures (2-3 Q)
- 8) Data-Sufficiency (2-3 Q)

Round 2 Advanced section

Quant (9-10) → Data interpretation

Verbal (4-5)

Reasoning

Permutation, Combination, Probability (2 or 3)

Codings

Matrix strings (or) Arrays (1 Q)

Compound interest

$$CI = P \left(1 + \frac{R}{100} \right)^n - P$$

Method I

$$P = 1000$$

$$R = 10\%$$

$$n = 2, 3, 4$$

$$= 1000 \left(1 + \frac{10}{100} \right)^2 - 1000$$

$$= 1000 \left(\frac{11}{10} \right)^2 - 1000$$

$$= 1000 \left(\frac{121}{100} \right) - 1000$$

$$= 1210 - 1000 = \boxed{210}$$

2x

$$1000 \left(\frac{11}{10} \right)^3 - 1000$$

$$= 1000 \left(\frac{1331}{1000} \right) - 1000$$

$$1000 \times \frac{1331}{1000} - 1000$$

$$1331 - 1000$$

(331)

~~1000~~ $\times 2.5\%$

$$\begin{array}{r} 369 \quad 43.2 \\ -24 \quad 34 \\ \hline 132 \\ -360 \\ \hline 72 \end{array}$$

$$\frac{72}{360} \times 100 = 20\%$$

$\frac{1}{5}$

$$\frac{15}{100} = 4.50$$

The diff b/w the simple SI and CI for 2 years at 15% per annum is Rs. 4.50. The sum is?

$$P = \frac{\text{diff} \times 100^2}{r^2}$$

$$P = \frac{4.50 \times 100^2}{225}$$

$$P = 2000$$

The diff b/w SI and CI for 3 years at 10% per annum is ~~Rs. 20.10~~ 6 ~~10~~ of rupees 10000?

P

$$P = \frac{\text{diff} \times 100^3}{r^2 (300 + 0)}$$

$$10^4 = d \times 10^6 \times 10^4$$

$$25 \times 305$$

d =

On Rs 2000 at 20% per annum for 1 $\frac{1}{2}$ years, the Interest being compounded half yearly;

3:	3:	1:	
2000	20%	400	20%
400		80	20%
1200		16	
240		32	
64		64	
1404			

Number System

→ by using this we represent all numbers.

Digits :- 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Number :- one or more digits.

1) sum of digits of a two digit number is 19. if the new number formed by reversing the digits is greater than the original

$$x + y = 12$$

$$yx > xy$$

$$yx - xy = 54$$

$$(10y + x) - (10x + y) = 54$$

$$9y - 9x = 54$$

$$\boxed{y - x = 6}$$

* The diff. b/w a Three digit number and the number formed by reversing those digits should be divisible by?

option

- (a) 3 (b) 9 (c) 11 (d) All of these

$$\rightarrow xy z - zyx$$

$$(100x + 10y + z) - (100z + 10y + x)$$

~~$99x - 99z$~~

$$99x - 99z$$

~~$10(x - z)$~~

Natural numbers (N) :- 1, 2, 3 ...

also called as
Counting numbers

$$\rightarrow 1+2+3+\dots+n = \frac{n(n+1)}{2}$$

$$\rightarrow 1^2+2^2+3^2+\dots+n^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\rightarrow 1^3+2^3+3^3+\dots+n^3 = \left[\frac{n(n+1)}{2} \right]^2$$

whole number

it is denoted by \mathbb{W} 0, 1, 2, 3 ... (n-1)

$$\begin{array}{l} 100^{\text{th}} \rightarrow 99 \\ 51^{\text{th}} \rightarrow 50 \end{array}$$

Integers (Z):

$$\{ \dots -2, -1, 0, 1, 2, \dots \infty \}$$

$$\mathbb{Z}_{\text{+ve}} \rightarrow \{ 1, 2, \dots \}$$

$$\mathbb{Z}_{\text{-ve}} \rightarrow \{ \dots -2, -1 \}$$

$$\mathbb{Z}_{\text{non+ve}} \rightarrow \{ \dots -2, -1, 0 \}$$

$$\mathbb{Z}_{\text{non-ve}} \rightarrow \{ 0, 1, 2, \dots \infty \}$$

Even numbers

number which is exactly divisible by 2

$$2, 4, 6, 8, \dots (2n)$$

$$100^{\text{th}} \rightarrow 200$$

$$50^{\text{th}} \rightarrow 100$$

$$\frac{31}{2}, \frac{17}{2} \leftarrow 34$$

$$\left[\frac{0}{2} \right] = 0$$

so zero also even.

sum of first even
number = $n(n+1)$

odd numbers

number which are not divisible
by 2. $\rightarrow n^{\text{th}}$

$$1, 3, 5, 7 \dots (2n+1)$$

$$100^{\text{th}} = 2 \times 100 - 1 = 200 - 1 = 199$$

$$50^{\text{th}} \rightarrow 99$$

$$\frac{37+1}{2} = 19 \leftarrow 37$$

$$\frac{19+1}{2} = 10^{\text{th}} \leftarrow 19$$

$$\text{sum of odd number} = n^2$$

prime numbers

multiple of 5

$35 \rightarrow 35 \rightarrow 5$ is called a factor of 35

* prime number is Ntq but the
number is divisible by 1 and itself

$$\begin{array}{c} 2 \\ | \\ 1 \quad 2 \\ | \quad 3 \\ 1 \quad 3 \end{array} \rightarrow \text{prime}$$

composite number (> 2) factors.

$$\begin{array}{c} 4 \\ | \\ 1 \quad 2 \quad 4 \end{array}$$

A number is ~~not~~ said to be prime if it is divisible by 1 and itself only.

* It have only 2 factors

$$\begin{array}{c} 2 \\ | \\ 1 \quad 2 \\ | \quad 3 \\ 1 \quad 3 \end{array}$$

composite number :- it has more
than two factors.

$$\begin{array}{c} 4 \\ | \\ 1 \quad 2 \quad 4 \end{array}$$

* $\boxed{1}$ is neither prime nor composite.
because it have only one factor.

$$(Prime)^2 - 1$$

$$\rightarrow 3, 8, 24, 48 \xrightarrow{120} \begin{array}{c} 120 \\ 4 \mid 120 \\ 4 \mid 24 \\ 4 \mid 8 \\ 4 \mid 3 \end{array}$$

$$\begin{array}{c} \rightarrow 2, 3, 5, 7 \\ 11, 13, 17, 19 \\ 23, 29 \\ 31, 37 \\ 41, 43, 47 \end{array} \left. \begin{array}{c} \\ \\ \\ \\ \end{array} \right\} 15 \text{ prime number}$$

$$53, 59, 61, 67$$

$$71, 73, 79, 83, 89, 97 \left. \begin{array}{c} \\ \\ \\ \\ \end{array} \right\} 10$$

$$\frac{n(n+1)}{2} \times \frac{100}{2} = 200(20)$$

~~$\frac{100 \times 20}{2}$~~
 ~~$\frac{100}{2}$~~
 ~~$\frac{100}{2}$~~
 ~~$\frac{100}{2}$~~
 ~~$\frac{100}{2}$~~

sum of natural numbers from
100 to 200.

$$\begin{aligned}
 & 100 + 101 + \dots + 200 = ? \\
 & = (1 + \dots + 200) - (1 + \dots + 99) \\
 & = \frac{200 \times 201}{2} - \frac{99 \times 100}{2} \\
 & = 20100 - 4950 \\
 & \boxed{= 15150}
 \end{aligned}$$

$$\frac{n(n+1)(2n+1)}{6}$$

$$= \frac{20(21)(41)}{6}$$

$$= 2870$$

$$2^2 + 4^2 + 6^2 + \dots + 40^2$$

~~(81)~~
$$(a \times b)^m = a^m \times b^m$$

$$6^2 = (2 \times 3)^2 = 2^2 \times 3^2$$

$$2^2 [1^2 + 2^2 + 3^2 + \dots + 20^2]$$

$$= 4 \times 2870$$

$$= 11480$$

Find the value of ~~$1+2+3+\dots+100$~~

$$1 \times 2 + 2 \times 3 + 3 \times 4 + \dots + 99 \times 100 ?$$

Find the value of $1 \times 3 + 3 \times 5 + 5 \times 7 + \dots + 19 \times 21$

write as

$$\begin{aligned}
 & (2-1)(2+1) + (4-1)(4+1) + (6-1)(6+1) \\
 & + \dots + (20-1)(20+1) \\
 & = 2^2 - 1 + 4^2 - 1 + 6^2 - 1 + \dots + 20^2 - 1 \\
 & = 2^2 (1^2 + 2^2 + 3^2 + \dots + 10^2) - 10 \\
 & = 4 \times \left(\frac{10 \times 11 \times 21}{6} \right) - 10 \\
 & = 1530
 \end{aligned}$$

sum of cubes of first 10 natural numbers

$$\left(\frac{10 \times 11}{2} \right)^2 = 55^2 = 3025$$

~~sum of first 50~~

Find the sum of even numbers up to 200.

$$\begin{aligned}
 & 2 + 4 + 6 + \dots + 200 = ? \\
 & \text{sum} = \frac{(100 \times 101)}{2} = 10100
 \end{aligned}$$

Find the sum of the even numbers from 100 to 200

$$\begin{aligned}
 & 100 + 102 + \dots + 200 = ? \\
 & \text{sum} = \frac{(100 \times 101)}{2} = 10100
 \end{aligned}$$

* what will be the maximum sum of 44, 42, 40 ... ?

$$44 + 42 + 40 + \dots + 2 = 22 \times 23 \\ = 506$$

1) Find the sum of odd numbers up to 100?

$$1 + 3 + \dots + 99 = 50^2 = 2500$$

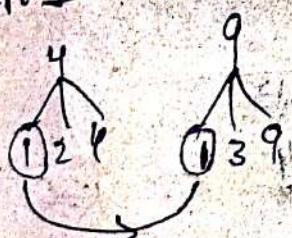
2) Find the sum of odd numbers from 100 to 200.

$$101 + 103 + \dots + 199 = \\ = 100^2 - 50^2 \\ = 7500$$

Co-primes (or) Relative primes

When you called 2 or more numbers as co-primes

* There is no common divisor except 1.



e.g.: 16, 25 ~~are not~~

* 2 or more numbers are said to be co-primes if there is no common divisor except 1.

* Is 6336 divisible by 36?

Divisibility Rule for co-primes:



* Is 6336 divisible by 36?

$$36 = \cancel{1} \times \cancel{3} \times \cancel{2} \times \cancel{2}, \cancel{3} \times \cancel{3} \times \cancel{4} \times \cancel{9}, \cancel{6} \times \cancel{6}$$

$$\begin{array}{r} 6336 \\ \hline 4 \\ 6336 \\ \hline 9 \end{array} \quad \begin{array}{r} 6336 \\ \hline 4 \times 9 = 36 \end{array}$$

If x be a number, m & n are co-primes.

* If x is exactly divisible by n , also divisible by m . Then x should be divisible by $[m \times n]$.

is 6

Divisibility Rules:

2 :- units digits should be 0, 2, 4, 6, 8

3 :- last 2 digits should be divisible by 4 or (00)

4 :- last 3 digits should be divisible by 8 or (000)

The above num have last digits zero's also divisible

5 :- last 4 digits should be divisible by 16 or (0000)

6 :- sum of the digits should be divisible by 3.

Sir Ph. Ram
(Vedic Calculating)

Eg:- 9866934338

112 18 also divisible
by 3

* So this num is divisible by 3.

9: sum of digits should be
divisible by 9.

Eg:- 9666934338 12 not divisible

5: last digit 5 or (0)

6: divisible by 2 & 3

12: divisible by 3 & 4

14: 2 & 7

15: 3 & 5

18: 2 & 9

20: 4 & 5

(00/20/40/60/80) last 2 digits

21: 3 & 7

22: 2 & 11

24: 3 & 8

25: (00/25/50/75) last 2 digits

7, 11, 13, 31

3434/235

3434

235

196 ✓ 28

3/199

3

13 :- 1697865

265

4832

-8

24

11 :- 1331132121
9
→ odd place sum
even place sum
 $9 - 7 = 2$

11 :- sum of odd - sum of even should be 0 or divisible by 11/22/33/44... are multiples of 11.

239456 12 → 3 & 4
b = 2
b = 276

239456

b = 2 (or) 6

b = 2 → 239452

K35624 13
K=6

(K+7)-13=0

R=8 13 - K + 7 = 0

R=6

cut 3 digit from
Right side subtract
greater number from
smaller up to it
get it into 3 digit

2. Find the highest power of 2 which divide 100?

Highest factor of 2

* highest power of a prime number when divided by n!

answer

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

$$\frac{50}{2} = 25$$

$$\frac{25}{2} = 12$$

$$\frac{12}{2} = 6$$

$$\frac{6}{2} = 3$$

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

$$\frac{1}{2} = 0$$

$$\rightarrow \max(x) = \frac{1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10}{2^8}$$

$$\rightarrow \frac{n!}{p_1^{e_1} p_2^{e_2} \dots p_m^{e_m}} \rightarrow \max(x) = \left[\frac{n}{p_1} \right] + \left[\frac{n}{p_1 p_2} \right] + \left[\frac{n}{p_1 p_2 p_3} \right] + \dots$$

where $[x]$ - Integral part of x

find the high power of 6 which divide 60

$$6 = 2 \times 3$$

$$3 \mid 60$$

$$3 \mid 20$$

$$3 \mid 6$$

$$2 \mid 2$$

$$2 \mid 1$$

$$2 \mid 0$$

$$2 \mid 0$$

$$2 \mid 0$$

$$2 \mid 0$$

$$2 \mid 60$$

$$2 \mid 30$$

$$2 \mid 15$$

$$2 \mid 7$$

$$2 \mid 3$$

$$2 \mid 1$$

$$(56)$$

(28) [✓] smaller

2. find the highest power of 3 which divide 120

only 3

$$\begin{array}{r} 3 \mid 120 \\ 3 \mid 40 \\ 3 \mid 13 \\ 3 \mid 4 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 40 \\ 13 \\ 4 \\ \hline 58 \end{array}$$

$$58$$

find the highest power of 4 divide by 48

4 is Not Prime number

$$so, 4 = 2^2$$

$$\begin{array}{r} 2 \mid 40 \\ 2 \mid 20 \\ 2 \mid 10 \\ 2 \mid 5 \\ 2 \mid 2 \\ \hline 1 \end{array}$$

$$38$$

$$\frac{38 \times 2}{2} = 19$$

8 which divide 80

$$8 = 2^3$$

$$\begin{array}{r}
 2 \overline{) 80} \\
 2 \overline{) 40} \\
 2 \overline{) 20} \\
 2 \overline{) 10} \\
 2 \overline{) 5} \\
 2 \overline{) 2} \\
 \hline
 & 78 \\
 \hline
 & \frac{78}{3} = 26
 \end{array}$$

Find the maximum value of n , if $12^0 / 12^n$ is an integer

$$12 = 3 \times 4$$

$$\begin{array}{r}
 3 \overline{) 40} \quad 2 \overline{) 60} \\
 3 \overline{) 13} \quad 2 \overline{) 30} \\
 3 \overline{) 4} \quad 2 \overline{) 15} \\
 \hline
 58 \quad \frac{15}{2} \\
 \hline
 & 116 \\
 & \frac{116}{2} = 58
 \end{array}$$

$$3^{58} \times 4^{58} = [58]$$

number of the zeroes at the end of the

product

$$83$$

Number of the zeroes at the end

of the product
one is 5

product of 2 and 5
one is at the end of product

~~no 23~~

① Find the no. of zeros in the product of $1 \times 2 \times 3 \times \dots \times 100 \times 2 \times 3 \times \dots \times 100 \times 1 \times 2 \times 3 \times \dots \times 100$

$$\begin{array}{r}
 100! \times 100! \times 1000! \\
 \downarrow \quad \downarrow \quad \downarrow \\
 22000 + 24 + 249 \\
 \hline
 = 275 \text{ zeros}
 \end{array}$$

Permutation and combination

Let n be a number and $n = p_1^a p_2^b p_3^c$
where p_1, p_2, p_3 are prime numbers.
 a, b, c are natural numbers.
the factors of $n(f) = (a+1) \cdot (b+1) \cdot (c+1)$

$$\begin{array}{c}
 6 \rightarrow 2^1 \times 3^1 \\
 \downarrow \quad \downarrow \\
 2^0 2^1 \quad 3^0 3^1
 \end{array}$$

No. of factors $n(f) = 2 \times 2 = 4$

$$(2^0 \times 3^0) = 1$$

$$(2^0 \times 3^0) = 3$$

$$(2^1 \times 3^0) = 2$$

$$(2^1 \times 3^1) = 6$$

if p is a prime number

$$\text{Eg: } \underline{2400} = 2^3 \times 5^2 \times 2^3 \times 3^1 \\ = 2^5 \times 3^1 \times 5^2$$

$$n(f) = 6 \times 2 \times 3 = 36$$

$$\text{Eg: } \underline{1024} = 2^{10}$$

find the factor of $\underline{36000}$?

$$2^3 \times 5^3 \times 2^9 \times 3^1 \\ 2^4 \times 5^3 \times 3^1$$

$$= \cancel{4 \times 3^1} \cdot 2^{\frac{2}{2}} \cdot \cancel{3 \times 7}$$

find the number of numbers
upto 1000 having exactly
three factors?

$$\cancel{2^3 \times 5^3}$$

$$3 = 2 + 9 \\ 2 \times 5^2$$

$$\underline{1800} = 2^2 \times 5^2 \times 2 \times 3^2$$

$$= 2^3 \times 3^2 \times 5^2$$

$$n(f) = 3 + 2 + 2 = 7$$

$$n(\text{diff prime factors}) = 3$$

$$\rightarrow \text{sum of diff prime factors} = 2 + 3 + 5 = 10$$

$$\rightarrow \text{sum of prime factors,} \\ = 3 \times 2 + 2 \times 3 + 2 = 10 \\ = 22$$

$$\underline{9200} = 2^2 \times 5^1 \times 5^2 \times 7^1$$

$$n(f) = 3 + 1 + 2 + 1 = 7$$

$$n(\text{d.P.F.}) = 4 \rightarrow \{2, 3, 5, 7\}$$

$$S(\text{d.P.F.}) = 2 + 3 + 5 + 7 = 17$$

$$S(\text{p.factors}) = 4 + 3 + 10 + 7 = 24 \quad (\text{Ans.})$$

sum of factors :-

$$24 \\ 1 + 2 + 3 + 4 + 6 + 8 + 12 + 24 \\ = 60$$

if $\underline{240}$

$$= 2 \times 5 \times 2^3 \times 3^1$$

$$= 2^4 \times 3^1 \times 5^1$$

$$S(F) = (1 + 2 + 2^2 + 2^3 + 2^4)$$

$$\Rightarrow 24 = \boxed{2^3} \times \boxed{3^1}$$

$\begin{matrix} 2^0 & 2^1 & 2^2 & 2^3 \\ \diagdown & \diagup & \diagdown & \diagup \\ 2^0 & 2^1 & 2^2 & 2^3 \end{matrix}$

$$S(F) = (2^0 \times 3^0) + (2^0 \times 3^1) + (2^1 \times 3^0) + (2^1 \times 3^1)$$

$$(1) + (3) + (3) + (3) = 10$$

$$n = p_1^a \times p_2^b \times p_3^c \times \dots$$

$$S(F) = (1 + p_1^1 + p_1^2 + \dots + p_1^a) (1 + p_2^1 + p_2^2 + \dots + p_2^b) \dots$$

$$(1 + p_3^1 + p_3^2 + \dots + p_3^c)$$

$$S(F) = 1 \left[\frac{p_1^{a+1} - 1}{p_1 - 1} \right]$$

$$\begin{array}{r} 256 \\ 2 \times 256 \\ \hline 0 \end{array} \quad \begin{array}{r} 256 \\ 2 \times 256 \\ \hline 0 \end{array} \quad \begin{array}{r} 256 \\ 2 \times 256 \\ \hline 0 \end{array} \quad \begin{array}{r} 256 \\ 2 \times 256 \\ \hline 0 \end{array}$$

Eg:- 1500

$$2^2 \times 5^2 \times 3^1 \times 5^1$$

$$= 2^2 \times 5^3 \times 3^1$$

$$= 2^2 \times 3 \times 4 \times 2$$

$$= \boxed{24}$$

$$(2^0 + 2^1 + 2^2) \times (5^0 + 5^1 + 5^2 + 5^3)$$

$$(3^0 + 3^1) \times (5^0 + 5^1)$$

$$(1+2+4) (1+5+25+125)$$

$$\frac{1099 \times 4 \cdot 3834}{4396}$$

$$= (7) (157) (4)$$

$$= 1099 (4)$$

Remainders

$$1) \frac{63 \times 65 \times 67 \times 69}{6}$$

$$\rightarrow \frac{(3) \times 5 \times 1 \times 3}{6}$$

$$\begin{array}{r} 15 \times 3 \\ \hline 6 \\ = 45 \\ \hline 6 \end{array} = \boxed{3}$$

$$6) \frac{63(1)}{6}$$

$$6) \frac{33(1)}{6}$$

$$6) \frac{63(1)}{6}$$

$$6) \frac{63(1)}{6}$$

$$2) \frac{98 \times 108 \times 102 \times 97 \times 9994 \times 99}{100}$$

$$100) \frac{99989}{900}$$

$$99$$

Find the remainder when
119 \times 193 \times 47 \times 62 is divided by 12

$$(-1) \times (-3) \times (-1) \times 2 = -6$$

Now to calculate,
 5^{256} is divided by 4

$$\frac{5^{256}}{4} = \boxed{1} = 1$$

$$\frac{278}{3} \rightarrow (-1)^{78} \xrightarrow{\text{Power even}} +1 \quad \text{plus sign}$$

$$\frac{100011003}{1002} * \text{power odd sign is negative transferred}$$

$$(-1)^{1003}$$

$$\leftarrow -1$$

$$102 - 1 = 100$$

Kenneth's theorem

$$1) \frac{63 \times 65 \times 67 \times 69}{6}$$

$$\rightarrow \frac{3 \times 5 \times 7 \times 3}{6} = \frac{15 \times 3}{6} = \frac{45}{6} = \boxed{3}$$

$$2) \frac{98 \times 108 \times 102 \times 97 \times 99.4 \times 99}{100}$$

$$(100) \frac{99.4 \times 99}{100}$$

the remainder when
 $(93 \times 47 \times 62)$ is divided by 12

$$1) \times (-3) \times (-1) \times 2 = -6$$

2^{56} is divided by 4

$$\frac{2^{56}}{4} = \frac{2^{56}}{2^2} = 1$$

$$\frac{2^{78}}{3} \rightarrow (-1)^{\frac{78}{2}} = +1 \quad \begin{matrix} \text{power even} \\ \text{plus sign} \end{matrix}$$

$\frac{1001}{1002} \times \frac{1003}{1002}$ power odd
sign is - neglige transfered.

$$1) \frac{1003}{1002}$$

$$2) -1 \times \frac{1001}{1002}$$

26) find the
is divided by 28^7

$$\begin{aligned} & \frac{3^80}{28} \cdot \frac{3^2}{28} = \frac{(3^3)^{26}}{28} \times 3^2 \\ & = (-1)^{26} \times 9 = 9 \end{aligned}$$

$$27) \frac{12^{35}}{7} \rightarrow (-2)^{35} = \frac{-2^{35}}{7} = -\frac{(2^3)^{11} \times 2^2}{7} = -1'' \times 4 = -4 \quad \boxed{3}$$

Fermat

$$\begin{aligned} & \frac{35}{21} \cdot \frac{35}{3} = \frac{5 \times 35^{41}}{3} \\ & \text{E1) } (-1)^{41} = +1 \times 7 \quad \boxed{7} \end{aligned}$$

Note:-

$\rightarrow (a^n + b^n) \div (a+b)$, if n - odd

$\rightarrow (a^n + b^n + c^n + d^n) \div (a+b+c+d)$, if n - odd.

$\rightarrow (a^n - b^n) \div (a-b)$, if n - even

$\rightarrow (a^n - b^n) \div (a+b)$, if n ,

Fermat's Theorem :-

289 is divide by 81

$$R \left[\frac{289}{89} \right] = \frac{2 \times 2^{38}}{89} = 2 \times 1 = 2$$

successive division

$$a) n/c b) \frac{1}{n}$$

a) in successive division means

b) first division co-efficient

becomes second division dividend

second division co-efficient becomes

third division dividend.

1) if 150 is successively divide by 4
then find the respective rem

$$4) 150(37) \quad \begin{array}{r} 4 \\ 12 \\ 30 \\ 28 \\ \hline 2 \end{array}$$

$$5) 37(57) \quad \begin{array}{r} 5 \\ 35 \\ \hline 2 \end{array}$$

Ans: 1, 2, 2

$$3) 7(2) \quad \begin{array}{r} 3 \\ 2 \end{array}$$

LCM & HCF

LCM :-

Multiples of 2: - 2, 4, 6, 8, 10, 12, 14, 16, 18
 Multiples of 3: - 3, 6, 9, 12, 15, 18, 21

Common multiples: 6, 12, 18, 24

LCM :- 6

1) Find the LCM of 36, 48, 72, 96

upto 10000
 find the number of numbers
 between 100 and 10000 which are
 exactly divisible by 12, 15, 20, 35

$$\text{LCM}(12, 15, 20, 25) = 420$$

Find the greatest four digit number
 when divided by 36, 48, 64 leaves
 remainder 9 in each case.

$$\text{LCM}(36, 48, 64) = 576$$

$$(576) \overline{) 9999}$$

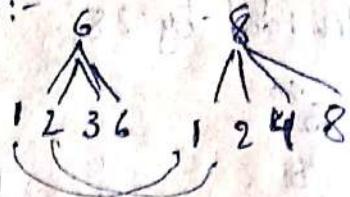
$$\overline{(207)}$$

$$9999 - 207 = 9792$$

$$\begin{array}{r} \\ + 4 \\ \hline 9796 \end{array}$$

HCF

Factors:-



common factor: 162

HCF also called as GCD or GCM

of greatest number which divides given numbers:

Find HCF of 36 and 84:

$$\text{I} \quad 36 = 2^2 \times 3^2$$

$$\text{II} \quad 84 = 2^2 \times 3 \times 7$$

$$\text{HCF} = 2^2 \times 3 = 12$$

$$\begin{array}{r} 36 \\ 72 \\ 12 \\ 36 \\ 12 \\ 36 \\ 12 \\ 0 \end{array}$$

$$\text{HCF} = 12$$

III

$$\begin{array}{r} 36, 84 \\ \downarrow 18 \\ 12 \end{array}$$

IV

$$\begin{array}{r} 43684 \\ \downarrow 3921 \\ 3, 7 \\ 4 \times 3 = 12 \end{array}$$

greatest number which divide

108, 288 and 360

this ^{way}
 calculate all
 number

$$4 \overline{) 108, 288, 360}$$

$$9 \overline{) 27, 72, 90}$$

$$3, 8, 10$$

$$4 \times 9 = 36$$

The ratio of two numbers is 3:4 and their HCF is 4. Their LCM's?

$$\text{LCM} = \text{HCF} \times \text{LCM}(3, 4)$$

$$= 4 \times 12$$

$$= 48$$

$$\begin{array}{r} 3 \ 12 \ 3 \rightarrow 8 \\ \times \quad \quad \quad \downarrow \\ 4 \ 1, 8 \end{array}$$

$$\textcircled{1} \ 12, 3, 8$$

(16) The sum of two numbers is 216 and their HCF is 27. The numbers are?

$\rightarrow 27a, 27b \rightarrow$ where (a, b) are co-primes

$$27a + 27b = 216$$

$$atb - 8 = 1+7 = 8+6 = 3+5 = 4+4$$

$$(a, b) : (1, 7), (3, 5)$$

$$(27a, 27b) = (27 \times 1, 27 \times 7), (27 \times 3, 27 \times 5) \\ = (27, 189) (81, 135)$$

The product of two numbers is 2028 and their HCF is 13. The number of such pairs is?

$$3a \times 13b = 2028 \quad a, b - \text{co-primes}$$

$$ab = 12 = 1 \times 12 = 2 \times 6 = 3 \times 4$$

$$(a/b) = (1, 12), (3, 4) \\ = 2 \text{ pairs}$$

The HCF of two numbers is 11 and their LCM is 693. If one of the numbers is 77

Head	feet
HoCw	long Cw
1	142
50	

$$x+y = 50$$

$$2x+4y = 142$$

$$1x = 50 - 4$$

$$2(50 - 4) + 4y = 142$$

$$100 - 8y + 4y = 142$$

$$100 + 2y = 142$$

$$2y = 142 - 100$$

$$y = 42$$

$$\boxed{y = 21}$$

$$\begin{array}{r} 12 \\ 9 \\ \hline 14 \end{array} \begin{array}{r} 8 \\ 7 \\ \hline 15 \end{array} \begin{array}{r} 34 \\ 9 \\ \hline 17 \end{array}$$

$$577717 \quad \frac{18}{9}$$

$$5.5162 \quad \frac{19}{9} X$$

$$569.82 \quad \frac{21}{9} X$$

Xyz $N = xyz$

$$N = 100x + 10y + z$$

$$\begin{aligned} N - (x+y+z) &= (100x+10y+z) - (x+y+z) \\ &= 99x + 9y \\ &= 9(11x+y) \end{aligned}$$



~~63576~~

~~7602~~ $\frac{15}{8} X$

~~2512~~ $\frac{16}{8} \checkmark$

~~7622~~ $\frac{17}{8} X$

~~7622~~ $\frac{18}{8} X$

one-word substitutions

Baker \rightarrow One who makes bun, cake \rightarrow one who kills own father \rightarrow Patri

Kills own Mother \rightarrow

Kills own child \rightarrow Feticide

\rightarrow Murder
New born

Medicine \rightarrow One who calls

One who sells book, pen, \rightarrow stationer
Pencils

One who makes and \rightarrow confidancy
Sells sweets

* one who thinks about \rightarrow Egoist

* one who thinks and prices \rightarrow Egg Tise

* one who sells vegetables and fruits \rightarrow Green Grocer

* one who sells Rice, Dal \rightarrow Grocer

* one who sells meats \rightarrow Butcher

* one who catches fish \rightarrow Fisherman

* one who sells fish \rightarrow Fishmonger

* one who believes in god \rightarrow Thiest

* one who does not believe god \rightarrow Ethiest

* one who really believes god \rightarrow Agnostic

* one who believes many gods \rightarrow Polytheist

believes all gods \rightarrow Pantheist

one who have single wife \rightarrow monogamist

having two wives \rightarrow ~~B~~ Polygynous

\rightarrow Polyandrist

\rightarrow Murder

Side/cide difference?

Sentence completion

Fill in the blanks with the correct option.

A Misogynist hates _____

- (A) men
- (B) women ✓
- (C) society
- (D) children

2) A person who travels on foot
Podestarin

3) A man who always thinks of
himself Egoist.

4) A man who speaks less in the
forum

- (A) boorish → to be oblivious and boring
- (B) unintelligible → impossible to understand
- (C) garrulous → excessively talkative
- (D) reticent ✓

5) A country that is by a king or
queen

- (A) Monarchy
- (B) Democratic
- (C) Autocracy → a system of govt by one person with absolute power.
- (D) All the above.

6) The study of ancient sciences

- (A) Archaeology ✓
- (B) Anthropology - The science of human being

7) History → The study of the microscopic structure of tissues

- (C) Ethnology - study of culture of different people and relationships b/w them

8) Handwriting which is not clear enough to be read?

- (A) scrawled → carelessly written
- (B) illegible ✓
- (C) crabbled → of handwriting very small
- (D) None of above

9) Peter is excessively concerned with Accuracy and Precision. He is a _____

- (A) Pedantic ✓
- (B) Professional
- (C) Observer

- (D) None of the above

① Removing people from a place of danger. Evacuate.

- A) Evade
- B) Extract

② Evacuate ✓

⑩ A speech made without preparation.

④ Improvisation

③ Unprepared

⑤ Extempore → without preparing and giving presentation

⑥ None of the above

11) The two brother's looks so similar that it is difficult to differentiate them.

- a) same
- b) similar
- c) identical
- d) alike ✓

12) An action of killing human beings Homicide

13) Animals who live in groups Herd

14) Animals feeding on plants Herbivorous

15) my friend has good command over English and Hindi.

16) A group of worshippers assembled for the religious ceremony

① Aggregation

② congregation

17) Diseases which spread from one person to another by direct contact

③ Infectious → to be transmitted to people through the environment

④ Contagious

18) A substance that kills germs Germsicide

19) A substance that kills pests Pesticide

20) Every week, in the office, one hour is _____ to games and sports

a) conferred

b) dedicated

c) conceded

d) diverted

what Annual income will
distrach debt of 848 at the
rate of 4% per annum in 4
annual equal installments?

- (A) 200
- (C) 244
- (B) 144
- (D) 164

$$\frac{100 \times 848}{100(1) + \frac{16}{8}} = \frac{100 \times 848}{120} = \frac{100 \times 848}{\frac{3}{2}} = \frac{100 \times 848}{100 + 8t(t-\frac{1}{2})}$$

$$\frac{100 \times 848}{400 + 24} = \frac{100 \times 848}{324} = 200$$

compound interest installment

A man borrows 2000 at 12%.
compound interest how much he
has to pay Annual at the end of
the each year to settle his loan
in 2 years

- (A) 12,000
- (B) 12100
- (C) 12,200
- (D) 12,300

$$P = \frac{I}{1+Ry_1} + \frac{I}{(1+Ry_1)^2} + \frac{I}{(1+Ry_1)^3}$$

$$P = I \left[\frac{1}{(1+\frac{R}{100})} + \frac{1}{(1+\frac{R}{100})^2} \right] \quad (1+Ry_1) \\ 1 + \frac{16}{100} \\ \frac{11}{10}$$

$$P = I \left[\frac{1}{1} + \frac{10^2}{112} \right]$$

$$2000 = x \left[\frac{10}{11} + \frac{100}{121} \right]$$

$$= x \left[\frac{110+100}{121} \right] = 121x$$

$$x \left[\frac{21}{121} \right] = 2100$$

$$x = 121 \times 100 = 12100$$

$$\begin{aligned} & 4200 \\ & 2^2 \times 3^2 \times 5^2 \times 7^1 \\ & n(f) = 2^2 \cdot 3^2 + 10 \\ & \quad 3^2 \cdot 5^2 \\ & \quad 3^2 \cdot 7^2 \\ & \cancel{\text{profit and loss}} \end{aligned}$$

~~$x+y=2$~~

~~$yx > xy = 54$~~

~~$(10y+x) - (10x+y) = 54$~~

~~$9y - 9x = 54$~~

~~$y-x=6$~~

~~$y=9 \quad x=3 \quad xy=54$~~

~~$y=6+x$~~

~~$x+(6+x)=12$~~

~~$2x+6=12$~~

~~$2x=12-6$~~

~~$x=6$~~

~~$6+3=9$~~

$$\begin{aligned} xy - zy &= 100x + 10y + 10z \\ (100x + 10y + 10z) - (100z + 10y + x) &= 99x - 99z \\ 99(x - z) &= \end{aligned}$$

Profit & Loss

An article is sold for 375/- at a loss of $6\frac{1}{4}\%$. Find the cost price?

$$SP = 375$$

$$L = 6\frac{1}{4}\% = \frac{1}{16} \rightarrow CP$$

$$SP = CP - L$$

$$= 16 - 1 = 15 P$$

$$15P = 375 \quad \boxed{1P = 25}$$

$$16 \times 25 = 400$$

$$15P \rightarrow 375$$

$$1P \rightarrow 25$$

$$\cancel{16P \rightarrow 400}$$

The cost price of an object is numerically equal to its profit, and its selling price is 56/- what is its cost price?

A man sold 2 articles for 495/- each. On one he gains 10% and on the other, he losses 10%. Find the total loss.

$$495$$

$$10\%$$

$$\begin{aligned} x+y &= 15 \\ x-y &= 3 \\ \hline 2x &= 12 \\ x &= 6 \\ y &= 9 \\ x+y &= 15 \\ x-y &= 3 \end{aligned}$$

$$x+y = 15$$

$$\begin{aligned} x+y &= 15 \\ x-y &= 3 \\ \hline 2x &= 18 \\ x &= 9 \end{aligned}$$

$$10x+y$$

$$10y+x$$

$$\begin{aligned} &\therefore (10x+y) + (10y+x) \\ &= 11(10x+10y) \text{ which} \\ &\text{is divisible by 11} \end{aligned}$$

$$xy = 120$$

$$x^2 + y^2 = 289$$

$$\therefore (x+y)^2 = x^2 + y^2 + 2xy = 289$$

$$x+y = \sqrt{529} = 23$$

$$x+y = \underline{\underline{25}}$$

$$x-y = 13$$

$$2x = 38$$

$$x = 19, y = 6$$

$$2114$$

$$x+y+z = 10$$

$$5^2 - 120$$

$$x^2+y^2=289$$

$$(x+y)^2 = x^2+y^2+2xy$$
$$= 289 + 2(120)$$
$$= 529$$

$$\sqrt{529} = 23$$

class Java

{ public static void main (String [] args) }

{ int size = 7;

int arr [] = new int [size];

arr = new int [2, -1, 0, 22, 1, 7]

for(i=0; i<7; i++)

{

If I given a number dysorium number

or not?

Zogo offer Internship
every year April to June

(2x120)
The reader is concerned with
four factors i.e.,

Decoding

Decoding or interpreting in
reading refers to the process
of changing the coded message
into information.

Comprehending

* in reading refers to
the identification of the
central theme, main idea
supporting details.

Text Analysis

* After decoding and
comprehending the literal
meaning of a written
message, its significance
is evaluated.

Rapid Read

- 1) ~~A~~ 2) B 3) D
4) A 5) E 6) C 7) B

Para-Jumbled

- 1) where John has bought his a
2) when you get up in the mor
3) Kaito and sakura are from

IP

$$x+y=15$$

$$x=y-5$$

$$\begin{array}{r} x+y=15 \\ x-y=5 \\ \hline 2y=10 \\ y=5 \end{array}$$

Rumbled Paragraphs.

* The paragraph thus has to follow

A D E C E

C A B D E

close test

$$x + ty = 2a$$

B O D M A S
Brackets off
(C E D)

$$CP = 600$$

$$SP = 750$$

$$P = SP - CP$$

$$= 750 - 600$$

$$= 150$$

$$\therefore \% = \frac{150}{600} \times 100\%$$

$$= 25\%$$

$$CP = 450 \quad \& \quad SP = 400$$

$$P = 400 - 450$$

$$\therefore \% = \frac{50}{450} \times 100\%$$

$$= 9\%$$

$$CP = 640 \quad P = 15\%$$

$$\frac{15}{100} \times$$

$$100 \rightarrow 15\%$$

$$P = 640 \times 15\%$$

$$= 96$$

$$SP = \frac{600}{100} \times 100$$

$$= 600$$

$$H.A = \frac{1}{9} \times 100$$

$$= 11\frac{1}{9}$$

$$T.P = \frac{1}{9} \times 100$$

$$= 11\frac{1}{9}$$

$$(ab)^m = a^m$$

$$= 2^2 (1^2 + 2^2 + 3^2 + \dots + 20^2)$$

$$\frac{1}{2} (n(n+1))$$

find the value of

$$(1^2 + 2^2 + 3^2 + 4^2 + \dots + 20^2)$$

$$1(1+1) + 2(2+1) + 3(3+1) + \dots + 20(20+1)$$

$$1^2 + 1 + 2^2 + 2 + 3^2 + 3 + \dots + 20^2 + 20$$

natural numbers squares

$$= \frac{20 \times 21 \times 41}{6} + \frac{20 \times 21}{2}$$

$$= 2870 + 210$$

$$= 3080$$

~~$$1^2 + 3^2 + 5^2 + 7^2 + \dots + 19^2$$~~

$$\left[\frac{n(n+1)}{2} \right]^2$$

$$\left[\frac{10(11)}{2} \right]^2 = 55^2$$

$$\begin{array}{r} 55 \times 55 \\ 275 \\ \hline 3025 \end{array}$$

$$\sqrt{1^3 + 2^3 + \dots + 20^3}$$

$$= \sqrt{\frac{20 \times 21}{2}}^3$$

$$= 210$$

$$m^{th} \text{ whole number} = n - 1$$

$$50^{th} \text{ whole number} = 49$$

50 whole numbers

$$\frac{n(n+1)}{2}$$

$$\frac{49(50)}{2} = \frac{49 \times 50}{2} = \frac{49 \times 100}{4} = 1225$$

(M2)

whole numbers upto 50

$$0 + 1 + 2 + \dots + 50$$

$$\frac{50 \times 51 \times 2}{2 \times 2} = \frac{51 \times 100}{4} = 1275$$

(M2) 2 + 4 + 6 + \dots + 100

$$= 100 \times 101$$

$$= 10100$$

(M2) (100 + 102 + \dots + 200)

$$(100 + \dots + 200) - (1 + 2 + \dots + 99)$$

$$= 100 \times 101 - 49 \times 50$$

$$= 10100 - 2450$$

$$= 7650$$

maximum sum of

$$44, 42, 40, \dots, ?$$

Max sum = $\frac{22}{2} (44 + 42 + 40 + \dots)$

$$= 22 \times 23$$

$$= 506$$

- sum of odd numbers = n^2

find the sum of odd numbers up to 100?

$$(1+3+5+\dots+99) \rightarrow \frac{99+1}{2}$$

50 is nth position

$$= \frac{50^2}{2} \\ = 2500$$

sum of odd numbers from

100 to 200

$$51 \rightarrow (101+103+\dots+189 = ?)$$

$$\begin{aligned} &= 100^2 - 50^2 \\ &= 10000 - 2500 \\ &= 7500 \end{aligned}$$

~~6336 divisible by 36~~
which of the following numbers is a prime number?

- a) ~~89~~ b) 207 c) 323 d) 101

$$\begin{aligned} \sqrt{189} < 14 & \quad \sqrt{207} < 15 \\ 3, 5, 7, 11, 13 \end{aligned}$$

$$\begin{aligned} 14^2 &= 196 & 207 \text{ lieg blau} \\ 15^2 &= 225 & \text{so } < 15 \end{aligned}$$



A+B → A is Mother of B

A-B → A is brother of B

A×B → A is father of B

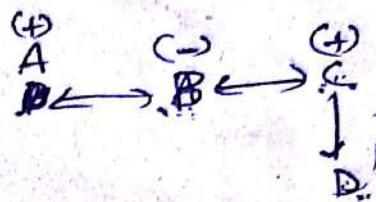
A×B → A is sister of B

P is maternal uncle of Q?

Q-N + M × P
Brother Mother Sister P you

Mother Sister Mabor
P-M + N × Q
brother mother sister

Q-N + M × P
Brother Mother Sister



A+B → A brother of B

A-B → A sister of B

A×B → A father of B

A M-N × C + F
sister father brother

B F-C + N × M
sister brother father

C N-T-M - F × C
bro sis' father

D M×N - C + F