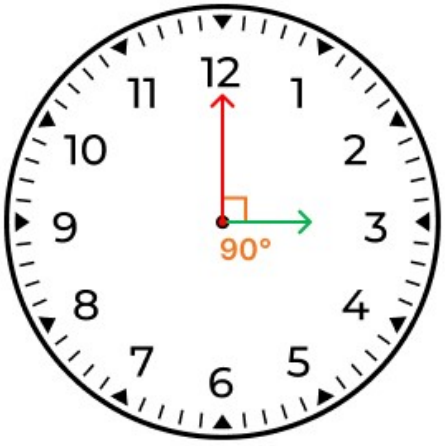
Clocks

Finding Angle

θ = 30H ~ (11/2)M H is hours and M is minutes Hour hand of a clock moves in one hour = 30 degrees Hour hand moves at a rate of (1/2) degrees per minute Minute hand moves at a rate of 6 degrees per minute
A Minutes past B = B:A Examples: 20 Minutes past 6 = 6 : 20 Quarter past 2 o'clock = 2 : 15 To find the reflex angle between the hands of the clock = 360° - [30H ~ (11/2)M]

Finding Time



- The hands of a clock are opposite to each other => θ = 180 degrees[θ = 30H ~ (11/2)M]
- The minute hand and hour hand overlaps/together = θ = 0 degrees
- In 12 hours, the hands are in opposite direction 11 times.

- In one hour, the hands of a clock form a right angle (90 degrees) twice.
- The hands of a clock form a right angle 22 times in 12 hour-period.
- The hands of a clock coincide after every 65(5/11) minutes

Calendars

Finding Day

- In Normal year : A standard calendar year has 365 days. There are 52 full weeks with 1 extra day,called an odd day, because each week has 7 days.
- In Leap year: A leap year has 366 days. There are 52 full weeks with 2 extra days, called odd days, because each week has 7 days.
- A century will become a leap year only if it is divisible by 400.
- 100 years have 5 odd days.
- 200 years have 3 odd days.
- 300 years have 1 odd day.
- 400 years have 0 odd days.
- Odd days in a month are the extra days left after forming complete weeks, indicating the days that don't fit into a 7-day-a-week pattern for that particular month

Odd days in a month:-

Month	**Odd days**	**Month**	**Odd days**	**Month**	**Odd days**
January	3	May	3	September	2
February[Ordinary/Leap]	[0/1]	June	2	October	3
March	3	July	3	November	2
April	2	August	3	December	3

To find the day of the week for any given date:

- Determine the Number of Days : Count the number of days from the reference day (usually a known day of the week) to the target date.
- Consider Leap Years: Adjust the count for leap years if the target year is a leap year.
- Calculate the odd days for complete years, months, and days leading up to the target date.
- Sum Up Odd Days : Add the odd days obtained from steps 2 and 3.

- Determine the Day of the Week: Find the remainder when the sum of odd days is divided by 7 and Match the remainder to the corresponding day of the week.

Finding Date Total leap years are there in a 1st century = 24 years Number of odd days are there in a leap year = 2 days For Calendar Questions based on IF condition:

- Begin with the given starting day of the week.
- Add 1 odd day for a normal year and Add 2 odd days for a leap year.
- Calculate the resulting day for the target year.
- This resulting day represents the day of the week for the specified date in the target year.

Calendar Repetition To find in which year calendar can be used again:

- If the given year was Leap Year = +28 years
- If the given year was Leap Year + 1 years = +6 years
- If the given year was Leap Year + 2 years = +11 years
- If the given year was Leap Year + 3 years = +11 years

Data Interpretation

Table Data interpretation tables are used to organize and present data in clear and a structured format. Four basic Formulas :

1. Average = (Sum of data points)/ (Number of data points)
2. Percentage = a % of b = (a/100) * b
3. Percentage Change = ((Final Value - Initial Value)/(Initial Value)) x 100
4. Ratio = (Quantity 1) / (Quantity 2)

Pie Chart Circular graph representing data. Divided into segments indicating proportions. Segments represent proportions in percentages or angles. Total percentages sum up to 100% or 360°. Central Angle = (Total Angle) * (Percentage / Total Percentage) Proportional Value = (Percentage / 100) * (Total Value)

Bar graph Bar graphs visually represent data using rectangular bars where the length/height corresponds to the value being represented. They are useful for comparing different categories. Total Value = Σ (values)

Line chart Line charts display data points connected by lines, typically used to visualize changes over time. Average = (Σ Values) / (Number of Values) Difference = Σ (Category A) - Σ (Category B)

Coding and Decoding

Number series While solving and selecting answers on Number series problems follow the preferences below:

1. Addition(+)/ Subtraction(-)
2. Multiplication(x)/Division(/)

3. Natures of terms: Odd numbers, Even numbers, Prime numbers, Square numbers, Cubes.
4. Multiple operators

Alphabet series

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

Alphabet series based on Alphabet and Its position. The total number of alphabets is 26. Alphabet series is a sequence of letters that follows a specific pattern or rule,which includes:

- Positions of letters in the alphabet
- Skipping letters
- Reversing order
- Fixed numerical increment or decrement.

Analogies Analogy Definition: Analogy involves comparing two things and finding similar comparisons in other things. Pattern Recognition: Identify the pattern or relationship between the given pairs. Apply Pattern: Apply the identified pattern to find the missing pair. Pattern includes:

- Adding numbers
- Reversing the alphabets
- Synonyms
- Antonyms
- Relationship between two things etc..

Reversing the alphabets :

A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

Odd man Out Odd man out is an element or number or term in a series that is different from the others. Identify Pattern: In the given series, observe the pattern or relationship between the terms. Apply Pattern: Apply the identified pattern to each term and compare with the others. Look for the term that does not follow the established pattern.
Example 1: The series follows multiples of a certain number. Identify the term that deviates from this pattern. Example 2: Each term in the series follows a specific letter-to-number mapping. Identify the term that does not adhere to this mapping.

Coded Language Coding involves transforming information into a special format using specific rules Decoding is the reverse process of converting this special format back into its original form by applying the same rules Letter to Number Coding:

- Analyze the coding pattern observed in the provided examples.
- Apply the identified pattern to each letter of the word to decode.
- Determine the corresponding code for each letter according to the pattern.
- Combine the decoded codes to form the coded representation of the word.

Word Coding:

- Analyze the provided sentences and their corresponding codes.
- Identify common words and their corresponding codes across different sentences.
- Note the unique code for the target word in a sentence where it appears.
- Determine the code for the target word based on its unique code in the identified sentence.

Letter to Symbol Coding:

- Each letter in the given word corresponds to a specific symbol in the provided coding scheme.
- Determine the symbols assigned to each letter in the word based on the given code.
- Assign the appropriate symbol to each letter in the word according to the established coding pattern.
- Combine the symbols to form the coded representation of the word.

Blood Relations

Blood relations establish familial connections through birth, marriage, or other reasons, delineating relationships within a family.
Generations: 1st Generation: Consists of Grandparents - Paternal (father's side) and Maternal (mother's side). 2nd Generation: Includes Parents, In-laws, Uncles, and Aunts. 3rd Generation: Comprises Husband-Wife, Siblings, and Cousins. 4th Generation: Encompasses Grandchildren
Key Relationships: Grandparents: Paternal (father's side) and Maternal (mother's side). Parents: Father, Mother, Father-in-law, and Mother-in-law. Uncles and Aunts: Maternal and Paternal. Siblings: Brothers and Sisters. Cousins: Children of parents' siblings. Grandchildren: Sons, Daughters, Nieces, Nephews, Sons-in-law, and Daughters-in-law.
Personal Narratives Models: Analyze the familial relationships described in the question. Determine the speaker's family connections using possessive pronouns. Identify the relationships between the individuals mentioned in the question, such as mother, father, daughter, son, aunt, uncle, etc. Draw the family tree diagram and visualize the relationship

Ranking

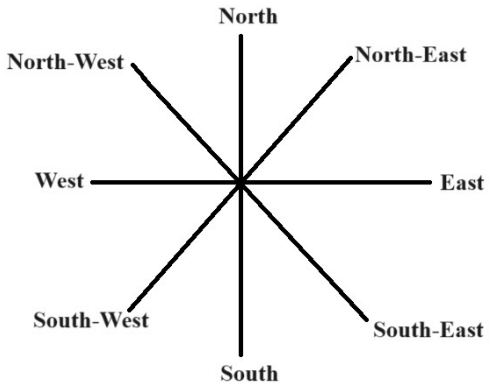
- Total number of Persons = Rank from top + Rank from bottom -1
- Total number of Persons = Position from left + Position from Right -1
- If the person is Positioned from the left = Total number of Person - Position from right +1
- If the person is Positioned from the right = Total number of Person - Position from left +1
- The Rank of the person from the top =Total number of Persons - Rank from bottom+1

- The Rank of the person from the bottom =Total number of Persons - Rank from top+1
- Number of persons between two persons = Total number of persons - Sum of Position two different persons opposite ends.

Persons between two persons(with overlapping): If the sum of the Positions of two persons > The Total number of persons then it is called Overlapping. Number of persons between two people = Sum of the positions of two people -Total number of persons - 2

Interchanging position: Interchanging positions involves two persons swapping their original places in a row or queue. In this category ,to find positions either from left or right after interchanging.

Directions



Total Distance Covered: Add up the distances traveled in each direction to find the total distance covered.
Short Distance(Displacement): Use Pythagoras theorem to find the shortest distance between the starting and final points.
Shadow based Directions: Shadows fall opposite to the direction of the sun, helpful for determining directions based on shadows.
Directions based on Rotations: Determine the direction after rotation clockwise or anti-clockwise by a certain angle. Pythagorean Formula : $c^2 = a^2 + b^2$

Data Arrangement

Linear Arrangement

Hints in Linear Arrangement: Direct Hint: Provides clear information about a position or order. Indirect Hint: Provides information that indirectly implies a position or order. Use given information to place individuals or objects in the line according to the constraints.
Note on Directions: "To the left of": Indicates a person is positioned anywhere on the left side of another person. "To the right of": Indicates a person is positioned anywhere on the right side of another person.
Clarification on Gap Count: Mention of a person being "N places to the right" means there are N gaps between them, not necessarily N individuals.

Circular Arrangement Objects or individuals are positioned in a circular pattern, facing towards the center or outward. Circular arrangements can be interpreted in both clockwise and anticlockwise directions. Analyze statements to derive logical conclusions about positions or orders in the circular arrangement.
Note on Directions: "To the left of": Indicates a person is positioned immediately to the left of another person. "To the right of": Indicates a person is positioned immediately to the right of another person.

Data Sufficiency

Involves determining whether the given information is adequate to solve a problem or answer a question. Data sufficiency questions provide a problem and statements of data. Questions can be quantitative or logical.
Objective: The main goal is to assess if the data in the statements are sufficient to answer the question, not necessarily to solve the problem completely.
Standard options for data sufficiency questions include: Statement I alone is sufficient. Statement II alone is sufficient. Both statements I and II together are sufficient. Either statement I or II is sufficient. Neither statement I nor II is sufficient.

Venn Diagrams

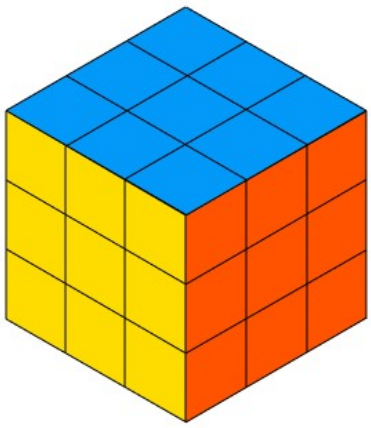
Venn diagrams graphically represent relationships between different sets using overlapping circles.
Representation for Two Sets: Each circle represents a set, and overlap shows common elements.
Representation for Three Sets: Uses three overlapping circles to represent relationships between three sets.
Union of Sets (A ∪ B): Represents the combination of elements present in either set A or set B or both.
Intersection of Sets (A ∩ B): Represents the common elements present in both set A and set B.
Complement of a Set (A'): Represents the elements not present in set A, considering a universal set μ.
Number of Elements in a Set: n(A) represents the number of elements in set A.
$n(A \cup B) = n(A) + n(B) - n(A \cap B)$ $n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(C \cap A) + n(A \cap B \cap C)$

Syllogisms

Syllogism is a logical reasoning method where conclusions are derived from given statements.
Statements: These are the given premises or facts. **Conclusions:** These are the logical deductions drawn from the statements. **Options:** The possible conclusions are usually presented with standard options to choose from.
Tick and Cross method:- All A's are B's(universal positive statement) :- A = Tick and B= cross No A's are B's(universal negative statement) :- A = Tick and B= Tick Some A's are B's(paticular positive statement) :- A = cross and B= cross some A's are not B's(particular negative statement) :- A = cross and B= Tick
Rules:-
1.In two statements, there should be 3 terms with one term as common and common term should have atleast one tick. 2.If both statements are particular, there is no conclusion. 3.If both statements are negative, there is no conclusion. 4.If one of the statements is particular, the conclusion must be particular. 5.A cross in a statement cannot be tick in the conclusion

Cubes

Min and Max Cubes



A cube is a three-dimensional solid object. It has 6 faces, 8 corners, 12 edges Equal length, breadth, and height Minimum number of pieces: Number of cuts + 1 Maximum number of peices: (nl + 1) x (nw + 1) x (nh + 1) Where nl, nw, and nh are the number of cuts along the length, width, and height, respectively. nl = nw = nh

Painted Cubes Case 1: All sides painted: Number of cubes painted on 3 sides: 8 Number of cubes painted on 2 sides: 12 x (n - 2) Number of cubes painted on 1 side: 6 x (n - 2)^2 Number of cubes with no sides painted: (n - 2)^3
Case 2: Two adjacent faces painted with the same color: Only one face painted: (n - 2)^2 Painted on two adjacent faces: (nx3) - 2 Painted on one face: (nxn)x2 - n
Case 3: Three adjacent faces painted with the same color: Only one face painted: 3 x ((n - 2)^2) + 3 x (n - 2) + 1 Painted on three adjacent faces: (nx6) - 6