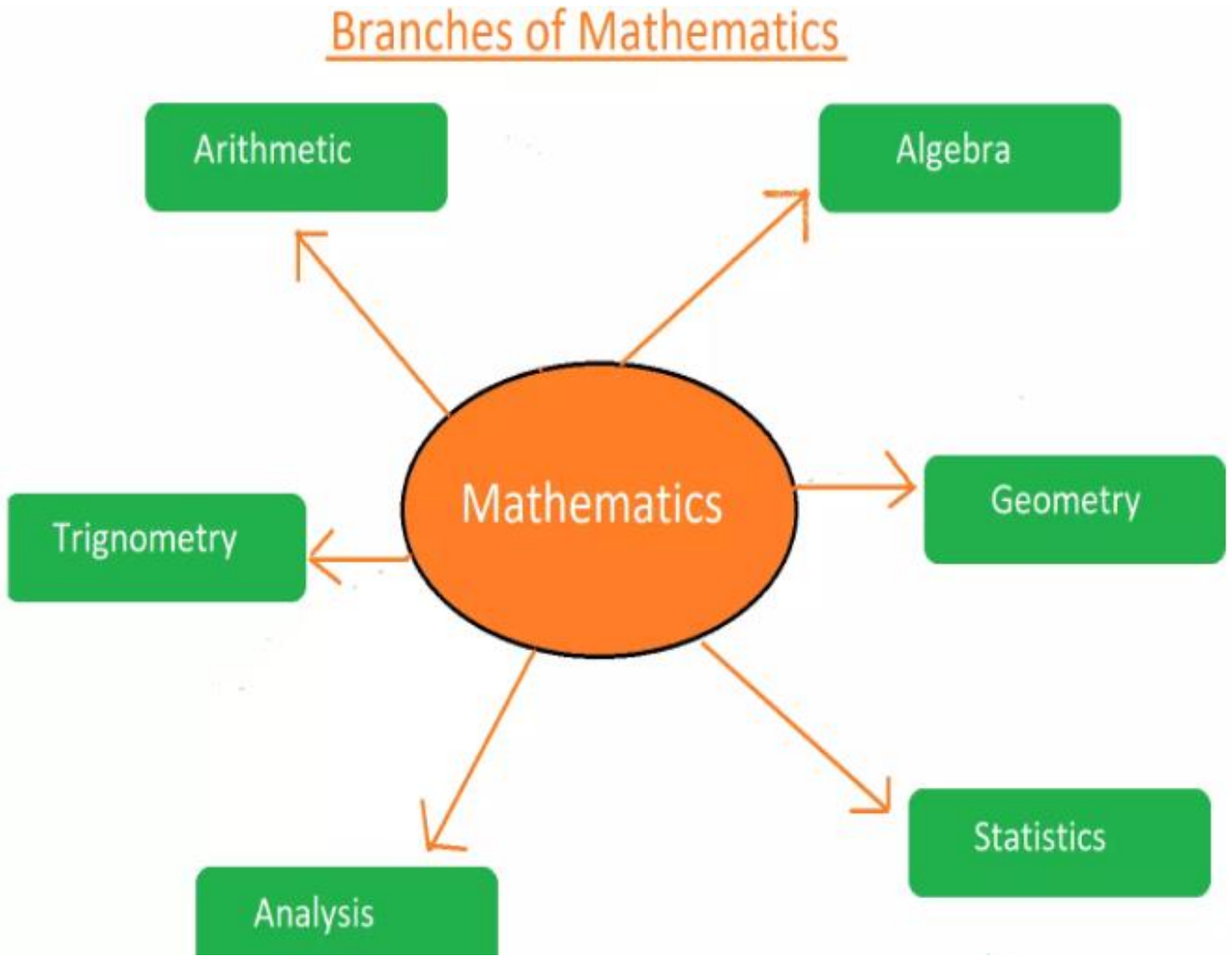
Employability and Skill Development

Course Code	Teaching Scheme	Evaluation Scheme				Credit
	L	CA	MSE	ESE	Total	
BTAIHM605B	3	20	20	60	100	3

Unit II: Arithmetic and Mathematical Reasoning and Analytical Reasoning and Quantitative Ability



- The Mathematics is the branch of science which deals with numbers, also involves calculations and mainly focuses on the study of quantity, shapes, measurement etc.

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1. Arithmetic:

-This is most oldest and fundamental branch of math.

-This branch deals with the basic operation & number.

-The basic operations are subtraction, addition, multiplication and division.

2. Algebra

-Algebra is the type of arithmetic. And here, we find the value of unknown quantities, such as X, Y and Z.

-we usually use a English alphabets (variables) as unknown numbers.

-Several formulas uses to solve the equations to calculate the unknown value.

3. Geometry

- It is the most practical branch considered in Mathematics.

- It deals with the construction of figures, shapes and their properties.

-The basics of geometry are points, lines, surfaces, angles and solids.

-In geometry, we used many mathematics tools such as scale & protector.

4. Trigonometry:

- Trigonometry is derived from Greek words trigon means triangle and metron refer to measurement.
- So, it is clear from the name that is the study of triangle sides and angles.

5. Analysis:

- This is a little complex branch of mathematics.
- It deals with the study of rate of change with respect to specific quantities.
- Examples: Differentiation, Integration, Limit, infinite sequences etc.
- The base of analysis is Calculus.
- Calculus is the mathematical study of continuous change.

6. Statistics:

-The statistic is the branch, deals with the collection of huge data, organize it and further analyze to get final results.

-Example: The population of any country can be estimated through this branch.

- **Arithmetic and Mathematical Reasoning:**

- Arithmetic and mathematical reasoning are both important components of mathematics, but they are different in nature.
- **Arithmetic** is the branch of mathematics that deals with the study of numbers and the basic operations used to manipulate them, such as addition, subtraction, multiplication, and division.
- Arithmetic reasoning involves applying arithmetic concepts and operations to solve problems, make decisions, and draw conclusions.

Example 1. If cost of 15 eggs is ₹75, then find out the cost of 4 dozens eggs.

(a) ₹240 (b) ₹300 (c) ₹150 (d) ₹185

Solution: (a) ∴ Cost of 15 eggs = ₹75

∴ Cost of 1 egg = ₹ (75/15) = ₹5

∴ Cost of 4 dozens (4 x 12 = 48) eggs = 5 x 48 = ₹240

- **Mathematical reasoning:**

- Refers to the process of using logical thinking, assumptions, and critical analysis to solve mathematical problems.
- It involves a mathematical concepts and relationships to understand and solve problems in different areas of mathematics, such as algebra, geometry, calculus, and statistics.
- Mathematical reasoning involves identifying patterns, formulating hypotheses, and drawing conclusions based on evidence and logical arguments.
- For example, using algebraic equations to solve for unknown variables or using geometric theorems to prove mathematical statements involves mathematical reasoning.

- In terms of mathematics, reasoning can be of two major types which are:

1. Inductive Reasoning
2. Deductive Reasoning

1. Inductive Reasoning:

- In the Inductive method of mathematical reasoning, the validity of the statement is checked by a certain set of rules and then it is generalized.
- **Example of Inductive Reasoning:**
- **Statement:** The cost of goods is Rs 10 and the cost of labour to manufacture the item is Rs. 5. The sales price of the item is Rs. 50.
- **Reasoning:** From the above statement, it can be said that the item will provide a good profit for the stores selling it.

2. Deductive Reasoning

-In deductive reasoning, we apply the rules of a general case to a given statement and make it true for particular statements.

- **Example of Deductive Reasoning:**
- **Statement:** Pythagoras Theorem holds true for any right-angled triangle.
- **Reasoning:** If triangle XYZ is a right triangle, it will follow Pythagorean Theorem.

- **Analytical Reasoning**

-Analytical reasoning is a cognitive skill that involves breaking down complex information into smaller components in order to understand it better and draw conclusions.

-It is a fundamental aspect of critical thinking and problem-solving that is applicable to a wide range of disciplines, including science, business, law, and engineering.

-**Critical thinking** is a kind of thinking in which you question, analyse, interpret, evaluate and make a judgement about what you read, hear, say, or write.

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- **Analytical reasoning involves the following steps:**

1. **Identifying the problem or issue:** This involves defining the problem or issue at hand and determining the scope of the analysis.
2. **Gathering information:** This involves collecting data and information relevant to the problem or issue, often using various sources and methods.
3. **Analyzing information:** This involves examining and evaluating the information gathered, identifying patterns and relationships, and drawing inferences.
4. **Drawing conclusions:** This involves making logical conclusions based on the analysis conducted, and assessing the validity and reliability of these conclusions.
5. **Formulating Recommendations:** This involves using the conclusions and analysis to develop practical solutions or recommendations that can be implemented to address the problem or issue.

- **Quantitative ability**

- Quantitative ability refers to the proficiency in numerical reasoning, mathematical concepts, and problem-solving skills.
- It is the ability to reason using numbers.
- It involves mathematical and statistical methods to solve problems in various contexts, including business, finance, science, and engineering.
- Quantitative ability involves a range of mathematical skills, such as arithmetic, algebra, geometry, and calculus, as well as statistical concepts, such as probability, hypothesis testing, and regression analysis.
- Individuals with strong quantitative ability can understand and manipulate numerical data, analyze patterns and relationships, and make data-driven decisions.

- Examples of quantitative ability skills include:

- Solving mathematical equations and word problems
- Interpreting and analyzing graphs and charts
- Calculating and interpreting statistical measures, such as mean, median, mode, and standard deviation
- Applying mathematical models to real-world scenarios, such as financial forecasting or engineering design

Question Bank

1. If a pizza has 8 slices and you eat 2 slices, what fraction of the pizza have you eaten?

A) 1/4 (B) 2/4

(C) 6/1 (D) 4/1

2. If a shirt costs RS 1000 and is on sale for 25% off, what is the sale price?

(A) 800 (B) 750

(C) 250 (D) 650

3. If a pizza has a diameter of 12 inches, what is its circumference?

(A) 31.7 (B) 37.1

(C) 37.7 (D) 27.1

4. Choose the odd numeral pair/group in each of the following questions.

(A) 9 – 36 (B) 16 - 64

(C) 36 – 216 (D) 49 – 343

5. In a group of 100 people, 80 have at least one dog, 60 have at least one cat, and 30 have both a dog and a cat. How many people have neither a dog nor a cat?

(A) 5 (B) 10

(C) 15 (D) 20

6. If a company's profits have increased by 20% each year for the past three years, and its profits were RS 100,000 three years ago, what were its profits last year?

(A) 124000 (B) 142000

(C) 144000 (D) 140000

7. What is the next number in the series: 1, 3, 6, 10, 15, ...?

A) 20 B) 21

c) 25 D)23

8) Johny introduced Selvia as the mother of his sister's brother. How is Selvia related to Johny?

(A) Aunt (B) Niece

(C) Mother (D) Sister

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(A) 124000 (B) 142000

(C) 144000 (D) 140000

10. If a rectangular room is 10 feet long, 8 feet wide, and 6 feet tall, what is its volume?

(A) 480 Cubic feet (B) 380 Cubic feet

(C) 580 Cubic feet (D) 280 Cubic feet

11. If a car travels at a speed of 60 miles per hour for 2 hours, how far will it travel?

A) 30 miles B) 80 miles

c) 120 miles D) 60 miles

12) If a company has 120 employees and 25% of them are women, how many men work for the company?

(A) 30 (B) 90

(C) 60 (D) 110

Aspects of Intelligence

- **Intelligence:**

- The word intelligence is derived from a Latin verb “Intellegere” which means understanding.
- Intelligence is the ability to acquire and apply a knowledge.
- It involves a range of cognitive processes, including perception, attention, memory, language, and problem-solving.
- Intelligence is also influenced by factors such as motivation, personality traits, and environmental factors, such as education and cultural experiences.
- According to Alfred Binet intelligence is the ability for judgement or common sense.
- Throndike defines intelligence as one’s capacity to deal effectively with situations.
- Jean Piaget: Intelligence is the ability to adapt to surrounding.
- According to David wechslers (1977): The intelligence is the global capacity to think rationally, act purposefully and deal effectively with the environment.

- **Aspects of Intelligence:**

- The three aspects of successful intelligence are
- ***Analytical or componential thinking*** is required to solve problems and to judge the quality of ideas.
- ***Creative or experiential intelligence*** is required to formulate good problems and ideas in the first place.
- ***Practical or contextual intelligence*** is needed to use the ideas and their analysis in an effective way in one's everyday life.

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- commonly recognized aspects of intelligence:

1. Verbal-linguistic intelligence:

-This refers to the ability to use language effectively, including the ability to understand and express complex ideas and feelings through written and spoken communication.

2.Logical-mathematical intelligence:

- This involves the ability to think logically, analyze problems, and use mathematical and scientific reasoning to solve complex problems.

3.Spatial intelligence:

-This involves the ability to visualize and manipulate objects in mind

- Example: Those with spatial intelligence have the ability to think in three-dimensions.

-They excel at mentally manipulating objects, enjoy drawing or art, like to design or build things etc.

4. Bodily-kinesthetic intelligence:

-This involves the ability to use body skillfully and coordinate physical movements.

-An example of kinesthetic is the nature of a workout in gym class, dance movements, drama expressions etc.

5. Musical intelligence:

-This involves the ability to recognize and create music, as well as understand and appreciate different musical forms and structures.

6.Intrapersonal Intelligence:

- Your own view about your self

-This involves the ability to understand oneself, including emotions, motivations, and beliefs, as well as the ability to reflect on own experiences and learn from them.

7.Interpersonal intelligence:

-This involves the ability to understand and communicate effectively with other people, as well as the ability to empathize and understand their emotions and motivations.

Bloom Taxonomy

- Bloom's taxonomy was developed to provide a common language for teachers to discuss and exchange learning and assessment methods i.e it is used as a framework for categorizing educational goals and objectives.
- It was created by Benjamin Bloom in the 1950s and revised by a group of educators in the 2000s.
- The framework organizes learning objectives into six hierarchical levels, which are arranged in order of complexity and specificity, with each level building upon the previous one:

1. Remembering:

- This level involves the ability to recall or recognize information, ideas, or concepts.

- Examples include recalling facts, identifying vocabulary words, and recognizing familiar faces.

2. Understanding:

- This level involves the ability to explain the meaning of information, ideas, or concepts.

- Examples include explaining a scientific concept, summarizing a story, and interpreting a graph.

3. Applying:

- This level involves the ability to use or apply information, ideas, or concepts in a new situation or context.
- Examples include using a mathematical formula to solve a problem, applying a new language in a conversation, and using a computer program to design a graphic.

4. Analyzing:

-This level involves the ability to break down or examine information, ideas, or concepts into smaller parts and understand how they relate to each other.

- Examples include identifying cause-and-effects, categorizing data, and comparing and contrasting different perspectives.

5. Evaluating:

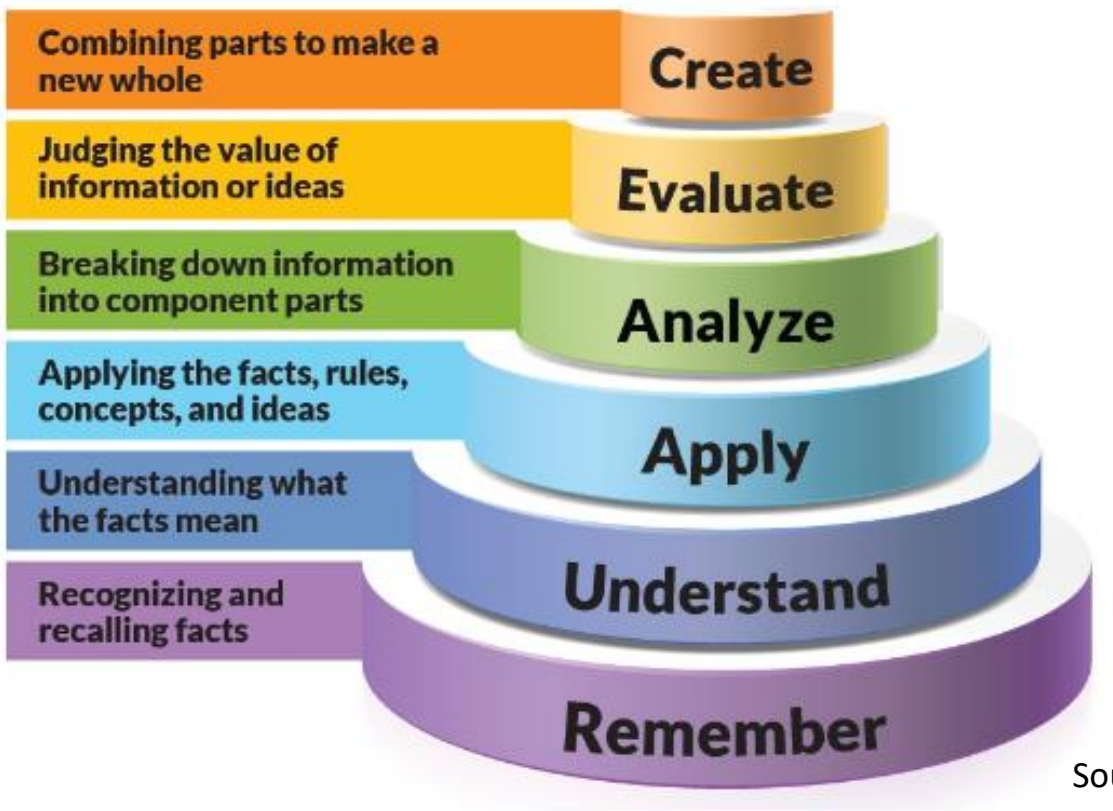
- This level involves the ability to make judgments or evaluations based on criteria and standards.
- Examples include students make judgments about the value of ideas, items, materials, and more.

6. Creating:

- This level involves the ability to generate or create new ideas, products, or solutions.

- Examples include designing a new product, composing a piece of music, and developing a new strategy for a business.

- Overall, Bloom's taxonomy provides a useful framework for educators to design learning activities and assessments that align with specific learning objectives and help students develop higher-order thinking skills.



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Multiple Intelligence Theory

- The concept of multiple intelligences is a theory proposed by Harvard psychologist Howard Gardner in the 1980s
- Gardner first outlined his theory in his 1983 book Frames of Mind: The Theory of Multiple Intelligences, where he suggested that all people have different kinds of "intelligences.
- In order to capture the full range of abilities and talents that people possess, Gardner theorizes that people do not have just an intellectual capacity (ability to think, learn, plan, and execute with discipline), but also, have many kinds of intelligence, including musical, interpersonal, spatial-visual, and linguistic intelligences etc.
- Gardner originally proposed seven intelligences, but later expanded the list to nine

1. Linguistic-Verbal Intelligence

People who are strong in linguistic-verbal intelligence are able to use words well, both when writing and speaking.

-These individuals are typically very good at writing stories, memorizing information, and reading.

- **Strengths**

- Words, language, and writing

- **Characteristics :** People with linguistic-verbal intelligence:

- Remember written and spoken information

- Enjoy reading and writing

- Debate or speeches

- Are able to explain things well

- Use humor when telling stories

- **Potential Career Choices**

- If you're strong in linguistic-verbal intelligence, good career choices for you are: Writer/journalist, Lawyer, Teacher

2. Logical-Mathematical Intelligence

- People who are strong in logical-mathematical intelligence are good at reasoning, recognizing patterns, and logically analyzing problems.
- These individuals tend to think conceptually about numbers, relationships, and patterns.

- **Strengths**

- Analyzing problems and mathematical operations

- **Characteristics :** People with logical-mathematical intelligence:

- Have excellent problem solving skills
- Enjoy thinking about ideas
- Like conducting scientific experiments
- Can solve complex computations

- **Potential Career Choices**

- Scientist, Mathematician, Computer programmer, Engineer, Accountant

3. Visual-Spatial Intelligence

- People who are strong in visual-spatial intelligence are good at visualizing things.
- These individuals are often good with directions as well as maps, charts, videos, and pictures

- **Strengths**

- Visual and spatial judgment

- **Characteristics :** People with logical-mathematical intelligence:

- Read and write for enjoyment
- Are good at putting puzzles together
- Interpret pictures, graphs, and charts well
- Enjoy drawing, painting, and the visual arts
- Recognize patterns easily

- **Potential Career Choices**

- If you're strong in visual-spatial intelligence, good career choices for you are:
- Architect, Artist, Engineer

4. Bodily-kinesthetic intelligence:

-Those who have high bodily-kinesthetic intelligence are said to be good at body movement, performing actions, and physical control.

- People who are strong in this area tend to have excellent hand-eye coordination and dexterity

- **Strengths**

- Physical movement, body control

- **Characteristics :** People with logical-mathematical intelligence:

- Are skilled at dancing and sports

- Enjoy creating things with his or her hands

- Have excellent physical coordination

- Remember by doing, rather than hearing or seeing

- **Potential Career Choices**

- If you're strong in bodily-kinesthetic intelligence, good career choices for you are:

- Craftsperson, Dancer, Builder, Surgeon, Sculptor, Actor

5. Musical intelligence:

- People who have strong musical intelligence are good at thinking in patterns, rhythms, and sounds.

- They have a strong appreciation for music and are often good at musical composition and performance.

- **Strengths**

- Rhythm and music

- **Characteristics :** People with logical-mathematical intelligence:

- Enjoy singing and playing musical instruments

- Recognize musical patterns and tones easily

- Remember songs and melodies

- Have a rich understanding of musical structure, rhythm, and notes

- **Potential Career Choices**

- If you're strong in musical intelligence, good career choices for you are:

- Musician, Composer, Singer, Music teacher

6. Interpersonal intelligence:

- Those who have strong interpersonal intelligence are good at understanding and interacting with other people.
- These individuals are skilled at assessing the emotions, motivations, desires, and intentions of those around them

- **Strengths**

- Understanding and relating to other people

- **Characteristics :** People with logical-mathematical intelligence:

- Communicate well verbally
- Are skilled at nonverbal communication
- See situations from different perspectives
- Create positive relationships with others
- Resolve conflicts in group settings

- **Potential Career Choices**

- If you're strong in interpersonal intelligence, good career choices for you are:
- Psychologist, Philosopher, Counselor, Salesperson, Politician

7. Intrapersonal intelligence:

- Individuals who are strong in intrapersonal intelligence are good at being aware of their own emotional states, feelings, and motivations.
- They tend to enjoy self-reflection and analysis, including daydreaming, exploring relationships with others, and assessing their personal strengths.

- **Strengths**

- Introspection and self-reflection

- **Characteristics :** People with logical-mathematical intelligence:

- Analyze their strengths and weaknesses well
- Enjoy analyzing theories and ideas
- Have excellent self-awareness
- Understand the basis for his or her own motivations and feelings

- **Potential Career Choices**

- If you're strong in intrapersonal intelligence, good career choices for you are:
- Philosopher, Writer, Theorist, Scientist

8. Naturalistic intelligence:

- Naturalistic is the most recent addition to Gardner's theory.
- According to Gardner, individuals who are high in this type of intelligence are more in tune with nature and are often interested in nurturing, exploring the environment, and learning about other species.
- These individuals are said to be highly aware of even subtle changes to their environments

- **Strengths**

- Finding patterns and relationships to nature

- **Characteristics :** People with logical-mathematical intelligence:

- Are interested in subjects such as botany, biology, and zoology
- Categorize and catalog information easily
- Enjoy camping, gardening, hiking, and exploring the outdoors
- Dislikes learning unfamiliar topics that have no connection to nature

- **Potential Career Choices**

- If you're strong in naturalistic intelligence, good career choices for you are:
- Biologist, Conservationist, Gardener, Farmer

9. Existential Intelligence :

- Existential intelligence is the ninth type of intelligence suggested as an addition to Gardner's original theory.
- He described existential intelligence as an ability to delve into deeper questions about life and existence.
- People with this type of intelligence contemplate the "big" questions about topics such as the meaning of life and how actions can serve larger goals.

- **Strengths**

- An ability to see the big picture

- **Characteristics :** People with logical-mathematical intelligence:

- Have a long-term outlook
- Consider how current actions influence future outcomes
- Interest in questions about the meaning of life and death
- Strong interest and concern for others
- The ability to see situations from an outside perspective

- **Potential Career Choices**

- If you have a strong sense of existential intelligence, you might enjoy a career as a:
- Philosopher, Theologian, Pastoral counselor

Number sequence test

- A number sequence test is a type of cognitive assessment that measures a person's ability to identify and continue numerical patterns or sequences.
- These tests typically consist of a series of numbers arranged in a specific order, and the test-taker is asked to identify the pattern or rule that governs the sequence and then continue it by providing the next number(s) in the sequence.
- **Examples:**
- 2, 4, 6, 8, …..

- Ans: 10

- 1, 4, 9, 16, 25, ...

- Ans: 36

- 0, 1, 1, 2, 3, 5, 8, ...

- Ans: 13

- 3, 9, 27, 81, 243, ...

- Ans: 729

Mental Arithmetic

- Mental arithmetic is the ability to perform mathematical calculations in one's head, without the use of external aids such as calculators, pen and paper, or other tools.
- This skill requires a strong foundation in basic mathematical concepts, such as addition, subtraction, multiplication, and division, as well as the ability to perform more complex operations such as square roots, percentages, and fractions.
- Mental arithmetic is an important skill that can be used in many everyday situations, such as calculating the cost of groceries, figuring out the tip on a restaurant bill, or estimating the time required to complete a task.
- It is also an important skill for academic and professional settings, as it can improve problem-solving abilities and enhance the speed and accuracy of calculations.
- There are many techniques and strategies that can be used to improve mental arithmetic skills, including practicing regularly, breaking down calculations into smaller parts, using estimation to check answers, and visualizing numbers and patterns.

- **Square and Square Root**
- A **square** is a number that is obtained by multiplying another number by itself.
- **Example:**
- 5x5 = 25, so 25 is a square; so similarly
- 9x9 = 81
- 12x12 = 144
- 20x20 = 400
- 30x30 = 900
- A **square root** is the inverse operation of squaring a number.
- The square root of a number is a value that, when multiplied by itself, gives the original number.
- Example, the square root of 9 is 3, because 3 x 3 = 9.
- The square root of 25 is 5, because 5 x 5 = 25.
- The square root of 49 is 7, because 7 x 7 = 49
- The square root of 625 is 5, because 25 x 25 = 625

- **LCM and HCF**
- **LCM: Least Common Multiple**
- The LCM of two or more numbers is the smallest positive integer that is divisible by each of the numbers.
- LCM: 6 and 8

  6 = 6,12,18,24,30,36,42,48,54,60

  8 = 8,16,24,32,40,48,56,64,72,80

  CM = 24, 48

  LCM = 24
- Example:

i. 3, 4, 6

Ans: 12

ii. 12, 18

Ans: 36

iii. 40 , 48, 15

Ans: 240

- **Tricks:**

1. 6, 12, 24, 48

Ans: 48

2. 5, 15, 20, 30

Ans: 60

3. 7, 14, 13

Ans: 182

4. 4 , 12 , 17, 24

Ans: 408

- **HCF**
- **HCF: Highest Common Factor**
- The HCF is the greatest number which divides each of the two or more numbers.
- HCF is also called the Greatest Common Measure (GCM) and Greatest Common Divisor(GCD).
- Factor: 12 = 1,2, 3,4,6,12

  24 = 1,2,3,4,6,8,12,24

  CF = 1,2,3,4,6,12

  HCF =12
- Example:

i. 3, 4, 6

Ans: 1

ii. 12, 18

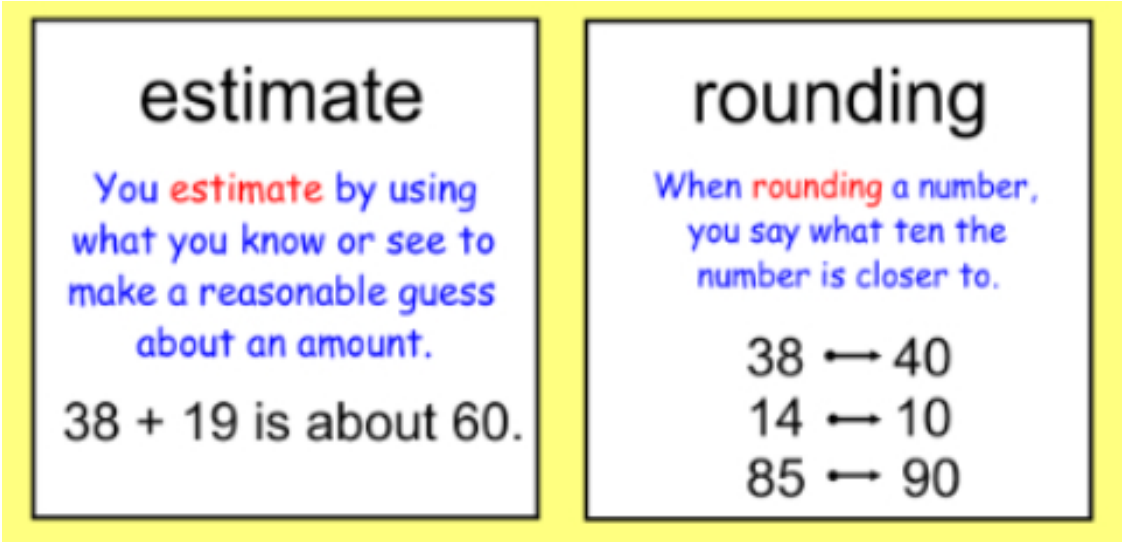
Ans: 6

Speed calculations

- Speed calculation is the ability to perform mathematical calculations quickly and accurately, without the use of external aids such as calculators or pen and paper.
- Speed calculation involves a combination of mental arithmetic skills and strategies, including estimation, breaking down calculations into smaller parts, and using patterns and shortcuts.

- **Some common shortcuts and tricks used in speed calculation include:**

1. Using rounding to estimate results



2. Memorizing multiplication tables and common formulas

3. Simplifying fractions by finding common factors

- Steps to follow:

- find the greatest common factor (GCF) of the numerator and denominator.
- Divide both the numerator and denominator by GCF.
- Example: 12/18 = ?

4. Using the distributive property to simplify calculations

- Example: i. 2* (x+5) = 16

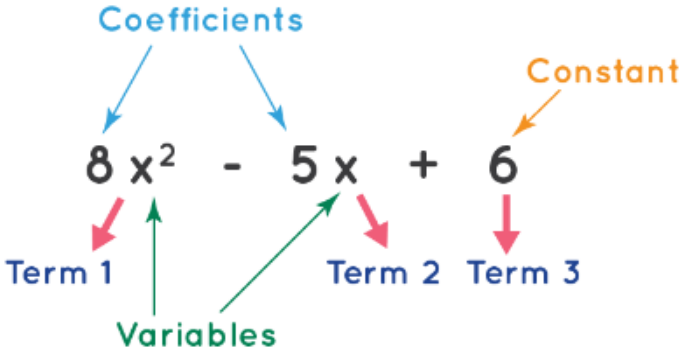
  ii. 5(9.96) = ?

  iii. 7(8.2) = ?

5. Using mental math tricks, such as adding or subtracting from both sides of an equation to simplify it.

- **Reminder Theorem:**

- Reminder : The remaining value after division is called reminder.
- So, it is the process of division.
- Ex: 5/2
- Why we need reminder theorem?



- Because division of simple number or digit is a easier but difficult for polynomials.

Definition:

Reminder Theorem: Let p(x) be any polynomial of degree greater than or equal to one and let (a) be any real number. If p (x) is divided by the liner polynomial (x –a) then the reminder is p(a)

Example:

1. If p(x) = 3x^2 + x -1 is divided by (x-1) find the reminder?
2. if p(x) = x^3+ 2x^2+x+ 5 is divided by (x-2) find the reminder?
2. if p(x) = X^3 + x^2 -3x + 8 is divided by (x-1) find the reminder?

- **Matching:**

- Matching : This type of reasoning questions consists of a definition followed by four choices and have to choose one option that is a perfect example of the given definition or scenario.

- **Example:**

1. A Guarantee is a promise or formal assurance that attests to the quality of a product. It is generally given in writing by the company or verbally by a person selling the product. It says that a product will be repaired, replaced or money will be refunded if it is not of a specified quality. Which of the following situations is the best example of the Guarantee?

A) Tom bought a cell phone with the highest consumer ratings in its category.

B) The salesperson assures Peter that he is buying a camera with a guarantee.

C) Peter buys a used camera from John. John assures that it is a quality product and he will refund the money if the camera does not work properly.

D) The auto body shop is specialized in refurbishing and selling used cars.

Ans: C

2. In the Green Valley school, a four-day suspension occurs where a student is not permitted to attend school for four days for (i) physically assaulting another student, a teacher, or a school employee or (ii) intentionally damaging school's property. Which of the given situations is the best example of a four-day suspension?

A) Mike gets caught cheating on a math test for the third time and is suspended from school.

B) Tom is asked to leave the classroom due to his constant interruptions.

C) Ms. Julie told her class that the students who fail the exam are required to stay after school for extra class.

D) Jacky uses spray paint to write offensive comments on the classroom walls, so he is suspended.

Ans: D

3. A Tiebreaker is an additional contest or duration of play to decide a winner among tied contestants. Which of the following situations is the best example of a Tiebreaker?

A) The referee tosses a coin to decide which team will hit the ball first.

B) At halftime, the score is tied at 30.

C) Tom and Jack each have scored three goals in the game.

D) CSK and MI finished at 150 all out.

Ans: D

4.Erratic behavior is the behavior that is not appropriate, i.e. when an individual acts in a manner that is not regular, consistent or organized. Which of the following situations is the best example of Erratic Behavior?

A) Rocky can't contain his anger whenever the subject of local politics is discussed.

B) The supervisor tells Mike that he is being laid off. Before leaving the supervisor's office, he punches a hole in the window.

C) John has visited the dealer several times, but he still could not decide which car to buy.

D) In the past few months, Tony, who was a model employee for three years, is behaving differentially, i.e., he forgets important meetings, frequently calls in sick, and is verbally abusive to colleagues.

Ans: D

5.It is called reentry when someone leaves his social system for certain duration and then returns to his or her social system. Which of the following situations is the best example of reentry?

A) Peter left his job as he is offered a better paying position in a new restaurant in another city.

B) Tom is spending his junior year of college studying abroad in Italy.

C) Smith is readjusting to civilian life after three years of overseas military service.

D) After several unhappy months, Julie decides to leave the rented apartment.

Ans: C

6. Call it a day is to quit work and go home. Which of the following situations given below is the best example of this idiom?

A) Rocky has perfect form throughout his Inning.

B) After playing together for ten years, the players finally decided to leave the team.

C) All athletes know the point where they have to finish the first lap.

D) The police called in Tony for interrogation.

Ans: B

Selection:

- Selection based on a given condition is selecting the items asked while following the conditions.
- These conditions are important because they tell us how the answers are supposed to be.
- These conditions are statements; you have to keep these statements in mind and then answer them.

Select a team of 5 from two different groups, making sure that 2 people from 1st group and 3 people from 2nd group.

Group 1	Group 2
A, B, C	W, X, Y, Z

Constraints:

1. If A is selected then W has to selected.

$A \Rightarrow W$

$W \Rightarrow A \,/\, \overline{A}$

$\overline{A} \Rightarrow W \,/\, \overline{W}$

$\overline{W} \Rightarrow \overline{A}$

Example:

Among students of group 1 – P, Q, R, S & T and five students of group II – J, K, L, M & N. A team of five students consisting of exactly three students from group - II is to be selected. It is also known that

1. T and K can not select together
2. If S is selected, neither M nor N will be selected
3. Among, P, Q, R and L exactly two persons to be selected
4. If P or R is selected, then none among K, L and M is to be selected.

Group 1	Group 2
P, Q, R, S, T	J, K, L, M, N

Group 1	Group 2
P, Q, R, S, T	J, K, L, M, N

Clues:

Total = 5

Group II = 3 Students

Group I = ?

1. T/K = cannot select together
2. S = $\overline{M}$ / $\overline{N}$ $\Longrightarrow$ M = $\overline{S}$, N = $\overline{S}$
3. P, Q, R, L = select 2
4. P / R = $\overline{K}$, $\overline{L}$, $\overline{M}$

So, as per 4th constraints if .e select P and R gets eliminated because we need three people in group II

From constrain three we automatically selects Q and L

Possible combination:

Group 1	Group 2
Q, S	L, J, k

Group 1	Group 2
Q, T	L, M, N

Group 1	Group 2
Q, S Q, T	L, J, k L,M,N

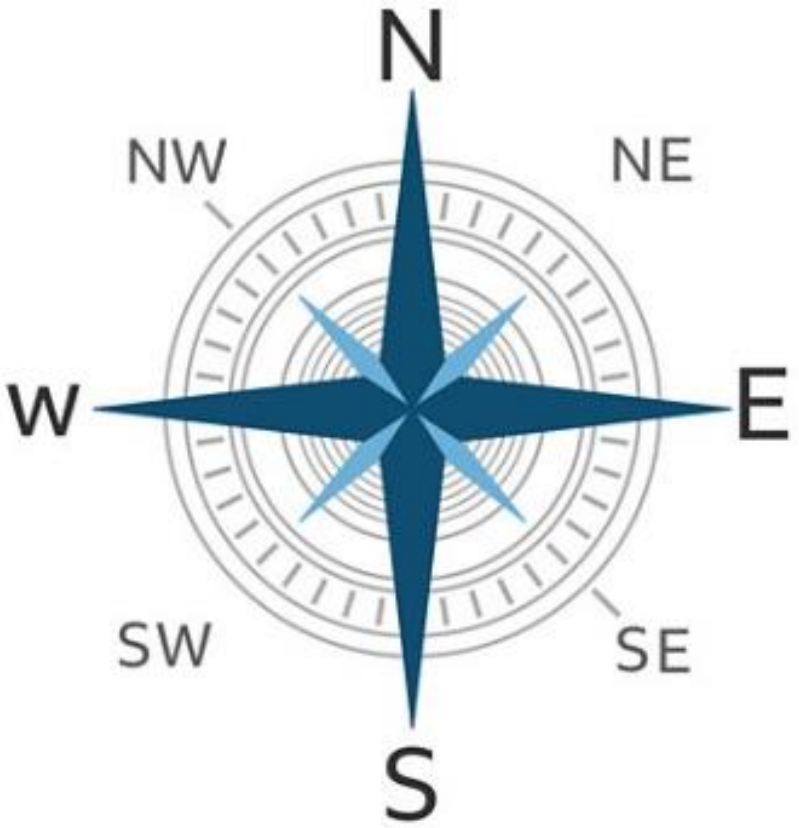
Q. Who among the member of group I will be selected.

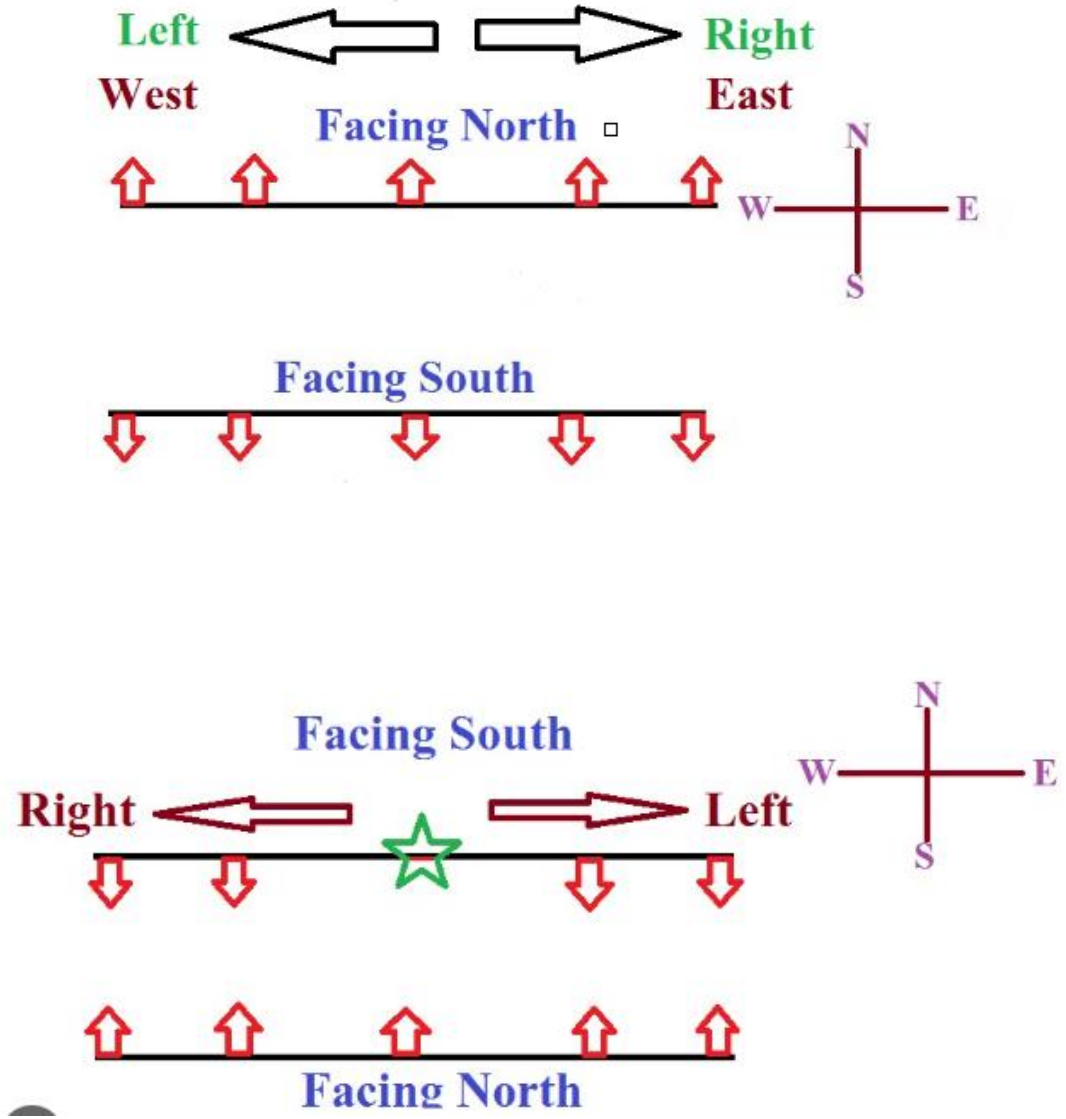
Ans: Q

Arrangement

- In the context of logical reasoning, arrangement refers to the process of organizing a set of elements according to a specific pattern or rule.
- The goal of an arrangement problem is to determine the correct order or arrangement of the elements based on the given conditions or constraints.
- They are , linear, double row, circular, rectangular and complex row arrangements.

- Let’s understand the directions




Left
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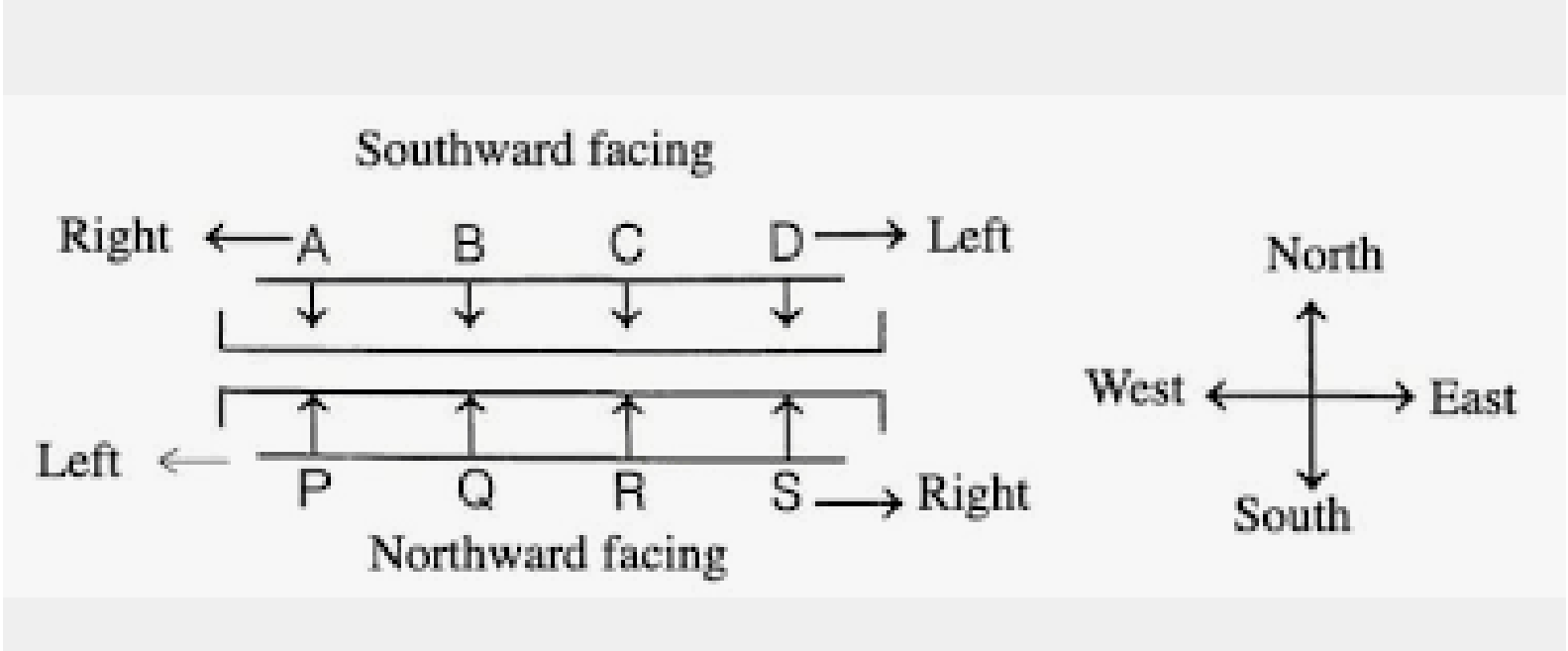
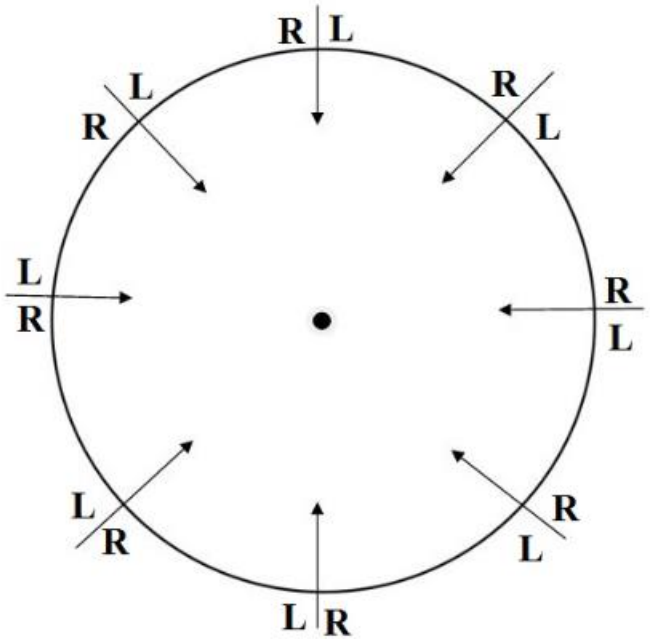
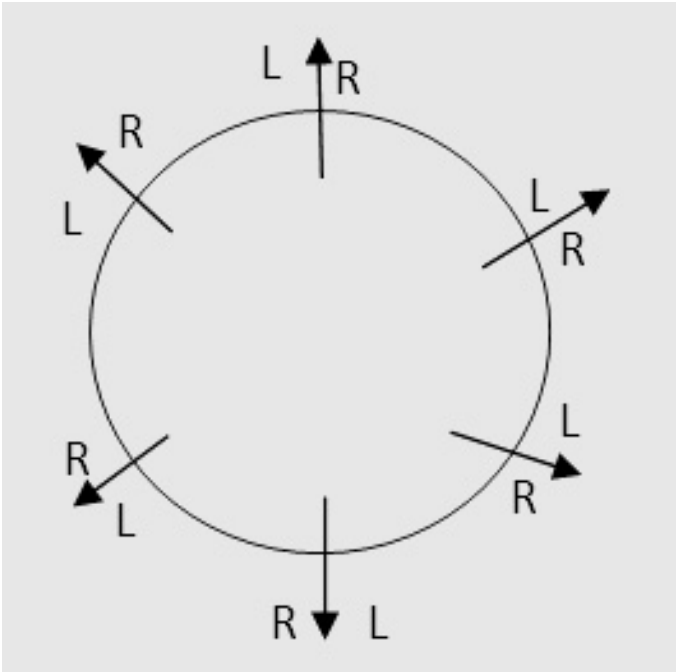


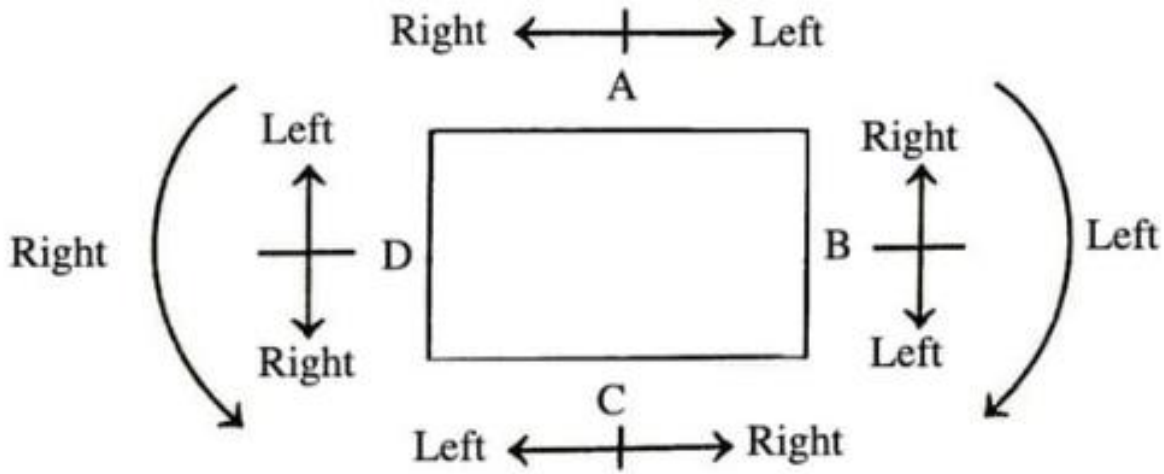
Double Row Arrangement



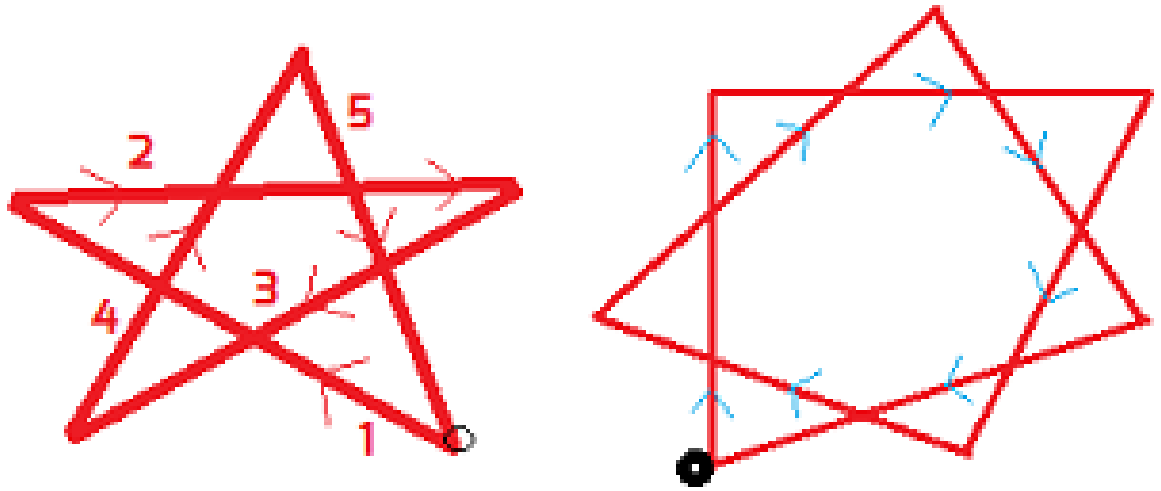
Sitting Arrangement Facing Towards center



Sitting Arrangement Facing opposite to center



Rectangular Arrangement Facing Towards center



Complex Arrangement

Example:

1. There are 5 girls sitting in a row in a college party. P is sitting to the left of M and to the right of O. R is sitting to the right of N but left to the O. Who is sitting in the middle.

1) O
2) R
3) P
4) M

Example:

2. Students A, B, C, D, E, F, G, H, I, J, and K are setting in a row facing towards a teacher. D who is immediate left to F, is second right to C. A is second right to E, who is at the one left end. J is the neighbor of A and B and third to left of G. H is on left of D and third to right of I.

Ans: E, K, A, J, B, I, G, C, H, D, F

1) Who is setting at the middle of the row.

Ans: I

2) Which of the following group of friends setting right of G.

Ans: CHDF

Example:

3. 8 friends P, Q, R, S, T, U, V and W are sitting on a circular table facing towards center. Q is between V and S. W is sitting third left to the Q and second right to the P. R is sitting between P and V. Q and T are not setting Infront of each other.

1) Who is third to the left of S.

Ans: U

Verifications of Truth

- In this type of reasoning questions, a question is followed by four possible answers.
- The alternatives other than the correct answer also seem to have a relationship with the item mentioned in the statement.
- you are required to select the absolute truth which always hold or verifies the truth of statement.
- (In general, absolute truth is whatever is always valid, regardless of parameters or context)
- Example 1 :
- An animal always has…

1.Skin

2.Heart

3.Lungs

4.life

5.Ears

Ans: Life

- Example 2 :
- A race always has…

1.Reward

2.Rivals

3.Spectators

4.Referee

5.Victory

Ans: Rivels

- Example 3 :
- A book always has…

1.Pages

2.Contents

3.Images

4.Chapters

5.Story

Ans: Pages

- Example 4 :
- A factory always has

1.Electricity

2.Water

3.Chimney

4.Files

5.Workers

Ans: Workers

- Example 5:
- A river always has

1) Banks
2) Boats
3) Delta
4) Tributaries
5) Fishes

Ans: Banks

- Example 6:
- A camera always has

1) Lens
2) Memory card
3) Flash
4) Photograph
5) Stand

Ans: Lens

- Example 7:
- A diseases always has

1) Cure
2) Medicine
3) Cause
4) Germs

Ans: Cause

Verbal Aptitude (Synonym, Antonym, Analogy).

Verbal Aptitude is the ability to use the written language and to understand concepts presented through words.

3 Pillars in Verbal Ability

Vocabulary

Question types:
- Synonyms
- Antonyms
- Analogy
- Idioms
- Phrasal Verbs
- Sentence Completion

Grammar

Question types:
- Error-Spotting
- Sentence Improvement
- Sentence Completion
- Choose the correct/ incorrect sentence

Reasoning

Question types:
- Reading Comprehension
- Para-jumbles
- Critical Reasoning

Synonym.

Synonym:

It is a word or phrase that has the same meaning as another word or phrase in the same language.

Example:

1. Good:

fine, excellent, great.

- 2. Hard:

difficult, challenging, tough.

3. afraid:

scared.

4. achieve:

accomplish

Antonym

Antonym:

a word that means the opposite of another word

Example:

1. Good:

Bad, wicked

- 2. Hard:

Easy, soft, light.

3. afraid:

Unafraid, brave, confident

4. achieve:

Miss, fail, lose

Analogy

Analogy:

It is a comparison between two things that shows a way in which they are similar

Example:

1. Tree : Leaf :: Flower: ?

- Petal

2. Like : Love :: Dislike: ?

- Hate

3. Life is like a mountain.

4. Life is a roller coaster with lots of ups and downs

Assignment 2

1. Give an example of a number sequence test question and explain how to solve it.

2. What is Mathematical Reasoning? What are its two major types?

3. What is Bloom's Taxonomy and what are its different levels explain each in detail?

4. What is analytical reasoning? What are the steps involved in it?

5. What is intelligence? List out the aspects of the intelligence and explain any two.

6. What does the term speed calculation mean and what are the shortcuts and tricks used to perform speed calculations?

7. What is the Reminder Theorem? find the reminder's of the below polynomial's by using both the reminder theorem as well as by regular method.

1. If p(x) = 3x^2 + x -1 is divided by (x-1) find the reminder?

2. if p(x) = x^3+ 2x^2+x+ 5 is divided by (x-2) find the reminder?

2. if p(x) = X^3 + x^2 -3x + 8 is divided by (x-1) find the reminder?

8. 8 friends P, Q, R, S, T, U, V and W are sitting on a circular table facing towards center. Q is between V and S. W is sitting third left to the Q and second right to the P. R is sitting between P and V. Q and T are not setting Infront of each other.

1) Who is third to the left of S.

2) Who is second the right of T

DISCLAIMER

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