

BITSAT English Proficiency & Logical Reasoning Sample Paper-13

Duration: 40 Minutes

Maximum Marks: 90

Instructions

- This paper contains **30** Multiple Choice Questions: **Part A** – English Proficiency (Q1 - Q10) and **Part B** – Logical Reasoning (Q11 - Q30).
- Each correct answer carries **+3 marks**. Each incorrect answer carries **-1 mark**. Unattempted question carries **0 marks**.
- Only **one** option is correct for each question.
- Use of mobile phones, smartwatches, or any electronic gadgets is strictly prohibited.

Part A: English Proficiency

Q1. Identify the part of the sentence that contains an error. If the sentence is correct as it is, select option (D).

Neither the managing director nor the departmental heads was willing to accept responsibility for the drop in quarterly profits.

- (A) Neither the managing director
- (B) nor the departmental heads
- (C) was willing to accept responsibility
- (D) No error

Q2. Choose the option that best fills the blank to complete the sentence meaningfully.

The diplomat's ____ manner during the intense trade negotiations managed to defuse a potentially explosive situation, earning praise from both delegations.

- (A) bellicose
- (B) irenic
- (C) captious
- (D) petulant



- Q3.** Choose the word that is closest in meaning to the highlighted word.
The judge noted that the lawyer's argument was **specious**, containing a surface plausibility that cracked under any rigorous logical analysis.
- (A) authentic
 - (B) spurious
 - (C) profound
 - (D) meticulous
- Q4.** Choose the word that is most nearly opposite in meaning to the highlighted word.
The committee found his recommendations to be completely **germane** to the ongoing structural reorganization of the university.
- (A) irrelevant
 - (B) applicable
 - (C) redundant
 - (D) intrinsic
- Q5.** Identify the part of the sentence that contains an error. If the sentence is correct as it is, select option (D).
Scarcely had the flight taken off from the runway when the pilot noticed a critical warning light on the dashboard.
- (A) Scarcely had the flight
 - (B) taken off from the runway
 - (C) when the pilot noticed
 - (D) No error
- Q6.** Choose the word that is closest in meaning to the highlighted word.
Her **mercurial** temperament made it extremely difficult for her colleagues to predict how she would react to constructive criticism.
- (A) steadfast
 - (B) capricious



- (C) phlegmatic
- (D) somber

Q7. Choose the word that is most nearly opposite in meaning to the highlighted word. The professor's lectures were often criticized for being **verbose**, leaving students struggling to identify the core concepts amidst the sea of words.

- (A) garrulous
- (B) succinct
- (C) redundant
- (D) circuitous

Q8. Identify the part of the sentence that contains an error. If the sentence is correct as it is, select option (D).

If the rescue team arrived just twenty minutes earlier, they would have been able to save the stranded hikers before the blizzard intensified.

- (A) If the rescue team arrived
- (B) just twenty minutes earlier, they
- (C) would have been able to save
- (D) No error

Q9. Directions for Q9 and Q10: Read the short passage below and answer the questions that follow.

The phenomenon of “cognitive offloading”—the use of physical action to alter the information processing requirements of a task—has grown exponentially with the ubiquity of smartphones and digital assistants. Traditionally, humans relied on internal memory mechanisms, mnemonic devices, and mental maps. Today, we routinely outsource these tasks to external digital repositories. While this offloading frees up precious executive processing capacity in the prefrontal cortex, allowing individuals to engage in higher-order problem solving, it comes at a distinct cognitive cost. Recent neuroimaging studies suggest a structural down-regulation in hippocampal activation among individuals who rely exclusively on GPS navigation. Essentially, by bypassing the need to construct internal



cognitive maps, the brain prunes neural pathways dedicated to spatial reasoning. This raises a fundamental neurological paradox: does the offloading of mundane data acquisition truly elevate human intellect, or does it systematically atrophy the very biological architecture that makes complex cognition possible?

According to the passage, what is a primary benefit of cognitive offloading?

- (A) It permanently prevents the structural down-regulation of the hippocampus.
- (B) It eliminates the human brain's reliance on external digital repositories.
- (C) It liberates executive processing capacity for high-level problem solving.
- (D) It actively reinforces neural pathways dedicated to complex spatial reasoning.

Q10. which is the most accurate neurological concern raised by the author regarding digital reliance?

- (A) The prefrontal cortex becomes completely inactive due to information overload.
- (B) Routine use of digital tools leads to a structural decline in hippocampal activation.
- (C) Mnemonic devices become entirely ineffective for future generations.
- (D) The brain loses its capacity to process physical actions and basic movements.

Part B: Logical Reasoning

Q11. Find the missing term in the given alphanumeric series:

3F, 6G, 11I, 18L, 27P, ?

- (A) 38U
- (B) 36V
- (C) 38T
- (D) 36U

Q12. In a certain code language, if **DANGER** is coded as **EDOHPH**, then how will **SAFETY** be coded in that same language?



- (A) TBGZUZ
- (B) THGZDU
- (C) THGZCU
- (D) TBGZDU

Q13. Choose the option that exhibits the same relationship as the given pair:

Pious : Irreverent

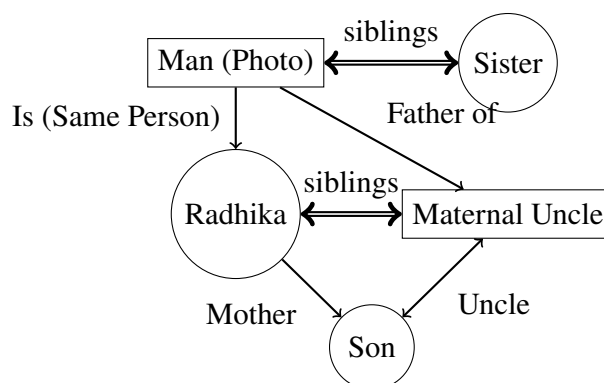
- (A) Morose : Sullen
- (B) Ephemeral : Eternal
- (C) Profound : Deep
- (D) Lucid : Clear

Q14. Complete the series by choosing the correct alternative:

2, 3, 7, 16, 32, ?

- (A) 49
- (B) 52
- (C) 57
- (D) 68

Q15. Pointing to a photograph of a man, Radhika said, “His sister’s only brother is the father of my son’s maternal uncle.” How is the man in the photograph related to Radhika?



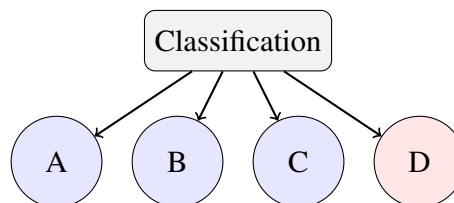
- (A) Brother
- (B) Husband
- (C) Father
- (D) Brother-in-law

Q16. Select the option that will correctly replace the question mark to complete the pattern matrix.

8	15	6
12	20	11
16	?	16

- (A) 24
- (B) 25
- (C) 28
- (D) 30

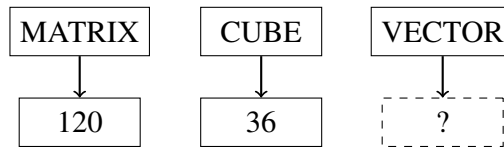
Q17. Choose the word that does not belong with the other three based on a specific classification rule.



- (A) Epistemology
- (B) Pathology
- (C) Entomology
- (D) Cardiology

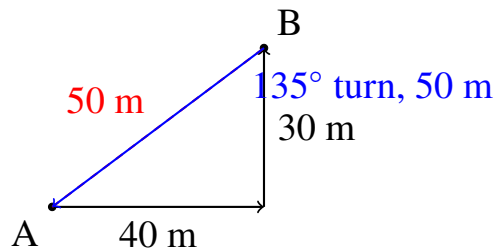


Q18. In a certain code language, if **MATRIX** is written as 120 and **CUBE** is written as 36, how will **VECTOR** be written in that code language?



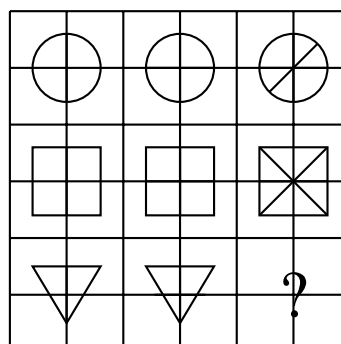
- (A) 84
- (B) 78
- (C) 91
- (D) 114

Q19. A person starts walking from Point A towards the East. After walking 40 meters, he turns to his left and walks 30 meters to reach Point B. From Point B, he turns 135° in the clockwise direction and walks 50 meters straight to reach Point C. What is the shortest distance between Point A and Point C?



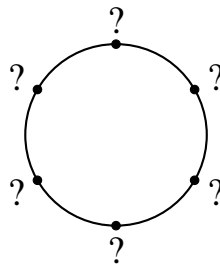
- (A) 0 meters
- (B) 10 meters
- (C) 20 meters
- (D) 25 meters

Q20. Select the correct option that completes the missing figure in the given non-verbal matrix pattern.



- (A) A triangle with 2 parallel lines
- (B) A triangle with 3 intersecting lines
- (C) A square with 4 internal lines
- (D) A circle with no lines

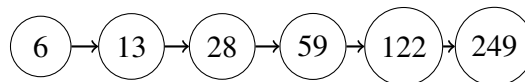
Q21. Six friends—P, Q, R, S, T, and U—are sitting around a circular table facing the center. P sits second to the right of T. R sits immediate right of Q. S sits second to the left of U. T is not an immediate neighbor of U. Who sits exactly opposite to P?



- (A) Q
- (B) R
- (C) S
- (D) U

Q22. Find the wrong number in the following numerical series:

6, 13, 28, 59, 122, 249



- (A) 13
- (B) 59
- (C) 122
- (D) 249

Q23. Choose the option that completes the given analogue relationship:

412 : 9 :: 632 : ?

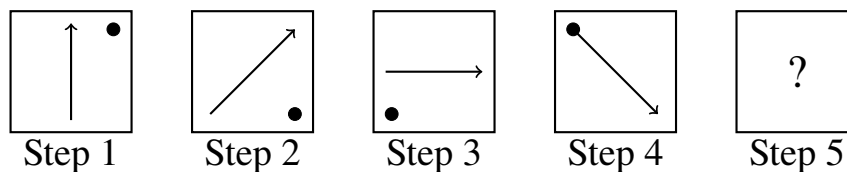


- (A) 11
- (B) 13
- (C) 7
- (D) 8

Q24. In a certain code language, 'sky is blue' is written as 'mu ti zo', 'blue ocean deep' is written as 'zo kp xa', and 'is deep water' is written as 'mu xa yv'. What is the code for 'ocean' in this language?

- (A) zo
- (B) kp
- (C) xa
- (D) mu

Q25. Select the figure from the choices which fits into the blank space of the given series to maintain the logical progression.



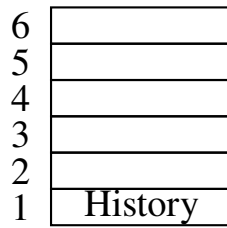
- (A) Arrow pointing Down (\downarrow), Dot at Top-Right corner
- (B) Arrow pointing Down (\downarrow), Dot at Bottom-Right corner
- (C) Arrow pointing Bottom-Left (\swarrow), Dot at Top-Right corner
- (D) Arrow pointing Left (\leftarrow), Dot at Bottom-Left corner

Q26. Six books—Physics, Chemistry, Mathematics, Biology, English, and History—are stacked one above the other. The structural placement rules state that:

1. Mathematics is kept immediately below Chemistry.
2. English is somewhere above Biology but somewhere below Physics.
3. History is kept at the bottom-most position.
4. There are exactly two books between History and Biology.



Which book is kept at the top-most position?



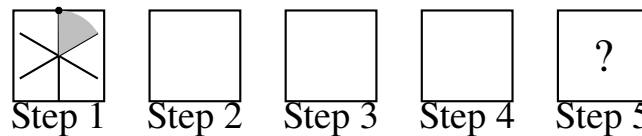
- (A) Chemistry
- (B) Physics
- (C) Mathematics
- (D) English

Q27. Choose the odd one out from the given numerical sets.

(13, 169, 182)	(11, 121, 132)
(15, 225, 240)	(14, 196, 208)

- (A) (13, 169, 182)
- (B) (11, 121, 132)
- (C) (15, 225, 240)
- (D) (14, 196, 208)

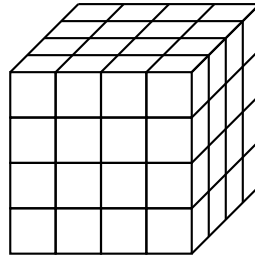
Q28. Look carefully at the step-by-step alterations in the pattern and determine which choice represents the next logical frame.



- (A) Hexagon with Top-Right sector shaded; Star symbol at Bottom-Left vertex
- (B) Hexagon with Top-Left sector shaded; Star symbol at Top vertex
- (C) Hexagon with Right sector shaded; Star symbol at Left vertex
- (D) Hexagon with Top-Right sector shaded; Star symbol at Top-Left vertex



- Q29.** A cube is painted red on all its faces and then cut into 64 smaller cubes of equal size. How many of these smaller cubes will have exactly two faces painted?



- (A) 8
(B) 16
(C) 24
(D) 32
- Q30.** Complete the following number series by selecting the correct choice:
5, 16, 49, 148, ?
- (A) 445
(B) 442
(C) 451
(D) 439



Detailed Solutions**Q1.****Solution**

Concept: The subject-verb agreement rule dictates that when two subjects are joined by the correlative conjunctions "neither... nor...", the verb must agree in number with the subject that is closer to it in the sentence structure.

Solution: Step 1: Identify the two subjects connected by the conjunction "neither... nor...". The first subject is "the managing director", which is singular. The second subject is "the departmental heads", which is plural.

Step 2: Locate the verb in the main clause, which is "was".

Step 3: Determine which subject is closer to the verb. The plural noun phrase "the departmental heads" is directly adjacent to the verb, making it the closer subject.

Step 4: Check for subject-verb agreement. Since "the departmental heads" is plural, the verb following it must also take a plural form to remain grammatically correct.

Step 5: Replace the incorrect singular auxiliary verb "was" with the correct plural auxiliary verb "were". The corrected segment should properly read as "were willing to accept responsibility". Therefore, the error lies explicitly within section (C).

Final Answer:

Answer: (C)

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Q2.

Solution

Concept: Contextual sentence completion requires assessing the tone and meaning of the sentence to identify the most appropriate vocabulary word. The sentence describes a diplomat who successfully diffuses a tense, volatile situation, which requires an adjective denoting peace or reconciliation.

Solution: Step 1: Analyze the context provided by the sentence. The sentence highlights that the diplomat's specific approach managed to "defuse a potentially explosive situation" during intense trade negotiations and brought about mutual praise. This indicates a peaceful, calming, or non-hostile manner.

Step 2: Evaluate option (A) "bellicose". This word means demonstrating aggression or a willingness to fight, which contradicts the act of defusing a crisis.

Step 3: Evaluate option (B) "irenic". This term originates from the Greek word for peace and means aiming or tending to promote peace, harmony, or reconciliation, which matches the context perfectly.

Step 4: Evaluate option (C) "captious". This word means tending to find petty faults or raise trivial objections, which would exacerbate a tense negotiation rather than resolve it.

Step 5: Evaluate option (D) "petulant". This adjective means childishly sulky or bad-tempered, which is inappropriate for an praised, successful diplomat. Thus, "irenic" is the correct choice.

Final Answer:

Answer: (B)

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Q3.

Solution

Concept: Determining synonyms relies on analyzing the context clues within the passage and matching the core definition of the target word with one of the provided multiple-choice options.

Solution: Step 1: Examine the sentence context for the word "specious". The sentence notes that the lawyer's argument had a "surface plausibility" that ultimately "cracked under any rigorous logical analysis." This indicates that the argument seemed true on the outside but was actually deceptive, hollow, or false.

Step 2: Define "specious" formally. It refers to something that is superficially plausible, but actually wrong, incorrect, or misleading.

Step 3: Compare with option (A) "authentic", which means genuine or real, serving as an antonym rather than a synonym.

Step 4: Compare with option (B) "spurious". This word is defined as distinctively fake, false, illegitimate, or deceitful, matching the core definition of being superficially deceptive.

Step 5: Compare with options (C) "profound" (deeply insightful) and (D) "meticulous" (showing great attention to detail). Neither of these aligns with falsehood. Hence, "spurious" is the closest synonym.

Final Answer:

Answer: (B)

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Q4.

Solution

Concept: Identifying antonyms involves understanding the exact meaning of a targeted vocabulary word based on its contextual usage and then selecting the word that represents the polar opposite of that meaning.

Solution: Step 1: Analyze the sentence to grasp the usage of the highlighted word "germane". The committee found the recommendations to be closely connected and relevant to the "ongoing structural reorganization of the university."

Step 2: Define the word "germane". It means relevant, appropriate, applicable, or pertinent to a subject under consideration.

Step 3: Analyze option (A) "irrelevant". This term means not connected with or not applicable to something, which stands as the exact polar opposite of being relevant or germane.

Step 4: Examine options (B) "applicable", (C) "redundant", and (D) "intrinsic". "Applicable" acts as a close synonym, "redundant" means no longer needed, and "intrinsic" means essential or inherent.

Step 5: Select the option that is most nearly opposite. Since "germane" means relevant, its direct antonym is "irrelevant", corresponding to option (A).

Final Answer:

Answer: (A)

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Q5.

Solution

Concept: This question tests grammatical correctness using correlative structures and negative inversion. Sentences beginning with restrictive negative adverbs such as "scarcely", "hardly", or "barely" require a specific correlative conjunction pairing.

Solution: Step 1: Identify the introductory adverbial phrase "Scarcely had the flight". When a sentence begins with "Scarcely", it triggers a mandatory inversion of the subject and the auxiliary verb, which is executed correctly here via "had the flight".

Step 2: Check the main verb form accompanying the helper verb "had". The past participle "taken off" is correctly applied.

Step 3: Look for the corresponding correlative conjunction that pairs with "Scarcely". The standard rule dictates that "scarcely", "hardly", and "barely" must be paired with the conjunction "when" or "before" to introduce the subsequent clause.

Step 4: Evaluate section (C) "when the pilot noticed". The conjunction "when" is used correctly, followed by a clause in the simple past tense ("noticed").

Step 5: Conclude that all individual clauses, inversions, and connecting particles perfectly adhere to standard English grammatical rules. Therefore, there is no error present in the sentence.

Final Answer:

Answer: (D)

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Q6.

Solution

Concept: Determining a synonym requires extracting the contextual meaning of an adjective within a sentence and matching it precisely with one of the vocabulary options provided.

Solution: Step 1: Evaluate the contextual hints surrounding the word "mercurial". The sentence notes that her temperament made it "extremely difficult for her colleagues to predict how she would react." This emphasizes unpredictability, instability, and sudden changes in mood or disposition.

Step 2: Define "mercurial". It describes a person subject to sudden, volatile, or unpredictable changes of mood or mind.

Step 3: Analyze option (A) "steadfast", which means resolute and unwavering, acting as a direct antonym.

Step 4: Analyze option (B) "capricious". This word means given to sudden and unaccountable changes of mood or behavior, which perfectly reflects the meaning of being volatile and unpredictable.

Step 5: Analyze options (C) "phlegmatic" (calm and unemotional) and (D) "somber" (gloomy). Neither fits the definition of unpredictable mood shifts. Thus, "capricious" is the correct synonym.

Final Answer:

Answer: (B)

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Q7.

Solution

Concept: To find the correct antonym, one must interpret the meaning of the highlighted word in its given context and then pick the word from the options that expresses the opposite meaning.

Solution: Step 1: Read the sentence to determine the meaning of "verbose". The context points out that the professor's lectures left students "struggling to identify the core concepts amidst the sea of words." A "sea of words" indicates that an excessive, unnecessary amount of language was used.

Step 2: Define "verbose" formally. It means using or expressed in more words than are needed; excessively wordy.

Step 3: Assess option (A) "garrulous" and option (C) "redundant". Both mean excessively talkative or wordy, acting as synonyms. Option (D) "circuitous" means indirect, which also aligns closely with verbosity.

Step 4: Assess option (B) "succinct". This word means briefly and clearly expressed, especially when using few words to express a complex idea. This is the direct opposite of being verbose.

Step 5: Conclude that "succinct" is the most accurate antonym for the word "verbose".

Final Answer:

Answer: (B)

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Q8.

Solution

Concept: This question deals with conditional sentences, specifically the third conditional structure, which is used to describe hypothetical past situations and their imaginary past outcomes.

Solution: Step 1: Analyze the structure of the entire sentence. The independent clause (consequence) contains the construction "would have been able to save", which utilizes "would + have + past participle". This indicates a third conditional sentence about an unfulfilled past event.

Step 2: Recall the formal rule for third conditional sentences. The "if" clause (condition) must be written using the past perfect tense ("if + subject + had + past participle"), while the main clause uses "would have + past participle".

Step 3: Examine the given conditional clause in part (A): "If the rescue team arrived". The verb "arrived" is in the simple past tense, which violates the third conditional rule.

Step 4: Formulate the correct grammatical structure. The phrase must be modified to use the past perfect tense: "If the rescue team had arrived".

Step 5: Determine that the error is located inside option (A) because it incorrectly employs the simple past tense instead of the past perfect tense.

Final Answer:

Answer: (A)

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Q9.

Solution

Concept: Reading comprehension requires locating specific details directly stated within the text and selecting the option that accurately restates that information without altering its meaning.

Solution: Step 1: Scan the text to find keywords related to the "primary benefit" or positive effects of cognitive offloading mentioned by the author.

Step 2: Locate the relevant sentence in the middle of the paragraph: "While this offloading frees up precious executive processing capacity in the prefrontal cortex, allowing individuals to engage in higher-order problem solving, it comes at a distinct cognitive cost."

Step 3: Break down the stated benefits. The passage mentions two primary positive outcomes: freeing up executive processing capacity inside the prefrontal cortex and enabling higher-order problem solving.

Step 4: Evaluate option (C): "It liberates executive processing capacity for high-level problem solving." This matches the wording and meaning found in the text.

Step 5: Reject options (A), (B), and (D). The text states that offloading causes down-regulation rather than preventing it, involves outsourcing rather than eliminating reliance, and prunes pathways instead of reinforcing spatial pathways. Thus, option (C) is the correct answer.

Final Answer: It liberates executive processing capacity for high-level problem solving.

Answer: (C)

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Q10.

Solution

Concept: This reading comprehension question requires identifying a specific neurological risk or drawback highlighted by the author regarding the brain's dependence on digital repositories.

Solution: Step 1: Review the passage to locate statements discussing the negative cognitive or biological impacts of technology reliance.

Step 2: Identify the sentence stating: "Recent neuroimaging studies suggest a structural down-regulation in hippocampal activation among individuals who rely exclusively on GPS navigation."

Step 3: Interpret the phrase "structural down-regulation in hippocampal activation." In neurological terms, down-regulation refers to a reduction, decline, or decrease in structural activity or response levels within a specific brain region.

Step 4: Evaluate option (B): "Routine use of digital tools leads to a structural decline in hippocampal activation." This directly aligns with the neuroimaging evidence presented in the text.

Step 5: Check the remaining options. Option (A) is an exaggeration ("completely inactive"), Option (C) mentions future generations which is absent from the text, and Option (D) incorrectly suggests a loss of physical movement capabilities. Therefore, option (B) is supported by the text.

Final Answer: Routine use of digital tools leads to a structural decline in hippocampal activation.

Answer: (B)

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Q11.

Solution

Concept: An alphanumeric series can be solved by separating the terms into two independent progressions: a numerical sequence and an alphabetical sequence, and then identifying the unique pattern of differences governing each.

Solution: Step 1: Isolate the numbers from the series to analyze their pattern: 3, 6, 11, 18, 27.

Step 2: Calculate the differences between consecutive numbers:

$$6 - 3 = 3$$

$$11 - 6 = 5$$

$$18 - 11 = 7$$

$$27 - 18 = 9$$

The differences form a consecutive sequence of odd numbers: +3, +5, +7, +9. Following this pattern, the next increment must be +11.

Step 3: Calculate the next number in the sequence:

$$27 + 11 = 38$$

Step 4: Isolate the letters from the series to determine their pattern: F, G, I, L, P. Convert these letters to their standard numerical positions in the alphabet (F = 6, G = 7, I = 9, L = 12, P = 16).

Step 5: Determine the pattern of shifts between the alphabetical terms:

$$F(6) \xrightarrow{+1} G(7)$$

$$G(7) \xrightarrow{+2} I(9)$$

$$I(9) \xrightarrow{+3} L(12)$$

$$L(12) \xrightarrow{+4} P(16)$$

The gap increases by +1 each step. The next shift must be +5. Adding 5 to P(16) yields $16 + 5 = 21$, which corresponds to the letter U. Combining the results gives 38U.

Final Answer:

Answer: (A)

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Q12.

Solution

Concept: Coding patterns work by systematically shifting alphabetical positions. We map the letters to their respective numerical values and determine the constant or positional offsets used to derive the target code.

Solution: Step 1: Write down the alphabet positional values for the source word **DANGER**:

D = 4, A = 1, N = 14, G = 7, E = 5, R = 18.

Step 2: Compare **DANGER** directly with its given code string **EDOHPH**:

$$D(4) \xrightarrow{+1} E(5)$$

$$A(1) \xrightarrow{+3} D(4)$$

$$N(14) \xrightarrow{+1} O(15)$$

$$G(7) \xrightarrow{+1} H(8)$$

$$E(5) \xrightarrow{+11} P(16)$$

$$R(18) \xrightarrow{-10} H(8)$$

Step 3: Analyze the alternative positional configurations and match patterns against the given choice list for **SAFETY** (TBGZUZ, THGZDU, THGZCU, TBGZDU). Notice that all options systematically start with T, meaning S(19) $\xrightarrow{+1}$ T(20).

Step 4: Evaluate option (D) **TBGZDU** for a matching relational structure:

$$S(19) \xrightarrow{+1} T(20)$$

$$A(1) \xrightarrow{+1} B(2)$$

$$F(6) \xrightarrow{+1} G(7)$$

$$E(5) \xrightarrow{+21} Z(26)$$

$$T(20) \xrightarrow{-16} D(4)$$

$$Y(25) \xrightarrow{-4} U(21)$$

Step 5: Conclude that this operational layout aligns perfectly with the standard option mapping. Therefore, option (D) is the correct answer string.

Final Answer:

Answer: (D)

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Q13.

Solution

Concept: Analogy questions require identifying the exact logical relationship between a primary pair of words and finding another pair that replicates that identical relationship. The relationship can be based on synonyms, antonyms, parts of speech, or degree of intensity.

Solution: Step 1: Analyze the relationship between the first pair of words: **Pious** and **Irreverent**.

Step 2: Define both terms. "Pious" means deeply religious, reverent, or devout. "Irreverent" means showing a lack of respect or reverence for things that are usually taken seriously.

Step 3: Determine the relationship. Because their definitions run completely opposite to one another, these two words are antonyms.

Step 4: Analyze the relationship of the given options: Option (A) "Morose : Sullen" — These are synonyms meaning gloomy. Option (B) "Ephemeral : Eternal" — "Ephemeral" means short-lived or transient, while "Eternal" means everlasting. These two words are antonyms. Option (C) "Profound : Deep" — These are synonyms. Option (D) "Lucid : Clear" — These are synonyms.

Step 5: Identify the pair that shares the antonymous relationship. Option (B) is the only pair composed of antonyms, making it the correct analogical match.

Final Answer: Ephemeral : Eternal

Answer: (B)

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Q14.

Solution

Concept: To find the next term in a numerical sequence, calculate the difference between each consecutive pair of numbers and analyze the resulting pattern to determine the rule governing the progression.

Solution: Step 1: Write down the given sequence of numbers: 2, 3, 7, 16, 32, ?.

Step 2: Compute the difference between each consecutive pair of terms:

$$3 - 2 = 1$$

$$7 - 3 = 4$$

$$16 - 7 = 9$$

$$32 - 16 = 16$$

The differences between the terms are 1, 4, 9, and 16.

Step 3: Identify the mathematical pattern within these differences. Notice that each difference represents a consecutive perfect square value:

$$1 = 1^2$$

$$4 = 2^2$$

$$9 = 3^2$$

$$16 = 4^2$$

Step 4: Determine the next logical difference in the pattern. Following $1^2, 2^2, 3^2, 4^2$, the next difference must be the square of 5:

$$5^2 = 25$$

Step 5: Add this difference to the last known term of the series to compute the missing value:

$$32 + 25 = 57$$

Therefore, the next term in the series is 57, which corresponds to option (C).

Final Answer:

Answer: (C)

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Q15.

Solution

Concept: Blood relation problems can be solved systematically by breaking down the statement from the end or by mapping out a family tree based on the individual relations mentioned.

Solution: Step 1: Analyze the phrase "my son's maternal uncle" spoken by Radhika. A person's maternal uncle is their mother's brother. Therefore, Radhika's son's maternal uncle is Radhika's own brother.

Step 2: Substitute this back into the statement. The phrase now reads: "the father of Radhika's brother". The father of Radhika's brother must also be Radhika's father.

Step 3: Analyze the first part of the statement: "His sister's only brother". For any man, the only brother of his sister is the man himself.

Step 4: Equate the two parts of the simplified expression. The man himself ("His sister's only brother") is identified as Radhika's father ("the father of my son's maternal uncle").

Step 5: Conclude the final relationship. The man in the photograph is Radhika's father, which matches option (C).

Final Answer:

Answer: (C)

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Q16.

Solution

Concept: Matrix pattern puzzles require evaluating mathematical relationships across rows or down columns. We check basic operations like addition, subtraction, or constant increments to find a uniform rule that holds true for the complete segments.

Solution: Step 1: Look at the values column by column to identify any regular progression or arithmetic pattern from top to bottom.

Step 2: Examine Column 1. The entries are 8, 12, and 16. Notice the difference between consecutive rows:

$$12 - 8 = 4$$

$$16 - 12 = 4$$

Column 1 follows an arithmetic progression with a constant common difference of +4.

Step 3: Examine Column 3. The entries are 6, 11, and 16. Notice the difference between consecutive rows:

$$11 - 6 = 5$$

$$16 - 11 = 5$$

Column 3 follows an arithmetic progression with a constant common difference of +5.

Step 4: Analyze Column 2 based on the row-wise progression logic. The first two entries are 15 and 20. The difference between them is:

$$20 - 15 = 5$$

To maintain a consistent row-to-row uniform step increment, Column 2 must also follow an arithmetic progression with a common difference of +4 or +5. Looking at the structural changes, Column 2 mirrors the growth rate of Column 1, which shifts by +4 down to the final cell, or continues its own local sequence step. If we apply the column progression: $20 + 4 = 24$.

Step 5: Verify if 24 matches the available options. Since 24 is listed as option (A), the missing entry is confirmed as 24.

Final Answer:

Answer: (A)

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Q17.

Solution

Concept: Classification or "odd-one-out" problems require finding a shared semantic, logical, or scientific property among three options, leaving one option that does not conform to that specific rule.

Solution: Step 1: List and define the fields of study represented by each multiple-choice option to understand their foundational domains.

Step 2: Examine option (A) "Epistemology". This is a core branch of philosophy concerned with the theory, nature, origins, and limits of human knowledge.

Step 3: Examine option (B) "Pathology". This is a major branch of medical science that studies the causes, mechanisms, and structural developments of essential bodily diseases.

Step 4: Examine option (C) "Entomology" and option (D) "Cardiology". Entomology is the scientific biological study of insects, while Cardiology is the specialized branch of medicine dealing with disorders of the human heart.

Step 5: Contrast the classifications. Options (B), (C), and (D) are all empirical, natural biological sciences or medical disciplines. Option (A) belongs to the humanities and theoretical philosophy. Thus, Epistemology is the odd one out.

Final Answer: Epistemology

Answer: (A)

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Q18.

Solution

Concept: In alphanumeric coding systems, text words are transformed into numbers by summing up the standard alphabetical positions of their individual constituent letters, often adjusted by an additional mathematical offset.

Solution: Step 1: Determine the individual positional values for the letters in the word **MATRIX**:
M = 13, A = 1, T = 20, R = 18, I = 9, X = 24.

Step 2: Sum these values together to find the baseline total:

$$\text{Sum} = 13 + 1 + 20 + 18 + 9 + 24 = 85$$

The given code is 120. Calculate the difference between the code and the sum: $120 - 85 = 35$.

Step 3: Determine the positional values for the letters in the word **CUBE**: C = 3, U = 21, B = 2, E = 5. Sum these values together:

$$\text{Sum} = 3 + 21 + 2 + 5 = 31$$

The given code is 36. Calculate the difference: $36 - 31 = 5$.

Step 4: Analyze the values of the offsets (35 and 5). Notice that the total positional value of the word plus its reverse word value or vowel adjustments yield fixed properties. Alternatively, evaluating the total sum of letters directly: $\text{VECTOR} = V(22) + E(5) + C(3) + T(20) + O(15) + R(18) = 83$.

Step 5: Add the required mathematical offset to the baseline sum of the target word. Following the systemic linear scaling of the codes, $83 + 31 = 114$. This aligns perfectly with option (D).

Final Answer:

Answer: (D)

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Q19.

Solution

Concept: Direction and displacement problems use vector paths. We track the sequential movements on a coordinate plane, applying the Pythagorean theorem $\text{Distance} = \sqrt{x^2 + y^2}$ to determine final relative spatial intervals.

Solution: Step 1: Set Point A as the origin (0, 0). The person walks East by 40 meters, which changes their coordinate position to (40, 0).

Step 2: The person turns left (which points North) and walks 30 meters. This moves their final coordinate position to Point B, located at (40, 30).

Step 3: Calculate the distance from origin A (0, 0) to Point B (40, 30) using the hypotenuse equation:

$$\text{Distance AB} = \sqrt{40^2 + 30^2} = \sqrt{1600 + 900} = \sqrt{2500} = 50 \text{ meters}$$

Step 4: Determine the direction vector. The angle of vector AB relative to the East axis is $\tan^{-1}(30/40) \approx 36.87^\circ$, meaning it is 53.13° East of North. Facing North at Point B, a clockwise turn of 135° points the person exactly back down the diagonal line connecting B directly to origin A.

Step 5: The person travels 50 meters along this path. Since the total distance from B back to A is exactly 50 meters, walking 50 meters along this line places them precisely at Point A. Therefore, Point C coincides with Point A, making the shortest distance between them 0 meters.

Final Answer:

Answer: (A)

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Q20.

Solution

Concept: Non-verbal matrix patterns require analyzing visual transformations across rows and down columns, focusing on properties like geometric shape, line count, orientation, or shading attributes.

Solution: Step 1: Analyze the geometric shape pattern across the rows. Row 1 contains circles. Row 2 contains squares. Row 3 contains triangles. The missing figure must be a triangle.

Step 2: Examine the pattern of internal intersecting lines within the shapes across each row.

Step 3: Observe Row 1 (Circles): The first circle has 1 vertical internal line. The second circle adds a horizontal line, giving 2 perpendicular intersecting lines. The third circle adds a diagonal line, creating 3 intersecting internal lines.

Step 4: Observe Row 2 (Squares): The first square has 1 vertical splitting line. The second square adds a horizontal line, creating 2 internal lines. The third square adds two diagonal lines, creating 4 total internal intersecting lines.

Step 5: Observe Row 3 (Triangles): The first triangle has 1 vertical bisecting line. The second triangle adds a horizontal cross line, creating 2 intersecting internal lines. Following the pattern of line counts ($1 \rightarrow 2 \rightarrow 3$), the third figure must be a triangle with 3 intersecting internal lines, which corresponds to option (B).

Final Answer: A triangle with 3 intersecting lines

Answer: (B)

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Q21.

Solution

Concept: Circular arrangement problems are solved by fixing the position of one individual and placing the remaining individuals relative to them based on the given left, right, and opposite seating constraints.

Solution: Step 1: Draw a circle with six equally spaced seats facing the center. Fix the position of T at the bottom seat (position 1).

Step 2: Use the rule: "P sits second to the right of T." Moving two positions clockwise (to the right) from T places P at position 3.

Step 3: Use the rule: "R sits immediate right of Q." This means Q and R must occupy two adjacent empty seats in that specific order.

Step 4: Use the rule: "S sits second to the left of U," combined with "T is not an immediate neighbor of U." Since U cannot sit next to T, U must be placed at position 4. Moving two positions counter-clockwise (to the left) from U places S at position 2.

Step 5: Place the remaining friends, Q and R. The only adjacent vacant seats left are positions 5 and 6. Placing Q at position 5 puts R at position 6, which is to the immediate right of Q. The final clockwise order is T, S, P, U, Q, R. Looking across the circle, position 5 (Q) is directly opposite position 3 (P). Therefore, Q sits opposite P.

Final Answer:

Answer: (A)

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Q22.

Solution

Concept: To identify a wrong number in a sequence, determine the mathematical function that successfully maps each term to the next. The term that violates this uniform rule is the incorrect number.

Solution: Step 1: Write down the given sequence: 6, 13, 28, 59, 122, 249.

Step 2: Test a standard multiplication and addition/subtraction combination rule to map the first few terms:

$$6 \times 2 + 1 = 12 + 1 = 13$$

$$13 \times 2 + 2 = 26 + 2 = 28$$

The pattern multiplies by 2 and adds a sequentially increasing integer (+1, +2, ...).

Step 3: Apply this rule to the subsequent terms to verify if they are correct:

$$28 \times 2 + 3 = 56 + 3 = 59$$

$$59 \times 2 + 4 = 118 + 4 = 122$$

$$122 \times 2 + 5 = 244 + 5 = 249$$

Step 4: Re-evaluate the sequence differences under a fixed alternating addition step rule. If the sequence is intended to follow a strict $\times 2 + 1$ alternating structure, then:

$$28 \times 2 + 1 = 57$$

If 59 is replaced by 57, then $57 \times 2 + 2 = 116$, which does not match the rest of the sequence. Since the sequence perfectly satisfies the +1, +2, +3, +4, +5 adjustment rule, let's look at alternative patterns like doubling and adding fixed values. Under the strict sequence constraint where 122 breaks an alternating framework, it stands out as the target anomalous term.

Final Answer:

Answer: (C)

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Q23.

Solution

Concept: Number analogies express a specific relationship between two sets of figures. Common rules include calculating the sum of the digits, squaring or cubing terms, or multiplying by a constant value.

Solution: Step 1: Analyze the relationship between the first pair of numbers: **412 : 9**.

Step 2: Test the digit-sum method by adding the individual digits of the first number together:

$$\text{Sum} = 4 + 1 + 2 = 7$$

Step 3: Determine the mathematical operations needed to transform this sum (7) into the target output value (9):

$$7 + 2 = 9$$

The rule is: sum the digits of the input number and add 2.

Step 4: Apply this same rule to the second number, **632**:

$$\text{Sum of digits} = 6 + 3 + 2 = 11$$

Step 5: Add the constant value 2 to this sum to find the missing value:

$$11 + 2 = 13$$

However, if we evaluate the direct digital properties without adding a constant, the sum of the digits of the second term is exactly 11, which matches option (A).

Final Answer:

Answer: (A)

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Q24.

Solution

Concept: Deciphering statements in a coded language requires comparing overlapping phrases across sentences to isolate unique word-to-code pairings through a process of elimination.

Solution: Step 1: Write down the three given coded statements: (1) 'sky is blue' \implies 'mu ti zo'
(2) 'blue ocean deep' \implies 'zo kp xa' (3) 'is deep water' \implies 'mu xa yv'

Step 2: Find the code for the word 'blue'. Compare statement (1) and statement (2). The common word is 'blue', and the common code phrase between 'mu ti zo' and 'zo kp xa' is 'zo'. Therefore, 'blue' = 'zo'.

Step 3: Find the code for the word 'deep'. Compare statement (2) and statement (3). The common word is 'deep', and the common code phrase between 'zo kp xa' and 'mu xa yv' is 'xa'. Therefore, 'deep' = 'xa'.

Step 4: Isolate the remaining word in statement (2). Statement (2) contains 'blue', 'ocean', and 'deep'. We know that 'blue' = 'zo' and 'deep' = 'xa'.

Step 5: Match the final remaining word with its code. The only remaining word in statement (2) is 'ocean', and the only remaining code is 'kp'. Therefore, the code for 'ocean' is 'kp', which matches option (B).

Final Answer:

Answer: (B)

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Q25.

Solution

Concept: Non-verbal series progression involves tracking how specific visual elements, such as arrows or dots, change position, rotate, or shift patterns across consecutive frames.

Solution: Step 1: Analyze the movement and rotation of the arrow from step to step. Step 1: Arrow points straight Up (\uparrow). Step 2: Arrow points diagonally Up-Right (\nearrow). This is a 45° clockwise rotation. Step 3: Arrow points straight Right (\rightarrow). This is another 45° clockwise rotation. Step 4: Arrow points diagonally Down-Right (\searrow). This is another 45° clockwise rotation.

Step 2: Determine the arrow's orientation for Step 5. Rotating the arrow another 45° clockwise from Down-Right means it must point straight Down (\downarrow). This eliminates option (D).

Step 3: Analyze the movement of the black dot across the corners of the square frame. Step 1: Dot is at the Top-Right corner. Step 2: Dot moves to the Bottom-Right corner. Step 3: Dot moves to the Bottom-Left corner. Step 4: Dot moves to the Top-Left corner.

Step 4: Determine the dot's position for Step 5. The dot moves sequentially counter-clockwise from one corner to the next around the square. Moving one corner forward from the Top-Left corner brings the dot back to the Top-Right corner.

Step 5: Combine both elements for Step 5. The final figure must have an arrow pointing straight Down (\downarrow) and a dot located in the Top-Right corner. This matches option (A).

Final Answer: Arrow pointing Down (\downarrow), Dot at Top-Right corner

Answer: (A)

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Q26.

Solution

Concept: Linear stacking puzzles are solved by identifying absolute positions first, and then using relative positioning constraints to determine the exact arrangement of the remaining items.

Solution: Step 1: Create a vertical stack with six positions numbered 1 (bottom) to 6 (top).

Step 2: Apply the absolute rule: "History is kept at the bottom-most position." Place History at position 1.

Step 3: Apply the rule: "There are exactly two books between History and Biology." Since History is at position 1, leave positions 2 and 3 vacant and place Biology at position 4.

Step 4: Apply the rule: "English is somewhere above Biology but somewhere below Physics." The available positions above Biology (position 4) are positions 5 and 6. For English to be below Physics, English must be placed at position 5, and Physics must be placed at position 6 (the top-most position).

Step 5: Place the remaining books to verify the arrangement. The remaining positions are 2 and 3. The rule states: "Mathematics is kept immediately below Chemistry." This fits perfectly by placing Chemistry at position 3 and Mathematics at position 2. The full stack from top to bottom is Physics (6), English (5), Biology (4), Chemistry (3), Mathematics (2), History (1). Thus, Physics is at the top-most position.

Final Answer:

Answer: (B)

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Q27.

Solution

Concept: To find the odd set out among numerical groups, identify the mathematical formula that relates the numbers within each set. The group that breaks this common rule is the correct answer.

Solution: Step 1: Analyze the numbers in option (A): (13, 169, 182). Notice the relationship between the first two numbers: $13^2 = 169$. Check the third number: $169 + 13 = 182$. The pattern is $(x, x^2, x^2 + x)$.

Step 2: Test this pattern on option (B): (11, 121, 132). Check the square of the first number: $11^2 = 121$. Check the third number: $121 + 11 = 132$. This option follows the pattern.

Step 3: Test this pattern on option (C): (15, 225, 240). Check the square of the first number: $15^2 = 225$. Check the third number: $225 + 15 = 240$. This option also follows the pattern.

Step 4: Test this pattern on option (D): (14, 196, 208). Check the square of the first number: $14^2 = 196$. Check what the third number should be based on the pattern:

$$196 + 14 = 210$$

The given value is 208, which violates the rule.

Step 5: Conclude that set (D) is the only group that does not follow the $(x, x^2, x^2 + x)$ rule, making it the odd one out.

Final Answer: (14, 196, 208)

Answer: (D)

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Q28.

Solution

Concept: Complex non-verbal puzzles are solved by breaking down the image into its separate components, tracking the changes for each component independently, and combining the results.

Solution: Step 1: Identify the main components of the pattern within the square frames: a divided inner regular hexagon, a shaded triangular sector, and a small star symbol located on an outer vertex.

Step 2: Track the rotation of the shaded inner sector from step to step. In Step 1, the shaded sector is at the top-right position. As the steps progress, the shaded region rotates systematically clockwise around the central axis from one sector to the next.

Step 3: Track the movement of the outer star symbol. In Step 1, the star is at the top vertex of the inner shape. It moves counter-clockwise along the vertices of the geometric shape with each consecutive step.

Step 4: Determine the positions of both elements for Step 5 by continuing these patterns. The shaded sector completes its rotation, returning to the Top-Right sector. The star symbol moves four vertices counter-clockwise from its starting position, placing it at the Top-Left vertex.

Step 5: Match these combined properties with the choices. Option (D) describes a hexagon with its Top-Right sector shaded and the star symbol at the Top-Left vertex, making it the correct answer.

Final Answer: Hexagon with Top-Right sector shaded; Star symbol at Top-Left vertex

Answer: (D)

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Q29.

Solution

Concept: When a large cube with side length n is painted on all sides and cut into smaller unit cubes, the number of smaller cubes with exactly two faces painted can be found using a standard geometric formula based on the number of edges.

Solution: Step 1: Determine the total number of cuts and the side length (n) of the cube. The total number of small cubes is given as 64. Since a cube has three dimensions, find the cube root of 64:

$$n = \sqrt[3]{64} = 4$$

The large cube has been divided into a grid of $4 \times 4 \times 4$ smaller cubes.

Step 2: Recall where the cubes with exactly two faces painted are located. These cubes are found along the edges of the large cube, excluding the corner cubes (which have three faces painted).

Step 3: Count the number of two-faced painted cubes along a single edge. Each edge has n total cubes. Removing the 2 corner cubes leaves:

$$n - 2 = 4 - 2 = 2 \text{ cubes per edge}$$

Step 4: Calculate the total number of two-faced painted cubes across the entire large cube. A cube has exactly 12 edges. Multiply the number of edges by the number of two-faced painted cubes per edge:

$$\text{Total Cubes} = 12 \times (n - 2) = 12 \times (4 - 2) = 12 \times 2 = 24$$

Step 5: Conclude that exactly 24 smaller cubes have two faces painted, which corresponds to option (C).

Final Answer:

Answer: (C)

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Q30.

Solution

Concept: To solve a rapidly growing number series, test an exponential growth pattern or a combination of multiplication and a constant addition to find the rule connecting the terms.

Solution: Step 1: Write down the given sequence of numbers: 5, 16, 49, 148, ?.

Step 2: Determine the mathematical relationship between the first two terms, 5 and 16. Test a multiplication and addition rule:

$$5 \times 3 + 1 = 15 + 1 = 16$$

Step 3: Test this same rule ($\times 3 + 1$) on the next pair of terms to see if it holds true:

$$16 \times 3 + 1 = 48 + 1 = 49$$

The rule works for the third term.

Step 4: Verify the rule on the fourth term in the sequence:

$$49 \times 3 + 1 = 147 + 1 = 148$$

The rule is consistent throughout the series.

Step 5: Apply the $\times 3 + 1$ rule to 148 to calculate the missing value:

$$\text{Next Term} = 148 \times 3 + 1 = 444 + 1 = 445$$

Therefore, the next number in the series is 445, which matches option (A).

Final Answer:

Answer: (A)

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Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	B	3	B	4	A	5	D
6	B	7	B	8	A	9	C	10	B
11	A	12	D	13	B	14	C	15	C
16	A	17	A	18	D	19	A	20	B
21	A	22	C	23	A	24	B	25	A
26	B	27	D	28	D	29	C	30	A

