



## Master series Mock CAT – 3 2019

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VARC

LRDI

QA

### Sec 1

**Directions for questions (1to 6): The passage below is accompanied by a set of six questions. Choose the best answer to each question.**

On March 1, 1990, Uruguayans and representatives of many foreign governments witnessed the reaffirmation of Uruguay's revived democratic tradition: the transfer of power from one elected president to another. Having completed a full five-year term in office, Julio María Sanguinetti Cairolo (1985–90) of the liberal Colorado Party (Partido Colorado) transferred the presidential sash to Luis Alberto Lacalle de Herrera of the rival conservative National Party (Partido Nacional, usually referred to as the Blancos). Lacalle was elected to serve for the 1990–95 period as the country's fiftieth president.

Uruguayan democracy had been reinstated five years earlier—after the 1973–85 period of military rule—as a result of Sanguinetti's victory in the November 25, 1984, election and referendum. Sanguinetti was the first Uruguayan president to be elected, albeit in a semi democratic election, after the period of repressive military rule. He had been a lawyer, journalist, representative, minister of education and culture, and minister of labour and social welfare. During his term of office, Sanguinetti consolidated Uruguay's multiparty democracy, restored the country's prestige and respect abroad, increased its export markets, and avoided financial disorder. He symbolized Uruguay's political opening by visiting the Soviet Union and China in 1989.

In what proved to be its most active electoral year, Uruguay held two national elections in 1989. The first was a referendum on the government's amnesty law for abuses committed by the military regime. The second, the November 26 poll—the first totally free presidential elections to be held in Uruguay since 1971—demonstrated the country's return to its democratic tradition of free and honest elections.

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#### Q.1

The passage is primarily concerned with:

- 1  analysing the achievements of two former presidents of a country.
  - 2  presenting a brief account of a country's political history for a decade.
  - 3  forming analogies between the challenges faced by two successive presidents of a country.
-

4  explaining how a country had revived after an abusive military rule.

**Solution:**

**Correct Answer : 2**

The passage discusses the political scenario in Uruguay between 1985 – 1995. Prior to 1985, there was military rule, but this changed from 1985, post which democracy was restored. The passage is primarily concerned with giving an overview of the political scenario during the said period.

 **Bookmark**

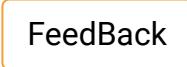
 **Answer key/Solution**

**Option 1:** This answer choice is too narrow – it suggests that the purpose was to analyse the 'achievements'. The passage dwells beyond the achievements of the two presidents. The last paragraph mentions the challenges faced by both the presidents. Hence (1) is INCORRECT.

**Option 2: CORRECT.** Out of the four answer choices, this one BEST captures the primary purpose of the passage. One could argue that 'political history' is too broad when the passage discusses specifically two presidents. However, political history deals with analysis of events, movements, organs of governments, voters, parties and leaders. The author briefly touches upon a few aspects of these. Also, it is important to note that no other option comes close to explaining the intended purpose of the author.

**Option 3:** This answer choice is INCORRECT. The author does not attempt make any sort of comparison between the two presidents. The author independently mentions the achievements of Sanguinetti; the reasons for his party's defeat in the election; the challenges faced by Lacalle.

**Option 4:** Yes, the passage does mention the events after the military rule. However, the revival after military is not the passage's primary purpose. Also, how the nation revived from that military rule is something the author did not dwell too much into. Hence (4) too narrow, making it INCORRECT.

 **FeedBack**

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Uruguayan democracy had been reinstated five years earlier— after the 1973–85 period of military rule—as a result of Sanguinetti's victory in the November 25, 1984, election and

**referendum. Sanguinetti was the first Uruguayan president to be elected, albeit in a semi democratic election, after the period of repressive military rule. He had been a lawyer, journalist, representative, minister of education and culture, and minister of labour and social welfare. During his term of office, Sanguinetti consolidated Uruguay's multiparty democracy, restored the country's prestige and respect abroad, increased its export markets, and avoided financial disorder. He symbolized Uruguay's political opening by visiting the Soviet Union and China in 1989.**

**In what proved to be its most active electoral year, Uruguay held two national elections in 1989. The first was a referendum on the government's amnesty law for abuses committed by the military regime. The second, the November 26 poll—the first totally free presidential elections to be held in Uruguay since 1971—demonstrated the country's return to its democratic tradition of free and honest elections.**

**Although voting was compulsory in Uruguay, the turnout in the November 26, 1989, elections was nonetheless impressive: 88 percent of the electorate of 2.3 million people participated. The high turnout did not necessarily mean that Uruguayan voters were among the most politically sophisticated in the world, although Uruguayans usually discussed and debated political issues exhaustively at all levels of society. The high voter turnout in 1989 demonstrated, however—as it had in 1984 when 88.5 percent participated—that Uruguay was a very politicized country and that it had one of Latin America's longest democratic traditions.**

**Despite Sanguinetti's accomplishments, his party's historic and decisive defeat reflected widespread dissatisfaction with two years of economic stagnation. The elections also challenged Uruguay's traditional two-party system of the Colorado and National parties. For the first time, a third party, the Broad Front, reached important levels by winning the country's second most powerful post (after president of the republic): the mayorship of Montevideo, which had over 40 percent of the country's population and more than two-thirds of its economic activity. The new Marxist mayor, Tabare Vázquez, immediately began pressing Lacalle for greater municipal autonomy. The prospects for the success of a "cohabitation arrangement," i.e., harmonious cooperation, however, were doubtful because Uruguayans continued to support a strong presidential system and because Lacalle was assertive of his executive powers. Thus, in addition to the challenges posed by a resurgent political left, labour unrest, and economic crisis, the Lacalle government faced the possibility of political clashes with the municipal government.**

## **Q.2**

**The defeat of the Colorado party in the 1989 Uruguay election can be primarily attributed to:**

- 1  the widespread dissatisfaction with the political system.**
- 2  the resurgence of the third party – the Broad Front.**
- 3  the repressive political rule by the party.**
- 4  the lack of growth in the economy.**

Bookmark

Answer key/Solution

**Solution:****Correct Answer : 4**

Firstly, it is important to understand that the timeline of 1989 election Military Rule was between 73 – 85; Sanguinetti was president from 95 – 90; Lacalle was president from 90 – 95. The 1989 election is one where Sanguinetti lost and Lacalle won. In the last paragraph, the author starts with this sentence – *'Despite Sanguinetti's accomplishments, his party's historic and decisive defeat reflected widespread dissatisfaction with two years of economic stagnation.'* The author attributes the defeat to the two years of economic stagnation.

**Option 1:** Nowhere in the passage does the author mention any dissatisfaction with the political system. There is evidence to the contrary. The last paragraph mentions – *'Uruguayans continued to support a strong presidential system....'* Hence, (1) is INCORRECT.

**Option 2:** The passage mentions that the election challenged the two-party system and there was a resurgence of a third-party. However, this is not so much the cause for the election result, but more of an effect of the dissatisfaction faced by the voters. Hence, (2) is INCORRECT.

**Option 3:** There is no evidence whatsoever in the passage to suggest that Sanguinetti's presidency was repressive; what was repressive was the military rule between 73–85. Hence, (3) is INCORRECT.

**Option 4: CORRECT.** It identifies economic stagnation or the lack of economic growth as the main reason for the defeat of Sanguinetti's party.

FeedBack

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### Q.3

The high turnout in the 1989 elections in Uruguay showed that:

- 1  the law of compulsory voting had immense benefits.
  - 2  Uruguay had a long tradition of democracy.
  - 3  citizens of Uruguay are politically active, indulging in political debates and discussions.
  - 4  the abuses committed by the military had a huge impact in getting people to the ballot box.
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**Solution:****Correct Answer : 2**

Refer to the sentence: '*The high voter turnout in 1989 demonstrated, however—as it had in 1984 when 88.5 percent participated—that Uruguay was a very politicized country and that it had one of Latin America's longest democratic traditions.*'

 **Bookmark**
 **Answer key/Solution**

**The high voter turnout demonstrated two things**

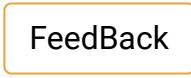
1. Uruguay was politicized
2. Uruguay has the longest democratic traditions in Latin America

**Option 1:** "*Although voting was compulsory in Uruguay, the turnout in the November 26, 1989, elections was nonetheless impressive.*" The passage suggests that the turnout was still impressive even though voting was compulsory. The author does not attribute the high turnout to compulsory voting. Also, the passage does not mention the benefits of compulsory voting. Hence,(1) is INCORRECT.

**Option 2:** This is the CORRECT answer.

**Option 3:** INCORRECT. What the high turnout demonstrated is that Uruguay is highly politicized, and not that Uruguayans are politically 'active'. Refer to this sentence from the passage: '*The high turnout did not necessarily mean that Uruguayan voters were among the most politically sophisticated in the world, although Uruguayans usually discussed and debated political issues exhaustively at all levels of society.*'

**Option 4:** There is no evidence cited in the passage to make this inference. The impact of military rule to the 1989 elections is uncertain. Also, it is worthwhile to take a look at the explanation given to question number 5 regarding the timeline of events. Hence, (4) is INCORRECT.

 **FeedBack**

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#### **Q.4**

**Which of the following principle, if true, will help explain the apprehension for the success of cohabitation agreement as mentioned in the last paragraph?**

**1  The success of cohabitation agreement is dependent on the kind of political system that is prevalent in the country.**

**2  The success of cohabitation agreement is less unlikely in a presidential political system when the citizens of that country continue to support a strong presidential system.**

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3  For the success of a cohabitation agreement, the support of its citizens for such an agreement is essential.

4  The executive powers of a President are unlimited.

**Solution:**

**Correct Answer : 3**

This question requires interpretation of the argument presented by the author. An argument has reasons (or premises) that justify a claim or a conclusion. Principle underlying the argument is another term for an assumption. Assumptions are those statements that are required for the connection to be made between the stated reason and conclusion.

 **Bookmark**

 **Answer key/Solution**

For instance, consider this argument – You must study hard for the CAT because it is a tough exam.

**Reason:** CAT is a tough exam.

**Conclusion:** You must study hard for the CAT.

**Required Principle:** A tough exam requires someone to study hard.

In the light of the above, let us evaluate the argument made by the author pertaining to the question.

*'The prospects for the success of a "cohabitation arrangement," i.e., harmonious cooperation, however, were doubtful because Uruguayans continued to support a strong presidential system and because Lacalle was assertive of his executive powers.'*

**Reason 1:** Uruguayans continued to support presidential system.

**Reason 2:** Lacalle was assertive of his executive powers

**Conclusion:** The prospects for the success of a cohabitation agreement were doubtful.

**Required principle connecting Reason 1 and conclusion:**

Citizens' support is essential for the success of cohabitation agreement.

*(Their continued support of presidential system is a reason for the lack of the success of the cohabitation agreement would mean that their support has an impact on the success of the agreement)*

**Required principle connecting Reason 2 and conclusion:**

The more is a president assertive of his executive power, lesser are the chances of success of cohabitation agreement.

**Option 1:** This kind of political system is irrelevant. What is relevant is whether the citizens support that system. Hence answer choice (1) is INCORRECT.

**Option 2:** This is INCORRECT. It contradicts what is mentioned. The trap that is set in this question is the usage of the term '*less unlikely*'. Less unlikely would mean likely. If you replace 'less unlikely' with 'likely', then the answer choice would become - *The success of a cohabitation agreement is likely in a presidential political system when the citizens of that country continues to support a strong presidential system.* This is in direct contradiction with what is mentioned in the passage.

**Option 3:** It is CORRECT for above-mentioned reasons.

**Option 4:** INCORRECT. Whether or not the powers of the president are unlimited is irrelevant. What is relevant is whether the president asserts that power.

FeedBack

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#### **Q.5**

**Which one of the following best describes Uruguay's form of Government prior to the 1973–85 military rule?**

- 
- 1  Authoritarian Government**
  - 2  Parliamentary Democracy**
  - 3  Presidential Republic**
  - 4  Communist Government**
-

**Solution:****Correct Answer : 3****There are a few pieces of evidence that one needs to consider.****Bookmark****Answer key/Solution**

**1. After the Military rule between 73 – 75, Sanguinetti became the president followed by Lacalle.**

**2. 'Lacalle was elected to serve for the 1990–95 period as the country's fiftieth president'**

**3. 'Uruguay was a very politicized country and that it had one of Latin America's longest democratic traditions.'**

**4. 'Uruguayan continued to support a strong presidential system'**

Two things are clear – prior to the military rule, (1) there were 49 presidents and (2) Uruguay was a democracy.

From (4), it is also very likely that they had a presidential system prior to the military rule.

The above information, along with basic knowledge of types of government, can help one in answering the given question.

**Option 1: HIGHLY UNLIKELY.** Authoritarian government is one where there is an indefinite political tenure by a ruler or a ruling party. Given the fact that there were 49 presidents, it is highly unlikely that the political tenure of a president was indefinite.

**Option 2: HIGHLY UNLIKELY.** In a parliamentary system the executive leader is the prime minister and not the president.

**Option 3: MOST LIKELY.** Presidential Republic is a democratic system where the head of the government is the President. This is the most likely case.

**Option 4: HIGHLY UNLIKELY.** Communist Government is the one where the state controls the economy and a single party holds power.

(On a side note, in reality Uruguay is officially called "The Oriental Republic of Uruguay" and it is a unitary presidential constitutional republic)

**FeedBack**

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#### Q.6

Which of the following CANNOT be inferred from the passage?

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- 1  The Uruguay government sought to enact laws to pardon at least some of the abuses committed by the military regime.
- 2  The President's term in Uruguay was five years during the mid-80s to mid-90s.
- 3  In the late 80s and early 90s, the city of Montevideo had the highest economic activity in Uruguay.
- 4  The President of Uruguay faced political clashes with the municipal government during the late 80s.

**Solution:**

**Correct Answer : 4**

Option (1) – This is a tricky option. It is very likely that someone would mark this as the answer. However, if you look closely you will find that this statement can be inferred from the passage.

 **Bookmark**

 **Answer key/Solution**

Refer to these sentences: '*In what proved to be its most active electoral year, Uruguay held two national elections in 1989. The first was a referendum on the government's amnesty law for abuses committed by the military regime.*'

Amnesty is an official pardon for people who have committed political offence.

Given the fact the government had sought a referendum on its amnesty law would mean that the government sought to enact laws to pardon at least some of the abuses committed by the military regime. Since answer choice (1) is inferred from the passage, it is ELIMINATED.

Option (2) – This is inferred from the first paragraph. '*Having completed a full five-year term in office, Julio María Sanguinetti Cairolo (1985–90) of the liberal Colorado Party...*'

Hence, (2) is ELIMINATED.

Option (3) – This is inferred from the last paragraph. Refer to: '*...the mayoralship of Montevideo, which had over 40 percent of the country's population and more than two-thirds of its economic activity.*' Since Montevideo has two-thirds of Uruguay's economic activity, it definitely had the highest economy activity than any other city. Hence, (3) is ELIMINATED.

Option (4) – This is a tricky option. What the passage mentions is: '*Thus, in addition to the challenges posed by a resurgent political left, labour unrest, and economic crisis, the Lacalle government faced the possibility of political clashes with the municipal government.*' Facing the possibility of something and actually facing it are two different things. Whether or not Lacalle's government faced the political clashes is uncertain. Hence, option (4) is the CORRECT ANSWER.

 **FeedBack**

**Directions for questions (7 to 12): The passage below is accompanied by a set of six questions. Choose the best answer to each question.**

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Hip, high-tech casinos sound like a lot of fun. But they may not come into being. Building and maintaining them would be expensive, and in the end, they still might not appeal to younger people. More to the point, gambling executives may not have the stamina to see the projects through. Most of them today are curiously short of two things: free cashflow and, above all, the readiness to gamble big.

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**gaming income (in part, by taking away customers from Atlantic City). Revenue from operations on Native American territory has risen by only 12% since 2008, to \$29.9 billion last year.**

### Q.7

**Which of the following statements is/are a reason(s) as to why there may not be a creation of high-tech casinos?**

- A. The running cost of high-tech casinos would be high.
- B. The casino's appetite to take the required risk is low.
- C. It might not appeal to the intended target customers.

1  Only A and B

2  Only A and C

3  Only B and C

4  A, B and C

**Solution:**

**Correct Answer : 4**

The relevant information can be found in the fourth paragraph:

 **Bookmark**

 **Answer key/Solution**

*Hip, high-tech casinos sound like a lot of fun. But they may not come into being. Building and maintaining them would be expensive, and in the end, they still might not appeal to younger people. More to the point, gambling executives may not have the stamina to see the projects through. Most of them today are curiously short of two things: free cashflow and, above all, the readiness to gamble big.*

**Statement A – TRUE.** The passage mentions that maintaining them would be expensive. Therefore, it is inferred that the running cost would be high.

**Statement B – TRUE.** The passage mentions that one of the major shortcomings are '*the readiness to gamble big*'. That essentially suggests that the casinos are not willing to take the risk.

**Statement C – TRUE.** From paragraphs 1 to 3, it is inferred that the reason for a high-tech casino is to appeal to the younger people. The fourth paragraph mentions that the high-tech casinos might not appeal to the younger people. This makes statement C a correct observation.

**FeedBack**

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**Shortly after Mark Frissora took over as chief executive of Caesars Entertainment last year, he paced the floors of his American casinos, with their rows and rows of idle slot machines, and grasped the scale of the existential threat that faces his industry. Casino customers are ageing, and younger people have little interest in taking their place. Mr Frissora called on his company to brainstorm a new “casino within a casino” to draw in millennials who grew up playing video and mobile-phone games.**

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**Q.8**

In the penultimate paragraph the casinos are compared to photocopier machines. Which of the following aspect of photocopiers, if true, best explains the analogy?

- 1  There is an increased use of digital document creation, storage and distribution using modes other than photocopying.
- 2  Photocopiers are increasingly adopting digital technology.
- 3  There is a steady decline in the price of photocopier machines.
- 4  Photocopier machines are largely used by the older generation.

**Solution:**

**Correct Answer : 1**

The question mentions: '*if true*'. So, while evaluating the answer choices, you must consider them as true.

 **Bookmark**

 **Answer key/Solution**

Refer: '*Alex Bumazhny of Fitch Ratings suggests they might become like photocopier machines, used less frequently but not entirely obsolete.*'

The analogy made here between photocopier machines and casinos is based on the '*frequency of use*'. The casinos have been losing customers just like how photocopiers are being used less frequently.

Answer choice (1) – gives a reason for the less usage of photocopiers. Hence, answer choice (1) is the **BEST** answer.

Answer choice (2) – suggests that photocopiers are innovating. Though that aspect of casinos is mentioned in the passage, the analogy of photocopiers is not addressing the said issue. Hence, answer choice (2) is **NOT** the answer.

Answer choice (3) – this describes the reduction in price. The passage dwells upon the reduction in revenue growth of casinos in the last paragraph. However, the analogy of photocopiers is not addressing the issue of revenue. Hence, answer choice (3) is **NOT** the answer.

Answer choice (4) – this describes the kind of customer that uses photocopier machine. Though casinos also attract older generation, the analogy does not address the demographics of the customer. Hence, answer choice (4) is **NOT** the answer.

**FeedBack**

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**Shortly after Mark Frissora took over as chief executive of Caesars Entertainment last year, he paced the floors of his American casinos, with their rows and rows of idle slot machines,**

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**Q.9**

The passage mentions 'In Atlantic City revenues have halved since 2006.' Based on the information given in the passage, which one of the following could be the most likely reason why Atlantic City casinos were hit badly than others?

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- 1  Most of the casinos in Atlantic City, since inception, did not innovate enough to attract younger customers.
  - 2  Post 2006, there was an increasing influx of older people spending their retirement in Atlantic City.
  - 3  Between 2006 and now, the economic crisis of 2008 impacted Atlantic City the highest amongst all the cities which had casinos.
  - 4  Before 2006, the residents of Pennsylvania and Maryland had to travel to Atlantic City to play in the casinos.
-

**Solution:****Correct Answer : 4**

This is an interpretation question – one that requires reasoning based on the information given in the passage. The question is asking to evaluate a reason as to why Atlantic City casinos' revenue halved. Going by the information given in the last paragraph, among all the casinos mentioned, the Atlantic City casinos had the worse fate. So, the answer must give us an additional problem faced by Atlantic City which could explain this occurrence.

 **Bookmark**
 **Answer key/Solution**

**Answer choice (1)** – This is an option that is worth considering. In general, the problem faced by casinos is that they are unable to attract younger customers. However, this is a challenge for casinos in general and does not explain why the revenues in the casinos in Atlantic City halved. If there are no better explanations in any other answer choice, one could go with answer choice (1). But there is a far better case presented by answer choice (4). Answer choice (1) is NOT the best answer.

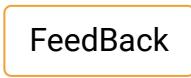
**Answer choice (2)** – This CANNOT be the answer. There is an influx of retirees settling in Atlantic City. Given the information in the passage that the casinos still attract older customers, there is no reason why Atlantic City casinos revenues should have dipped (assuming some of the retirees visit casinos). If we assume none of them visit the casinos, even then it will not explain the dip in revenue.

**Answer choice (3)** – The impact of economic crisis of 2008 is difficult to ascertain based on the information given in the passage. This answer choice is NOT the best answer.

**Answer choice (4)** – is the BEST answer. While the passage mentions many reasons as to why the casinos are facing challenges, there is a specific piece of information in the passage that talks about Atlantic City in particular. Refer: '*The states of Pennsylvania and Maryland, which had no casinos until a decade ago, now in 2016 account for more than \$4 billion in gaming income (in part, by taking away customers from Atlantic City).*' The author mentions that:

- (1) the part of \$4 billion revenue came from taking away customer from Atlantic City and
- (2) In 2006, there were no casinos in Pennsylvania and Maryland.

Combining (1) and (2), it is reasonable to assume that the residents in those two states had to go elsewhere to play in the casinos and when the casinos started in their states, they stopped visiting casinos in other states. The statement in answer choice (4) explains this reason.

 **FeedBack**

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**Q.10**

Based on the information given in the passage, which of the following is NOT mentioned as a course of action that any of the casinos acted on to attract young customers?

- 1  Redesign the casino space
- 2  Leverage technology
- 3  Tap into social media to woo younger customers
- 4  Each of the above is an action taken by at least some casinos

**Solution:**

**Correct Answer : 3**

Answer choice (1) – This is a course of action acted on by some casinos. In the second paragraph you can find evidence of the same: '*Both firms will soon open experimental spaces for young people*'. Hence answer choice (1) is ELIMINATED.

 **Bookmark**

 **Answer key/Solution**

Answer choice (2) – This is a course of action acted on by some casinos. Third paragraph gives evidence of the same: '*There are gravity-free rooms where you can literally climb the walls; LED screens that continuously change interior backgrounds; and combinations of gambling machines and virtual-reality shoot-em-ups that allow you to bet on how many monsters you (and your friends) can blast away. Instead of individuals standing solo at one-armed bandits, groups of players might compete against each other over wireless-enabled consoles offering a menu of wagering games*'. Hence, answer choice (2) is ELIMINATED.

Answer choice (3) – The passage makes no reference to wooing younger customers through social media. Answer choice (3) is the CORRECT answer.

Answer choice (4) – This is ELIMINATED.

**FeedBack**

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#### Q.11

Which one of the following if overlooked by Caesars Entertainment and MGM Resorts International will make their actions to attract younger customers, futile?

- 1  A growing number of young people are hooked on wagering games.
- 2  Playing in the casino requires money and young people do not earn enough to spend in the casino.

- 3  There is significant reporting in the media regarding the perils of gambling.
- 4  50 percent of the income earned by the two casinos is paid in taxes to the government—one of the highest among casinos in the country.

**Solution:**

**Correct Answer : 2**

This is an interpretation question. Mind you, the question asks: '*which if true*'. So, while evaluating the answer choices, you must consider them as true.



[Q. Answer key/Solution](#)

Answer choice (1) – One of the action taken by the casino is: '*Instead of individuals standing solo at one-armed bandits, groups of players might compete against each other over wireless-enabled consoles offering a menu of wagering games.*' So, if it were true that younger people are hooked on wagering games, then it would mean the action taken by the casinos is not futile. Since we are looking an action which is futile, answer choice (1) is **INCORRECT**.

Answer choice (2) – The assumption (or the problem identified) behind the action taken by the casinos is that young customers are looking at other alternatives because of the attractiveness of those alternatives. Each of the action taken by the casinos, if you look closely, is addressing that assumption. So, if it were true that the real reason that younger people do not come to the casino is because they do not have enough money to spend in the casino, then action of casinos will not attract young customers. By attacking the assumptions made by the casinos, the statement in answer choice (2) makes a compelling case to conclude that the actions of the casinos will be futile. Hence, answer choice (2) is the **BEST** answer.

Answer choice (3) – This to a large extent is irrelevant. What would have probably made a case is whether there is an increase in such reporting and whether the younger generation acts on that reporting. However, in the current form answer choice (3) is **NOT** the best answer.

Answer choice (4) – This is irrelevant. Even if it is true that the casinos pay huge taxes, that does not have an impact on the action taken by casinos to attract younger customers. Hence answer choice (4) is **INCORRECT**.

[Feedback](#)

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## **Q.12**

**Which of the following best describes the passage?**

1  An article made by an investigative journalist

2  An article in a business periodical

3  A research study in a business journal

4  An analysis made by the executive of a casino

**Solution:**

**Correct Answer : 2**

**Answer choice – (1).** Investigative journalist deeply investigates serious crimes, political corruption, or corporate wrongdoing.

This passage is not an example of investigative journalism.

Hence answer choice (1) is NOT the best answer.

 **Bookmark**

 **Answer key/Solution**

**Answer choice – (2).** The passage dwells into the business of casinos – specifically the challenges faced by them. This is the kind of article one could find in business magazines and periodicals. Hence answer choice (2) is the **BEST** answer.

**Answer choice – (3).** This passage does not show the elements of a research study. It does not appeal to any sort of study being conducted. It quotes comments by experts – hardly a research study. Answer choice (3) is NOT the best answer. **Answer choice – (4).** Highly unlikely. If this was written by the executive of a casino, he or she would rather give much deeper personal insights rather than take the quote of others in the sector. The passage seems more like a third-party view of the industry. Hence answer choice (4) is NOT the best answer.

**FeedBack**

**Directions for questions (13 to 18):** The passage below is accompanied by a set of six questions. Choose the best answer to each question.

The energy sector is in a state of change and uncertainty. A change is necessary due to the environmental damage and risks associated with the existing energy system such as climate change, pollution, security of supply concerns, and unpredictable future energy prices. Numerous studies, debates, and public figures have highlighted the need for a radical change in the very near future, including the International Energy Agency who have recently stated that a radical change is necessary by 2019.

Unfortunately, the pace of change is relatively slow today, even with all these concerns and the large body of research to prove that a change is necessary. This could be attributed to numerous factors such as the strength of existing institutions in the energy sector and the lack of suitable policy and markets. One of the key issues obstructing change in the energy sector is uncertainty.

A lot of this uncertainty is created by the variety of alternatives being proposed and debated

for the energy sector. Typically, every country will have a few very powerful institutions in each of the electricity, gas, oil, and renewable energy sectors. Each of these institutions would like to remain powerful in the future and so, when debating the design of the future energy system, it is often very difficult to separate the optimum outcome from the vested interests. This is particularly true when debating renewable energy in the future. Renewable energy is still at the development stage and it requires a radical change in the way the energy system is operated. Therefore, its reliability, costs, and potential are often more difficult to illustrate and communicate.

100% renewable energy system is technical feasible, but the structure will be very different in the future. In general, combustion will be replaced by electricity in almost all sectors. This is already evident in the electricity sector where primarily wind turbines are replaced power plants. In the heat sector individual boilers will be replaced by heat pumps, while in the transport sector oil will be replaced by electric vehicles and synthetic fuels.

In terms of costs, based on 2020 price assumptions a 100% renewable energy scenario will be approximately 20% more expensive than a business-as-usual scenario, but under 2050 price assumptions they will be the same price. However, the key difference from a society perspective is not the total costs, but the method type of costs in these two energy systems. A business-as-usual scenario will result in a fuel-based system which is dependent on imports, while a renewable energy scenario will result in an investment-based system. For instance, this will have a very positive impact on Ireland's balance of payment, since Ireland currently imports 90% of its fossil fuels. In total, there is approximately €2 billion/year more spent within Ireland when the investment-based renewable energy system is in place. This enables the creation of approximately 40,000–50,000 more direct jobs if all the investments are spread out between 2020 and 2050.

100% renewable energy systems will most likely result in the same socio-economic costs as a business as usual scenario. However, due to the type of costs in the investment-based renewable energy system, the local benefits for countries that currently import fossil fuels mean that a 100% renewable energy system is more cost effective for society.

### Q.13

With which one of the following statements is the author LEAST likely to agree with?

- 1  The debate around renewable energy systems must be based on the optimum outcome and not on any vested interest.
- 2  In the long-run, a transition to 100% renewable energy may not necessarily result in a significantly low socio-economic cost.
- 3  It is more likely that a move to 100% renewable energy systems is possible without having made fundamental changes to the way energy system is operated.
- 4  A transition to 100% renewable energy can happen without increasing the cost of the energy system.

**Solution:****Correct Answer : 3**

This is an interpretation question. While the author will definitely agree with the things that she stated in the passage, the author is also very likely to agree to the assumptions that are required for the statements that she made in the passage.

**Bookmark****Answer key/Solution**

**Answer Choice (1)** – Refer to: '*Each of these institutions would like to remain powerful in the future and so, when debating the design of the future energy system, it is often very difficult to separate the optimum outcome from the vested interests.'* The author makes her intention clear elsewhere in the passage that a change in the energy system is necessary. That coupled with the sentence mentioned here it is very likely that author does not approve of vested interests in the energy system debate. Therefore, since the author is likely to agree with option (1), it is ELIMINATED.

**Answer Choice (2)** – The passage says '*100% renewable energy systems will most likely result in the same socio-economic costs as a business as usual scenario. So, it will be true to suggest that 'in the long-run, a transition to 100% renewable energy may not necessarily result in a significantly low socio-economic costs.*' Note that the important qualifier in the statement is 'significantly'. The author does not suggest a significant reduction and there is no reason for author to disagree with option (2). Hence, it is ELIMINATED.

**Answer Choice (3)** – This is the CORRECT answer. One can be absolutely sure that the author will NOT agree with option (3). The author mentions '*Renewable energy is still at the development stage and it requires a radical change in the way the energy system is operated.*' The author clearly states that a radical change in the way the energy system is operated is necessary. Therefore, the author will clearly disagree with option (3).

**Answer Choice (4)** – Refer to: '*In terms of costs, based on 2020 price assumptions a 100% renewable energy scenario will be approximately 20% more expensive than a business-as-usual scenario, but under 2050 price assumptions they will be the same price.*' Since the author mentions that the cost will be the same under 2050 price assumptions, author will agree with option (4). Hence, it is ELIMINATED.

**FeedBack**

**Directions for questions (13 to 18):** The passage below is accompanied by a set of six questions. Choose the best answer to each question.

The energy sector is in a state of change and uncertainty. A change is necessary due to the environmental damage and risks associated with the existing energy system such as climate change, pollution, security of supply concerns, and unpredictable future energy prices. Numerous studies, debates, and public figures have highlighted the need for a radical change in the very near future, including the International Energy Agency who have recently stated that a radical change is necessary by 2019.

Unfortunately, the pace of change is relatively slow today, even with all these concerns and the large body of research to prove that a change is necessary. This could be attributed to numerous factors such as the strength of existing institutions in the energy sector and the lack of suitable policy and markets. One of the key issues obstructing change in the energy sector is uncertainty.

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100% renewable energy system is technical feasible, but the structure will be very different in the future. In general, combustion will be replaced by electricity in almost all sectors. This is already evident in the electricity sector where primarily wind turbines are replaced power plants. In the heat sector individual boilers will be replaced by heat pumps, while in the transport sector oil will be replaced by electric vehicles and synthetic fuels.

In terms of costs, based on 2020 price assumptions a 100% renewable energy scenario will be approximately 20% more expensive than a business-as-usual scenario, but under 2050 price assumptions they will be the same price. However, the key difference from a society perspective is not the total costs, but the method type of costs in these two energy systems. A business-as-usual scenario will result in a fuel-based system which is dependent on imports, while a renewable energy scenario will result in an investment-based system. For instance, this will have a very positive impact on Ireland's balance of payment, since Ireland currently imports 90% of its fossil fuels. In total, there is approximately €2 billion/year more spent within Ireland when the investment-based renewable energy system is in place. This enables the creation of approximately 40,000–50,000 more direct jobs if all the investments are spread out between 2020 and 2050.

100% renewable energy systems will most likely result in the same socio-economic costs as a business as usual scenario. However, due to the type of costs in the investment-based renewable energy system, the local benefits for countries that currently import fossil fuels mean that a 100% renewable energy system is more cost effective for society.

#### Q.14

The author mentions that a change in the energy system is necessary. The primary reason for the same is that:

1  the International Energy Agency stated that a radical change is necessary.

2  a change will be cost effective for the society.

3  every country has powerful institutions that hamper the progress of energy reform.

4  the current energy system risks damages to the environment.

**Solution:**

**Correct Answer : 4**

The passage discusses quite a few things on energy system. Therefore, it is possible to get confused with some of the options. What is important is to understand that the question asks a specific information as to why a change in the energy system is necessary. The answer can be found in the first paragraph.

 **Bookmark**

 **Answer key/Solution**

**'A change is necessary due to the environmental damage and risks associated with the existing energy system such as climate change, pollution, security of supply concerns, and unpredictable future energy prices.'**

The passage mentions that the change is necessary because of (1) environmental damage and (2) risks in the energy system

Answer choice (1) – Though the International Energy Agency has stated that the change is necessary, this statement is not the reason as to why the energy system needs change. Hence, option (1) is INCORRECT.

Answer choice (2) – is INCORRECT. It makes a reference to another detail which is not pertaining to the issue at hand.

v Answer choice (3) – the power institutions are a hindrance to the change and not a reason for the change. Hence, option (3) is INCORRECT.

Answer choice (4) is the CORRECT answer. It identifies environmental damage as the reason for the requirement of the change.

**FeedBack**

**Directions for questions (13 to 18): The passage below is accompanied by a set of six questions. Choose the best answer to each question.**

The energy sector is in a state of change and uncertainty. A change is necessary due to the environmental damage and risks associated with the existing energy system such as climate change, pollution, security of supply concerns, and unpredictable future energy prices. Numerous studies, debates, and public figures have highlighted the need for a radical change in the very near future, including the International Energy Agency who have recently stated that a radical change is necessary by 2019.

Unfortunately, the pace of change is relatively slow today, even with all these concerns and the large body of research to prove that a change is necessary. This could be attributed to numerous factors such as the strength of existing institutions in the energy sector and the lack of suitable policy and markets. One of the key issues obstructing change in the energy

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In terms of costs, based on 2020 price assumptions a 100% renewable energy scenario will be approximately 20% more expensive than a business-as-usual scenario, but under 2050 price assumptions they will be the same price. However, the key difference from a society perspective is not the total costs, but the method type of costs in these two energy systems. A business-as-usual scenario will result in a fuel-based system which is dependent on imports, while a renewable energy scenario will result in an investment-based system. For instance, this will have a very positive impact on Ireland's balance of payment, since Ireland currently imports 90% of its fossil fuels. In total, there is approximately €2 billion/year more spent within Ireland when the investment-based renewable energy system is in place. This enables the creation of approximately 40,000–50,000 more direct jobs if all the investments are spread out between 2020 and 2050.

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#### Q.15

Which of the following, if true, calls into question the claims made by the author?

- 1  Renewable energy needs huge capital investment.
- 2  Fossil fuel industry has used its influence on spreading false and misleading information about climate change.
- 3  Most of current climate change trend is extremely likely to be the result of human activity since the 20th century.

4  **The Energy Return on Investment–ratio between the amount of energy they produce to the amount of energy invested in them–will substantially remain low for at least 4 decades for renewables than those of fossil fuels.**

**Solution:**

**Correct Answer : 4**

The question says: '*if true*'. So, while evaluating the answer choices, you must consider the answer choices as true.

 **Bookmark**

 **Answer key/Solution**

**Answer choice (1) – The author does not disagree with the statement that renewable energy will incur cost. The author's intention is to argue that the investments in renewable energy will benefit society in the long run. Since the statement in answer choice (1) does not contradict what the author says, it does not question the author's claim. Hence answer choice (1) is INCORRECT.**

**Answer choice (2) – The author mentions in the second paragraph that there are vested interests. If the statement in answer choice (2) is true, then it supports the claims made by the author. Hence answer choice (2) is INCORRECT.**

**Answer choice (3) – The author argues that the change in energy system is necessary because of environmental damage. If the statement given in answer choice (3) is true, it will lend more support to the author's claim. Hence answer choice (3) is INCORRECT.**

**Answer choice (4) – The author main argument is founded on the reasoning that there is a long-term benefit for using renewable energy system. If it were true that the return on investment is substantially low, as mentioned in answer choice (4), it will refute the argument made by the author. Hence answer choice (4) is CORRECT.**

**FeedBack**

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The energy sector is in a state of change and uncertainty. A change is necessary due to the environmental damage and risks associated with the existing energy system such as climate change, pollution, security of supply concerns, and unpredictable future energy prices. Numerous studies, debates, and public figures have highlighted the need for a radical change in the very near future, including the International Energy Agency who have recently stated that a radical change is necessary by 2019.

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In terms of costs, based on 2020 price assumptions a 100% renewable energy scenario will be approximately 20% more expensive than a business-as-usual scenario, but under 2050 price assumptions they will be the same price. However, the key difference from a society perspective is not the total costs, but the method type of costs in these two energy systems. A business-as-usual scenario will result in a fuel-based system which is dependent on imports, while a renewable energy scenario will result in an investment-based system. For instance, this will have a very positive impact on Ireland's balance of payment, since Ireland currently imports 90% of its fossil fuels. In total, there is approximately €2 billion/year more spent within Ireland when the investment-based renewable energy system is in place. This enables the creation of approximately 40,000–50,000 more direct jobs if all the investments are spread out between 2020 and 2050.

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#### Q.16

What structural change will happen in the energy system should there be a transition to 100% renewable energy system?

- 
- 1  Electricity will replace most of the existing energy creation process.
  - 2  Newer technologies will be created to replace the existing ones.
  - 3  There will be less dependence on imports of fossil fuels.
  - 4  More direct jobs will be created in the next 30 years.
-

**Solution:****Correct Answer : 1**

The discussion on change in energy system structure is mentioned in the fourth paragraph.

 **Bookmark**
 **Answer key/Solution**

*'100% renewable energy system is technical feasible, but the structure will be very different in the future. In general, combustion will be replaced by electricity in almost all sectors. This is already evident in the electricity sector where primarily wind turbines are replaced power plants. In the heat sector individual boilers will be replaced by heat pumps, while in the transport sector oil will be replaced by electric vehicles and synthetic fuels.'*

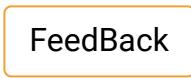
The passage mentions that combustion will be replaced by electricity in almost all sectors. Then the author gives examples of such changes. From this the best answer is the one that mentions 'electricity' as the major structural change.

Only answer choice (1) mentions it and hence it is the **CORRECT** answer.

Answer choice (2) – 'Newer technologies' is too broad. While it is plausible to think that there will be changes in technologies, whether or not these technologies are 'new' is uncertain. It might be possible that these technologies already exist. The author does not dwell in the technologies required for renewable energy. Hence answer choice (2) is **INCORRECT**.

Answer choice (3) – The dependence on fossil fuel is discussed in the last paragraph and it is not a structural change that the author mentions. Hence answer choice (3) is **INCORRECT**.

Answer choice (4) – **INCORRECT**. Same problem as answer choice (3)

 **FeedBack**

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The energy sector is in a state of change and uncertainty. A change is necessary due to the environmental damage and risks associated with the existing energy system such as climate change, pollution, security of supply concerns, and unpredictable future energy prices. Numerous studies, debates, and public figures have highlighted the need for a radical change in the very near future, including the International Energy Agency who have recently stated that a radical change is necessary by 2019.

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In terms of costs, based on 2020 price assumptions a 100% renewable energy scenario will be approximately 20% more expensive than a business-as-usual scenario, but under 2050 price assumptions they will be the same price. However, the key difference from a society perspective is not the total costs, but the method type of costs in these two energy systems. A business-as-usual scenario will result in a fuel-based system which is dependent on imports, while a renewable energy scenario will result in an investment-based system. For instance, this will have a very positive impact on Ireland's balance of payment, since Ireland currently imports 90% of its fossil fuels. In total, there is approximately €2 billion/year more spent within Ireland when the investment-based renewable energy system is in place. This enables the creation of approximately 40,000–50,000 more direct jobs if all the investments are spread out between 2020 and 2050.

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#### Q.17

Which of the following, if it were to happen, will best mitigate the problem of slow pace of change in the energy sector?

- 
- 1  Educating the public the benefits of renewables.
  - 2  There is better coordination between various governments.
  - 3  All stakeholders agree on the design of the future renewable energy system.
  - 4  The price of fossil-fuel increases significantly.
-

**Solution:****Correct Answer : 3**

Mind you, the question says, '*if it were to happen*'. So, while evaluating the answer choices, you must consider them as true.

 **Bookmark**
 **Answer key/Solution**

The slow pace of change is introduced in paragraph 2. It is mentioned that '*One of the key issues obstructing change in the energy sector is uncertainty. A lot of this uncertainty is created by the variety of alternatives being proposed and debated for the energy sector.*'

The slow pace is due to uncertainty which in turn is due to the debate around the design of future energy system and the lack of consensus.

**Answer choice (1)** – the author does not mention educating public. This is an “alien” concept in the context of the passage. Hence answer choice (1) is NOT the best answer.

**Answer choice (2)** – The author does not mention anything about coordination between governments. While the passage does mention every country having powerful institutions that cause hindrance, the author does not suggest that governments working together is a possible solution. Therefore, the impact of better coordination between governments is uncertain. Hence answer choice (2) is NOT the best answer.

**Answer choice – (3).** The author identifies the primary reason behind the slow pace as the debate around the future energy system. If the event mentioned in answer choice (3) were to happen, then that removes the uncertainty. Hence answer choice (3) is the BEST answer.

**Answer choice – (4).** The passage is silent on the impact of fossil fuel prices. Solely based on the evidences given in the passage, it is impossible to evaluate the impact of increase in fossil fuel prices. Hence answer choice (4) is NOT the best answer.

 **FeedBack**


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#### Q.18

Which of the following best describes the passage?

- 1  An appeal to get more investments in 100% renewable energy system
- 2  Introduction to a more detailed discussion on the economic feasibility of 100% renewable energy system
- 3  Critically evaluating the present energy systems and presenting 100% renewable energy system as the best alternative
- 4  A summary of findings made in a study on the viability of 100% renewable energy system

**Solution:****Correct Answer : 2**

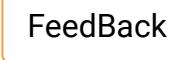
**Answer choice (1) – While the author does discuss that renewable system is beneficial, the tone of the passage does not suggest in any way that it is an appeal for action. The tone of the passage is one that of analysis of a particular course of action rather than a plea for that action. Answer choice (1) is NOT the best answer.**

 **Bookmark** **Answer key/Solution**

**Answer choice (2) – From the given options, this is the BEST answer. The author starts with the necessity for change in energy sector; introduces 100% renewable energy system; briefly evaluates the cost analysis of 100% renewable energy system. If the discussion were to go on, it is highly likely that it would give a detailed discussion on the economic feasibility.**

**Answer choice (3) – The author does not critically evaluate present energy systems. This one can be CLEARLY ELIMINATED.**

**Answer choice (4) – A summary of findings from a study should at least refer to a study being done. The passage makes no such reference and hence answer choice (4) is NOT the best answer.**

 **FeedBack**

**Directions for questions (19 to 21): The passage below is accompanied by a set of three questions. Choose the best answer to each question.**

Throughout the ages, an enduring mystique has developed around dolphins. Even today some people continue to impute dolphins with mystical abilities such as extra-sensory perception and, in alternative medicine circles, special healing powers. An entire industry in 'dolphin assisted therapy' has been founded on the idea that dolphins have the capacity to heal illnesses using their sonar or by touch. There is no scientific support for any of these outlandish claims. But our appreciation of dolphins does not need to depend on their having supernatural powers. What we know about dolphin cognition from scientific research is immensely more exciting than any myths could be.

Controlled experimental studies on bottlenose dolphin cognition have been carried out in the domains of memory, conceptual processes, vocal and motor mimicry, behavioural innovation, 'language' understanding, mental representation and self-awareness. Not surprisingly, bottlenose dolphins have exceptional short term and long-term memory for visual, auditory and multimodal information, as well as abstract concepts. Bottlenose dolphins exhibit a level of behavioural flexibility, innovation and imitative-ability that is rare, if not unique, among nonhuman animals. This means that dolphins are able to mentally represent and form analogies between their own body and that of another individual – even improvising when that other individual doesn't look much like a dolphin! These propensities of dolphins undoubtedly contribute much to the human passion for interacting with them.

The bottlenose dolphin is one of a very limited group of nonhuman species – great apes and parrots are the others – that have demonstrated compelling capacities to understand a rule-based symbolic artificial 'language'. They are capable of semantics (comprehending visual and auditory symbols as 'words') and syntax (understanding that changes in word order change the meaning of a sentence). Dolphins even understand symbolic references to objects that are absent. Out of sight – not out of mind!

#### **Q.19**

**Which of the following best captures the essence of the first paragraph?**

- 1  Throughout ages, there has been a lasting mysteriousness around dolphins, most of which are outlandish claims.
- 2  Contrary to the belief of some people, the scientific support for any mystical abilities of dolphin is non-existent.
- 3  Our knowledge of dolphin cognition from scientific research is significantly more exciting than any myth associated with dolphins.
- 4  While there are exciting myths around dolphins, there are many things beyond those myths that can help us appreciate dolphins.

**Solution:****Correct Answer : 3**

The first paragraph serves as an introduction to a discussion on dolphin cognition. The author introduces the myths surrounding the dolphins and then focuses the last part of the paragraph to introduce dolphin cognition. The main point of the paragraph is to introduce readers to dolphin cognition.

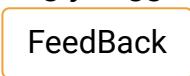
 **Bookmark** **Answer key/Solution**

**Answer Choice (1) –** This is a ‘supporting detail’ in the paragraph. The purpose of the paragraph is not to delve into the how people perceive the mystical abilities of dolphins. As explained above, the main point is to introduce dolphin cognition. Hence answer choice (1) is INCORRECT.

**Answer Choice (2) –** This is a ‘supporting detail’ in the paragraph. The lack of scientific support for mystical abilities of dolphins is not the author’s primary purpose and hence it is not its essence. Answer choice (2) is INCORRECT.

**Answer Choice (3) –** This choice captures the essence of the paragraph. Hence it is CORRECT.

**Answer Choice (4) –** The problem with this choice is that – by suggesting that there are many things beyond those myths that can help us appreciate dolphins, it has broadened the scope of the paragraph. The paragraph mentions only dolphin cognition and not ‘many things’ as wrongly suggested by this answer choice. Hence answer choice (4) is incorrect.

 **FeedBack**

**Directions for questions (19 to 21): The passage below is accompanied by a set of three questions. Choose the best answer to each question.**

Throughout the ages, an enduring mystique has developed around dolphins. Even today some people continue to impute dolphins with mystical abilities such as extra-sensory perception and, in alternative medicine circles, special healing powers. An entire industry in 'dolphin assisted therapy' has been founded on the idea that dolphins have the capacity to heal illnesses using their sonar or by touch. There is no scientific support for any of these outlandish claims. But our appreciation of dolphins does not need to depend on their having supernatural powers. What we know about dolphin cognition from scientific research is immensely more exciting than any myths could be.

Controlled experimental studies on bottlenose dolphin cognition have been carried out in the domains of memory, conceptual processes, vocal and motor mimicry, behavioural innovation, 'language' understanding, mental representation and self-awareness. Not surprisingly, bottlenose dolphins have exceptional short term and long-term memory for visual, auditory and multimodal information, as well as abstract concepts. Bottlenose dolphins exhibit a level of behavioural flexibility, innovation and imitative-ability that is rare, if not unique, among nonhuman animals. This means that dolphins are able to mentally represent and form analogies between their own body and that of another individual – even improvising when that other individual doesn't look much like a dolphin! These propensities of dolphins undoubtedly contribute much to the human passion for interacting with them.

The bottlenose dolphin is one of a very limited group of nonhuman species – great apes and parrots are the others – that have demonstrated compelling capacities to understand a rule-based symbolic artificial 'language'. They are capable of semantics (comprehending visual and auditory symbols as 'words') and syntax (understanding that changes in word order change the meaning of a sentence). Dolphins even understand symbolic references to objects that are absent. Out of sight – not out of mind!

#### Q.20

Each of the following questions can be answered with the help of the information given in the passage EXCEPT:

- 1  What factors contribute to the desire of humans to interact with bottlenose dolphins?
- 2  Do bottlenose dolphins have a unique desire to seek out human contact?
- 3  Are bottlenose dolphins the only non-human species which can comprehend visual and auditory symbols?
- 4  Is it possible to conduct experimental studies on vocal mimicry on at least one non-human species?

**Solution:****Correct Answer : 2**

**Answer Choice (1) –** The answer to this question can be found in paragraph 2. The last line of the second paragraph states the same. *"These propensities of dolphins undoubtedly contribute much to the human passion for interacting with them."* Hence answer choice (1) is ELIMINATED.

 **Bookmark** **Answer key/Solution**

**Answer Choice (2) –** Whether or not bottlenose dolphins desire to seek out human contact is something that the passage has not discussed. Hence answer choice (2) is the RIGHT answer.

**Answer Choice (3) –** The answer to this question can be found in the first sentence of the third paragraph. Since great apes and parrots also have this capability, one can answer the question  *Are bottlenose dolphins the only non-human species which can comprehend visual and auditory symbols?*  with a 'No'. Hence answer choice (3) is ELIMINATED.

**Answer Choice (4) –** One can answer this question in the affirmative. The first sentence of the second paragraph states that controlled experimental studies were conducted on bottleneck dolphins in various domains including vocal mimicry. This would mean that it is possible to conduct studies on at least one non-human species. Hence answer choice (4) is ELIMINATED.

 **FeedBack**

**Directions for questions (19 to 21): The passage below is accompanied by a set of three questions. Choose the best answer to each question.**

Throughout the ages, an enduring mystique has developed around dolphins. Even today some people continue to impute dolphins with mystical abilities such as extra-sensory perception and, in alternative medicine circles, special healing powers. An entire industry in 'dolphin assisted therapy' has been founded on the idea that dolphins have the capacity to heal illnesses using their sonar or by touch. There is no scientific support for any of these outlandish claims. But our appreciation of dolphins does not need to depend on their having supernatural powers. What we know about dolphin cognition from scientific research is immensely more exciting than any myths could be.

Controlled experimental studies on bottlenose dolphin cognition have been carried out in the domains of memory, conceptual processes, vocal and motor mimicry, behavioural innovation, 'language' understanding, mental representation and self-awareness. Not surprisingly, bottlenose dolphins have exceptional short term and long-term memory for visual, auditory and multimodal information, as well as abstract concepts. Bottlenose dolphins exhibit a level of behavioural flexibility, innovation and imitative-ability that is rare, if not unique, among nonhuman animals. This means that dolphins are able to mentally represent and form analogies between their own body and that of another individual – even improvising when that other individual doesn't look much like a dolphin! These propensities of dolphins undoubtedly contribute much to the human passion for interacting with them.

The bottlenose dolphin is one of a very limited group of nonhuman species – great apes and parrots are the others – that have demonstrated compelling capacities to understand a rule-based symbolic artificial 'language'. They are capable of semantics (comprehending visual and auditory symbols as 'words') and syntax (understanding that changes in word order change the meaning of a sentence). Dolphins even understand symbolic references to objects that are absent. Out of sight – not out of mind!

#### Q.21

One of the reasons why the bottlenose dolphins can form similarities between their own body and that of others is that:

- 1  their exceptional short-term and long-term memory.
- 2  their compelling capability of understanding semantics.
- 3  their conceptual flexibility.
- 4  their ability to match their actions to those observed in others.

**Solution:****Correct Answer : 4**

The answer to this question can be found in the second paragraph.

 **Bookmark** **Answer key/Solution**

***Bottlenose dolphins exhibit a level of behavioural flexibility, innovation and imitative-ability that is rare, if not unique, among nonhuman animals. This means that dolphins are able to mentally represent and form analogies between their own body and that of another individual.***

Three things are mentioned as the reasons – (1) behavioural flexibility, (2) innovation and (3) imitative ability.

**Answer Choice (1)** – is INCORRECT. Short-term or long-term memory is not ascribed to the phenomenon in question.

**Answer Choice (2)** – is INCORRECT. The discussion on semantics comes later in the passage and it is not linked to the abilities to form the said analogies.

**Answer Choice (3)** – is INCORRECT. Behavioural flexibility is mentioned as a reason and not conceptual flexibility. In fact, no such term is used anywhere in the passage.

**Answer Choice (4)** – is CORRECT. Imitative ability is after all the ability to match one's actions to those observed in others. Though, this answer choice does not use the term imitative ability, it gives the explanation of that term.

 **FeedBack**

**Directions for questions (22 to 24): The passage below is accompanied by a set of three questions. Choose the best answer to each question.**

Margot Kidder, who has died aged 69, will be remembered best for one defining movie performance. It's her sterling and witty turn as Lois Lane in the Christopher Reeve-led *Superman* movies of the late 70s and early 80s, in which she was every inch Clark Kent's equal in wit and moxie, if not in Kryptonite superpowers – and which set the standard for any other actor playing the role since.

If one neglects to dig more deeply into her fascinating life, then column inches will also be dominated by a bout of depression in 1996, when she was found wandering confusedly in a Los Angeles backyard after a four-day disappearance, having lost the caps of her teeth after an apparent rape attempt. She immediately sought treatment for her bipolar disorder and by her own account, in 2016, she never endured another episode.

Kidder's moment in the sun began on Christmas 1971, when De Palma left the scripts for *Sisters* and *The Phantom of the Paradise* gift-wrapped under the Christmas tree for Kidder and Salt to read. The pair were both cast in *Sisters*. Kidder played conjoined twins, one of whom is given to murderous rages. Hitherto Kidder had played small roles in TV shows like *Janacek* and *Harry O*, and in forgotten movies like *Quackser Fortune has a Cousin in the Bronx*. Thereafter she became one of the more interesting and accomplished actors of the era, always with an enlivening dose of comic expertise. Her Lois Lane was straight-up screwball-comedienne gold dust, sweet-sour, quick-witted and sharp-tongued, reliable in a crunch and, with her arched eyebrows and odd beauty, the idol of every teenage comic book fan who laid eyes on her.

Her career choices were impulsive and not conducive to a lasting career at the top. She had starring roles in *The Reincarnation of Peter Proud* and *The Great Waldo Pepper*, and worked twice with writer-director Paul Mazursky. Her most interesting roles seem to be in movies that are vanishingly obscure or almost forgotten, including *92 in the Shade* and the Terrence Malick-scripted *The Gravy Train*, with Stacy Keach and Frederick Forrest. But as she grew older she spent less time on the screen and more time living. As she once said: "Acting's fun, but life's more important."

## Q.22

Which of the following best describes the primary purpose of the passage?

- 1  To reflect on the life and works of an actor who recently passed away.
- 2  To highlight the struggle that an actor – who recently passed away – had to go through early in her career.
- 3  To censure the roles played by an actor who recently passed away.
- 4  To present an insight into the career of an actor who recently passed away.

**Solution:****Correct Answer : 4**

**life'.** Even though paragraph 2 mentions one aspect of the life of Kidder-'that she had a bout of depression-'the main theme of the passage is her career as a movie actor. Hence, answer choice (1) is INCORRECT

 **Bookmark** **Answer key/Solution**

**Answer Choice (2) –** This answer choice is narrow. This choice focuses only 'what she had to go through early in her career'. Even though it is a detail that is mentioned in the passage, it is not the primary purpose of the passage. Hence, answer choice (2) is INCORRECT.

**Answer Choice (3) –** Censure means "to express severe disapproval of (someone or something)". The author does not express severe disapproval. On the contrary, there are evidences in the passage that the author praises the actor. Example - "*Thereafter she became one of the more interesting and accomplished actors of the era, always with an enlivening dose of comic expertise.*" Hence, answer choice (3) is INCORRECT.

**Answer Choice (4) –** This is the CORRECT answer choice. The passage focuses on the career of Kidder – her accomplishments, her acting style, her career choices. Though paragraph 2 dwells briefly into her depression problem, overall the author maintains a clear focus on the career of Kidder. Answer choice (4) aptly captures the same.

 **FeedBack**

**Directions for questions (22 to 24): The passage below is accompanied by a set of three questions. Choose the best answer to each question.**

Margot Kidder, who has died aged 69, will be remembered best for one defining movie performance. It's her sterling and witty turn as Lois Lane in the Christopher Reeve-led *Superman* movies of the late 70s and early 80s, in which she was every inch Clark Kent's equal in wit and moxie, if not in Kryptonite superpowers – and which set the standard for any other actor playing the role since.

If one neglects to dig more deeply into her fascinating life, then column inches will also be dominated by a bout of depression in 1996, when she was found wandering confusedly in a Los Angeles backyard after a four-day disappearance, having lost the caps of her teeth after an apparent rape attempt. She immediately sought treatment for her bipolar disorder and by her own account, in 2016, she never endured another episode.

Kidder's moment in the sun began on Christmas 1971, when De Palma left the scripts for *Sisters* and *The Phantom of the Paradise* gift-wrapped under the Christmas tree for Kidder and Salt to read. The pair were both cast in *Sisters*. Kidder played conjoined twins, one of whom is given to murderous rages. Hitherto Kidder had played small roles in TV shows like *Janacek* and *Harry O*, and in forgotten movies like *Quackser Fortune has a Cousin in the Bronx*. Thereafter she became one of the more interesting and accomplished actors of the era, always with an enlivening dose of comic expertise. Her Lois Lane was straight-up screwball-comedienne gold dust, sweet-sour, quick-witted and sharp-tongued, reliable in a crunch and, with her arched eyebrows and odd beauty, the idol of every teenage comic book fan who laid eyes on her.

Her career choices were impulsive and not conducive to a lasting career at the top. She had starring roles in *The Reincarnation of Peter Proud* and *The Great Waldo Pepper*, and worked twice with writer-director Paul Mazursky. Her most interesting roles seem to be in movies that are vanishingly obscure or almost forgotten, including *92 in the Shade* and the Terrence Malick-scripted *The Gravy Train*, with Stacy Keach and Frederick Forrest. But as she grew older she spent less time on the screen and more time living. As she once said: "Acting's fun, but life's more important."

#### Q.23

Which of the following can be inferred from the passage? A. Kidder did not make right choices of roles in her career. B. Kidder's year of birth cannot be earlier than 1947. C. De Palma was the script writer for *Sisters* and *The Phantom of Paradise*.

1  Only B

2  Only A and C

3  Only A and B

4  None of A, B or C.

**Solution:****Correct Answer : 1**

**Statement (A) – This statement is a wrong inference from - "Her career choices were impulsive and not conducive to a lasting career at the top."** The author only suggests that an impulsive decision is not advantageous. Whether or not it is "right", is not something that one can infer. Also, the statement makes a general statement that Kidder did not make right choices, when in fact the author credits Kidder in her role as Lois Lane. Statement (A) CANNOT be inferred.

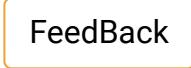
 **Bookmark** **Answer key/Solution**

**Statement (B) – There are two pieces of information given in the passage from which this inference can be logically drawn.**

- (1): Kidder died at the age of 69 and
- (2) "by her account in 2016".

Kidder was alive in the year 2016. And,  $2016 - 69 = 1947$ . So, she cannot be born before 1947. For instance, if she was born in the year 1946, then in the year 2016 her age would have been 70. That is not possible. Hence statement (B) is TRUE based on the information given in the passage.

**Statement (C) – This is an incorrect inference. The passage mentions "..., when De Palma left the scripts for *Sisters* and *The Phantom of the Paradise* gift-wrapped...." However, all that we know is that De Palma left the scripts for Kidder. Whether or not De Palma was the one who wrote that script is uncertain. Hence statement (C) CANNOT be inferred.**

 **FeedBack**

**Directions for questions (22 to 24): The passage below is accompanied by a set of three questions. Choose the best answer to each question.**

Margot Kidder, who has died aged 69, will be remembered best for one defining movie performance. It's her sterling and witty turn as Lois Lane in the Christopher Reeve-led *Superman* movies of the late 70s and early 80s, in which she was every inch Clark Kent's equal in wit and moxie, if not in Kryptonite superpowers – and which set the standard for any other actor playing the role since.

If one neglects to dig more deeply into her fascinating life, then column inches will also be dominated by a bout of depression in 1996, when she was found wandering confusedly in a Los Angeles backyard after a four-day disappearance, having lost the caps of her teeth after an apparent rape attempt. She immediately sought treatment for her bipolar disorder and by her own account, in 2016, she never endured another episode.

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Her career choices were impulsive and not conducive to a lasting career at the top. She had starring roles in *The Reincarnation of Peter Proud* and *The Great Waldo Pepper*, and worked twice with writer-director Paul Mazursky. Her most interesting roles seem to be in movies that are vanishingly obscure or almost forgotten, including *92 in the Shade* and the Terrence Malick-scripted *The Gravy Train*, with Stacy Keach and Frederick Forrest. But as she grew older she spent less time on the screen and more time living. As she once said: "Acting's fun, but life's more important."

#### **Q.24**

**According to the passage, Kidder's portrayal of the characters she played:**

- 1  **were not always conducive to a lasting career at the top.**
- 2  **were at least in some cases obscure.**
- 3  **often set the standard for other actors playing the role.**
- 4  **often had a refreshing dose of wit.**

**Solution:****Correct Answer : 4**

**Answer Choice (1)** – This is a ‘twisted’ answer choice. What the passage mentions is that “*Her career choices were impulsive and not conducive to a lasting career at the top*”. It is her career choices that were not conducive and not her portrayal of characters. Hence, answer choice (1) is INCORRECT.

**Bookmark****Answer key/Solution**

**Answer Choice (2)** – There is no evidence in the passage that suggests that Kidder’s portrayal of a character is obscure. What the passage mentions is “*... most interesting roles seem to be in movies that are vanishingly obscure or almost forgotten, including...*” that some movies that she acted in was obscure. Hence, answer choice (2) is INCORRECT.

**Answer Choice (3)** – The passage mentions that she set the standard for the portrayal of Lois Lane. That is just one character. Whether or not this was the case for other characters she played is uncertain. Therefore, one cannot say that “she often set standard...”. Hence answer choice (3) is INCORRECT.

**Answer Choice (4)** – is the CORRECT answer. This is clearly mentioned in the passage – “*Thereafter she became one of the more interesting and accomplished actors of the era, always with an enlivening dose of comic expertise.*” Kidder’s portrayal often had a dose of wit – this is what the author discusses in the paragraph.

**FeedBack****Q.25**

**Directions for question 25:** The passage given below is followed by four summaries. Choose the option that best captures the author’s position.

Traditional theories from psychoacoustics and cognitive psychology have portrayed our reception of music as something rather internal and passive. The mind processes sound like a computer processes information. But this perspective is too limited. There is an alternative ecological theory of music perception that better matches our active and more external involvement in music worlds. We think of musical perception more as a specific case of how we actively orientate ourselves in general to our environment. Like a digital radio scanning for the clarity of signals, our aural apparatus tunes in to what can be heard, and latches onto this feature in order to explain it. Any sound to some extent specifies its source and certain key things about it. We instinctively ‘bend our ears’ towards sound events, asking (non-consciously) the key questions. What’s going on here? Where exactly? What do I need to know about it? What can I do with it? Our aural perception tunes us into our world, flagging up current dangers and opportunities. We keep listening because we need to keep making sense of our world and joining in with what’s happening.

- 
- 1  We have instinctive capacity to appreciate music because we need to keep making sense of our world.
- 2  Our reception of music is more of an active and external process rather than an internal and passive process.
- 
- 3  We instinctively listen to sound events and ask key questions non-consciously.
- 4  The alternative ecological theory of music perception best explains how we process music.
- 

**Solution:**

**Correct Answer : 2**

**Synopsis:**

 **Bookmark**

 **Answer key/Solution**

The Paragraph starts with traditional theories from cognitive psychology which portrays our reception to music as something that is passive. Then the author claims that this perspective is too limited and presents an alternative theory that music reception is an active process. The author then goes to give detailed explanation to justify his claim.

**Answer choice (1) –** The problem with this summary is ‘appreciate music’. The passage does not discuss appreciation of music, rather it discusses our reception of music. Hence answer choice (1) is INCORRECT.

**Answer choice (2) –** As mentioned in the synopsis, the main claim of the author is that the traditional theory is limited and there is an alternate theory – that music reception is more of an active process. Answer choice (2) identifies the main idea of the paragraph. Hence answer choice (2) is CORRECT.

**Answer choice (3) –** Even though this is something that is mentioned in the passage, it is not its main idea and hence not its summary. The statement in answer choice (3) is a supporting detail of the author’s main claim. Hence answer choice (3) is INCORRECT.

**Answer choice (4) –** The problem with this summary is the use of the word ‘best’. The author only suggest that the alternative theory better explains a phenomenon and does not suggest that it is the best. Hence answer choice (4) is INCORRECT.

**FeedBack**

**Q.26**

**Directions for question 26:** The passage given below is followed by four summaries. Choose the option that best captures the author's position.

In the history of art, science, philosophy, and even literature one very often finds that in order to appreciate or to evaluate a work it is not much of an advantage to be familiar with its author and his life: an intellectual or artistic product is better judged on its own merits than on the basis of uncertain knowledge about the idiosyncratic features and muddled purposes of its author. Moreover, in some cases authors intentionally withdraw from their products in an attempt to become invisible and to let the work speak for itself, and thus leave us very few personal clues in their works. Rousseau could serve as an example of the first kind of case and Kant of the second; Kant goes so far as to use the phrase *de nobis ipsis silemus* ("of our own person we will say nothing") as a motto for his main work.

- 
- 1  To appreciate the work of someone in the history of art, science, philosophy, and literature, there is not much benefit to be aware of the personal life of the author.
  - 2  To appreciate the work of someone in the history of art, science, philosophy, and literature, it is important to understand how Rousseau and Kant detach their personal life from their work.
  - 3  To appreciate the work of someone in the history of art, science, philosophy, and literature, it is important that one is not familiar with its author and his life.
  - 4  To appreciate the work of someone in the history of art, science, philosophy, and literature, it is advantageous that we know less of its author and his life.
-

Bookmark

Answer key/Solution

**Solution:****Correct Answer : 1**

**Answer choice (1) – This is the CORRECT summary amongst all the answer choices.** The author is making the claim that to appreciate the work in the fields mentioned '*it is not much of an advantage to be familiar with its author and his life*'. This is captured in answer choice (1).

**Answer choice (2) – This is INCORRECT.** The author alludes to Rousseau and Kant as examples of how some authors have kept their personal life out. The author does not suggest that understanding Rousseau and Kant is important to appreciate the work of someone in the history of art, science etc.

**Answer choice (3) – This is INCORRECT.** This is a wrong interpretation of what the author mentions. Paragraph says that being familiar with the life of the author is not advantageous to appreciate their work. That does not mean that one should not be familiar with the life of the author in order to appreciate the work.

As an analogy, consider this example. "Studying vocabulary is not much of an advantage in order to crack the CAT." That does not mean that in order to crack the CAT, you must not study vocabulary, or you must study less vocabulary.

**Answer choice (4) – This is INCORRECT.** This answer choice has the same problem as the one mentioned in answer choice (3).

FeedBack

**Q.27**

**Directions for question 27:** The passage given below is followed by four summaries. Choose the option that best captures the author's position.

The history of Arabia just before the birth of Islam is a profound mystery, with few written sources. Historians had long believed that the Bedouin nomads who lived in the area composed exquisite poetry to record the feats of their tribes but had no system for writing it down. In recent years, though, scholars have made profound advances in explaining how ancient speakers of early Arabic used the letters of other alphabets to transcribe their speech. These alphabets included Greek and Aramaic, and also Safaitic; Macdonald's rock was one of more than fifty thousand such texts found in the deserts of the southern Levant. Safaitic glyphs look nothing like the cursive, legato flow of Arabic script. But when read aloud they are recognizable as a form of Arabic—archaic but largely intelligible to the modern speaker.

- 1 There are not enough written sources which can help us understand the history of Arabia—before the birth of Islam—due to the lack of written alphabets.

2 ⚪ The long-held belief of historians that the nomads—who lived in Arabia before the birth of Islam did not have any system of transcribing their speech has been proven wrong by recent scholars.

3 ⚪ Though it was believed that ancient speakers of Arabic had no system of writing, in recent years, scholars have made advances in explaining how they used alphabets from Greek, Aramaic and Safaitic to transcribe their speech.

4 ⚪ The Safaitic glyphs that the ancient speakers of Arabic used to transcribe their speech is very different from the Arabic script, however, when read aloud they are recognizable as a form of Arabic.

**Solution:**

**Correct Answer : 3**

Closely looking at the answer choices, it is evident that each of them has taken one part of the information given in the paragraph. The task therefore is to identify which of the sentence in the paragraph is its summary.

 **Bookmark**

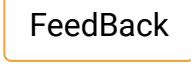
 **Answer key/Solution**

**Answer choice (1)** – This is not the summary of the paragraph. This is taken from the first two sentences of the paragraph. The later sentences of the paragraph do say that there are evidences that the ancient speakers did use alphabets of other languages for writing. Hence, answer choice (1) is INCORRECT.

**Answer choice (2)** – While it is true that the recent advances have proven the historians wrong, the highlight of the passage is not a criticism of the historians. The author merely states that new studies have found alternate explanations to long held views. Answer choice (2) is INCORRECT.

**Answer choice (3)** – This is the summary of the paragraph. The main highlight of the passage is that the ancient speakers of Arabic used alphabets from other languages for writing things down. The paragraph starts with introducing the lack of written sources; the view historians held about why there is a lack of written sources; and then explaining the recent years scholars' discovery that there is in fact written sources. The focus of the paragraph is that the ancient speakers had written alphabets, albeit from other languages. Hence answer choice (3) is CORRECT

**Answer choice (4)** – This is a supporting detail to the paragraph. The focus of the paragraph is not specifically Safaitic language. Hence answer choice (4) is INCORRECT.

 **FeedBack**

**Q.28**

**Directions for question 28:** The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. The key constructivist contention is that there is no natural, objectively definable set of human malfunctions that cause disease.
2. But the bodily processes are not objectively malfunctioning; rather, they are merely judged by us to be unusual or abnormal because they depart from some shared, usually culturally specific, conception of human nature.
3. Rather, constructivists assert that to call a condition a disease is to make a judgment that someone in that condition is undergoing a specific kind of harm that we explain in terms of bodily processes.
4. The crucial difference between the positions then is that for naturalists, diseases are objectively malfunctioning biological processes that cause harms.
5. For constructivists, diseases are harms that we blame on some biological process because it causes the harm, not because it is objectively dysfunctional.

**Solution:**

**Correct Answer : 13245**

 **Bookmark**

 **Answer key/Solution**

This question can be challenging because the topic under discussion is difficult and the text is very dense. However, one can make connections between sentences to arrive at the answer.

**Step 1: Identifying the theme**

1. The key **constructivist** contention is that there is no natural, objectively definable set of **human malfunctions** that cause **disease**.
2. But the bodily processes are not objectively **malfunctioning**; rather, they are merely judged by us to be unusual or abnormal because they depart from some shared, usually culturally specific, conception of human nature.
3. Rather, **constructivists** assert that to call a condition a **disease** is to make a judgment that someone in that condition is undergoing a specific kind of harm that we explain in terms of bodily processes.
4. The crucial difference between the positions then is that for **naturalists**, diseases are **objectively malfunctioning** biological processes that cause harms.
5. For **constructivists**, diseases are harms that we blame on some biological process because it causes the harm, not because it is objectively dysfunctional.

The colour coding helps us better understand the theme.

*Constructivist – no objective malfunctioning biological process that causes disease.*

*Naturalists – diseases are objectively malfunctioning biological process.*

The paragraph spends majority of its sentences on 'Constructivists' view.

**Step 2: Identifying the opening sentence and connections**

When there are no answer choices in paragraph jumble, a good way to start is to identify the opening sentence.

1. The key constructivist contention is that there is no natural, objectively definable set of human malfunctions that cause disease.
2. But the bodily processes are not objectively malfunctioning; rather, they are merely judged by us to be unusual or abnormal because they depart from some shared, usually culturally specific, conception of human nature.
3. Rather, constructivists assert that to call a condition a disease is to make a judgment that someone in that condition is undergoing a specific kind of harm that we explain in terms of bodily processes.
4. The crucial difference between the positions then is that for naturalists, diseases are objectively malfunctioning biological processes that cause harms.
5. For constructivists, diseases are harms that we blame on some biological process because it causes the harm, not because it is objectively dysfunctional.

Opening Sentence: Sentences 2, 3, and 4 can be eliminated easily – they cannot be the starting sentence. The fight then is between sentences 1 and 5.

Connections between ideas will help, as illustrated below.

1. The key constructivist contention is that there is no natural, objectively definable set of human malfunctions that cause disease.
2. But the bodily processes are not objectively malfunctioning; rather, they are merely judged by us to be unusual or abnormal because they depart from some shared, usually culturally specific, conception of human nature.
3. Rather, constructivists assert that to call a condition a disease is to make a judgment that someone in that condition is undergoing a specific kind of harm that we explain in terms of bodily processes.
4. The crucial difference between the positions then is that for naturalists, diseases are objectively malfunctioning biological processes that cause harms.
5. For constructivists, diseases are harms that we blame on some biological process because it causes the harm, not because it is objectively dysfunctional.

1→3 and 4→5 are connected. Since the start is either 1 or 5 and given than 4 comes after 5, the starting sentence is 1.

We are now left with sentence 2.

1. The key constructivist contention is that there is no natural, objectively definable set of human malfunctions that cause disease.
2. But the bodily processes are not objectively malfunctioning; rather, they are merely judged by us to be unusual or abnormal because they depart from some shared, usually culturally specific, conception of human nature.
3. Rather, constructivists assert that to call a condition a disease is to make a judgment that someone in that condition is undergoing a specific kind of harm that we explain in terms of bodily processes.
4. The crucial difference between the positions then is that for naturalists, diseases are objectively malfunctioning biological processes that cause harms.
5. For constructivists, diseases are harms that we blame on some biological process because it causes the harm, not because it is objectively dysfunctional.

3→2 connection can be made as illustrated above. The use of article ‘the’ in sentence 2 is a giveaway.

We now have everything to get the answer

- (1) Opening sentence – 1
- (2) Connections: 1→3, 3→2, and 4→5

**FeedBack**

**Q.29**

**Directions for question 29:** The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. When I've strayed, I've been able to look to my agent, Jane Dystel, for her faith and tenacity; to my editor, Henry Ferris, for his gentle but firm correctives; to Ruth Fecych and the staff at Times Books, for their enthusiasm and attention in shepherding the manuscript through its various stages; to my friends, especially Robert Fisher, for their generous readings; and to my wonderful wife, Michelle, for her wit, grace, candor, and unerring ability to encourage my best impulses.
2. If nothing else, I hope that the love and respect I feel for them shines through on every page.
3. Whatever the label that attaches to this book—autobiography, memoir, family history, or something else—what I've tried to do is write an honest account of a particular province of my life.
4. Without their constant love and support, without their willingness to let me sing their song and their toleration of the occasional wrong note, I could never have hoped to finish.
5. It is to my family, though—my mother, my grandparents, my siblings, stretched across oceans and continents—that I owe the deepest gratitude and to whom I dedicate this book.

**Solution:**

**Correct Answer : 31542**

**Step 1: Identifying the theme**

**Bookmark**

**Answer key/Solution**

Once you skim through the 5 sentences, it is fairly easy to identify that the theme is an author's acknowledgement

**Step 2: Identifying the opening sentence**

- (1) When I've strayed, I've been able to look to my agent, Jane Dystel, for her faith and tenacity, to my editor, Henry Ferris, for his gentle but firm correctives; to Ruth Fecych and the staff at Times Books, for their enthusiasm and attention in shepherding the manuscript through its various stages, to my friends, especially Robert Fisher, for their generous readings; and to my wonderful wife, Michelle, for her wit, grace, candor, and unerring ability to encourage my best impulses.
- (2) If nothing else, I hope that the love and respect I feel for them shines through on every page.
- (3) Whatever the label that attaches to this book—autobiography, memoir, family history, or something else—what I've tried to do is write an honest account of a particular province of my life.
- (4) Without their constant love and support, without their willingness to let me sing their song and their toleration of the occasional wrong note, I could never have hoped to finish.
- (5) It is to my family, though—my mother, my grandparents, my siblings, stretched across oceans and continents—that I owe the deepest gratitude and to whom I dedicate this book.

The opening sentence is 3. In sentence 3, he mentions his intention of writing the book. Sentences 1, 2, 4, and 5 are him giving gratitude to others.

### Step 3: Identifying the connections

- (1) When I've strayed, I've been able to look to my agent, Jane Dystel, for her faith and tenacity; to my editor, Henry Ferris, for his gentle but firm correctives; to Ruth Fecych and the staff at Times Books, for their enthusiasm and attention in shepherding the manuscript through its various stages; to my friends, especially Robert Fisher, for their generous readings; and to my wonderful wife, Michelle, for her wit, grace, candor, and unerring ability to encourage my best impulses.
- (2) If nothing else I hope that the love and respect I feel for them shines through on every page.
- (3) Whatever the label that attaches to this book—autobiography, memoir, family history, or something else—what I've tried to do is write an honest account of a particular province of my life.
- (4) Without their constant love and support, without their willingness to let me sing their song and their toleration of the occasional wrong note, I could never have hoped to finish.
- (5) It is to my family, though—my mother, my grandparents, my siblings, stretched across oceans and continents—that I owe the deepest gratitude and to whom I dedicate this book.

If you look closely between sentences 1 and 5 you would be able to get connections. One: sentence 5 uses the connector 'though'. This would make 1→5 a good connection. In sentence 1, the author acknowledges many people while in sentence 5, he focuses on his family.

Once the above connection is made, the 'them' and 'their' that the author refers to in sentences 4 and 5 can be understood as his family. So, we can make a connection: 5→(4/2)

We can see that sentence 2 is an apt ending – 'If nothing else..... I hope....'. So, the connection would be 5 → 4 → 2.

**Now we have everything**

- (1) Sentence 3 is the start
- (2) Connection: 1 → 5
- (3) Connection: 5 → 4 → 2

FeedBack

### Q.30

**Directions for question 30:** The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. Latin's six cases cover in comparison with Estonian's 14, which include inessive, elative, adessive, abessive, and the system is riddled with irregularities and exceptions.
2. On this score, some European languages are far harder than are, say, Latin or Greek.
3. Estonian's cousins in the Finno-Ugric language group do much the same.
4. Beyond sound comes the problem of grammar.
5. Slavic languages force speakers, when talking about the past, to say whether an action was completed or not.

**Solution:**

**Correct Answer : 42135**
[Answer key/Solution](#)

While the theme is very easy to interpret, the connection between the sentences are slightly challenging to identify. It could easily be possible that you are convinced with your answer so much that you may not agree with the correct answer choice!

**What is the starting sentence?**

For starters, find the starting sentence is a tough job here. (On a side-note: it might be a good idea to avoid spending too much time of para jumble questions, without options, when you are not sure about the starting sentence).

There is a tendency to reject a sentence as the starting sentence because those sentences having 'connector words'.

- (1) Latin's six cases cower in comparison with Estonian's 14, which include inessive, elative, adessive, abessive, and the system is riddled with irregularities and exceptions.
- (2) On this score, some European languages are far harder than are, say, Latin or Greek.
- (3) Estonian's cousins in the Finno-Ugric language group do much the same.
- (4) Beyond sound comes the problem of grammar.
- (5) Slavic languages force speakers, when talking about the past, to say whether an action was completed or not.

On a first glance, one may want to eliminate sentences 2, 3, and 4 as the starting sentence. If we do that, we hit a road block. Sentence 1 is connected to sentence 2. 1 must come after 2. Note that sentence 2 ends with 'say, Latin or Greek.' And then sentence 1 starts with comparing Latin with Estonian. So, there is a 2→1 connection. That would mean sentence 1 cannot be the start.

Sentence 5 also has problem as the starting sentence. Note that it talks about '*Slavic languages*'. None of the other sentence talks about Slavic languages! Why would the author start a paragraph with Slavic language and then completely ignore it in the rest of the sentences? It is more likely that sentence 5 is the end!

**Sentences 1, 2 and 3 are connected.**

- (1) Latin's six cases cower in comparison with Estonian's 14, which include inessive, elative, adessive, abessive, and the system is riddled with irregularities and exceptions.
- (2) On this score, some European languages are far harder than are, say, Latin or Greek.
- (3) Estonian's cousins in the Finno-Ugric language group do much the same.
- (4) Beyond sound comes the problem of grammar.
- (5) Slavic languages force speakers, when talking about the past, to say whether an action was completed or not.

**2 → 1 → 3 is the connection.**

**Sentence 2 makes a general statement – Some European languages are harder than Latin**

**Sentence 1 gives a specific example – Estonian is harder than Latin**

**Sentence 3 gives another example – Estonian's cousins are harder too.**

**Once we get the above connection, we can see the right place for sentence 4. It is the start!**

- (1) Latin's six cases cower in comparison with Estonian's 14, which include inessive, elative, adessive, abessive, and the system is riddled with irregularities and exceptions.
- (2) On this score some European languages are far harder than are, say, Latin or Greek.
- (3) Estonian's cousins in the Finno-Ugric language group do much the same.
- (4) Beyond sound comes the problem of grammar.
- (5) Slavic languages force speakers, when talking about the past, to say whether an action was completed or not.

**4 → 2**

### **The connections**

**So, we have got these connections: 4 → 2 and 2 → 1 → 3.**

**Combining the above we get 4 → 2 → 1 → 3**

**We have to figure out where to place sentence 5. It is important to note that we have a tight 4213 connection. So, the only place left for sentence 5 is either the start or the end. Starting with sentence 5 will not make sense. It ends with sentence 5. Also note that problem mentioned with Slavic language is also a problem of grammar and not a problem of sound. So, we reach the answer – 42135**

**FeedBack**

**Q.31**

**Directions for question 31:** The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. The new work is the first comprehensive estimate of the weight of every class of living creature and overturns some long-held assumptions.
2. Bacteria are indeed a major life form – 13% of everything – but plants overshadow everything, representing 82% of all living matter.
3. Yet since the dawn of civilisation, humanity has caused the loss of 83% of all wild mammals and half of plants, while livestock kept by humans abounds.
4. The world's 7.6 billion people represent just 0.01% of all living things, according to the study.
5. Humankind is revealed as simultaneously insignificant and utterly dominant in the grand scheme of life on Earth by a ground-breaking new assessment of all life on the planet.

**Solution:**

**Correct Answer : 54312**

**Step 1: Identifying the theme**

The theme of the paragraph is not difficult to identify. A skim-read would help us understand that the paragraph is an introduction to a new study.

 **Bookmark**

 **Answer key/Solution**

**Step 2: Identifying the starting sentence**

Sentence 5 is the start. It makes a general claim and the rest of the sentences dwell into the specifics.

Some may have evaluated sentence 1 as the start. There is a problem with that. If we start with sentence 1, then the rest of them would be overturning long-held assumptions. That would mean that what is being revealed is contrary to what we thought. Common-sense tells us that 5 is not contrary to what we thought. It is common-sense to understand that there is no dispute that humans dominate the world. So, it would not make sense to start with sentence 1.

### Step 3: Making connections

There are two ‘blocks’ of connections that can be made.

One of them is between sentences 3, 4 and 5

- (1) The new work is the first comprehensive estimate of the weight of every class of living creature and overturns some long-held assumptions.
  - (2) Bacteria are indeed a major life form – 13% of everything – but plants overshadow everything, representing 82% of all living matter.
  - (3) Yet since the dawn of civilisation, humanity has caused the loss of 83% of all wild mammals and half of plants, while livestock kept by humans abounds.
  - (4) The world’s 7.6 billion people represent just 0.01% of all living things, according to the study.
  - (5) Humankind is revealed as simultaneously insignificant and utterly dominant in the grand scheme of life on Earth by a ground-breaking new assessment of all life on the planet.
- 

5→4→3 is the one connection

The other connection is between sentences 1 and 2

- (1) The new work is the first comprehensive estimate of the weight of every class of living creature and overturns some long-held assumptions.
  - (2) Bacteria are indeed a major life form – 13% of everything – but plants overshadow everything, representing 82% of all living matter.
  - (3) Yet since the dawn of civilisation, humanity has caused the loss of 83% of all wild mammals and half of plants, while livestock kept by humans abounds.
  - (4) The world’s 7.6 billion people represent just 0.01% of all living things, according to the study.
  - (5) Humankind is revealed as simultaneously insignificant and utterly dominant in the grand scheme of life on Earth by a ground-breaking new assessment of all life on the planet.
- 

1→2 is the connection

### Combining the connections

- (1) Sentence 5 is the start
- (2) Connection: 5→4→3
- (3) Connection: 1→2

**Answer is 54312**

FeedBack

**Q.32**

**Directions for question 32:** Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. Similarly, much remains to be done to fulfil the vision of the Food and Agriculture Organization of the United Nations(FAO).
2. FAO's vision is of a 'world free from hunger and malnutrition, where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner'.
3. Over the past century, enormous progress has been achieved worldwide in improving human welfare.
4. Societies have changed radically thanks to quantum leaps in technology, rapid urbanization, and innovations in production systems.
5. Yet conditions in today's world are a far cry from the world 'free of fear and want' envisioned at the foundation of the United Nations.

**Solution:**

**Correct Answer : 2**

One of the important characteristics of a paragraph is 'unity' – in one paragraph one idea or topic is developed and explained. In odd-sentence questions, all we need to do is to identify that sentence which breaks the unity.

 **Bookmark**

 **Answer key/Solution**

**Let's evaluate.**

- |  |
|--|
| (1)  <b>Similarly, much remains to be done to fulfil the vision of the Food and Agriculture Organization of the United Nations(FAO).</b>         |
| (2) FAO's vision is of a 'world free from hunger and malnutrition, where food and agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner'.   |
| (3) Over the past century,  enormous progress has been achieved worldwide in improving human welfare.    |
| (4) Societies have  changed radically thanks to quantum leaps in technology, rapid urbanization, and innovations in production systems.          |
| (5)  Yet conditions in today's world are a far cry from the world 'free of fear and want'  envisioned at the foundation of the United Nations. |

The tone of that sentence 1 and 5 is negative. Those two sentences talk about the fact that there is much to be done. The connector 'similarly' in sentence 1 helps us identify a 5 → 1 connection.

Sentences 3 and 4 have a positive tone. The connection 'yet' in sentence 5 helps make the transition from positive to negative.

**Sentences 5 and 1 are mandatory. Sentence 5: because it gives the transition from positive to**

**negative. Sentence 1: because if we remove sentence 1, there is no place for sentence 2.**

That leaves us with 2, 3, and 4. Once this is sure – we need at least one of the sentences 3 and 4. And if you look closely at those two sentences, sentence 3 gives a broad statement and sentence 4 gives details that supports that statement. So, having sentences 3 and 4 will not break the unity of the passage.

Sentence 2 is an issue. All that it does is to state the vision of FAO. Sentence 1 does mention that there is lot to be done to achieve the vision of FAO. The question is should we require a sentence in the paragraph that states the vision. Why should the paragraph single out FAO to explain the vision and leave out what is envisioned at the foundation of the United Nations in sentence 5? It does not make sense.

**Sentence 2 is the odd sentence.**

**The correct order is 3451 and the odd sentence is 2**

**(It is not necessary that you identify the order of the remaining sentences)**

FeedBack

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### Q.33

**Directions for question 33: Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.**

1. For instance, a Comcast victory could dash any fans' dreams of an on-screen mash-up involving the X-Men and Marvel's largest superhero group, the Avengers.
  2. The Murdochs made their choice obvious in December 2017 when Disney and Fox announced their merger plans.
  3. But Comcast hopes to sway shareholders with its offer, as Disney and Fox prepare for special stockholder meetings to vote on the merger.
  4. Disney CEO Robert Iger has championed the Fox acquisition as integral to the company's goals of expanding an already-impressive content catalogue and increasing the strength of its planned subscription movie and TV service.
  5. For consumers, the battle could have huge repercussions.
-

**Solution:****Correct Answer : 4**

**The two sentences that needs to be the part of the paragraph is sentences 1 and 5.**

**Bookmark****Answer key/Solution**

**One cannot survive without the other. The order is 5 → 1.**

**Once we establish both 1 and 5 has be to be a part of the paragraph, we can see that sentence 5 refers to '*the battle*'. That would force sentence 3 to be a part of the paragraph.**

- (1) For instance, a Comcast victory could dash any fans' dreams of an on-screen mash-up involving the X-Men and Marvel's largest superhero group, the Avengers.
- (2) The Murdochs made their choice obvious in December 2017 when Disney and Fox announced their merger plans.
- (3) But Comcast hopes to sway shareholders with its offer, as Disney and Fox prepare for special stockholder meetings to vote on the merger.
- (4) Disney CEO Robert Iger has championed the Fox acquisition as integral to the company's goals of expanding an already-impressive content catalogue and increasing the strength of its planned subscription movie and TV service.
- (5) For consumers, the battle could have huge repercussions.

**So, now the order is 3 → 5 → 1.**

**That leaves sentences 2 and 4 – One of them is odd. Both seems to fit it. However, the sentence which has a better fit is sentence 2. Note that in sentence 3, it mentions Disney and Fox prepare for a meeting and sentence 2 mentions Disney and Fox announced the plan. Those two sentences are better connected than sentence 4 and 3 since the focus in sentence 4 is Disney's interest in the plan.**

- (1) For instance, a Comcast victory could dash any fans' dreams of an on-screen mash-up involving the X-Men and Marvel's largest superhero group, the Avengers.
- (2) The Murdochs made their choice obvious in December 2017 when Disney and Fox announced their merger plans.
- (3) But Comcast hopes to sway shareholders with its offer, as Disney and Fox prepare for special stockholder meetings to vote on the merger.
- (4) Disney CEO Robert Iger has championed the Fox acquisition as integral to the company's goals of expanding an already-impressive content catalogue and increasing the strength of its planned subscription movie and TV service.
- (5) For consumers, the battle could have huge repercussions.

**The odd sentence is 4**

**The correct order of the other sentences is 2351**

**FeedBack**

**Q.34**

**Directions for question 34:** Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. Ogechi formed the head, the arms, the legs.
2. How to make firm clay—something she was born to do.
3. When the mix was just right, she added a handful of the ashes.
4. This she knew.
5. Ogechi felt a little bit sad, but nothing she wouldn't shake off in a few days.

**Solution:**

**Correct Answer : 5**

At first read, this would have sounded very confusing. A closer look would have helped you identify the context – Ogechi is making something using clay.

**Bookmark**

**Answer key/Solution**

If you analyse the tone of the each of the sentence, you can easily pick the odd sentence.

- |   |            |
|---|------------|
| (1) Ogechi formed the head, the arms, the legs.                                     | → Neutral  |
| (2) How to make firm clay—something she was born to do.                             | → Positive |
| (3) When the mix was just right, she added a handful of the ashes.                  | → Neutral  |
| (4) This she knew.  | → Positive |
| (5) Ogechi felt a little bit sad, but nothing she wouldn't shake off in a few days. | → Negative |

Sentence 5 is out of place. There is nothing to suggest as to why she is feeling sad.

Sentences 1, 2, 3, and 4 mentions an activity that Ogechi is doing – creating something from clay.

**Odd Sentence is 5**

**Correct order of the remaining sentence – 4231**

**FeedBack**

## Sec 2

**Directions for questions 35 to 38: Answer the questions on the basis of the information given below.**

5 persons—Hannah, Indira, Jacob, Kapil, and Laxman—have been held captive by a criminal organization in one of 12 warehouses—H1, H2, ..., H12—in the city of Ontopia. No two captives are held in the same warehouse. The police have 6 teams that are ready to be deployed for a raid. No two teams would be deployed to the same warehouse. If any police team is deployed to a location where the captive is held in, they will locate the captive.

Police have nabbed three criminals who are part of the criminal organization. The police conduct narcoanalysis test on the three criminals. Narcoanalysis test uses truth serum which inhibits a subject's ability to tell a lie. After administering truth serum, the police can ask each criminal only 5 questions. The truth serum does not completely inhibit the ability to tell a lie. These criminals have gone through prior training to beat the narcoanalysis test. However, the police are sure that each criminal will not be lying in all the 5 questions and each criminal will not be telling the truth in all the 5 questions.

**Following table gives the response to the 5 questions asked to the three criminals.**

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7	H7	H3
In which warehouse is Indira held?	H3	H3	H7
In which warehouse is Jacob held?	H9	H9	H4
In which warehouse is Kapil held?	H12	H11	H8
In which warehouse is Laxman held?	H10	H11	H11

### Q.35

If it is known that Criminal 2 has lied only once, then how many of the warehouses COULD be the warehouse where Kapil is held in?

**Solution:**

**Correct Answer : 8**

**Bookmark**

**Answer key/Solution**

Criminal 2 lied only once.

So, 4 out of the 5 responses by Criminal 2 should be TRUE. Since the responses given to the 4<sup>th</sup> and the 5<sup>th</sup> questions by Criminal 2 is H11:

- A. Both cannot be TRUE –(the captives are held in different warehouses)
- B. Both cannot be FALSE

So, one of them must be TRUE and the other must be FALSE. One can also deduce since the criminal 2 has lied only once, the responses to questions 1, 2 and 3 must be TRUE.

Question	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is	H7	H7 T	H3

Hannah held?			
In which warehouse is Indira held?	H3	H3 T	H7
In which warehouse is Jacob held?	H9	H9 T	H4
In which warehouse is Kapil held?	H12	H11 T/F	H8
In which warehouse is Laxman held?	H10	H11 F/T	H11

We can also make deduction regarding the responses of other criminals, given that we are sure of these: Hannah – H7, Indira – H3, Jacob – H9.

Question	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7 T	H7 T	H3 F
In which warehouse is Indira held?	H3 T	H3 T	H7 F
In which warehouse is Jacob held?	H9 T	H9 T	H4 F
In which warehouse is Kapil held?	H12	H11 T/F	H8
In which warehouse is Laxman held?	H10	H11 F/T	H11

Now, let's consider 2 cases.

Case 1: Kapil – H11

Case 2: Laxman – H11

**Case 1:Kapil – H11**

If Kapil is in H11, there will be an issue with regards to the responses of Criminal 3. His 4<sup>th</sup> response will be false since his response H8. Also, his 5<sup>th</sup> response will be false since Kapil is already in H11 and no two persons are held in the same warehouse. That would mean that all the responses of Criminal 3 are false which violates condition – 'Each criminal cannot tell a lie in all the 5 questions'. So,Kapil cannot be in H11

Illustration:

Question	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3	CASE 1
In which warehouse is Hannah held?	H7 T	H7 T	H3 F	
In which warehouse is Indira held?	H3 T	H3 T	H7 F	
In which warehouse is Jacob held?	H9 T	H9 T	H4 F	
In which warehouse is Kapil held?	H12	H11 T	H8 F	
In which warehouse is Laxman held?	H10	H11 F	H11 F	

**Case 2: Laxman – H11**

If Laxman is in H11, the 5<sup>th</sup> response of criminal 3 is True and the 5<sup>th</sup> response of criminal 1 is False.

With regards to Kapil (4<sup>th</sup>question), the response of Criminal 2 is False. However, nothing can be said about the responses of Criminal 1 and Criminal 3. Given that we already have one True response by Criminal 3 and one False response by Criminal 1, whatever be the outcome of their response to question 4 (True or False), it will not violate any condition. Therefore, it is not necessary that Kapil must be either H12 or H8. Both the criminals 1 and 3 could have lied in question 4 (without violating any of the conditions)

Illustration:

Question	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3	CASE 2
In which warehouse is Hannah held?	H7 T	H7 T	H3 F	
In which warehouse is Indira held?	H3 T	H3 T	H7 F	
In which warehouse is Jacob held?	H9 T	H9 T	H4 F	

In which warehouse is Kapil held?	H12 ?	H11 F	H8 ?
In which warehouse is Laxman held?	H10 F	H11 T	H11 T

This is the summary of the inferences drawn:

Hannah – H7; Indira – H3; Jacob – H9.

Kapil cannot be in H11

So, Kapil cannot be in H7, H3, H9, H11.

Kapil can be in any one of H1, H2, H4, H5, H6, H8, H10, H12

[FeedBack](#)

**Directions for questions 35 to 38: Answer the questions on the basis of the information given below.**

5 persons—Hannah, Indira, Jacob, Kapil, and Laxman—have been held captive by a criminal organization in one of 12 warehouses—H1, H2, ..., H12—in the city of Ontopia. No two captives are held in the same warehouse. The police have 6 teams that are ready to be deployed for a raid. No two teams would be deployed to the same warehouse. If any police team is deployed to a location where the captive is held in, they will locate the captive.

Police have nabbed three criminals who are part of the criminal organization. The police conduct narcoanalysis test on the three criminals. Narcoanalysis test uses truth serum which inhibits a subject's ability to tell a lie. After administering truth serum, the police can ask each criminal only 5 questions. The truth serum does not completely inhibit the ability to tell a lie. These criminals have gone through prior training to beat the narcoanalysis test. However, the police are sure that each criminal will not be lying in all the 5 questions and each criminal will not be telling the truth in all the 5 questions.

Following table gives the response to the 5 questions asked to the three criminals.

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7	H7	H3
In which warehouse is Indira held?	H3	H3	H7
In which warehouse is Jacob held?	H9	H9	H4
In which warehouse is Kapil held?	H12	H11	H8
In which warehouse is Laxman held?	H10	H11	H11

### Q.36

It is known that for each of the questions, at least one of the criminals have told the truth and the 6 police teams are deployed to H3, H4, H7, H8, H10, and H11. What is the probability of finding all the captives?

1  1/3

2  2/3

3  1

4  None of the above

**Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

Taking the additional condition into consideration (for each of the question, at least one of the criminals have told the truth), following can be deduced

Hannah is held in one of – H3 or H7

Indira is held in one of – H3, or H7

Jacob is held in one of – H4, or H9

Kapil is held in one of – H8, H11, or H12

Laxman is held in one of – H10 or H11

One police team each is deployed to H3 & H7: They will find Hannah & Indira

One police team each is deployed to H10 & H11: They will find Laxman

So, out of the 6 teams, the above-mentioned teams will find 3 of the hostages – Hannah, Indira, Kapil & Laxman.

The remaining one police team is deployed to H4. Jacob is either in H4 or H9. So, the probability of finding Jacob is  $\frac{1}{2}$ .

And Kapil can be in H8, H11 or H12. So, the probability of finding Kapil is  $\frac{2}{3}$ .

The net probability that all the 5 captives will be found is  $\frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$ .

 **FeedBack**

**Directions for questions 35 to 38: Answer the questions on the basis of the information given below.**

5 persons—Hannah, Indira, Jacob, Kapil, and Laxman—have been held captive by a criminal organization in one of 12 warehouses—H1, H2, ..., H12—in the city of Ontopia. No two captives are held in the same warehouse. The police have 6 teams that are ready to be deployed for a raid. No two teams would be deployed to the same warehouse. If any police team is deployed to a location where the captive is held in, they will locate the captive.

Police have nabbed three criminals who are part of the criminal organization. The police conduct narcoanalysis test on the three criminals. Narcoanalysis test uses truth serum which inhibits a subject's ability to tell a lie. After administering truth serum, the police can ask each criminal only 5 questions. The truth serum does not completely inhibit the ability to tell a lie. These criminals have gone through prior training to beat the narcoanalysis test. However, the police are sure that each criminal will not be lying in all the 5 questions and each criminal will not be telling the truth in all the 5 questions.

Following table gives the response to the 5 questions asked to the three criminals.

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7	H7	H3
In which warehouse is Indira held?	H3	H3	H7
In which warehouse is Jacob held?	H9	H9	H4
In which warehouse is Kapil held?	H12	H11	H8
In which warehouse is Laxman held?	H10	H11	H11

### Q.37

Which of the following COULD be true about the captives and the warehouses they are held in?

- 1  Hannah – H9, Indira – H4, Jacob – H8, Kapil – H12, Laxman – H11
- 2  Hannah – H7, Indira – H3, Jacob – H9, Kapil – H12, Laxman – H10
- 3  Hannah – H7, Indira – H3, Jacob – H10, Kapil – H11, Laxman – H9
- 4  Either (1) or (3)

**Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

Hannah – H9, Indira – H4, Jacob – H8, Kapil – H12, Laxman – H11

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7 <b>F</b>	H7 <b>F</b>	H3 <b>F</b>
In which warehouse is Indira held?	H3 <b>F</b>	H3 <b>F</b>	H7 <b>F</b>
In which warehouse is Jacob held?	H9 <b>F</b>	H9 <b>F</b>	H4 <b>F</b>
In which warehouse is Kapil held?	H12 <b>T</b>	H11 <b>F</b>	H8 <b>F</b>
In which warehouse is Laxman held?	H10 <b>F</b>	H11 <b>T</b>	H11 <b>T</b>

The above is possible.

Answer Choice (2)

Hannah – H7, Indira – H3, Jacob – H9, Kapil – H12, Laxman – H10

This is not possible, since all the responses by Criminal 1 will be true.

Answer choice (3)

Hannah – H7, Indira – H3, Jacob – H10, Kapil – H11, Laxman – H9

This is not possible, since all the responses by Criminal 3 will be false.

**FeedBack**

**Directions for questions 35 to 38: Answer the questions on the basis of the information given below.**

5 persons—Hannah, Indira, Jacob, Kapil, and Laxman—have been held captive by a criminal organization in one of 12 warehouses—H1, H2, ..., H12—in the city of Ontopia. No two captives are held in the same warehouse. The police have 6 teams that are ready to be deployed for a raid. No two teams would be deployed to the same warehouse. If any police team is deployed to a location where the captive is held in, they will locate the captive.

Police have nabbed three criminals who are part of the criminal organization. The police conduct narcoanalysis test on the three criminals. Narcoanalysis test uses truth serum which inhibits a subject's ability to tell a lie. After administering truth serum, the police can ask each criminal only 5 questions. The truth serum does not completely inhibit the ability to tell a lie. These criminals have gone through prior training to beat the narcoanalysis test. However, the police are sure that each criminal will not be lying in all the 5 questions and each criminal will not be telling the truth in all the 5 questions.

Following table gives the response to the 5 questions asked to the three criminals.

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7	H7	H3
In which warehouse is Indira held?	H3	H3	H7
In which warehouse is Jacob held?	H9	H9	H4
In which warehouse is Kapil held?	H12	H11	H8
In which warehouse is Laxman held?	H10	H11	H11

### Q.38

If only 5 police teams were deployed, and they were deployed to H3, H4, H7, H11, and H12, and they did not find a single captive, then which of the following MUST be true?

- A. Each of the criminals lied 4 times
- B. Laxman is held captive in H10
- C. Hannah is not held captive in H8

1  Only C

2  A and B only

3  B and C only

4  None of the above

**Solution:****Correct Answer : 1****Bookmark****Answer key/Solution**

Police teams were deployed to H3, H4, H7, H11, and H12 and they did not find any of the captives. That would mean:

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7 F	H7 F	H3 F
In which warehouse is Indira held?	H3 F	H3 F	H7 F
In which warehouse is Jacob held?	H9	H9	H4 F
In which warehouse is Kapil held?	H12 F	H11 F	H8
In which warehouse is Laxman held?	H10	H11 F	H11 F

Criminal 2 and Criminal 3 have already 4 false responses. Since no criminal lies in all the questions, following must be true

Questions to each criminal	Response by Criminal 1	Response by Criminal 2	Response by Criminal 3
In which warehouse is Hannah held?	H7 F	H7 F	H3 F
In which warehouse is Indira held?	H3 F	H3 F	H7 F
In which warehouse is Jacob held?	H9 T	H9 T	H4 F
In which warehouse is Kapil held?	H12 F	H11 F	H8 T
In which warehouse is Laxman held?	H10 ?	H11 F	H11 F

- A. Each of the criminals lied 4 times  
*Not necessarily. Criminal 1 could have lied 3 times.*
- B. Laxman is held captive in H10  
*Not necessarily.*
- C. Hannah is not held captive in H8  
*This MUST be true. Kapil is held captive in H8. So, Hannah cannot be held captive in H8.*

**FeedBack**

**Directions for questions 39 to 42: Answer the questions on the basis of the information given below.**

**In a 4×400 relay race, there are four runners in each team who each complete 400 meters or one lap.**

**During the annual sports day of Indus Global School, one team from each of the four houses –red, green, yellow, and blue–participated in a 4×400 relay race. The time taken by all the runners individually to complete one lap was one among 72 seconds, 76 seconds, 80 seconds and 84 seconds. In the red house team, only three runners had the same average speed and the slowest among the four ran the first round. In green house team, only two runners—who ran the first two laps—had the same average speed and the slowest amongst the four ran the third round. Additionally, the first round of the green house team clocked more than 72 seconds. In the yellow house team, all the runners had different average speed while in the blue house team, all the runners had the same average speed. It is also noted that no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race; and no runners in the blue house team had the fastest average speed amongst all the runners in the race.**

### Q.39

**How many unique ordered pair of first and last finished teams are possible (ignore cases, if any, where there are more than one team that finishes first or last at the same time)?**

**Solution:**

**Correct Answer : 4**

**Bookmark**

**Answer key/Solution**

Condition that apply to all teams:

Time taken for one lap (in seconds) is one among – {72, 76, 80, 84}

Inferences - Red House Team

- A. three runners had the same average speed
- B. fastest among the four ran the first round.
- C. no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race

Based on C – time taken by the runners of red house team for 1 lap – {76, 80}

B suggests that the *slowest* ran the first round. That combined with what is mentioned in A, would mean there is only one possibility.

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	80	76	76	76	308

Inferences - Green House Team

- A. only two runners—who ran the first two laps—had the same average speed
- B. the slowest amongst the four ran the third round
- C. the first round of the green house team clocked more than 72 seconds

There is more than one scenario for the green house team. However, these scenarios are not very difficult to decipher.

From A, the time taken by the runners would look like –

Runner 1	Runner 2	Runner 3	Runner 4
----------	----------	----------	----------

X	X	Y	Z
---	---	---	---

From B,  $Y < X$  and  $Y < Z$

From C,  $X > 72$

The third runner's(the slowest among the three) can take values either 80 or 84. Or, the value of Y = 80 or 84

Let's take the case Y = 80

There will be just only one case

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	80	72	304

Let's take the case that Y = 84

Here, we will have multiple cases

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
2	76	76	84	72	308
3	80	80	84	72	316
4	76	76	84	80	316
5	80	80	84	76	320

5 cases in total for green house team

#### Inferences - Yellow House Team

Condition: all the runners had different average speed

All possible permutations of the following:

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	72	76	80	84	312

Inferences - Blue House Team

Conditions:

(A) all runners had the same average speed

(B) no runners in the blue house team had the fastest average speed amongst all the runners in the race.

Based on the above two, there are 3 scenarios possible

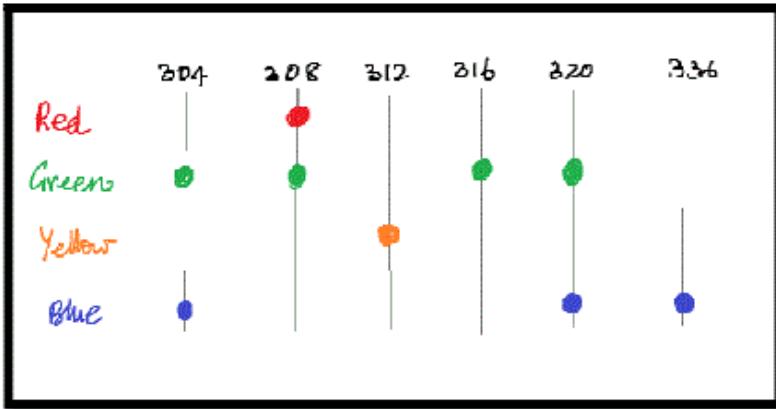
Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	76	76	304
2	80	80	80	80	320
3	84	84	84	84	336

Combining Inferences

Since all the questions ask about the order of finishes, it would be a good idea to represent it pictorially.

Possible total times for each team

Red	308
Green	304, 308, 316, 320
Yellow	312
Blue	304, 320, 336

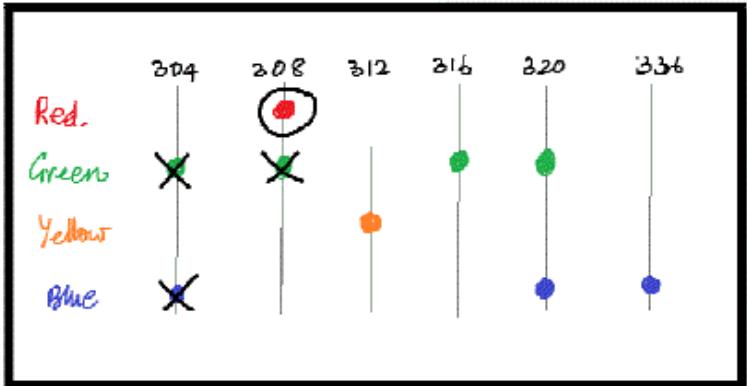


The first position can be – either Red, Green, or Blue

Case 1: Red – first position

If Red is first, then Green is either 316 or 320

If Red is first, then Blue is either 320 or 336

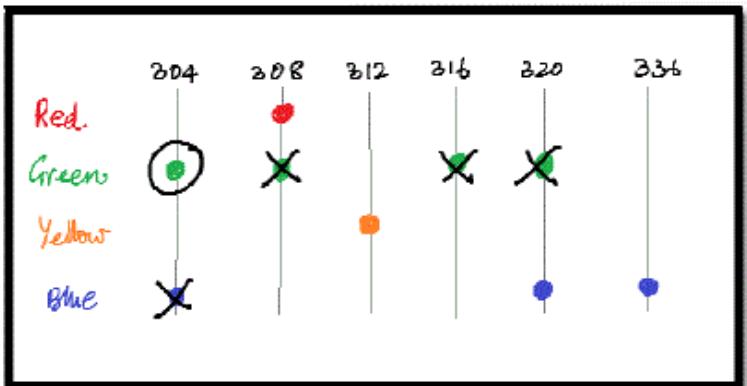


Since, we have to ignore case where the more than one finishes first or last, Blue will be the last

Case 1: Only one possibility of First & Last respectively → Red, Blue

Case 2: Green – first position

If Green is first, Blue must be last

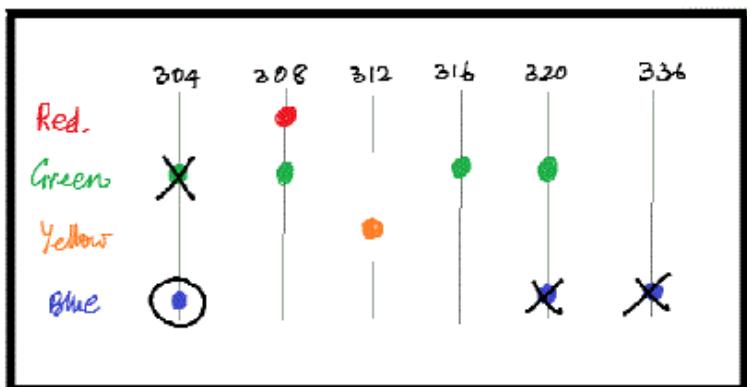


Case 2: Only one possibility for Case 1 of first & last positions respectively → Green, Blue

Case 3: Blue – first position

Yellow will be last, if Green takes 308sec and

Green will be last if Green team takes 316 seconds or 320 seconds



Two possibilities of first and last respectively for Case 2:

Blue, Yellow | Blue, Green

Answer: 4 (1 from Case-1, 1 from Case-2 & 2 from Case-3)

FeedBack

**Directions for questions 39 to 42: Answer the questions on the basis of the information given below.**

**In a 4×400 relay race, there are four runners in each team who each complete 400 meters or one lap.**

**During the annual sports day of Indus Global School, one team from each of the four houses –red, green, yellow, and blue–participated in a 4×400 relay race. The time taken by all the runners individually to complete one lap was one among 72 seconds, 76 seconds, 80 seconds and 84 seconds. In the red house team, only three runners had the same average speed and the slowest among the four ran the first round. In green house team, only two runners—who ran the first two laps—had the same average speed and the slowest amongst the four ran the third round. Additionally, the first round of the green house team clocked more than 72 seconds. In the yellow house team, all the runners had different average speed while in the blue house team, all the runners had the same average speed. It is also noted that no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race; and no runners in the blue house team had the fastest average speed amongst all the runners in the race.**

#### **Q.40**

**How many unique order of teams and their finish time (when arranged from first to last team to finish) are possible, if there are more than one team which finishes first?**

**Solution:**

**Correct Answer : 3**



[Answer key/Solution](#)

Condition that apply to all teams:

Time taken for one lap (in seconds) is one among – {72, 76, 80, 84}

Inferences - Red House Team

- A. three runners had the same average speed
- B. fastest among the four ran the first round.
- C. no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race

Based on C – time taken by the runners of red house team for 1 lap – {76, 80}

B suggests that the *slowest* ran the first round. That combined with what is mentioned in A, would mean the there is only one possibility.

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	80	76	76	76	308

Inferences - Green House Team

- A. only two runners—who ran the first two laps—had the same average speed
- B. the slowest amongst the four ran the third round
- C. the first round of the green house team clocked more than 72 seconds

There is more than one scenario for the green house team. However, these scenarios are not very difficult to decipher.

From A, the time taken by the runners would look like –

Runner 1	Runner 2	Runner 3	Runner 4
----------	----------	----------	----------

X	X	Y	Z
---	---	---	---

From B,  $Y < X$  and  $Y < Z$

From C,  $X > 72$

The third runner's(the slowest among the three) can take values either 80 or 84. Or, the value of Y = 80 or 84

Let's take the case Y = 80

There will be just only one case

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	80	72	304

Let's take the case that Y = 84

Here, we will have multiple cases

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
2	76	76	84	72	308
3	80	80	84	72	316
4	76	76	84	80	316
5	80	80	84	76	320

5 cases in total for green house team

#### Inferences - Yellow House Team

Condition: all the runners had different average speed

All possible permutations of the following:

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	72	76	80	84	312

#### Inferences - Blue House Team

Conditions:

(A) all runners had the same average speed

(B) no runners in the blue house team had the fastest average speed amongst all the runners in the race.

Based on the above two, there are 3 scenarios possible

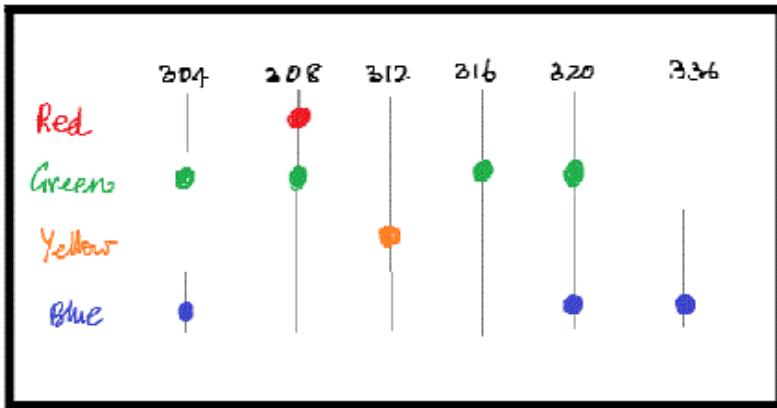
Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	76	76	304
2	80	80	80	80	320
3	84	84	84	84	336

#### Combining Inferences

Since all the questions ask about the order of finishes, it would be a good idea to represent it pictorially.

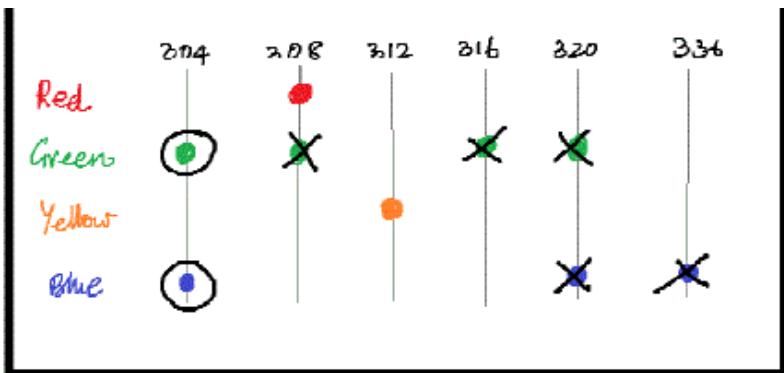
Possible total times for each team

Red	308
Green	304, 308, 316, 320
Yellow	312
Blue	304, 320, 336



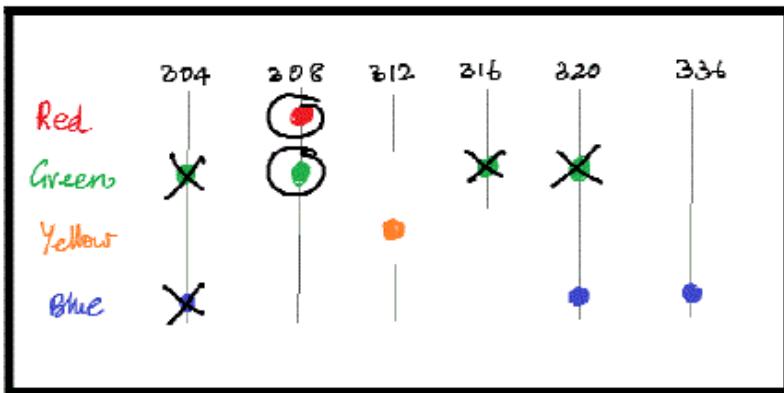
There are 2 possibilities of joint winners

Case 1: Green and Blue finishes the race in 304 seconds



Only one possibility for Case 1→Green (304), Blue (304); Red (308); Yellow (312)

Case 2: Red and Green finishes first the race in 308 seconds



Two possibilities for case 2

Red (308), Green (308); Yellow (312); Blue (320)

Red (308), Green (308); yellow (312); Blue (336)

Answer: 3 possibilities (1 from case-1 and 2 from case-2)

[FeedBack](#)

**Directions for questions 39 to 42: Answer the questions on the basis of the information given below.**

In a  $4 \times 400$  relay race, there are four runners in each team who each complete 400 meters or one lap.

During the annual sports day of Indus Global School, one team from each of the four houses –red, green, yellow, and blue–participated in a  $4 \times 400$  relay race. The time taken by all the runners individually to complete one lap was one among 72 seconds, 76 seconds, 80 seconds and 84 seconds. In the red house team, only three runners had the same average speed and the slowest among the four ran the first round. In green house team, only two runners—who ran the first two laps—had the same average speed and the slowest amongst the four ran the third round. Additionally, the first round of the green house team clocked more than 72 seconds. In the yellow house team, all the runners had different average speed while in the blue house team, all the runners had the same average speed. It is also noted that no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race; and no runners in the blue house team had the fastest average speed amongst all the runners in the race.

**Q.41**

If the yellow house team is the second team to complete the race, which of the following **MUST** be true?

1  Green house team finishes either first or last.

2  Red house team finishes first

3  Blue house team finishes first

4  Blue house team does not finish last

**Solution:**

**Correct Answer : 2**

 **Bookmark**

 **Answer key/Solution**

Condition that apply to all teams:

Time taken for one lap (in seconds) is one among – {72, 76, 80, 84}

Inferences - Red House Team

- A. three runners had the same average speed
- B. fastest among the four ran the first round.
- C. no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race

Based on C – time taken by the runners of red house team for 1 lap – {76, 80}

B suggests that the *slowest* ran the first round. That combined with what is mentioned in A, would mean there is only one possibility.

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	80	76	76	76	308

Inferences - Green House Team

- A. only two runners—who ran the first two laps—had the same average speed
- B. the slowest amongst the four ran the third round
- C. the first round of the green house team clocked more than 72 seconds

There is more than one scenario for the green house team. However, these scenarios are not very difficult to decipher.

From A, the time taken by the runners would look like –

Runner 1	Runner 2	Runner 3	Runner 4
----------	----------	----------	----------

X	X	Y	Z
---	---	---	---

From B,  $Y < X$  and  $Y < Z$

From C,  $X > 72$

The third runner's(the slowest among the three) can take values either 80 or 84. Or, the value of  $Y = 80$  or 84

Let's take the case  $Y = 80$

There will be just only one case

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	80	72	304

Let's take the case that  $Y = 84$

Here, we will have multiple cases

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
2	76	76	84	72	308
3	80	80	84	72	316
4	76	76	84	80	316
5	80	80	84	72	316

0	80	80	84	10	320
---	----	----	----	----	-----

5 cases in total for green house team

#### Inferences - Yellow House Team

Condition: all the runners had different average speed

All possible permutations of the following:

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	72	76	80	84	312

Inferences - Blue House Team

Conditions:

(A) all runners had the same average speed

(B) no runners in the blue house team had the fastest average speed amongst all the runners in the race.

Based on the above two, there are 3 scenarios possible

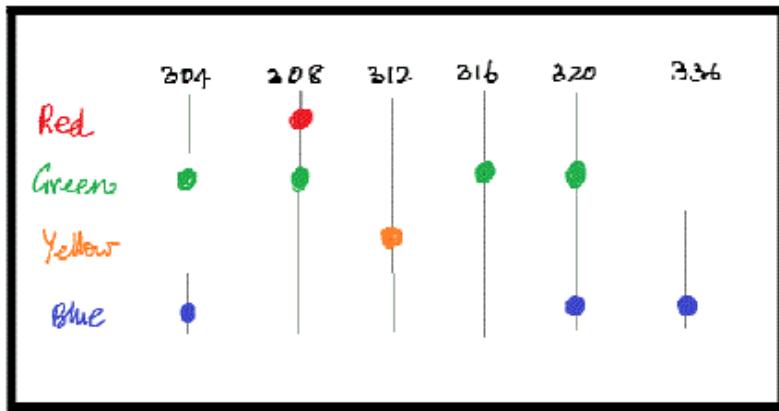
Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	76	76	304
2	80	80	80	80	320
3	84	84	84	84	336

Combining Inferences

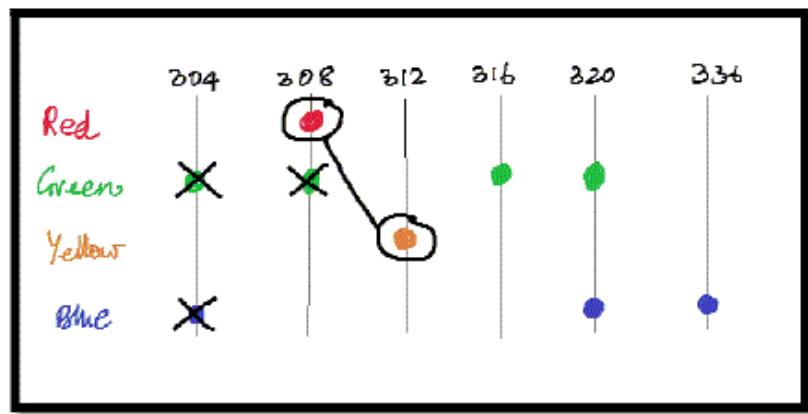
Since all the questions ask about the order of finishes, it would be a good idea to represent it pictorially.

Possible total times for each team

Red	308
Green	304, 308, 316, 320
Yellow	312
Blue	304, 320, 336



For yellow house to be the second team to complete the race, Red house must be the first to complete the race.



FeedBack

**Directions for questions 39 to 42: Answer the questions on the basis of the information given below.**

In a 4×400 relay race, there are four runners in each team who each complete 400 meters or one lap.

During the annual sports day of Indus Global School, one team from each of the four houses –red, green, yellow, and blue–participated in a 4×400 relay race. The time taken by all the runners individually to complete one lap was one among 72 seconds, 76 seconds, 80 seconds and 84 seconds. In the red house team, only three runners had the same average speed and the slowest among the four ran the first round. In green house team, only two runners—who ran the first two laps—had the same average speed and the slowest amongst the four ran the third round. Additionally, the first round of the green house team clocked more than 72 seconds. In the yellow house team, all the runners had different average speed while in the blue house team, all the runners had the same average speed. It is also noted that no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race; and no runners in the blue house team had the fastest average speed amongst all the runners in the race.

#### Q.42

If in the green house team, the average speed of the fourth runner is less than the average speed of the second runner, what is the total number of unique possible order of the teams from first to last?

**Solution:**

**Correct Answer : 2**

**Bookmark**

**Answer key/Solution**

Condition that apply to all teams:

Time taken for one lap (in seconds) is one among – {72, 76, 80, 84}

Inferences - Red House Team

- A. three runners had the same average speed
- B. fastest among the four ran the first round.

C. no runners in the red house team had the fastest or the slowest average speed amongst all the runners in the race

Based on C – time taken by the runners of red house team for 1 lap – {76, 80}

B suggests that the *slowest* ran the first round. That combined with what is mentioned in A, would mean there is only one possibility.

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	80	76	76	76	308

Inferences - Green House Team

- A. only two runners—who ran the first two laps—had the same average speed
- B. the slowest amongst the four ran the third round
- C. the first round of the green house team clocked more than 72 seconds

There is more than one scenario for the green house team. However, these scenarios are not very difficult to decipher.

From A, the time taken by the runners would look like –

Runner 1	Runner 2	Runner 3	Runner 4
----------	----------	----------	----------

X	X	Y	Z
---	---	---	---

From B,  $Y < X$  and  $Y < Z$

From C,  $X > 72$

The third runner's(the slowest among the three) can take values either 80 or 84. Or, the value of  $Y = 80$  or 84

Let's take the case  $Y = 80$

There will be just only one case

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	80	72	304

Let's take the case that  $Y = 84$

Here, we will have multiple cases

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
2	76	76	84	72	308
3	80	80	84	72	316
4	76	76	84	80	316
5	80	80	84	76	320

5 cases in total for green house team

#### Inferences - Yellow House Team

Condition: all the runners had different average speed

All possible permutations of the following:

Time taken

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	72	76	80	84	312

#### Inferences - Blue House Team

Conditions:

(A) all runners had the same average speed

(B) no runners in the blue house team had the fastest average speed amongst all the runners in the race.

Based on the above two, there are 3 scenarios possible

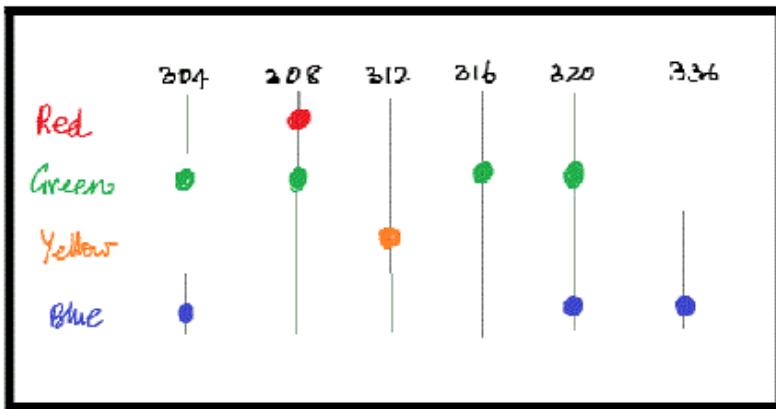
Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	76	76	304
2	80	80	80	80	320
3	84	84	84	84	336

Combining Inferences

Since all the questions ask about the order of finishes, it would be a good idea to represent it pictorially.

Possible total times for each team

Red	308
Green	304, 308, 316, 320
Yellow	312
Blue	304, 320, 336



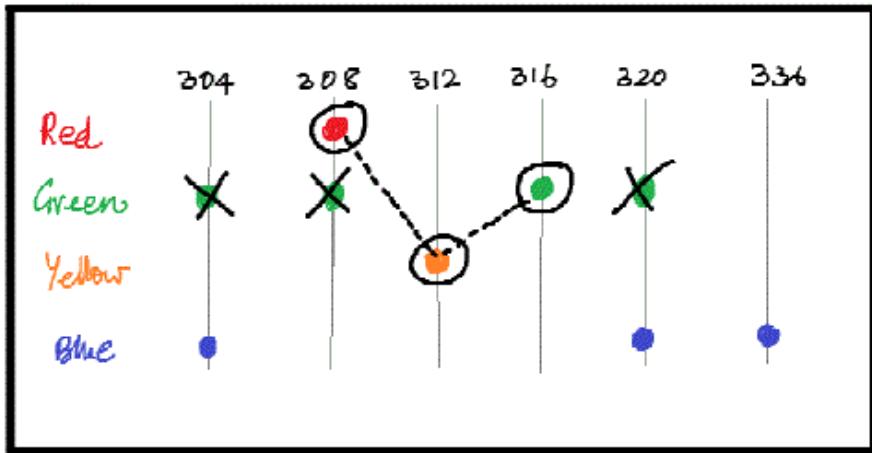
This question asks about the green house team.

Following were the scenarios that we deduced for green house team

Scenario	Runner 1	Runner 2	Runner 3	Runner 4	Total
1	76	76	80	72	304
2	76	76	84	72	308
3	80	80	84	72	316
4	76	76	84	80	316
5	80	80	84	76	320

The additional condition, the average speed of fourth runner is less than the average speed of second runner. That would mean that the time taken by the fourth runner is more than the time taken by the second runner. That is in only one case – case (4) where the total time is 316 seconds.

So, the possibilities are:



Red → Yellow → Green must happen, and blue can be either the first or the last.

Two possibilities

Blue, Red, Yellow, Green

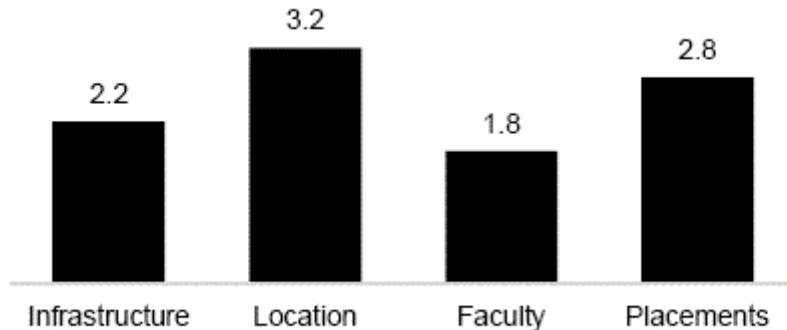
Red, Yellow, Green, Blue

FeedBack

**Directions for questions 43 to 46: Answer the questions on the basis of the information given below.**

In a closed group discussion, 5 students—Rita, Suresh, Tamanna, Uday, and Varun—of a certain B-School were asked to grade 4 attributes—Infrastructure, Location, Faculty, and Placements—of the B-school from 1(lowest) to 4(highest). While grading the 4 attributes, no student gave the same grade to two attributes.

The graph below shows the average grade of each of the attributes



Following table shows the attribute which was not given a grade 1 or 4 by the students

Rita	Location, Faculty
Suresh	Location, Faculty
Tamanna	Infrastructure, Placements
Uday	Infrastructure, Placements
Varun	Location, Faculty

Further it is also known that

- The attribute 'faculty' did not get the highest grade from any of the students.
- Rita and Suresh gave the same grade to attribute 'Infrastructure'.

#### Q.43

**How many students gave a higher grade to 'Faculty' than 'Location'?**

1  0

2  1

3  2

4  Cannot be determined

**Solution:**

**Correct Answer : 2**

**Bookmark**

**Answer key/Solution**

Inferences from the graph

The graph gives the average grade for each attribute given by the five students. We can calculate the total that each have got.

$$\text{Infrastructure} = 2.2 \times 5 = 11$$

$$\text{Location} = 3.2 \times 5 = 16$$

$$\text{Faculty} = 1.8 \times 5 = 9$$

$$\text{Placements} = 2.8 \times 5 = 14$$

Inferences from the table

The table gives the list of attributes that was not marked 1 or 4 by students. That would mean that it is list of what they marked 2 or 3.

Following inference can be drawn

	Infrastructure	Location	Faculty	Placements
Rita	1/4	2/3	3/2	4/1
Suresh	1/4	2/3	3/2	4/1
Tamanna	2/3	1/4	4/1	3/2
Uday	2/3	1/4	4/1	3/2
Varun	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

Inference from additional conditions

*Condition: The attribute 'faculty' did not get the highest grade from any of the students.*

That would mean that faculty cannot get 4

The table can be refined

	Infrastructure	Location	Faculty	Placements
Rita (R)	1/4	2/3	3/2	4/1
Suresh (S)	1/4	2/3	3/2	4/1
Tamanna (T)	2/3	4	1	3/2
Uday (U)	2/3	4	1	3/2
Varun (V)	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

**Faculty**

$$R + S + T + U + V = 9$$

$$\text{Since, } T = U = 1$$

$$R + S + V = 7, \text{ where } R, S \text{ is either 2 or 3.}$$

$$\text{There is only one possibility } \rightarrow 3 + 2 + 2 = 7$$

**Location**

$$R + S + T + U + V = 16$$

$$\text{Since, } T = U = 4$$

$$R + S + V = 8, \text{ where } R, S \text{ is either 2 or 3.}$$

$$\text{There is only one possibility } \rightarrow 2 + 3 + 3 = 8$$

So, the table for Faculty & Location would be

	Location	Faculty
R/S/V	2	3
R/S/V	3	2
T	4	1
U	4	1
R/S/V	3	2
R/S/V	16	9

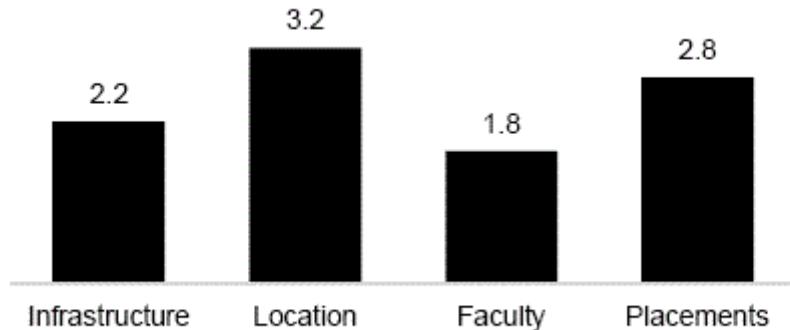
1 student have a higher ranking to Faculty than Location.

Feedback

**Directions for questions 43 to 46: Answer the questions on the basis of the information given below.**

In a closed group discussion, 5 students—Rita, Suresh, Tamanna, Uday, and Varun—of a certain B-School were asked to grade 4 attributes—Infrastructure, Location, Faculty, and Placements—of the B-school from 1(lowest) to 4(highest). While grading the 4 attributes, no student gave the same grade to two attributes.

The graph below shows the average grade of each of the attributes



Following table shows the attribute which was not given a grade 1 or 4 by the students

Rita	Location, Faculty
Suresh	Location, Faculty
Tamanna	Infrastructure, Placements
Uday	Infrastructure, Placements
Varun	Location, Faculty

Further it is also known that

- The attribute 'faculty' did not get the highest grade from any of the students.
- Rita and Suresh gave the same grade to attribute 'Infrastructure'.

#### Q.44

**Which of the following COULD BE an accurate list of the grades given by Rita?**

- 1  Infrastructure – 1, Location – 3, Faculty – 2, Placement – 4.
- 2  Infrastructure – 4, Location – 3, Faculty – 2, Placement – 1.
- 3  Infrastructure – 4, Location – 2, Faculty – 3, Placement – 1.
- 4  Both (2) and (3)

**Solution:**

**Correct Answer : 1**

**Bookmark**

**Answer key/Solution**

#### Inferences from the graph

The graph gives the average grade for each attribute given by the five students. We can calculate the total that each have got.

$$\text{Infrastructure} = 2.2 \times 5 = 11$$

$$\text{Location} = 3.2 \times 5 = 16$$

$$\text{Faculty} = 1.8 \times 5 = 9$$

$$\text{Placements} = 2.8 \times 5 = 14$$

$$\text{Placements} = 2.0 \times 2 = 14$$

### Inferences from the table

The table gives the list of attributes that was not marked 1 or 4 by students. That would mean that it is list of what they marked 2 or 3.

Following inference can be drawn

	Infrastructure	Location	Faculty	Placements
Rita	1/4	2/3	3/2	4/1
Suresh	1/4	2/3	3/2	4/1
Tamanna	2/3	1/4	4/1	3/2
Uday	2/3	1/4	4/1	3/2
Varun	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

### Inference from additional conditions

**Condition:** The attribute 'faculty' did not get the highest grade from any of the students.

That would mean that faculty cannot get 4

The table can be refined

	Infrastructure	Location	Faculty	Placements
Rita (R)	1/4	2/3	3/2	4/1
Suresh (S)	1/4	2/3	3/2	4/1
Tamanna (T)	2/3	4	1	3/2
Uday (U)	2/3	4	1	3/2
Varun (V)	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

### Faculty

$$R + S + T + U + V = 9$$

Since,  $T = U = 1$

$$R + S + V = 7, \text{ where } R, S \text{ is either } 2 \text{ or } 3.$$

There is only one possibility  $\rightarrow 3 + 2 + 2 = 7$

### Location

$$R + S + T + U + V = 16$$

Since,  $T = U = 4$

$$R + S + V = 8, \text{ where } R, S \text{ is either } 2 \text{ or } 3.$$

There is only one possibility  $\rightarrow 2 + 3 + 3 = 8$

So, the table for Faculty & Location would be

	Location	Faculty
R/S/V	2	3
R/S/V	3	2
T	4	1
U	4	1
R/S/V	3	2
R/S/V	<b>16</b>	<b>9</b>

**Condition:** Rita and Suresh gave the same grade to Infrastructure.

First, let us get a handle of the score of Infrastructure.

	Infrastructure
Rita (R)	1/4
Suresh (S)	1/4
Tamanna (T)	2/3
Uday (U)	2/3
Varun (V)	1/4
<b>TOTAL</b>	<b>11</b>

Since Rita and Suresh gave the same grade to infrastructure, either  $R = S = 1$  or  $R = S = 4$ .

Now, if  $R = S = 4$ , then

$$R + S + T + U + V = 11$$

$$R + S = 4 + 4 = 8$$

$T + U + V = 3$ , That would be  $T = U = V = 1$ , which is not possible.

So, R = S = 1.

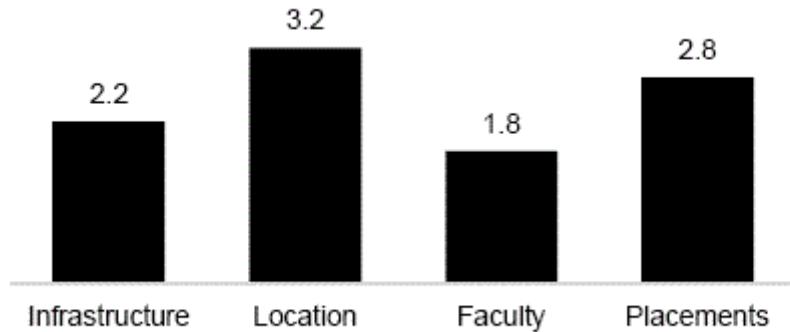
Rita must grade Infrastructure as 1. That eliminates options 2, 3, and 4

**FeedBack**

**Directions for questions 43 to 46:** Answer the questions on the basis of the information given below.

In a closed group discussion, 5 students—Rita, Suresh, Tamanna, Uday, and Varun—of a certain B-School were asked to grade 4 attributes—Infrastructure, Location, Faculty, and Placements—of the B-school from 1(lowest) to 4(highest). While grading the 4 attributes, no student gave the same grade to two attributes.

The graph below shows the average grade of each of the attributes



Following table shows the attribute which was not given a grade 1 or 4 by the students

Rita	Location, Faculty
Suresh	Location, Faculty
Tamanna	Infrastructure, Placements
Uday	Infrastructure, Placements
Varun	Location, Faculty

Further it is also known that

- The attribute 'faculty' did not get the highest grade from any of the students.
- Rita and Suresh gave the same grade to attribute 'Infrastructure'.

#### Q.45

If for 'faculty', Rita graded higher than Varun, which of the following COULD BE an accurate list of the grades given by Suresh?

- 1  Infrastructure – 4, Location – 3, Faculty – 2, Placement – 1.
- 2  Infrastructure – 1, Location – 3, Faculty – 2, Placement – 4.
- 3  Infrastructure – 1, Location – 2, Faculty – 3, Placement – 4.
- 4  Both (2) and (3)

**Solution:**

**Correct Answer : 2**

**Bookmark**

Inferences from the graph

The graph gives the average grade for each attribute given by the five students. We can calculate the total that each have got.

$$\text{Infrastructure} = 2.2 \times 5 = 11$$

$$\text{Location} = 3.2 \times 5 = 16$$

$$\text{Faculty} = 1.8 \times 5 = 9$$

$$\text{Placements} = 2.8 \times 5 = 14$$

Inferences from the table

The table gives the list of attributes that was not marked 1 or 4 by students. That would mean that it is list of what they marked 2 or 3.

Following inference can be drawn

	Infrastructure	Location	Faculty	Placements
Rita	1/4	2/3	3/2	4/1
Suresh	1/4	2/3	3/2	4/1
Tamanna	2/3	1/4	4/1	3/2
Uday	2/3	1/4	4/1	3/2
Varun	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

Inference from additional conditions

*Condition:* The attribute 'faculty' did not get the highest grade from any of the students.

That would mean that faculty cannot get 4

The table can be refined

	Infrastructure	Location	Faculty	Placements
Rita (R)	1/4	2/3	3/2	4/1
Suresh (S)	1/4	2/3	3/2	4/1
Tamanna (T)	2/3	4	1	3/2
Uday (U)	2/3	4	1	3/2
Varun (V)	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

**Faculty**

$$R + S + T + U + V = 9$$

Since,  $T = U = 1$

$$R + S + V = 7, \text{ where } R, S \text{ is either } 2 \text{ or } 3.$$

There is only one possibility  $\rightarrow 3 + 2 + 2 = 7$

**Location**

$$R + S + T + U + V = 16$$

Since,  $T = U = 4$

$$R + S + V = 8, \text{ where } R, S \text{ is either } 2 \text{ or } 3.$$

There is only one possibility  $\rightarrow 2 + 3 + 3 = 8$

So, the table for Faculty & Location would be

	Location	Faculty
R/S/V	2	3
R/S/V	3	2
T	4	1
U	4	1
R/S/V	3	2
R/S/V	16	9

**Suresh's grade for infrastructure is 1. There are 2 options that satisfies that condition. We cannot be sure of the answer.**

We inferred the following

	Location	Faculty
R/S/V	2	3

R/S/V	3	2
T	4	1
U	4	1
R/S/V	3	2
R/S/V	<b>16</b>	<b>9</b>

	Infrastructure	Placements
R	1	4
S	1	4
T/U	2	3
U/T	3	2
V	4	1
	<b>11</b>	<b>14</b>

Combining the above two

	Infrastructure	Location	Faculty	Placements
Rita (R)	1	2/3	3/2	4
Suresh (S)	1	2/3	3/2	4
Tamanna (T)	2	4	1	3
Uday (U)	3	4	1	3
Varun (V)	1	2/3	3/2	4
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>
<b>Values →</b>		(2, 3, 3, 4, 4)	(1, 1, 2, 2, 3)	

Faculty: Rita graded higher than Varun.

That would mean that Rita graded 3 and Varun graded 2. Now, since for faculty the possible values are (1, 1, 2, 2, 3). Suresh must grade 2 for faculty.

So, the grade of Suresh would be:

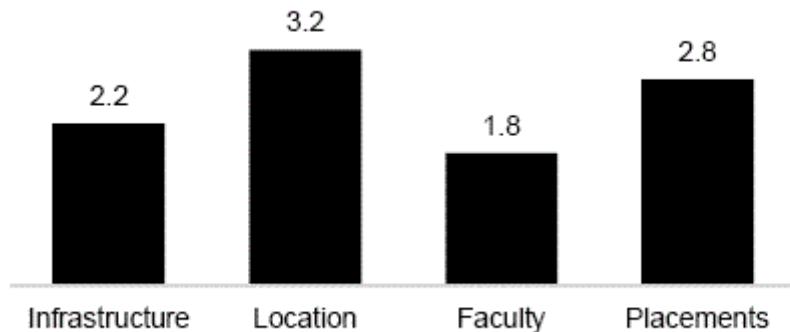
Infrastructure – 1, Location – 3, Faculty – 2, Placement – 4.

FeedBack

**Directions for questions 43 to 46:** Answer the questions on the basis of the information given below.

In a closed group discussion, 5 students—Rita, Suresh, Tamanna, Uday, and Varun—of a certain B-School were asked to grade 4 attributes—Infrastructure, Location, Faculty, and Placements—of the B-school from 1(lowest) to 4(highest). While grading the 4 attributes, no student gave the same grade to two attributes.

The graph below shows the average grade of each of the attributes



Following table shows the attribute which was not given a grade 1 or 4 by the students

Rita	Location, Faculty
Suresh	Location, Faculty
Tamanna	Infrastructure, Placements
Uday	Infrastructure, Placements
Varun	Location, Faculty

Further it is also known that

- The attribute 'faculty' did not get the highest grade from any of the students.
- Rita and Suresh gave the same grade to attribute 'Infrastructure'.

#### Q.46

If Varun's grade were not considered, what would be the average grade received by attribute 'Placements'?

1  2.5

2  2.6

3  3.25

4  Either (2) or (3)

**Solution:**

**Correct Answer : 3**

**Bookmark**

**Answer key/Solution**

#### Inferences from the graph

The graph gives the average grade for each attribute given by the five students. We can calculate the total that each have got.

$$\text{Infrastructure} = 2.2 \times 5 = 11$$

$$\text{Location} = 3.2 \times 5 = 16$$

$$\text{Faculty} = 1.8 \times 5 = 9$$

$$\text{Faculty} = 1.8 \times 5 = 9$$

$$\text{Placements} = 2.8 \times 5 = 14$$

#### Inferences from the table

The table gives the list of attributes that was not marked 1 or 4 by students. That would mean that it is list of what they marked 2 or 3.

Following inference can be drawn

	Infrastructure	Location	Faculty	Placements
Rita	1/4	2/3	3/2	4/1
Suresh	1/4	2/3	3/2	4/1
Tamanna	2/3	1/4	4/1	3/2
Uday	2/3	1/4	4/1	3/2
Varun	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

#### Inference from additional conditions

*Condition: The attribute 'faculty' did not get the highest grade from any of the students.*

That would mean that faculty cannot get 4

The table can be refined

	Infrastructure	Location	Faculty	Placements
Rita (R)	1/4	2/3	3/2	4/1
Suresh (S)	1/4	2/3	3/2	4/1
Tamanna (T)	2/3	4	1	3/2
Uday (U)	2/3	4	1	3/2
Varun (V)	1/4	2/3	3/2	4/1
<b>TOTAL</b>	<b>11</b>	<b>16</b>	<b>9</b>	<b>14</b>

#### Faculty

$$R + S + T + U + V = 9$$

$$\text{Since, } T = U = 1$$

$$R + S + V = 7, \text{ where } R, S \text{ is either 2 or 3.}$$

$$\text{There is only one possibility } \rightarrow 3 + 2 + 2 = 7$$

#### Location

$$R + S + T + U + V = 16$$

$$\text{Since, } T = U = 4$$

$$R + S + V = 8, \text{ where } R, S \text{ is either 2 or 3.}$$

$$\text{There is only one possibility } \rightarrow 2 + 3 + 3 = 8$$

So, the table for Faculty & Location would be

	Location	Faculty
R/S/V	2	3
R/S/V	3	2
T	4	1
U	4	1
R/S/V	3	2
R/S/V	16	9

$$\text{Since } R = S = 1, R + S = 2$$

$$T + U + V = 9$$

Given that T = 2 or 3; U = 2 or 3 and V = 1 or 4, the only combination that will get to a 9 is

$$2 + 3 + 4 = 9$$

	Infrastructure
R	1
S	1
T/U	2
U/T	3
V	4
	<b>11</b>

The above will give the accurate list for placements

	Infrastructure	Placements
R	1	4
S	1	4
T/U	2	3
U/T	3	2
V	4	1
	11	14

Since Varun's grade is discredited, the new total of placements would be 13

$$\text{Average} = \frac{13}{4} = 3.25$$

FeedBack

**Directions for questions 47 to 50: Answer the questions on the basis of the information given below.**

**Mahesh is celebrating his birthday and he invites four of his friends—Aditya, Binita, Chaitanya, and Dinesh—to his party. His friends together bring 3 types of gifts totalling 15 gift items—5 video games, 5 sun glasses, and 5 books.**

- Each of the friends brings at most two types of gifts and at least three gift items.
- The total number of gift items of Binita is less than that of Aditya
- Dinesh brings no gift types other than video games.

**Q.47**

If it is known that

(1) The total number of gift items brought by Dinesh is more than the total number of gift items brought by Aditya, and

(2) Aditya and Binita brings only one type of gift,

then what is the total number of possible ordered triplets of number of video games, sun glasses and books that Chaitanya brings?

**Solution:**

**Correct Answer : 2**

 **Bookmark**

 **Answer key/Solution**

Drawing inference from the data

Conditions:

1. Each of the friends bring at most two types of gifts and at least three gift items.
2. The total number of gift items of Binita is less than that of Aditya
3. Dinesh brings no gift types other than video games.

Let's start with a basic template to fill in the data

Code: Aditya (A); Binita (B); Chaitanya (C) and Dinesh (D)  
Videogame (v); Sunglasses (s); Books (b)

Applying condition 3, we have the basic working template.

	A	B	C	D	
v				5	
s			<del>5</del>	5	
r			<del>5</del>	5	
				<b>15</b>	

Now, let us draw inferences using conditions 1, 2 and 3

Condition 1 & 2:

The total # of gift items of each gift type that the friends can bring is 3, 4, or 5

There should be at least one box which is blank

Since the minimum value of the total gift item is 3, The maximum that anyone can bring is 6

$$3 + 3 + 3 = 9$$

Since the total is 15, the fourth value would be 6

$$6 + 3 + 3 + 3 = 15$$

(If one them, say A, brought 7 gift items then  $B + C + D = 15 - 7 = 8$ . That would mean that one of them will have to bring 2 gift items, which is not possible)

Since total # of gift items of B < total # of gift items of A. The possible combinations of A and B are (6, 5); (6, 4); (6, 3); (5, 4); (5, 3); (4, 3)

If A = 6, there is just one possibility

$$A + B + C + D = 15$$

Since the minimum value of C, D = 3

The minimum value of C + D = 6

So, the maximum value of A + B = 9.

Only one possibility

$$A = 6, B = 3, C = 3, D = 3$$

$$A = 5, B = 4$$

$$A + B + C + D = 15$$

$$A + B = 9$$

$$C + D = 6$$

Only one possibility, C = 3, D = 3

$$A = 5, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 8$$

$$C + D = 7$$

Two possibilities,

$$C = 3, D = 4$$

$$C = 4, D = 3$$

$$A = 4, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 4$$

$$C + D = 8$$

Three possibilities,

$$C = 3, D = 5$$

$$C = 5, D = 3$$

$$C = 4, D = 4$$

We have the following 7 cases:

Total	A	B	C	D
Case 1	6	3	3	3
Case 2	5	4	3	3
Case 3	5	3	4	3
Case 4	5	3	3	4
Case 5	4	3	3	5
Case 6	4	3	5	3

Case 7	4	3	4	4
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Condition:

- 1) The total number of gift items brought by Dinesh is more than the total number of gift items brought by Aditya.
- 2) Aditya and Binita brings only one type of gift

From (1), there is only one case that is applicable

	A	B	C	D	
Case 5	4	3	3	5	

	A	B	C	D	
V	1	1	1	5	5
S				1	5
L				1	5
	4	3	3	5	15

Consider: Aditya and Binita brings only one type of gift

Let's consider Aditya.

Two possibilities – Aditya brings 4 sun glasses or Aditya brings 4 books.

If Aditya brings 4 sun glasses, then Binita cannot bring 3 sunglasses, since the total number of sunglasses is only 5. So, Binita must bring 3 books.

Similarly, if Aditya brings 4 books, then Binita must bring 3 sunglasses.

**Scenario 1**

	A	B	C	D	
V	1	1	1	5	5
S	4	3		1	5
L	1	3		1	5
	4	3	3	5	15

In this scenario, Chaitanya has to bring 1 sunglass and 2 books

	A	B	C	D	
V	1	1	1	5	5
S	4	3	1	1	5
L	1	3	2	1	5
	4	3	3	5	15

**Scenario 2**

	A	B	C	D	
V	1	1	1	5	5
S					
L					
	4	3	3	5	15

<del>5</del>	3	3		<del>3</del>	5
<del>5</del>	4	<del>3</del>		<del>3</del>	5
4	3	3	5		15

In this scenario, Chaitanya has to bring 2 sunglasses and 1 book

	A	B	C	D	
V	<del>3</del>	<del>3</del>	<del>3</del>	5	5
S	3	3	2	<del>3</del>	5
L	4	<del>3</del>	1	<del>3</del>	5
	4	3	3	5	15

There are 2 possibilities for Chaitanya, as number of video games he brought is '0' in both the cases

- 1) 2 sunglasses; 1 book
- 2) 1 sunglass; 2 books

FeedBack

**Directions for questions 47 to 50: Answer the questions on the basis of the information given below.**

Mahesh is celebrating his birthday and he invites four of his friends—Aditya, Binita, Chaitanya, and Dinesh—to his party. His friends together bring 3 types of gifts totalling 15 gift items—5 video games, 5 sun glasses, and 5 books.

- Each of the friends brings at most two types of gifts and at least three gift items.
- The total number of gift items of Binita is less than that of Aditya
- Dinesh brings no gift types other than video games.

#### Q.48

If exactly two of the four friends bring equal number of gift times, then each of the following MUST be true EXCEPT

1  If Chaitanya brings more number of gift items than Dinesh, then Aditya can bring in at most two video games.

2  The number of gift items brought by Chaitanya and Dinesh cannot be the same.

3  If Binita and Chaitanya bring equal number of gift items, then the number of gift items brought by Chaitanya is less than the number of gifts brought by Dinesh

- 4  If Aditya brings 4 gift items, then the number of gifts items brought by Binita and Dinesh can be equal.

**Solution:**

**Correct Answer : 2**

 **Bookmark**

 **Answer key/Solution**

#### Drawing inference from the data

Conditions:

1. Each of the friends bring at most two types of gifts and at least three gift items.
2. The total number of gift items of Binita is less than that of Aditya
3. Dinesh brings no gift types other than video games.

Let's start with a basic template to fill in the data

Code: Aditya (A); Binita (B); Chaitanya (C) and Dinesh (D)  
 Videogame (v); Sunglasses (s); Books (b)

Applying condition 3, we have the basic working template.

A	B	C	D	
v				5
s			s	5
b			b	5
				15

Now, let us draw inferences using conditions 1, 2 and 3

Condition 1 & 2:

The total # of gift items of each gift type that the friends can bring is 3, 4, or 5

There should be at least one box which is blank

Since the minimum value of the total gift item is 3, The maximum that anyone can bring is 6

$$3 + 3 + 3 = 9$$

Since the total is 15, the fourth value would be 6

$$6 + 3 + 3 + 3 = 15$$

(If one them, say A, brought 7 gift items then  $B + C + D = 15 - 7 = 8$ . That would mean that one of them will have to bring 2 gift items, which is not possible)

Since total # of gift items of B < total # of gift items of A. The possible combinations of A and B are (6, 5); (6, 4); (6, 3); (5, 4); (5, 3); (4, 3)

If A = 6, there is just one possibility

$$A + B + C + D = 15$$

Since the minimum value of C, D = 3

The minimum value of C + D = 6

So, the maximum value of A + B = 9.

Only one possibility

$$A = 6, B = 3, C = 3, D = 3$$

$$A = 5, B = 4$$

$$A + B + C + D = 15$$

$$A + B = 9$$

$$C + D = 6$$

Only one possibility, C = 3, D = 3

$$A = 5, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 8$$

$$C + D = 7$$

Two possibilities,

$$C = 3, D = 4$$

$$C = 4, D = 3$$

$$A = 4, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 4$$

$$C + D = 8$$

Three possibilities,

$$C = 3, D = 5$$

$$C = 5, D = 3$$

$$C = 4, D = 4$$

We have the following 7 cases:

Total	A	B	C	D
Case 1	6	3	3	3
Case 2	5	4	3	3
Case 3	5	3	4	3
Case 4	5	3	3	4
Case 5	4	3	3	5
Case 6	4	3	5	3
Case 7	4	3	4	4

Condition: Exactly two of the four friends bring equal number of gift times

Following are the relevant cases:

Total	A	B	C	D
Case 2	5	4	3	3
Case 3	5	3	4	3
Case 4	5	3	3	4
Case 5	4	3	3	5
Case 6	4	3	5	3

Answer choice (1)

If Chaitanya brings more number of gift items than Dinesh, then Aditya can bring in at most two video games.

Relevant cases:

Total	A	B	C	D
Case 3	5	3	4	3
Case 6	4	3	5	3

	A	B	C	D	
W				3	5
S				<del>3</del>	5
B				<del>3</del>	5
	5/4	3	4/5	3	15

In the above case, it is clear that Dinesh will bring in 3 video games, so it MUST be true that Aditya can bring at most 2 video games.

Answer choice (1) is ELIMINATED

Answer choice (2)

The number of gift items brought by Chaitanya and Dinesh cannot be the same.

This is FALSE. It is possible as in case 2

Total	A	B	C	D

Case 2	5	4	3	3
--------	---	---	---	---

So, Answer choice (2) is the CORRECT ANSWER

Answer choice (3)

If Binita and Chaitanya bring equal number of gift items, then the number of gift items brought by Chaitanya is less than the number of gifts brought by Dinesh.

Relevant cases:

Total	A	B	C	D
Case 4	5	3	3	4
Case 5	4	3	3	5

The statement is TRUE. In both the cases, the number of gift items of Chaitanya is lesser than that of Dinesh.

Answer choice (3) is ELIMINATED.

Answer choice (4)

If Aditya brings 4 gift items, then the number of gifts items brought by Binita and Dinesh can be equal.

Relevant cases:

Total	A	B	C	D
Case 5	4	3	3	5
Case 6	4	3	5	3

The statement is TRUE. The number of gift items brought by Binita and Dinesh can be equal(Case 6)

Answer choice (4) is ELIMINATED

FeedBack

**Directions for questions 47 to 50: Answer the questions on the basis of the information given below.**

Mahesh is celebrating his birthday and he invites four of his friends—Aditya, Binita, Chaitanya, and Dinesh—to his party. His friends together bring 3 types of gifts totalling 15 gift items—5 video games, 5 sun glasses, and 5 books.

- Each of the friends brings at most two types of gifts and at least three gift items.
- The total number of gift items of Binita is less than that of Aditya
- Dinesh brings no gift types other than video games.

**Q.49**

If the following two conditions are also known:

- (1) Exactly three of the friends brings equal number of gift items
- (2) Exactly two of the friends brings equal number of video games, and that number is a natural number

What is the number of gift items brought by Aditya (Type in 0, if it cannot be determined uniquely)?

**Solution:**

**Correct Answer : 6**

Bookmark

Answer key/Solution

Drawing inference from the data

Conditions:

1. Each of the friends bring at most two types of gifts and at least three gift items.
2. The total number of gift items of Binita is less than that of Aditya
3. Dinesh brings no gift types other than video games.

Let's start with a basic template to fill in the data

Code: Aditya (A); Binita (B); Chaitanya (C) and Dinesh (D)  
 Videogame (v); Sunglasses (s); Books (b)

Applying condition 3, we have the basic working template.

	A	B	C	D	
v				5	
s			<del>5</del>	5	
b			<del>5</del>	5	
				<b>15</b>	

Now, let us draw inferences using conditions 1, 2 and 3

Condition 1 & 2:

The total # of gift items of each gift type that the friends can bring is 3, 4, or 5

There should be at least one box which is blank

Since the minimum value of the total gift item is 3, The maximum that anyone can bring is 6

$$3 + 3 + 3 = 9$$

Since the total is 15, the fourth value would be 6

$$6 + 3 + 3 + 3 = 15$$

(If one them, say A, brought 7 gift items then  $B + C + D = 15 - 7 = 8$ . That would mean that one of them will have to bring 2 gift items, which is not possible)

Since total # of gift items of B < total # of gift items of A. The possible combinations of A and B are (6, 5); (6, 4); (6, 3); (5, 4); (5, 3); (4, 3)

If A = 6, there is just one possibility

$$A + B + C + D = 15$$

Since the minimum value of C, D = 3

The minimum value of C + D = 6

So, the maximum value of A + B = 9.

Only one possibility

$$A = 6, B = 3, C = 3, D = 3$$

$$A = 5, B = 4$$

$$A + B + C + D = 15$$

$$A + B = 8$$

$$C + D = 7$$

Only one possibility, C = 3, D = 3

$$A = 5, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 8$$

$$C + D = 7$$

Two possibilities,

$$C = 3, D = 4$$

$$C = 4, D = 3$$

$$A = 4, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 7$$

$$C + D = 8$$

Three possibilities,

$$C = 3, D = 5$$

$$C = 5, D = 3$$

$$C = 4, D = 4$$

We have the following 7 cases:

Total	A	B	C	D
Case 1	6	3	3	3
Case 2	5	4	3	3
Case 3	5	3	4	3

Case 4	5	3	3	4
Case 5	4	3	3	5
Case 6	4	3	5	3
Case 7	4	3	4	4

Conditions:

- 1) Three of the friends brings equal number of gift items
- 2) Exactly two of the friends brings equal number of video games

Relevant Cases:

Total	A	B	C	D
Case 1	6	3	3	3
Case 7	4	3	4	4

There are two possibilities for A – 6 or 4.

Condition (2): Exactly two of the friends brings equal number of video games

Case 7 is not possible:

Total	A	B	C	D
Case 7	4	3	4	4

Since Dinesh has already brought in 4 video games and so, only one other person can bring 1 video violating the additional condition (2)

Case 1:

Total	A	B	C	D
Case 1	6	3	3	3

	A	B	C	D	
w				3	5
s				2	5
b				2	5
	6	3	3	3	15

3 video games have been brought by Dinesh, and so, 2 video games are left. And since two friends bring in equal number of video games, two of them must bring one each.

This is possible:

A possible scenario

	A	B	C	D	
w	1	1	2	3	5
s	5	2	2	2	5
b	2	3	3	2	5
	6	3	3	3	15

Aditya has brought in 6 gift items

FeedBack

**Directions for questions 47 to 50: Answer the questions on the basis of the information given below.**

Mahesh is celebrating his birthday and he invites four of his friends—Aditya, Binita, Chaitanya, and Dinesh—to his party. His friends together bring 3 types of gifts totalling 15 gift items—5 video games, 5 sun glasses, and 5 books.

- Each of the friends brings at most two types of gifts and at least three gift items.
- The total number of gift items of Binita is less than that of Aditya
- Dinesh brings no gift types other than video games.

**Q.50**

If it is known that,

- (1) Binita brings in the second highest number of gift items among the four friends
- (2) Binita brings in only one type of gifts
- (3) Two of them bring sun glasses
- (4) No three of them brought in the same number of gift items

Which of the following could be true?

1  Dinesh brings 4 video games

2  Aditya brings 1 book

3  Chaitanya brings 1 video game

4  Both (2) and (3)

**Solution:**

**Correct Answer : 2**

 **Bookmark**

 **Answer key/Solution**

Drawing inference from the data

Conditions:

1. Each of the friends bring at most two types of gifts and at least three gift items.
2. The total number of gift items of Binita is less than that of Aditya
3. Dinesh brings no gift types other than video games.

Let's start with a basic template to fill in the data

Code: Aditya (A); Binita (B); Chaitanya (C) and Dinesh (D)  
Videogame (v); Sunglasses (s); Books (b)

Applying condition 3, we have the basic working template.

A	B	C	D	
v				5
s				5
b				5
				15

Now, let us draw inferences using conditions 1, 2 and 3

Condition 1 & 2:

The total # of gift items of each gift type that the friends can bring is 3, 4, or 5

There should be at least one box which is blank

Since the minimum value of the total gift item is 3, The maximum that anyone can bring is 6

$$3 + 3 + 3 = 9$$

Since the total is 15, the fourth value would be 6

$$6 + 3 + 3 + 3 = 15$$

(If one them, say A, brought 7 gift items then  $B + C + D = 15 - 7 = 8$ . That would mean that one of them will have to bring 2 gift items, which is not possible)

Since total # of gift items of B < total # of gift items of A. The possible combinations of A and B are (6, 5); (6, 4); (6, 3); (5, 4); (5, 3); (4, 3)

If  $A = 6$ , there is just one possibility

$$A + B + C + D = 15$$

Since the minimum value of C, D = 3

The minimum value of C + D = 6

So, the maximum value of A + B = 9.

Only one possibility

$$A = 6, B = 3, C = 3, D = 3$$

$$A = 5, B = 4$$

$$A + B + C + D = 15$$

$$A + B = 9$$

$$C + D = 6$$

Only one possibility, C = 3, D = 3

$$A = 5, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 8$$

$$C + D = 7$$

Two possibilities,

$$C = 3, D = 4$$

$$C = 4, D = 3$$

$$A = 4, B = 3$$

$$A + B + C + D = 15$$

$$A + B = 4$$

$$C + D = 8$$

Three possibilities,

$$C = 3, D = 5$$

$$C = 5, D = 3$$

$$C = 4, D = 4$$

We have the following 7 cases:

Total	A	B	C	D
Case 1	6	3	3	3
Case 2	5	4	3	3
Case 3	5	3	4	3
Case 4	5	3	3	4
Case 5	4	3	3	5
Case 6	4	3	5	3
Case 7	4	3	4	4

Additional conditions:

- 1) Binita brings in the second highest number of gift items among the four friends
- 2) Binita brings in only one type of gifts
- 3) Two of them bring sun glasses
- 4) No three of them brought in the same number of gift items

Condition (1) gives us the relevant case

Total	A	B	C	D
Case 2	5	4	3	3

	A	B	C	D	
V			3	5	
S			<del>3</del>	5	
b			<del>3</del>	5	
	5	4	3	3	15

Drawing additional inferences

Conditions:

- 2) Binita brings in only one type of gifts
- 3) Two of them bring sun glasses

Combining the above two conditions, it is clear that Binita cannot bring in sunglasses. Binita cannot bring videogames as well. So, Binita brings in 4 books

	A	B	C	D	
V		<del>3</del>	3	5	
S		<del>3</del>	<del>3</del>	5	
b		4	<del>3</del>	5	
	5	4	3	3	15

Evaluating answer choices

Answer choice (1)

Dinesh brings 4 video games

This is FALSE. Dinesh brings in 3 video games.

Answer choice (1) CANNOT be TRUE

Answer choice (2)

Aditya brings 1 book.

Two of them must bring sunglasses (additional condition -3). So, Aditya must bring sun glasses. Since "Each of the friends bring at most two types of gifts" (original condition), Aditya cannot bring video games.

	A	B	C	D	
V	<del>3</del>	<del>3</del>	3	5	
S		<del>3</del>	<del>3</del>	5	
b	1	4	<del>3</del>	<del>3</del>	5
	5	4	3	3	15

Now, Chaitanya must bring the two videogames and the following is the table:

	A	B	C	D	
V	<del>3</del>	<del>3</del>	2	3	5
S	4	<del>3</del>	1	<del>3</del>	5
b	1	4	<del>3</del>	<del>3</del>	5
	-	-	-	-	15

5 | 4 | 3 | 3 | 15

This is POSSIBLE.

So, Answer choice (2) is COULD BE TRUE

Answer choice (3)

Chaitanya brings 1 video game

	A	B	C	D	
V			1	3	5
S					5
L		4			5
	5	4	3	3	15

Now, since two of them have to bring sunglasses, Chaitanya must bring sunglasses. That would mean she cannot bring books (it will violate the original condition - Each of the friends bring at most two types of gifts). So, Chaitanya will then have to bring 2 sunglasses (since her total is 3)

That will leave Aditya to bring 1 video game, 1 book and 3 sunglasses. He will bring 3 gift items. That violates condition – "Each of the friends bring at most two types of gifts".

	A	B	C	D	
V	1		1	3	5
S	3		2		5
L	1	4	1		5
	5	4	3	3	15

This is NOT possible.

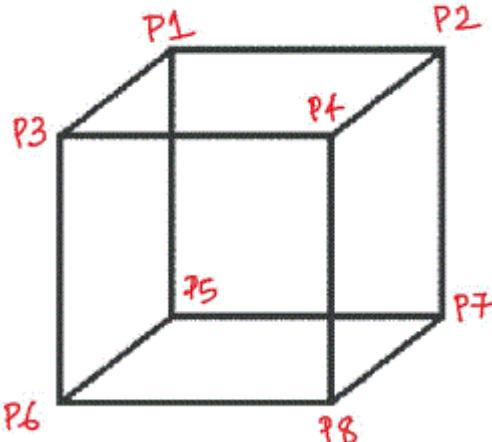
So, Answer choice (3) CANNOT be true

FeedBack

**Directions for questions 51 to 54:** Answer the questions on the basis of the information given below.

8 ants—A1, A2, A3, A4, A5, A6, A7, A8—are initially at different corners of a cube—P1, P2, P3, P4, P5, P6, P7, P8—respectively.

The following figure gives the positions in the cube:



Ants A1, A3, A5, A7 belongs to the OddColony and ants A2, A4, A6, A8 belongs to the EvenColony.

- (1) An ant either stays in its corner or travels only along the edge of the cube to reach another corner.
- (2) If an ant starts travelling, it will start only at the beginning of every 10 minutes and it takes exactly 10 minutes to travel from one corner to another corner.
- (3) If and only if an ant from one colony meets with an ant from another colony at any of the corners, they engage in a fight which lasts for 10 minutes.
- (4) In a fight, if the number of ants from one colony equals the number of ants from another colony, then all the ants survive at the end of 10 minutes.
- (5) If in a fight, the number of ants from one colony is more than the number of ants from another colony, then all the ants from the former survives and all the ants from the latter dies at the end of 10 minutes.

#### Q.51

Suppose the ants A2, A3, A6, and A7 do not leave their corner and ants A1, A4, A5, and A8 always moves to another corner after every 10 minutes unless they are fighting or killed, what is the probability that A4 will survive at the end of 20 minutes?

1  1/9

2  7/9

3  8/9

4  None of the above

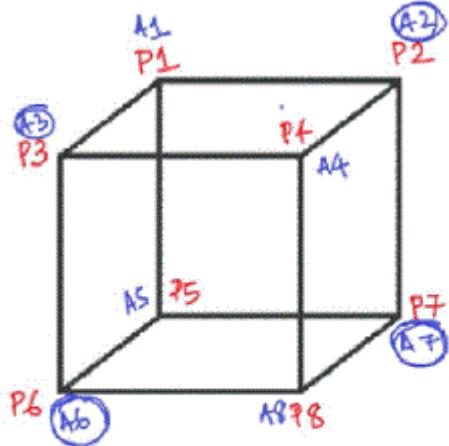
**Solution:**

**Correct Answer : 4**

Bookmark

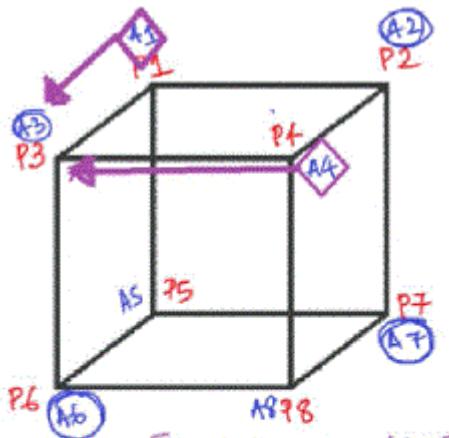
**Q Answer key/Solution**

A2, A3, A7, A6 stays in the position



Drawing inferences

Let's look at the cases where A4 will not survive. For that to happen A4 must be in a place where there are two Odd Colony ants. The only Odd Colony ant in an adjacent corner to A4 is A3 in P3. For A4 not to survive the fight, another Odd Colony ant must be in P3 – that would be A1 who can travel from P1 to P3.



[Case: A4 not surviving]

So, while counting the cases of A4's movement during these 20 minutes, we have the following possibilities:

T=0 to T=10		T=10 to T=20		Total choices
A1	A4	A1	A4	
P2	P2	P2	P2	1
P2	P3	P2	P3	1
P2	P8	P2	P7, P4, P6	3
P3	P2	P6, P4, P1	P1, P4, P7	9
P3	P3	P3	P3	1
P3	P8	P6, P4, P1	P7, P4, P6	9
P5	P2	P7, P6, P1	P7, P4, P1	9
P5	P3	P7, P6, P1	P3	3
P5	P8	P7, P6, P1	P7, P4, P6	9
		Total	45	

Now, A4 will survive in all the cases except the one when both A1 and A4 move to P3 in first 10 minutes. Because at P3, there will be two ants of OddColony and one from EvenColony i.e, A1, A4 and A3.

So, probability of A4's survival =  $\frac{44}{45}$

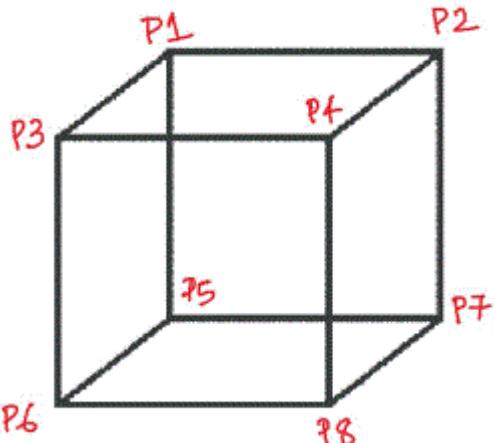
Answer choice (4)

FeedBack

**Directions for questions 51 to 54:** Answer the questions on the basis of the information given below.

8 ants—A1, A2, A3, A4, A5, A6, A7, A8—are initially at different corners of a cube—P1, P2, P3, P4, P5, P6, P7, P8—respectively.

The following figure gives the positions in the cube:



Ants A1, A3, A5, A7 belongs to the OddColony and ants A2, A4, A6, A8 belongs to the EvenColony.

- (1) An ant either stays in its corner or travels only along the edge of the cube to reach another corner.
- (2) If an ant starts travelling, it will start only at the beginning of every 10 minutes and it takes exactly 10 minutes to travel from one corner to another corner.
- (3) If and only if an ant from one colony meets with an ant from another colony at any of the corners, they engage in a fight which lasts for 10 minutes.
- (4) In a fight, if the number of ants from one colony equals the number of ants from another colony, then all the ants survive at the end of 10 minutes.
- (5) If in a fight, the number of ants from one colony is more than the number of ants from another colony, then all the ants from the former survives and all the ants from the latter dies at the end of 10 minutes.

### Q.52

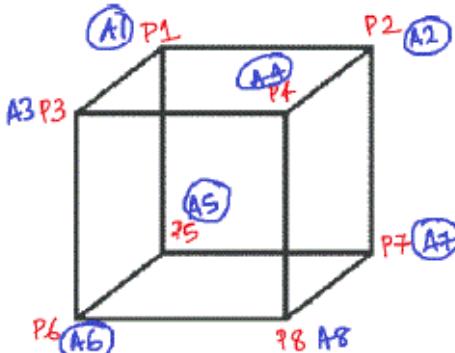
Suppose only ants A3 and A8 are always moving unless they are fighting or killed, and ants A1, A2, A4, A5, A6, and A7 never leave their corner, how many combinations of fight exists if A3 is killed before 35 minutes? (Consider a combination of fight as the unique combination of ants which are fighting irrespective of position where they are fighting at)

1  1

2  2

3  3

4  More than 3

**Solution:****Correct Answer : 3** **Bookmark** **Answer key/Solution**

Only Ants A3 and A8 are moving. For ant A3 to get killed, ants A8, A3 must move to a corner where an even colony stays. There are 3 other even colony ants – A4, A6 and A2 in P4, P6 and P2 respectively.

Possibility 1: A3& A8 moves to P6 : Fight – A3 vs A6 & A8

This is possible within the first 35 minutes. In the first 10 minutes of A8 and A3 moves to P6, A3 will be killed in the next 10 minutes

Possibility 2: A3 & A8 moves to P4 : Fight – A3 vs A4 & A8

This is possible within the first 35 minutes. In the first 10 minutes of A8 and A3 moves to P4, A3 will be killed in the next 10 minutes.

Possibility 3: A3 & A8 moves to P2 : Fight – A3 vs A2& A8

This is possible within the first 35 minutes. In the first 20 minutes of A8 can reach P2 via P4 and A3 can reach P2 via P1. A3 will be killed in 30 minutes (20 minutes for travel & 10 minutes for fight)

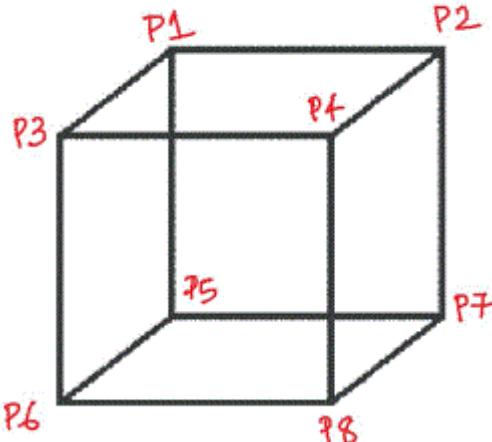
Three combinations of fight exist – Answer choice (3)

**FeedBack**

**Directions for questions 51 to 54:** Answer the questions on the basis of the information given below.

8 ants—A1, A2, A3, A4, A5, A6, A7, A8—are initially at different corners of a cube—P1, P2, P3, P4, P5, P6, P7, P8—respectively.

The following figure gives the positions in the cube:



Ants A1, A3, A5, A7 belongs to the OddColony and ants A2, A4, A6, A8 belongs to the EvenColony.

- (1) An ant either stays in its corner or travels only along the edge of the cube to reach another corner.
- (2) If an ant starts travelling, it will start only at the beginning of every 10 minutes and it takes exactly 10 minutes to travel from one corner to another corner.
- (3) If and only if an ant from one colony meets with an ant from another colony at any of the corners, they engage in a fight which lasts for 10 minutes.
- (4) In a fight, if the number of ants from one colony equals the number of ants from another colony, then all the ants survive at the end of 10 minutes.
- (5) If in a fight, the number of ants from one colony is more than the number of ants from another colony, then all the ants from the former survives and all the ants from the latter dies at the end of 10 minutes.

### Q.53

Suppose ants A2 and A7 never left their corners for 30 minutes. The other three ants from each of the colonies meet at two different points after the first 10 minutes and then each group together travel to attack the rival stationary ant, what is the probability that at least one ant is killed at the end of 30 minutes, if it is known that after group formation the groups are equally likely to move along any edge?

1  1/3

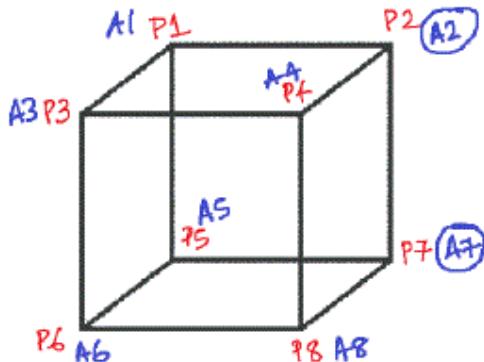
2  2/3

3  5/9

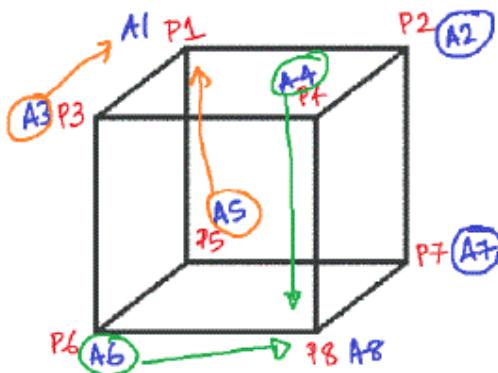
4  7/9

**Solution:****Correct Answer : 3****Bookmark****Answer key/Solution**

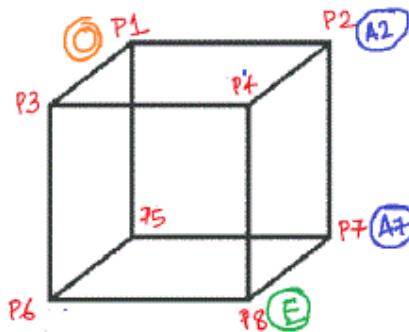
A2 and A7 are stationary

The other three ants of each group meet at  $t = 10$ 

For this to happen, there must be a point where all the three ants can meet. For even colony ants, it is point P8 and for odd colony ants, it is point P1



Let's call the even ants A4, A6 and A8 as group E and odd ants A1, A3, and A5 as group O. The following will be their position at the end of 10 minutes



We need to find the probability that at least one ant is killed in first 30 minutes.

First 10 minutes: The groups are formed

Next 10 minutes: Group should travel to rival ant's position

Last 10 minutes: Fight

The only ants that can be killed in 30 minutes are A2 and A7

For the ant A7 to be killed in the first 30 minutes, Group E has to move to P7. For the ant A2 to be killed, Group O has to move to P2. Each group has 3 positions to move to. In two of those positions, no ants will be killed.

So, the required probability is:

$$P(\text{at least one ant killed}) = 1 - P(\text{no ant killed})$$

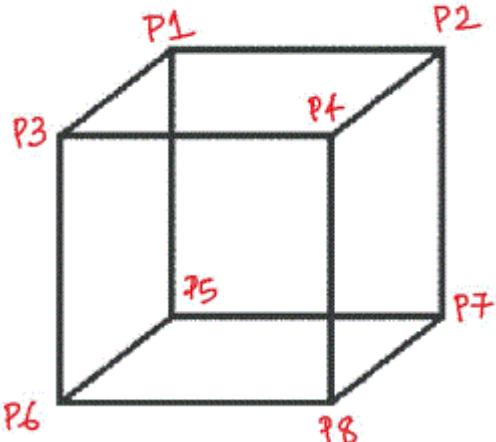
$$1 - \frac{2}{3} \cdot \frac{2}{3} = \frac{5}{9}$$

**FeedBack**

**Directions for questions 51 to 54:** Answer the questions on the basis of the information given below.

8 ants—A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, A<sub>4</sub>, A<sub>5</sub>, A<sub>6</sub>, A<sub>7</sub>, A<sub>8</sub>—are initially at different corners of a cube—P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>, P<sub>4</sub>, P<sub>5</sub>, P<sub>6</sub>, P<sub>7</sub>, P<sub>8</sub>—respectively.

The following figure gives the positions in the cube:



Ants A<sub>1</sub>, A<sub>3</sub>, A<sub>5</sub>, A<sub>7</sub> belongs to the OddColony and ants A<sub>2</sub>, A<sub>4</sub>, A<sub>6</sub>, A<sub>8</sub> belongs to the EvenColony.

- (1) An ant either stays in its corner or travels only along the edge of the cube to reach another corner.
- (2) If an ant starts travelling, it will start only at the beginning of every 10 minutes and it takes exactly 10 minutes to travel from one corner to another corner.
- (3) If and only if an ant from one colony meets with an ant from another colony at any of the corners, they engage in a fight which lasts for 10 minutes.
- (4) In a fight, if the number of ants from one colony equals the number of ants from another colony, then all the ants survive at the end of 10 minutes.
- (5) If in a fight, the number of ants from one colony is more than the number of ants from another colony, then all the ants from the former survives and all the ants from the latter dies at the end of 10 minutes.

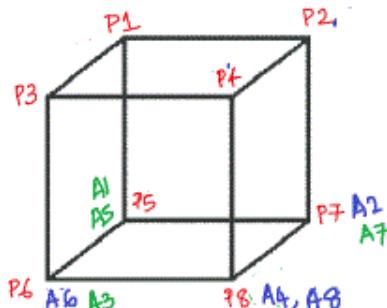
#### Q.54

Suppose A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> and A<sub>4</sub> travels south in the first 10 minutes while the rest of the ants are stationary for these 10 minutes, and post that none of the ants travels north. If after certain time, all the Even Colony ants are killed, what is the minimum time (from the start) required for such an event to occur?

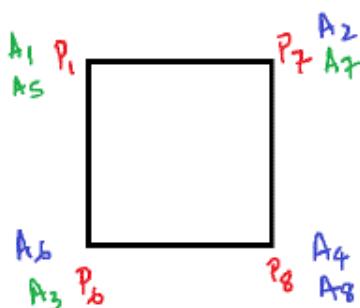
- 1  30 minutes
- 2  40 minutes
- 3  50 minutes
- 4  It is impossible for such an event to occur

**Solution:****Correct Answer : 3****Bookmark****Answer key/Solution**

At t=10, following would be the position of ants

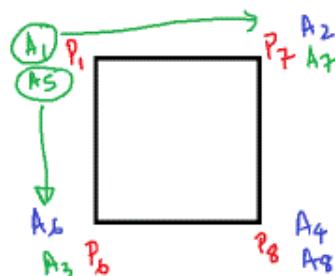


Since all the ants are in the bottom square, it would be easier to interpret the situation if we consider a square



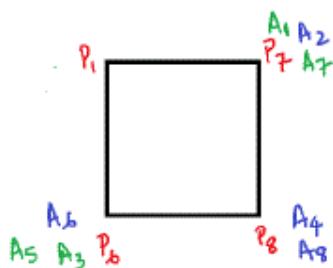
For all even ants to get killed in the least amount of time, ants in P8 (A4 and A8) cannot travel to P7 or P6. If that happens then the # of even ants will not less than the # of odd colony ants.

So, for getting the least time that all even ants are killed, A4 and A8 must be stationary at P8 from time t=10 to t=20. Ants A1 and A5 should get to a position where A2 and A6 can be killed.



Between t=10 to t=20, A1 and A5 should travel in different direction

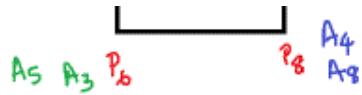
t = 20 to t = 30



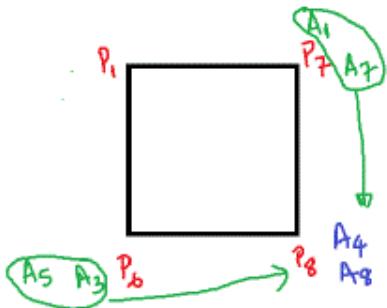
There will be fights at P6 and P7 where at t = 30, A2 and A6 is killed.

At t = 30 (considering the case that A4 and A8 was stationary)





Now, from  $t = 30$  to  $t = 40$ , all the odd colony ants can move to P8 and if A4 & A8 is stationary, the fight from  $t=40$  and  $t=50$  will result in A4 and A8 getting killed.



So, the least time is 50 minutes. Option (3)

FeedBack

**Directions for questions 55 to 58: Answer the questions on the basis of the information given below.**

The Net Promoter Score is calculated based on the responses to a single question: *How likely is it that you would recommend our company/product/service to a friend or a colleague?* The scoring for this answer is based on a 0 to 10 scale.

Those who respond with a score of 9 to 10 are labelled Promoters and are considered likely to exhibit value-creating behaviours, such as buying more, remaining customers for longer, and making more positive referrals to other potential customers. Those who respond with a score of 0 to 6 are labelled Detractors, and they are believed to be less likely to exhibit the value-creating behaviours. Responses of 7 and 8 are labelled Passives, and their behaviour falls between Promoters and Detractors. The Net Promoter Score is calculated by subtracting the percentage of customers who are Detractors from the percentage of customers who are Promoters.

**Example:** If you received 100 responses to your survey:

10 responses were in the 0–6 range (Detractors)

20 responses were in the 7–8 range (Passives)

70 responses were in the 9–10 range (Promoters)

When you calculate the percentages for each group, you get 10%, 20%, and 70% respectively. To finish up, subtract 10% (Detractors) from 70% (Promoters), which equals 60%.

Net Promoter Score is always shown as just an integer and not a percentage, as in the above example your NPS is simply 60.

Net Promoter Score of 6 companies—A, B, C, D, E, F—was calculated after surveying 100 customers who use all the products of all the 6 companies.

Following are the partial data about the 6 companies:

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B			80	10
C	28			-29
D		10		4
E			45	47
F				0

### Q.55

Which of the following is impossible?

- 1  The number of promoters of A is greater than the number of promoters of E
- 2  The number of passives of F is greater than the number of passives of B
- 3  The number of promoters of A is equal to the number of promoters of C

All of the above are possible

**Solution:**

**Correct Answer : 4**

 **Bookmark**

 **Answer key/Solution**

Since the number of customers surveyed is 100, the NPS = No. of Promoters – No. of Detractors. And in each row, the sum of no. of promoters, no. of detractors and no. of passives equals 100.

The table can be filled as follows

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F				0

Evaluating options

(1) The no. of promoters of A is greater than the number of promoters of E

This is possible

For instance, no of promoters of A = 60 and no of detractors of A = 40

(2) The no. of passives of F is greater than the no. of passives of B

This is possible

For instance, no. of promoters of F = 0, no. of detractors of F = 0, no. of passives of F = 100

(3) The number of promoters of A is equal to the number of promoters of C

This is possible

If number of promoters of A = 28, then no. of detractors of A = 48 and no. of passives = 24

(4) All of the above are possible

**FeedBack**

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The Net Promoter Score is calculated based on the responses to a single question: *How likely is it that you would recommend our company/product/service to a friend or a colleague?* The scoring for this answer is based on a 0 to 10 scale.

Those who respond with a score of 9 to 10 are labelled Promoters and are considered likely to exhibit value-creating behaviours, such as buying more, remaining customers for longer, and making more positive referrals to other potential customers. Those who respond with a score of 0 to 6 are labelled Detractors, and they are believed to be less likely to exhibit the value-creating behaviours. Responses of 7 and 8 are labelled Passives, and their behaviour falls between Promoters and Detractors. The Net Promoter Score is calculated by subtracting the percentage of customers who are Detractors from the percentage of customers who are Promoters.

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Net Promoter Score of 6 companies—A, B, C, D, E, F—was calculated after surveying 100 customers who use all the products of all the 6 companies.

Following are the partial data about the 6 companies:

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B			80	10
C	28			-29
D		10		4
E			45	47
F				0

**Q.56**

If the number of passives of A and F are the maximum possible, then the number of customers who are passives in at least two companies should be at least

**Solution:****Correct Answer : 15** **Bookmark** **Answer key/Solution**

Since the number of customers surveyed is 100, the NPS = No. of Promoters – No. of Detractors. And in each row, the sum of no. of promoters, no. of detractors and no. of passives equals 100.

The table can be filled as follows

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F				0

No of passives of A and F are maximum possible.

For F, the number of passives = 100, and the no. of promoters and detractors = 0

For A, since the NPS is 20, the maximum no. of passives will happen when no. of detractors = 0.

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A	20	0	80	20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F	0	0	100	0

The number of passives of A to F are 80, 80, 15, 76, 45, 100.

To find out the no. of customers who are passive in at least 2 companies, we need to look at the number of customers who are passive in at least one of A to E (since all customers are in passive in F).

The least value among A to E is 15. So at least 15 customers would have been passive in at least 2 companies.


**FeedBack**

**Directions for questions 55 to 58: Answer the questions on the basis of the information given below.**

The Net Promoter Score is calculated based on the responses to a single question: *How likely is it that you would recommend our company/product/service to a friend or a colleague?* The scoring for this answer is based on a 0 to 10 scale.

Those who respond with a score of 9 to 10 are labelled Promoters and are considered likely to exhibit value-creating behaviours, such as buying more, remaining customers for longer, and making more positive referrals to other potential customers. Those who respond with a score of 0 to 6 are labelled Detractors, and they are believed to be less likely to exhibit the value-creating behaviours. Responses of 7 and 8 are labelled Passives, and their behaviour falls between Promoters and Detractors. The Net Promoter Score is calculated by subtracting the percentage of customers who are Detractors from the percentage of customers who are Promoters.

**Example: If you received 100 responses to your survey:**

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20 responses were in the 7–8 range (Passives)

70 responses were in the 9–10 range (Promoters)

When you calculate the percentages for each group, you get 10%, 20%, and 70% respectively. To finish up, subtract 10% (Detractors) from 70% (Promoters), which equals 60%.

Net Promoter Score is always shown as just an integer and not a percentage, as in the above example your NPS is simply 60.

Net Promoter Score of 6 companies—A, B, C, D, E, F—was calculated after surveying 100 customers who use all the products of all the 6 companies.

Following are the partial data about the 6 companies:

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B			80	10
C	28			-29
D		10		4
E			45	47
F				0

**Q.57**

If the number of detractors of A and F are maximum possible, then the number of customers who are passives in none of the 6 companies can be at most

**Solution:****Correct Answer : 20** **Bookmark** **Answer key/Solution**

Since the number of customers surveyed is 100, the NPS = No. of Promoters – No. of Detractors. And in each row, the sum of no. of promoters, no. of detractors and no. of passives equals 100.

The table can be filled as follows

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F				0

No of detractors of A and F are maximum possible.

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A	60	40	0	20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F	50	50	0	0

To find the number of customers who are passive in none of the companies, we need to look at B, C, D, and E (since for A and F none of the customers are passive)

The no. of passives of B, C, D, and E are 80, 15, 76, 45 respectively.

The customers who are not passive for B, C, D, and E are 20, 85, 24, and 55 respectively.

The maximum value for the number of customers who are not passive any of the 4 above mentioned companies would be 20.


**FeedBack**

**Directions for questions 55 to 58: Answer the questions on the basis of the information given below.**

The Net Promoter Score is calculated based on the responses to a single question: *How likely is it that you would recommend our company/product/service to a friend or a colleague?* The scoring for this answer is based on a 0 to 10 scale.

Those who respond with a score of 9 to 10 are labelled Promoters and are considered likely to exhibit value-creating behaviours, such as buying more, remaining customers for longer, and making more positive referrals to other potential customers. Those who respond with a score of 0 to 6 are labelled Detractors, and they are believed to be less likely to exhibit the value-creating behaviours. Responses of 7 and 8 are labelled Passives, and their behaviour falls between Promoters and Detractors. The Net Promoter Score is calculated by subtracting the percentage of customers who are Detractors from the percentage of customers who are Promoters.

**Example:** If you received 100 responses to your survey:

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When you calculate the percentages for each group, you get 10%, 20%, and 70% respectively. To finish up, subtract 10% (Detractors) from 70% (Promoters), which equals 60%.

Net Promoter Score is always shown as just an integer and not a percentage, as in the above example your NPS is simply 60.

Net Promoter Score of 6 companies—A, B, C, D, E, F—was calculated after surveying 100 customers who use all the products of all the 6 companies.

Following are the partial data about the 6 companies:

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B			80	10
C	28			-29
D		10		4
E			45	47
F				0

### Q.58

If the number of detractors of A is maximum possible and equals to the number of promoters of F, then the sum of the number of promoters for all the 6 companies would be

1  228

2  208

3  **288**4  **None of the above****Solution:****Correct Answer : 2****Bookmark****Q Answer key/Solution**

Since the number of customers surveyed is 100, the NPS = No. of Promoters – No. of Detractors. And in each row, the sum of no. of promoters, no. of detractors and no. of passives equals 100.

The table can be filled as follows

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A				20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F				0

No. of detractors of A is maximum possible and equals to the no. of promoters of F.

Though the maximum possible number of detractors of A is 50, it cannot be 50 since the no. of promoters of A will be 70. That would mean that the total would be greater than 100. So, the maximum value that A can take is 40.

	No. of Promoters	No. of Detractors	No. of Passives	Net Promoter Score
A	60	40	0	20
B	15	5	80	10
C	28	57	15	-29
D	14	10	76	4
E	51	4	45	47
F	40	40	20	0

The sum of all the no. of promoters would be  $60 + 15 + 28 + 14 + 51 + 40 = 208$

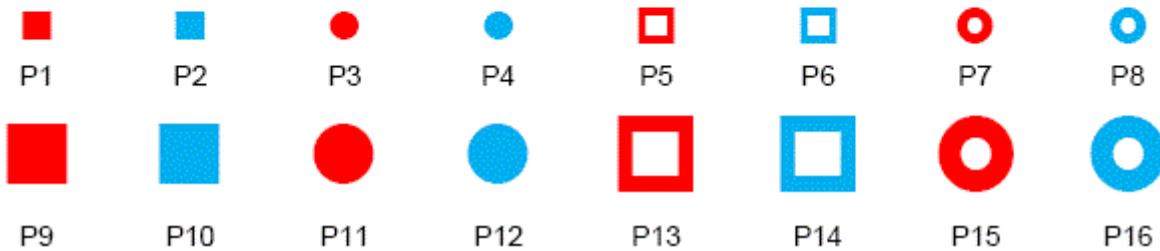
**FeedBack**

**Directions for questions 59 to 62: Answer the questions on the basis of the information given below.**

**You and your friend play a board game. The board has 16 squares ( $4 \times 4$ ), and 16 different pieces that can be constructed combining the following four characteristics**

- Size – Big/Small
- Colour – Red/Blue
- Shape – Circle/Square
- Hole – piece with hole/piece without hole

Following figures shows the 16 pieces are identified as P1, P2, ..., P16



**The aim of the game is to complete a line with four pieces that are similar in at least about one of the four described characteristics (four big pieces, four small pieces, four red pieces, four blue pieces, for square pieces, for circle pieces, four pieces with hole, four pieces without hole). The line may be vertical, horizontal or diagonal. The winner is the player who places the fourth piece on the line.**

**Players move alternatively, placing one piece on the board in any desired vacant square; once inserted, pieces cannot be moved. One of the more special characteristics of this game is that the choice of the piece to be placed on the board is not made by the same player who places it; it is the opponent who after doing the move, decides which will be the next piece to place.**

**So, each turn consists of two actions:**

1. Place on the board the piece.
2. Give the opponent the piece to be placed in the next move.

**In the first turn of the game, the player who starts has only to choose one piece for the opponent.**

**The game finishes in a draw when nobody reaches the objective after placing the 16 pieces.**

The following is an intermediate position of the game. Each box is identified as B1, B2, B3, ..., B16

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12
B13	B14	B15	B16

The pieces that are left to be used are as follows:



### Q.59

If your friend gave you the piece P15, which position should you place the piece so that you are guaranteed a win (assume both play intelligently)?

1  B5

2  B9

3  B2

4  You will lose in all the above scenarios

**Solution:**

**Correct Answer : 4**

**Bookmark**

**Answer key/Solution**

B1	B2	B3	B4
B5	B6	B7	B8

B9	B10	B11	B12

B13	B14	B15	B16

The pieces left to use are



The win is no longer possible in any of the diagonals and in row 2.

Column 2 – a win is possible if a small piece (P1, P5, P6) is placed on B2

Row 4 – a win is possible if a blue piece (P6, P14, P16) is placed on B15.

So, if someone has to win the game he cannot give pieces P1, P5, P6, P14, and P16 to the opponent.

The only pieces that can be given to the opponent are

P11, P15.



P11      P15

You are given P15.

Option (1) - If you place in B5

	B1	B2	B3	B4
	B13	B14	B15	B16

This opens Column 1 for a win (four big pieces).

Now the only piece left is P11 which you are forced to give to your friend is a big piece. He can place that in B9 and win the game.

So, you will lose the game

Option (2) – If you place in B9

	B1	B2	B3	B4

B13	B14	B15	B16

This will create the same situation as before. Now instead of B9, your friend will place the piece in B5 and win So, you will lose the game.

Option (3) – If you place in B2

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12
B13	B14	B15	B16

Even if the Column 2 is closed, any piece that you give to your friend, he will win.

Following pieces will be placed in B3



Following pieces will be placed in B15



You will lose

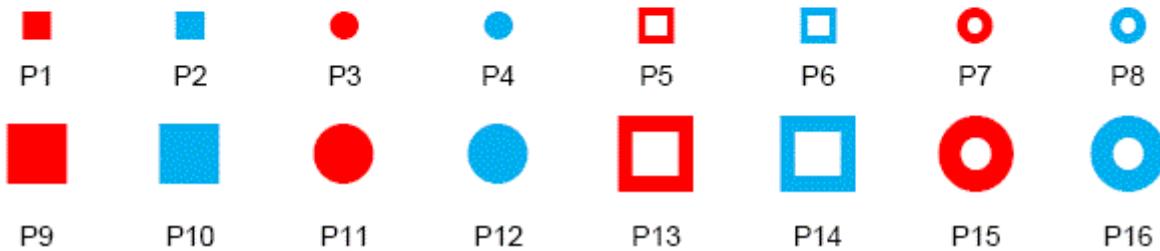
FeedBack

**Directions for questions 59 to 62: Answer the questions on the basis of the information given below.**

**You and your friend play a board game. The board has 16 squares ( $4 \times 4$ ), and 16 different pieces that can be constructed combining the following four characteristics**

- Size – Big/Small
- Colour – Red/Blue
- Shape – Circle/Square
- Hole – piece with hole/piece without hole

Following figures shows the 16 pieces are identified as P1, P2, ..., P16



**The aim of the game is to complete a line with four pieces that are similar in at least about one of the four described characteristics (four big pieces, four small pieces, four red pieces, four blue pieces, for square pieces, for circle pieces, four pieces with hole, four pieces without hole). The line may be vertical, horizontal or diagonal. The winner is the player who places the fourth piece on the line.**

**Players move alternatively, placing one piece on the board in any desired vacant square; once inserted, pieces cannot be moved. One of the more special characteristics of this game is that the choice of the piece to be placed on the board is not made by the same player who places it; it is the opponent who after doing the move, decides which will be the next piece to place.**

**So, each turn consists of two actions:**

1. Place on the board the piece.
2. Give the opponent the piece to be placed in the next move.

**In the first turn of the game, the player who starts has only to choose one piece for the opponent.**

**The game finishes in a draw when nobody reaches the objective after placing the 16 pieces.**

The following is an intermediate position of the game. Each box is identified as B1, B2, B3, ..., B16

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12
B13	B14	B15	B16

The pieces that are left to be used are as follows:



#### Q.60

If in your next move you placed P11 in B11, you are guaranteed a win in which of the following scenario: (assume both play intelligently)

- 1  Give P1 for your friend to place
- 2  Give P15 for your friend to place
- 3  Give P14 for your friend to place
- 4  You will lose the game in all the above scenarios

**Solution:**

**Correct Answer : 2**

**Bookmark**

**Answer key/Solution**

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12

B13	B14	B15	B16
●	■		○

The pieces left to use are



The win is no longer possible in any of the diagonals and in row 2.

Column 2 – a win is possible if a small piece (P1, P5, P6) is placed on B2

Row 4 – a win is possible if a blue piece (P6, P14, P16) is placed on B15.

So, if someone has to win the game he cannot give pieces P1, P5, P6, P14, and P16 to the opponent.

The only pieces that can be given to the opponent are

P11, P15.



You place P11 in B3

B1	B2	B3	B4
■			●
	●	□	■
	●	●	
B9	B10	B11	B12
		●	
B13	B14	B15	B16
●	■		○

The pieces left are:



If you give any of the blue pieces then you will lose the game, since your friend will place it on B15. That eliminates answer choice (3).

If you choose any of the small pieces P1, P5, or P6 you will lose the game since it can be kept on B2.

That eliminates answer choice (1)

Option (2) – Give P15 for your friend to place

B1	B2	B3	B4
■			●
	●	□	■
	●	●	
B9	B10	B11	B12
		●	
B13	B14	B15	B16
●	■		○

B13			B16



P15

Piece that your friend has to give you will be one among the following:



P1

P5

P6

P14

P16

Since B2 and B15 are part of winning lines, your friend will have to close one of them. He cannot place P15 in B2 since that will open Row 1 for an all red win.

So, he will have to place it on B15

B1		B2		B4
B5				
B9				B12

B13				

Your friend will have to give you any one of the following pieces:



P1

P5

P6

P14

P16

Now, your friend cannot choose a red piece for you since there is two winning lines – Column 3 and Row 1: all red win.

He cannot give P6 since there is a winning line – Column 2: all small win

He cannot give P14 or P16 since it will open a winning line – Column 3: all big win

So, you will win.

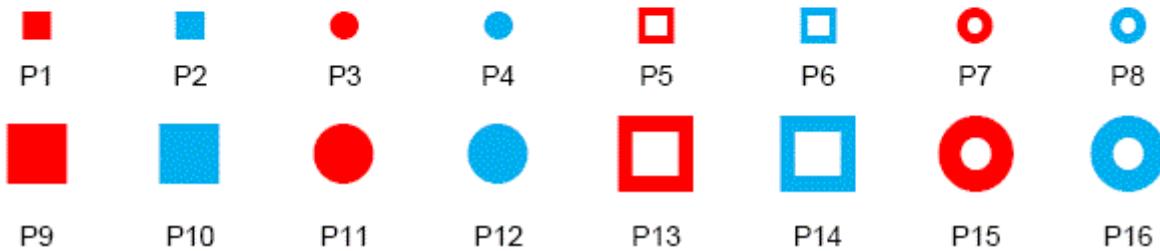
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**The aim of the game is to complete a line with four pieces that are similar in at least about one of the four described characteristics (four big pieces, four small pieces, four red pieces, four blue pieces, for square pieces, for circle pieces, four pieces with hole, four pieces without hole). The line may be vertical, horizontal or diagonal. The winner is the player who places the fourth piece on the line.**

**Players move alternatively, placing one piece on the board in any desired vacant square; once inserted, pieces cannot be moved. One of the more special characteristics of this game is that the choice of the piece to be placed on the board is not made by the same player who places it; it is the opponent who after doing the move, decides which will be the next piece to place.**

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**In the first turn of the game, the player who starts has only to choose one piece for the opponent.**

**The game finishes in a draw when nobody reaches the objective after placing the 16 pieces.**

The following is an intermediate position of the game. Each box is identified as B1, B2, B3, ..., B16

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12
B13	B14	B15	B16

The pieces that are left to be used are as follows:



### Q.61

**Initially, there were 10 potential winning lines. At the intermediate stage given in this question set, how many winning lines are possible?**

1  5

2  6

3  7

4  8

**Solution:**

**Correct Answer : 2**

**Bookmark**

**Answer key/Solution**

B1	B2	B3	B4
			●
B5	●	□	■
B9	○		
B13	■		○
B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12
B13	B14	B15	B16

The pieces left to use are



The win is no longer possible in any of the diagonals and in row 2.

Column 2 – a win is possible if a small piece (P1, P5, P6) is placed on B2

Row 4 – a win is possible if a blue piece (P6, P14, P16) is placed on B15.

So, if someone has to win the game he cannot give pieces P1, P5, P6, P14, and P16 to the opponent.

The only pieces that can be given to the opponent are

P11, P15.



P11      P15

No of winning lines

Row 1 – All Red

Row 2 – Not Possible

Row 3 – All Red

Row 4 – All Blue

Column 1 – All Big

Column 2 – All Small/All pieces with no holes

Column 3 – All Red/All Big/All Square/All pieces with holes

Column 4 – Not Possible

No winning line is possible along the diagonals

Total 6 winning lines are possible

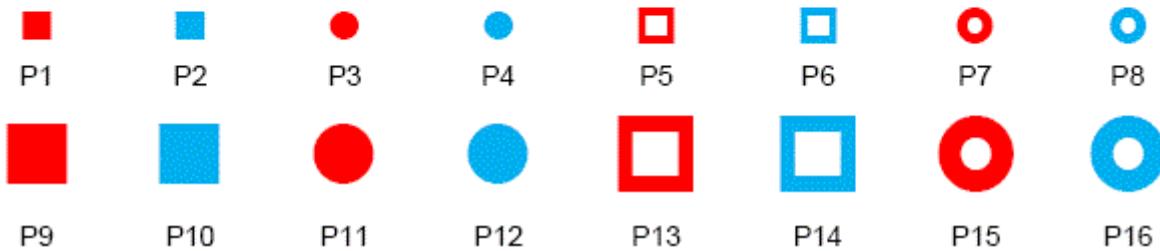
FeedBack

**Directions for questions 59 to 62: Answer the questions on the basis of the information given below.**

**You and your friend play a board game. The board has 16 squares ( $4 \times 4$ ), and 16 different pieces that can be constructed combining the following four characteristics**

- Size – Big/Small
- Colour – Red/Blue
- Shape – Circle/Square
- Hole – piece with hole/piece without hole

Following figures shows the 16 pieces are identified as P1, P2, ..., P16



**The aim of the game is to complete a line with four pieces that are similar in at least about one of the four described characteristics (four big pieces, four small pieces, four red pieces, four blue pieces, for square pieces, for circle pieces, four pieces with hole, four pieces without hole). The line may be vertical, horizontal or diagonal. The winner is the player who places the fourth piece on the line.**

**Players move alternatively, placing one piece on the board in any desired vacant square; once inserted, pieces cannot be moved. One of the more special characteristics of this game is that the choice of the piece to be placed on the board is not made by the same player who places it; it is the opponent who after doing the move, decides which will be the next piece to place.**

**So, each turn consists of two actions:**

1. Place on the board the piece.
2. Give the opponent the piece to be placed in the next move.

**In the first turn of the game, the player who starts has only to choose one piece for the opponent.**

**The game finishes in a draw when nobody reaches the objective after placing the 16 pieces.**

The following is an intermediate position of the game. Each box is identified as B1, B2, B3, ..., B16

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B11	B12
B13	B14	B15	B16

The pieces that are left to be used are as follows:



### Q.62

If you blundered and gave P14 to your friend to place, and still did not lose the game, which of the following must have happened?

- 1  Your friend placed P14 on B4
- 2  Your friend did not place P14 on B15
- 3  Your friend place P14 on B6
- 4  Your friend placed P14 on B15

**Solution:****Correct Answer : 2****Bookmark****Answer key/Solution**

B1	B2	B3	B4
			●
B5	●	□	■
B9	○		

B13	B14	B15	B16
■	□		○

The pieces left to used are



The win is no longer possible in any of the diagonals and in row 2.

Column 2 – a win is possible if a small piece (P1, P5, P6) is placed on B2

Row 4 – a win is possible if a blue piece (P6, P14, P16) is placed on B15.

So, if someone has to win the game he cannot give pieces P1, P5, P6, P14, and P16 to the opponent.

The only pieces that can be given to the opponent are

P11, P15.



If your friend was given P14, which is a blue piece and still you did not lose the game, it is clear that he did not place it on B15. B15 had an all 4 blue winning line.

**FeedBack**

**Directions for questions 63 to 66: Answer the questions on the basis of the information given below.**

**Five professors—Mukund, Nalini, Parth, Ravi and Saritha—conduct workshops for 10 batches.**

- 5 batches come in the morning and 5 batches come in the afternoon.
- Each professor conduct workshops on two different topics in one day, one each in morning and afternoon.

**Following are the details of the schedule on 17<sup>th</sup> June 2018**

- Workshops to be conducted in morning are—entrepreneurship, finance, and operations.
- Workshops to be conducted in afternoon are—operations, marketing, and HR.
- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.
- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.
- Only the five professors listed above conduct workshops.

**All the questions are pertaining to the workshop conducted on the 17th of June 2018.**

#### **Q.63**

**If Mukund takes a workshop on HR, which of the following must be true?**

- 1  Mukund takes a workshop on operations.
- 2  Nalini takes a workshop on marketing.
- 3  Parth takes a workshop on finance.
- 4  Ravi takes a workshop on entrepreneurship.

**Solution:**

**Correct Answer : 2**

 **Bookmark**

 **Answer key/Solution**

The basic diagram is as follows

	M	N	P	R	S
(e, f, o)	-	-	-	-	-
(o, m, h)	-	-	-	-	-

M – Mukund, N – Nalini, P – Parth, R – Ravi, S – Saritha  
e – Entrepreneurship; f – Finance, o – Operations, m – Marketing, h – HR

- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.

So, there is nothing common between M & N and nothing common between P & R

	M	N	P	R	S
(e, f, o)	-	-	-	-	-
(o, m, h)	-	-	-	-	-

- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.

No since there is nothing common between M/N and P/R, following would be the case

	M	N	P	R	S
(e, f, o)	-	-	-	-	o
(o, m, h)	-	-	-	-	m

Mukund takes workshop on HR

	M	N	P	R	S
(e, f, o)	-	-	-	-	o
(o, m, h)	h	-	-	-	m

Since one among Mukund and Nalini has to take marketing and since marketing is in the afternoon slot, following must be true

	M	N	P	R	S
(e, f, o)	-	-	-	-	o
(o, m, h)	h	m	-	-	m

FeedBack

**Directions for questions 63 to 66: Answer the questions on the basis of the information given below.**

Five professors—Mukund, Nalini, Parth, Ravi and Saritha—conduct workshops for 10 batches.

- 5 batches come in the morning and 5 batches come in the afternoon.
- Each professor conduct workshops on two different topics in one day, one each in morning and afternoon.

Following are the details of the schedule on 17<sup>th</sup> June 2018

- Workshops to be conducted in morning are—entrepreneurship, finance, and operations.
- Workshops to be conducted in afternoon are—operations, marketing, and HR.
- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.
- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.
- Only the five professors listed above conduct workshops.

All the questions are pertaining to the workshop conducted on the 17th of June 2018.

#### Q.64

If Parth takes a workshop on HR, which of the following must be true?

- 1  Either Nalini or Ravi takes a workshop on finance.
- 2  Either Mukund or Ravi takes a workshop on operations.
- 3  Either Parth or Ravi takes a workshop on finance.
- 4  Either Mukund or Nalini takes a workshop on entrepreneurship.

**Solution:**

**Correct Answer : 4**

 **Bookmark**

 **Answer key/Solution**

The basic diagram is as follows

	M	N	P	R	S
(e, f, o)	—	—	—	—	—
(o, m, h)	—	—	—	—	—

M – Mukund, N – Nalini, P – Parth, R – Ravi, S – Saritha  
 e – Entrepreneurship; f – Finance, o – Operations, m – Marketing, h – HR

- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.

So, there is nothing common between M & N and nothing common between P & R

	M $\leftrightarrow$ N	P $\leftrightarrow$ R	S
(e, f, o)	- -	- -	-
(o, m, h)	- -	- -	-

- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.

No since there is nothing common between M/N and P/R, following would be the case

	M $\leftrightarrow$ N	P $\leftrightarrow$ R	S
(e, f, o)	- -	- -	<u>o</u>
(o, m, h)	<u>o, m</u>	<u>o, m</u>	<u>m</u>

Parth takes workshop on HR

	M $\leftrightarrow$ N	P $\leftrightarrow$ R	S
(e, f, o)	- -	- -	<u>o</u>
(o, m, h)	<u>o, m</u>	<u>h</u>	<u>m</u>

Ravi has to take a workshop on Marketing in the afternoon.

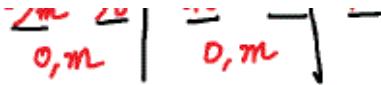
	M $\leftrightarrow$ N	P $\leftrightarrow$ R	S
(e, f, o)	- -	- -	<u>o</u>
(o, m, h)	<u>o, m</u>	<u>h</u> <u>m</u>	<u>m</u>

In the evening HR and Marketing is covered. Since at least one Operations must happen in the afternoon, between Mukund and Nalini one of them must take operations in the afternoon.

	M $\leftrightarrow$ N	P $\leftrightarrow$ R	S
(e, f, o)	- -	- -	<u>o</u>
(o, m, h)	<u>o/m m/o</u>	<u>h</u> <u>m</u>	<u>m</u>

In the morning, between Mukund and Nalini, they have to take entrepreneurship and finance. (workshop on operations is already taken in the afternoon and one person takes two different topics)

	M $\leftrightarrow$ N	P $\leftrightarrow$ R	S
(e, f, o)	<u>e/f f/e</u>	- -	<u>o</u>

(e, n, h) 

Answer choice (4) must be true - Either Mukund or Nalini takes a workshop on entrepreneurship.

[FeedBack](#)

**Directions for questions 63 to 66:** Answer the questions on the basis of the information given below.

Five professors—Mukund, Nalini, Parth, Ravi and Saritha—conduct workshops for 10 batches.

- 5 batches come in the morning and 5 batches come in the afternoon.
- Each professor conduct workshops on two different topics in one day, one each in morning and afternoon.

Following are the details of the schedule on 17<sup>th</sup> June 2018

- Workshops to be conducted in morning are—entrepreneurship, finance, and operations.
- Workshops to be conducted in afternoon are—operations, marketing, and HR.
- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.
- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.
- Only the five professors listed above conduct workshops.

All the questions are pertaining to the workshop conducted on the 17th of June 2018.

### Q.65

If Nalini is the only professor who takes a workshop on entrepreneurship, which of the following could be true?

- 1  Ravi takes a workshop on operations in the morning.
- 2  Mukund takes a workshop on HR in the afternoon.
- 3  Parth takes a workshop on operations in the afternoon.
- 4  Nalini takes a workshop on HR in the afternoon.

**Solution:**

Correct Answer : 1

 [Bookmark](#)

 [Answer key/Solution](#)

The basic diagram is as follows

M   N   P   R   S  
 (e, f, o) — — — — —

$(\theta, m, h)$  — — —

M – Mukund, N – Nalini, P – Parth, R – Ravi, S – Saritha  
e – Entrepreneurship; f – Finance, o – Operations, m – Marketing, h – HR

- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.

So, there is nothing common between M & N and nothing common between P & R

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
$(e, f, o)$	— —	— —	—
$(\theta, m, h)$	— —	— —	—

- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.

No since there is nothing common between M/N and P/R, following would be the case

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
$(e, f, o)$	— —	— —	<u>o</u>
$(\theta, m, h)$	<u>o, m</u>	<u>o, m</u>	<u>m</u>

Nalini is only profession who takes entrepreneurship.

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
$(e, f, o)$	— <u>e</u>	— —	<u>o</u>
$(\theta, m, h)$	<u>o, m</u>	<u>o, m</u>	<u>m</u>

Option (1) – Ravi takes a workshop on operations in the morning

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
$(e, f, o)$	— <u>e</u>	— <u>o</u>	<u>o</u>
$(\theta, m, h)$	<u>o, m</u>	<u>o, m</u>	<u>m</u>

That would mean Parth must take finance in the morning, and the rest of the choices are as follows

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
$(e, f, o)$	<u>f/o</u> <u>e</u>	<u>f</u> <u>o</u>	<u>o</u>
$(\theta, m, h)$	<u>m/h/o</u> <u>m/h/o</u>	<u>m/h</u> <u>h/m</u>	<u>m</u>

This COULD be true

Option – (2) Mukund takes a workshop on HR in the afternoon.

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
(e, f, o)	— e —	— —	o —
(o, m, h)	h — —	— —	m —

Since one among Mukund and Nalini has to take marketing in the afternoon, Nalini has to take marketing in the afternoon. Also, since one among Mukund and Nalini has to take operations, Mukund has to take operations in the morning.

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
(e, f, o)	o — e —	— —	o —
(o, m, h)	h — m —	— —	m —

For the morning slot for Parth and Ravi, they cannot take entrepreneurship since Nalini is the only one taking it. So, Parth and Ravi has to take finance and operations.

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
(e, f, o)	o — e —	f/o o/f —	o —
(o, m, h)	h — m —	— —	m —

Now, operations cannot be taken in the evening by Parth or Ravi. That would mean there is no operations workshop in the evening which violates the condition.

Hence answer choice (2) CANNOT be true.

Option (3) - Parth takes a workshop on operations in the afternoon.

If Parth takes a workshop on operations in the afternoon, then Ravi has to take marketing in the afternoon.

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
(e, f, o)	— e —	— —	o —
(o, m, h)	— —	o — m —	m —

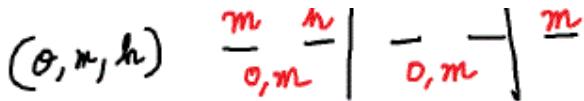
In the morning, Parth & Ravi now cannot take operations and entrepreneurship. They are left with only finance. Since they do not take the same topic, this cannot be true.

Hence answer choice (3) CANNOT be true.

Option (4) - Nalini takes a workshop on HR in the afternoon.

If Nalini takes HR in the afternoon, then Mukund has to take operations in the morning and marketing in the afternoon.

	M $\xrightarrow{x}$ N	P $\xrightarrow{x}$ R	S
(e, f, o)	o — e —	— —	o —



Since at least one operations have to happen in the evening, Parth or Ravi must take operations in the evening. That would mean that they cannot take operations and entrepreneurship in the morning. That leaves only finance for both of them in the morning. Hence INCORRECT.

Hence answer choice (4) is incorrect

[FeedBack](#)

**Directions for questions 63 to 66: Answer the questions on the basis of the information given below.**

Five professors—Mukund, Nalini, Parth, Ravi and Saritha—conduct workshops for 10 batches.

- 5 batches come in the morning and 5 batches come in the afternoon.
- Each professor conduct workshops on two different topics in one day, one each in morning and afternoon.

Following are the details of the schedule on 17<sup>th</sup> June 2018

- Workshops to be conducted in morning are—entrepreneurship, finance, and operations.
- Workshops to be conducted in afternoon are—operations, marketing, and HR.
- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.
- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.
- Only the five professors listed above conduct workshops.

All the questions are pertaining to the workshop conducted on the 17th of June 2018.

### Q.66

If Nalini and Saritha takes workshops on the same two topics, all of the following must be true EXCEPT:

- 1  Mukund does not take a workshop on operations.
- 2  Nalini does not take a workshop on entrepreneurship.
- 3  Parth does not take a workshop on HR.
- 4  Ravi does not take a workshop on Marketing

**Solution:**

**Correct Answer : 4**

[Bookmark](#)

[Answer key/Solution](#)

The basic diagram is as follows

M N P R S

$(e, f, o)$	-	-	-	-	-
$(o, m, h)$	-	-	-	-	-

M – Mukund, N – Nalini, P – Parth, R – Ravi, S – Saritha  
 e – Entrepreneurship; f – Finance, o – Operations, m – Marketing, h – HR

- Mukund does not take any topics that Nalini takes.
- Parth does not take any topics that Ravi takes.

So, there is nothing common between M & N and nothing common between P & R

	$M \leftrightarrow N$	$P \leftrightarrow R$	S
$(e, f, o)$	- -	- -	-
$(o, m, h)$	- -	- -	-

- Three professors including Saritha take workshops on operation.
- Three professors take workshop on marketing.

No since there is nothing common between M/N and P/R, following would be the case

	$M \leftrightarrow N$	$P \leftrightarrow R$	S
$(e, f, o)$	- -	- -	<u>o</u>
$(o, m, h)$	<u>o, m</u>	<u>o, m</u>	<u>m</u>

Nalini and Saritha takes workshops on the same two topics

	$M \leftrightarrow N$	$P \leftrightarrow R$	S
$(e, f, o)$	- <u>o</u>	- -	<u>o</u>
$(o, m, h)$	<u>o, m</u>	<u>o, m</u>	<u>m</u>

Answer choices (1) and (2) MUST be true. Mukund does not take a workshop on Marketing because Nalini is taking it. Nalini does not take a workshop on entrepreneurship.

Option (3) – Parth does not take a workshop on HR.

Let us prove this by contradiction

Contradictory statement: Parth takes a workshop on HR

If Parth takes a workshop on HR, then Ravi has to take Marketing in the afternoon

	$M \leftrightarrow N$	$P \leftrightarrow R$	S
$(e, f, o)$	- <u>o</u>	- -	<u>o</u>
$(o, m, h)$	<u>o, m</u>	<u>h</u> <u>m</u>	<u>m</u>

*o,m* | *o,m*

Mukund cannot take operations in afternoon since Nalini is taking it in the morning. So, in the afternoon there will not workshop on operations.

Therefore, the statement: Parth takes a workshop on HR is FALSE

So, the statement: Parth does not take a workshop on HR is TRUE.

Since answer choices 1, 2, and 3 are TRUE, the correct answer is answer choice (4)

**FeedBack**

## Sec 3

**Q.67**

$N = a^3 + 3a^2 + 2a$ , where a is odd. Which of the following can be the value of N?

1  1320

2  720

3  210

4  None of the above

**Solution:**

**Correct Answer : 3**

$$a^3 + 3a^2 + 2a = a(a+1)(a+2)$$

The above is the product of three consecutive numbers where a is odd.

$1320 = 10 \times 11 \times 12 \rightarrow a = 10$ , not odd; NOT possible

$720 = 8 \times 9 \times 10 \rightarrow a = 8$ , not odd; NOT possible

$210 = 5 \times 6 \times 7 \rightarrow a = 5$ , is odd; possible

 **Bookmark**

 **Answer key/Solution**

**FeedBack**

**Q.68**

A certain soft-drink is sold in a cylindrical can. The company reduced the diameter of the can by 10% but continued to fill the can of soft-drink to the same height as before. If the can of soft-drink is sold at the same price as before, what is the increase in profit percentage that the company will make per can?

1  19%

2  21%

3  23.47%

4  Cannot be determined

**Solution:****Correct Answer : 4**

The new cost price per can would be 81% of the old cost price ( $90\% \times 90\%$ ). However, since we do not know the selling price, we cannot determine the increase in profit. Cannot be determined.

**Bookmark****Answer key/Solution****FeedBack****Q.69****What is the unit digit of  $(88^{77} - 77^{88})$ ?****Solution:****Correct Answer : 3****Bookmark****Answer key/Solution**

The cyclicity of unit digit's powers of digit 8 is {8, 4, 2, 6}. So,  $88^{77}$  will end in 8

The cyclicity of unit digit's powers of digit 7 is {7, 9, 3, 1}. So,  $77^{88}$  will end in 1

Since,  $77^{88} > 88^{77}$ ,

$88^{77} - 77^{88}$  must be calculated as:  $-(77^{88} - 88^{77})$

That would be calculating (a number ending with 1) minus (a number ending with 8)

Units digit = 11 – 8 = 3

**FeedBack****Q.70****What is the 200<sup>th</sup> term of the following sequence:**

a, 1, b, b, 2, 2, c, c, c, 3, 3, 3, d, d, d, d, 4, 4, 4, 4, e, e, e, e, e, 5, 5, 5, 5, 5, ...

1  **13**2  **14**3  **t**4  **20**

**Solution:****Correct Answer : 2** **Bookmark** **Answer key/Solution**

The last position of a number in the above sequence is

$$1 + 1 + 2 + 2 + 3 + 3 + 4 + 4 \dots + n + n = n(n+1)$$

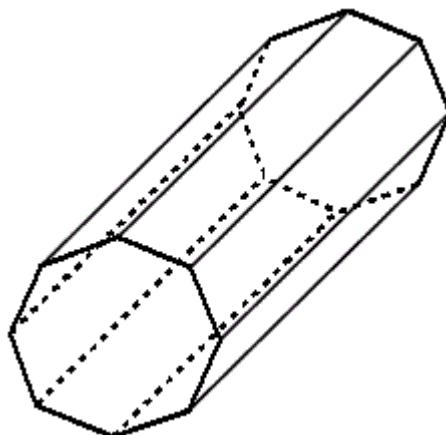
The nearest value to 200 for  $n(n+1) = 13 \times 14 = 182$

At 182<sup>nd</sup> term the number 13 ends. The letter of the alphabet 'N' starts at 183 and ends at 196 ( $182+14 = 196$ ). The number 14 will begin at 197 and end at 210 ( $196+14 = 210$ ).

So, the 200<sup>th</sup> term in the sequence would be 14

**FeedBack****Q.71**

**A metal is in the form of a right octagonal prism with base area of 10 square units. It is then melted and re-cast into 10 right triangular prisms with volume of 1 cubic unit each. The height of the prism is \_\_\_\_\_ unit(s).**

**Solution:****Correct Answer : 1**

$$\text{Volume} = \text{Base area} \times \text{Height}$$

$$10 = 10 \times \text{Height}$$

$$\text{Height} = 1$$

**Bookmark** **Answer key/Solution****FeedBack****Q.72**

If  $f\left(\frac{x}{4}\right) = x^2 - x + 1$ , then find the sum of all values of  $y$  where  $f(3y) = 13$ .

1 2  1/12

3  04  None of the above**Solution:****Correct Answer : 2**

$$f\left(\frac{y}{4}\right) = y^2 - y + 1$$

$$f\left(12 \cdot \frac{y}{4}\right) = f(3y) = 144y^2 - 12y + 1 = 13$$

$$144y^2 - 12y - 12 = 0$$

$$12y^2 - y - 1 = 0$$

$$12y^2 - 4y + 3y - 1 = 0$$

$$4y(3y - 1) + (3y - 1) = 0$$

$$(4y + 1)(3y - 1) = 0$$

$$y = \frac{-1}{4}, y = \frac{1}{3}$$

$$\text{Sum of all values of } y = \frac{-1}{4} + \frac{1}{3} = \frac{1}{12}$$

**FeedBack****Bookmark****Answer key/Solution****Q.73**

Consider two values A and B as

$$A = \frac{100!}{2^{50} \cdot 50!} \text{ and } B = 1 \times 3 \times 5 \times 7 \times \dots \times 95 \times 97 \times 99.$$

Which of the following is the value of  $\frac{A}{B}$ ?1  Less than 12   $51 \times 53 \times 55 \times \dots \times 95 \times 97 \times 99$ 3   $50!$ 4  1

**Solution:****Correct Answer : 4** **Bookmark** **Answer key/Solution**

$A$ 's denominator is

$$2^{50} \cdot 50! = 2^{50} \times 1 \times 2 \times 3 \times \dots \times 49 \times 50 = 2 \times 4 \times 6 \times \dots \times 98 \times 100$$

$$\text{So, } A = \frac{100!}{2^{50} \cdot 50!} = 1 \times 3 \times 5 \times 7 \times \dots \times 95 \times 97 \times 99 \text{ (Product of all odd numbers less than 100)}$$

$B$  – Product of all odd numbers less than 100

$$A = B.$$

Hence, answer choice (4) is correct

**FeedBack****Q.74**

**Simple interest is applied to a certain sum of money at 10% per annum and 5% per annum for every alternate years starting with 10%. In which year the amount will be at least thrice of the original sum? (Type in 0, if it cannot be determined)**

**Solution:****Correct Answer : 27** **Bookmark** **Answer key/Solution**

Assume the original amount to be 100. We need the amount to be 300; an increase of 200.

Every two years, the 15% or 15 would be added to the original amount.

$13 \times 15 = 195$ . In 26 years, the amount would increase by 195.

So, in the 27<sup>th</sup> year, the increase will be 205.

**FeedBack****Q.75**

**A triangle with sides in the ratio 20 : 21 : 29 is inscribed in a circle with radius 5. The area (in sq. units) of the triangle is closest to**

1  **25**2  **30**3  **35**4  **40**

**Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

20 : 21 : 29 is a Pythagorean triplet ( $20^2 + 21^2 = 29^2$ ). So, it is a right-angled triangle.  
 If the sides are  $20a$ ,  $21a$ ,  $29a$ ;  
 $29a = 10$ , the diameter.

$$\text{Area} = \frac{1}{2}(20a)(21a) = 210a^2$$

$$a = \frac{10}{29}$$

$$\text{Area} = 24.97$$

**FeedBack****Q.76**

**A function  $f(x) = (2 - x)(x + 3)(x^2 - 1)$  is defined for all positive real values of  $x$ . The maximum value of the function would be found in the range**

1  **0 < x < 1**2  **1 < x < 2**3  **x > 2**4  **x > 3****Solution:****Correct Answer : 2** **Bookmark** **Answer key/Solution**

The roots of the function are  $-3$ ,  $-1$ ,  $1$ ,  $2$

The coefficient of  $x^4$  is negative

	$x < -3$	$-3 < x < -1$	$-1 < x < 1$	$1 < x < 2$	$x > 2$
Function	(-)	(+)	(-)	(+)	(-)

The function is positive for the following range of  $x$

$-3 < x < -1$  and  $1 < x < 2$

Since we need to consider only the positive values of  $x$ , answer is option (2).

**FeedBack**

**Q.77**

Mohit drew a convex polygon and calculated the sum of its interior angles as  $1500^\circ$ . If he missed counting one angle, what is the measure of that angle?

1   $60^\circ$

2   $80^\circ$

3   $100^\circ$

4   $120^\circ$

**Solution:**

**Correct Answer : 4**

Sum of the interior angles of a n-sided polygon =  $180(n - 2)$  The sum of the angles must be a multiple of 180. As the nearest multiple of 180 is 1620. So, he missed  $(1620 - 1500) = 120$

 **Bookmark**

 **Answer key/Solution**

**FeedBack**

**Q.78**

a, b, c, and d are one of the digits 1, 3, 5, or 7, with each digit used only once. How many different values of  $a \times b + c \times d$  can be obtained?

**Solution:**

**Correct Answer : 3**

The problem is equivalent to creating two groups of two each.

$$\frac{4!}{2!2!2!} = 3$$

 **Bookmark**

 **Answer key/Solution**

**FeedBack**

**Q.79**

Is  $x \geq 5$ ?

**Statement A:**  $x^2 = 25$

**Statement B:**  $x^2 - 11x + 30 = 0$

1  Question can be answered using one of the statements alone but not by using the other statement alone.

2  Question can be answered using either of the statements alone.

3  Question can be answered by using both statements together but not by any statement alone.

**4**  Question can not be answered even using both the statements together.

**Solution:**

**Correct Answer : 1**

By statement A:

$$x = +5 \text{ or } x = -5$$

If  $x = +5$ , then the answer to the question "Is  $x \geq 5$ ?" is YES

If  $x = -5$ , then the answer to the question "Is  $x \geq 5$ ?" is NO

Statement A alone is NOT sufficient.

By statement B:

$$x = 5 \text{ or } x = 6$$

If  $x = 5$ , then the answer to the question "Is  $x \geq 5$ ?" is YES

If  $x = 6$ , then the answer to the question "Is  $x \geq 5$ ?" is YES

Statement B alone is sufficient.

 **Bookmark**

 **Answer key/Solution**

**FeedBack**

**Q.80**

$N = \left( \dots \left( \left( (13)^{13} \right)^{13} \right)^{13} \dots \right)^{13}$  where there are thousand 13s as exponents. What is the remainder when N is divided by 7?

**Solution:**

**Correct Answer : 6**

When 13 is divided by 7, the remainder is 6. Since 6 is  $(7 - 1)$ , we can consider the remainder to be  $(-1)$ .

Since the exponent is odd,  $(-1)$  to the power any odd number will yield  $(-1)$ . So, the remainder is  $(-1)$  or  $7 - 1 = 6$

 **Bookmark**

 **Answer key/Solution**

**FeedBack**

**Q.81**

Architect Mandrake builds a clock in which the minute hand runs anti-clockwise instead of clockwise, and hour hand runs clockwise. The speed of the hour hand and minute hand is the same as a normal clock. At 12 O'clock, the clock shows the actual time. How many times in the next 12 hours will Mandrake's clock show the actual time?

**Solution:****Correct Answer : 24**

The hour hand is travelling clockwise, it shows the correct position.

 **Bookmark**
 **Answer key/Solution**

Comparing the minute-hand of Mandrake's clock and an actual clock: This can be looked at as a Time-Speed-Distance problem with 2 runners started at the point in a circle – one running clockwise and the other running anti-clockwise at the exact same speed. They will meet at two points – (1) diagonally opposite to the start and (2) at the start.

**They will both show the same time at**

**12:30, 1:00, 1:30, 2:00, 2:30, ..., 10:00, 10:30, 11:00, 11:30, 12:00 i.e, 24 times.**

**Q.82**

**The length of the three sides of a convex quadrilateral are 4 cm, 8 cm, and 16 cm. How many positive integer values can the fourth side (in cm) take if no two sides have the same length?**

1  **23**

2  **21**

3  **24**

4  **Infinite**

**Solution:****Correct Answer : 2**
 **Bookmark**
 **Answer key/Solution**

The properties of the sides of a triangle can be generalized for a quadrilateral. The third side  $x$  must satisfy the following two conditions.

$$1) \quad x < 4 + 8 + 16 \Rightarrow x < 28$$

$$2) \quad x + 4 + 8 > 16 \Rightarrow x > 4$$

Combining (1) and (2);  $4 < x < 28$

$x$  can take 23 values. However, since no two sides can have the same value we discard two values: 8 and 16. So, the total number of values = 21

**Q.83**

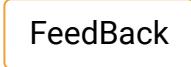
**What is the probability that  $\log_n b$  is a natural number, if  $b$  and  $n$  can take any of the values from the set  $A = \{2, 2^2, 2^3, 2^4, 2^5, 2^6\}$ ?**

1  13/362  1/33  7/184  2/3**Solution:****Correct Answer : 3** **Bookmark** **Answer key/Solution**Number of Sample Size =  $6 \times 6 = 36$ 

Number of Event

For  $\log_n b$  to be a natural number the exponent of  $n$  should be a factor of exponent of  $b$  $b = 2^6, n = \{2, 2^2, 2^3, 2^6\} - 4$  values $b = 2^5, n = \{2, 2^5\} - 2$  value $b = 2^4, n = \{2, 2^2, 2^4\} - 3$  values $b = 2^3, n = \{2, 2^3\} - 2$  values $b = 2^2, n = \{2, 2^2\} - 2$  values $b = 2, n = \{2\} - 1$  value

Total 14 values.

So, probability =  $\frac{7}{18}$  **FeedBack****Q.84**

**50% of the students in a class are girls. One-third of these girls are from Mumbai. Two-thirds of the girls from Mumbai scored at least 70% in Science. The number of boys in the class should be at least**

**Solution:****Correct Answer : 9** **Bookmark** **Answer key/Solution**

Assume the number of girls in the class is  $n$ . The number of boys in the class will also be  $n$ .  
 One-third of the girls are from Mumbai

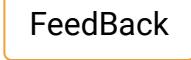
$$\# \text{Girls from Mumbai} = \frac{n}{3}$$

Two-thirds of the girls from Mumbai scored at least 70% in Science

$$\# \text{Girls from Mumbai who scored at 70\% in Science} = \frac{2}{3} \left( \frac{n}{3} \right) = \frac{2n}{9}$$

Since the #girls—from Mumbai who scored at least 70% in Science—must be a natural number,  $\frac{2n}{9}$  must be natural number.

So,  $n$  is a multiple of 9. The minimum value of  $n = 9$


**FeedBack**
**Q.85**

**A in 10 days completes two-third of the work, B in 10 days completes one-half of the work and C in 10 days completes two-fifth of the work. A and B starts the work together and C plans to join them later. On which day should C must join so that the work gets completed on 7<sup>th</sup> day?**

1  Day 1

2  Day 2

3  Day 3

4  Day 4

**Solution:****Correct Answer : 3** **Bookmark** **Answer key/Solution**

- A takes 15 days to complete the work  
 B takes 20 days to complete the work  
 C takes 25 days to complete the work.

Each day A and B together completes  $\left(\frac{1}{15} + \frac{1}{20}\right) = \frac{7}{60}$  th of the work. Since they would be working for 7 days, they

would do  $\frac{49}{60}$  th of the work in 7 days. C will have to do the remaining  $\frac{11}{60}$  th of the work. Since C does  $\frac{1}{25}$  th of the work

each day, C will have to work for  $\frac{11}{60} \div \frac{1}{25} = \frac{55}{12} = 4.58$  days. C has to work for 5 days, so C must start on Day 3.

**FeedBack****Q.86**

**f(1) = 1 and the remaining number of the sequence is generated by the following function:  
 $f(n+1) - f(n) = n - 1$  .**

**What is the value of f(2018) ?**

1  **2029106**

2  **2035152**

3  **2033137**

4  **2013111**

**Solution:****Correct Answer : 3**

$$f(n+1) = f(n) + n - 1$$

We can see the following relation

**Bookmark** **Answer key/Solution**

$$f(2) = f(1) = 1$$

$$f(3) = f(2) + 1 = 1 + 1 = 2$$

$$f(4) = f(3) + 2 = 2 + 2 = 4$$

$$f(5) = f(4) + 3 = 4 + 3 = 7$$

$$f(6) = f(5) + 4 = 7 + 4 = 11 = (\text{sum of first four digits})$$

$$f(2018) = 1 + \text{sum of first 2016 digits} = 1 + \frac{(2016)(2017)}{2} = 2033137$$

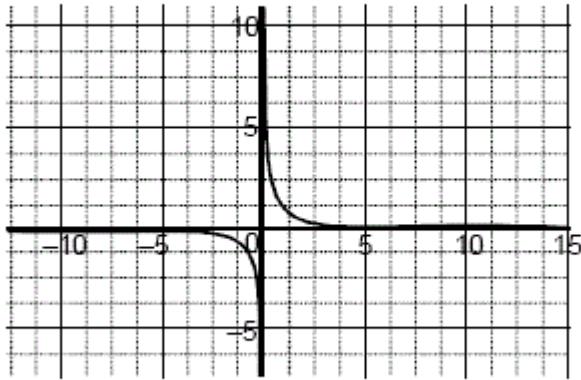
**FeedBack**

**Q.87**

Two graphs  $y = \frac{1}{x}$  and  $y = x^2 - a$  do not intersect each other for  $x > 0$ . Which of the following is the possible value of  $a$ ?

1  42  13  04  None of the above**Solution:****Correct Answer :** 4
 **Bookmark**
 **Answer key/Solution**

Following is the graph of  $y = \frac{1}{x}$



The graph gets closer to  $y$ -axis when  $x$  tends to 0 and graph gets closer to  $x$ -axis when  $x$  tends to infinity. So, any parabola of the form  $y = x^2 - a$  will cut the graph for  $x > 0$ .

 **FeedBack**
**Q.88**

If:  $2 \cdot m \cdot n = (L(m,n))^2 + (H(m,n))^2$ , where  $L(m, n)$  is the least common multiple of  $m$  and  $n$ , and  $H(m, n)$  is the highest common factor of  $m$  and  $n$ , then which of the following must be true?

1   $L(m, n) = H(m, n)$ 2   $H(m, n) = 1$ 3   $L(m, n) > H(m, n)$ 4   $L(m, n) > 4$

**Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

Product of two numbers = LCM of the two numbers × HCF of the two numbers

Let's take  $L(m, n) = x$  and  $H(m, n) = y$

So, the equation becomes:

$$2xy = x^2 + y^2$$

$$x^2 + y^2 - 2xy = 0$$

$$(x - y)^2 = 0$$

$$x = y$$

$$\text{LCM} = \text{HCF}$$

**Q.89**

An infinite sequence is defined as  $\frac{T_{n+1}}{T_n} = r$ , where  $T_n$  is the  $n^{\text{th}}$  term of the sequence and  $T_2 = 2$ .

If all the terms are positive, then the sum of the infinite terms should be at least

1  **1/2**

2  **1/4**

3  **4**

4  **8**

**Solution:****Correct Answer : 4**

This is a geometric progression.

Common ratio is  $r$ , then the first term would be  $\frac{2}{r}$ .

**Bookmark** **Answer key/Solution**

$$S_\infty = \frac{a}{1-r}$$

$$S_\infty = \frac{2/r}{1-r} = \frac{2}{r(1-r)}$$

For the above to be minimum  $r(1 - r)$  should be maximum.

It would be maximum when  $r = 1 - r$

$$\text{So, } r = 1 - r = \frac{1}{2}$$

$$\text{So, } S_\infty = \frac{2}{r(1-r)} = \frac{2}{\frac{1}{2}(1-\frac{1}{2})} = 8$$

**Q.90**

The median of 7 integers 3, 3, 4, 5, x, x, -4 is 4. Each of the following can be a value of 'x' except

1  3

2  4

3  5

4  6

**Solution:**

**Correct Answer : 1**

The median of 7 numbers would be the 4th number in the ascending order. For 4 to be the median value, x has to be greater than or equal to 4 since there are three numbers already less than 4: 3, 3, -4.

So, out of the given options, 3 cannot be the value of x.

 **Bookmark**

 **Answer key/Solution**

**FeedBack**

**Q.91**

Sum of three positive integers – a, b, c – is 20. What is the maximum value of  $abc^2$ ?

**Solution:**

**Correct Answer : 2500**

 **Bookmark**

 **Answer key/Solution**

We are dealing with natural numbers. For this particular case, we see that we are multiplying 4 numbers— $a$ ,  $b$ ,  $c$ ,  $c$ . Since 20 is divisible by 4, the following would work.

It will have maximum value when  $a = b = \frac{c}{2}$

$a = b = 5; c = 10$

Maximum value of  $abc^2$  would be 2500

**FeedBack**

**Q.92**

$\Delta ABC$  is an isosceles right-angled triangle with  $\angle B = 90^\circ$  and  $AB = 1$  unit. AB and BC are tangents to a circle such that points A and C are lying on the circle. What is the area of the region in the triangle ABC which is outside that circle?

1   $\frac{4 - \pi}{4}$

2   $\frac{8 - \pi}{8}$

3   $\frac{8 - \pi}{4}$

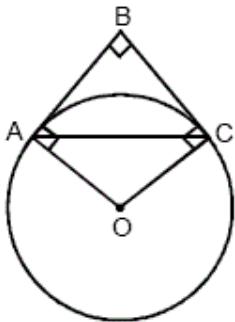
4  None of the above

**Solution:**

**Correct Answer : 1**

 **Bookmark**

 **Answer key/Solution**



Since AB and AC is tangent to the circle,  $\angle OAB = \angle OCB = 90^\circ$ . Therefore, ABCO is a square. The required region is Area of square ABCD and area of the region inside the circle bounded by the AOC.

Area of the square = 1 (since AB = AC = 1)

Area of the region inside the circle bounded by AOC =  $\frac{1}{4}$  Area of Circle =  $\frac{\pi}{4}$ .

So, the required area =  $1 - \frac{\pi}{4}$  or  $\frac{4 - \pi}{4}$

**FeedBack**

### Q.93

In an x-y plane, the region is bounded by the equation  $x^2 + y^2 - 2x - 2y - 7 = 0$ . What is the area of the largest quadrilateral that can be drawn in this region?

1   $6\sqrt{2}$

2  9

3  18

4  36

**Solution:****Correct Answer : 3****Bookmark****Answer key/Solution**

$$x^2 + y^2 - 2x - 2y - 7 = 0$$

$$x^2 - 2x + y^2 - 2y = 7$$

$$x^2 - 2x + 1 + y^2 - 2y + 1 = 9$$

$$(x - 1)^2 + (y - 1)^2 = 9$$

$$(x - 1)^2 + (y - 1)^2 = 3^2$$

This is the equation to a circle with radius 3 and centre (1, 1).

The largest quadrilateral that can be drawn in a circle is a square whose diagonal is the diameter of the circle.  
Diagonal of the square = 6

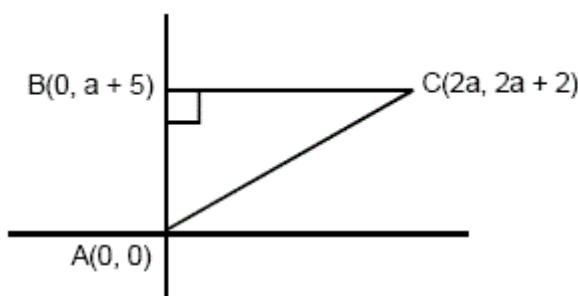
$$\text{Side of the square} = \frac{6}{\sqrt{2}}$$

$$\text{Area of the square} = \left(\frac{6}{\sqrt{2}}\right)^2 = 18$$

**FeedBack****Q.94**

**The points A(0,0), B(0, a + 5) and C(2a, 2a + 2) form a right-angled triangle where  $\angle B = 90^\circ$ .**

**What is the length of AC?**

1  132   $9\sqrt{5}$ 3   $5\sqrt{2}$ 4  10**Solution:****Correct Answer : 4****Bookmark****Answer key/Solution**

$$a + 5 = 2a + 2$$

$$a = 3$$

$$AB = a + 5 = 8$$

$$BC = 2a = 6$$

$$AC = 10$$

**FeedBack**

**Q.95**

In a certain exam there are 25 questions, all of which must be solved in 65 minutes. The difficulty level of the question increases as the exam progresses and the ideal time (in minutes) that one must devote to each question, for completing the test on time, is directly proportional to the question number. What is the time (in seconds) one must devote to question number 6? (Type in 0, if it cannot be determined)

**Solution:**

**Correct Answer : 72**

**Bookmark**

**Answer key/Solution**

Since the time that one must devote to each question is directly proportional to the question number, total time can be written as:

$$1k + 2k + 3k + \dots + 24k + 25k = 65$$

$$325k = 65$$

$$k = \frac{65}{325} = \frac{1}{5}$$

For question number 6, one must devote  $6\left(\frac{1}{5}\right)\text{min} = (60)(6)\left(\frac{1}{5}\right)\text{sec} = 72\text{ sec}$

**FeedBack**

**Q.96**

There is a series of infinite circles which are tangent to each other and the centres of all the circles are collinear. The areas of these circles are in Geometric Progression with a common ratio of 1/4. The ratio of the length of diameter of the first circle to the diameters of rest of the circles taken together is

1  1 : 1

2  1 : 2

3  2 : 1

4  4 : 1

**Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

If the common ratio of the area is  $1/4$ , then the common ratio of the diameter would be  $1/2$ .  
 If the diameter of the first circle is 1

The diameter of the remaining circles would be  $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots = \frac{\frac{1}{2}}{1 - \frac{1}{2}} = 1$ .

So the required ratio = 1 : 1.

**FeedBack****Q.97**

**Amit drives from his home to office at 35 kilometres per hour for the first hour but then realizes that he will be 1 hour late to work if he drives at the same speed. He increases the speed by 15 kilometres per hour and reaches 30 minutes early. What is the distance (in kilometres) between his house and office?**

1  **175**2  **200**3  **100**4  **210****Solution:****Correct Answer : 4** **Bookmark** **Answer key/Solution**

Let 'd' be the distance remaining after 1 hour and 't' be the remaining time until his office starts.

$$d = 35(1+t)$$

$$d = 50(t-0.5)$$

Solving,  $t = 4$ , and  $d = 175$

Total distance will be  $175 + 35 = 210$ .

**FeedBack****Q.98**

$\log(m^4n^3), \log(m^3n^3), \log(m^3n^2)$  are the first three terms of an Arithmetic Progression. If the 8<sup>th</sup> term of the Arithmetic Progression is  $\log(m^a n^a)$ , what is the value of a?

1  12  03  24  3**Solution:****Correct Answer : 2** **Bookmark** **Answer key/Solution**

If  $\log A$ ,  $\log B$  and  $\log C$  are in A.P., then  $A$ ,  $B$ , and  $C$  are in G.P. where  $B^2 = AC$ .  
So,

$$(m^3n^3)^2 = (m^4n^3)(m^3n^2)$$

$$m^6n^6 = m^7n^5$$

$$n = m$$

$$m^4n^3 = n^7$$

$$m^3n^3 = n^6$$

$$m^3n^2 = n^5$$

The 8<sup>th</sup> term if the series would be  $n^0$ . So, the value of  $a = 0$ .

**FeedBack****Q.99**

**Radhika and Pallavi decided to meet at the library which is located at a straight road between their houses. Radhika leaves her house, and after a little while later Pallavi starts from her house. When they meet at the library, Radhika had walked for twice the length of time as Pallavi, at three-fourth of Pallavi's speed. If Pallavi travelled for 4 kilometres, what is the distance (in kilometres) between their houses?**

**Solution:****Correct Answer : 10** **Bookmark** **Answer key/Solution**

Assume the speed of Pallavi and the time taken by Pallavi is  $x$  and  $t$  respectively  
 $xt = 4$

$$\text{Speed of Radhika} = \frac{3}{4}x$$

$$\text{Time of Radhika} = 2t$$

$$\text{Distance travelled by Radhika} = \left(\frac{3}{4}x\right)2t = \frac{3}{2}xt = \frac{3}{2} \cdot 4 = 6$$

$$\text{So, the total distance} = 6 + 4 = 10.$$

**FeedBack****Q.100**

**Twelve men can complete a work in 32 days while 64 women can complete the same work in 12 days. Sixteen men and sixteen women started working and worked for twelve days. How many additional men are required after that to complete the remaining work in 2 days?**

1  **24**2  **48**3  **12**4  **15****Solution:****Correct Answer : 1** **Bookmark** **Answer key/Solution**

12 men take 32 days, while 64 women take 12 days to complete the same work.

$$\text{So, Total work} = 12 \times M \times 32 = 64 \times W \times 12$$

$$\text{i.e., } 1 \text{ men} = 2 \text{ women}$$

$$\text{or } 16 \text{ women} = 8 \text{ men}$$

$$\text{Work done by 16 men and 16 women in 12 days} = \text{work done by 24 men in 12 days.}$$

$$\text{So, work left to complete in 2 days} = 12 \times M \times 32 - 24 \times M \times 12 = 96 M$$

If  $x$  additional men are required, then

$$2(24 + x) \times M = 96 M$$

$$\text{i.e., } x = 24.$$

So, 24 more men are required.

**FeedBack**