



Gujarat

Judicial Services Exam

The High Court of Gujarat

Volume - 11

Reasoning, Numerical, Mental Ability and English Language



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CHAPTER

English Alphabet Test



- This chapter includes questions based on the English alphabet (A–Z). Candidates should know the positions of all 26 letters and basic related concepts clearly.
- **Letters are of two types:**
 - ✓ Vowels – A, E, I, O, U (There are 5 vowels in the English alphabet.)

- ✓ Consonants – B, C, D, F, G, H, J, K, L, M, N, P, Q, R, S, T, V, W, X, Y, Z (There are 21 consonants in the English alphabet.)
- **The alphabet is divided into two halves:**
 - ✓ First Half – A to M (The first half contains 13 letters, i.e., positions 1 to 13.)
 - ✓ Second Half – N to Z (The second half contains 13 letters, i.e., positions 14 to 26.)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Short trick:

- **EJOTY (इजोटी)**

5	10	15	20	25
E	J	O	T	Y

- **CFILORUX (सिफिलोरक्स)**

3	6	9	12	15	18	21	24
C	F	I	L	O	R	U	X

- **Finding letters from the right side can be simplified using the formula:**

- ✓ Position from left = 27 – Position from right

- **Trick to Remember Opposite Letters**

Pair	AZ	BY	CX	DW	EV	FU	GT
Trick	AZ	BYe	Cracks	DeW	EVening	Few / Uff	G.T. Road

Pair	HS	IR	JQ	KP	LO	MN
Trick	High School	Indian Railway	Jaipur Queen	KanPur	Life OK	MaN

Type-1 Position of a Letter in the English Alphabet

- If counting in the **same direction** (left to left or right to right), **subtract** both positions.
- If counting in **opposite directions** (left to right or right to left), **add** both positions.

Ex: In the English alphabet, what is the 10th letter to the left of the 21st letter from the left?

Ans: Using the trick: If counting in the same direction (left to left or right to right), subtract both positions.

English alphabet = 21-10= 11th alphabet = K

Ex: In the English alphabet, what is the 9th letter to the left of the 11th letter from the right?

Ans: In these types of question first we calculate from the left and then subtract from the 27.

Alphabet = $11 + 9 = 20^{\text{th}}$ from the left

Original alphabet = $27 - 20 = 7^{\text{th}}$ alphabet = G

Type-2 Forming Letter Pairs

- The letter pair can be formed in both forward and backward directions.
- Multiple pairs can be created from a single word.
- After forming a pair with a letter, you can form another pair with the same letter if they are at the same distance according to the English alphabet.

Ex: How many such pairs of letters are there in the word 'COMBINE', each of which has as many letters between them in the word (both forward and backward direction) as they have between them in the English Alphabet?

Ans: First of all, we will write number of positions of 'COMBINE' word according to English alphabet i.e. C is written as 3 and O will be written as 15 and so on.

C	O	M	B	I	N	E
3	15	13	2	9	14	5

Here we can see that only B and E is making one pair.

Type-3 Letter Problems

Ex: If the first and eighth letters of the word 'REPRESENTATIVE' are swapped, then the second and ninth letters, and so on, are also swapped, what will be the fourth letter to the left of the 6th letter from the left in the new arrangement?

Ans:

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Original Letter	R	E	P	R	E	S	E	N	T	A	T	I	V	E
New Letter	N	T	A	T	I	V	E	R	E	P	R	E	S	E

Fourth letter to the left of the 6th letter from the left = $6 - 2 = 4^{\text{th}} = \text{T}$

Type-4 Arrangement of English Words

- Arranging English words in alphabetical or dictionary order is called arrangement of words.

Ex: Arrange the following words according to English dictionary arrangement:

(A) Epitaxy (B) Episode (C) Epigene

(D) Epitome (E) Epilogue

Ans: In a Dictionary, every word is arranged alphabetically. Also, in each word each and every letter is positioned alphabetically. So here, dictionary the arrangement of words in a Dictionary, every word is arranged alphabetically.

(C) Epigene (E) Epilogue (B) Episode

(A) Epitaxy (D) Epitome

Therefore, the correct answer is (C), (E), (B), (A), (D)

Type-5 Meaningful Logical Order of Words

Ex: How many meaningful words of 5 letters can be made with the alphabets K, E, D, H, I each being used only once in each word?

Ans: Given letters: K, E, D, H, I

Meaningful word can be formed out of the alphabets K, E, D, H, I:

HIKED: Walk for a long distance, Hence, only one such word is possible.

Ex: If a five-letter meaningful word can be formed by using the first, third, fifth, sixth and eighth letters from the word "HALLOWEEN", then what is the last letter from the left end of the newly formed word?

Ans: The 1st, 3rd, 5th, 6th, and 8th letters from the left end of the word "HALLOWEEN" are H, L, O, W, and E respectively. The only five-letter meaningful word that can be formed using the letters is WHOLE.



Number and Alphabet Series Test



- A series is a systematic arrangement of numbers or letters within a defined group. In competitive exams, sequences of numbers, letters, or a mix of both are presented. One position in the sequence is either left blank or contains an incorrect number or letter. Candidates are tasked with completing the series by selecting the correct option to fill the blank or identify the incorrect element.

Here's a clearer and concise way to solve number series problems:

- **Look for Patterns:** Check if the numbers are increasing or decreasing by a constant (addition/subtraction) or multiplied/divided by a constant (multiplication/division).
- **Find Differences:**
- ✓ If the difference between consecutive numbers is the same, it's an arithmetic series (e.g., 2, 5, 8, 11).
 - ✓ If the second difference (difference of differences) is constant, it's a quadratic series.
- **Check for Multiplication/Division:** Look if each number is multiplied or divided by a constant to get the next number (e.g., 3, 6, 12, 24 where each number is doubled).
- **Recognize Special Sequences:**
- ✓ **Squares:** 1, 4, 9, 16, ...
 - ✓ **Cubes:** 1, 8, 27, ...
 - ✓ **Fibonacci:** Each number is the sum of the two preceding ones (e.g., 0, 1, 1, 2, 3, 5).
- **Check for Ratios:** If the numbers increase by a constant ratio, it's a geometric progression (e.g., 2, 4, 8, 16).
- **Test the Options:** If options are provided, check which one follows the identified pattern.

Type-1 Series in Increasing Order

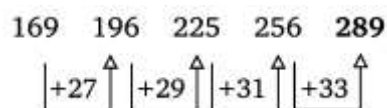
Ex: In the following question, select the missing number from the given series.



169, 196, 225, 256, _?

1. 289 2. 324
3. 441 4. 361

Ans:

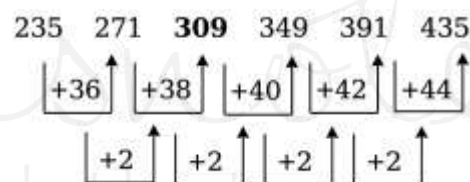


Ex: Which of the following numbers will replace the question mark (?) in the given series?

235, 271, ?, 349, 391, 435

1. 311 2. 307
3. 313 4. 309

Ans:

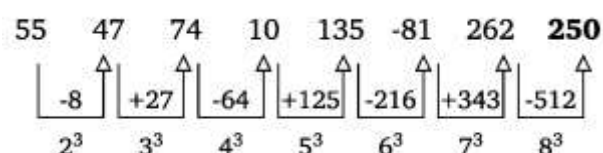


Ex: What number should replace question Mark (?) in the series given below.

55, 47, 74, 10, 135, -81, 262, ?

1. 774 2. -250
3. 343 4. -343

Ans:

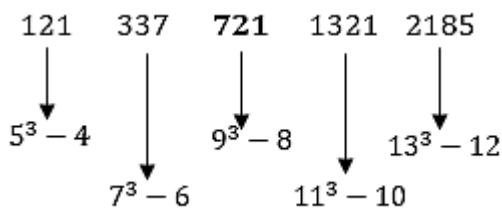


Ex: Find the missing number in the following series:

121, 337, ?, 1321, 2185

1. 713 2. 720
3. 721 4. 737

Ans:



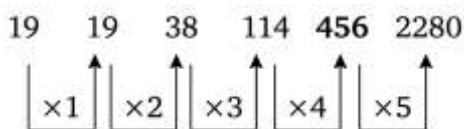
Type-2 Multiplication Based Increasing Series

Ex: Select the number from among the given options that can replace the question mark (?) in the following series.

19, 19, 38, 114, ?, 2280

1. 344 2. 1140
3. 456 4. 224

Ans:

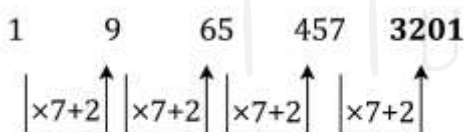


Ex: Which of the following numbers will replace the question mark (?) in the given series?

1, 9, 65, 457, ?

1. 4258 2. 3125
3. 3201 4. 5289

Ans:

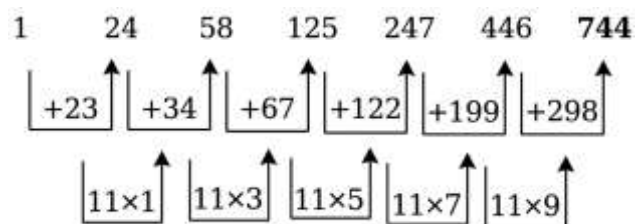


Ex: Which of the following numbers will replace the question mark (?) in the given series?

1, 24, 58, 125, 247, 446, ?

1. 774 2. 747
3. 744 4. 777

Ans:

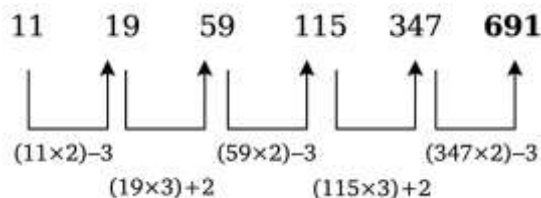


Ex: Select the number from among the given options that can replace the question mark (?) in the following series.

11, 19, 59, 115, 347, ?

1. 697 2. 619
3. 679 4. 691

Ans:



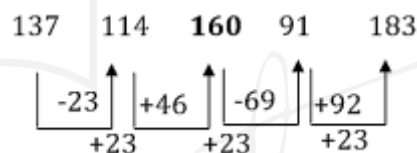
Type-3 Addition and Subtraction Series

Ex: Which of the following number will replace the question mark (?) in the given series?

137, 114, ?, 91, 183

1. 145 2. 160
3. 125 4. 112

Ans:

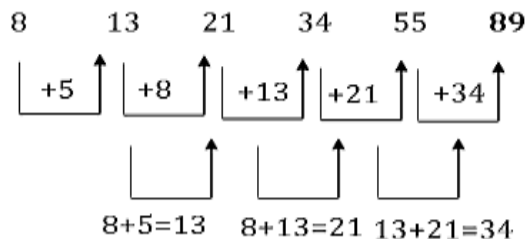


Ex: Which of the following numbers will replace the question mark (?) in the given series?

8, 13, 21, 34, 55, ?

1. 74 2. 68 3. 72 4. 89

Ans:



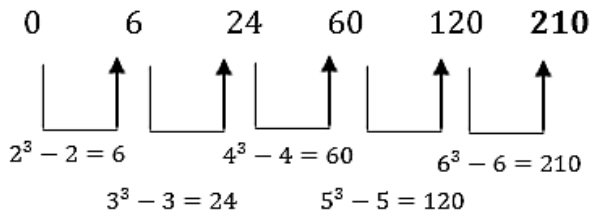
Type-4 Square and Cube Based Series

Ex: Find the next term of the series:

0, 6, 24, 60, 120, ?

1. 180 2. 210
3. 216 4. 240

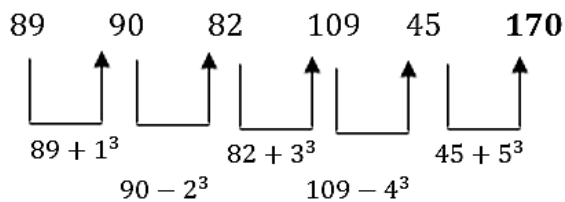
Ans:



Ex: Which number will replace the question mark (?) in the following series?

89, 90, 82, 109, 45, ?

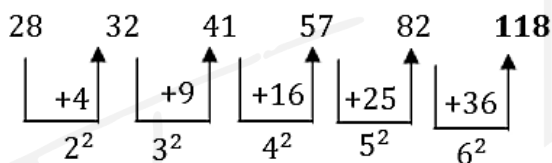
Ans:



Ex: Which number will replace the question mark (?) in the following series?

28, 32, 41, 57, 82, ?

Ans:

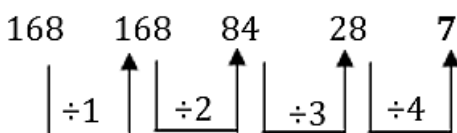


Type-5 Division Based Decreasing Series

Ex: Which number will replace the question mark (?) in the following number series?

168, 168, 84, 28, ?

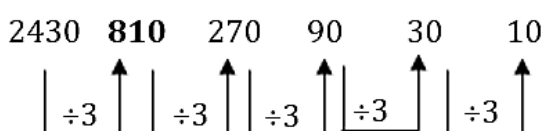
Ans:



Ex: Which number will replace the question mark (?) in the following series?

2430, ?, 270, 90, 30, 10

Ans:



Type-6 Mixed Number Series

Ex: Find the next terms 11, 13, 17, 19, 23, ?

1. 27
2. 29
3. 31
4. 33

Ans:

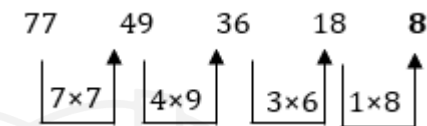
11 → Prime number
13 → Prime number
17 → Prime number
19 → Prime number
23 → Prime number
Next prime number = 29

Ex: What will come in place of the question mark (?) in the following series?

77, 49, 36, 18, ?

1. 10
2. 12
3. 8
4. 16

Ans:

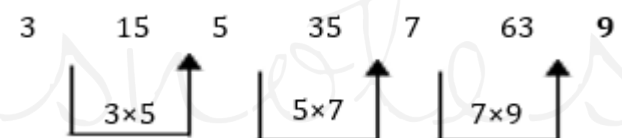


Ex: What will come in place of the question mark (?) in the following series?

3, 15, 5, 35, 7, 63, ?

1. 10
2. 126
3. 9
4. 84

Ans:

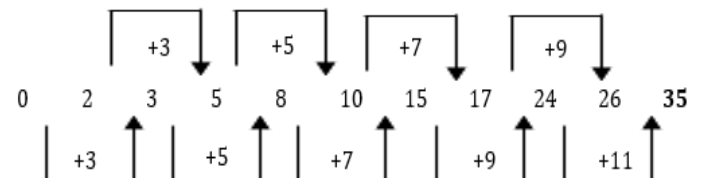


Ex: In the following series, what comes in place of the question mark (?)?

0, 2, 3, 5, 8, 10, 15, 17, 24, 26, ?

1. 28
2. 30
3. 32
4. 35

Ans:



Ex: Select the number from among the given options that can replace the question mark (?) in the following series.

62, 74, 80, 86, 95, ?, 158

1. 113
2. 100
3. 108
4. 122

62 74 80 86 95 113 158

$\uparrow +12$ $\uparrow +6$ $\uparrow +6$ $\uparrow +9$ $\uparrow +18$ $\uparrow +45$

$\uparrow \times 0.5$ $\uparrow \times 1$ $\uparrow \times 1.5$ $\uparrow \times 2$ $\uparrow \times 2.5$

18 37 60 99 120 157

└─+19─┘ └─+23─┘ └─+39─┘ └─+21─┘ └─+37─┘

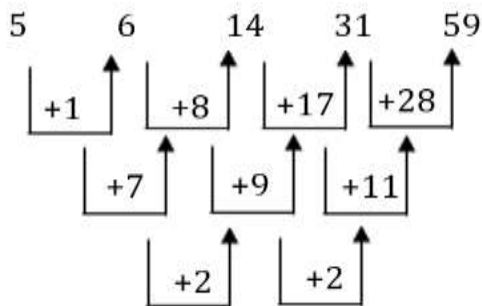
6

Ex: Find the wrong term from the given number series.

5, 7, 14, 31, 59

1. 31 2.5
3. 59 4.7

Ans: Correct answer in 7



In the place of 6, it is written 7, so the answer is 7.

Ex: Find the Wrong number in the given number series:

6, 7, 10, 13, 21, 37

1. 10 2. 37
3. 6 4. 13
5. 21

Ans:

The given number series follows the pattern:

$$\begin{aligned} 6 + 2^0 &= 7 & 7 + 2^1 &= 10 \\ 7 + 2^1 &= 10 & 10 + 2^2 &= 14 \\ 10 + 2^2 &= 14 & 14 + 2^3 &= 26 \\ 14 + 2^3 &= 26 & 26 + 2^4 &= 66 \end{aligned}$$

Wrong Number in the given number series is 10.

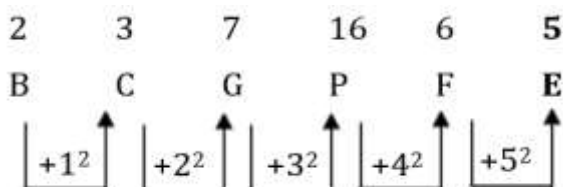
Type-8 Alphabet Series

Ex: Which of the following letters will replace the question mark (?) and complete the following letter series?

B, C, G, P, F, ?

1. F 2. E
3. C 4. D

Ans:



Ex: A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

ABCD, CUKA, ENSX, GGAU, ?

1. IQRT 2. MNOQ
3. IRQT 4. IZIR

Ans:

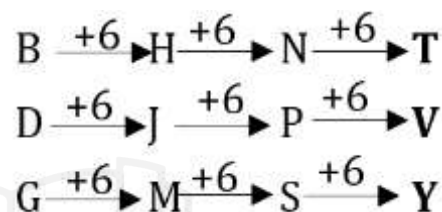
Logic:

- In the first letter, add 2 to its position in the English alphabet.
 - In the second letter, subtract 7 from its position.
 - In the third letter, add 8 to its position.
 - In the fourth letter, subtract 3 from its position.
- Hence, "IZIR" is the correct answer.

Ex: A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

BDG, HJM, NPS, ?

Ans:



Ex: A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

KIMnO, qRs Tu, WxYzA, cDeFg, ?

1. iJkLm 2. HiJkL
3. IjKIM 4. hijkl

Ans:

The pattern consists of groups of five letters arranged in the English alphabetical order. After each term, one letter is skipped. Additionally, letters follow an alternating pattern of uppercase and lowercase.

After 'g', the next omitted letter is 'h'. Also, the first letter and every alternate letter must be in uppercase.

Hence, the missing term is IjKIM.

Type-9 Mixed Series

Ex: A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

FK27, LQ64, RW125, ?

1. CX216 2. XB216
3. XC216 4. YB343

Ans:

Letters follow +6 steps in the alphabet

F → L → R → X and K → Q → W → C (after Z it starts from A)

Numbers are cubes of consecutive numbers

27 = 3³, 64 = 4³, 125 = 5³, 216 = 6³

Final answer XC216

Ex: Find the missing term. C4X, F9U, 116R,

1. L25P

2. L250

3. L270

4. L27P

Ans:

First part (letters):

C → F → I → L (each +3)

Second part (numbers):

4 → 9 → 16 → 25 (perfect squares 2², 3², 4², 5²)

Third part (letters):

X → U → R → O (each -3)

So, the missing term is L250

Ex: What will be the next term in the following category?

G7Z26, H8X24, I9V22, _____?

1. J10T20

2. W23J10

3. J10W23

4. W23T20

Ans:

First letter: G → H → I → J (+1 each step)

Number: 7 → 8 → 9 → 10 (+1 each step)

Second letter: Z → X → V → T (-2 each step)

Last number: 26 → 24 → 22 → 20 (-2 each step)

Final answer: J10T20

Type-10 Consecutive Series

In such questions, a sequence of letters and/or numbers is given, formed using uppercase and/or lowercase English alphabets along with numerical values, following a specific pattern from left to right. Certain positions in the sequence are left blank. The task is to identify the correct letters or numbers that should fill these blanks, assuming the pattern continues consistently.

Ex: Select the option that represents the letters that, when sequentially placed from left to right in the blanks below, will complete the letter series.

A _ JL DG LAD J AD _ L

1. DGALGLGJ

2. DGAJGLGJ

3. DAGJGLGL

4. DGALGJGJ

Ans:

Observe carefully:

➤ The series follows a repeating pattern of ADGLJ (with slight shifts).

➤ Letters appear in a cyclic order:

A → D → G → J → L → A...

➤ Fill the blanks to maintain this consistent progression.

Filling accordingly:

A D G J L A D G L L A D G J L A D G J L

So, the missing letters are:

D G A L G J G J

Ex: Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?

mc_bcm_cbbc_m_bbcm

1. mccb

2. bcmb

3. cbmb

4. Bmmc

Ans:

➤ mccb → mc**m**bcm/c**c**bbcc/m**b**bbcm

➤ bcmb → mc**b**bcm/c**c**bb**c**m/m**b**bbcm

➤ cbmb → mc**c**bcm/**b**cbb**c**m/m**b**bbcm

➤ bmmc → mc**b**bcm/**m**cbb**c**m/m**c**bbcm

Hence, 'bmmc' is the correct answer.

Ex: Select the option that represents the letters that, when sequentially placed from left to right in the blanks, will complete the letter series.

g_c_p_c_bc_ps_g_cp_sc

1. bpsppsbp

2. bpcgpsbp

3. bpsgpcbp

4. Bpspgcbp

Ans:

➤ bpsppsbp → g**b**c**p**p**s**c**p**b**c**p**s**s**g**b**c**p**p**s**c**

➤ bpcgpsbp → g**b**c**p**p**c**c**g**b**c**p**p**s**g**b**c**p**p**s**c**

➤ bpsgpcbp → g**b**c**p**p**s**c**g**b**c**p**p**s**c**g**b**c**p**p**s**c

➤ bpspgcbp → g**b**c**p**p**s**c**p**b**c**g**p**s**c**g**b**c**p**p**s**c

Hence, 'bpsgpcbp' is the correct answer.

Ex: Select the option that represents the letters that, when placed from left to right in the same sequence in the blanks below, will complete the letter series.

D _ B _ A _ C _ _ G F _ E _ _ H

1. BACDEFGH

2. CABDHEFG

3. BACDHEFG

4. CABDEFGH

Ans:

D _ B _ A _ C _ _ G F _ E _ _ H

Reverse

Order

Forward

Order

Reverse

Order

Forward

Order

CABDHEFG → DCBA/ABCD/HGFE/EFGH

3

CHAPTER

Analogy Test



- Analogy tests involve identifying similarities between two terms. In this chapter, we explore the relationships between different elements. Such questions are included in exams to evaluate a candidate's knowledge, reasoning, and cognitive abilities.
- Analogy questions are based on specific relationships. To solve these questions effectively, candidates should follow these two steps:

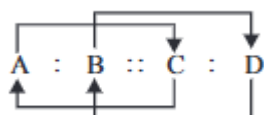
Step 1: Determine the relationship between the first two terms given in the question.

Step 2: Apply the identified relationship to the remaining terms and choose the correct answer.

Rule:1 Basic relationship: In the analogy A: B:: C:D, the relationship between A and B will be the same as the relationship between C and D or D and C.



Rule:2 Developed Relationship: In the analogy A:B:: C:D, the relationship between A and C, or C and A, will be the same as the relationship between B and D, or D and B. It is not necessary that the relationship is directly committed; it may vary.



Type-1 Word Analogy

Common Relationship Patterns

- **Synonym & Antonym:** Famous: Renowned :: Important: Significant (Same); Big: Small :: Sharp: Blunt (Opposite).

- **Tool/Instrument & Action/Function:** Needle: Sew :: Knife: Cut (Instrument-Action).
- **Unit/Part & Whole:** Petal: Flower:: Page: Book.
- **Worker & Tool/Working Place:** Artist: Brush:: Farmer : Plough; Doctor : Hospital :: Teacher : School.
- **Gender/Individual & Group:** Lion: Lioness:: Dog: Bitch.
- **Topic/Category:** Country: Capital (India: New Delhi):: State: Capital (Maharashtra: Mumbai).

Type of Relation	Example
Antonyms/ Synonyms	Believer: Atheist, Import: Export, Victory: Defeat, Living: Non-living
Country and Continent	India: Asia, Ghana: Africa, Canada: North America, France: Europe
Country and Capital	China: Beijing, Nepal: Kathmandu, Japan: Tokyo, Sri Lanka: Colombo
Country and Currency	China: Yuan, Japan: Yen, Italy: Lira, Myanmar: Kyat
Country and Parliament	India: Parliament, Afghanistan: Shora, Iran: Majlis, Japan: Diet
Country and National Symbol	India: Ashoka Chakra, Spain: Eagle, France: Lily, Iran: Rose

Country and National Sport	Britain: Cricket, India: Hockey, Japan: Judo, Spain: Bullfighting
Country and River	India: Ganga, China: Yangtze, Italy: Tiber, Britain: Thames
City and River	London: Thames, Rome: Tiber, Paris: Seine, Delhi: Yamuna
City and Industry	Mumbai: Film Production, Manchester: Cotton, Pittsburgh: Iron and Steel, Detroit: Automobiles
State and Capital	Uttar Pradesh: Lucknow, Uttarakhand: Dehradun, Jharkhand: Ranchi, Chhattisgarh: Raipur
Union Territory and Capital	Lakshadweep: Kavaratti, Dadra and Nagar Haveli: Silvassa
State and High Court	Uttar Pradesh: Allahabad, Uttarakhand: Nainital, Rajasthan: Jodhpur, Bihar: Patna
Product and Raw Material	Curd: Milk, Shoe: Leather, Sugar: Sugarcane, Liquor: Grapes
Worker and Product	Goldsmith: Jewellery, Cobbler: Shoes, Cook: Food, Masons: House
Person and Workplace	Doctor: Hospital, Teacher: School, Farmer: Field, Judge: Court
Person and Tool	Blacksmith: Hammer, Mason: Trowel, Farmer: Plough, Carpenter: Saw

Tool and Work	Pen: Writing, Scissors: Cutting, Spoon: Eating, Glasses: Seeing
Animal and Habitat	Lion: Cave, Horse: Stable, Rat: Hole, Bird: Nest, Bee: Beekeeping, Fish: Fishing
Revolution and Production Area	White Revolution: Milk Yellow Revolution: Oilseed
Animal and Sound	Dog: Barking, Lion: Roaring, Horse: Neighing, Cat: Meowing
Animal and Offspring	Dog: Puppy, Lioness: Cub, Cow: Calf, Sheep: Lamb
Disease and Affected Organ	Pyorrhoea: Teeth, Trachoma: Eyes, Jaundice: Liver, Tuberculosis: Lungs
Location and Place	Taj Mahal: Agra, Hawa Mahal: Jaipur, Jahaz Mahal: Mandu, Red Fort: Delhi
Person and Samadhi Place	Mahatma Gandhi: Raj Ghat, Lal Bahadur Shastri: Vijay Ghat, Chaudhary Charan Singh: Kisan Ghat
Sport and Court	Badminton: Court, Hockey: Field, Boxing: Ring, Shooting: Range
Sport and Cup/Trophy	Cricket: Dilip Trophy, Football: Durand Cup, Hockey: Dhyan Chand Trophy, Golf: Ryder Cup
Award and field	Booker Prize: Literature, Grammy Award: Music, Oscar Award: Film

Instructions: In the following question, select the related number from the given alternatives.

Ex: Car: Road :: Rail : ____.

- (A) Water (B) Air
(C) Road (D) Track

Ans: Just as a car runs on a road, a train (rail) runs on a track.

Ex: Light: Lumen::__?__:__?__

- (A) Temperature: Candela
(B) Density: Kilogram
(C) Pressure: Pascal
(D) Force: Meter

Ans: Lumen is the unit of light, and Pascal is the unit of pressure. Both pairs represent the relationship between a physical quantity and its corresponding unit.

Ex: Person: Biography::__?__:__?__.

- (A) World: Encyclopaedia
(B) Nation: History
(C) Place: Economy
(D) Country: Constitution

Ans: A biography is a written account of a person's life, and history is a written account of a nation's past. Both pairs reflect a relationship between a subject and its written or recorded account.

Ex: Just as 'Taj Mahal' is related to 'Agra', in the same way, 'Lal Bagh' is related to which place?

- (A) Bengaluru (B) Delhi
(C) Haridwar (D) Madhya Pradesh

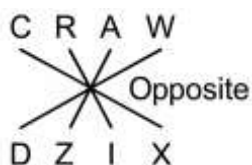
Ans: Just as 'Taj Mahal' is located in Agra, 'Lal Bagh' is located in Bengaluru.

Type-2 Letter Analogy

Ex: Select the option that is related to the third term in the same way as the second term is related to the first term.

CRAW: DZIX:: MOCK:?

Ans: For CRAW: DZIX

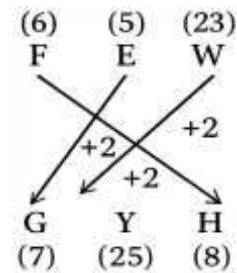


Similarly, for MOCK,

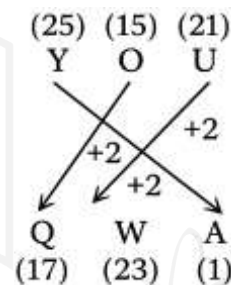


Ex: Select the option that is related to the third letter - cluster in the same way as the second letter -cluster is related to the first letter - cluster. FEW: GYH :: YOU : ?

Ans: For, FEW: GYH

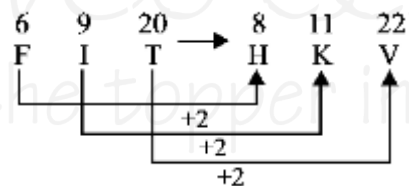


Similarly, YOU:?

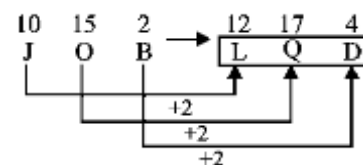


Ex: FIT: HKV:: JOB:?

Ans: logic



Similarly



Ans: JOB: LQD

Type-3 Number Analogy Square



Number	Square	Number	Square
1	1	2	4
3	9	4	16

5	25	6	36
7	49	8	64
9	81	10	100
11	121	12	144
13	169	14	196
15	225	16	256
17	289	18	324
19	361	20	400
21	441	22	484
23	529	24	576
25	625	26	676
27	729	28	784
29	841	30	900
31	961	32	1024
33	1089	34	1156
35	1225	36	1296
37	1369	38	1444
39	1521	40	1600

Cube

Number	Cube	Number	Cube
1	1	2	8
3	27	4	64
5	125	6	216
7	343	8	512
9	729	10	1000
11	1331	12	1728
13	2197	14	2744
15	3375	16	4096
17	4913	18	5832
19	6859	20	8000

Based on square

Ex: 6:36::11: ?

Ans: $6^2=36$, $11^2=121$

Based on cube

Ex: 8:512::10:?

Ans: $8^3=512$, $10^3=1000$

Based on addition

Ex: 389: 392:: 450:?

Ans: $389+3=392$ $450+3=453$

Based on subtraction

Ex: 389:384::450:?

Ans: $389-5=384$ $450-5=445$

Based on multiplication

Ex: 7:56::6:?

Ans: $7 \times 8=56$ $6 \times 8=48$

Based on division

Ex: 35:7::25:?

Ans: $35 \div 7=5$ $25 \div 5=5$

Based on number group

Select the set in which the numbers are related in the same way as are the numbers of the following sets. (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 - Operations on 13 such as adding /subtracting/ multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

Ex: (15, 25, 35) (45, 55, 65)

(1) (55, 65, 75) (2) (45, 55, 70)

(3) (55, 75, 85) (4) (55, 60, 70)

Ans: Logic

$15 \xrightarrow{+10} 25 \xrightarrow{+10} 35$
 $45 \xrightarrow{+10} 55 \xrightarrow{+10} 65$

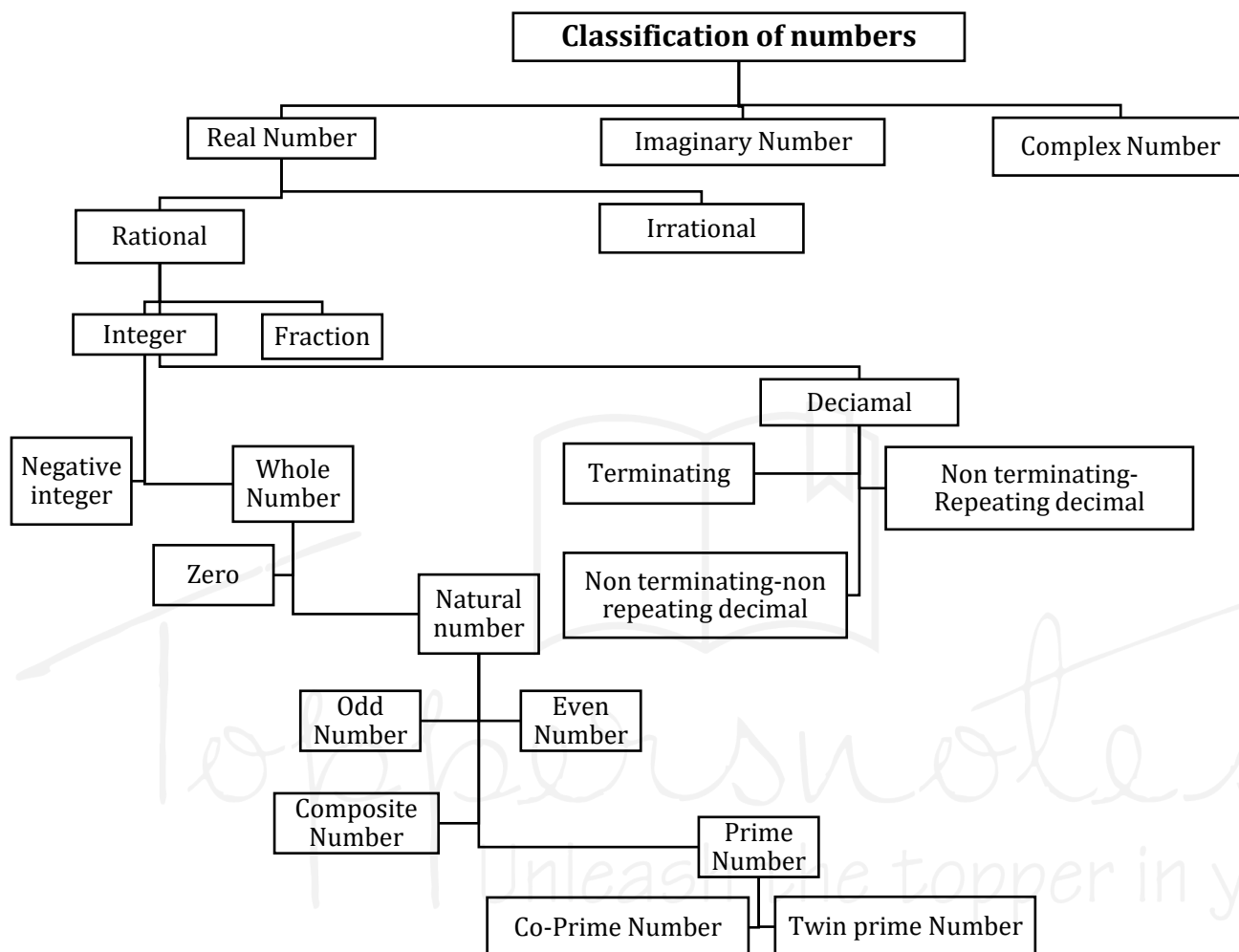
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CHAPTER

Number System



- **Number System:** A number system is a **method of representing and working with numbers** using a defined set of symbols and rules.



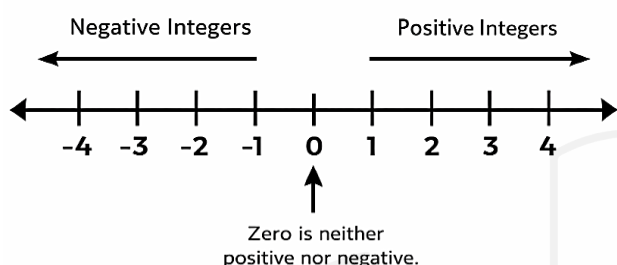
Types	Definition
Real Number	A real number is any number that can be represented on the number line. A real number is a number that includes all rational and irrational numbers and can be expressed as a point on the number line.
Rational Number	A rational number is a number that can be expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

Irrational Number	An irrational number is a number that cannot be expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$
Fraction	A fraction is a number that represents a part of a whole or a ratio of two quantities. It is written in the form $\frac{a}{b}$.
Integer	An integer is a whole number that can be positive, negative, or zero, and does not include any fractional or decimal part

Negative Integer	Negative integers are whole numbers with a negative sign, such as $-1, -2, -3, \dots$	Co-Prime Numbers	Two or more numbers are called co-prime (or relatively prime) if their only common factor (HCF) is 1. ➤ 1 is neither prime or composite.
Whole Number	A whole number is a non-negative integer, including zero.	Twin Prime Numbers	Twin numbers (twin primes) are a pair of prime numbers whose difference is exactly 2. ➤ 5 is only prime which is in 2 twin prime pairs. (3, 5) (5, 7) ➤ Sum of twin prime number (except 3 and 5) is always divisible by 12.
Natural number	Natural numbers are the numbers starting from 1 and increasing by 1 each time. 1, 2, 3, 4, ...	Decimal Number	A decimal number is a number that has a decimal point (.) and consists of a whole part and a fractional part. Ex- 3.5, 12.75 etc
Odd Number	An odd number is a natural number that is not divisible by 2 or in the form of $2n + 1$	Terminating Decimal	A terminating decimal is a decimal number that ends after a finite number of digits after the decimal point. Ex- 2.5, 0.75
Even Numbers	An even number is a natural number that is completely divisible by 2 or in the form of $2n$.	Non-Terminating Repeating Decimal	A non-terminating repeating decimal is a decimal number that does not end and in which one or more digits repeat continuously after the decimal point. Ex- 0. 333., 0. 1212
Prime number	A prime number is a natural number greater than 1 that has exactly two distinct factors: 1 and the number itself. 2, 3, 5, 7. ➤ 2 is the smallest prime number. ➤ 2 is only even prime number. ➤ All prime number (except 2 and 3) can be written in the form of $6n + 1$ or $6n + 5$ where n is natural number however, the converse is not true. ➤ (3, 5, 7) is only group of three primes, which are consecutive odds. ➤ 101 is smallest 3-digit prime number. ➤ 997 is largest 3-digit prime number.	Non-Terminating Non-Repeating Decimal	A non-terminating non-repeating decimal is a decimal number that does not end and does not repeat any digit or pattern after the decimal point. Ex- 1.1412, 3.14
Composite Number	A composite number is a natural number greater than 1 that has more than two factors. A composite number can be divided exactly by 1, itself, and at least one other number. 4, 6, 8, 9, 10, 12, 14... ➤ The smallest composite number is 4. ➤ The smallest odd composite number is 9 If a and b are any two odd primes then $a^2 + b^2$ and $a^2 - b^2$ is composite numbers.	Imaginary Number	An imaginary number is a number that can be written in the form $= bi$ b is a real number i is the imaginary unit, defined by

Complex Number	A complex number is a number that consists of two parts—a real part and an imaginary part—and can be expressed in the standard form $z = a + ib$ a is a real number, called the real part of z b is a real number, called the imaginary part of z i is the imaginary unit, defined by the property
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Integer Number Line



How to check the given number is prime or not?

- To determine whether a number is prime, first find its square root and round it down to the nearest whole number. Then check whether the number is divisible by any prime number up to this value. If it is not divisible by any of them, the number is a prime number.

Between	Number or prime number
1-50	15
1-100	25
1-200	46

Ramanujan number

A Ramanujan number is a number that can be expressed as the sum of two positive cubes in two different ways. It is also known as the Hardy–Ramanujan number or taxi-cab number.

Smallest Ramanujan number = 1729

$$1729 = 1^3 + 12^3 = 9^3 + 10^3$$

Perfect number

A perfect number is a natural number that is equal to the sum of its proper divisors (that is, all its positive divisors excluding the number itself).

Ex: 4 is divisible by 1 and 2, so $1 + 2 = 3 \neq 4$; therefore, 4 is not a perfect number.

6 is divisible by 1, 2 and 3, so, $1 + 2 + 3 = 6 = 6$; therefore, 6 is a perfect number.

Key points

Even + Even = Even

Even $\times$ Even = Even

Even + Odd = odd

Even $\times$ Odd = Even

Odd + odd = Even

Odd $\times$ Odd = Odd

Sum Of ' n ' odd number is odd, if n is odd.

Sum of ' n ' odd number is even, if n is even.

Type 1: Question based on definitions



Ex: 173 is prime number or not?

Sol: The Square root of 173 is approximately 13.

The Prime number less than or equal to 13 are 2, 3, 5, 7, 11 and 13,

Since 173 is not divisible by any number, it is a prime number.

Ex: x, y and z are distinct prime number where $x < y < z$ if $x + y + z = 70$, then what is the value of z ?

Sol: Now, sum is 70, means at least one of the numbers is even. As we know, only one even prime number exists, and that is 2.

2 is also the smallest prime number.

Means $x = 2$

Now, $70 - 2 = 68 = y + z$

By substituting the values of different prime numbers, we obtain the result.

$y = 31$ and $x = 37$

Ex: How many composite numbers are there from 53 to 97?

Sol: If we find the total number of integers between 53 and 97 and then subtract the number of prime numbers between them, we obtain the number of composite numbers.

Total number = $97 - 53 + 1 = 45$ (+1 when both numbers are included)

Total prime number from 53 to 97 is 10

So, composite number = $45 - 10 = 35$

Ex: Which one of the following is TRUE?

- (A) All irrational numbers are real
- (B) All real numbers are irrational.
- (C) Rational numbers are not real.
- (D) Integers are not rational.

Sol: Irrational numbers form a subset of real numbers, so all irrational numbers are real.

Not all real numbers are irrational; rational numbers are also real.

Rational numbers are real numbers.

Integers are a subset of rational numbers since any integer can be written as $\frac{p}{q}$ (e.g., $5 = \frac{5}{1}$).

So, Answer is (A).

Special concept: based on sum of digits for special types of numbers

Number	Square	Sum of digits
11^2	121	3
111^2	12321	9
So, on		
111111111^2	12345678987654321	81

Ex: Each digit of a 9-digit number is 1. It is multiplied by itself. What is the sum of digit of the resulting number.

Sol- using the concept

$$111111111^2 = \gg 81$$

Type 2: Unit digit based

To find the units digit of an expression, consider only the unit digits of the numbers instead of evaluating the entire expression.

Unit digit of $(a + b)$ = unit digit of a + unit digit of b

Unit digit of $(a - b)$ = unit digit of a - unit digit of b

Unit digit of $a \times b$ = unit digit of $a \times$ unit digit of b

Ex: What are the unit digit of 435×433 .

Sol: Unit digit of $a \times b$ = unit digit of $a \times$ unit digit of b

$$5 \times 3 = 15 \text{ so, unit digit is } 5$$

Cyclicity

Cyclicity in the number system means the repeating pattern of digits or remainders when a number is raised to higher powers. The unit digit remains unchanged for all powers.

$$0 \rightarrow 0 \quad 1 \rightarrow 1$$

$$5 \rightarrow 5 \quad 6 \rightarrow 6$$

Cycle of Length 2-The unit digit alternates between two values.

$$4 \rightarrow 4, 6$$

When the power is odd, the unit digit is 4, and when the power is even, the unit digit is 6.

$$9 \rightarrow 9, 1$$

When the power is odd, the unit digit is 9, and when the power is even, the unit digit is 1.

Cycle of Length 4- The unit digit repeats after four powers.

$$2 \rightarrow 2, 4, 8, 6$$

$$3 \rightarrow 3, 9, 7, 1$$

$$7 \rightarrow 7, 9, 3, 1$$

$$8 \rightarrow 8, 4, 2, 6$$

$$\text{Let } N = x^y$$

To find the unit digit of (N) , we only need to consider the unit digit of the base number (x) .

The unit digit of an exponential expression can be determined by finding the remainder when the power is divided by 4.

Type 3: Cyclicity - Unit Digit Based on Arithmetic Equations



Ex: If $x = (164)^{169} + (333)^{337} - (727)^{726}$ then what is the unit digit of x ?

Sol: In the expression, the **first term** has an odd power of 4, so the unit digit of the first term is 4. For the **second term**, dividing 337 by 4 gives a remainder of 1 so the unit digit of the second term is 3. For the **third term**, dividing 726 by 4 gives a remainder of 2; hence, the unit digit of the third term is 9.

So, unit digit of the expression $4 + 3 - 9 = -2$. If the unit digit comes out negative, add 10 to obtain the correct unit digit. Unit digit is $10 - 2 = 8$.

Ex: What is the unit digit of $1^5 + 2^5 + 3^5 + 4^5 + \dots + 20^5$

Sol: In each term, the cyclicity is 1. Therefore, for every term, the units digit is the same as the number itself.

The Unit digit for 1 to 10 is zero.

$$= (1 + 2 + 2.. + 9 + 0)$$

$$+ (1 + 2 + 3.. + 9 + 0) = 0$$

Ex: Find the unit digit $x = 187^{280} \times 529^{320} \times 343^{236}$

Sol: If remainder is 0 then put power equal to the 4.

For the first terms - 7^4 cyclicity is 1

For the second terms - power of 9 is even so the unit digit is 1

For the third terms - 3^4 cyclicity is 1

Unit digit is $= 1 \times 1 \times 1 = 1$

Ex: What is the unit digit in the expansion of $(57242)^{9 \times 7 \times 5 \times 3 \times 1}$?

Sol: We only check only for digit 2. Power will be divided by 4.

$$= 2^{1 \times (-1) \times 1 \times (-1) \times 1} = 2^1$$

So, the unit digit is 2

Type 4: Counting based Questions (a digit or page counting or key strokes)



1 to 9 $\rightarrow$ required digit is = 9

10 to 99 $\rightarrow 90 \times 2 = 180$

Ex: What is the number of digits required for numbering a book with 428 pages?

Sol: 1 to 9 $\rightarrow$ required digit is = 9

10 to 99 $\rightarrow 90 \times 2 = 180$

100 to 428 $= (428 - 100 + 1) = 329 \rightarrow 329 \times 3 = 987$

Total number of digits required = $9 + 180 + 987 = 1176$

Type 5: Perfect Square Based Questions



How to check if a number is a perfect square (it shows the possibility)

1. The last two digits of any perfect square number must be among the squares from 1 to 24.
2. The units digit should not be 2, 3, 7, or 8.
3. The number of zeros in the number and the denominator should both be even.
4. After dividing a perfect square by 9, the remainder must be 0, 1, 4, or 7.

Ex: Is it possible that 562576 is a perfect square or not?

Sol: The number ends in 76, which is possible for a perfect square. The unit digit is 6, so it is possible for the number to be a perfect square.

Sum of digit of 562576 = 21

after dividing remainder is 3.

So, this number is not perfect.

Type 6 Decimal to fraction conversion



- The number of zeros in the denominator is equal to the number of digits after the decimal point.

$$0.abc = \frac{abc}{1000}$$

- The number of 9 in the denominator is equal to the number of digits after the decimal point.

$$0.\overline{abc} = \frac{abc}{999}$$

- When some digits are not covered by the overline

$$0.a\overline{bc} = \frac{abc - a}{990}$$

$$0.ab\overline{cd} = \frac{abcd - ab}{9900}$$

- Mix concept

$$a.b\overline{cd} = a + \frac{bcd - b}{990} = \frac{abcd - ab}{990}$$

Ex: If $A = 0.3\overline{12}$, $B = 0.4\overline{15}$ and $C = 0.30\overline{9}$ what is the value of $A + B + C$.

Sol:

$$A + B + C = \frac{312 - 3}{990} + \frac{415 - 4}{990} + \frac{309 - 30}{900}$$

$$A + B + C = \frac{720}{999} + \frac{279}{900}$$

$$A + B + C = \frac{10269}{9900} = \frac{1141}{1100}$$



Type 7: Number of zeros

- Zeros at the end of a number are determined by the number of 10s and in its factorization, primarily based on the pairs of 5s and 2s.
- **Factorial** is a mathematical operation defined for non-negative integers.

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CHAPTER

Noun



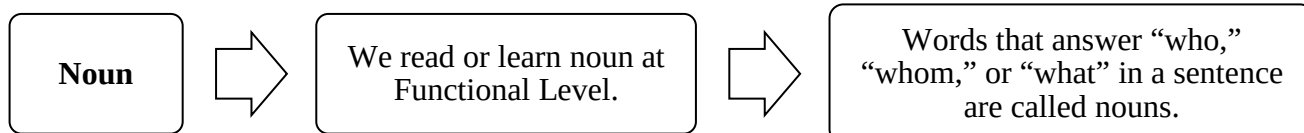
Definition:

➤ **Noun** is the name of Person, Place or things.

Or

➤ A **noun** is a word used as the names of a **person, place, thing, action, quality or condition**.

➤ Everything presents in the world is called a **Noun**.



Example:

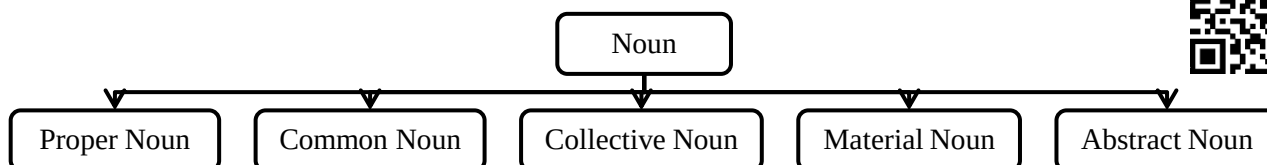
Example	Explanation
Ram called Reena.	Who calls Reena? – The answer will be Ram. Therefore, Ram is a noun here because it answers “who”. Similarly, whom does Ram call? – The answer will be Reena. Therefore, Reena is a noun here because it answers “whom”.
Time is precious for me.	What is precious for him (me)? – The answer will be time. Therefore, time is a noun because it answers “what”.
Ram and Sita are going to market.	Where are Ram and Sita going? – The answer will be market. Therefore, “market” answers “where”, so “where” functions as an adverb here. However, who is going to the market? – The answer will be Ram and Sita. Therefore, Ram and Sita are nouns because they answer “who”.

Nouns are classified on the basis of their functional level. In a sentence, a noun is identified based on its functional (working) role.

Noun : Functional Level

Naming Word	Felt Only	Noun Equivalent
Person	Verb	Unit
Place	Quality	Count
Things	Feelings	Measure
	Emotions	Calculate

Types of Nouns:



Proper Noun

➤ The names of a particular or specific person, place or thing are known as proper nouns.

Rules:

- The first letter of a Proper Noun is always written in a capital letter.
- Articles such as “a, an, or the” are not used with Proper Nouns.

Example:

1. Ram is my friend.
2. I live in Jaipur.
3. He is Tom.

Common Noun

➤ A common noun is a noun referring to a person, place or thing in a general sense.

Example:

1. According to the **boy**, the nearest **town** is very far.
2. All the **gardens** in the **neighbourhood** were invaded by **beetles** this **summer**.
3. The road **crew** was startled by the **sight** of three large **cats** crossing the **road**.
4. Dogs are the most adorable and lovable pets to keep.

Rules

- Sometimes, “the” is used before a Proper Noun, and it is then used like a Common Noun.
 - ✓ Kalidas is **the Shakespeare** of India.
- Sometimes, a Proper Noun is also used like a Common Noun. At that time, the Proper Noun represents a class or a person belonging to that class.
 - ✓ There are five **Ram** in my Class.
- Proper, Material, and Abstract Nouns are always singular, but when they are used in the plural form, they become Common Nouns.
 - ✓ **Simran** is the wife of Shivam. (Proper Noun)
 - ✓ All the ladies of India are not a **Simran**. (Common Noun)
 - ✓ **Iron** is a hard metal. (Proper Noun)
 - ✓ Where are the **irons**? (Common Noun)

Collective Noun

- Collective nouns is the name of a number (or collection) of persons, or things taken together and spoken of as one whole.

Example:

- ✓ This compartment is reserved for military personnel.
- ✓ The **crew** of sailors was not perturbed by the strong gale.
- ✓ The **crowd** of the migrant workers at the station for the Shramik Special is unforgettable.
- ✓ A **pride** of lions consists of related females, cubs, and a small number of adult males.

Rules

- Generally, a Collective Noun takes a singular verb. A plural verb is used with it only when each member of the group is being referred to.
 - ✓ The **jury is** deciding the matter. → Here, “jury” is in the form of a group, so it indicates a singular noun; therefore, the helping verb will be singular, i.e., “is”.
The **Committee meets** every week to discussing important matter. → Here, each member of the committee (noun of multitude) is being referred to; therefore, a plural helping verb is used with “committee”.

Words Related to Collective Noun

1. A **band** of musicians.
2. A **board** of directors, etc.
3. A **bevy** of girls, women, officers etc.
4. A **bunch** of grapes, keys, etc.
5. A **bundle** of sticks and hay.
6. A **caravan** of Merchants, pilgrims, travellers.
7. A **chain/range** of mountains or hills.
8. A **choir** of singers.
9. A **class** of students.
10. A **retinue** of servants/ attendants.
11. A **clump/grove** of trees.
12. A **code** of laws.
13. A **cluster / constellation/ galaxy** of stars.
14. A **company/regiment/army** of soldiers.
15. A **convoy** of ships, cars etc. moving under an escort.
16. A **course** or **series** of lectures.
17. A **crew** of sailors
18. A **crowd/mob** of people.
19. A **curriculum** of studies.
20. A **flight** of steps, stairs.
21. A **fleet** of ships or motorcars.
22. A **flock** of geese, sheep and birds.
23. A **gang** of robbers, labourers.
24. A **garland/bunch/bouquet** of flowers.
25. A **heap** of ruins, sand, stones.
26. A **herd** of cattle.
27. A **litter** of puppies.
28. A **pack** of hounds, cards.
29. A **pair** of shoes, scissors, compasses, trousers.
30. A **series** of events.
31. A **sheaf** of corn, arrows.
32. A **swarm** of ants, bees or flies.
33. A **train** of carriages, followers etc.
34. A **troop** of **horses** (cavalry) scouts; etc.
35. A **volley** of shots, bullets
36. A **forum** of people (discussing issues)
37. A **congregation** of people (discussing religious issues)

Material Noun

- A material noun is the name of metal or substance, of which thing is made of.

Example: Wood, Silver, Gold, Iron etc.

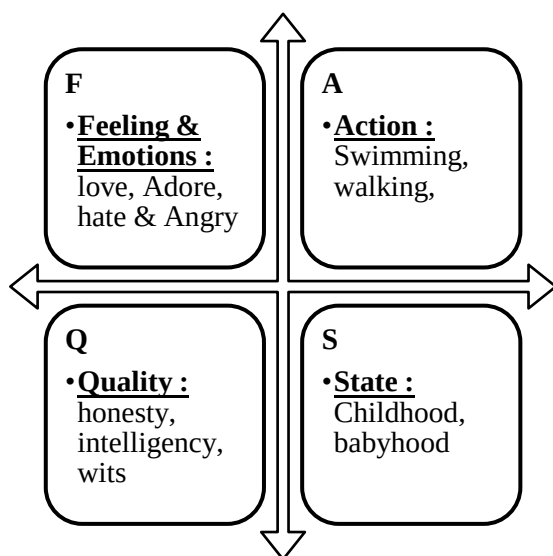
1. She has purchased a tea set of **silver**.
2. He got his furniture made of teak **wood**.

Notes: Material nouns are not countable, that is, they cannot be counted in numbers. They are always measured or weighed and represent a mass or substance. Therefore, they generally take a singular verb. Articles are not used before them.

Abstract Noun

- Abstract noun in general refers, the name of quality, action or state.

Example: Honesty, Bravery (quality), Hatred, Laughter (action), Poverty, Young (state).



Types	Example
Abstract nouns that express quality	greatness, hardness, height, honesty, anger, joy, courage, idleness, softness, strength, sweetness, truth, wisdom.
Abstract nouns that express action	growth, discovery, activity, consideration, laughter, meditation, movement, pain, speech, obedience, pleasure, race, theft.
Abstract nouns that express state	childhood, boyhood, adulthood, cold, death, illness, imprisonment, independence, madness, poverty, sadness, sleep, youth, kindness.
Abstract nouns that express the names of arts and sciences	Astronomy, Economics, Geometry, Grammar, Music, Chemistry, Spinning and weaving, Wood-craft.

Rules:

- **Word + Suffix = Abstract Noun**
(Suffix -
ation/ion/ity/ty/y/th/red/ter/ship/hood/ment/ism/
ness)
✓ Honest + y = honesty
✓ Proud = pride
✓ Wide = width
- **Common Noun + Hood = Abstract Noun**

- ✓ Baby + hood = babyhood
- ✓ Child + hood = childhood
- **Common Noun + Ship = Abstract Noun**
✓ Friend + ship = friendship
✓ King + ship = kingship
- **Verb + er / or = Abstract Noun**
✓ Teach + er = teacher
✓ Act + or = actor
- **Verb + Ment/ion/tion = Abstract Noun**
✓ Manage + ment = management
✓ Act + ion = Action

Noun: Number

- **The number** indicates how many **persons or objects** are being referred to.
- The form that indicates **only one** is called **the singular**.
- The form that **indicates more than one** is called **the plural**.



Countable Noun: A countable noun is a noun with both a singular and a plural form, and it names anything (or anyone) that one can count.

Example

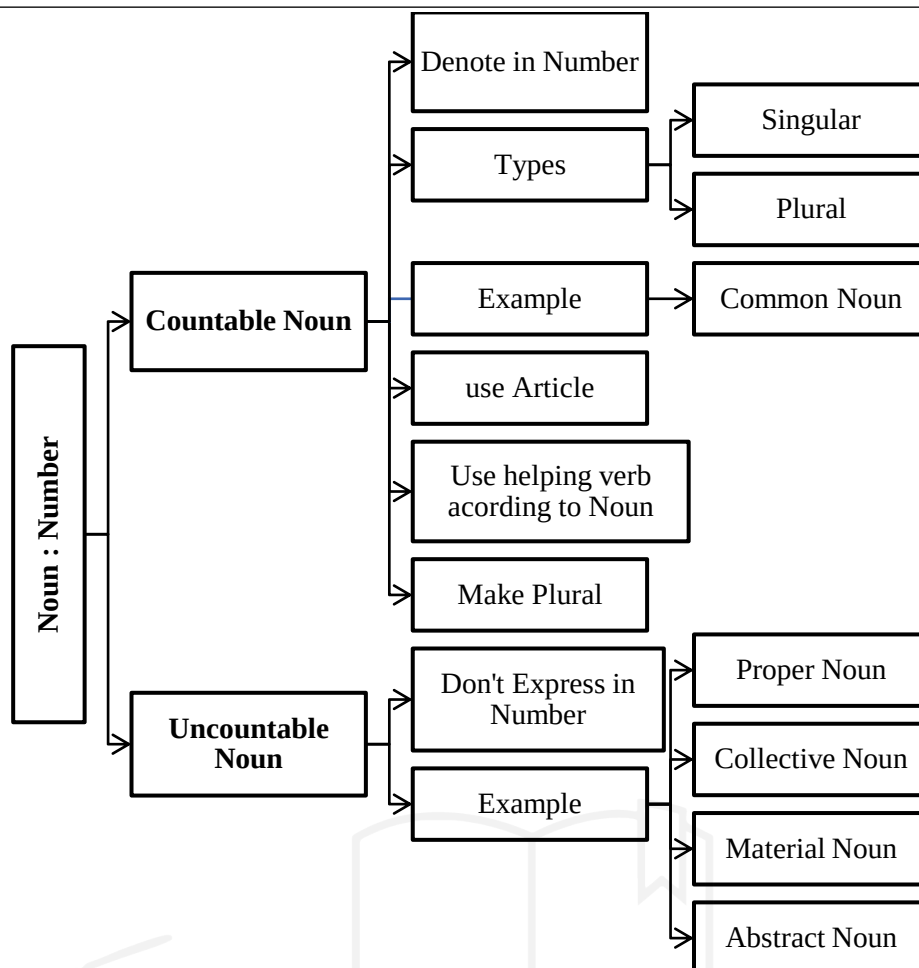
- Time and technology are two important factors that change substances into resources.
 - The man played the flute and led all the mice out of the town.
 - The usage of chemicals, insecticides and pesticides began after the Green Revolution.
 - The businessman also insisted that the police had issued him several summonses.
- **Uncountable Nouns:** An uncountable noun is a noun which does not have a plural form, and which refers to something that one cannot usually count. A non-countable noun always takes a singular verb in a sentence. uncountable nouns are similar to collective nouns, and are the opposite of countable nouns.

Example

- I've got a lot of **homework** this weekend.
- The little boy made much **mischief** in school.

Notes: Some Nouns Are Both Countable and uncountable.

- **Time** is money. (Here, "time" is a countable noun.)
- One should not waste **the time** on trifles. (Here, "time" is an uncountable noun.)



Some important Rules of Nouns

Rule 1: Some nouns are always used in the plural form. The “s” at the end of these nouns cannot be removed to make them singular. They appear plural and are also used as plural.

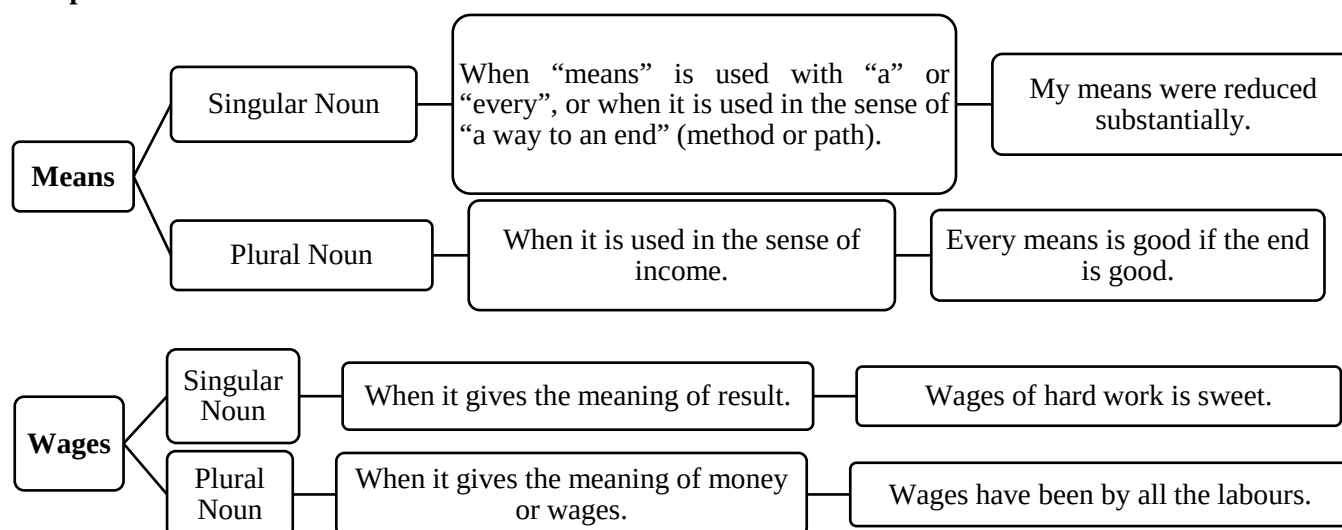
Words : Alms, amends, annals, archives, ashes, arrears, athletics, auspices, caves, species, scissors, trousers, pants, clippers, bellows, gallows, fangs, eyeglasses, goggles, belongings, breeches, bowels, braces, binoculars, customs, congratulations, dregs,

Exceptions:

earnings, entrails, embers, fetters, fireworks, lodgings, lees, odds, outskirts, particulars, proceeds, proceedings, regards, riches, remains, savings, shambles, shears, spectacles, surroundings, tidings, troops, tactics, thanks, tongs, vegetables, valuables, wages, Bacteria etc.

Example:

- He hated always to be the bearer of bad tidings.
- Bacteria are single-celled organisms that can reproduce on their own.



Rule 2: Some nouns appear to be plural but are singular in meaning. They are always used as singular.

Words: News, Innings, Politics, Summons, Physics, Economics, Ethics, Mechanics, Mathematics, Mumps, Rickets, Billiards, Draughts, etc.

Example:

- No news is good news.
- Economics is a good subject.
- Draughts is a good game.
- Ethics demands honesty in working.

Rule 3: Some nouns appear to be singular but are always used in the plural form.

Words: cattle clergy, cavalry, infantry, poultry, peasantry, children, gentry, police etc.

Example:

- Cattle are grazing in the field.
- Police have arrested the thieves.
- The police finished their investigation.

Notes: "People" means "persons". "Peoples" means "people of different races".

Rule 4: Some nouns are used only in the singular form. These are uncountable nouns, and articles "a/an" are not used with them.

Words: Scenery, Poetry, Furniture, Advice, Information, Hair, Language, Business, Mischief, Bread, Stationery, Crockery, Luggage, Baggage, Postage, Knowledge, Wastage, Money, Jewellery, Breakage, temper.

Example:

- He loses his temper on the slightest provocation.
- Some passengers misplaced their luggage before boarding the train.
- Mr. Abhilash and his family have received no information about the incident.
- I want to give you information about the missing necklace.

Notes: The plural form of "money" can be "monies", which means "sums of money".

Example:

- Monies have been collected and handed to the women's welfare society.

Rule 5: Some nouns have the same form in both singular and plural.

Words: deer, fish, crew, family, team, jury, carp, pike, trout, aircraft, counsel etc.

Example:

- The jury is considering its judgement.
- The jury are considering their verdict.
- One fish is there in the pond.
- There are many fish in the pond.

Rule 6: Some nouns are plural in meaning, but when they are preceded by a definite numeral adjective, they are not pluralized.

Words: Pair, score, gross, stone, hundred, dozen, thousand, million, Billion etc.

Example:

- I have two hundred rupees only.
- He has already donated five thousand rupees.
- It is a three feet wall.
- It is five feet in width.

Exceptions: If they are used with an indefinite countable expression, they are pluralized.

Example: dozens of women, hundreds of people, millions of dollars, scores of shops, many pairs of shoes, thousands millions etc.

Rule 7: If a noun is followed by a preposition and then the same noun again, the noun remains singular.

Example:

- Town after town was devastated.
- Row upon row of pick marble looks beautiful.
- He enquired from door to door.
- Ship after ship is arriving.

Note: In such sentences, writing "towns after towns", "rows upon rows", "doors to doors", or "ships after ships" is incorrect.

Rule 8: In a sentence, when "a half" or "a quarter" comes after a numeral adjective, the noun is placed after the numeral adjective, and then "a half" or "a quarter" is written.

Example:

- He gave me one rupee and a half.
- She gave me two rupees and a quarter.

Notes: If the numeral adjective and the fraction are joined by "and" and used in the sense of multiplication, then the noun is used in the plural form after "a half" or "a quarter".

Example:

- Two and a quarter times.
 - One and a half times.
- Here, multiplication is used in the sentence; therefore, the noun "times" is used in the plural form after "a quarter" or "a half".

Rule 9: A hyphenated noun is not used in the plural form.

Example:

- He gave me two hundred-rupee notes.
- He stays in five-star hotels. (Convert "stars" into "star")

Rule 10: With "a set of", "a pair of", "a group of", "each of", "either of", and "neither of", the noun is plural, and the helping verb is singular.