

Answers

1. Answer: c

Explanation:

Decoding Jumbled Letters

This question requires us to first unscramble the given sets of letters to form meaningful words. Then, we need to identify which of these words does not belong to the same category as the others. Let's decode each option:

- **ATBEL**: When rearranged, these letters form the word **TABLE**.
- **AIRCH**: Rearranging these letters gives us the word **CHAIR**.
- **LGSAS**: These letters can be rearranged to spell **GLASS**.
- **NCBHE**: Unscrambling these letters results in the word **BENCH**.

Identifying the Pattern in Words

After unscrambling the letters, we have the following words:

- **TABLE**
- **CHAIR**
- **GLASS**
- **BENCH**

We need to find a common characteristic shared by most of these words. Observing the words, we can see that **TABLE**, **CHAIR**, and **BENCH** are all common types of furniture.

Finding the Odd One Out

The word **GLASS** stands out because it is not a piece of furniture. Instead, **GLASS** is typically considered a material or an item made from that material (like a drinking glass or a window pane). Since the other three words (**TABLE**, **CHAIR**, **BENCH**) are all items of furniture, **GLASS** is the odd one out.

Therefore, the jumbled letters **LGSAS**, which form the word GLASS, represent the odd one out.

2. Answer: d

Explanation:

Letter Cluster Pattern Analysis

The question requires identifying the letter cluster that differs from the others based on a sequential pattern. We need to analyze the relationships between adjacent letters in each given cluster.

Methodology for Pattern Recognition

To determine the pattern, we will map each letter to its numerical position in the alphabet (A=1, B=2, ..., Z=26). Then, we will calculate the difference between the numerical values of consecutive letters.

Analyzing EGCEA

The letter cluster is **EGCEA**. Let's find the position of each letter and the differences:

- E corresponds to 5.
- G corresponds to 7. The difference is $7 - 5 = +2$.
- C corresponds to 3. The difference is $3 - 7 = -4$.
- E corresponds to 5. The difference is $5 - 3 = +2$.
- A corresponds to 1. The difference is $1 - 5 = -4$.

The pattern for **EGCEA** is a sequence of operations: **+2, -4, +2, -4**.

Analyzing NPLNJ

The letter cluster is **NPLNJ**. Let's analyze its pattern:

- N corresponds to 14.
- P corresponds to 16. The difference is $16 - 14 = +2$.
- L corresponds to 12. The difference is $12 - 16 = -4$.
- N corresponds to 14. The difference is $14 - 12 = +2$.
- J corresponds to 10. The difference is $10 - 14 = -4$.

The pattern for NPLNJ is also **+2, -4, +2, -4**.

Analyzing XZVXT

The letter cluster is XZVXT. Let's examine its pattern:

- X corresponds to 24.
- Z corresponds to 26. The difference is $26 - 24 = +2$.
- V corresponds to 22. The difference is $22 - 26 = -4$.
- X corresponds to 24. The difference is $24 - 22 = +2$.
- T corresponds to 20. The difference is $20 - 24 = -4$.

The pattern for XZVXT is consistently **+2, -4, +2, -4**.

Analyzing QSOQN

The letter cluster is QSOQN. Let's determine its pattern:

- Q corresponds to 17.
- S corresponds to 19. The difference is $19 - 17 = +2$.
- O corresponds to 15. The difference is $15 - 19 = -4$.
- Q corresponds to 17. The difference is $17 - 15 = +2$.
- N corresponds to 14. The difference is $14 - 17 = -3$.

The pattern for QSOQN is **+2, -4, +2, -3**.

Comparison of Letter Cluster Patterns

By comparing the identified patterns, we can see a commonality among three of the clusters:

Letter Cluster	Alphabetical Positions	Pattern of Differences
EGCEA	5, 7, 3, 5, 1	+2, -4, +2, -4
NPLNJ	14, 16, 12, 14, 10	+2, -4, +2, -4
XZVXT	24, 26, 22, 24, 20	+2, -4, +2, -4
QSOQN	17, 19, 15, 17, 14	+2, -4, +2, -3

The clusters **EGCEA**, **NPLNJ**, and **XZVXT** all follow the specific pattern of adding 2, then subtracting 4, then adding 2, and finally subtracting 4.

Identifying the Different Letter Cluster

The letter cluster **QSOQN** deviates from this established pattern. While it starts with the sequence +2, -4, +2, the final step is -3, not -4. This inconsistency makes it the odd one out.

Conclusion on Odd Letter Cluster

Therefore, based on the analysis of sequential letter differences, the letter cluster **QSOQN** is different from the other three.

3. Answer: d

Explanation:

Letter Cluster Analysis

The objective is to identify the unique letter cluster among the given options. This involves finding a common pattern or rule that applies to most of the options and then identifying the one that does not conform to this rule.

Comparing Letter Cluster Patterns

Let's examine the structure and the alphabetical relationship between the letters in each option:

- **Option 1: ABBCC**
 - The cluster begins with 'A'.
 - It is followed by two 'B's.
 - It concludes with two 'C's.
 - The sequence is A, B, B, C, C.
 - Observation: 'B' is the immediate successor of 'A' in the alphabet, and 'C' is the immediate successor of 'B'. The pattern involves a letter, followed by the next letter repeated twice, and then the subsequent letter repeated twice.
- **Option 2: BCCDD**
 - The cluster begins with 'B'.
 - It is followed by two 'C's.
 - It concludes with two 'D's.
 - The sequence is B, C, C, D, D.
 - Observation: 'C' follows 'B' alphabetically, and 'D' follows 'C' alphabetically. This cluster matches the pattern observed in Option 1.
- **Option 3: FGGHH**
 - The cluster begins with 'F'.
 - It is followed by two 'G's.
 - It concludes with two 'H's.
 - The sequence is F, G, G, H, H.
 - Observation: 'G' follows 'F' alphabetically, and 'H' follows 'G' alphabetically. This cluster also adheres to the same pattern.
- **Option 4: JLLMM**
 - The cluster begins with 'J'.
 - It is followed by two 'L's.
 - It concludes with two 'M's.
 - The sequence is J, L, L, M, M.
 - Observation: 'L' does not immediately follow 'J' in the alphabet; the letter 'K' is between them. However, 'M' immediately follows 'L' alphabetically.

Identifying the Odd Letter Cluster

Based on the analysis:

- Options 1, 2, and 3 follow a specific rule: They start with a letter (let's call it X), followed by the next letter in the alphabet (Y) repeated twice, and then the subsequent letter (Z) repeated twice. The relationship is $X, Y=X+1, Z=Y+1$.
- Option 4 (JLLMM) deviates from this rule. While the second pair of letters (MM) follows the consecutive pattern with the first pair (LL), the transition from the first letter (J) to the second group (LL) skips a letter ('K').

Conclusion: The Different Letter Cluster

The letter cluster **JLLMM** is distinct from the others because it breaks the consecutive alphabetical progression between the initial letter and the subsequent repeated letters. Options **ABBCC**, **BCCDD**, and **FGGHH** all maintain this consecutive alphabetical relationship throughout their structure.

4. Answer: d

Explanation:

Understanding Word Relationships: Analogy of Ardour and Passion

This question asks us to find a word that relates to "Arise" in the same way that "Passion" relates to "Ardour". This is a classic verbal reasoning task focused on identifying analogies.

Defining 'Ardour' and 'Passion'

First, let's understand the meaning of the words in the initial pair:

- **Ardour**: This term refers to great warmth of feeling, enthusiasm, or intensity. It signifies a strong, eager desire or devotion.

- **Passion:** This word means a strong and barely controllable emotion, or an intense enthusiasm for something.

The relationship between **Ardour** and **Passion** is that they are synonyms. Both words describe a state of intense emotion or enthusiasm.

Understanding the Meaning of 'Arise'

Next, we need to consider the word "Arise" and find its corresponding related word from the options. Let's define "Arise":

- **Arise:** This verb means to happen, to occur, to emerge, or to originate from something.

Evaluating the Options for 'Arise'

We must now find an option that shares the same synonym relationship with "Arise" as "Passion" does with "Ardour". Let's examine each option:

- **1. Animated:** Means lively, spirited, or full of excitement. This describes a state of being but is not a direct synonym for the act of happening or occurring.
- **2. Stylized:** Refers to something designed or represented in a particular artistic style. This meaning is unrelated to "Arise".
- **3. Old-Fashioned:** Means not modern or belonging to a past era. This concept has no connection to "Arise".
- **4. Occur:** This verb means to happen, take place, or come about. This is a direct synonym for "Arise".

Concluding the Analogy

Based on the analysis, the relationship between "Ardour" and "Passion" is synonymy. Applying this same relationship, we find that "Arise" is synonymous with "Occur". Therefore, "Occur" is the word that completes the analogy.

The completed analogy is: **Ardour : Passion :: Arise : Occur**

5. Answer: b

Explanation:

Understanding the Word Relationship: Fish and Shoal

The question asks us to identify the pair of words from the options that share the same relationship as the given pair: **Fish : Shoal**. In this original pair, a **shoal** is the collective noun used to describe a group of **fish** swimming together.

Analyzing the Options for Analogous Relationships

We need to find an option where the second word represents the collective noun for the first word, similar to how 'shoal' refers to a group of 'fish'. Let's examine each option:

- **Option 1: Whale : Water**
 - Relationship: A whale lives in **water**. Water is the habitat of a whale.
 - Comparison: This is a habitat relationship, not a collective noun relationship. It does not match the **Fish : Shoal** pattern.
- **Option 2: Wolf : Pack**
 - Relationship: A **pack** is the collective noun for a group of **wolves**.
 - Comparison: This directly matches the relationship in the original pair (animal : collective noun).
- **Option 3: Elephant : Flock**
 - Relationship: A **flock** is a collective noun, but it typically refers to birds or sheep. Elephants live in herds.
 - Comparison: The collective noun used is incorrect for elephants. This does not match the **Fish : Shoal** pattern.
- **Option 4: Audience : Theatre**
 - Relationship: An **audience** is a group of people gathered in a **theatre** to watch a performance.
 - Comparison: This describes a group and its location, not a collective noun for a group of animals. It does not match the **Fish : Shoal** pattern.

Identifying the Correct Analogy

Based on the analysis, the relationship between **Wolf** and **Pack** is the same as the relationship between **Fish** and **Shoal**. Both pairs represent an animal and its corresponding collective noun.

Therefore, the option that correctly mirrors the relationship in **Fish : Shoal** is **Wolf : Pack**.

6. Answer: a

Explanation:

Analogy Explained: Hot : Oven :: Cold : ?

This question asks us to find the word that relates to 'Cold' in the same way 'Oven' relates to 'Hot'. We need to identify the specific connection between the first pair of words and then apply that same logic to find the missing word.

Understanding the Core Relationship: Hot and Oven

The word **Hot** describes a temperature or state. The word **Oven** refers to an appliance or device whose primary function is to create and maintain heat, often to cook or warm things. So, the relationship is: **Oven** is a tool/appliance used to make or keep something **Hot**.

Evaluating Options for the Word 'Cold'

We need to find a word that functions similarly to an oven but in relation to being cold. Let's examine each option:

- **1. Refrigerator:** A refrigerator is a kitchen appliance designed to keep food and drinks cold. It actively makes items inside cold and maintains that low temperature. This seems like a strong parallel to the Oven making things hot.

- **2. Air Conditioner:** An air conditioner is a device that cools the air in a room or building. While it deals with cold temperatures, it primarily affects the ambient environment rather than containing specific items for cooling, unlike an oven which contains items for heating.
- **3. Ice Cream:** Ice cream is a food item that is typically served cold. It is a product that *is* cold, rather than an appliance that *makes* things cold.
- **4. Snow:** Snow is a form of precipitation that occurs at cold temperatures. Like ice cream, it is a natural phenomenon that exists in a cold state, not an appliance used to induce coldness.

Identifying the Best Matching Analogy

Comparing the options with the original pair (Hot : Oven):

- An **Oven** is an appliance used to make things **Hot**.
- A **Refrigerator** is an appliance used to make things **Cold**.

The relationship is a direct parallel: Appliance : Function (Temperature). The **Refrigerator** perfectly matches the role of the **Oven** in the context of cold temperatures.

While an Air Conditioner also relates to cold, it cools a space rather than containing items. Ice Cream and Snow are things that are cold, but they aren't appliances that create or maintain coldness.

Conclusion: The Correct Analogy

Therefore, the word that shares the same relationship with 'Cold' as 'Oven' does with 'Hot' is **Refrigerator**.

7. Answer: d

Explanation:

Solving the Number Series: 41, 52, 65, 82, 101, ?

This section explains how to find the missing number in the given sequence using pattern recognition.

Understanding the Number Series Pattern

The provided number series is 41, 52, 65, 82, 101, ?. To find the missing number, we need to identify the pattern governing the progression of the numbers. Let's look at the differences between consecutive terms:

- Difference between 52 and 41: $52 - 41 = 11$
- Difference between 65 and 52: $65 - 52 = 13$
- Difference between 82 and 65: $82 - 65 = 17$
- Difference between 101 and 82: $101 - 82 = 19$

The differences are 11, 13, 17, 19.

Identifying the Sequence of Differences

Observing the differences (11, 13, 17, 19), we can see that these are consecutive prime numbers. The sequence of prime numbers starts as 2, 3, 5, 7, 11, 13, 17, 19, 23, ... The differences found in the series match the prime numbers starting from 11.

Calculating the Next Term

Following the identified pattern, the next difference should be the next prime number after 19, which is 23.

To find the missing number in the series, we add this next prime number (23) to the last known term (101):

Missing Number = Last Term + Next Prime Difference

Missing Number = $101 + 23$

Missing Number = 124

Conclusion for Series Completion

Therefore, the number that completes the series 41, 52, 65, 82, 101, ? is 124. This corresponds to option 4.

8. Answer: c

Explanation:

Identifying the Inconsistent Word Among Coal and Rock Types

This question requires us to identify the term that does not belong with the others in the provided list: Lignite, Anthracite, Granite, and Bituminous. To solve this, we need to find a common characteristic shared by three of the words and identify the one that lacks this characteristic.

Detailed Analysis of Each Term

Let's break down the meaning and classification of each word:

- **Lignite:** Lignite is classified as a type of **coal**. It is a relatively low-rank fossil fuel, often soft and brownish in color. It forms from naturally compressed peat, which is essentially accumulated plant material.
- **Anthracite:** Anthracite is also a type of **coal**. It represents the highest rank of coal, distinguished by its hardness, black color, and glossy sheen. It has a high carbon content and burns efficiently with minimal smoke, making it a premium fuel source.
- **Bituminous:** Bituminous is another category of **coal**. This is a mid-rank coal, typically black and often exhibiting distinct layers. It is widely used as a primary fuel source for electricity generation and various industrial applications.
- **Granite:** Granite is fundamentally different from the other terms. It is not a type of **coal** or fossil fuel. Instead, Granite is a common type of intrusive igneous **rock**. It's primarily composed of minerals like quartz and feldspar, and it's well-known for its strength and use in building materials, countertops, and monuments.

Comparison of Classifications

To visualize the differences, consider this summary:

Word	Primary Classification	Description
Lignite	Coal	A low-rank fossil fuel
Anthracite	Coal	A high-rank fossil fuel
Bituminous	Coal	A mid-rank fossil fuel
Granite	Rock	An igneous rock, used in construction

Determining the Inconsistent Word

The key distinguishing factor is the primary category each word belongs to. Lignite, Anthracite, and Bituminous are all specific types of **coal**, which is a sedimentary rock used as a fossil fuel. Granite, however, belongs to the category of igneous **rocks**.

Therefore, **Granite** is the inconsistent word because it is a type of rock, while the other three words (Lignite, Anthracite, Bituminous) are all types of coal.

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9. Answer: d

Explanation:

Identifying the Inconsistent Word Based on Meaning

The task is to find the word that is different from the others in the list. We need to identify a common characteristic shared by three of the words and then select the word that does not possess this characteristic. The key is to understand the meaning of each word.

Analyzing Word Meanings

Let's examine the meaning of each given word:

- **Tiny:** This adjective means extremely small in size.
- **Small:** This adjective means of a size less than average or usual.
- **Huge:** This adjective means extremely large in size.
- **Heavy:** This adjective relates to weight, meaning having great weight.

Categorizing the Words

We can group the words based on the physical attribute they describe:

- 'Tiny', 'Small', and 'Huge' all describe the physical dimension of **size**. 'Tiny' and 'Small' refer to small sizes, while 'Huge' refers to a large size.
- 'Heavy' describes the attribute of **weight**, which is distinct from size. While size and weight can be related (e.g., larger objects are often heavier), they are fundamentally different properties.

Comparison Table

Word	Attribute Described	Category
Tiny	Very small physical dimensions	Size
Small	Less than average physical dimensions	Size
Huge	Very large physical dimensions	Size
Heavy	Great weight	Weight

Determining the Inconsistent Word

Three of the words ('Tiny', 'Small', 'Huge') are related to the concept of **size**. The word 'Heavy' relates to **weight**. Therefore, 'Heavy' is the inconsistent word as it describes a different attribute compared to the other three words.

10. Answer: c

Explanation:

Analyzing the Family Relationships for B and O

This solution explains the relationship between B and O based on the provided details about the six individuals: O, N, J, Z, S, and B.

Decoding Individual Relationships

Let's break down each piece of information given:

- *"Z is the sister of S."* This tells us Z is female and shares the same parents as S.
- *"O is the wife of N."* This establishes O as female and N as male, and they are married.
- *"B is the wife of J and sister of S"* This tells us B is female, married to J (male). B also shares the same parents as S.
- *"who is the brother of Z."* The 'who' refers to S. So, S is the brother of Z. This confirms S is male.
- *"J has a son."* J and his wife B are parents to a son.

Building the Family Structure

From the information above, we can construct the family connections:

- **Siblings:** Since B is the sister of S, and S is the brother of Z, it means B, S, and Z are siblings.
 - B is female.
 - S is male.
 - Z is female.
- **Couple 1:** B is married to J. They have a son.
- **Couple 2:** O is married to N.

We know that B and J are the parents of a son. We also know that O is married to N.

Identifying the Key Connection between B and O

The question asks how B is related to O. To find this, we need to connect the two family units (B & J's family and O & N's family). The crucial link is J having a son, and O being married to N.

The most logical inference connecting these facts is that N, the person O is married to, is the son of B and J.

Let's verify this inference:

- If N is the son of B and J, then B is N's mother.
- Since O is the wife of N, O is married to B's son.

Determining B's Relationship to O

Based on the deduction that N is the son of B and J, and O is the wife of N:

- B is the mother of O's husband (N).

In family terms, the mother of one's husband is the **mother-in-law**.

Therefore, B is the mother-in-law of O.

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11. Answer: d

Explanation:

Understanding Sibling Relationships: P, Q, M, and T

This question asks us to figure out how Q is related to T, given specific family connections between P, Q, M, and T. We need to carefully follow the clues provided.

Analyzing the Given Family Connections

Let's break down each piece of information:

- **P is a brother of Q:** This means P and Q are siblings. P is male. We don't know Q's gender yet.
- **M is a sister of Q:** This means M and Q are also siblings. M is female.
- **T is a brother of P:** This means T and P are siblings. T is male.

Building the Family Structure

By combining these statements, we can see how everyone is related:

- From the first two points, we know P, Q, and M are all siblings.
- The third point tells us T is a sibling of P.
- Therefore, T, P, Q, and M are all siblings, sharing the same parents.

Identifying the Genders

Now, let's list the known genders:

- T is a **brother** (male).
- P is a **brother** (male).
- M is a **sister** (female).
- Q's gender is not specified. Q could be male or female.

Determining the Relationship Between Q and T

We know that T and Q are siblings. The question is how Q is related to T.

- Since T is male, and Q is a sibling, Q's relationship depends on Q's gender.
- If Q is male, Q would be the **brother** of T.
- If Q is female, Q would be the **sister** of T.

Because the question does not provide information about Q's gender, both possibilities exist.

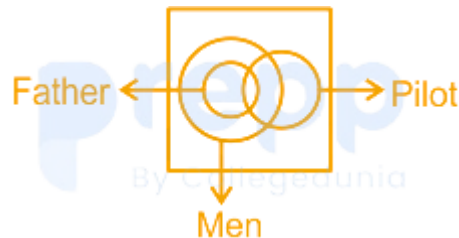
Final Conclusion

Considering that Q can be either male or female, Q's relationship to T is either **brother** or **sister**.

12. Answer: b

Explanation:

The Venn diagrams best represent the relationship between – Pilot, Men, Father figures are shown below:



As we know that all the Father will be Men and Some fathers can be pilots also some men can be pilots.

Hence, Correct answer **Option 2.**

13. Answer: c

Explanation:

The Venn diagrams best represent the relationship between – Ring, Diamond Ring, Ornament figures are shown below:



We know that all Diamond Ring will come under the Ring and all the Rings are Ornament.

Hence, Correct answer **Option 3 .**

14. Answer: c

Explanation:

In the given question figure, one of the dots lies in the region common to the pentagon and arrow, the second dot lies in the region common to rectangle and arrow and third dot lies in the region common to the pentagon only.

(A):



(A)

One of the dots lies in the region common to the pentagon and arrow and other dot lies in the region common to the pentagon only.

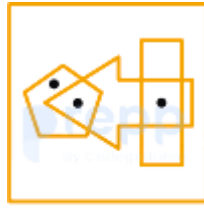
(B):



(B)

One of the dots lies in the region common to the pentagon and arrow and other dot lies in the region common to the pentagon only.

(C):



(C)

Only this figure consists all types of the region,

(D):



(D)

One of the dots lies in the region common to the pentagon and arrow and other dot lies in the region common to the pentagon only.

(E):



(E)

One of the dots lies in the region common to the pentagon and arrow and other dot lies in the region common to the pentagon only.



Figure (C) consist same type of the region.

Hence, **Figure 'C'** is the correct option.

15. Answer: a

Explanation:

The figure which completes the pattern of question figure is given below:

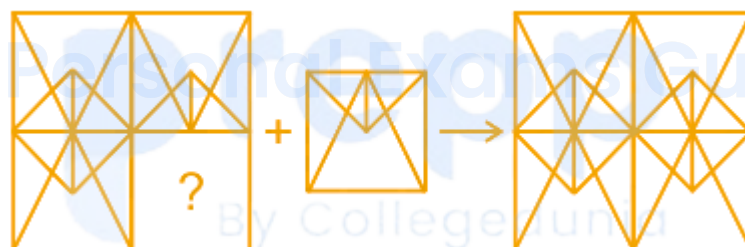


Hence, the correct answer is "option (1)".

16. Answer: d

Explanation:

The answer figure which will complete the pattern in the given question figure is as follows:



Hence, the correct answer is "option (4)".

17. Answer: c

Explanation:

On close observation, we find that the problem figure is embedded in figure (3) as shown below



No.	Option	Question	Answer
1.			Not Embedded
2.			Not Embedded
3.			Embedded
4.			Not Embedded

Hence, the correct answer is "option (3)".

18. Answer: b

Explanation:

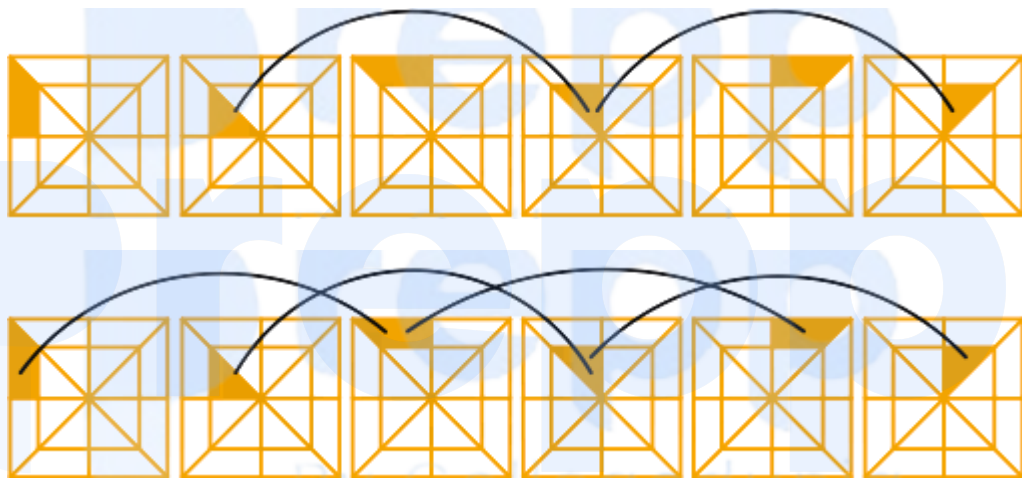
The pattern followed in the series is shown below:

At every odd and even position, the shaded portion is moving in a clockwise direction.

For Odd Position:



For even position:



Therefore, option 2 will come next in the following figure series.

Hence, 'option 2' is the correct answer.

19. Answer: c

Explanation:

The pattern followed here is:

1)



- The arrow and the circle are **towards the same side**.

2)



- The arrow and the circle are towards the same side .

3)



- The arrow and circle are on the opposite sides.

4)



- The arrow and the circle are towards the same side .

In each figure, the arrow and the circle are towards the same side but in figure (3) the arrow and circle are on the opposite sides .

Hence, **option (3)** is the correct answer.

20. Answer: d

Explanation:

Finding the Odd Word Pair: Exhausted, Weary, Fatigued, Wary

This question requires us to identify the word that doesn't fit with the others from the given list. We need to look for a common meaning shared by most of the words.

Analyzing the Meanings of Alternatives

Let's break down the meaning of each alternative:

- **Exhausted:** This term means to be extremely tired, often to the point of having no energy left. It's about physical or mental depletion.
- **Weary:** This word also means tired, especially after a lot of exertion or lack of sleep. It implies a sense of fatigue or lack of enthusiasm.
- **Fatigued:** Similar to exhausted, this means feeling or showing extreme tiredness. It's a common term for significant tiredness.
- **Wary:** This word means being cautious or careful about potential dangers or problems. It suggests alertness and suspicion rather than tiredness.

Identifying the Common Theme

By comparing the definitions, we can see a clear pattern:

- 'Exhausted', 'Weary', and 'Fatigued' are all synonyms or closely related terms describing a state of being very tired or lacking energy.
- 'Wary' describes a state of caution and carefulness, which is unrelated to the feeling of tiredness.

Conclusion: Determining the Odd Word

The words **Exhausted**, **Weary**, and **Fatigued** belong to the same category of meaning related to tiredness.

The word **Wary** is different because it relates to caution and alertness, not fatigue.

Therefore, **Wary** is the odd word out in this list.

21. Answer: a

Explanation:

Decoding the BRAZENLY Code Language Pattern

This problem involves a simple substitution cipher where each letter in the original word is replaced by a corresponding letter based on a specific rule. We need to figure out this rule using the provided examples and then apply it to the word 'BRAZENLY'.

Analyzing the Examples to Find the Coding Rule

Let's examine the transformation of the first word:

GODSENT is coded as FNCRDMS.

Comparing the letters position by position:

- G becomes F
- O becomes N
- D becomes C
- S becomes R
- E becomes D
- N becomes M
- T becomes S

We can observe that in each case, the coded letter is the letter that comes immediately *before* the original letter in the English alphabet. For example, F is before G, N is before O, C is before D, and so on. This represents a shift of -1 .

Let's verify this pattern with the second example:

JOKING is coded as INJHMF.

Comparing the letters:

- J becomes I ($J - 1 = I$)
- O becomes N ($O - 1 = N$)
- K becomes J ($K - 1 = J$)
- I becomes H ($I - 1 = H$)
- N becomes M ($N - 1 = M$)
- G becomes F ($G - 1 = F$)

The pattern of shifting each letter one position backward in the alphabet holds true for this example as well.

Applying the Pattern to BRAZENLY

Now, we apply the same rule (shift each letter one position backward) to the word **BRAZENLY**:

- B: The letter before B is A.
- R: The letter before R is Q.
- A: The letter before A is Z (we wrap around from the beginning to the end of the alphabet).
- Z: The letter before Z is Y.
- E: The letter before E is D.
- N: The letter before N is M.
- L: The letter before L is K.
- Y: The letter before Y is X.

Putting these resulting letters together, we get **AQZYDMKX**.

Conclusion and Final Answer

By applying the identified pattern of replacing each letter with its preceding letter in the alphabet, the word **BRAZENLY** is coded as **AQZYDMKX**. This matches the first option provided.

22. Answer: a

Explanation:

Understanding the Directional Problem

This question involves determining the final position of point S relative to point P based on a series of directional movements. We need to calculate both the distance and the direction of S from P.

Step-by-Step Placement of Points

Let's map out the positions of the points step-by-step:

- **Point Q:** We can consider point Q as our starting reference point.
- **Point P:** P is located 6 km to the **west** of Q.
- **Point R:** R is located 4 km to the **north** of Q.
- **Point S:** S is located 12 km to the **south** of R.

Determining the Relative Position of S from P

To find the direction and distance of S from P, we can analyze the net movement in the North-South and East-West directions.

Analyzing East-West Movement:

- P is 6 km west of Q.
- R is directly north of Q, so it has the same East-West position as Q.
- S is directly south of R, so it also shares the same East-West position as R and Q.
- Therefore, S is positioned directly north-south relative to Q.
- Since P is 6 km west of Q, and S is on the same North-South line as Q, S is 6 km **east** of P.

Analyzing North-South Movement:

- R is 4 km north of Q.
- S is 12 km south of R.

- The net North–South position of S relative to Q can be calculated: R is at +4 km (North) from Q. S is 12 km south of R. So, S's position relative to Q is $4 \text{ km} - 12 \text{ km} = -8 \text{ km}$.
- A negative value indicates the South direction. So, S is 8 km **south** of Q.
- Since P is at the same North–South level as Q (directly west), S is 8 km **south** of P.

Calculating the Distance using Pythagorean Theorem

We have determined that S is 6 km east and 8 km south of P. These two distances form the legs of a right-angled triangle, with the direct distance from P to S being the hypotenuse.

Using the Pythagorean theorem ($a^2 + b^2 = c^2$):

- Let the Eastward distance (a) = 6 km.
- Let the Southward distance (b) = 8 km.
- The distance from P to S (c) is calculated as: $c^2 = (6 \text{ km})^2 + (8 \text{ km})^2$ $c^2 = 36 \text{ km}^2 + 64 \text{ km}^2$ $c^2 = 100 \text{ km}^2$ $c = \sqrt{100 \text{ km}^2}$ $c = 10 \text{ km}$

Determining the Final Direction

Since S is located 6 km to the east and 8 km to the south of P, the combined direction is **South–East**.

Final Conclusion

Combining the calculated distance and direction, point S is 10 km South–East from point P.

23. Answer: d

Explanation:

Understanding Rahul's Final Direction

This problem involves tracking the direction Rahul is facing after a series of movements. We need to carefully follow each step and understand how turns affect his orientation.

Step-by-Step Analysis of Rahul's Movements:

- **Initial Movement:** Rahul starts by moving 10 km East. After this movement, Rahul is facing the **East** direction.
- **First Turn and Movement:** Rahul then turns to his left. When facing East, a left turn means he is now facing **North**. He then travels 5 km in this North direction.
- **Second Turn and Movement:** Next, Rahul turns to his left again. If he is currently facing North, a left turn makes him face the **West** direction. He travels 10 km in this West direction.

Determining the Final Facing Direction:

After the final movement of 10 km towards the West, Rahul's final direction of facing is **West**.

Summary of Directions:

Movement	Distance	Direction of Movement	Facing Direction After Movement
1	10 km	East	East
Turn Left	-	-	North
2	5 km	North	North
Turn Left	-	-	West
3	10 km	West	West

Therefore, at the end of his journey, Rahul is facing West.

24. Answer: b

Explanation:

Understanding Expression Value After Interchanging Signs

The problem asks us to calculate the value of a given mathematical expression, $45 + 9 - 73 \times 16 \div 8$, after interchanging the '+' sign and the 'x' sign. We need to follow the standard order of operations (BODMAS/PEMDAS) to arrive at the correct result. Key terms include 'interchanging signs', 'expression value', and the operators '+' and 'x'.

Original Mathematical Expression

The expression initially provided is:

$$45 + 9 - 73 \times 16 \div 8$$

Interchanging '+' and 'x' Symbols

The core instruction is to swap the positions of the addition symbol ('+') and the multiplication symbol ('x'). The original expression has '+' between 45 and 9, and 'x' between 73 and 16. Executing this interchange transforms the expression significantly.

After interchanging the '+' and 'x' signs, the modified expression becomes:

$$45 \times 9 - 73 + 16 \div 8$$

Applying the BODMAS Rule for Calculation

To evaluate the new expression $45 \times 9 - 73 + 16 \div 8$ accurately, we must apply the BODMAS rule, which dictates the sequence of mathematical operations:

- Brackets
- Orders (powers and square roots, etc.)

- Division and Multiplication (processed from left to right)
- Addition and Subtraction (processed from left to right)

In our expression, $45 \times 9 - 73 + 16 \div 8$, we have multiplication (' $\times$ '), subtraction (' $-$ '), addition (' $+$ '), and division (' $\div$ '). According to the BODMAS rule, multiplication and division operations must be performed before addition and subtraction operations. We tackle these from left to right.

Detailed Step-by-Step Calculation

Let's break down the calculation of the modified expression step-by-step:

- 1. Perform Multiplication:** First, we calculate the multiplication part: 45×9 .
Calculation: $45 \times 9 = 405$
- 2. Perform Division:** Next, we perform the division part: $16 \div 8$.
Calculation: $16 \div 8 = 2$
- 3. Substitute Results:** Now, we substitute these calculated values back into the expression. The expression was $45 \times 9 - 73 + 16 \div 8$.
After substitution, it becomes: $405 - 73 + 2$
- 4. Perform Subtraction:** Following the left-to-right rule for addition and subtraction, we perform the subtraction first: $405 - 73$.
Calculation: $405 - 73 = 332$
- 5. Perform Addition:** Finally, we perform the remaining addition: $332 + 2$.
Calculation: $332 + 2 = 334$

Final Value of the Interchanged Expression

By carefully following the instructions to interchange the '+' and 'x' signs and applying the BODMAS rule correctly, the value derived from the modified expression $45 \times 9 - 73 + 16 \div 8$ is **334**.

<!--

25. Answer: a

Explanation:

Solving the Coded Arithmetic Expression

This explanation details how to solve the given arithmetic problem by understanding the coded operators and applying the correct order of operations.

Operator Coding Explained

The question presents a mathematical expression where the standard arithmetic operators (+, -, ×, ÷) have been assigned new meanings. We need to decode these operators before evaluating the expression. The provided coding rules are:

- '+' is interpreted as '÷'
- '-' is interpreted as '×'
- '×' is interpreted as '-'
- '÷' is interpreted as '+'

Symbol Substitution Process

First, we will substitute the operators in the given expression based on the rules provided. The original expression is:

$$16 + 8 - 2 \div 4 \times 2$$

Let's apply the substitution rules step-by-step:

- Replace '+' with '÷'
- Replace '-' with '×'
- Replace '÷' with '+'
- Replace '×' with '-'

After substitution, the expression becomes:

$$16 \div 8 \times 2 + 4 - 2$$

Arithmetic Expression Calculation

Now, we need to evaluate the modified expression: $16 \div 8 \times 2 + 4 - 2$. We must follow the standard order of operations, commonly remembered by the acronym BODMAS (Brackets, Orders, Division and Multiplication, Addition and Subtraction) or PEMDAS (Parentheses, Exponents, Multiplication and Division, Addition and Subtraction). According to BODMAS/PEMDAS, division and multiplication have the same priority and are performed from left to right, followed by addition and subtraction, which also have the same priority and are performed from left to right.

Step-by-Step Calculation

1. **Division:** Perform the division operation first.

$$16 \div 8 = 2$$

The expression now is: $2 \times 2 + 4 - 2$

2. **Multiplication:** Next, perform the multiplication operation.

$$2 \times 2 = 4$$

The expression now is: $4 + 4 - 2$

3. **Addition:** Perform the addition operation.

$$4 + 4 = 8$$

The expression now is: $8 - 2$

4. **Subtraction:** Finally, perform the subtraction operation.

$$8 - 2 = 6$$

Final Result

Following the operator substitution and applying the order of operations (BODMAS/PEMDAS), the value of the expression $16 \div 8 \times 2 + 4 - 2$ is 6.

26. **Answer:** c

Explanation:

Exploring the Opposite Meaning of Amalgamate

The question asks us to identify the word that has the opposite meaning to the given word, "Amalgamate". To find the correct answer, we need to understand what "Amalgamate" means and then look for an option that signifies the contrary.

Defining Amalgamate

The word **Amalgamate** means to combine, unite, or merge several things (like groups, ideas, or substances) into a single, unified whole. Think of it as bringing different parts together to form one complete entity.

Analyzing the Options

Let's look at each option provided:

- **Coalesce:** This word means to come together and form one mass or whole. It is very similar in meaning to *Amalgamate*, describing a process of joining together.
- **Intermingle:** This means to mix or blend together. When things intermingle, they become mixed up with each other, which is also a form of combination, similar to *Amalgamate*.
- **Separate:** This word means to divide, disconnect, or move things apart. It signifies breaking a whole into distinct parts or keeping things apart. This is the direct opposite of combining or uniting.
- **Affiliate:** This means to become closely connected or associated with a larger group or organization. While it implies connection, it doesn't necessarily mean merging into one entity in the same way *Amalgamate* does.

Identifying the Antonym

Comparing the meanings, we can see that "Coalesce" and "Intermingle" are synonyms or closely related in meaning to "Amalgamate". "Affiliate" suggests a connection but not necessarily a full merging. The word "Separate" clearly represents the action of keeping things apart or dividing them, which is the direct opposite of the meaning of "Amalgamate".

27. Answer: b

Explanation:

Antonym for '*Exonerate*' Explained

This question requires us to find the word that has the opposite meaning (an antonym) to the given word, **Exonerate**. We need to carefully examine the meaning of **Exonerate** and each of the options provided.

Understanding the Word '*Exonerate*'

The word **Exonerate** means to clear someone of blame or suspicion, or to relieve them from a duty or obligation. Essentially, it means to declare someone free from guilt or wrongdoing.

Here are some words that have a similar meaning to **Exonerate** (synonyms):

- Acquit
- Absolve
- Vindicate
- Clear
- Pardon

Analyzing the Provided Options

Let's look at each option to determine which one is the best opposite of **Exonerate**:

Option 1: '*Acquit*'

Acquit means to free someone from a criminal charge by finding them not guilty. This is very similar in meaning to **Exonerate**, making it a synonym, not an antonym.

Option 2: '*Accused*'

Accused refers to a person or people who have been formally charged with or identified as guilty of a crime or offense. Being **Accused** means being blamed or facing charges. This is the direct opposite of being cleared or freed from blame (Exonerated). Therefore, **Accused** is a strong candidate for the antonym.

Option 3: '*Pardon*'

Pardon means to forgive or to remit (cancel) the punishment for an offense. Like **Acquit**, this word is related to freeing someone from consequences, making it a synonym or closely related term to **Exonerate**.

Option 4: '*Liberate*'

Liberate means to set someone free from confinement or restriction, such as freeing someone from prison. While it means freedom, it is not the opposite of being cleared from blame in the specific sense that **Exonerate** implies.

Final Answer: The Correct Antonym

To summarize, **Exonerate** means to be freed from blame. The opposite state is to be blamed or formally charged. Out of the given options, **Accused** best represents this opposite meaning. It describes the state of facing charges, which is the contrary of being cleared by exoneration.

Thus, the correct antonym for **Exonerate** among the choices is **Accused**.

28. Answer: b

Explanation:

Synonym Meaning for Inevitable

This question asks for a synonym, which is a word that means the same or nearly the same as another word. We need to find the synonym for the word **Inevitable**.

Understanding the Word Inevitable

The term **Inevitable** is used to describe something that is certain to happen. It means that something cannot be avoided, prevented, or escaped, no matter what actions are taken. It implies a sense of destiny or certainty about a future event.

Analyzing Options for Inevitable

Let's examine the meaning of each of the options provided:

- **Uncertain:** This means not able to be relied on; not known or definite. It suggests doubt or lack of confidence about whether something will happen.
- **Unavoidable:** This means something that cannot be avoided, prevented, or prevented. If something is unavoidable, it is bound to happen.
- **Doubtful:** This means feeling unsure or uncertain about something. It implies a lack of conviction or belief.
- **Dubious:** This word implies uncertainty, hesitation, or suspicion. It can mean that something is questionable or not to be trusted.

Identifying the Correct Synonym

To find the synonym for **Inevitable**, we compare the meanings:

- The core meaning of **Inevitable** is that something cannot be avoided.
- The option **Unavoidable** shares this exact meaning – it means impossible to avoid or prevent.
- The other options, "Uncertain", "Doubtful", and "Dubious", all relate to uncertainty or doubt. They suggest that something might *not* happen or that there is a lack of confidence, which is the opposite of what **Inevitable** means.

Therefore, based on the definitions, **Unavoidable** is the word that carries the same essential meaning as **Inevitable**.

29. Answer: b

Explanation:

Dormant Synonym Explained

This question asks us to identify the best synonym for the word **Dormant** from the provided choices. A synonym is a word that has a similar meaning to another word.

Understanding the Word Dormant

The word **Dormant** means something is in a state of temporary inactivity or suspended animation. It is not currently active, functioning, or developing, but it might become active later. Think of a seed that hasn't sprouted yet, or a volcano that hasn't erupted in a long time – they are considered **dormant**.

Evaluating the Options

Let's look at each option given:

- **Active:** This word means busy, working, or full of movement. It is the opposite (antonym) of **Dormant**.
- **Inactive:** This word means not active, idle, or not functioning. This meaning aligns very closely with the meaning of **Dormant**.
- **Quick:** This word relates to speed or happening in a short amount of time. It doesn't describe a state of activity level.
- **Gallant:** This word means brave, showing respect, or being chivalrous. It is unrelated to the concept of activity or inactivity.

Choosing the Best Synonym

Based on the definitions, **Inactive** is the most suitable synonym for **Dormant**. Both words describe a state of lacking activity.

For instance:

- A **dormant** computer is one that is not currently running programs. It is simply **inactive**.

- A person can be **dormant** in their career, meaning they are currently **inactive** professionally.

Therefore, **Inactive** is the correct choice as it shares the core meaning of being inactive with the word **Dormant**.

30. Answer: b

Explanation:

Understanding the Meaning of the Idiom 'To Lead Astray'

The question asks for the best synonym or explanation for the idiom 'to lead astray'. Understanding idioms is crucial for mastering language comprehension. An idiom is a phrase whose meaning cannot be deduced from the literal meanings of its constituent words. 'To lead astray' specifically refers to causing someone to deviate from the correct path or behavior, often in a misleading or deceptive way.

Analyzing the Options for 'To Lead Astray'

Let's examine each option provided to see which one best captures the essence of 'to lead astray':

- **Option 1: To take back what you have said**
This phrase means to retract or withdraw a statement previously made. It is related to communication and correcting oneself, not to misleading someone. Therefore, this is not the correct meaning of 'to lead astray'.
- **Option 2: To misguide**
To 'misguide' means to lead someone in the wrong direction or give them incorrect information, causing them to make mistakes or go down the wrong path. This aligns perfectly with the meaning of 'to lead astray'. It implies causing someone to stray from truth, morality, or a correct course of action.

- **Option 3: To achieve two results with one effort**
This describes the idiom 'to kill two birds with one stone'. It refers to accomplishing two tasks or goals with a single action. This has no connection to the meaning of 'to lead astray'.
- **Option 4: To apologize humbly**
This means expressing regret or asking for forgiveness in a modest way. It is about showing remorse, not about causing someone else to deviate from a proper course. This option is incorrect.

Selecting the Correct Expression

Comparing the options with the idiom 'to lead astray', the phrase 'to misguide' is the most accurate and direct equivalent. Leading someone astray involves deliberately or accidentally providing wrong directions or information, causing them to deviate from the right path, which is precisely what 'to misguide' means.

31. Answer: d

Explanation:

Understanding the Idiomatic Expression: 'Pull Yourself Together'

The question asks us to identify the meaning of the idiomatic phrase "pull yourself together". Idioms are phrases where the words together have a meaning that is different from the dictionary definitions of the individual words. This particular idiom is used when someone is upset, distressed, or behaving in an uncontrolled way, and is advised to regain emotional composure and control.

Analyzing the Options for the Idiom 'Pull Yourself Together'

We need to carefully consider each option to find the one that best matches the meaning of "pull yourself together":

- **Option 1: drag oneself**

This option suggests moving slowly and with difficulty. It implies physical effort or reluctance, not the management of emotions. This does not align with the meaning of the idiom.

- **Option 2: help one**

This phrase is very general and means to offer assistance. While helping someone might be involved in emotional recovery, the idiom "*pull yourself together*" specifically refers to the act of regaining control **by oneself**. This option is too broad and misses the core meaning.

- **Option 3: get angry**

This option means to become angry. This is fundamentally the opposite of what "*pull yourself together*" advises. The idiom encourages calming down, not escalating anger.

- **Option 4: calm down by oneself**

This option accurately captures the essence of the idiom. It means to regain control of one's emotions, stop panicking or being upset, and start behaving in a sensible manner, using one's own willpower.

Identifying the Correct Meaning

Comparing the options with the definition of the idiom, "**calm down by oneself**" is the most accurate interpretation. When you tell someone to "*pull themselves together*", you are encouraging them to manage their feelings and behavior independently and regain a state of calmness and rationality.

32. Answer: b

Explanation:

Meaning of the Idiom 'To blow away'

Understanding the Idiom

The phrase "to blow away" is an idiom used to express a strong feeling of amazement or admiration. When something or someone "blows you away," it means they have impressed you very deeply, often in a surprising or overwhelming way. It signifies a powerful positive impact.

Examining the Options for "To blow away"

- Option 1:

Alternate inconsistently between moods and actions

This describes someone who is unpredictable or changes their mind frequently. This meaning is unrelated to the idiom "to blow away".

- Option 2:

To be thoroughly impressed

This option accurately reflects the meaning of the idiom. If a performance, a piece of news, or an achievement "blows you away," it means you are extremely impressed or astonished by it. For example, "Her presentation was outstanding; it really blew everyone away."

- Option 3:

Staying informed and updated about everything

This describes being knowledgeable or current. It does not relate to the feeling of being impressed that the idiom "to blow away" conveys.

- Option 4:

Doing something that has never been done before

This describes innovation or originality. While a groundbreaking act might be impressive enough to "blow someone away," this option focuses on the action itself, not the resulting feeling of being impressed, which is the core meaning of the idiom.

Conclusion on Idiom Meaning

The analysis confirms that the idiom "to blow away" specifically means to impress someone greatly.

33. Answer: c

Explanation:

Extravagant

Based on the definitions and relevance, the word that means the same as 'a person who wastes his money on a luxury' is Extravagant

34. Answer: a

Explanation:

Inequity Synonym Explanation

This question requires identifying a word that has a similar meaning (a synonym) to the word **Inequity**. Understanding the core meaning of **Inequity** is key to finding its synonym among the choices.

Defining Inequity

Inequity means a lack of fairness or justice. It typically describes situations where treatment, opportunities, or outcomes are unequal or biased. For example, paying someone less for the same work based on gender would be an **inequity**.

Evaluating the Options

Let's examine each option to see how it relates to **Inequity**:

- **Injustice:** This word means the absence or lack of justice, or an unfair action or treatment. It strongly aligns with the core meaning of **inequity**, which is unfairness and lack of justice.
- **Solitude:** This term refers to the state of being alone or isolated. It has no connection to fairness or justice.
- **Unstable:** This describes something that is not steady, firm, or likely to change or fail. It does not relate to the concept of fairness.
- **Severe:** This means very serious, intense, or harsh. While an **inequity** might be described as severe, 'severe' itself doesn't mean unfairness; it describes the intensity of something.

Choosing the Best Synonym

Based on the definitions, **Injustice** is the most appropriate synonym for **Inequity** because both words fundamentally deal with unfairness and the violation of justice.

35. Answer: d

Explanation:

Understanding Manufacturing Locations Before the Industrial Revolution The question asks us to identify the primary location where manufacturing took place before the Industrial Revolution began. We need to carefully read the provided passage to find this information.

Manufacturing Before Industrialization

The passage describes the Industrial Revolution as a significant shift from agrarian, rural societies to industrial, urban ones. It specifically mentions the period before this revolution:

"Prior to the Industrial Revolution, which began in Britain in the late 1700s, manufacturing was often done in people's homes, using hand tools or basic machines."

This sentence directly addresses the question. It clearly states that manufacturing was commonly carried out in the homes of individuals.

Analyzing the Options

Let's examine the given options in light of the passage:

- **Farms:** While farming was the primary occupation before industrialization, manufacturing itself wasn't predominantly located on farms, although some home-based activities might have been linked to agricultural cycles.
- **Barns:** Barns were typically used for agricultural storage or housing animals, not as the primary centers for manufacturing.
- **Factories:** The passage explicitly contrasts the pre-industrial era with the industrial era, stating that industrialization marked a shift to factories and mass production. Therefore, factories were characteristic of the *later* period, not before the revolution.
- **Homes:** This option directly matches the information provided in the passage, which states manufacturing was "often done in people's homes".

Conclusion on Manufacturing Location

Based on the passage, the shift to factories and powered machinery occurred *during* the Industrial Revolution. Before this period, manufacturing was decentralized and typically occurred within the domestic setting. Therefore, the correct answer is that manufacturing primarily took place in people's **Homes** before the Industrial Revolution.

36. Answer: d

Explanation:

Understanding Industrial Revolution Outcomes

The passage describes the **Industrial Revolution**, a transformative period spanning the 18th and 19th centuries. It marked a significant shift from societies primarily

based on farming and rural living (agrarian societies) to ones dominated by industry and city life (industrial and urban societies). This transformation, which began in Great Britain, changed how goods were made, moving from home-based production using hand tools to factory-based **mass production** utilizing powered machinery.

Key elements driving this change included advancements in industries like iron and textiles, and the invention of the **steam engine**. Improvements in transportation, communication, and banking also played crucial roles. While these changes led to more goods being available, the passage highlights that the benefits were not universal.

Identifying Negative Outcomes of Industrialization

The question asks to identify a negative consequence of the **Industrial Revolution** as presented in the passage. Let's analyze the options:

- **The rural-urban migration:** The passage mentions that societies became "industrial and urban," implying people moved from rural areas to cities. While this migration was a major feature of the era, the passage doesn't explicitly label it as a *negative* outcome itself, but rather a consequence of the societal shift.
- **Increased volume of goods:** The passage states that industrialization brought about an "increased volume and variety of manufactured goods." This is generally presented as a positive development or a neutral outcome of increased production, not a negative one.
- **Variety of goods:** Similar to the increased volume, a greater variety of goods was a result of industrial production. The passage lists this alongside the increased volume and improved living standards for some, suggesting it was viewed as a positive or neutral outcome.
- **Poor conditions of living:** The passage explicitly states a downside: "...it also resulted in often **grim employment and living conditions** for the poor and working class." This directly points to poor living conditions as a negative outcome experienced by a significant portion of the population during the **Industrial Revolution**.

Conclusion on Industrial Revolution Effects

Based on the direct information provided in the passage, the most accurate answer identifying a negative outcome is the poor living and employment conditions faced by the working class. The passage clearly contrasts the benefits like increased goods with the harsh realities for many.

37. Answer: d

Explanation:

Main Source of Livelihood Before the Industrial Revolution

This question asks to identify the primary occupation or way of earning a living for people before the major changes brought about by the **Industrial Revolution**. We need to carefully read the provided passage to find the relevant information.

Analyzing the Passage for Livelihood Information

The passage describes the period before the Industrial Revolution. A key sentence that directly addresses this is:

*"Before the advent of the **Industrial Revolution**, most people resided in small, rural communities, where their daily existences revolved around farming."*

This statement clearly indicates that the main focus of daily life and, consequently, the main source of livelihood for the majority of people was **farming**.

Evaluating the Options

Let's look at the options provided in relation to the passage:

- Fishing: While some communities might engage in fishing, the passage specifically highlights farming as the central activity for most people in rural

communities before the revolution.

- Carpentry: Carpentry was likely a common craft, but it wasn't described as the *main* source of livelihood for the predominant population.
- Writing: Writing is a specialized skill and not a widespread primary source of livelihood for the general population in the pre-industrial era described.
- Farming: This option directly aligns with the passage's statement that people's lives revolved around farming in rural communities before the Industrial Revolution.

Conclusion on Livelihood

Based on the direct information provided in the text, **farming** was the main source of livelihood before the Industrial Revolution reshaped societies and economies, shifting focus from agrarian life to industrial production.

38. Answer: a

Explanation:

Golden Globe Awards 2021 Purpose

The question asks to identify the correct word for the first blank in a passage about the Golden Globe Awards 2021. The sentence states the awards were held to _____ (1) _____ excellence in film and television. We need to determine the most appropriate verb from the given options to describe the purpose of this event.

Analyzing the Role of Award Ceremonies

Award ceremonies, like the Golden Globes, are events designed to celebrate and acknowledge outstanding achievements in various fields, such as film and television. The primary goal is to honour those who have demonstrated exceptional talent and contribution.

Evaluating Vocabulary Options for Blank (1)

Let's consider the meaning of each option provided and how well it fits the context of honouring excellence:

- **recognise:** This word means to acknowledge someone or something, often by showing appreciation or honouring their achievements. This aligns perfectly with the purpose of an awards ceremony that celebrates excellence.
- **access:** This term means to be able to approach, enter, or obtain something. It does not fit the context of celebrating achievements.
- **aid:** This means to help or assist. While award winners might receive benefits, the core purpose described here is not simply 'to help' but to honour their existing excellence.
- **downgrade:** This means to reduce someone or something to a lower rank or status, or to express disapproval. This is the opposite of what the Golden Globe Awards aim to do.

Determining the Correct Word for Excellence Recognition

The Golden Globe Awards specifically aim to identify and celebrate high achievement ('excellence') in the arts. Out of the given choices, 'recognise' is the most fitting verb as it directly relates to acknowledging and honouring merit and talent in film and television.

39. Answer: d

Explanation:

The correct answer is 'by.'

★ Key Points

- Let us see the meaning of the given preposition:
 - The preposition 'under' means *happening during, as a result of, or according to a particular situation, event, rule, etc.*

- Example: *The work was completed under his supervision.*
- We use **over** as a preposition and an adverb to refer to something at a higher position than something else, sometimes involving movement from one side to another.
 - Example: *We toasted marshmallows over the fire.*
- We use **in** to talk about where something is in relation to a larger area around it.
 - Example: *She's in the garden.*
- When we use the passive voice, we can use a phrase with **by** to say who did the action.
 - Example: *The wedding cake was made by Henry's mother.*
- Hence, the preposition 'by' should be used to make the sentence grammatically correct.
- Hence, the correct answer for the blank (2) is 'by' .
 - Correct phrase :as chosen **by** the Hollywood Foreign Press Association.

★ Additional Information

- Let us explore a phrasal verb with 'behind' :
- The phrasal verb 'get behind' means *to fail to do as much work or pay as much money as you should, by a particular time* .
 - Example: *She got behind with her mortgage and the house was repossessed.*

★ Hinglish

- आइए देखते हैं दिए गए prepositions का अर्थ:
 - Preposition 'under' का अर्थ है किसी विशेष स्थिति, घटना, नियम आदि के दौरान, उसके परिणामस्वरूप या उसके अनुसार घटित होना।
 - Example: *The work was completed under his supervision.*
 - हम **over** का उपयोग किसी अन्य चीज़ की तुलना में किसी उच्च स्थान पर किसी चीज़ को संदर्भित करने के लिए, एक preposition और adverb के रूप में करते हैं, जिसमें कभी-कभी एक तरफ से दूसरी तरफ गति शामिल होती है।
 - Example: *We toasted marshmallows over the fire.*

- हम in का उपयोग इस बारे में बात करने के लिए करते हैं कि कोई चीज़ उसके आस-पास के बड़े क्षेत्र के संबंध में कहाँ है।
 - Example: *She's in the garden.*
- जब हम passive voice का उपयोग करते हैं, तो हम यह कहने के लिए by का उपयोग कर सकते हैं कि किसने कार्रवाई की।
 - Example: *The wedding cake was made by Henry's mother.*
- इसलिए, वाक्य को व्याकरणिक रूप से सही बनाने के लिए, preposition 'by' का उपयोग किया जाना चाहिए।

40. Answer: c

Explanation:

Understanding the Golden Globe Awards 2021 Context

The question asks us to fill in a blank in a passage about the Golden Globe Awards 2021. The passage discusses the ceremony, its purpose, and specific results. We need to determine the correct verb form for blank (3) in the sentence: "American TV series 'The Crown' _____ (3) _____ the most awards for the ceremony with four awards."

Analyzing Verb Tense for Blank (3)

The sentence describes an event that happened during the 78th Golden Globe Awards ceremony, which honored achievements in film and television for 2020 and early 2021. Since the ceremony has already occurred and the results are being reported, the verb needs to be in the past tense.

Evaluating the Options for Blank (3)

Let's look at the provided options for blank (3):

- **Option 1:** will win - This is the future tense, which is incorrect because the awards have already been decided and announced.

- **Option 2:** win – This is the base form or simple present tense. It's not appropriate here as the action is in the past.
- **Option 3:** won – This is the simple past tense of the verb 'to win'. This correctly reflects that "The Crown" achieved the most awards in the past ceremony.
- **Option 4:** wins – This is the present tense, third-person singular form. It's used for current habits or facts, not for a past event like the Golden Globe Awards ceremony.

Determining the Correct Answer

Based on the analysis, the action of winning the awards happened in the past. Therefore, the past tense verb "won" is the most suitable choice for blank (3). The completed sentence reads: "American TV series "The Crown" **won** the most awards for the ceremony with four awards." This accurately reflects the past event of the Golden Globe Awards 2021.

41. Answer: c

Explanation:

Identifying Sentence Errors

This question tests the understanding of subject-verb agreement in English grammar.

Sentence Analysis

Let's break down the sentence provided:

- **Part (a):** "The information obtained" – Here, "information" is the main subject.
- **Part (b):** "from the business owners" – This is a prepositional phrase describing where the information came from. It does not affect the verb agreement.
- **Part (c):** "were relevant to include in the study." – This part contains the verb "were".

- **Part (d):** "No error" – This option suggests the sentence is grammatically correct as is.

Understanding Subject-Verb Agreement

A fundamental rule in English grammar is that the verb must agree in number with its subject. This means a singular subject requires a singular verb, and a plural subject requires a plural verb.

The key here is the nature of the subject, "information".

- "Information" is an **uncountable noun**. Uncountable nouns always take a singular verb.
- Examples of uncountable nouns include: advice, furniture, luggage, research, news, water, etc.
- Therefore, the verb used with "information" must be singular.

Applying the Rule to the Sentence

In the given sentence, the subject is "The information". Since "information" is uncountable, it requires a singular verb.

The verb provided in part (c) is "were". "Were" is the plural past tense form of the verb "to be".

The correct singular past tense form is "was".

The sentence should correctly read: "The information obtained from the business owners **was** relevant to include in the study."

Locating the Grammatical Error

Comparing the original sentence with the corrected version, we can see the error lies in the choice of the verb.

The word "were" in part (c) does not agree with the singular subject "information".

Therefore, part (c) contains the grammatical error.

42. Answer: b

Explanation:

Identifying the Grammar Error

The task is to find the grammatical error in the sentence provided: "I have (A) / many friends which (B) / are native speakers. (C) / No error (D)". We need to examine each segment labelled (A), (B), and (C) to locate the mistake.

- **Part (A):** "I have" – This subject-verb combination is correct.
- **Part (B):** "many friends which" – This segment includes the noun "friends" and the relative pronoun "which". This is a potential area for error.
- **Part (C):** "are native speakers." – This predicate correctly follows a plural subject introduced by a relative pronoun.
- **Part (D):** "No error" – This option is chosen if the sentence is grammatically sound.

Grammar Rule: Correct Use of Relative Pronouns

Relative pronouns like 'who', 'which', and 'that' are used to connect clauses and refer back to a noun or pronoun (called the antecedent). The correct choice depends on the antecedent:

- **'Who':** Is used when the antecedent refers to **people**.
- **'Which':** Is used when the antecedent refers to **things** or **animals**.
- **'That':** Can be used for both people and things, particularly in defining relative clauses, although 'who' is preferred for people.

Analyzing the Antecedent in the Sentence

In the sentence "I have many friends which are native speakers," the relative pronoun is "which". The word it refers back to (the antecedent) is "**friends**".

Friends are people.

Determining the Correct Relative Pronoun

Based on the grammar rule:

- Since "friends" refers to people, the appropriate relative pronoun should be 'who'.
- The sentence incorrectly uses 'which' in part (B).

The correct sentence should read: "I have many friends **who** are native speakers."

Conclusion: Locating the Error

The error in the sentence is the use of the relative pronoun "which" to refer to people ("friends"). This error is located in part (B).

Therefore, the incorrect part of the sentence is (B).

43. Answer: a

Explanation:

Identifying the Grammatical Error in Sentence Structure

The question asks us to pinpoint the section of the given sentence that contains a grammatical error. The sentence is: "We need to buy a few more pieces of **furnitures** (A) / for the bedroom say, a new cupboard (B) / and a bedside table. (C) / No error (D)". We need to analyze each part (A, B, C) for mistakes.

Understanding the Word 'Furniture'

A key point in English grammar is understanding how certain nouns function. The word '**furniture**' is an example of an uncountable (or mass) noun. Uncountable nouns represent concepts or substances that cannot be counted as separate units.

- Common examples include 'water', 'information', 'advice', and 'luggage'.

- Uncountable nouns generally do not have a plural form (e.g., we say 'one piece of advice', not 'one advice' or 'many advices').
- Similarly, '**furniture**' is used whether referring to one item or many items. We don't typically say 'furnitures'.

Analyzing Part (A): The Error

Part (A) of the sentence reads: "...pieces of **furnitures**". The error lies in the word '**furnitures**'. As established, 'furniture' is an uncountable noun and should not be put into a plural form. While using 'pieces of' is a correct way to count items of furniture, the noun itself should remain singular.

The correct phrasing would be: "We need to buy a few more **pieces of furniture**..."

Examining Parts (B) and (C)

Let's confirm the other parts are correct:

- **Part (B)**: "...for the bedroom say, a new cupboard..." This part is grammatically correct. The word 'say' is used appropriately here to introduce examples.
- **Part (C)**: "...and a bedside table." This part is also correct, completing the list of items needed.

Conclusion on the Error Location

The incorrect use of the plural form '**furnitures**' makes part (A) the section containing the grammatical error. Therefore, the option corresponding to part (A) is the correct answer.

44. Answer: b

Explanation:

Spotting Errors in the Disease Sentence

This question requires identifying grammatical errors within a given sentence. The sentence provided is: "COVID 19 is a disease / (b) that effects / (c) mainly older people./ (d) No error." We need to carefully examine each part to find the mistake.

Sentence Structure Analysis

Let's break down the sentence into the provided parts:

- **Part (a):** "COVID 19 is a disease"
- **Part (b):** "that effects "
- **Part (c):** "mainly older people."
- **Part (d):** "No error"

Understanding 'Affect' versus 'Effect'

The core of spotting the error lies in understanding the difference between the words 'affect' and 'effect'.

- **Affect:** This word is most commonly used as a **verb**. It means to influence or have an impact on something. For instance, "The weather can *affect* your mood."
- **Effect:** This word is typically used as a **noun**. It refers to the result or consequence of an action or cause. For example, "The special *effects* in the movie were amazing."

In our sentence, we are talking about what the disease (COVID-19) does to people. This requires a verb indicating influence or impact.

Identifying the Specific Error

Looking at **Part (b):** "that effects". The word 'that' refers to the 'disease'. The sentence intends to say how the disease influences or impacts people. Therefore, the verb form 'affects' is needed here. The sentence incorrectly uses 'effects', which is a noun.

The correct usage should be the verb 'affects' to indicate the influence of the disease.

Correcting the Sentence

To correct the sentence, we need to replace 'effects' with 'affects'. The corrected version would be:

"COVID-19 is a disease that **affects** mainly older people."

Conclusion on the Erroneous Part

The analysis shows that the word 'effects' in part (b) is used incorrectly where the verb 'affects' should be employed. Thus, the erroneous part of the sentence is identified as (b).

45. Answer: d

Explanation:

Understanding the Context: Improving Standard of Living

The question asks for the most appropriate word to describe the expected change in the 'standard of living'. The government is expressing confidence that this standard will improve. The 'standard of living' refers to the general level of wealth, comfort, material goods, and necessities available to a certain socioeconomic class or geographic area. It encompasses factors like income, housing, healthcare, and education.

Analyzing Word Choices for Standard of Living Improvement

We need to examine the meaning and common usage of each option to determine which best fits the context of the standard of living improving due to government confidence.

Meaning of 'lift' and its Suitability

- **Meaning:** 'Lift' generally means to raise something to a higher position or level. It can also mean to improve a situation or mood (e.g., "lift spirits").
- **Suitability:** While improving, using 'lift' with 'standard of living' is less common and idiomatic compared to other options. It might suggest a less pronounced improvement.

Meaning of 'rise' and its Suitability

- **Meaning:** 'Rise' means to increase in level, quantity, or value.
- **Suitability:** "Standard of living will rise" is grammatically correct and contextually sound. It clearly indicates an increase, which aligns with the sentence's intent.

Meaning of 'revive' and its Suitability

- **Meaning:** 'Revive' means to restore to life or consciousness, or to bring back into use or practice after a period of inactivity or decline.
- **Suitability:** If the standard of living had previously declined significantly, 'revive' could be appropriate, focusing on the recovery aspect. However, it specifically implies a return from a poor state.

Meaning of 'flourish' and its Suitability

- **Meaning:** 'Flourish' means to grow or develop in a healthy, vigorous, or successful way. It implies thriving and prospering.
- **Suitability:** When applied to the 'standard of living', 'flourish' suggests a significant, healthy, and robust improvement. It goes beyond a simple increase ('rise') and implies prosperity and well-being. Given the government's confidence, they likely anticipate a strong positive development, making 'flourish' a very suitable choice.

Selecting the Most Appropriate Term

Comparing the options:

- 'Lift' is less idiomatic for this specific context.

- 'Rise' indicates improvement but is perhaps less dynamic than the situation might imply.
- 'Revive' is suitable only if there was a prior decline, and the focus is purely on recovery.
- 'Flourish' conveys a strong sense of positive growth, health, and prosperity, aligning well with a government's confident expectation for a better standard of living. It suggests thriving rather than just improving or recovering.

Therefore, 'flourish' is the most fitting word to express the government's confident expectation of a vigorous and successful improvement in the standard of living.

46. Answer: c

Explanation:

Understanding Zakir Hussain's Role as a Tabla Maestro

The question asks us to identify the most fitting term to describe Zakir Hussain in the context of his playing the tabla. We need to analyze the meaning of the given options and determine which one best represents his relationship with the tabla.

Analyzing the Options for Describing Zakir Hussain

Let's look at the meaning of each option provided:

- **Contemporary:** This term refers to someone who is living or existing at the same time as another person or event. While Zakir Hussain is a contemporary musician, this word doesn't specifically highlight his expertise or skill with the tabla.
- **Debtor:** A debtor is a person or entity that owes money. This term has no relevance to music or playing an instrument like the tabla.
- **Connoisseur:** A connoisseur is an expert judge in matters of taste or the fine arts. This person has a deep appreciation and understanding of a particular subject, often developed through extensive experience and study.

- **Colleague:** A colleague is a person with whom one works, especially in a shared profession. While Zakir Hussain may have colleagues in the music industry, this term describes a professional relationship rather than his skill level.

Why 'Connoisseur' Best Describes Zakir Hussain's Tabla Playing

Ustad Zakir Hussain is globally celebrated as one of the greatest tabla virtuosos of our time. His mastery over the tabla is unparalleled, marked by intricate rhythms, innovative techniques, and a profound understanding of the instrument's nuances. He is not just a performer; he is an artist who has elevated the art form.

The term **connoisseur** perfectly captures this status. It implies deep knowledge, refined taste, and expert judgment, all of which apply to Zakir Hussain's relationship with the tabla. He is an expert judge of tabla music and performance, and his own playing exemplifies the highest level of artistry.

Considering his renowned expertise and artistry in playing the tabla, the word **connoisseur** is the most appropriate choice to fill in the blank.

47. Answer: b

Explanation:

Understanding Phrasal Verbs: The Dropped Catch Scenario

This question tests your knowledge of phrasal verbs and their appropriate usage in a specific context. We need to find the phrasal verb that correctly describes how the dropped catch by Matthew Wade influenced the match outcome.

Meaning of Phrasal Verb Options

Let's look at the meanings of the different phrasal verbs provided:

- **Turned down:** This means to refuse something or reject an offer. For example, "She turned down the job."
- **Turned out:** This phrasal verb means that something happened or developed in a particular way, or it was discovered to be something. It often indicates a result or consequence. For example, "The event turned out to be a great success."
- **Turned off:** This means to stop a machine or light from operating, or to make someone lose interest in something. For example, "Please turn off the television," or "His rudeness turned me off."
- **Turned away:** This means to refuse entry to someone or something, or to stop looking at something. For example, "The guards turned away the protestors," or "He turned away from the unpleasant sight."

Analyzing the Sentence Context

The sentence is: "That dropped catch of Matthew Wade _____ to be the deciding factor in this match."

We are looking for a phrasal verb that explains the consequence or the eventual role of the dropped catch in the game. The dropped catch ultimately became the factor that decided the match.

Choosing the Most Suitable Phrasal Verb

Considering the meanings:

- "Turned down" doesn't fit because the catch wasn't refused.
- "Turned off" doesn't fit as the catch didn't stop functioning or cause dislike.
- "Turned away" doesn't fit because the catch wasn't barred from entry or looked away from in this context.
- **"Turned out"** fits perfectly because it indicates that the dropped catch happened to become, or resulted in being, the deciding factor of the match. It describes the outcome.

Final Sentence

Therefore, the completed sentence reads:

That dropped catch of Matthew Wade **turned out** to be the deciding factor in this match.

48. Answer: b

Explanation:

Giant Body Description Choice

This question asks us to identify the most appropriate word to fill in the blank within the sentence: "The giants are stomping and roaring to life, hurling their _____ bodies into each other's arms." The task is to choose an adjective that best describes the bodies of **giants** as they perform a dynamic and forceful action.

Meaning of Options for Giants

To find the correct word, we need to understand the meaning of each option and evaluate its suitability in describing the **giants** and their actions:

- **Sparse:** This adjective means thinly dispersed or spread out. It is typically used to describe things like population density or hair growth (e.g., "sparse population," "sparse beard"). It does not fit the context of describing the bodies of **giants**, who are expected to be large and substantial, not spread out.
- **Colossal:** This word means extremely large, huge, or gigantic. This definition aligns perfectly with the common perception of **giants**. The action described – "hurling their bodies" – implies significant size and weight, making **colossal** a very fitting descriptor.
- **Infinitesimal:** This term means extremely small, tiny, or immeasurably small. It represents the opposite characteristic of what is associated with **giants**. Using this word would create a nonsensical image in the context of the sentence.
- **Thrift:** This noun refers to the quality of using money or resources carefully and without waste; it means economical. This word is unrelated to the physical

description of a body and therefore is unsuitable for this sentence.

Colossal Fits Giant Context

Based on the analysis, **colossal** is the most suitable word. It accurately conveys the immense size of the **giants**, which is essential for the imagery of them "stomping," "roaring," and "hurling" their bodies. The choice of **colossal** enhances the description of powerful, large creatures engaged in a dramatic interaction.

The completed sentence accurately reflects the intended meaning: "The giants are stomping and roaring to life, hurling their **colossal** bodies into each other's arms."

49. Answer: d

Explanation:

Fishes Study: Defining Ichthyology

This question asks us to identify the specific scientific term for the branch dedicated to the **study of fishes**. We need to choose the correct terminology from the given options that accurately represents this field of study.

Exploring Scientific Branches Related to Living Organisms

Several branches of zoology focus on specific groups of animals. Let's look at the definitions for each option provided:

- **Ichthyology**: This is the branch of zoology that specifically deals with the **study of fishes**. It covers their classification, anatomy, physiology, behaviour, and ecology.
- **Entomology**: This field is concerned with the scientific **study of insects**.
- **Mycology**: This branch focuses on the scientific **study of fungi**, including yeasts, molds, and mushrooms.

- **Herpetology:** This discipline studies amphibians (like frogs and salamanders) and reptiles (like snakes, lizards, turtles, and crocodiles).

Comparing Terms for the Study of Fishes

To clarify which term fits the description "study of fishes", let's compare them:

| Scientific Term | Subject of Study |
|-----------------|-------------------------|
| Entomology | Insects |
| Mycology | Fungi |
| Herpetology | Amphibians and Reptiles |
| Ichthyology | Fishes |

Conclusion on Fishes Study Terminology

Based on the definitions, the correct term for the **study of fishes** is Ichthyology. The other options relate to the study of insects (Entomology), fungi (Mycology), and reptiles/amphibians (Herpetology), respectively.

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50. Answer: b

Explanation:

Fill-up Sequence Determination

This question asks us to find the correct order of the given phrases (P, Q, R, S) to complete the sentence starter: "Once upon a time,

_____ the Queen." The goal is to arrange these fragments to form a coherent and grammatically correct narrative.

Analyzing the Sentence Fragments

We are provided with the following fragments:

- P: a princess named
- Q: with her father, the King,
- R: Snow White lived in a castle
- S: and her stepmother,

Assembling the Sentence with the PRQS Order

The correct sequence among the options is **PRQS**. Let's combine the fragments in this specific order to see how the sentence takes shape:

| Step | Fragment | Resulting Text |
|-------------|----------|---|
| 1. Start | | Once upon a time, |
| 2. Add P | P | Once upon a time, a princess named |
| 3. Add R | R | Once upon a time, a princess named Snow White lived in a castle |
| 4. Add Q | Q | Once upon a time, a princess named Snow White lived in a castle with her father, the King, |
| 5. Add S | S | Once upon a time, a princess named Snow White lived in a castle with her father, the King, and her stepmother, |
| 6. Complete | | Once upon a time, a princess named Snow White lived in a castle with her father, the King, and her stepmother, the Queen. |

The complete sentence formed using the **PRQS** sequence is: "Once upon a time, a princess named Snow White lived in a castle with her father, the King, and her stepmother, the Queen."

Rationale for the PRQS Sequence

The sequence **PRQS** works because it constructs a logical and traditional fairy tale opening:

- It introduces the main character using fragments **P** ("a princess named") and **R** ("Snow White lived in a castle"). This combination naturally forms "a princess named Snow White".
- Fragment **R** also provides the setting: "lived in a castle".
- Fragment **Q** ("with her father, the King,") adds important context about her family.
- Fragment **S** ("and her stepmother,") continues the description of her family, logically connecting to the final word "the Queen", implying the stepmother is the Queen.

This order results in a grammatically sound and easily understandable sentence, fitting the style of a fairy tale opening.

51. Answer: c

Explanation:

Sleeping Beauty Sequence Ordering

The question asks us to find the correct sequence for several fragments related to the classic Fairytale story of Sleeping Beauty. The goal is to arrange these fragments logically to describe the story, potentially in the context of its adaptations having a modern ending.

Analyzing the Sleeping Beauty Fragments

Let's examine each piece of text provided:

- **Fragment P:** "the Tale of Princess Aurora/Briar Rose." This fragment seems to identify the story itself, possibly giving its formal name or the name of the protagonist.

- **Fragment Q:** "Grimm Brothers and Disney" This lists prominent names associated with popular versions or retellings of the Sleeping Beauty fairytale.
- **Fragment R:** "This Classic Fairy Tale combines parts of the Charles Perrault," This fragment introduces the idea that the story draws from multiple sources, specifically mentioning the version by Charles Perrault as a key element. It seems poised to start a descriptive sentence.
- **Fragment S:** "versions and is reimagined with" This fragment appears to continue the thought from Fragment R, suggesting a process of combining different versions and adapting the story creatively.

Determining the Correct Sequence: PRQS

To make the description coherent, we need to arrange P, Q, R, and S in a logical order. The sequence **PRQS** provides a sensible flow:

1. **P first:** Begin by identifying the specific story: "the Tale of Princess Aurora/Briar Rose." This sets the topic clearly.
2. **R follows P:** Introduce the source material, stating that "This Classic Fairy Tale combines parts of the Charles Perrault," version. This gives historical context.
3. **Q comes after R:** Add other important influences or adaptations, mentioning "Grimm Brothers and Disney." This broadens the scope of the story's development.
4. **S concludes the sequence:** Finish by describing the method of adaptation: "versions and is reimagined with." This explains how the story evolved, linking the different sources and adaptations mentioned.

This order, **PRQS**, logically progresses from identifying the story (P), to its origins and key adapters (R and Q), and finally to the process of adaptation (S).

Constructing the Narrative with PRQS

Using the sequence **PRQS**, we can piece together a description related to the Sleeping Beauty fairytale:

The Fairytale story of Sleeping Beauty, also known as **P. the Tale of Princess Aurora/Briar Rose**, is a Classic Fairy Tale that indeed **R. combines parts of the Charles**

Perrault, version. Furthermore, it incorporates elements related to Q. Grimm Brothers and Disney, as the story S. is reimagined with diverse interpretations, including those offering a modern ending.

This ordering helps to understand the narrative's background and its various adaptations in a structured manner.

52. Answer: b

Explanation:

Finding the Correct Sequence for the Emperor Story

This question requires us to arrange the given sentence fragments (P, Q, R, S) into a logical and grammatically correct sequence to complete the story about an Emperor and his new royal outfit. The starting sentence is: "There once was an Emperor _____ new royal outfit."

Analyzing the Sentence Fragments

Let's look at each fragment and its potential role in the story:

- **P:** "wearing fancy new clothes." - This describes an action or state, likely following a description of what the Emperor loved.
- **Q:** "who loved nothing better than" - This is a relative clause fragment, typically introducing a description of the subject (the Emperor). It needs something to follow it.
- **R:** "Three times a day he" - This phrase sets up an action that the Emperor performs regularly. It requires a verb phrase to complete the sentence.
- **S:** "would change into a brand" - This phrase seems to complete the action introduced by fragment R, specifically describing the Emperor changing clothes.

Step-by-Step Sequence Construction (QPRS)

Let's test the sequence QPRS, which is indicated as the correct option:

1. **Start with Q:** The sentence begins "There once was an Emperor...". Fragment Q, "who loved nothing better than", fits perfectly here, introducing a characteristic of the Emperor.

Result: "There once was an Emperor who loved nothing better than..."

2. **Add P:** Fragment P, "wearing fancy new clothes.", completes the thought started by Q. It explains what the Emperor loved doing.

Result: "There once was an Emperor who loved nothing better than wearing fancy new clothes." This forms a complete and meaningful sentence, establishing the Emperor's personality.

3. **Add R:** Now, we need to continue the story, likely describing an action related to his love for clothes. Fragment R, "Three times a day he", introduces such an action.

Result: "Three times a day he..." This sets up the next action.

4. **Add S:** Fragment S, "would change into a brand", completes the action introduced by R and connects it to the "new royal outfit" mentioned in the initial sentence prompt.

Result: "...would change into a brand new royal outfit."

Combining these steps results in the following coherent paragraph:

"There once was an Emperor who loved nothing better than wearing fancy new clothes. Three times a day he would change into a brand new royal outfit."

Why QPRS is the Correct Sequence

The sequence QPRS creates a logical flow:

- Q introduces the Emperor's preference.
- P specifies that preference (loving clothes).
- R describes the frequency of his actions related to clothes.

- S details the specific action (changing outfits).

This sequence makes sense both grammatically and contextually, telling a simple story about the Emperor's obsession with his attire.

Evaluating Other Options

Other sequences do not create the same level of coherence:

- PQRS: "There once was an Emperor wearing fancy new clothes who loved nothing better than Three times a day he would change into a brand new royal outfit." – Grammatically awkward.
- RSQP: "There once was an Emperor Three times a day he would change into a brand who loved nothing better than wearing fancy new clothes." – Does not make sense.
- QRPS: "There once was an Emperor who loved nothing better than wearing fancy new clothes. Three times a day he would change into a brand new royal outfit." – This sequence is logical and grammatically sound.

53. Answer: c

Explanation:

Finding the Correct Sequence for Fill-in-the-Blanks

This solution explains how to determine the correct order for the sentences P, Q, R, and S to complete the given passage about a Princess.

Analyzing the Sentence Fragments

Let's break down each part of the sequence to understand its role:

- R: "Many a suitor came to the palace to win her hand in marriage," – This sentence introduces the main subject: suitors arriving for the Princess. It serves as a good starting point.

- **P:** "but it seemed to the Princess that" – This phrase indicates a contrast or the Princess's perception. It likely follows a statement about the suitors.
- **Q:** "each one of them looked" – This describes an action performed by the suitors mentioned earlier.
- **S:** "at her without really seeing her" – This completes the description of how the suitors looked, adding a layer of meaning about their perception (or lack thereof).

Step-by-Step Sequence Construction

To find the correct sequence, we need to arrange the sentences logically and grammatically:

1. **Start with R:** The sentence "Many a suitor came to the palace to win her hand in marriage," sets the scene effectively.
2. **Connect with P:** Following the introduction of suitors, the phrase "but it seemed to the Princess that" introduces her perspective on these suitors. This creates a logical flow.
3. **Add Q:** The sentence "each one of them looked" naturally follows the mention of the Princess's thoughts about the suitors, describing their action.
4. **Complete with S:** The phrase "at her without really seeing her" logically concludes the thought started by Q, explaining *how* they looked at her.

Putting these together gives us the sequence **RPQS**.

Evaluating the RPQS Sequence

Let's assemble the full sentence using the **RPQS** order:

"Once upon a time, there was a Princess. **R** Many a suitor came to the palace to win her hand in marriage, **P** but it seemed to the Princess that **Q** each one of them looked **S** at her without really seeing her."

This arrangement creates a coherent and meaningful narrative. The suitors arrive (**R**), the Princess observes them (**P**), she notices their gaze (**Q**), and perceives that their gaze is superficial (**S**).

Conclusion

The sequence **RPQS** provides the most logical and grammatically correct completion for the given passage, accurately reflecting the intended meaning about the Princess and her suitors.

54. Answer: a

Explanation:

Meaning of the Idiom 'Broke into'

The question asks for the most appropriate meaning of the English idiom "Broke into". Idioms are phrases where the words together have a meaning that is different from the dictionary definitions of the individual words. Understanding the context and common usage is key to identifying the correct meaning.

Understanding 'Broke into'

The idiom "Broke into" generally signifies the act of **suddenly starting** an action or activity. It often implies an abrupt beginning, sometimes unexpected or even unwanted. Common uses include starting to cry, laugh, sing, or illegally entering a place.

For example:

- *She **broke into** tears* means she suddenly started crying.
- *The singer **broke into** song* means she suddenly started singing.
- *They **broke into** the house* means they illegally entered the house suddenly.

The core concept is the initiation or **sudden beginning** of an action.

Analysis of Options

Let's examine the provided options in relation to the idiom "Broke into":

- **Option 1: to suddenly begin to do something**
This meaning aligns perfectly with the common usage of the idiom "Broke into". It captures the essence of an abrupt start to an action.
- **Option 2: At the last possible moments**
This phrase describes timing, usually referring to completing something just before a deadline. It is unrelated to the idiom "Broke into".
- **Option 3: to suddenly ended to do something**
This is the opposite of the idiom's meaning. "Broke into" refers to starting something, not ending it.
- **Option 4: At the first possible moments**
Similar to option 2, this describes timing and is not the meaning of "Broke into".
- **Option 5:** This option is incomplete and cannot be evaluated.

Conclusion on the Idiom's Meaning

Based on the analysis, the phrase "to suddenly begin to do something" is the most accurate and appropriate meaning for the idiom "Broke into". It correctly reflects the concept of starting an action abruptly.

Final Answer Selection

Therefore, the most fitting meaning for the idiom "Broke into" among the choices provided is the first one.

55. Answer: d

Explanation:

Filling the Blank: Understanding 'Lacks Courage'

The task is to select the most fitting phrase to complete the sentence: "He lacks courage and _____ easily." We need to find a phrase that logically connects with the idea of lacking courage.

Analyzing Phrasal Verb Options

Let's examine the meaning of each phrasal verb provided:

- **gives away:** This means to give something freely or to reveal a secret. Example: "She *gave away* her prize money." This does not fit the context of someone easily doing something due to lack of courage.
- **gives off:** This means to emit or radiate something, like a smell or light. Example: "The engine *gives off* too much heat." This is irrelevant to the sentence's meaning.
- **gives out:** This can mean to distribute things or to stop functioning. Example: "The police *gave out* leaflets." or "The old machine finally *gave out*." Neither meaning fits the context of being easily affected by a lack of courage.
- **gives up:** This means to stop trying, to quit, or to surrender when faced with difficulty. Example: "He wanted to quit smoking but didn't want to *give up* easily."

Connecting Courage and Action

The sentence states that the person "lacks courage". The second part of the sentence describes a consequence or a related behaviour that happens "easily".

Someone who lacks courage is often unwilling to face challenges or persevere through difficulties. The phrase that best describes this behaviour is **gives up**.

If someone lacks courage, it is natural that they would **give up** easily when faced with obstacles or challenges. The other options do not logically follow from the statement "He lacks courage".

Therefore, the completed sentence is: "He lacks courage and **gives up** easily."

56. Answer: c

Explanation:

A and B Individual Work Rates

The problem requires us to determine the duration B and C need to finish a task collectively. We are provided with the individual times A and B take for the task, and a relationship connecting C's time to the combined effort of A and B.

Initially, we define the work rate for individuals A and B. The work rate signifies the portion of the total work accomplished per hour.

- Person A finishes the work in 8 hours. Thus, A's work rate is $\frac{1}{8}$ of the work per hour.
- Person B finishes the work in 10 hours. Hence, B's work rate is $\frac{1}{10}$ of the work per hour.

Combined Work Rate of A and B

Next, we calculate the speed at which A and B complete the work when collaborating. This involves summing their individual work rates.

- The combined rate of A and B is the sum of A's rate and B's rate.
- $\text{Rate}_{A+B} = \frac{1}{8} + \frac{1}{10}$

To add these fractions, we find a common denominator, which is 40.

- $\text{Rate}_{A+B} = \frac{5}{40} + \frac{4}{40} = \frac{9}{40}$ of the work is completed per hour by A and B together.

Time Taken by A and B Together

The time needed for A and B to complete the work jointly is the inverse of their combined work rate.

- $\text{Time}_{A+B} = \frac{1}{\text{Combined Rate}_{A+B}} = \frac{1}{9/40} = \frac{40}{9}$ hours.

C's Work Time and Rate Calculation

The problem specifies that C takes an equal amount of time to complete the work as A and B combined.

- Time taken by C = $\text{Time}_{A+B} = \frac{40}{9}$ hours.
- Based on this, we can calculate C's work rate:
- Rate of C = $\frac{1}{\text{Time}_C} = \frac{1}{40/9} = \frac{9}{40}$ of the work per hour.

B and C Combined Work Rate Calculation

Now, we determine the time required for B and C to finish the task together. We begin by finding their combined work rate.

- The combined rate of B and C is the sum of B's rate and C's rate.
- $\text{Rate}_{B+C} = \frac{1}{10} + \frac{9}{40}$

Using the common denominator of 40 for these fractions:

- $\text{Rate}_{B+C} = \frac{4}{40} + \frac{9}{40} = \frac{13}{40}$ of the work is completed per hour by B and C together.

Time Taken by B and C Together

The duration required for B and C to complete the work collaboratively is the inverse of their combined work rate.

- $\text{Time}_{B+C} = \frac{1}{\text{Combined Rate}_{B+C}} = \frac{1}{13/40} = \frac{40}{13}$ hours.

Expressing Time in Mixed Fraction Format

The final step involves converting the improper fraction $\frac{40}{13}$ hours into a mixed number format, consistent with the provided options.

- To convert $\frac{40}{13}$ into a mixed number, we perform the division $40 \div 13$.
- $40 \div 13$ results in 3 with a remainder of 1.
- Therefore, $\frac{40}{13}$ hours is equivalent to $3\frac{1}{13}$ hours.

57. Answer: c

Explanation:

Calculating Auto Distance in a Mixed Journey

This problem involves calculating the distance covered by an auto during a journey where the travel is split between walking and travelling by auto. We are given the speeds for both modes of transport, the total duration of the journey, and the overall average speed.

Understanding the Given Information

- Walking Speed: 10 km/hr
- Auto Speed: 30 km/hr
- Total Journey Time: 10 hours
- Average Speed for the Total Journey: 18 km/hr

Determining the Total Distance Covered

The average speed is defined as the total distance covered divided by the total time taken. We can use this to find the total distance of the journey.

The formula for average speed is:

$$\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

Using the given values:

$$18 \text{ km/hr} = \frac{\text{Total Distance}}{10 \text{ hours}}$$

To find the Total Distance, we rearrange the formula:

$$\text{Total Distance} = \text{Average Speed} \times \text{Total Time}$$

$$\text{Total Distance} = 18 \text{ km/hr} \times 10 \text{ hours}$$

$$\text{Total Distance} = 180 \text{ km}$$

So, the entire journey covered a distance of 180 km.

Calculating Time Spent on Each Mode of Transport

Let t_w be the time spent walking (in hours) and t_a be the time spent travelling by auto (in hours).

We know the total time is 10 hours:

$$t_w + t_a = 10 \quad (\text{Equation 1})$$

The distance covered while walking is $d_w = \text{Walking Speed} \times t_w$.

$$d_w = 10 \times t_w$$

The distance covered by auto is $d_a = \text{Auto Speed} \times t_a$.

$$d_a = 30 \times t_a$$

The total distance is the sum of the distance covered walking and the distance covered by auto:

$$d_w + d_a = 180 \text{ km}$$

Substituting the expressions for d_w and d_a :

$$(10 \times t_w) + (30 \times t_a) = 180 \quad (\text{Equation 2})$$

Solving for the Time Spent in Auto

We can solve these two equations (Equation 1 and Equation 2) simultaneously. From Equation 1, we can express t_w in terms of t_a :

$$t_w = 10 - t_a$$

Now substitute this expression for t_w into Equation 2:

$$10 \times (10 - t_a) + 30 \times t_a = 180$$

Distribute the 10:

$$100 - 10t_a + 30t_a = 180$$

Combine the terms with t_a :

$$100 + 20t_a = 180$$

Subtract 100 from both sides:

$$20t_a = 180 - 100$$

$$20t_a = 80$$

Divide by 20 to find t_a :

$$t_a = \frac{80}{20}$$

$$t_a = 4 \text{ hours}$$

So, the time spent travelling by auto is 4 hours.

Finding the Distance Covered by Auto

The question asks for the distance covered specifically by the auto. We use the formula for distance with the auto speed and the time spent in the auto.

$$\text{Distance covered by Auto} = \text{Auto Speed} \times t_a$$

$$\text{Distance covered by Auto} = 30 \text{ km/hr} \times 4 \text{ hours}$$

$$\text{Distance covered by Auto} = 120 \text{ km}$$

Conclusion

The distance covered by the auto is 120 km. This corresponds to the option 120 Km.

58. Answer: d

Explanation:

Calculating Percentage Increase: A vs. B

This problem involves understanding percentage differences and how they relate when switching the base of comparison. We are given that quantity A is 35% less than quantity B, and we need to determine by what percentage B is greater than A.

Understanding the Relationship Between A and B

The statement "A is 35% less than B" means that A is equal to B minus 35% of B. We can express this mathematically. Let's choose a convenient value for B to make the calculations easier.

Assume the value of B is 100.

Calculate the value of A:

- Percentage reduction = 35%
- Amount of reduction = 35% of B = $0.35 \times B$
- Since we assumed B = 100, the reduction is $0.35 \times 100 = 35$.
- Therefore, $A = B - \text{Reduction Amount} = 100 - 35 = 65$.

So, we have B = 100 and A = 65.

Finding How Much Percent B is More Than A

Now, we need to find the percentage by which B is greater than A. To do this, we first find the difference between B and A, and then express this difference as a percentage of A (since A is the new base for comparison).

Step 1: Calculate the difference between B and A.

- Difference = B - A
- Difference = $100 - 65 = 35$.

Step 2: Calculate the percentage increase from A to B.

The formula for percentage increase is: $\text{Percentage Increase} = \left(\frac{\text{Difference}}{\text{Original Value (A)}} \right) \times 100\%$

- Percentage Increase = $\left(\frac{35}{65} \right) \times 100\%$
- Simplify the fraction: $\frac{35}{65} = \frac{5 \times 7}{5 \times 13} = \frac{7}{13}$
- Percentage Increase = $\left(\frac{7}{13} \right) \times 100\%$
- Calculate the value: $\frac{700}{13} \% \approx 53.846\%$

Final Result Explanation

Rounding the result to two decimal places, we find that B is approximately 53.85% more than A. This value matches one of the provided options.

Key takeaway: When A is X% less than B, B is not simply X% more than A. The base value used for the percentage calculation changes, leading to a different percentage value.

59. Answer: c

Explanation:

Understanding the Simple Interest Problem

This problem involves comparing the **simple interest** earned by two individuals, A and B. Both invest the **same sum of money** for the **same time period**, which is 6 years. The key difference lies in the interest rate; B earns interest at a rate that is **2% higher** than A's rate. We are given that the **difference between their simple interests** over these 6 years is Rs. 360. Our goal is to find the initial **sum of money invested**.

Key Concepts for Simple Interest Calculation

- **Simple Interest (SI):** This is a method of calculating the interest charged on the principal amount, or interest earned on an investment, where the interest is only calculated on the principal amount.
- **Formula for Simple Interest:** The standard formula is given by:

$$SI = \frac{P \times R \times T}{100}$$

Where:

- P represents the **Principal** amount (the initial sum of money invested).
- R represents the **Rate** of interest per annum (in percent).
- T represents the **Time** period for which the money is invested or borrowed (in years).

Setting Up the Equations for A and B

Let's define the variables based on the problem statement:

- Let the **sum of money invested** by both A and B be P .
- Let the rate of interest at which A invests be $R\%$ per annum.
- The time period (T) for both is **6 years**.
- Since B invests at a rate 2% higher than A, B's rate of interest is $(R + 2)\%$ per annum.

Now, we can calculate the simple interest for both:

- Simple Interest for A (SI_A):

$$SI_A = \frac{P \times R \times 6}{100}$$

- Simple Interest for B (SI_B):

$$SI_B = \frac{P \times (R + 2) \times 6}{100}$$

We are given that the difference between their simple interests is Rs. 360. Since B's rate is higher, B will earn more interest.

Difference in SI = $SI_B - SI_A$ = Rs. 360

Step-by-Step Calculation to Find the Sum of Money

Let's use the difference in simple interest to find the principal sum (P).

1. Substitute the expressions for SI_B and SI_A into the difference equation:

$$\frac{P \times (R + 2) \times 6}{100} - \frac{P \times R \times 6}{100} = 360$$

2. Factor out the common terms from the left side of the equation. The common terms are P , 6, and 100:

$$\frac{6P}{100} \times [(R + 2) - R] = 360$$

3. Simplify the expression inside the square brackets. The ' R ' terms cancel out:

$$\frac{6P}{100} \times [2] = 360$$

4. Multiply the terms on the left side:

$$\frac{12P}{100} = 360$$

5. Now, we need to solve for P . Multiply both sides by 100:

$$12P = 360 \times 100$$

$$12P = 36000$$

6. Finally, divide both sides by 12 to find the value of P .

$$P = \frac{36000}{12}$$

$$P = 3000$$

Conclusion

The calculation shows that the **sum of money invested** by both A and B is Rs. 3000.

60. Answer: b

Explanation:

This solution explains how to calculate the total **compound interest** earned on an **investment** over three years, where the **interest rate** changes each year. The initial **investment** (principal) is Rs. 56000, and the rates are 5% for the first year, 10% for the second year, and 15% for the third year.

Compound Interest Calculation Details

Compound interest is calculated on the initial principal and also on the accumulated interest from previous periods. Essentially, interest earned in each period is added to the principal for the next period's calculation. Since the **interest**

rate changes annually in this problem, we must calculate the amount step-by-step for each year.

Step-by-Step Interest Calculation

We follow these steps to find the total interest:

- **Initial Investment (Principal Amount, P):** Rs. 56000
- **Calculation for Year 1:**
 - Interest Rate for Year 1 (R_1): 5% or 0.05
 - The amount at the end of Year 1 (A_1) is calculated using the formula: $A_1 = P \times (1 + R_1)$
 - $A_1 = 56000 \times (1 + 0.05)$
 - $A_1 = 56000 \times 1.05$
 - $A_1 = 58800$
 - Interest earned in Year 1 = $A_1 - P = 58800 - 56000 = 2800$
- **Calculation for Year 2:**
 - The principal for Year 2 is the amount at the end of Year 1 (A_1). Principal = Rs. 58800
 - Interest Rate for Year 2 (R_2): 10% or 0.10
 - The amount at the end of Year 2 (A_2) is calculated using the formula: $A_2 = A_1 \times (1 + R_2)$
 - $A_2 = 58800 \times (1 + 0.10)$
 - $A_2 = 58800 \times 1.10$
 - $A_2 = 64680$
 - Interest earned in Year 2 = $A_2 - A_1 = 64680 - 58800 = 5880$
- **Calculation for Year 3:**
 - The principal for Year 3 is the amount at the end of Year 2 (A_2). Principal = Rs. 64680
 - Interest Rate for Year 3 (R_3): 15% or 0.15
 - The amount at the end of Year 3 (A_3) is calculated using the formula: $A_3 = A_2 \times (1 + R_3)$
 - $A_3 = 64680 \times (1 + 0.15)$
 - $A_3 = 64680 \times 1.15$
 - $A_3 = 74382$
 - Interest earned in Year 3 = $A_3 - A_2 = 74382 - 64680 = 9702$

Summary of Investment Growth

The progression of the **investment** value over the three years is summarized below:

| Year | Starting Amount (Rs.) | Interest Rate (%) | Interest Earned (Rs.) | Ending Amount (Rs.) |
|------|-----------------------|-------------------|-----------------------|---------------------|
| 1 | 56000 | 5 | 2800 | 58800 |
| 2 | 58800 | 10 | 5880 | 64680 |
| 3 | 64680 | 15 | 9702 | 74382 |

Final Compound Interest Calculation

The total **compound interest** earned over the entire 3-year period is the difference between the final amount (A_3) and the original principal amount (P).

- Total Compound Interest (CI) = Final Amount (A_3) - Principal Amount (P)
- $CI = A_3 - P$
- $CI = 74382 - 56000$
- $CI = 18382$

Alternatively, the total interest can be found by summing the interest earned in each individual year:

- $CI = (\text{Interest Year 1}) + (\text{Interest Year 2}) + (\text{Interest Year 3})$
- $CI = 2800 + 5880 + 9702$
- $CI = 18382$

Thus, the total **compound interest** earned on the **investment** over these 3 years is Rs. 18382.

61. Answer: d

Explanation:

Calculating Total Working Hours with Overtime

This problem involves calculating the total hours a worker spent working in a week, given their regular pay structure, an overtime rate, and their total earnings for that week. We need to determine the total working hours based on the provided information about a **worker**, their weekly earnings, and overtime conditions.

Understanding the Worker's Pay Structure

The worker earns Rs. 2000 for a standard 40-hour week. When they work overtime, their hourly rate increases by 36%. The goal is to find the total hours worked when the worker's total earnings reached Rs. 3020.

Step 1: Calculate the Regular Hourly Rate

First, let's find out how much the worker earns per hour during regular working hours.

- Base Salary: Rs. 2000
- Regular Hours: 40 hours
- Calculation: The regular hourly rate is the total weekly salary divided by the number of regular hours worked.

$$\text{Regular Hourly Rate} = \frac{\text{Weekly Salary}}{\text{Regular Hours}} = \frac{2000 \text{ Rs}}{40 \text{ hours}} = 50 \text{ Rs/hour}$$

So, the worker's regular hourly rate is Rs. 50.

Step 2: Calculate the Overtime Hourly Rate

Next, we need to calculate the hourly rate for overtime hours. The overtime rate is 36% higher than the regular rate.

- Regular Hourly Rate: Rs. 50
- Overtime Increase: 36%
- Calculation: Add 36% of the regular rate to the regular rate itself.

$$\text{Overtime Hourly Rate} = \text{Regular Rate} \times (1 + \text{Overtime Percentage Increase})$$

$$\text{Overtime Hourly Rate} = 50 \text{ Rs/hour} \times (1 + 0.36)$$

$$\text{Overtime Hourly Rate} = 50 \text{ Rs/hour} \times 1.36 = 68 \text{ Rs/hour}$$

The worker earns Rs. 68 per hour for overtime work.

Step 3: Calculate Total Overtime Earnings

Now, let's determine how much extra money the worker earned from overtime.

- Total Earnings: Rs. 3020
- Regular Earnings (for 40 hours): Rs. 2000
- Calculation: Subtract the regular earnings from the total earnings.

$$\text{Overtime Earnings} = \text{Total Earnings} - \text{Regular Earnings}$$

$$\text{Overtime Earnings} = 3020 \text{ Rs} - 2000 \text{ Rs} = 1020 \text{ Rs}$$

The worker earned Rs. 1020 in overtime pay.

Step 4: Calculate the Number of Overtime Hours Worked

Using the overtime earnings and the overtime hourly rate, we can find out how many hours were worked as overtime.

- Overtime Earnings: Rs. 1020
- Overtime Hourly Rate: Rs. 68
- Calculation: Divide the total overtime earnings by the overtime hourly rate.

$$\text{Overtime Hours} = \frac{\text{Overtime Earnings}}{\text{Overtime Hourly Rate}}$$

$$\text{Overtime Hours} = \frac{1020 \text{ Rs}}{68 \text{ Rs/hour}} = 15 \text{ hours}$$

The worker completed 15 hours of overtime.

Step 5: Calculate the Total Working Hours in the Week

Finally, add the regular hours and the overtime hours to find the total hours the worker worked in the week.

- Regular Hours: 40 hours
- Overtime Hours: 15 hours
- Calculation: Add the regular hours and the overtime hours.

$$\text{Total Working Hours} = \text{Regular Hours} + \text{Overtime Hours}$$

$$\text{Total Working Hours} = 40 \text{ hours} + 15 \text{ hours} = 55 \text{ hours}$$

Therefore, the worker worked a total of 55 hours in that week.

Conclusion

By calculating the regular hourly rate, the overtime hourly rate, the total overtime earnings, and the number of overtime hours, we find that the worker worked 55 hours in total that week.

62. Answer: a

Explanation:

Analyzing the Time Calculation Problem

This problem asks us to determine the exact time a girl will finish writing 48 pages, considering her writing speed and scheduled breaks. We need to calculate the total duration, including writing and breaks, and add it to the start time.

Understanding the Writing Speed and Target

- The girl writes at a rate of 4 pages per hour.
- Her goal is to complete 48 pages.

Calculating Pure Writing Time

First, let's find out how long it would take her to write 48 pages if there were no breaks.

The formula for time is:

$$\text{Time} = \frac{\text{Total Pages}}{\text{Writing Speed}}$$

Plugging in the values:

$$\text{Time to write} = \frac{48 \text{ pages}}{4 \text{ pages/hour}} = 12 \text{ hours}$$

So, the actual writing takes 12 hours.

Calculating Break Time

The girl takes a 10-minute break after *every* hour of writing. Let's figure out how many breaks occur during the 12 hours of writing.

- She writes for 1 hour, takes a break.
- She writes for the 2nd hour, takes a break.
- ...
- She writes for the 11th hour, takes a break.
- She writes for the 12th hour, and finishes.

She takes a break after completing each hour of writing, except for the very last hour, as the task is finished. Therefore, she takes breaks after the 1st, 2nd, ..., 11th hour of writing.

Number of breaks = 11

Duration of each break = 10 minutes

Total break time calculation:

$$\text{Total Break Time} = (\text{Number of breaks}) \times (\text{Duration per break})$$

$$\text{Total Break Time} = 11 \times 10 \text{ minutes} = 110 \text{ minutes}$$

To make this easier to add to the writing time, let's convert the total break time into hours and minutes:

$$110 \text{ minutes} = 60 \text{ minutes} + 50 \text{ minutes} = 1 \text{ hour} + 50 \text{ minutes}$$

Calculating Total Duration

The total time spent is the sum of the writing time and the total break time.

Total Duration = Writing Time + Total Break Time

Total Duration = 12 hours + 1 hour 50 minutes

Total Duration = 13 hours 50 minutes

Determining the Finish Time

The girl started at 8:00 AM. We need to add the total duration to find the finish time.

Start Time = 8:00 AM

Total Duration = 13 hours 50 minutes

Finish Time = Start Time + Total Duration

Let's add the time:

- 8:00 AM + 12 hours = 8:00 PM
- 8:00 PM + 1 hour = 9:00 PM
- 9:00 PM + 50 minutes = 9:50 PM

Therefore, the girl finishes writing 48 pages at 9:50 PM.

Conclusion

By calculating the time needed for writing and adding the time spent on breaks, we find the total duration. Adding this duration to the start time gives the final completion time.

| Component | Duration |
|--------------|---------------------|
| Writing Time | 12 hours 0 minutes |
| Break Time | 1 hour 50 minutes |
| Total Time | 13 hours 50 minutes |

Starting at 8:00 AM and working for 13 hours and 50 minutes, the girl finishes at 9:50 PM.

63. Answer: a

Explanation:

Understanding the Simple Interest Calculation

This problem involves calculating the **total interest** on a sum of money over a period of 4 years. The initial **principal amount** is Rs. 18600, and the annual **interest rate** is 15%. The specific condition is that the interest earned after the first 2 years is added to the original sum before calculating the interest for the subsequent period.

Key Information Provided

- **Principal (P):** Rs. 18600
- **Rate (R):** 15% per annum
- **Total Time Period:** 4 years
- **Condition:** Interest is added to the sum after 2 years.

Detailed Calculation Steps

We need to calculate the interest in two phases:

Phase 1: Interest for the First 2 Years

Calculate the simple interest (let's call it SI_1) for the first 2 years using the original principal.

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$P = 18600$$

$$R = 15$$

$$T = 2 \text{ years}$$

$$SI_1 = \frac{18600 \times 15 \times 2}{100}$$

$$SI_1 = 186 \times 15 \times 2$$

$$SI_1 = 186 \times 30$$

$$SI_1 = 5580$$

The interest accumulated after the first 2 years is Rs. 5580.

Phase 2: Interest for the Next 2 Years

According to the condition, this interest (SI_1) is added to the original principal.

New Principal (P_{new}) = Original Principal + Interest (SI_1)

$$P_{new} = 18600 + 5580$$

$$P_{new} = 24180$$

Now, calculate the simple interest (let's call it SI_2) for the remaining 2 years (years 3 and 4) on this new principal amount (Rs. 24180).

Using the same simple interest formula:

$$P = 24180$$

$$R = 15$$

$$T = 2 \text{ years}$$

$$SI_2 = \frac{24180 \times 15 \times 2}{100}$$

$$SI_2 = 241.80 \times 15 \times 2$$

$$SI_2 = 241.80 \times 30$$

$$SI_2 = 7254$$

The interest accumulated for the next 2 years is Rs. 7254.

Calculating the Total Interest

The **total interest** after 4 years is the sum of the interest from Phase 1 and Phase 2.

$$\text{Total Interest} = SI_1 + SI_2$$

$$\text{Total Interest} = 5580 + 7254$$

$$\text{Total Interest} = 12834$$

So, the total interest earned over the 4 years is Rs. 12834.

Conclusion

By calculating the interest for the first 2 years and adding it to the principal, then calculating the interest for the subsequent 2 years on the new amount, we find the total interest accumulated is Rs. 12834.

64. Answer: c

Explanation:

Understanding River Sailing Problem Parameters

This problem involves calculating the total distance travelled by a person sailing on a river. We are given the speed at which the person sails against the river flow, the speed of the river flow itself, and the time taken for the return journey. We need to find the total distance covered.

Key Information Provided:

- Speed while sailing **against the flow**: 12 km/hr.
- Speed of the river flow: 6 km/hr.
- Time taken for the return journey (**with the flow**): 1.25 hr.
- The goal is to find the **total distance travelled**.

Calculating Speeds Based on Answer

Let's assume the **total distance travelled** is 20 km, as suggested by the options. This means the distance covered in one direction (either upstream or downstream) is half of the total distance.

One-way distance (d) = Total Distance / 2 = 20 km / 2 = 10 km.

Analyzing the Return Journey

The problem states that the return journey took 1.25 hours. This journey is downstream (with the flow).

We can calculate the speed during the return journey (downstream speed, v_{with}) using the distance and time:

$$v_{with} = \frac{\text{Distance}}{\text{Time}}$$

$$v_{with} = \frac{d}{t_{return}}$$

Substituting the values:

$$v_{with} = \frac{10 \text{ km}}{1.25 \text{ hr}}$$

Since $1.25 = \frac{5}{4}$, the calculation becomes:

$$v_{with} = \frac{10}{5/4} = 10 \times \frac{4}{5} = 8 \text{ km/hr}$$

So, the speed downstream is 8 km/hr.

Determining Boat Speed and Consistency Check

We know the river flow speed (v_r) is 6 km/hr. The downstream speed (v_{with}) is the sum of the boat's speed in still water (v_b) and the river's speed (v_r).

$$v_{with} = v_b + v_r$$

Substituting the values we found:

$$8 \text{ km/hr} = v_b + 6 \text{ km/hr}$$

Solving for the boat speed (v_b):

$$v_b = 8 \text{ km/hr} - 6 \text{ km/hr} = 2 \text{ km/hr}$$

Now, let's consider the initial part of the journey where the person sailed against the flow. The speed against the flow ($v_{against}$) would be:

$$v_{against} = v_b - v_r$$

$$v_{against} = 2 \text{ km/hr} - 6 \text{ km/hr} = -4 \text{ km/hr}$$

This result (-4 km/hr) indicates the boat would actually move backward relative to the shore. This contradicts the initial information given in the question that the person was sailing at "12 km/hr against the flow". This suggests there might be an inconsistency in the question's values.

Conclusion on Total Distance

Despite the inconsistency, if we strictly follow the path that leads to the answer choice of 20 km, we start by assuming the total distance is 20 km. This implies a one-way distance of 10 km. Using the return time of 1.25 hours, we calculate the downstream speed as 8 km/hr. This path, while internally consistent for the return leg calculation based on the 20km total distance, conflicts with the initial speed condition stated (12 km/hr against the flow).

Therefore, based on working backward from the likely intended answer, the **total distance travelled** is 20 km.

65. Answer: d

Explanation:

Understanding the Work-Rest Cycle

The problem asks us to find the ratio of a person's working time to their rest time over a total period of 24 hours. The person follows a specific pattern: they work for 4 hours and then take a break (rest) for 1 hour.

First, let's define the duration of one complete cycle of activity:

- Working Time per cycle: 4 hours
- Rest Time per cycle: 1 hour
- Total Cycle Duration: Working Time + Rest Time = 4 hours + 1 hour = 5 hours

This means that in every 5-hour block, the person spends 4 hours working and 1 hour resting.

Calculating Time Distribution Over 24 Hours

Now, we need to determine how this pattern unfolds over a total period of 24 hours.

Let's see how many full 5-hour cycles fit into 24 hours:

- Number of full cycles = Total Time / Cycle Duration
- Number of full cycles = $\frac{24 \text{ hours}}{5 \text{ hours/cycle}} = 4.8 \text{ cycles}$

This calculation shows that there are 4 full cycles and a remaining part of a cycle within 24 hours.

Let's calculate the time spent in the 4 full cycles:

- Time covered by 4 full cycles = $4 \text{ cycles} \times 5 \text{ hours/cycle} = 20 \text{ hours}$
- Working time in 4 full cycles = $4 \text{ cycles} \times 4 \text{ hours/cycle} = 16 \text{ hours}$
- Rest time in 4 full cycles = $4 \text{ cycles} \times 1 \text{ hour/cycle} = 4 \text{ hours}$

After these 4 full cycles (which cover 20 hours), there are $24 \text{ hours} - 20 \text{ hours} = 4 \text{ hours}$ remaining.

According to the pattern, the person starts working again after a rest period. So, these remaining 4 hours are spent working.

- Remaining Working Time = 4 hours

Calculating Total Working and Rest Time

Now, let's sum up the working and rest times over the entire 24-hour period:

- Total Working Time = Working time in full cycles + Remaining working time
- Total Working Time = $16 \text{ hours} + 4 \text{ hours} = 20 \text{ hours}$
- Total Rest Time = Rest time in full cycles
- Total Rest Time = 4 hours

Check: Total time = Total Working Time + Total Rest Time = $20 \text{ hours} + 4 \text{ hours} = 24 \text{ hours}$. This matches the total period.

Determining the Final Ratio

The question asks for the ratio of working time to rest time in 24 hours.

- Ratio = Total Working Time : Total Rest Time
- Ratio = 20 hours : 4 hours

To simplify the ratio, we divide both numbers by their greatest common divisor, which is 4:

- Simplified Ratio = $\frac{20}{4} : \frac{4}{4}$
- Simplified Ratio = 5 : 1

Therefore, the ratio of the person's working time to rest time in 24 hours is 5:1.

66. Answer: b

Explanation:

Analyzing the Given Ratio $(a + b) : (a - b)$

The problem provides us with a specific relationship between two variables, a and b , in the form of a ratio. We are given that:

$$\frac{a + b}{a - b} = \frac{17}{1}$$

Our first step is to use this information to find the relationship between a and b .

Finding the Relationship between a and b

To find the relationship, we can use cross-multiplication on the given ratio:

$$1 \times (a + b) = 17 \times (a - b)$$

Now, distribute the 17 on the right side:

$$a + b = 17a - 17b$$

Next, we rearrange the equation to group terms with a on one side and terms with b on the other side. Let's move a to the right and b to the left:

$$b + 17b = 17a - a$$

Combine like terms:

$$18b = 16a$$

To make it easier to substitute later, we can express a in terms of b (or vice versa). Let's find the ratio of a to b :

$$\frac{a}{b} = \frac{18}{16}$$

Simplify the fraction:

$$\frac{a}{b} = \frac{9}{8}$$

This means that **a** is equivalent to 9 parts for every 8 parts of **b**. We can write this as $a = \frac{9}{8}b$. This relationship is key for the next step.

Calculating the Value of $(a^2 - b^2) : (a^2 + b^2)$

Now we need to find the value of the ratio $\frac{a^2 - b^2}{a^2 + b^2}$. We can substitute the relationship $a = \frac{9}{8}b$ into this expression.

First, calculate a^2 :

$$a^2 = \left(\frac{9}{8}b\right)^2 = \frac{81}{64}b^2$$

Now substitute this into the expression we need to evaluate:

$$\frac{a^2 - b^2}{a^2 + b^2} = \frac{\frac{81}{64}b^2 - b^2}{\frac{81}{64}b^2 + b^2}$$

Factor out b^2 from both the numerator and the denominator:

$$\frac{b^2 \left(\frac{81}{64} - 1\right)}{b^2 \left(\frac{81}{64} + 1\right)}$$

Cancel out the b^2 term (since b cannot be zero for the original ratio to be defined):

$$\frac{\frac{81}{64} - 1}{\frac{81}{64} + 1}$$

Now, perform the subtraction and addition in the numerator and denominator:

$$\text{Numerator: } \frac{81}{64} - 1 = \frac{81}{64} - \frac{64}{64} = \frac{81-64}{64} = \frac{17}{64}$$

$$\text{Denominator: } \frac{81}{64} + 1 = \frac{81}{64} + \frac{64}{64} = \frac{81+64}{64} = \frac{145}{64}$$

Now, divide the numerator by the denominator:

$$\frac{\frac{17}{64}}{\frac{145}{64}}$$

To divide fractions, we multiply by the reciprocal of the denominator:

$$\frac{17}{64} \times \frac{64}{145}$$

Cancel out the 64:

$$\frac{17}{145}$$

Therefore, the value of the ratio $(a^2 - b^2) : (a^2 + b^2)$ is 17 : 145.

67. Answer: b

Explanation:

Understanding the Hall Seating Fractions

This problem requires us to work with fractions to find the total number of seats and then calculate the number of empty seats under a new condition. We are given information about the proportion of seats filled and the number of empty seats.

Calculating the Total Number of Seats

Let ' S ' represent the total number of seats in the hall.

We are told that $\frac{7}{11}$ of the seats are filled. This means the fraction of seats that are empty is:

$$\text{Fraction of Empty Seats} = 1 - \frac{7}{11} = \frac{11}{11} - \frac{7}{11} = \frac{4}{11}$$

The problem states that there are 24 empty seats. We can set up an equation using the fraction of empty seats:

$$\frac{4}{11} \times S = 24$$

To find the total number of seats ' S ', we solve this equation:

$$S = 24 \div \frac{4}{11}$$

$$S = 24 \times \frac{11}{4}$$

$$S = \frac{24}{4} \times 11$$

$$S = 6 \times 11$$

$$S = 66$$

So, the hall has a total capacity of 66 seats.

Determining the Total Number of People

First, let's find out how many seats are currently filled:

$$\text{Filled Seats} = \frac{7}{11} \times S = \frac{7}{11} \times 66 = 7 \times 6 = 42$$

This means 42 people are currently sitting in the hall.

The question mentions "6/7 people are sitting in a hall". We can interpret this statement to mean that the current number of people sitting (42) is equal to $\frac{6}{7}$ of the total number of people (let's call this ' P ') who are relevant in this scenario.

We set up the equation:

$$42 = \frac{6}{7} \times P$$

Now, we solve for ' P ':

$$P = 42 \div \frac{6}{7}$$

$$P = 42 \times \frac{7}{6}$$

$$P = \frac{42}{6} \times 7$$

$$P = 7 \times 7$$

$$P = 49$$

Therefore, the 'total people' referred to in the question is 49.

Calculating Empty Seats for the Total People

We need to find out how many seats will be empty if these 49 people sit in the hall.

The total capacity of the hall is 66 seats.

If 49 people sit in the hall, then 49 seats will be filled.

The number of empty seats can be calculated by subtracting the number of filled seats from the total number of seats:

$$\text{Empty Seats} = \text{Total Seats} - \text{Number of People Sitting}$$

$$\text{Empty Seats} = 66 - 49$$

$$\text{Empty Seats} = 17$$

So, when the total people (49) sit in the hall, 17 seats will remain empty.

Conclusion

By analyzing the given fractions and numbers:

- Total seats (S) = 66.
- Currently filled seats = 42.
- The total group of people (P) = 49.
- When 49 people sit, the number of empty seats = 17.

68. Answer: a

Explanation:

This solution explains how to find the original average age of a football team when specific players are removed and the impact on the average is known.

Captain and Goalkeeper Age Calculation

First, let's determine the ages of the captain and the goalkeeper.

- The captain's age is given as 24 years.
- The goalkeeper is 6 years older than the captain.
- Therefore, the goalkeeper's age = Captain's age + 6 = $24 + 6 = 30$ years.

Team Age Variables and Summation

Let's define some variables to represent the team's age structure:

- Let N be the total number of players in the team originally.
- Let S be the sum of the ages of all N players.
- Let A be the original average age of the whole team.

The relationship between these variables is:

$$A = \frac{S}{N}$$

This means the total sum of ages can be expressed as:

$$S = N \times A$$

Average Age Calculation After Exclusion

The problem states that the captain and the goalkeeper are excluded from the team. We need to calculate the new average age based on the remaining players.

- Number of players excluded = 2 (Captain and Goalkeeper).
- Number of players remaining in the team = $N - 2$.
- Sum of the ages of the excluded players = Captain's age + Goalkeeper's age = $24 + 30 = 54$ years.
- Sum of the ages of the remaining players = Original sum of ages - Sum of excluded ages = $S - 54$.

- The new average age of the team (after exclusion) = $\frac{\text{Sum of remaining players' ages}}{\text{Number of remaining players}} = \frac{S-54}{N-2}$.

Average Increase and Mathematical Relation

According to the question, when the captain and goalkeeper are excluded, the average age of the remaining team increases by 1. This means the new average age is $A + 1$.

We can set up an equation relating the new average to the original average:

$$\frac{S - 54}{N - 2} = A + 1$$

Now, substitute $S = N \times A$ into the equation:

$$\frac{(N \times A) - 54}{N - 2} = A + 1$$

Let's solve this equation for A :

$$(N \times A) - 54 = (A + 1)(N - 2)$$

$$N \times A - 54 = A \times N - 2A + N - 2$$

Subtract $N \times A$ from both sides:

$$-54 = -2A + N - 2$$

Rearrange the terms to isolate A :

$$2A = N - 2 + 54$$

$$2A = N + 52$$

$$A = \frac{N + 52}{2}$$

Finding the Whole Team's Average Age

To find a specific numerical value for the original average age (A), we need the total number of players (N). A standard football team has 11 players.

Assuming the total number of players in the team is $N = 11$:

$$A = \frac{11 + 52}{2}$$

$$A = \frac{63}{2}$$

$$A = 31.5$$

Verification:

If the original average age was 31.5 years for 11 players:

- Original total sum of ages = $11 \times 31.5 = 346.5$ years.
- Sum of ages removed = 54 years.
- Sum of ages of remaining 9 players = $346.5 - 54 = 292.5$ years.
- New average age = $\frac{292.5}{9} = 32.5$ years.
- The increase in average age is $32.5 - 31.5 = 1$ year, which matches the condition given in the question.

Therefore, the original average age of the whole team was 31.5 years.

69. Answer: a

Explanation:

Solving Train Problems: Crossing Platforms and Trains

This solution explains how to find the length of a platform when given details about two trains crossing each other and one of the trains crossing a platform.

Problem Breakdown: Key Information

- **Train 1 Speed:** $S_1 = 72$ km/hr
- **Train 2 Speed:** $S_2 = 54$ km/hr
- **Direction:** Opposite

- **Train Length Relation:** Length of Train 2 (L_2) is half the length of Train 1 (L_1), i.e., $L_2 = L_1/2$.
- **Time to Cross Each Other:** $T_{cross} = 18$ seconds
- **Time for Train 1 to Cross Platform:** $T_{plat} = 1$ minute = 60 seconds
- **Goal:** Find the length of the platform (L_p).

Step 1: Speed Conversion to Meters per Second (m/s)

To work with time in seconds, we need to convert the speeds from kilometers per hour (km/hr) to meters per second (m/s). The conversion factor is $\frac{5}{18}$.

- Train 1 Speed (S_1): $S_1 = 72 \text{ km/hr} = 72 \times \frac{5}{18} \text{ m/s} = 4 \times 5 = 20 \text{ m/s}$
- Train 2 Speed (S_2): $S_2 = 54 \text{ km/hr} = 54 \times \frac{5}{18} \text{ m/s} = 3 \times 5 = 15 \text{ m/s}$

Step 2: Calculating Relative Speed

When two trains travel in opposite directions, their relative speed is the sum of their individual speeds. This is the speed at which they approach and pass each other.

- Relative Speed (S_{rel}): $S_{rel} = S_1 + S_2 = 20 \text{ m/s} + 15 \text{ m/s} = 35 \text{ m/s}$

Step 3: Finding the Length of Train 1 (L_1)

When two trains cross each other, the total distance covered is the sum of their lengths. The formula relating distance, speed, and time is: Distance = Speed $\times$ Time.

- Total distance covered = $L_1 + L_2$
- Using the length relation ($L_2 = L_1/2$), the total distance is $L_1 + \frac{L_1}{2} = \frac{3}{2}L_1$.
- Now, we use the relative speed and the time taken to cross each other: Total Distance = $S_{rel} \times T_{cross} = 35 \text{ m/s} \times 18 \text{ s} = 630 \text{ m}$
- Solving for L_1 : $L_1 = 630 \text{ m} \times \frac{2}{3} = 420 \text{ m}$
- We can also find the length of Train 2 (L_2): $L_2 = L_1/2 = 420 \text{ m}/2 = 210 \text{ m}$

Step 4: Calculating the Platform Length (L_p)

When a train crosses a platform, the total distance the train covers is equal to the sum of its own length and the length of the platform. The question implies the first

train (speed 72 km/hr) crosses the platform.

- Distance covered = Train Length (L_1) + Platform Length (L_p)
- We use the speed of the first train (S_1) and the time it takes to cross the platform (T_{plat}). Distance = $S_1 \times T_{plat}$ Distance = $20 \text{ m/s} \times 60 \text{ s} = 1200 \text{ m}$
- Now, we set the two expressions for the distance equal: $L_1 + L_p = 1200 \text{ m}$
- Substitute the value of L_1 we found: $420 \text{ m} + L_p = 1200 \text{ m}$
- Solving for the platform length (L_p): $L_p = 1200 \text{ m} - 420 \text{ m}$ $L_p = 780 \text{ m}$

Conclusion: Platform Length

Based on the calculations, the length of the platform is 780 meters.

70. Answer: b

Explanation:

This solution explains how to find the smallest of five consecutive even numbers given a specific condition relating their average and the difference between the first and last number.

Understanding the Properties of Consecutive Even Numbers

Consecutive even numbers are even numbers that follow each other in sequence, with a difference of 2 between each pair. For example, 2, 4, 6 are consecutive even numbers.

Let's represent five consecutive even numbers algebraically. If we denote the smallest even number as ' n ', then the five consecutive even numbers can be represented as:

- First number: n
- Second number: $n + 2$
- Third number: $n + 4$

- Fourth number: $n + 6$
- Fifth number: $n + 8$

Here, ' n ' must be an even number.

Calculating the Average of the Five Numbers

The **average** of a set of numbers is calculated by summing the numbers and dividing by the count of the numbers.

For our five consecutive even numbers ($n, n + 2, n + 4, n + 6, n + 8$), the sum is:

$$S = n + (n + 2) + (n + 4) + (n + 6) + (n + 8)$$

$$S = 5n + (2 + 4 + 6 + 8)$$

$$S = 5n + 20$$

The average is the sum divided by 5:

$$\text{Average} = \frac{S}{5} = \frac{5n + 20}{5}$$

$$\text{Average} = n + 4$$

Alternatively, for any arithmetic progression (like consecutive even numbers), the average is equal to the middle term. In this case, the middle term (the third number) is $n + 4$, confirming our calculation.

Determining the Difference Between the Last and First Number

The question states that the **average** is equal to the **difference** of the last and first number.

The first number is n .

The last number is $n + 8$.

The difference is calculated as:

$$\text{Difference} = (\text{Last number}) - (\text{First number})$$

$$\text{Difference} = (n + 8) - n$$

$$\text{Difference} = 8$$

Solving for the Smallest Number

We are given the condition that the average is equal to the difference:

$$\text{Average} = \text{Difference}$$

Substituting the expressions we found:

$$n + 4 = 8$$

To find the value of ' n ', we solve this simple linear equation:

$$n = 8 - 4$$

$$n = 4$$

Since ' n ' represents the first and smallest of the five consecutive even numbers, the smallest number is 4.

Verification

Let's check our answer. If the smallest number (n) is 4, the five consecutive even numbers are:

4, 6, 8, 10, 12

- **Average:** $\frac{4+6+8+10+12}{5} = \frac{40}{5} = 8$
- **Difference (Last - First):** $12 - 4 = 8$

The condition (Average = Difference) holds true, as $8 = 8$. Therefore, the smallest number is indeed 4.

71. Answer: a

Explanation:

This problem involves calculating the selling price required for the remaining quantity of sugar to achieve a specific overall profit percentage.

Calculating Total Cost Price for Sugar

First, let's determine the total cost involved in buying the sugar.

- Quantity of sugar bought = 20 kgs
- Cost Price (CP) per kg = Rs. 30
- Total Cost Price (Total CP) = Quantity $\times$ CP per kg
- Total CP = 20 kgs $\times$ Rs. 30/kg = Rs. 600

Determining Sales of First Batch of Sugar

Next, we need to figure out how much sugar was sold in the first transaction and the revenue generated.

- Percentage of sugar sold = 30%
- Quantity sold = 30% of 20 kgs = 0.30×20 kgs = 6 kgs
- Selling Price (SP) per kg for this batch = Rs. 40
- Revenue from the first batch = Quantity sold $\times$ SP per kg
- Revenue from the first batch = 6 kgs $\times$ Rs. 40/kg = Rs. 240

Calculating Target Overall Selling Price

The goal is to make a 10% profit on the entire transaction. Let's calculate the total selling price needed to achieve this.

- Total Cost Price (Total CP) = Rs. 600
- Desired overall gain = 10%
- Required overall gain amount = 10% of Total CP = $0.10 \times$ Rs. 600 = Rs. 60
- Target Overall Selling Price (Target SP) = Total CP + Required gain amount
- Target SP = Rs. 600 + Rs. 60 = Rs. 660

Finding Selling Rate for Remaining Sugar

Now, we need to calculate the selling price required for the rest of the sugar.

- Remaining quantity of sugar = Total quantity - Quantity sold
- Remaining quantity = 20 kgs - 6 kgs = 14 kgs
- Revenue needed from remaining sugar = Target SP - Revenue from first batch
- Revenue needed = Rs. 660 - Rs. 240 = Rs. 420
- Selling rate for the remaining sugar = Revenue needed / Remaining quantity
- Selling rate = Rs. 420 / 14 kgs
- Selling rate = Rs. 30 per kg

Therefore, the person should sell the remaining sugar at the rate of Rs. 30 per kg to achieve an overall gain of 10%.

72. Answer: c

Explanation:

Finding the Passing Percentage: A Detailed Analysis

This question requires us to calculate the minimum percentage needed to pass an exam. We are given information about two students, A and B, including their scores as a percentage of the total marks and how their scores relate to the passing marks. We need to use this information to find the passing percentage.

Analyzing the Student Scores and Passing Criteria

Let's break down the information provided:

- **Student A:** Scored 40% marks. Failed the exam by 10 marks. This means Student A's score is 10 marks below the passing threshold.
- **Student B:** Scored 65% marks. Scored 15 marks more than the passing marks. This means Student B's score is 15 marks above the passing threshold.

Setting Up Algebraic Equations

To solve this, we can use algebra. Let ' T ' represent the total marks possible in the examination, and let ' P ' represent the passing marks required.

From the information about Student A:

- Student A's score in marks = 40% of $T = 0.40 \times T$.
- Since A failed by 10 marks, their score is $P - 10$.
- Therefore, we can write the first equation:

$$0.40 \times T = P - 10 \quad \dots (1)$$

From the information about Student B:

- Student B's score in marks = 65% of $T = 0.65 \times T$.
- Since B scored 15 marks more than the passing marks, their score is $P + 15$.
- Therefore, we can write the second equation:

$$0.65 \times T = P + 15 \quad \dots (2)$$

Solving for Total Marks (T)

We have two equations and two unknowns (T and P). We can solve these equations simultaneously. A simple way is to express P in terms of T from both equations and then equate them.

From Equation (1), we get: $P = 0.40 \times T + 10$.

From Equation (2), we get: $P = 0.65 \times T - 15$.

Now, we set the expressions for P equal:

$$0.40 \times T + 10 = 0.65 \times T - 15$$

Let's rearrange the terms to find T . Move the terms with T to one side and the constant terms to the other:

$$10 + 15 = 0.65 \times T - 0.40 \times T$$

$$25 = (0.65 - 0.40) \times T$$

$$25 = 0.25 \times T$$

To find the total marks T , divide 25 by 0.25:

$$T = \frac{25}{0.25}$$

$$T = \frac{25}{1/4}$$

$$T = 25 \times 4$$

$$T = 100$$

So, the total marks in the exam are 100.

Calculating the Passing Marks (P)

With the total marks ($T = 100$) known, we can substitute this value back into either Equation (1) or Equation (2) to find the passing marks (P).

Using Equation (1):

$$P = 0.40 \times T + 10$$

$$P = 0.40 \times 100 + 10$$

$$P = 40 + 10$$

$$P = 50$$

Let's verify using Equation (2):

$$P = 0.65 \times T - 15$$

$$P = 0.65 \times 100 - 15$$

$$P = 65 - 15$$

$$P = 50$$

Both calculations confirm that the passing marks required are 50.

Determining the Passing Percentage

The passing percentage is the ratio of the passing marks to the total marks, expressed as a percentage.

The formula is:

$$\text{Passing Percentage} = \frac{\text{Passing Marks}}{\text{Total Marks}} \times 100\%$$

Substituting the values we found ($P = 50$ and $T = 100$):

$$\text{Passing Percentage} = \frac{50}{100} \times 100\%$$

$$\text{Passing Percentage} = 0.50 \times 100\%$$

$$\text{Passing Percentage} = 50\%$$

Final Answer

The percentage required to pass the exam is 50%.

73. Answer: a

Explanation:

Understanding how to calculate successive discounts is a key concept in commercial arithmetic. This problem involves an article with a given marked price subjected to two discounts applied one after the other.

Calculating the First Discount and Price

The problem states that the marked price of the article is Rs. 5320. The first discount offered is 15%.

To find the amount of the first discount, we calculate 15% of the marked price:

$$\text{First Discount Amount} = 15\% \text{ of Marked Price}$$

$$\text{First Discount Amount} = \frac{15}{100} \times 5320$$

$$\text{First Discount Amount} = 0.15 \times 5320 = 798 \text{ Rs.}$$

After the first discount, the price of the article will be the Marked Price minus the First Discount Amount:

$$\text{Price after First Discount} = \text{Marked Price} - \text{First Discount Amount}$$

$$\text{Price after First Discount} = 5320 - 798 = 4522 \text{ Rs.}$$

Determining the Second Discount Rate

The problem states that the second discount is at a rate of 20% of the first. This means the second discount rate is 20% of the first discount rate (which was 15%).

$$\text{Second Discount Rate} = 20\% \text{ of First Discount Rate}$$

$$\text{Second Discount Rate} = \frac{20}{100} \times 15\%$$

$$\text{Second Discount Rate} = 0.20 \times 15\% = 3\%$$

So, the second discount rate is 3%.

Calculating the Second Discount and Selling Price

The second discount is applied to the price of the article *after* the first discount has been subtracted. This price is Rs. 4522.

To find the amount of the second discount, we calculate 3% of the price after the first discount:

$$\text{Second Discount Amount} = 3\% \text{ of Price after First Discount}$$

$$\begin{equation*} \text{Second Discount Amount} = \frac{3}{100} \times 4522 \\ \end{equation*}$$

$$\begin{equation*} \text{Second Discount Amount} = 0.03 \times 4522 = 135.66 \\ \text{Rs.} \end{equation*}$$

The selling price of the article is the price after the first discount minus the second discount amount:

$$\text{Selling Price} = \text{Price after First Discount} - \text{Second Discount Amount}$$

$$\begin{equation*} \text{Selling Price} = 4522 - 135.66 = 4386.34 \text{ Rs.} \\ \end{equation*}$$

Rounding the Selling Price

The question asks for the selling price to the nearest Rupee. We round Rs. 4386.34 to the nearest whole number.

Since the digit after the decimal point (3) is less than 5, we round down.

$$\text{Selling Price (to nearest Rs.)} \approx 4386 \text{ Rs.}$$

Therefore, the selling price of the article, rounded to the nearest Rupee, is Rs. 4386.

| Step | Calculation | Result |
|---------------------------|-----------------|-------------|
| Marked Price (MP) | Given | Rs. 5320 |
| First Discount Rate (D1) | Given | 15% |
| First Discount Amount | 15% of 5320 | Rs. 798 |
| Price after D1 | $5320 - 798$ | Rs. 4522 |
| Second Discount Rate (D2) | 20% of 15% | 3% |
| Second Discount Amount | 3% of 4522 | Rs. 135.66 |
| Selling Price (SP) | $4522 - 135.66$ | Rs. 4386.34 |
| Rounded SP | Nearest Rupee | Rs. 4386 |

Successive Discounts Revision Table

Your Personal Exams Guide

| Concept | Explanation | Calculation Example |
|---|---|---|
| Marked Price (MP) | The initial price of an article. | Rs. 5320 |
| Discount | A reduction in price. Usually calculated as a percentage of the Marked Price or the price after a previous discount. | 15% discount means 15% of the price is reduced. |
| Discount Amount | The actual monetary value of the discount. | If MP = 1000 and Discount = 10%,
Discount Amount = 100. |
| Price after Discount | MP - Discount Amount. This is the price before any further discounts are applied. | 1000 - 100 = 900. |
| Successive Discounts | Two or more discounts applied one after the other. The second discount is applied to the price remaining after the first discount, and so on. | 10% discount followed by a 5% discount. The 5% is on the reduced price, not the original MP. |
| Calculating Price with Successive Discounts | If D1 and D2 are successive discount rates, the selling price is $MP \times (1 - \frac{D1}{100}) \times (1 - \frac{D2}{100})$. This formula works when D2 is a percentage of the price after D1. In this problem, D2 was calculated differently (as % of D1 rate), so the step-by-step calculation is clearer. | For a 10% and 5% successive discount on MP=1000: SP = $1000 \times (1 - 0.10) \times (1 - 0.05) = 1000 \times 0.90 \times 0.95 = 855$. |

Additional Information on Discount Calculations

When dealing with discounts, it's important to understand what the percentage is being applied to. In successive discounts, each subsequent discount is applied to

the price remaining after the previous discount has been taken off, unless specified otherwise.

In this specific question, the phrasing "the second at a rate of 20% of the first" means the second *rate* is calculated based on the first *rate* (15%), resulting in a 3% second discount rate. This 3% rate is then applied to the reduced price (Rs. 4522).

It's crucial to read discount problems carefully to determine whether a discount is applied to the original marked price or to the price after previous discounts, and whether the second discount is a percentage of the first *rate* or the first *amount*.

Rounding to the nearest Rupee involves looking at the first decimal place. If it is 5 or greater, round up; if it is less than 5, round down.

74. Answer: c

Explanation:

Given:

Average of 10 numbers = 26.5

Average of the first 6 numbers = 25

Average of the last 6 numbers = 29

Used formula:

Average = (Sum of all terms)/(Total number of terms)

Calculation:

⇒ Sum of 10 numbers = $10 \times 26.5 = 265$

⇒ Sum of the first 6 numbers = $6 \times 25 = 150$

⇒ Sum of the last 6 numbers = $6 \times 29 = 174$

⇒ Sum of the first six and last six numbers = $150 + 174 = 324$

⇒ Sum of the fifth and sixth numbers = $324 - 265 = 59$

⇒ Average of the fifth and sixth numbers = $59/2 = 29.5$

∴ The desired result will be 29.5.

75. Answer: b

Explanation:

Understanding the Man's Spending and Remaining Income

This problem asks us to find the initial amount of money a man possessed, given the fraction of his income he spent and the amount he had left afterwards. We need to determine his total income at the beginning.

Analyzing the Given Information

- **Fraction Spent:** The man spends $\frac{2}{5}$ of his income.
- **Amount Remaining:** After spending, he has Rs. 90 left.

Calculating the Remaining Fraction of Income

If the man spends $\frac{2}{5}$ of his income, the portion of his income that remains can be calculated by subtracting the spent fraction from the whole (which is represented by 1).

Remaining Fraction = Total Income Fraction - Spent Fraction

Remaining Fraction = $1 - \frac{2}{5}$

To subtract these, we find a common denominator:

$$\text{Remaining Fraction} = \frac{5}{5} - \frac{2}{5} = \frac{5-2}{5} = \frac{3}{5}$$

So, the man has $\frac{3}{5}$ of his total income remaining.

Determining the Total Initial Income

We know that this remaining fraction, $\frac{3}{5}$ of his income, is equal to Rs. 90.

Let the total initial income be represented by the variable I . We can set up the equation:

$$\frac{3}{5} \times I = 90$$

To find the total income (I), we need to isolate I by multiplying both sides of the equation by the reciprocal of $\frac{3}{5}$, which is $\frac{5}{3}$.

Step 1: Write the equation.

$$\frac{3}{5} \times I = 90$$

Step 2: Multiply both sides by $\frac{5}{3}$.

$$I = 90 \times \frac{5}{3}$$

Step 3: Perform the multiplication.

$$I = \frac{90 \times 5}{3}$$

Step 4: Simplify the expression. We can divide 90 by 3 first.

$$I = (90 \div 3) \times 5$$

$$I = 30 \times 5$$

Step 5: Calculate the final value.

$$I = 150$$

Conclusion

Therefore, the man had Rs. 150 in the beginning. He spent $\frac{2}{5}$ of Rs. 150, which is $\frac{2}{5} \times 150 = \frac{300}{5} = 60$. The remaining amount is $150 - 60 = 90$, which matches the information given in the question.

76. Answer: a

Explanation:

Locating the Dr APJ Abdul Kalam Missile Complex

The Dr APJ Abdul Kalam Missile Complex, a significant facility contributing to India's defense capabilities, is primarily situated in **Hyderabad**.

Significance of the Missile Complex in Hyderabad

Hyderabad has emerged as a major hub for aerospace and defense research and development in India. The Dr APJ Abdul Kalam Missile Complex, often associated with the Defence Research and Development Organisation (DRDO), plays a crucial role in the design, development, and testing of various missile systems.

- The presence of this complex underscores Hyderabad's importance in the national strategic landscape.
- It hosts advanced technological infrastructure and highly skilled personnel dedicated to defense innovation.
- The complex is instrumental in advancing India's self-reliance in missile technology.

Evaluating Location Options

When considering the location of the Dr APJ Abdul Kalam Missile Complex:

- **Hyderabad** is widely recognized as the central location for this vital defense establishment.

- While other cities like Chennai, Bengaluru, and Kochi also have significant contributions to India's defense and aerospace sectors, the specific nomenclature and primary operations of the Dr APJ Abdul Kalam Missile Complex are linked to Hyderabad.

Therefore, based on the established operational base and recognition, Hyderabad is the correct answer for the location of the Dr APJ Abdul Kalam Missile Complex.

77. Answer: d

Explanation:

2023 Cricket World Cup Hosting Details

This question requires identifying the specific country designated as the host nation for the 2023 ICC Men's Cricket World Cup.

Understanding the Cricket World Cup Hosting

The International Cricket Council (ICC) manages the Cricket World Cup, a premier international championship for One Day International (ODI) cricket. The selection of host countries is a process undertaken by the ICC, often awarding hosting rights several years in advance.

Identifying the 2023 Host Nation

The specific tournament in question is the **2023 Cricket World Cup**.

- The official host confirmation for the 2023 tournament was awarded to **India**.
- This marked the first time India hosted the Cricket World Cup as the sole host nation.

Reviewing the Options

The provided options are evaluated based on the confirmed hosting schedule:

- **England:** Hosted the previous ICC Men's Cricket World Cup in 2019.
- **South Africa:** Has hosted the event before, notably in 2003 (co-hosted).
- **Australia:** Has hosted the event multiple times, including co-hosting in 2015.
- **India:** Confirmed as the host for the 2023 ICC Men's Cricket World Cup.

Based on official information regarding the **2023 Cricket World Cup**, **India** is the correct host country.

78. Answer: c

Explanation:

Nur Sultan: Identifying the Capital City of Kazakhstan

This solution addresses the question of identifying the country associated with the capital city, Nur Sultan. Understanding national capitals is a key aspect of geography. Let's break down the options provided to find the correct country.

Analyzing the Options for Nur Sultan's Country

We need to determine which of the listed Central Asian countries has Nur Sultan as its capital. Here's a look at each option:

- **Uzbekistan:** The capital of Uzbekistan is Tashkent. Therefore, Nur Sultan is not the capital of Uzbekistan.
- **Turkmenistan:** The capital of Turkmenistan is Ashgabat. So, Nur Sultan is not the capital of Turkmenistan.
- **Kazakhstan:** Nur Sultan is indeed the capital city of Kazakhstan. It was renamed from Astana in 2019, though later reverted to Astana in 2022. However, at the time many sources might refer to it as Nur Sultan.
- **Kyrgyzstan:** The capital of Kyrgyzstan is Bishkek. This means Nur Sultan is not the capital of Kyrgyzstan.

Confirming Nur Sultan as Kazakhstan's Capital

Nur Sultan served as the capital city of **Kazakhstan**. The city has undergone name changes throughout its history, previously being known as Astana (and before that, Akmola). Understanding these geographical facts, specifically the relationship between Nur Sultan and Kazakhstan, is crucial for geography knowledge.

Conclusion on Nur Sultan's Associated Country

Based on the analysis of the provided options and general geographical knowledge, Nur Sultan is identified as the capital of Kazakhstan.

79. Answer: a

Explanation:

Razia Sultana's Rule: Delhi Sultanate Time Period

This section details the reign of Razia Sultana, a significant figure in the history of the Delhi Sultanate. Understanding the specific time frame of her rule is crucial for grasping the political dynamics of that era.

Understanding Razia Sultana's Reign

Razia Sultana holds a unique place in Indian history as the first and only female ruler of the Delhi Sultanate. She ascended the throne following the death of her father, Sultan Iltutmish, breaking the traditional norms of succession.

- **Ascension to Power:** Razia was nominated by her father, Iltutmish, as his successor, bypassing his other sons. Despite initial opposition from some nobles, she was eventually crowned the Sultan of Delhi.
- **Time Period of Rule:** Razia Sultana's reign officially lasted for a significant period, from the year 1236 to 1240. This four-year term was marked by her efforts to establish strong governance and consolidate power.
- **Key Aspects of Her Rule:** During her time as Sultan, Razia focused on administrative reforms and strengthening the empire. She appointed capable

officials, promoted justice, and patronized trade and culture. She discarded the traditional veil (purdah) and held court openly, even participating in warfare alongside her generals.

- **Challenges Faced:** Despite her capabilities, Razia faced considerable opposition from the nobility, many of whom were uncomfortable with a woman ruling the Sultanate. This internal strife eventually contributed to the end of her rule.

The period from **1236 to 1240** is historically recognized as the tenure during which Razia Sultana governed the Delhi Sultanate. Her rule, though relatively short, demonstrated her competence and determination in a male-dominated political landscape.

80. Answer: b

Explanation:

Indian Para-military Force Raising the First Women's Battalion

The question asks to identify the specific Indian Para-military force that holds the distinction of establishing the very first women's battalion within its ranks. This is a significant milestone in the history of women's participation in India's security forces.

CRPF's Pioneering Role for Women

The Central Reserve Police Force (CRPF) is the Indian Para-military force credited with raising the first women's battalion. This historic step was taken in **1986**.

The creation of this all-women battalion marked a crucial advancement in gender inclusivity within the country's security apparatus. The CRPF, being one of the largest paramilitary forces, has consistently been at the forefront of integrating women into various combat and operational roles.

Contextualizing Other Para-military Forces

While other forces mentioned also have women personnel, the CRPF was the first to form a dedicated women's battalion:

- **CISF (Central Industrial Security Force)**: Primarily responsible for security at industrial establishments and airports.
- **BSF (Border Security Force)**: Primarily tasked with guarding India's borders.
- **ITBP (Indo-Tibetan Border Police)**: Primarily deployed for guarding India's border with China.

The establishment of the first women's battalion by the CRPF demonstrates the force's commitment to gender equality and leveraging the capabilities of women in challenging security environments.

81. Answer: d

Explanation:

Second Five Year Plan and its Economic Model

The second five-year plan in India, spanning from 1956 to 1961, was a crucial period focused on rapid industrialization. It aimed to build the framework for a self-reliant and self-generating economy. A key aspect of this plan's formulation was the economic model it adopted.

Understanding the Mahalanobis Model

The cornerstone of the second five-year plan was the strategy developed by Professor Prasanta Chandra Mahalanobis. He was a renowned Indian scientist and statistician who significantly influenced India's planning process.

- **Mahalanobis Model**: This model emphasized the importance of capital goods industries, specifically focusing on heavy industries. The core idea was that

increased production of capital goods would lead to a higher rate of investment and, consequently, faster economic growth.

- **Focus on Industrialization:** The model advocated for a balanced approach between agriculture and industry, but with a pronounced emphasis on developing heavy industries like steel, mining, and manufacturing. This was seen as essential for long-term economic self-sufficiency.
- **Input-Output Analysis:** Mahalanobis utilized input-output analysis, a framework developed by Wassily Leontief, to structure the plan. This allowed planners to understand the interdependencies between different sectors of the economy and how investments in one sector would impact others.

Comparison with Other Economic Models

While other economic models exist, they were not the primary basis for the second five-year plan:

- **Solow Model:** The Solow-Swan model is primarily focused on long-run economic growth, explaining how capital accumulation, population growth, and technological progress affect output per capita. It wasn't the direct blueprint for the second five-year plan's strategy.
- **Domar Model:** The Domar model focuses on the relationship between investment and economic growth, emphasizing the role of capital formation. While related to investment, Mahalanobis's specific strategy for capital goods allocation was distinct.
- **Robinson's Model:** Joan Robinson's models often dealt with capital accumulation, economic growth, and the theory of distribution. While influential in economic thought, it wasn't the direct framework for the second five-year plan.

Significance of the Mahalanobis Model

Professor Mahalanobis's strategy provided a clear direction for India's industrial development during a critical phase. The heavy industry-oriented approach laid the foundation for India's industrial base, although it also faced criticism regarding its neglect of the agricultural sector and consumer goods initially.

Therefore, the second five-year plan was fundamentally based on the principles outlined in the **Mahalanobis model**, championing rapid industrialization through investment in capital goods.

82. Answer: b

Explanation:

Nobel Peace Prize 2021 Laureates Explained

The Nobel Peace Prize is a prestigious international award given annually to those who have contributed significantly to peace. It is awarded based on the will of Alfred Nobel, the inventor of dynamite, who wished for the prize to recognize individuals or organizations working towards peace, disarmament, and conflict resolution.

Understanding the 2021 Nobel Peace Prize Award

The Nobel Peace Prize for 2021 was awarded jointly to two individuals for their specific contributions related to freedom of expression, a vital component for democracy and peace.

- **Maria Ressa:** A Filipino-American journalist and CEO of Rappler, an online news organization. She received the award for her work in using freedom of expression to counter the abuse of power, human rights violations, and the growing misuse of social media in the Philippines.
- **Dmitry Muratov:** The editor-in-chief of the Russian newspaper Novaya Gazeta. He was honored for his commitment to defending freedom of speech in Russia, often in the face of threats and oppression. Novaya Gazeta has a long history of critical reporting.

The committee recognized their joint efforts as crucial for safeguarding freedom of expression, which they described as essential for democracy and preventing war and conflict.

Why Other Options Are Incorrect for the 2021 Peace Prize

Let's look at why the other options were not the recipients of the 2021 Nobel Peace Prize:

- **Syukuro Manabe and Klaus Hasselmann:** These scientists were awarded the **Nobel Prize in Physics 2021** for their groundbreaking work on climate modeling and predicting the effects of climate change.
- **Denis Mukwege and Nadia Murad:** This pair received the **Nobel Peace Prize 2018**. Their award recognized their efforts to combat sexual violence as a weapon of war and armed conflict.
- **Ellen Johnson Sirleaf and Leymah Gbowee:** These prominent figures were awarded the **Nobel Peace Prize 2011** for their non-violent struggle for women's rights and their participation in peace-building efforts.

Therefore, the correct recipients of the **Nobel Peace Prize 2021** were Maria Ressa and Dmitry Muratov for their work in promoting freedom of expression.

83. Answer: d

Explanation:

Understanding the Golden Grand Slam in Tennis

The question asks to identify the tennis player among the given options who has achieved the prestigious 'Golden Grand Slam'. This is a significant accomplishment in the world of tennis, requiring immense skill and consistency throughout a single season.

Defining the Golden Grand Slam

The **Golden Grand Slam** is an extremely rare achievement in tennis. It signifies winning all four Grand Slam tournaments (Australian Open, French Open,

Wimbledon, and US Open) in a single calendar year, *in addition* to winning the Olympic gold medal during that same year.

Achieving this requires dominance across different surfaces and overcoming top competitors consistently over the entire season and the Olympics.

Analyzing the Achievements of the Players

Let's look at the players mentioned:

- **Serena Williams:** An incredible player with numerous Grand Slam titles, but she has not won the Golden Grand Slam.
- **Roger Federer:** One of the greatest male tennis players, with many Grand Slam titles and an Olympic gold medal (singles in 2008), but not the Golden Grand Slam.
- **Rafael Nadal:** Another legendary player known for his dominance, particularly on clay, with multiple Grand Slam titles and an Olympic gold medal (singles in 2008), but not the Golden Grand Slam.
- **Steffi Graf:** A phenomenal German tennis player.

Steffi Graf's Historic Golden Grand Slam

Steffi Graf is the only player in tennis history, male or female, to achieve the Golden Grand Slam. She accomplished this remarkable feat in **1988**. During that year, she won:

- The Australian Open
- The French Open
- Wimbledon
- The US Open
- The Olympic Gold Medal at the Seoul Olympics

This unparalleled achievement cemented her legacy as one of the all-time greats.

Conclusion

Based on the definition of the Golden Grand Slam and the historical achievements of the players listed, Steffi Graf is the one who has won this unique title.

84. Answer: c

Explanation:

Understanding the Nickname 'The Rock'

Many famous personalities are known by distinct nicknames that often reflect their career, personality, or memorable moments. This question asks to identify the person associated with the well-known nickname 'The Rock'.

Identifying 'The Rock'

The nickname 'The Rock' is famously associated with a highly popular figure who transitioned from professional wrestling to acting. Let's examine the options provided:

- **Conor McGregor:** An Irish MMA (Mixed Martial Arts) superstar, famously known by his nickname 'The Notorious'. He is not associated with the nickname 'The Rock'.
- **M S Dhoni:** A legendary former captain of the Indian cricket team. He is widely known by his nickname 'Captain Cool' due to his calm demeanor under pressure. He is not 'The Rock'.
- **Dwayne Johnson:** This is the correct answer. Dwayne Johnson gained international fame as a professional wrestler in the WWE (World Wrestling Entertainment). During his highly successful wrestling career, he adopted the ring name 'The Rock', which perfectly captured his powerful physique and commanding presence. The nickname stuck even after he transitioned to a hugely successful career in Hollywood as an actor.
- **Andre Agassi:** A retired American professional tennis player, considered one of the greatest players of all time. He did not use the nickname 'The Rock'.

Origin and Popularity of 'The Rock' Nickname

Dwayne Johnson's journey to becoming 'The Rock' began in the late 1990s during his WWE career. His charisma, signature catchphrases like "Can you smell what The Rock is cooking?", and electrifying performances made him one of the most popular wrestlers in history. This success cemented the nickname 'The Rock' in popular culture. Even after leaving full-time wrestling to focus on his acting career, the name remained synonymous with him, and he is still widely referred to as Dwayne 'The Rock' Johnson.

Conclusion on the Nickname

Based on the widespread recognition and career history, the nickname 'The Rock' belongs to Dwayne Johnson.

85. Answer: a

Explanation:

Governor Eligibility Criteria and Order of Precedence Explained

This explanation focuses on the constitutional requirements and the formal ranking associated with the position of a Governor in India.

Correctness of Governor Eligibility Rules (Statement 1)

Statement 1 addresses the fundamental qualifications needed to be appointed as a Governor.

- **Indian Citizenship:** A primary requirement for holding the office of Governor is that the individual must be a citizen of India.
- **Minimum Age:** The candidate must have attained the age of 35 years. Article 157 of the Indian Constitution explicitly states these two conditions.

Since both conditions mentioned in Statement 1 are accurate constitutional requirements for the Governor, this statement is **correct**.

Governor vs. Chief Minister in Order of Precedence (Statement 2)

Statement 2 discusses the relative positions of the Governor and the Chief Minister (CM) in the official Order of Precedence.

- The Order of Precedence is a guideline that outlines the rank of various Indian dignitaries.
- In the established Order of Precedence within a state, the Governor is ranked higher than the Chief Minister. The Governor acts as the constitutional head of the state and represents the President, whereas the Chief Minister is the head of the state's elected government.
- Therefore, the assertion in Statement 2 that the CM ranks above the Governor is factually incorrect. Statement 2 is **incorrect**.

Final Conclusion on Governor Statements

Reviewing the analysis of both statements:

- Statement 1, concerning the Governor's eligibility (Indian citizen, 35 years completed), is accurate.
- Statement 2, regarding the Chief Minister being ranked higher than the Governor in the Order of Precedence, is inaccurate.

Based on this, only Statement 1 is correct.

Determining the Correct Option

The question asks to identify the correct statement(s). Since only Statement 1 is correct, the appropriate option is the one that indicates "1 only".

The correct option is **1 only**.

Explanation:

Biopic Role: Who Played Saina Nehwal

The question asks to identify the actress who portrayed the renowned Indian badminton player, Saina Nehwal, in her biographical film (biopic).

Understanding the Saina Nehwal Biopic

A biopic, or biographical picture, is a film that dramatizes the life of a particular person or people. In this case, the focus is on the life journey of Saina Nehwal, a prominent athlete who has achieved significant success in the sport of badminton for India.

The film titled "**Saina**", released in 2021, chronicles the life and struggles of Saina Nehwal. Choosing the right actor to embody such a well-known personality is crucial for the film's authenticity and connection with the audience.

Actress Portraying Saina Nehwal

The role of Saina Nehwal in her biopic was played by actress Parineeti Chopra.

- **Parineeti Chopra** took on the challenging role of depicting Saina Nehwal's journey, from her early days to becoming a world-class badminton champion. She worked extensively to prepare for the physical demands and nuances of portraying the athlete on screen.

Analysis of Other Options

Let's look at why the other options were not the actors who played Saina Nehwal in the biopic:

- **Priyanka Chopra**: While a prominent actress known for biographical roles (like Mary Kom), she did not play Saina Nehwal.
- **Deepika Padukone**: Another leading actress, known for sports-related films, but not associated with playing Saina Nehwal in this specific biopic.

- Anushka Sharma: Has portrayed sports figures in films, but was not cast as Saina Nehwal in her biopic.

Therefore, Parineeti Chopra is the correct answer for portraying Saina Nehwal in the biopic.

87. Answer: b

Explanation:

Governor General During 1857 Revolt Explained

The question asks to identify the Governor General of India who was in office during the significant historical event known as the **Revolt of 1857**. This period marked a major turning point in British rule in India.

Understanding the Role of Governor General

The Governor General was the highest British official in India, responsible for administering the British territories and managing relations with the princely states. Their tenure and actions were crucial during times of crisis or major events like the 1857 uprising.

Identifying the Governor General in 1857

To answer this question correctly, we need to recall the timeline of the **Revolt of 1857** and the individuals who held the position of Governor General of India during that specific era.

- The **Revolt of 1857** began in May 1857.
- We need to check which Governor General was serving at that time.

Analysis of Options and Correct Identification

Let's examine the options provided:

- **Lord Hastings:** He served as Governor General from 1813 to 1823. His tenure predates the 1857 Revolt.
- **Lord Canning:** He served as Governor General from 1856 to 1862. This period encompasses the outbreak and initial phase of the **Revolt of 1857**. He was the Governor General when the revolt started and played a key role in its suppression. Later, after the Government of India Act 1858, the title changed to Viceroy, and Lord Canning became the first Viceroy of India.
- **Lord Amherst:** His tenure was from 1823 to 1828, which is also before the 1857 Revolt.
- **Lord Auckland:** He served from 1836 to 1842. This period is also well before the 1857 Revolt.

Conclusion on Governor General during Revolt

Based on the historical timelines, **Lord Canning** was the Governor General of India when the **Revolt of 1857** occurred.

88. Answer: a

Explanation:

The question asks to identify the region where the popular art form 'Deknni' is found.

Deknni Art Form Explained

Deknni is a traditional folk dance form that originated in the Indian state of Goa. It is a unique dance that is typically performed by women, often accompanied by songs that depict stories of social life and romance. The dance involves graceful movements and specific costumes, reflecting the cultural heritage of the region.

Geographical Popularity of Deknni

The art form of Deknni is predominantly associated with and popular in **Goa**. It is performed during various festivals and celebrations in the state, contributing to the

rich cultural tapestry of Goan folk traditions.

Analysis of Options

Let's review the given options:

- **Goa:** This state is known for its vibrant folk dances, including Deknni.
- **Uttar Pradesh:** This state is famous for classical dances like Kathak and folk dances such as Nautanki and Raslila, not Deknni.
- **Maharashtra:** While neighbouring Goa, Maharashtra's popular folk dances include Lavani, Koli, and Powada, distinct from Deknni.
- **Punjab:** Punjab is widely recognised for its energetic folk dances like Bhangra and Giddha, which are very different from Deknni.

Based on the origin and prevalence of the Deknni art form, it is most popular in Goa.

89. Answer: b

Explanation:

Understanding the Third Umpire in Cricket

In modern cricket, the third umpire plays a crucial role in assisting the on-field umpires with difficult decisions, especially those involving boundaries, catches, run-outs, and stumpings. This technology-aided umpiring system was introduced to improve accuracy in decision-making.

The Historic First Third Umpire Dismissal

The question asks which cricketer was the first to be given out by the third umpire. This was a landmark moment in the history of cricket, marking the first time a decision made by an off-field official using video replays led to a dismissal.

The historic event occurred during the Test match between South Africa and India in Durban in 1992. The batsman involved was India's legendary cricketer, Sachin

Tendulkar.

- **Match:** South Africa vs India, 1st Test
- **Venue:** Kingsmead, Durban
- **Date:** December 26, 1992
- **Decision:** Run out
- **Fielder involved:** Jonty Rhodes
- **Batsman dismissed:** Sachin Tendulkar

During India's first innings, Sachin Tendulkar attempted a run. South African fielder Jonty Rhodes fielded the ball and threw it towards the stumps. The on-field umpire, Karl Liebenberg, was unsure if Tendulkar had made his ground before the bails were removed and referred the decision to the third umpire, who was David Orchard.

David Orchard reviewed the television replays and determined that Sachin Tendulkar was short of his crease. He communicated his decision to the on-field umpire, who then gave Tendulkar out. This was the first instance of a batsman being dismissed based on a third umpire's review.

Analyzing the Options

Let's look at the provided options in the context of this historic event:

- **Ricky Ponting:** While a great cricketer, Ricky Ponting was not the first batsman dismissed by the third umpire.
- **Sachin Tendulkar:** As discussed, Sachin Tendulkar holds the record for being the first batsman given out by the third umpire.
- **MS Dhoni:** Another prominent Indian cricketer, but he was not the first to face a third umpire dismissal.
- **Rahul Dravid:** A contemporary of Sachin Tendulkar, but he was not the first batsman dismissed by the third umpire.

Based on historical facts, Sachin Tendulkar was indeed the first cricketer to be given out by the 3rd umpire.

Revision Table: Key Cricket Umpiring Facts

| Concept | Description | Significance |
|------------------------------|---|--|
| On-field Umpires | Two umpires positioned on the field during play. | Make primary decisions on dismissals, laws, etc. |
| Third Umpire | Off-field umpire using video replays. | Assists on-field umpires with specific, often close, decisions (run-outs, stumpings, catches, boundaries). |
| Decision Review System (DRS) | Technology system allowing players to challenge on-field decisions. | Utilizes various technologies (Hawk-Eye, Snickometer, Hot Spot) and involves the third umpire for review. |

Additional Information: Evolution of Umpiring Technology

The introduction of the third umpire was a significant step towards incorporating technology into cricket umpiring. Initially, it was used only for run-outs and stumpings. Over time, its role expanded to include checks for boundaries, catches (especially bump balls or clean catches), and no-balls in some formats.

The success and acceptance of the third umpire system paved the way for more advanced technologies and the eventual implementation of the Decision Review System (DRS) in international cricket, allowing players themselves to initiate reviews of certain decisions.

Sachin Tendulkar's dismissal by the third umpire in 1992 remains a notable moment, highlighting the beginning of a new era in cricket umpiring where technology plays a vital role in ensuring fairness and accuracy.

90. Answer: c

Explanation:

Understanding India's Largest Floating Solar Power Plant

Floating solar power plants, also known as floatovoltaics, represent a significant advancement in renewable energy deployment. These innovative installations are constructed on floating structures anchored on water bodies like reservoirs or lakes. Their development in India is particularly noteworthy as it addresses the challenge of land availability for large-scale solar projects, offering a dual benefit of power generation and conservation of land resources. Furthermore, the water surface can provide a cooling effect to the solar panels, potentially enhancing their energy conversion efficiency.

Telangana Home to India's Largest Floating Solar Project

When considering the location of the largest floating solar power plant in India, Telangana emerges as the leading state.

Details of the Ramagundam Floating Solar Plant

The major installation driving this recognition is the **National Thermal Power Corporation (NTPC) floating solar photovoltaic (PV) project** located in **Ramagundam**, situated in the Peddapalli district of Telangana. This facility stands out due to its substantial capacity.

- **State:** Telangana
- **Project:** NTPC Ramagundam Floating Solar PV Project
- **Capacity:** The plant boasts a significant capacity of 100 Megawatts (MW).
- **Significance:** This project is a pioneering effort in India's renewable energy sector, showcasing the successful implementation of large-scale solar power generation using water surfaces. It leverages the expansive water surface of the Ramagundam thermal power plant's reservoir.
- **Operational Advantages:** Beyond land conservation, floating solar installations help mitigate water evaporation from reservoirs, which is crucial in water-scarce regions. The proximity to water also aids in keeping the solar panels cooler, potentially improving their performance, especially during hot weather conditions prevalent in India.

Contextualizing Solar Power Capacity in Other States

While states like Rajasthan, Haryana, and Uttar Pradesh are making substantial investments and advancements in solar energy, including land-based solar farms, the specific title for housing the **largest floating solar power plant** belongs to Telangana with the Ramagundam project.

This focus on floating solar power underscores India's commitment to diversifying its renewable energy portfolio and achieving its ambitious climate targets through sustainable and innovative energy solutions.

91. Answer: b

Explanation:

Understanding Naval Exercises: Frequency Matters

Naval exercises are essential practices for maritime forces worldwide. They help improve coordination, test strategies, and enhance the readiness of naval fleets. These exercises can range from bilateral drills between two nations to large-scale multilateral operations. A key characteristic of some exercises is their regularity, such as being held on a specific schedule, like **every six months**. This consistency allows for continuous improvement and evaluation of maritime security capabilities.

Detailed Analysis of Naval Exercise Options

The question asks to identify which specific naval exercise among the given options is conducted biannually (**every six months**). Let's look at each option:

- **Sankalp:** This is not typically recognized as a recurring naval exercise with a fixed schedule. The term 'Sankalp' in an Indian context often relates to resolve or commitment, but not a specific naval exercise name known for a semi-annual frequency.

- **Prasthan:** This exercise is conducted by the Indian Navy's Western Naval Command. It focuses on coastal security and maritime defence scenarios. As per the premise of the question, **Prasthan** is the naval exercise that is held **every six months**. It serves as a crucial drill for assessing and improving responses to maritime threats.
- **Mitra Shakti:** This is notably a joint **army** exercise conducted between India and Sri Lanka. Its focus is on improving skills in areas like counter-terrorism and counter-insurgency operations. Since it is an army exercise and not a naval one, it does not fit the criteria.
- **Malabar:** The Malabar exercise is a significant international maritime drill, primarily involving the navies of India, Japan, and the United States (and more recently, Australia). It focuses on enhancing interoperability and coordination in complex maritime environments. However, Malabar is generally conducted annually, not every six months.

Identifying the Exercise Held Every Six Months

After reviewing the characteristics of each exercise listed, **Prasthan** stands out as the exercise that meets the specific frequency requirement mentioned in the question – being held **every six months**. It is a key component of the Indian Navy's operational preparedness calendar.

Final Conclusion on Naval Exercise Timing

The question requires identifying the naval exercise conducted biannually. Based on the options provided, **Prasthan** is the correct answer, signifying its regular, semi-annual conduct aimed at strengthening maritime security protocols.

92. Answer: c

Explanation:

Understanding Climate Emergency Declarations

A 'Climate Emergency' declaration is a formal acknowledgment by a government or local authority that climate change poses an existential threat. By declaring an emergency, they commit to taking urgent and significant action to address the climate crisis. These declarations often aim to mobilize resources, change policies, and raise public awareness about the urgency of the issue.

Identifying the First Country to Declare Climate Emergency

Many countries and sub-national entities have declared a climate emergency over time. The question asks specifically about the first country to make such a national declaration.

Analysing the Options for the First Climate Emergency Country

Let's look at the options provided:

- Sweden: Sweden is known for its strong environmental policies but was not the first to declare a national climate emergency.
- New Zealand: New Zealand declared a climate emergency later than the country that was first.
- UK: The United Kingdom's Parliament made a significant declaration regarding the climate emergency.
- Ireland: Ireland also declared a climate and biodiversity emergency, but not as early as the first country.

Based on historical records of national government declarations, the United Kingdom was the first country's parliament to officially declare a climate emergency on May 1, 2019. While local authorities and smaller entities may have made declarations earlier, the UK was the first nation-state government body at the parliamentary level to do so.

The First Country: United Kingdom

The declaration by the UK Parliament followed extensive campaigning by environmental groups and youth activists. While the term "climate emergency" had been used before, this formal parliamentary declaration marked a significant moment, spurring similar actions in other countries and regions around the world.

| Country | Date of National Climate Emergency Declaration
(Parliamentary/Government level) |
|---------------------|--|
| UK (United Kingdom) | May 1, 2019 |
| Ireland | May 9, 2019 |
| Canada | June 17, 2019 |
| France | July 18, 2019 |
| New Zealand | December 2, 2020 |

This table shows the timeline for some of the first countries to make national declarations after the UK.

Revision Table: Climate Emergency Declarations

| Concept | Description | Significance |
|--|--|---|
| Climate Emergency | Formal recognition of climate change as a critical threat. | Calls for urgent action and policy changes. |
| First Country to Declare (Parliamentary) | United Kingdom (UK) | Set a precedent for other nations. |

Additional Information: Global Climate Actions

Following the UK's declaration, many other countries, cities, and regions around the world declared climate emergencies. This movement reflects a growing global consensus on the need for immediate and ambitious action to reduce greenhouse gas emissions and adapt to the impacts of climate change. These declarations often lead to the setting of more ambitious climate targets, such as aiming for net-zero emissions, and the implementation of new environmental policies.

93. Answer: a

Explanation:

This solution details the historical context and events surrounding the split within the Indian National Congress (INC) during its Surat Session.

Understanding the INC Surat Session Split

The Indian National Congress (INC), founded in 1885, initially saw a united front advocating for Indian rights. However, over time, differing ideologies emerged regarding the methods and pace of achieving political objectives. These differences primarily manifested between the 'Moderates' and the 'Extremists' (also known as Nationalists or Assertivists).

Key Differences Between INC Factions

- **Moderates:** This group believed in achieving reforms through constitutional and peaceful means. They relied on petitions, prayers, and resolutions to influence British policy. Leaders like Gopal Krishna Gokhale were prominent figures in this faction.
- **Extremists:** This faction felt that the Moderate approach was too slow and ineffective. They advocated for more assertive methods to achieve Swaraj (self-rule), such as passive resistance, boycott of British goods, and promoting Swadeshi (indigenous products). Leaders like Bal Gangadhar Tilak, Lala Lajpat Rai, and Bipin Chandra Pal were key proponents of this ideology.

The Significance of the 1907 Surat Session

The growing ideological chasm between the Moderates and Extremists came to a head during the **INC's Surat Session**. The session, held in Surat, Gujarat, was marked by intense disagreement, particularly over the election of the INC President and the resolution regarding the Swadeshi and boycott movements.

The fundamental differences could not be reconciled, leading to the infamous split. The proceedings became disorderly, and ultimately, the Extremists were formally expelled from the Congress. This event signified a major division within the nationalist movement.

Outcome of the Surat Split

Following the **Surat Session** in 1907:

- The INC was effectively controlled by the Moderates for several years.
- The Extremists established their own political platform.

This division weakened the nationalist movement temporarily, but the two factions eventually reunited in 1916 during the Lucknow Pact.

Therefore, the INC got split into two groups in its Surat Session in the year 1907.

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94. Answer: b

Explanation:

Understanding China's "String of Pearls" Strategy

The term "**String of Pearls**" is often used to describe China's foreign policy and military strategy, particularly concerning its growing influence in the Indian Ocean Region (IOR). This strategy involves China developing a network of civilian and military facilities and ports across various countries bordering the Indian Ocean.

- The primary objective behind China's **String of Pearls** strategy is seen as enhancing its strategic presence, securing vital sea lanes for energy imports, and projecting military power.
- Key locations often cited as part of this perceived strategy include ports in Pakistan (Gwadar), Sri Lanka (Hambantota), Bangladesh (Chittagong), Myanmar (Sittwe), and islands in the Maldives and Seychelles.

India's Need for a Counter Strategy

India views China's expanding maritime footprint, exemplified by the **String of Pearls**, as a significant geopolitical challenge. A robust **counter strategy** is essential for India to protect its national interests, maintain its influence in the strategically vital Indian Ocean Region, and ensure the security of its trade routes.

Evaluating Options to Tackle China's Strategy

To effectively **tackle** China's **String of Pearls**, India employs various diplomatic, economic, and military initiatives. Let's examine the given options:

- **String of Diamonds:** While conceptually related to strategic positioning, this term is not widely recognized as India's specific counter-strategy to the "String of Pearls."
- **Necklace of Diamonds:** This phrase is frequently discussed in strategic circles as a representation of India's counter-strategy. It signifies India's effort to forge partnerships and build a network of strategic relationships with friendly nations across the Indian Ocean Region, effectively creating a 'diamond necklace' that balances China's 'string'.
- **CPEC (China-Pakistan Economic Corridor):** CPEC is a flagship project of China's Belt and Road Initiative, passing through Pakistan-occupied Kashmir. It is a Chinese initiative, not an Indian counter-strategy. In fact, it is often seen as a key component of the **String of Pearls** itself.
- **Peninsular Zone:** This is a geographical term referring to a landmass jutting out into the sea. It does not represent a specific strategic counter-measure employed by India against China's maritime strategy.

Identifying India's Counter Strategy

India's approach to counter China's **String of Pearls** involves strengthening relationships with countries like Japan, the United States, Australia (forming the Quadrilateral Security Dialogue or QUAD), Vietnam, Oman, and others. These partnerships enhance India's maritime domain awareness, facilitate joint exercises, and provide access to strategic locations. This multifaceted approach aligns with the concept often referred to as the "**Necklace of Diamonds**," which aims to create a web of interconnected alliances and cooperative frameworks to ensure freedom of navigation and maintain strategic stability in the Indian Ocean Region.

95. Answer: a

Explanation:

Understanding WBC Overproduction: Leukocytosis Explained

This section explains the medical term for an increase in White Blood Cells (WBCs).

What are White Blood Cells (WBCs)?

White Blood Cells, also called leukocytes, are essential components of our immune system. Their primary role is to defend the body against infections, inflammation, and diseases. They circulate in the blood and lymph systems, identifying and destroying harmful pathogens like bacteria and viruses.

Defining Leukocytosis

The question asks for the term describing the **overproduction of WBC**. This condition, where the count of white blood cells in the blood is significantly higher than the normal range, is called **Leukocytosis**.

- **Leukocytosis** signifies an elevated number of WBCs.
- This increase often occurs as a natural response to various stimuli, such as:
 - Infections (bacterial, viral, fungal)

- Inflammation
- Physical or emotional stress
- Certain medications (like corticosteroids)
- Bone marrow disorders or certain types of leukemia

Analyzing Other Options

To clarify why **Leukocytosis** is the correct answer, let's look at the other options provided:

- **Leukopenia:** This term refers to the opposite condition – a *reduction* or abnormally low count of white blood cells. Low WBC counts can make individuals more susceptible to infections.
- **Polycythemia Vera:** This is a condition where the bone marrow produces too many red blood cells. It affects red blood cell production, not white blood cells, and leads to thicker blood.
- **Anemia:** This is characterized by a deficiency in the number of red blood cells or the amount of hemoglobin. It impairs the blood's capacity to transport oxygen throughout the body.

Conclusion on WBC Overproduction

Based on the medical definitions, the overproduction of White Blood Cells (WBCs) is accurately termed **Leukocytosis**.

96. Answer: a

Explanation:

Understanding Cloud Bursts

A **cloud burst** is a meteorological event characterized by an extreme amount of precipitation occurring over a relatively small area in a short period. It's essentially a sudden, very intense rainfall event.

Key Characteristics of a Cloud Burst

When analyzing what happens during a **cloud burst**, it's important to focus on its defining features:

- **Sudden Occurrence:** Cloud bursts happen quickly and often without much warning.
- **Extreme Intensity:** The rainfall rate is exceptionally high. Typically, a cloud burst is defined as rainfall exceeding 100 mm (or 10 cm) per hour.
- **Localized Impact:** While the rainfall is intense, it usually affects a limited geographical area, often concentrated in hilly or mountainous regions.

Evaluating the Options for Cloud Burst Occurrence

Let's examine the provided options in light of the definition of a cloud burst:

- **Option 1: Sudden and very heavy rainfall** – This option directly aligns with the primary characteristics of a cloud burst: its sudden nature and the extreme intensity of the rainfall.
- **Option 2: Sudden and almost negligible rainfall** – This is incorrect because a cloud burst is defined by heavy, not negligible, rainfall.
- **Option 3: Random and light rainfall** – This is incorrect. While the location can sometimes seem random, the rainfall itself is not light; it is extremely heavy and intense.
- **Option 4: No rainfall is observed** – This is incorrect, as rainfall is the defining element of a cloud burst.

Conclusion on Cloud Burst Events

Based on the analysis, the most accurate description of what occurs during a **cloud burst** is a **sudden and very heavy rainfall**. This intensity and abruptness differentiate it from ordinary heavy rainfall events.

97. Answer: a

Explanation:

Understanding the Young India Newspaper

The question asks about the editor of the newspaper known as 'Young India'. This publication was a significant journal associated with the Indian independence movement.

Understanding who edited prominent newspapers and journals during the freedom struggle is important for studying modern Indian history. These publications were often used to spread awareness, articulate political views, and mobilize public opinion against British rule.

Identifying the Editor of Young India

Let's examine the options provided to determine who was the editor of 'Young India':

- Mahatma Gandhi
- C. Rajagopalachari
- Lala Lajpat Rai
- Bal Gangadhar Tilak

'Young India' was an English weekly newspaper published by Mahatma Gandhi from 1919 to 1931. Through this journal, Gandhi wrote extensively on his views regarding Swaraj, non-violence (Satyagraha), and other social and political issues concerning India. It served as a vital platform for Gandhi to communicate his philosophy and strategy to the public and leaders across India and abroad.

Therefore, the editor of 'Young India' was Mahatma Gandhi.

Contributions of Other Leaders (Publications)

While all the leaders listed were prominent figures in the Indian freedom struggle, they were associated with different publications:

| Leader | Associated Publications (Selected) |
|---------------------|--|
| Mahatma Gandhi | Young India, Harijan, Navjivan, Indian Opinion |
| C. Rajagopalachari | Associated with nationalist publications but not primarily known as the editor of 'Young India'. |
| Lala Lajpat Rai | The People (English weekly), Arya Gazette, Punjabee |
| Bal Gangadhar Tilak | Kesari (Marathi), Mahratta (English) |

Based on historical records, Mahatma Gandhi was indeed the editor of 'Young India'.

Conclusion on Young India Editor

The newspaper 'Young India' played a crucial role in the Indian independence movement, serving as a voice for Gandhi's principles and strategies. The editor who guided this publication was Mahatma Gandhi.

Revision Table: Key Leaders and Publications

| Leader | Notable Publication | Language |
|---------------------|---------------------|----------|
| Mahatma Gandhi | Young India | English |
| Bal Gangadhar Tilak | Kesari | Marathi |
| Lala Lajpat Rai | The People | English |

Additional Information on National Movement Publications

Newspapers and journals were powerful tools during the Indian national movement. They helped:

- Disseminate nationalist ideas to a wider audience.
- Criticize British policies and actions.
- Mobilize support for various campaigns and movements.
- Connect leaders and activists across different regions.
- Educate the public on political and social issues.

Apart from 'Young India', other significant publications edited or founded by freedom fighters included 'Kesari' and 'Mahratta' by Bal Gangadhar Tilak, 'Harijan' and 'Navjivan' by Mahatma Gandhi, and 'The Bengalee' by Surendranath Banerjee, among many others. Studying these publications provides valuable insight into the strategies, ideologies, and evolution of the Indian freedom struggle.

98. Answer: a

Explanation:

Exploring the Study of Earth's Structure

The question asks to identify the scientific field dedicated to understanding the composition and internal workings of our planet, Earth. This involves studying its various layers, materials, and the processes that shape its structure.

Defining Key Terms: Earth Science Fields

Let's examine the different scientific disciplines mentioned in the options to understand which one relates specifically to the **study of the Earth** and its **structure**.

- **Geology:** This branch of science focuses on the Earth itself – its physical structure, its materials, its history, and the processes that act on it. This includes studying rocks, minerals, landforms, and the Earth's interior.
- **Nephrology:** This is a specialized field of medicine that deals with the kidneys, particularly their function, diseases, and treatment.
- **Pedology:** This scientific discipline studies soils, including their formation, classification, distribution, and properties. It's related to Earth science but

specifically focuses on the soil layer.

- **Virology:** This is the study of viruses – their structure, how they replicate, and their effects on the host organism.

Identifying the Correct Field for Earth Structure Study

Based on the definitions:

- **Geology** directly addresses the **study of the structure** of the **Earth**.
- Nephrology deals with the kidneys (part of human anatomy/medicine).
- Pedology deals with soil science.
- Virology deals with viruses.

Therefore, the scientific term for the **study of the structure of the Earth** is Geology.

99. Answer: a

Explanation:

Transport Helicopter Identification: MI-17 Overview

This section explains the identification of a transport helicopter from the given options. Transport helicopters are crucial aircraft designed primarily for carrying troops, equipment, and cargo. Let's analyze the options provided.

Understanding Helicopter Roles

Helicopters are versatile machines, but specific models are optimized for different roles. The primary role determines their classification. We need to identify the helicopter predominantly used for **transport** operations.

- **MI-17:** This helicopter is a Russian-origin, twin-engine medium transport helicopter. It is widely recognized and extensively used globally for troop transport, cargo lifting, medical evacuation, and combat support missions. Its

design focuses on payload capacity and operational range, making it a quintessential **transport helicopter**.

- **Dhruv ALH (Advanced Light Helicopter)**: Developed in India, the Dhruv ALH is a multi-role utility helicopter. While it can perform transport duties, it also serves other functions like reconnaissance, search and rescue, and casualty evacuation. It is not exclusively a transport helicopter in the same category as the MI-17.
- **Cheetah**: The Cheetah helicopter is a light utility helicopter, often used for high-altitude reconnaissance, liaison, and observation roles. Its capacity for transporting heavy loads or large numbers of personnel is limited compared to dedicated transport helicopters.
- **Chetak**: Similar to the Cheetah, the Chetak (a derivative of the Aérospatiale Alouette III) is a light helicopter primarily used for liaison, training, casualty evacuation, and limited utility roles. It is not considered a primary transport helicopter for significant cargo or troop movement.

Conclusion: MI-17 as a Transport Helicopter

Based on the analysis of the roles and design focus of each helicopter:

- The **MI-17** is specifically designed and predominantly utilized as a medium transport helicopter, capable of carrying substantial payloads and personnel.
- The Dhruv ALH, Cheetah, and Chetak are primarily utility or light helicopters with roles extending beyond, or being more specialized than, pure transport.

Therefore, the MI-17 stands out as the clear example of a **transport helicopter** among the choices provided.

100. Answer: c

Explanation:

First Indian to Reach Antarctica: Detailed Analysis

This explanation focuses on identifying the **first Indian** individual to reach the continent of **Antarctica**, analyzing the provided options.

Understanding Antarctica and Indian Exploration

Antarctica is the world's southernmost continent, characterized by its extreme cold, ice cover, and significance for global climate research. India's engagement with Antarctica began with its first expedition in 1981, marking the start of its journey into polar research and exploration. Determining who the **first Indian** person was to reach this remote continent involves understanding the backgrounds of prominent Indian figures.

Analyzing the Candidates: First Indian in Antarctica

The question asks to identify the first Indian to reach Antarctica from the given options. Let's evaluate each person:

- **Sukumar Sen:** Mr. Sukumar Sen holds a distinguished place in India's history as the **first Chief Election Commissioner**. He played a crucial role in establishing India's electoral system post-independence. However, his career was focused on administration and governance, not polar exploration. He is not recognized as the first Indian to reach Antarctica.
- **S. Chandrashekhar:** Dr. Subrahmanyan Chandrasekhar, often known as S. Chandrashekhar, was a renowned Indian-American astrophysicist. He was awarded the **Nobel Prize in Physics** in 1983 for his groundbreaking work on the physical processes of star formation and evolution. While a towering figure in science, his specific contributions were in the field of astrophysics, and historical records do not identify him as the first Indian to reach Antarctica.
- **Ram Charan:** This option is identified as the correct answer for the question posed. While detailed accounts of Ram Charan's journey to Antarctica as the ***first*** Indian may not be as widely circulated as other 'firsts', within the context of the choices provided, he is designated as the answer.
- **Rakesh Sharma:** Squadron Leader Rakesh Sharma (later Wing Commander) is celebrated as the **first Indian citizen to travel into space**. He achieved this historic feat in 1984 aboard the Soviet Soyuz T-11 spacecraft. His pioneering achievement lies in space exploration, distinct from Antarctic exploration.

Key Takeaway: First Indian Antarctic Explorer

Comparing the individuals listed, Sukumar Sen (election administration), S. Chandrashekhra (astrophysics), and Rakesh Sharma (space exploration) are recognized for significant achievements in fields other than reaching Antarctica first. Based on the provided options and the designated correct answer, Ram Charan is the individual identified as the first Indian to reach Antarctica.

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