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Mock CAT – 05 2019

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VARC

LRDI

QA

Sec 1

Direction for questions (1-5): Read the given passages and answer the questions that follow.

[…] It wasn't always this way. Many fields of mathematics germinated from the study of real world problems, before the underlying rules and concepts were identified. These rules and concepts were then defined as abstract structures. For instance, algebra, the part of

mathematics in which letters and other general symbols are used to represent numbers and quantities in formulas and equations was born from solving problems in arithmetic. Geometry emerged as people worked to solve problems dealing with distances and area in the real world.

That process of moving from the concrete to the abstract scenario is known, appropriately enough, as abstraction. Through abstraction, the underlying essence of a mathematical concept can be extracted. People no longer have to depend on real world objects, as was once the case, to solve a mathematical puzzle. They can now generalise to have wider applications or by matching it to other structures can illuminate similar phenomena. An example is the adding of integers, fractions, complex numbers, vectors and matrices. The concept is the same, but the applications are different. […]

The earliest example of abstraction was when humans counted before symbols existed. […] Today, we use the Arabic numbers (also known as the Hindu-Arabic numerals): 0,1,2,3,4,5,6,7,8,9 to represent any integer, that is any whole number.

This is another example of abstraction, and it's powerful. It means we're able to handle any amount of sheep, regardless of how many stones we have. We've moved from real-world objects – stones, sheep – to the abstract. There is real strength in this: we've created a space where the rules are minimalistic, yet the games that can be played are endless.

Another advantage of abstraction is that it reveals a deeper connection between different fields of mathematics. Results in one field can suggest concepts and ideas to be explored in a related field. Occasionally, methods and techniques developed in one field can be directly applied to another field to create similar results.

Of course, abstraction also has its disadvantages. Some of the mathematical subjects taught at university level – Calculus, Real Analysis, Linear Algebra, Topology, Category Theory, Functional Analysis and Set Theory among them – are very advanced examples of abstraction.

These concepts can be quite difficult to learn. They're often tough to visualise and their rules rather unintuitive to manipulate or reason with. This means students need a degree of mathematical maturity to process the shift from the concrete to the abstract.

Many high school kids come to university with an undeveloped level of intellectual maturity to handle abstraction. This is because of the way mathematics was taught at high school. I have seen many students struggling, giving up or not even attempting to study mathematics because they weren't given the right tools at school level and they think that they just "can't do maths".

Teachers and lecturers can improve this abstract thinking by being aware of abstractions in their subject and learning to demonstrate abstract concepts through concrete examples. Experiments are also helpful to familiarise and assure students of an abstract concept's solidity.

This teaching principle is applied in some school systems, such as Montessori, to help children improve their abstract thinking. Not only does this guide them better through the maze of mathematical abstractions but it can be applied to other sciences as well.

Q.1

Which of the following best summarises the influence of abstraction on Mathematics?

1 **It has made Mathematics less dependent on reality and more useful for application in other disciplines.**

2 **It has enabled us to extract the hidden essence of mathematical rules and widen their application.**

3 **It has minimised rules and maximised data extrapolation so that any mathematical principle can be used in a more holistic manner.**

4 **It has made concepts of advanced Mathematics too complicated to be of any use.**

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Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Your Answer : 1
This is an easy question if we use the process of elimination. In the passage, the author talks about the positive as well as negative influences of abstraction on Mathematics. However, the overall tone of the author is positive towards the use of abstraction.

Option 1 – It is a great example of a distorted option. The author says that abstraction has made Mathematics less dependent on real life examples or scenarios. It's not the same as being 'less dependent on reality'.
Option 2 – This is the correct answer. Refer to the lines: "Through abstraction, the underlying essence of a mathematical concept can be extracted." Then, the author talks about how abstraction helps mathematical principles to be used in other Sciences. So, this is correct.

Option 3 – This is completely irrelevant. 'Data extrapolation' can't be defined by the passage. We also can't define 'minimising' and 'maximising' as used in the option.

Option 4 – The author mentions that many students find it difficult to grasp the complexities of advanced abstraction when they attend college. This can't be equated with abstraction making Mathematics useless as a discipline. So, it is an incorrect option.

FeedBack

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Q.2

Which of the following best describes the main point of the paragraph that precedes the opening paragraph of this passage?

1 **Mathematics, as a discipline, evolved by exposing the underlying rules of real world problems.**

2 **Mathematics, as a discipline, was believed to be a tool for solving only complex issues.**

3 **Mathematics, as a discipline, evolved by being a tool for exposing the complexities of different natural phenomena.**

4 **Mathematics, as a discipline, is believed to be devoid of much real life application or usage.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
The clue to this question is the opening sentence of the passage: "It wasn't always this way." What was this 'it'? That will be the main point of the preceding paragraph (note the use of ellipsis at the beginning). The first paragraph of the given passage discusses how many mathematical rules began with real life scenarios. So, 'wasn't' means that the previous paragraph would talk about the exact opposite: how Mathematics doesn't have a direct relationship with real life scenarios. So, only option 4 talks about this.

Option 1 – It is incorrect as this is the theme of the first paragraph.

Options 2 and 3 – These are irrelevant.

FeedBack

Direction for questions (1-5): Read the given passages and answer the questions that follow.

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Q.3

As per the author, how can educators improve abstract thinking in students?

1 **By being aware of the conceptual solidity, and adopting the Montessori style of teaching**

2 **By using concrete examples, and teaching Mathematical principles in tandem with other Scientific disciplines**

3 **By being aware of the conceptual challenges, and using experiments and concrete examples**

4 **By juxtaposing experiments with concrete examples while being abstractly aware**

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Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Your Answer : 1
This is an easy question. Refer to the lines: "Teachers and lecturers can improve this abstract thinking by being aware of abstractions in their subject and learning to demonstrate abstract concepts through concrete examples. Experiments are also helpful to familiarise and assure students of an abstract concept's solidity." So, option 3 is the most complete choice.

Option 1 – The Montessori school is given just an example. It is not the focus of the discussion. So, this option is incomplete and slightly twisted.

Options 2 – The example of other scientific disciplines makes this option incorrect.

Option 4 – We don't really know what the phrase 'being abstractly aware' as used in the option. So, this is a vague option.

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Q.4

Why does the author give the examples of Algebra and Geometry in the first paragraph?

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1 To introduce the evolution of abstraction in Mathematics

2 To show how Mathematics remains a realistic subject

3 To introduce the origin of Mathematics in order to contrast it with abstraction

4 To show how Mathematics gradually lost its significance due to the advent of abstraction

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Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Your Answer : 4
This is a very easy question as the options are easy to eliminate. In the first paragraph, the author mentions how some mathematical disciplines originated in order to solve real life problems. Then the author goes on to mention how abstraction widened the scope of Mathematics as a discipline. The author's tone is not negative in this regard. So, the purpose of giving these examples can't be inferred to be negative. Thus, option 1 is the answer.

Option 2 – It doesn't match the theme of the next paragraph. It also makes an incorrect inference about the current status of Mathematics.

Option 3 – The word 'contrast' distorts the tone.

Option 4 – This distorts the tone of the author which is quite positive towards abstraction.

FeedBack

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Q.5

As per the passage, which of the following would best help students learn abstraction in Mathematics?

1 ○ **They should be taught Calculus, Real Analysis, Linear Algebra etc. in high school.**

2 ○ **They should be taught how to visualise and become more intuitive when they enter college.**

3 **They should be taught the right tools to become more mathematically mature during high school.**

4 **They should be taught how to of their mindset of 'can't do Maths'.**

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Solution:
Correct Answer : 3
Your Answer : 3
This is a slightly tricky question.

Bookmark

Answer key/Solution

Option 1 asks students to just learn complex abstraction. The question asks how students can do this. So, it doesn't answer the question.

Option 4 – It is clearly vague. It doesn't answer how this can be achieved.

Options 2 and 3 are quite close. But we can eliminate option 2. Refer to the lines: "These concepts can be quite difficult to learn. They're often tough to visualise and their rules rather unintuitive to manipulate or reason with. This means students need a degree of mathematical maturity to process the shift from the concrete to the abstract. Many high school kids come to university with an undeveloped level of intellectual maturity to handle abstraction." So, the focus of the author is on the use of right tools during high school. Hence, option 3 is the correct answer.

FeedBack

Direction for questions (6-10): Read the given passages and answer the questions that follow.

The Lok Sabha passed the Citizenship (Amendment) Bill on 8 January 2019.The bill violates the Constitution because the classification it adopts is manifestly arbitrary and unjustified. Citizenship law defines a country's political and constitutional identity. Laying down rules that determine membership in our political community only on the basis of one's religious beliefs completely violates this principle.

The Lok Sabha passed the Citizenship (Amendment) Bill, 2016 under the shadow of immense opposition and protest. The proposed amendment seeks to make non-Muslim illegal migrants from Afghanistan, Pakistan, and Bangladesh eligible for citizenship. While its fate in the Rajya Sabha may be uncertain, there is a lurking possibility of it coming into effect as an ordinance.

While the Constitution contains some criteria of citizenship, it grants Parliament the power to determine them through legislation. These criteria, which are contained in the Citizenship Act, have evolved over the years. The courts have stayed away from interfering with these laws till now. Perhaps, the first time they will categorically do so is when the Supreme Court's constitutional bench will hear a challenge to the separate citizenship regime for Assam under Section 6A of the Citizenship Act.

Under the existing law, any person who was born in India till 1987 is an Indian citizen. Hence, till 1987, India followed the criterion of citizenship by birth. This criterion is narrowed down for persons born in India between 1987 and 2003. Such persons must have at least one parent who is an Indian citizen. A person can also be registered as an Indian citizen. A person qualifies for registration if, among other grounds, they are of Indian origin and have been residing in India or outside undivided India, are married to an Indian citizen or are a minor child of Indian citizens. A person can also apply for citizenship through naturalization following the procedures laid down in the act and rules.

In 2004, this scheme was amended by the introduction of the term "illegal migrant," which was defined as someone who enters or stays in India without legal authorisation. The amendment was an obvious response to the anxiety, well founded or otherwise, that Bangladeshi migrants would get Indian citizenship and participate in elections. After the amendment, any child born 2004 onwards to even one parent who is an illegal migrant would be disqualified from citizenship by birth. The amendment bill seeks to change this scheme. It removes the disqualification based on illegal migration for "minority communities," specifically "Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians from Afghanistan, Bangladesh and Pakistan." These groups would not be considered "illegal migrants," thus allowing them and their descendants to be Indian citizens or apply for Indian citizenship.

In other words, the proposed amendment seeks to make two changes, specifically for non-Muslim migrants from these three neighbouring countries: it removes the possibility of their and their descendants' disqualification from citizenship, and accelerates obtaining citizenship by naturalization.

Q.6

Why does the author say that the Citizenship (Amendment) Bill violates the Constitution?

1 **It makes granting of citizenship solely dependent on one's religious beliefs.**

2 **It stops many asylum seekers by unnecessarily discriminating against them because of their ethnicity.**

3 **Its arbitrary and unjustified classifications go against India's political and constitutional identity.**

4 **It ignores the possibility of illegal immigrants being granted asylum in India.**

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Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Your Answer : 3
This is an easy fact based question. Refer to the lines: "The bill violates the Constitution because the classification it adopts is manifestly arbitrary and unjustified. Citizenship law defines a country's political and constitutional identity. Laying down rules that determine membership in our political community only on the basis of one's religious beliefs completely violates this principle." So, only options 1 and 3 are close. The other two options are irrelevant.

Option 1 – It looks close but the author says that this focus on granting citizenship based on religious beliefs violates India's political and constitutional identity. So, this is indirectly correct. However, option 3 is directly mentioned in the passage. Hence, it is the better choice as it is a fact based question.

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In other words, the proposed amendment seeks to make two changes, specifically for non-Muslim migrants from these three neighbouring countries: it removes the possibility of their and their descendants' disqualification from citizenship, and accelerates obtaining citizenship by naturalization.

Q.7

Non-Muslim illegal migrants from which of the following countries may not be eligible for citizenship as per the amendment?

1 **Pakistan**

2 **Bangladesh**

3 **Afghanistan**

4 **Nepal**

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Solution:
Correct Answer : 4
Your Answer : 4
The names of the countries are mentioned in the 2nd paragraph. Nepal is not mentioned. So, it is the correct answer.

FeedBack

Bookmark

Answer key/Solution

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Q.8

Why have the courts stayed away from interfering with laws related to citizenship?

1 **The constitution has a rigid citizenship law in place.**

2 **The constitution has given the Parliament powers to determine citizenship laws.**

3 **The court orders have proved ineffective in matters of determining citizenship.**

4 **The union governments over the years have made efforts to not let the courts interfere.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
This is a very easy fact based question. Refer to the lines: "While the Constitution contains some criteria of citizenship, it grants Parliament the power to determine them through legislation.
These criteria, which are contained in the Citizenship Act, have evolved over the years. The courts have stayed away from interfering with these laws till now." So, option 2 is the clear answer.

FeedBack

Direction for questions (6-10): Read the given passages and answer the questions that follow.

The Lok Sabha passed the Citizenship (Amendment) Bill on 8 January 2019.The bill violates the Constitution because the classification it adopts is manifestly arbitrary and unjustified. Citizenship law defines a country's political and constitutional identity. Laying down rules that determine membership in our political community only on the basis of one's religious beliefs completely violates this principle.

The Lok Sabha passed the Citizenship (Amendment) Bill, 2016 under the shadow of immense opposition and protest. The proposed amendment seeks to make non-Muslim illegal migrants from Afghanistan, Pakistan, and Bangladesh eligible for citizenship. While its fate in the Rajya Sabha may be uncertain, there is a lurking possibility of it coming into effect as an ordinance.

While the Constitution contains some criteria of citizenship, it grants Parliament the power to determine them through legislation. These criteria, which are contained in the Citizenship Act, have evolved over the years. The courts have stayed away from interfering with these laws till now. Perhaps, the first time they will categorically do so is when the Supreme Court's constitutional bench will hear a challenge to the separate citizenship regime for Assam under Section 6A of the Citizenship Act.

Under the existing law, any person who was born in India till 1987 is an Indian citizen. Hence, till 1987, India followed the criterion of citizenship by birth. This criterion is narrowed down for persons born in India between 1987 and 2003. Such persons must have at least one parent who is an Indian citizen. A person can also be registered as an Indian citizen. A person qualifies for registration if, among other grounds, they are of Indian origin and have been residing in India or outside undivided India, are married to an Indian citizen or are a minor child of Indian citizens. A person can also apply for citizenship through naturalization following the procedures laid down in the act and rules.

In 2004, this scheme was amended by the introduction of the term "illegal migrant," which was defined as someone who enters or stays in India without legal authorisation. The amendment was an obvious response to the anxiety, well founded or otherwise, that Bangladeshi migrants would get Indian citizenship and participate in elections. After the amendment, any child born 2004 onwards to even one parent who is an illegal migrant would be disqualified from citizenship by birth. The amendment bill seeks to change this scheme. It removes the disqualification based on illegal migration for "minority communities," specifically "Hindus, Sikhs, Buddhists, Jains, Parsis, and Christians from Afghanistan, Bangladesh and Pakistan." These groups would not be considered "illegal migrants," thus allowing them and their descendants to be Indian citizens or apply for Indian citizenship.

In other words, the proposed amendment seeks to make two changes, specifically for non-Muslim migrants from these three neighbouring countries: it removes the possibility of their and their descendants' disqualification from citizenship, and accelerates obtaining citizenship by naturalization.

Q.9

Under the existing law, who among the following cannot register for citizenship in India?

1 **People of Indian origin residing in India and outside undivided India**

2 **People who are married to Indian citizens**

3 **Minor children of Indian citizens**

4 **Minor children of people who have applied for registration**

✖

Solution:
Correct Answer : 4
Your Answer : 3
The eligibility criteria for registration under the existing laws (1987, 2003, and 2004) are mentioned in the 4th paragraph.
Options 1, 2, and 3 are mentioned. But option 4 may or may not be applicable.

FeedBack

Bookmark

Answer key/Solution

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In other words, the proposed amendment seeks to make two changes, specifically for non-Muslim migrants from these three neighbouring countries: it removes the possibility of their and their descendants' disqualification from citizenship, and accelerates obtaining citizenship by naturalization.

Q.10

What key aspect of the 2004 amendment is the current amendment trying to change?

1 **Removing disqualification on the basis of illegal migration for everyone**

2 **Strengthening the 'illegal migrant' clause of the 2004 amendment**

3 **Removing disqualification on the basis of illegal migration for the minority communities**

4 **Allowing registration to illegal migrants of one specific country**

✔

Solution:
Correct Answer : 3
Your Answer : 3
The new amendment seeks to allow citizenship to illegal immigrants of certain 'minority communities', thus removing the disqualification. This is mentioned in the 5th paragraph. So, option 3 is the clear answer.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (11-14): Read the given passages and answer the questions that follow.

The literature of the 18th century includes parodies, satires, and denunciations; however, the role of sentimentality usually comes second when discussing the literary movements of the century. The author of *The Life and Opinions of Tristram Shandy, Gentleman* , Laurence Sterne, is commonly known as he "who introduced the present mode of sentimental writing" (The Sentimental Magazine). Among authors such as Jonathan Swift, Henry Fielding, and Daniel Defoe his novel stands as a text outside the ordinary and invokes as much empathy as it does laughter. The text continually makes use of symbols, follows a plot with no linearity, cuts out entire chapters, includes black pages, blank pages, and even a notorious marbled page. At the same time, his work produces immense feeling, so much so, that his name becomes synonymous with sentimentality itself.

Sterne combines the two mediums of satire and sentimentality within his work to show the relationship between humour and emotion, between the body and mind, and between character and narrative. Furthermore, by means of the humour of the text it is possible to miss the intricacies of emotion that Sterne imbeds within his novel. *Tristram Shandy* presents mathematical proofs in order to show the location of the mind and body; it depicts characters not through words, but through simple actions such as a soft touching of the hand; it includes metanarratives, which invoke emotion in other characters as much as they do the narrator and reader; and, above all else it argues for moments of sentimentality, for moments when distraction and digression fade and all that remains is the resemblance of all mankind.

The sentimentality of Sterne's *Tristram Shandy* is present *ab ovo* and persists throughout the narrative as a complex relationship of mind and body. The text includes an early definition of their relationship by means of Tristram himself who states, "----I tremble to think what a foundation had been laid for a thousand weaknesses both of body and mind, which no skill of the physician or the philosopher could ever afterwards have set thoroughly to rights". In effect, the body and mind are similar to the middle section of a venn diagram, where it is impossible to set them "to rights" or "into a proper condition or order" (OED). Furthermore, when there is change in one it effects the other and they share the entirety of their elements, similar to their weaknesses. This idea is present within an essay on characterization and body in *Tristram Shandy* , by Juliet McMaster who states, "mind and body—with the indissoluble links between them, and their simultaneous tragic and comic discontinuity—are surely the major overarching subject of *Tristram Shandy* ".

Q.11

According to the author, the novelist Laurence Sterne's uniqueness, in comparison to other major novelists of the 18th Century, is exhibited:

1 **through his use of sentimentality and satire that pervaded the literary work of the century.**

2 **through his extraordinary ingenuity that could equally invoke empathy and laughter.**

3 through his adherence to the laid down rules of novel writing scrupulously followed by only few other novelists of the century.

4 through the body of his novels that was remarkable for the use of parodies, satires, and denunciations.

✔

Solution:
Correct Answer : 2
Your Answer : 2
This is a tricky question. It is both factual and inferential in nature.

Bookmark

Answer key/Solution

Among the novelists of the 18th century Laurence Sterne was the only novelist who used sentimentality in his novels. So, option 1 can be eliminated.

Options 3 and 4 are also incorrect because Laurence Sterne did not stick to the convention of novel writing that was prevalent in the 18th century and he also was known for use of sentimentality.

Option 2 is correct. Refer to the line: "Among authors such as Jonathan Swift, Henry Fielding, and Daniel Defoe his novel stands as a text outside the ordinary and invokes as much empathy as it does laughter."

FeedBack

Direction for questions (11-14): Read the given passages and answer the questions that follow.

The literature of the 18th century includes parodies, satires, and denunciations; however, the role of sentimentality usually comes second when discussing the literary movements of the century. The author of *The Life and Opinions of Tristram Shandy, Gentleman* , Laurence Sterne, is commonly known as he "who introduced the present mode of sentimental writing" (The Sentimental Magazine). Among authors such as Jonathan Swift, Henry Fielding, and Daniel Defoe his novel stands as a text outside the ordinary and invokes as much empathy as it does laughter. The text continually makes use of symbols, follows a plot with no linearity, cuts out entire chapters, includes black pages, blank pages, and even a notorious marbled page. At the same time, his work produces immense feeling, so much so, that his name becomes synonymous with sentimentality itself.

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Q.12

According to the passage, the role of sentimentality in the 18th century novels:

1 ○ **occupies a secondary place when the literary movements of the century are discussed.**

2 ○ **comes as a counteract to the much pragmatic approach to literature assumed by the writers of the 17th century.**

3 **set a new trend in the literary world and exerted great influence on novelists like Jonathan Swift, Henry Fielding, and Daniel Defoe.**

4 **is much frowned upon by the novelists of today for its excessive leaning towards emotional imbalance.**

✔

Solution:
Correct Answer : 1
Your Answer : 1
This is an easy question as the options can be easily eliminated.

Bookmark

Answer key/Solution

Since sentimentality was found in Laurence Sterne's novels and it played a less prominent role in the works of other novelists of the 18th century, it cannot be concluded that it was a counteract to the works of the previous century. Also, it cannot be said that Sterne exerted influences on other novelists of his time. So, options 2 and 3 are eliminated.

Option 4 is an extreme view that cannot be either inferred or confirmed from the given passage.

Option 1 is the correct answer because it is mentioned in the first sentence of the passage that the role of sentimentality usually comes second when discussing the literary movements of the century.

FeedBack

Direction for questions (11-14): Read the given passages and answer the questions that follow.

The literature of the 18th century includes parodies, satires, and denunciations; however, the role of sentimentality usually comes second when discussing the literary movements of the century. The author of *The Life and Opinions of Tristram Shandy, Gentleman* , Laurence Sterne, is commonly known as he "who introduced the present mode of sentimental writing" (The Sentimental Magazine). Among authors such as Jonathan Swift, Henry Fielding, and Daniel Defoe his novel stands as a text outside the ordinary and invokes as much empathy as it does laughter. The text continually makes use of symbols, follows a plot with no linearity, cuts out entire chapters, includes black pages, blank pages, and even a notorious marbled page. At the same time, his work produces immense feeling, so much so, that his name becomes synonymous with sentimentality itself.

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Q.13

According to the author, Tristram contends chiefly for instants:

1 **that combine the two mediums of satire and sentimentality to show only the association of body and mind.**

2 **of sentimentality that occasionally rule the better parts of his characters in the novel.**

3 when Laurence Sterne would like to be viewed as a progenitor of sentimentality in the English literary world.

4 when disruption and digression disappear and all that remains is the alikeness of all human race.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
This is a tough fact based question. It requires a thorough reading of the passage. Moreover, this passage is slightly difficult to read.

The word 'chiefly' in the question stem suggests that the answer should be about the main or primary instants. So, instants which are not of primary importance cannot be the answer. Option 1, therefore, can be eliminated.

Option 2 cannot be correct because it talks about the occasional domination of the characters of the novel by sentimentality.

Option 3 is not mentioned in the passage. Neither can it be inferred from the given context.

Option 4 is the correct answer as it mentioned in the later part of the second paragraph of the given passage.

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Q.14

The main purpose of the passage is to:

1 ○ **argue that *Trsistram Shandy* , despite its sentimentality, has been viewed as a trendsetter in the literary world.**

2 ○ **show how sentimentality continues throughout Sterne's *Tristram Shandy* as a complex relationship of mind and body.**

3 depict how Sterne was effective in depicting his characters in *Tristram Shandy* through words and action.

4 show how Laurence Sterne's aesthetic aspirations were predominantly ruled by his projection of sentimentality.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Normally, main idea questions are not too difficult. But this passage is slightly tedious to read if one doesn't enjoy this genre. However, if one keeps in mind the critical and unbiased tone of the author, the process of elimination becomes easier.

Options 1 and 4 sound correct but they cannot be confirmed from the given passage. The facts are not enough to support these. So, they can be called 'broad' or 'beyond the scope' options.

Option 3 is a distorted piece of information. It twists a narrow part of the passage. It doesn't encompass the overall idea of the passage.

Option 2 is the correct answer as the passage is about the sentimentality of Sterne's *Tristram Shandy* that is present from the beginning and persists throughout the narrative as a complex relationship of mind and body.

FeedBack

Direction for questions (15-19): Read the given passages and answer the questions that follow.

[…] The souring of *Game of Thrones* exposes a fundamental shortcoming of our storytelling culture in general: we don't really know how to tell sociological stories. At its best, *GOT* was a beast as rare as a friendly dragon in King's Landing: it was sociological and institutional storytelling in a medium dominated by the psychological and the individual. This structural storytelling era of the show lasted through the seasons when it was based on the novels by George R. R. Martin, who seemed to specialize in having characters evolve in response to the broader institutional settings, incentives, and norms that surround them. After the show ran ahead of the novels, however, it was taken over by powerful Hollywood showrunners David Benioff and D. B. Weiss. […] They probably stuck to the narrative points that were given to them, if only in outline form, by the original author. What they did is something different, but in many ways more fundamental: they steered the narrative *lane* away from the sociological and shifted to the psychological. That's the main, and often only, way Hollywood and most television writers tell stories.

This is an important shift to dissect because whether we tell our stories primarily from a sociological or psychological point of view has great consequences for how we deal with our world and the problems we encounter. […] Our inability to understand and tell sociological

stories is one of the key reasons we're struggling with how to respond to the historic technological transition we're currently experiencing with digital technology and machine intelligence […]

But all that is surface stuff. Even if the new season had managed to minimize plot holes and avoid clunky coincidences and a clumsy *Arya ex machina* as a storytelling device, they couldn't persist in the narrative lane of the past seasons. For Benioff and Weiss, trying to continue what Game of Thrones had set out to do, tell a compelling *sociological* story, would be like trying to eat melting ice cream with a fork. Hollywood mostly knows how to tell psychological, individualized stories. They do not have the right tools for sociological stories, nor do they even seem to understand the job. […]

The appeal of a show that routinely kills major characters signals a different kind of storytelling, where a single charismatic and/or powerful individual, along with his or her internal dynamics, doesn't carry the whole narrative and explanatory burden. Given the dearth of such narratives in fiction and in TV, this approach clearly resonated with a large fan base that latched on to the show.

In sociological storytelling, the characters have personal stories and agency, of course, but those are also greatly shaped by institutions and events around them. The incentives for characters' behaviour come noticeably from these external forces, too, and even strongly influence their inner life.

People then fit their internal narrative to align with their incentives, justifying and rationalizing their behaviour along the way. (Thus the famous Upton Sinclair quip: "It is difficult to get a man to understand something, when his salary depends upon his not understanding it.")

The overly personal mode of storytelling or analysis leaves us bereft of deeper comprehension of events and history. Understanding Hitler's personality alone will not tell us much about rise of fascism, for example. Not that it didn't matter, but a different demagogue would probably have appeared to take his place in Germany in between the two bloody world wars in the 20th century. Hence, the answer to "would you kill baby Hitler,?" sometimes presented as an ethical time-travel challenge, should be "no," because it would very likely not matter much. It is not a true dilemma. […]

That tension between internal stories and desires, psychology and external pressures, institutions, norms and events was exactly what *Game of Thrones* showed us for many of its characters, creating rich tapestries of psychology but also behaviour that was neither saintly nor fully evil at any one point. It was something more than that: you could *understand* why even the characters undertaking evil acts were doing what they did, how their good intentions got subverted, and how incentives structured behaviour. The complexity made it much richer than a simplistic morality tale, where unadulterated good fights with evil.

Q.15

Which of the following is the main point of the author in the last paragraph?

---

1 Game of Thrones managed to not tell an unadulterated story of the fight between the good and the evil.

2 Game of Thrones earlier narrated a complex tale where things were not necessarily black and white.

3 Game of Thrones earned a strong fan base because its characters were never given an easy choice.

4 Game of Thrones became popular due to its focus on resolving the true dilemma of its characters.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
As it is an idea based question, we need to keep in mind the overall tone and focus of the passage. In this passage, the author analyses the failing narrative power of Game of Thrones because of the shift in focus from sociological storytelling to psychological narrative. The author also discusses the importance of a sociological tale. S/he laments the dearth of such narratives in Hollywood and TV. The last paragraph focuses on the earlier seasons of GOT where the focus was on a sociological storytelling method. This is aptly captured by option 2, the correct choice.

Option 1 – The opening of the passage states that GOT shifted its focus. This option talks about the overall achievement of GOT. So, it misses the point of the author as GOT didn't manage to maintain a particular narrative vein. Hence, this is a distorted option.

Option 3 – 'Never given an easy choice' is both distorted and factually not proven as per the passage. It's also not the main focus of the last paragraph.

Option 4 – This is nowhere mentioned in the passage. 'Resolving the dilemma' is beyond the scope of the discussion.

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Q.16

In the third paragraph, the phrase "trying to eat melting ice cream with a fork" means:

1 **Benioff and Weiss were bound to fail in telling the story of GOT as they were from Hollywood.**

2 **Hollywood makes it impossible for anyone to tell a linear story.**

3 **Hollywood makes it utterly impossible for TV shows like GOT to have a plot hole free narrative.**

4 **Benioff and Weiss had an impossible task as they lacked the ability of narrating a sociological tale.**

Solution:
Correct Answer : 4
Such a question (similar in type) was there in the passage on air pollution in slot 1 of CAT 2018. It's not merely a contextual meaning question. Here, we need to understand the author's intention behind using the given phrase.

Bookmark

Answer key/Solution

The author mentions this phrase when s/he tries to show how Hollywood typically doesn't have a strong influence of sociological storytelling. The author calls Benioff and Weiss 'powerful Hollywood showrunner'. So, they were bound to be influenced by the existing pattern of narrative in Hollywood. The idiom in question refers to an impossible task. So, option 4 best answers the question.

Option 1 – It is too generic. The author doesn't say that Benioff and Weiss failed as storytellers. S/he says that they failed to continue the narrative pattern of the earlier seasons of GOT.

Options 2 and 3 – Both of these are distorted option. The author says that Hollywood primarily deals with linear narratives. The author doesn't discuss on the possibility of having a show without any plot hole. Hence, both are incorrect.

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But all that is surface stuff. Even if the new season had managed to minimize plot holes and avoid clunky coincidences and a clumsy *Arya ex machina* as a storytelling device, they couldn't persist in the narrative lane of the past seasons. For Benioff and Weiss, trying to continue what Game of Thrones had set out to do, tell a compelling *sociological* story, would be like trying to eat melting ice cream with a fork. Hollywood mostly knows how to tell psychological, individualized stories. They do not have the right tools for sociological stories, nor do they even seem to understand the job. […]

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In sociological storytelling, the characters have personal stories and agency, of course, but those are also greatly shaped by institutions and events around them. The incentives for characters' behaviour come noticeably from these external forces, too, and even strongly influence their inner life.

People then fit their internal narrative to align with their incentives, justifying and rationalizing their behaviour along the way. (Thus the famous Upton Sinclair quip: "It is difficult to get a man to understand something, when his salary depends upon his not understanding it.")

The overly personal mode of storytelling or analysis leaves us bereft of deeper comprehension of events and history. Understanding Hitler's personality alone will not tell us much about rise of fascism, for example. Not that it didn't matter, but a different demagogue

would probably have appeared to take his place in Germany in between the two bloody world wars in the 20th century. Hence, the answer to "would you kill baby Hitler,?" sometimes presented as an ethical time-travel challenge, should be "no," because it would very likely not matter much. It is not a true dilemma. […]

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Q.17

Which of the following is not a feature of a sociological narratives?

1 **Personal stories of the main characters**

2 **The influence of external factors on the characters' inner lives**

3 **A centralised protagonist who carries the burden of the narrative**

4 **A rationalization of one's action based on the incentives earned**

Solution:
Correct Answer : 3
Refer to the fifth paragraph. It mentions options 1 and 2.
Option 4 can be found in both the sixth and the seventh paragraphs.
Option 3 is the answer. It is the main feature of a psychological story, not a sociological one.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (15-19): Read the given passages and answer the questions that follow.

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got subverted, and how incentives structured behaviour. The complexity made it much richer than a simplistic morality tale, where unadulterated good fights with evil.

Q.18

Which of the following, if true, would weaken the contention of the author that killing Hitler during his childhood wouldn't have mattered?

1 **There were many other leaders who shared the same views as Hitler but only the latter found favour with the masses.**

2 **The Germans were angry with their status in the world which made it easier for Hitler to manipulate their sentiments.**

3 **Fascism as a movement predates the rise of Hitler in Germany.**

4 **Hitler was a charismatic leader who was a master manipulator of people's psyche.**

Solution:
Correct Answer : 1
The author mentions the example of Hitler while discussing "the overly personal mode of storytelling or analysis" of a central character. The contention of the author is that even if we kill Hitler in his childhood, the fate of Germany wouldn't change. This needs to be weakened.

Bookmark

Answer key/Solution

Options 2 and 3 – These show that the rise of Hitler or fascism was influenced by external factors. So, these options strengthen the author's argument. Option 4 – It looks close but it won't exactly weaken the author's contention. Hitler manipulated the psyche of the Germans. But other leaders could have done the same too. The option doesn't mention whether this manipulation was a result of external influences or the personal achievement of Hitler.

Option 1 – This is the correct answer. It clearly shows that Hitler managed to do something that other leaders couldn't. So, the credit must be given to Hitler's personality. This will weaken the author's contention in the given context.

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Q.19

Which of the following can be inferred from the Upton Sinclair quotation mentioned in the passage?

1 **A hungry man can't be expected to deliberate meditatively on the importance of life.**

2 **A person who is busy earning his livelihood will lead a law abiding life.**

3 **A person can't challenge the authority figures in his/her life.**

4 **A man guided by personal incentives can have a compromised critical faculty.**

Solution:
Correct Answer : 4
The given quotation shows that in sociological narratives, characters are influenced by the external agencies such as their surroundings, the social norms, and the benefits these events hold for them. So, they can't be expected to challenge or be impartial towards these events. Option 4 best mentions these points. So, it is the correct answer.

Option 1 is a little vague. Had the second part of the option been '…on the merit of food', it would have been correct.

Options 2 and 3 are irrelevant.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (20-24): Read the given passages and answer the questions that follow.

From the perspective of 19th-century visitors to the United States, the country's system of higher education was a joke. It wasn't even a system, just a random assortment of institutions claiming to be colleges that were scattered around the countryside. Underfunded, academically underwhelming, located in small towns along the frontier, and lacking in compelling social function, the system seemed destined for obscurity. But by the second half of the 20th century, it had assumed a dominant position in the world market in higher education. Compared with peer institutions in other countries, it came to accumulate greater wealth, produce more scholarship, win more Nobel prizes, and attract a larger proportion of talented students and faculty. US universities dominate global rankings.

How did this remarkable transformation come about? The characteristics of the system that

seemed to be disadvantages in the 19th century turned out to be advantages in the 20th. Its modest state funding, dependence on students, populist aura, and obsession with football gave it a degree of autonomy that has allowed it to stand astride the academic world.

The system emerged under trying circumstances early in US history, when the state was weak, the market strong, and the church divided. Lacking the strong support of church and state, which had fostered the growth of the first universities in medieval Europe, the first US colleges had to rely largely on support from local elites and tuition-paying student consumers. They came into being with the grant of a corporate charter from state government, but this only authorised these institutions. It didn't fund them.

The rationale for starting a college in the 19th century usually had less to do with promoting higher learning than with pursuing profit. For most of US history, the primary source of wealth was land, but in a country with a lot more land than buyers, the challenge for speculators was how to convince people to buy their land rather than one of the many other available options. (George Washington, for instance, accumulated some 50,000 acres in the western territories, and spent much of his life unsuccessfully trying to monetise his holdings.) The situation became even more desperate in the mid-19th century, when the federal government started giving away land to homesteaders. One answer to this problem was to show that the land was not just another plot in a dusty agricultural village but prime real estate in an emerging cultural centre. And nothing said culture like a college. Speculators would 'donate' land for a college, gain a state charter, and then sell the land around it at a premium, much like developers today who build a golf course and then charge a high price for the houses that front on to it.

Of course, chartering a college is not the same as actually creating a functioning institution. So, speculators typically sought to affiliate their emergent college with a religious denomination, which offered several advantages. One was that it segmented the market. A Presbyterian college would be more attractive to Presbyterian consumers than the Methodist college in the next town. Another was staffing. Until the late-19th century, nearly all presidents and most faculty at US colleges were clergymen, who were particularly attractive to college founders for two reasons. They were reasonably well-educated, and they were willing to work cheap.

Q.20

Which of the following conditions, if true, would invalidate the passage's main argument?

1 **The education in America in the late 19th century was supervised by clergymen who were presidents at US colleges.**

2 **Investors donated land for a college and after they gained charter from the State, they sold the land around it.**

3 **The investors in colleges of the 19th century America sought to affiliate their budding colleges to religious denominations for purely spiritual reason.**

4 **The reason for starting a college in the 19th century America was to earn more to earn profit than to promote higher learning.**

Solution:
Correct Answer : 3
Options 1, 2 and 4 are mentioned in the passage and serve as components of the given passage, whereas, option 3 is a distorted piece of information provided in the passage. It invalidates the passage's main argument. Hence, 3 is the answer.

Bookmark

Answer key/Solution

FeedBack

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Q.21

Which of the following conditions would weaken the efficacy of education in America in the 20th century?

1 **The first US colleges had to rely largely on support from local elites and tuition-paying student consumers.**

2 **Education in America began to be established and institutionalized as a component of ecclesiastical endeavour in its quest for spiritual well-being of its people.**

3 **What did not seem to work for education in the 19th century American began to work for it in the 20th century.**

4 **Education in America had assumed a dominant position in the world market in higher education in the second half of the 20th century.**

Solution:
Correct Answer : 2
It is not mentioned in the passage that education in America in the 20th century was based on religion or spiritual progress. Therefore, option 2 is the correct answer.

Option 1 is mentioned in the passage.

Option 3 is irrelevant contextually because it doesn't specify anything.

Option 4 supports the passage's argument. Therefore, it cannot be the correct answer.

Bookmark

Answer key/Solution

FeedBack

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Q.22

What is the main idea that the author is trying to highlight in the passage?

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1 The seeming disadvantage in one context could prove to be a huge advantage in another context.

2 The vast expanse of land in America had very little commercial value in the 19th century; so, the government evolved a land reform policy.

3 Education in America in the 19th century was seen as disorderly and profit-oriented; however, in the 20th century it saw a great leap and established itself as the dominant education hub of the world.

4 Education in America was largely imparted in line with the education system prevalent in the Mediaeval Europe.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Options 1 and 2 can be inferred from the given passage but neither of them can be the main idea the author is trying to highlight.

Option 4 is incorrect contextually.

Option 3 is the correct answer. Refer to "But by the second half of the 20th century, it had assumed a dominant position in the world market in higher education."

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Q.23

According to the author, the federal government began to give away land to homesteaders because:

1 **that way the government could show that the land was not only an agricultural land but a prime real estate and a developing cultural hub.**

2 **that way the vast land would be populated, and the colleges built in those places would attract students from there.**

3 **it was the opportune time to gain the confidence of the people and instigate economic reform of America.**

4 **the government want the settlers to be economically self-sufficient and contribute towards nation building in the 19th century America.**

Solution:
Correct Answer : 1
Options 2, 3 and 4 are not the reasons why the federal government started to give away land to homesteaders.

Bookmark

Answer key/Solution

Option 1 is the correct answer. Refer to the lines: "The situation became even more desperate in the mid-19th century, when the federal government started giving away land to homesteaders. One answer to this problem was to show that the land was not just another plot in a dusty agricultural village but prime real estate in an emerging cultural centre."

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Q.24

On the basis of the passage, which of the following is the reason why clergymen were preferred as presidents and faculty of US colleges by the college founders in the 19th century?

1 **Presidents and faculty of US colleges who were clergymen could also help the students and the society in their spiritual growth.**

2 **Education was dominated by the Church.**

3 **The educational system of the time necessitated the college founders to hire a maximum number of teachers with ecclesiastical experience.**

4 **The college founders found that the clergymen were well-educated, and they were also ready to work for less money.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Option 1 is not mentioned in the passage.
Option 2 is too extreme.
Option 3 is unfounded.
Option 4 is the correct answer. Refer to the lines: "Until the late-19th century, nearly all presidents and most faculty at US colleges were clergymen, who were particularly attractive to college founders for two reasons. They were reasonably well-educated, and they were willing to work cheap."

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.

The world's most lethal and devastating weapon! Able to rectify and destroy, to heal and to harm! This tool, which can be used as the most harmonious of presents—wrapped and bound with the purest of intentions, has been the same that has ruined entire countries and cultures—delivered with manipulative vengeance capable of planting lethal thoughts. Even used in the smallest sum, its potency can carry the greatest of meaning. I believe in the power of words.

1 **Words are the most powerful weapons in the world.**

2 **One should be careful of using words.**

3 **Words are always disguised as gifts which eventually harm the receiver.**

4 **Words are potent tools with a lot of potential for causing damage.**

✖

Solution:
Correct Answer : 4
Your Answer : 1

Bookmark

Answer key/Solution

This is an easy question as the options are not very close. The paragraph mentions three main points: Words can be potent weapons; they can destroy as well as heal; they are powerful. Option 4 mentions all these. So, it is the correct answer.

Option 1 – The author doesn't literally mean words as weapons. Note the use of the exclamatory mark at the end. It's a figurative description.

Option 2 – This is not a complete summary of the paragraph. It's an inference that can be drawn from the paragraph.

Option 3 – This is a completely distorted and illogical interpretation of the information provided in the paragraph. Note the use of the adjective 'always'. It makes the option extreme.

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.

The corruption of power is one of the most important psychosocial dynamics behind many important turning points in history, and in how the ills of society arise. In response, we have created elections, checks and balances, and laws and mechanisms that constrain the executive. Destructive historical figures often believe that they must stay in power because it is they, and only they, who can lead the people—and that any alternative would be calamitous. Leaders tend to get isolated, become surrounded by sycophants and succumb easily to the human tendency to self-rationalize. There are several examples in history of a leader who starts in opposition with the best of intentions and ends up acting brutally and turning into a tyrant if they take power.

1 **Power corrupts and absolute power corrupts absolutely.**

2 **Leaders with the best of intentions inevitably succumb to the lure of power and become corrupt.**

3 **The corrupting influence of power has been a historical phenomenon, and this has led to the establishment of checks and balances in the society.**

4 **Corruption has been the core issue in the psychosocial dynamics of our world from ancient times with many powerful leaders becoming sycophants and delusional.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Effectively, this paragraph mentions its main point in the first two sentences. All the following sentences are just examples. So, there are two main points here: Corruption of power has been a historical phenomenon (as proven by the various examples); checks and balances for the executives are the response to these historical lessons. Only option 3 mentions these two points.

Option 1 – It is not a summary but an extreme conclusion.

Option 2 – This is an incomplete option. It just mentions the last example the author gives in the paragraph. It doesn't talk about the main idea of the paragraph.

Option 4 – 'Leaders becoming sycophants' is a distorted interpretation of the information given in the paragraph. This paragraph too fails to mention both the points.

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.

Logically, somebody who never puts effort into anything should be the master of effortlessness. But it is not so. If you want to know effortlessness, you need to know effort. When you reach the peak of effort, you become effortless. Only a person who knows what it is to work understands rest. Paradoxically, those who are always resting know no rest; they only sink into dullness and lethargy. This is the way of life.

1 **People first need to understand the value of effort in order to master effortlessness.**

2 **Only those who are masters of something can understand the value of resting.**

3 **Only those who do something can afford to do nothing.**

4 **People need to first in order to understand rest.**

✔

Solution:
Correct Answer : 1
Your Answer : 1
This is not a very difficult to read paragraph if we keep in mind the main aim of the author. The main aim of the author is that people need to first master an act before they can afford to not do the same. The example of work and rest drives home this point. So, the main message of the paragraph is that one should first master the act of effort in order to become effortless. This is mentioned only in option 1. The other options are distorted conclusions. So, option 1 is the correct answer.

Bookmark

Answer key/Solution

FeedBack

Q.28

Directions for question (28): 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. There is, as yet, no room for complacency about the care of dying cancer patients.
2. In addition, adequate resources are required to meet the social and health care needs of cancer patients at home.
3. There is still some way to go before all dying cancer patients receive high quality care.
4. Education in the principles of palliative care is needed at all levels of the NHS if high standards are to be reached.
5. At present, death from cancer is dealt with in terms of major decisions of the clinicians, of the family, and of the patient.

✔

Bookmark

Answer key/Solution

Solution:
Correct Answer : 5
Your Answer : 5
The correct order is 3421. However, we don't have to arrange the remaining sentences. The odd sentence can be found by just looking at the theme of the paragraph. The other sentences are talking about care given for dying or terminal cancer patients. Sentence 5 talks about the decision makers regarding death from cancer. This is not what the paragraph talks about. Secondly, the focus of the paragraph is on care given to cancer patients and how it can be improved. Sentence 5 possibly talks about euthanasia or other death related issues with respect to cancer. Hence, it is the odd one out.

FeedBack

Q.29

Directions for question (29): 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. She studied in France; she loved French literature.
2. There is no doubt, though, that her son has portrayed her, as truthfully as he could, in his Stalingrad dilogy.
3. In spite of this disability, she was clearly an unusually independent woman for her time.
4. She left her first husband for Semyon Osipovich Grossman, a Jewish Ukrainian chemical engineer who had graduated from the University of Bern.
5. Yekaterina was born with a misaligned hip joint.

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Your Answer : 1
The correct order is 5314. Chronologically 2 comes later. The paragraph deals with the biographical sketch of Yekaterina.
53 is a pair as 'this disability' in 3 refers to the 'misaligned hip joint' in 5. So, these two sentences clearly belong to the paragraph. 14 or 41 can come next. It doesn't matter. Both the sentences talk about the life of Yekaterina.
2 is the odd one out as it talks about the tribute paid to her by her son.
Thematically, it is outside the scope of the paragraph.

FeedBack

Q.30

Directions for question (30): 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. Throughout the autumn and winter, we told and re-told stories, seeing them in a new light, gently mentioning things we knew about one another's lives, murky memories, events we had not mentioned for years.
2. In the awful, wearying months in which Harvey Weinstein's ritualistic mistreatment of women was being recounted daily in the media, I found myself, like so many others, wondering and talking about the men in my life: ex-boyfriends, ex-stalkers, ex-harassers, ex-gropers.
3. Soon after the allegations against him were published, Weinstein's wife Georgina Chapman announced she was leaving him.
4. My friends and I looked back, fitfully, in agitation, at the things we had endured, the things we had kept silent about, and we looked around at the things that were bothering us now.
5. We talked with a renewed anger and frankness, a renewed sense of permission in so doing – and perhaps, too, a renewed sense of simplicity.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
The correct order is 2415. This is a very easy question. The paragraph is not about Harvey Weinstein. He is just mentioned as an example or backdrop info. The author talks about her discussion on the subject of sexual assault or mistreatment in the wake of the issue taking the centre-stage in society. So, sentence 3, which talks about the aftermath of the allegations against Weinstein on his personal life, is the odd one out.

FeedBack

Q.31

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

1. They also shape our expectations of what love will be like – expectations by which we will want to abide, leading us to shoehorn our feelings into that idealised form.
2. This changed with the advent of modernity, where romantic love acquired the cultural acclaim that it commands today.
3. Just a few centuries ago, romance held a much less central position in the cultural imaginary than it does today: love was primarily a question of family allegiances and controlled reproduction.
4. The stories of love we find on the silver screen are not just representations of the emotions within us.

✔

Solution:
Correct Answer : 4132
Your Answer : 4132
This is a very easy question if we keep in mind the basic rules of paragraph writing.

Bookmark

Answer key/Solution

The strongest pair in the paragraph is 32. 'This changed' in 2 refers to the historical context provided in 3.

'They also' in 1 refers to 'the stories of love' in 4. So, 41 is a pair.

4 has to be the opening sentence. It introduces the topic of the paragraph: the idea of love and romance. Hence, 4132 is the correct sequence.

FeedBack

Q.32

Directions for question (32): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. Viral DNA sequences, incorporated long ago into the genomes of animals, may play a role in long-term memory formation.
2. These vesicles circulate in the body, but their purpose is largely unknown.
3. Two studies, one on mice and another on flies, focused on structures called *extracellular vesicles*, which form as the cell membrane pinches off from the cell.
4. The studies showed that many vesicles contained a gene called *Arc* that is implicated in long-term memory formation.

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1324
Your Answer : 3421
Sentence 1 introduces the topic. Sentences 2 and 4 can't open the paragraph as they use undefined terms. Between 1 and 3, the former is a better topic sentence. 3 has to come before 2 and 4 as 3 introduces the studies. The other two sentences add to the discussion of the findings of these studies.

'These' in 2 refers to the vesicles mentioned in 3. 34 may look like a pair but in that case 2 becomes redundant as it has no bearing with sentence 4. Hence, 1324 is the correct sequence.

FeedBack

Q.33

Directions for question (33): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. If these minerals did originate in the mantle, they may provide information about the Earth's geological state at the moment it collided with a protoplanet, creating the terrestrial debris from which the Moon was formed.
2. The presence of these minerals bolsters the theory that the massive Aitken Basin at the Moon's South Pole was created by an enormous impact that exposed the lunar mantle and made it possible to study the Moon's deep history.
3. China's Chang'e-4 mission may have identified material from the Moon's mantle.
4. The Yutu-2 rover, which is exploring the Von Kármán crater on the far side of the Moon, identified two minerals that are not typical of the lunar surface: low-calcium pyroxene and olivine.

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3421
Your Answer : 4123
Sentence 3 introduces the topic of the mission. The rover mentioned in 4 adds to this discussion. Hence, 34 is a pair.

'These minerals' in 2 refer to 'two minerals' mentioned in 4. So, 42 is a pair.

1 follows next as it adds to the discussion started by 4 and 2. Hence, the correct sequence is 3421.

FeedBack

Q.34
Directions for question (34): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. We walked all the cemeteries and all the industrial yards.
2. It didn't take us long to walk every neighbourhood in Manhattan.
3. We eventually walked over every single bridge in the greater New York metropolitan area – and there are a lot of them.
4. So, pretty soon, we started exploring the outer boroughs as well.

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2413
Your Answer : 2143
This is a tricky question. So, we need to go by the method of finding pairs.

24 is a pair as 2 states the cause and 4 mentions its effect (note the use of 'So' in 4).

After this, the answer will depend on one's interpretation of the phrase 'outer boroughs.' Cemeteries and industrial yards fall in this category. So, 1 has to come after 4.

3 uses the word 'eventually' which shows that it is the concluding sentence. It also talks about the New York metropolitan area – a further reference to the outer boroughs. Hence, 2413 is the correct sequence.

FeedBack

Sec 2

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

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.35

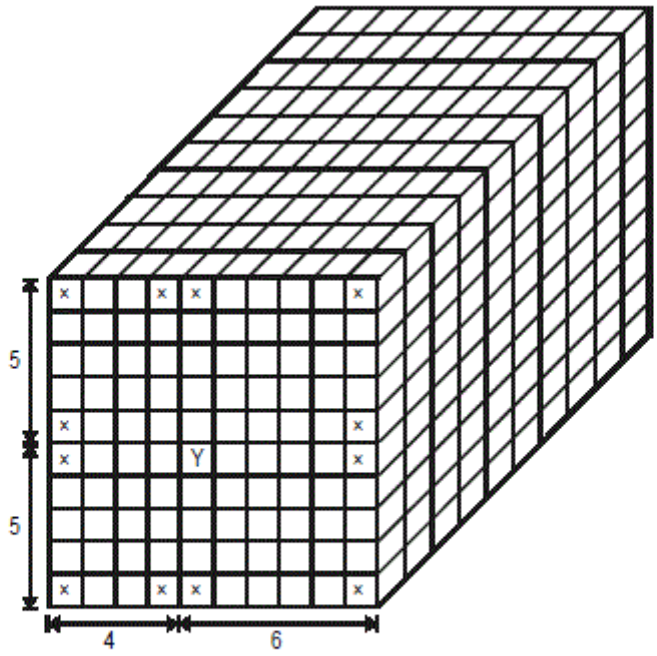
How many smaller cubes have exactly 3 different colors painted on their surfaces?

Solution:

Correct Answer : 24

Bookmark

Answer key/Solution



Cubes marked with (x) sign have exactly 3 painted surfaces in 3 different colors. There are total 12 cubes on one face. On opposite face also, there will be 12 cubes.
∴ Total 12 + 12 = 24.

FeedBack

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

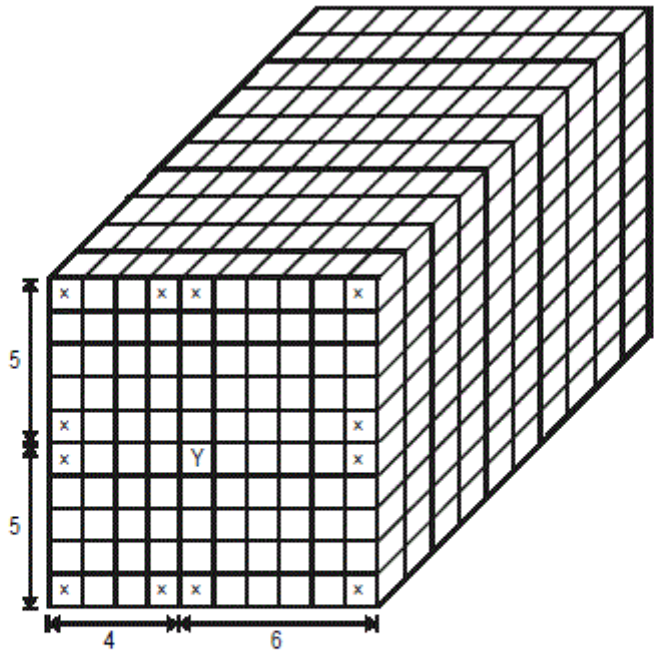
Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.36
How many smaller cubes are colourless?

Solution:
Correct Answer : 288

Bookmark

Answer key/Solution



Each small cube which lies inside the cuboids do not have any color on them. (Since the cuboids are initially painted in blue). The number of smaller cubes in each of the cuboid of 4 × 5 × 10 is (4 – 2) × (5 – 2) × (10 – 2) = 2 × 3 × 8 = 48.
Since there are 2 such cuboids, so 48 × 2 = 96.
Similarly in cuboid of dimension 6 × 5 × 10, the number of smaller cubes with no painted face
= [(6 – 2) × (5 – 2) × (10 – 2)] × 2 = 96 × 2 = 192
∴ Total 192 + 96 = 288.

FeedBack

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

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

Q.37

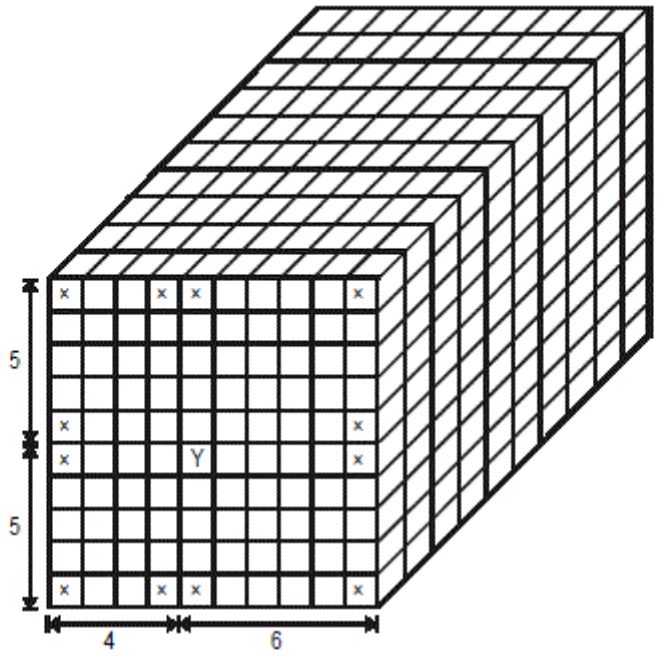
How many cubes have exactly 2 colors painted on their surfaces?

Solution:

Correct Answer : 200

Bookmark

Answer key/Solution



If we look at 6 × 5 × 10 cuboid at right bottom position. Let us count all pieces with exactly 2 colors.
• Number of corner pieces, marked Y (one on the front face + one on the back face) = 2.
• Number of pieces along the edges on the front + back faces = 14 + 14 = 28.
• Number of pieces along the edge at the right side = 8 + 8 = 16.
• Number of pieces along the edge at bottom face = 8.
∴ Total = 2 + 28 + 16 + 8 = 54.
And there are another 54 pieces obtained from second 6 × 5 × 10 cuboid.
Now, look at 4 × 5 × 10 cuboid at the left bottom position.
• Number of corner pieces = 2
• Number of pieces along the edges of front and back faces = 10 + 10 = 20.
• Number of pieces along the edges on the bottom face = 8 + 8 = 16.
• Number of pieces along the edge on the left face = 8.
Total = 2 + 20 + 16 + 8 = 46.
There are another 46 obtained from the second 4 × 5 × 10 cuboid.
∴ Total = 54 × 2 + 46 × 2 = 200.

FeedBack

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

Two wooden cuboids, each of dimension 4 cm × 5 cm × 10 cm, and 2 more wooden cuboids, each of dimension 6 cm × 5 cm × 10 cm, are painted with blue color on all sides. These 4 cuboids are stacked in such a way that a cube of dimensions 10 cm × 10 cm × 10 cm is formed. Now each pair of the opposite faces of the so formed cube are painted with a different colour among black, pink and green. This cube is now cut into smaller cubes of size 1 cm × 1 cm × 1 cm.

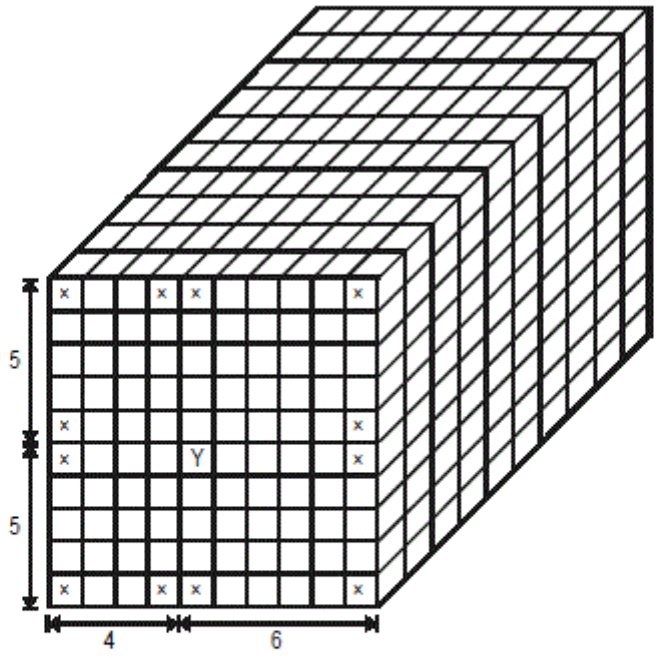
Q.38

All these smaller cubes of dimension 1 cm × 1 cm × 1 cm are painted with red colour and again joined to make the bigger cube of dimension 10 cm × 10 cm × 10 cm. This cube is then placed on a table. If infinite number of identical yellow coloured cubes of dimension 1 cm × 1 cm × 1 cm are available, then what is the minimum number of yellow cubes required to cover this big red cube such that a carpenter seeing it can see it as a yellow coloured cube?

Solution:
Correct Answer : 584

Bookmark

Answer key/Solution



Now, we have 10 cm × 10 cm × 10 cm big red cubes. If we want to completely cover it by yellow cubes, then 1 layer of yellow cubes will be required over red cubes. So covering the cube will make length from 10 cm to 12 cm, breadth from 10 cm to 12 cm, but since cube is kept on the table, we can't add cubes to the bottom, so height can only be made from 10 cm to 11 cm.
So, new cube has 12 × 12 × 11 = 1584 cubes,initial cube had 10 × 10 × 10 = 1000 cubes.
∴ 584 extra yellow cubes were required to cover.

FeedBack

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

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.39
For how many friends, the exact rank of each of the 4 games, can be calculated?

✖

Solution:
Correct Answer : 3
Your Answer : 4

Bookmark

Answer key/Solution

As Vaibhav didn't get rank 5 in any game so his total of all rankings cannot be more than 16. Also as the sum totals were in increasing AP, it could be 10, 11, 12, 13 and 14 or 8, 10, 12, 14 and 16.

Case 1: If the sum totals are 10, 11, 12, 13 and 14.

Here Manu's total is 13 and he has used only 2 numbers so 3 of the numbers must be similar and 1 number must be distinct (because 2 similar and 2 similar would result in an even sum). So his rankings can be (1, 4, 4, 4) or (3, 3, 3, 4). In case of 1, 4, 4, 4 Vaibhav's total cannot be 14 as he doesn't have 5 in any game.

So, the only possibility is Manu getting 3,3,3,4 and Vaibhav getting 4,4,4,2. Now no one else can have a rank of 4 in any game. As Anurag didn't get 2, his total of 10 can be formed by 1, 1, 3 and 5 only. As Shashank and Nitish have got rank 1 each in one of the games, no other person now can have a rank of 1 , 3 or 4. In this case to make Nitish's sum total 12 is impossible.

Case 2: If the sum totals are 8, 10, 12, 14 and 16.

Here Vaibhav's ranks must be 4 in all 4 games. A total of 14 for Manu can be achieved in 2 ways i.e. 3,3,3,5 or 2,2,5,5. Also Anurag's total of 8 can be formed by 1, 1, 1, 5 or 1, 1, 3, 3. But he cannot have rank 1 in 3 games as Shashank and Nitish both have rank 1 in one of the games. Hence his ranks must be 1, 1, 3, 3. Now, Manu's ranks too must be 2, 2, 5, 5 as he cannot have rank 3 in 3 games. A sum total of 12 for Nitish can be formed by 1, 3, 3, 5 only.

So, the final table looks like:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1		3		4
Cricket	3		1		4
Table tennis	1		3		4
Poker	3	1	5	2	4

The remaining ranks of Shashank are 2, 2, 5 and of Manu are 5, 5, 2 in any order.
So, the total cases formed are-
Case I:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	5	1	2	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case II:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	5	3	2	4
Cricket	3	2	1	5	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case III:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	2	1	5	4
Table Tennis	1	5	3	2	4
Poker	3	1	5	2	4

For only 3 friends i.e. Anurag, Nitish and Vaibhav, the exact rank of each of the 4 games can be calculated.

FeedBack

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

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.40
If Shashank's rank in pool is 5, then what is Manu's rank in table tennis?

Solution:
Correct Answer : 5

Bookmark

Answer key/Solution

As Vaibhav didn't get rank 5 in any game so his total of all rankings cannot be more than 16. Also as the sum totals were in increasing AP, it could be 10, 11, 12, 13 and 14 or 8, 10, 12, 14 and 16.

Case 1: If the sum totals are 10, 11, 12, 13 and 14.

Here Manu's total is 13 and he has used only 2 numbers so 3 of the numbers must be similar and 1 number must be distinct (because 2 similar and 2 similar would result in an even sum). So his rankings can be (1, 4, 4, 4) or (3, 3, 3, 4). In case of 1, 4, 4, 4 Vaibhav's total cannot be 14 as he doesn't have 5 in any game.

So, the only possibility is Manu getting 3,3,3,4 and Vaibhav getting 4,4,4,2. Now no one else can have a rank of 4 in any game. As Anurag didn't get 2, his total of 10 can be formed by 1, 1, 3 and 5 only. As Shashank and Nitish have got rank 1 each in one of the games, no other person now can have a rank of 1 , 3 or 4. In this case to make Nitish's sum total 12 is impossible.

Case 2: If the sum totals are 8, 10, 12, 14 and 16.

Here Vaibhav's ranks must be 4 in all 4 games. A total of 14 for Manu can be achieved in 2 ways i.e. 3,3,3,5 or 2,2,5,5. Also Anurag's total of 8 can be formed by 1, 1, 1, 5 or 1, 1, 3, 3. But he cannot have rank 1 in 3 games as Shashank and Nitish both have rank 1 in one of the games. Hence his ranks must be 1, 1, 3, 3. Now, Manu's ranks too must be 2, 2, 5, 5 as he cannot have rank 3 in 3 games. A sum total of 12 for Nitish can be formed by 1, 3, 3, 5 only.

So, the final table looks like:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1		3		4
Cricket	3		1		4
Table tennis	1		3		4
Poker	3	1	5	2	4

The remaining ranks of Shashank are 2, 2, 5 and of Manu are 5, 5, 2 in any order.
So, the total cases formed are-
Case I:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	5	1	2	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case II:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	5	3	2	4
Cricket	3	2	1	5	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case III:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	2	1	5	4
Table Tennis	1	5	3	2	4
Poker	3	1	5	2	4

If Shashank's rank in pool is 5 i.e. consider case II, then Manu's rank in table tennis is 5.

FeedBack

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

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.41
What is Anurag's rank in cricket?

1 **1**

2 **3**

3 **4**

4 **5**

✔

Solution:
Correct Answer : 2
Your Answer : 2

Bookmark

Answer key/Solution

As Vaibhav didn't get rank 5 in any game so his total of all rankings cannot be more than 16. Also as the sum totals were in increasing AP, it could be 10, 11, 12, 13 and 14 or 8, 10, 12, 14 and 16.

Case 1: If the sum totals are 10, 11, 12, 13 and 14.

Here Manu's total is 13 and he has used only 2 numbers so 3 of the numbers must be similar and 1 number must be distinct (because 2 similar and 2 similar would result in an even sum). So his rankings can be (1, 4, 4, 4) or (3, 3, 3, 4). In case of 1, 4, 4, 4 Vaibhav's total cannot be 14 as he doesn't have 5 in any game.

So, the only possibility is Manu getting 3,3,3,4 and Vaibhav getting 4,4,4,2. Now no one else can have a rank of 4 in any game. As Anurag didn't get 2, his total of 10 can be formed by 1, 1, 3 and 5 only. As Shashank and Nitish have got rank 1 each in one of the games, no other person now can have a rank of 1 , 3 or 4. In this case to make Nitish's sum total 12 is impossible.

Case 2: If the sum totals are 8, 10, 12, 14 and 16.

Here Vaibhav's ranks must be 4 in all 4 games. A total of 14 for Manu can be achieved in 2 ways i.e. 3,3,3,5 or 2,2,5,5. Also Anurag's total of 8 can be formed by 1, 1, 1, 5 or 1, 1, 3, 3. But he cannot have rank 1 in 3 games as Shashank and Nitish both have rank 1 in one of the games. Hence his ranks must be 1, 1, 3, 3. Now, Manu's ranks too must be 2, 2, 5, 5 as he cannot have rank 3 in 3 games. A sum total of 12 for Nitish can be formed by 1, 3, 3, 5 only.

So, the final table looks like:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1		3		4
Cricket	3		1		4
Table tennis	1		3		4
Poker	3	1	5	2	4

The remaining ranks of Shashank are 2, 2, 5 and of Manu are 5, 5, 2 in any order.
So, the total cases formed are-
Case I:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	5	1	2	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case II:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	5	3	2	4
Cricket	3	2	1	5	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case III:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	2	1	5	4
Table Tennis	1	5	3	2	4
Poker	3	1	5	2	4

Clearly, Anurag's rank in cricket is 3.

FeedBack

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

Six friends - Saral, Anurag, Shashank, Nitish, Manu and Vaibhav - went for a picnic. They played 4 games - pool, cricket, table tennis and poker - during the picnic. At the end, Saral ranked all the remaining five in all 4 games. He ranked them on a scale of 1 to 5 in each game and each friend got a distinct rank in any game. However some of them might get the same rank in different games. After the ranking was done, it was found that the sum of all the rankings of Anurag, Shashank, Nitish, Manu and Vaibhav were in an increasing Arithmetic progression, in the same order.

Also, it is known that
I. Vaibhav didn't get rank 5 in any game and Anurag didn't get rank 2 in any game.
II. All 4 rankings of Manu consisted of 2 different numbers.
III. Shashank got rank 1 in poker and Nitish got rank 1 in cricket.

Q.42
If Manu's rank in pool is 5, then what is his rank in cricket?

1 **2**

2 **3**

3 **5**

4 **Cannot be determined**

✔

Solution:
Correct Answer : 4
Your Answer : 4

Bookmark

Answer key/Solution

As Vaibhav didn't get rank 5 in any game so his total of all rankings cannot be more than 16. Also as the sum totals were in increasing AP, it could be 10, 11, 12, 13 and 14 or 8, 10, 12, 14 and 16.

Case 1: If the sum totals are 10, 11, 12, 13 and 14.

Here Manu's total is 13 and he has used only 2 numbers so 3 of the numbers must be similar and 1 number must be distinct (because 2 similar and 2 similar would result in an even sum). So his rankings can be (1, 4, 4, 4) or (3, 3, 3, 4). In case of 1, 4, 4, 4 Vaibhav's total cannot be 14 as he doesn't have 5 in any game.

So, the only possibility is Manu getting 3,3,3,4 and Vaibhav getting 4,4,4,2. Now no one else can have a rank of 4 in any game. As Anurag didn't get 2, his total of 10 can be formed by 1, 1, 3 and 5 only. As Shashank and Nitish have got rank 1 each in one of the games, no other person now can have a rank of 1 , 3 or 4. In this case to make Nitish's sum total 12 is impossible.

Case 2: If the sum totals are 8, 10, 12, 14 and 16.

Here Vaibhav's ranks must be 4 in all 4 games. A total of 14 for Manu can be achieved in 2 ways i.e. 3,3,3,5 or 2,2,5,5. Also Anurag's total of 8 can be formed by 1, 1, 1, 5 or 1, 1, 3, 3. But he cannot have rank 1 in 3 games as Shashank and Nitish both have rank 1 in one of the games. Hence his ranks must be 1, 1, 3, 3. Now, Manu's ranks too must be 2, 2, 5, 5 as he cannot have rank 3 in 3 games. A sum total of 12 for Nitish can be formed by 1, 3, 3, 5 only.

So, the final table looks like:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1		3		4
Cricket	3		1		4
Table tennis	1		3		4
Poker	3	1	5	2	4

The remaining ranks of Shashank are 2, 2, 5 and of Manu are 5, 5, 2 in any order.
So, the total cases formed are-
Case I:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	5	1	2	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case II:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	5	3	2	4
Cricket	3	2	1	5	4
Table Tennis	1	2	3	5	4
Poker	3	1	5	2	4

Case III:

	Anurag	Shashank	Nitish	Manu	Vaibhav
Pool	1	2	3	5	4
Cricket	3	2	1	5	4
Table Tennis	1	5	3	2	4
Poker	3	1	5	2	4

If Manu's rank in pool is 5, then according to case I and case III, his rank in cricket is either 2 or 5. Hence, cannot be determined.

FeedBack

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

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

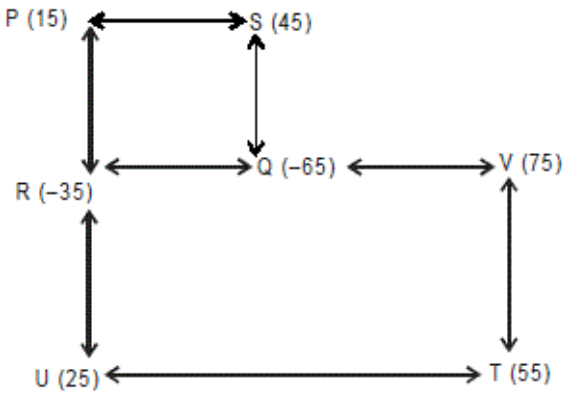
Q.43
What is the maximum possible amount (in rupees) that can be won by a player while moving the ball from point T to point R?

Solution:
Correct Answer : 90

Bookmark

Answer key/Solution

The network through which a ball can be moved is drawn below, where direction of arrows shows the direction of movement between any two points. The values in the brackets indicate the amount (in Rs.), won/lost, at these points:



Using the figure given above, the only possible routes from T to R and hence the amounts that can be won while moving from T to R are as follows:

- T — U — R → 55 + 25 – 35 = 45
- T — V — Q — R → 55 + 75 – 65 – 35 = 30
- T — V — Q — S — P — R → 55 + 75 – 65 + 45 + 15 – 35 = 90

∴ The maximum possible amount = Rs. 90, using path TVQSPR.

FeedBack

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

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.44
If the ball can be moved from Q to V and not from V to Q, and similarly from R to U and not from U to R, then what is the maximum possible amount (in rupees) that can be won by moving the ball starting from point P?

1 **135**

2 **150**

3 **90**

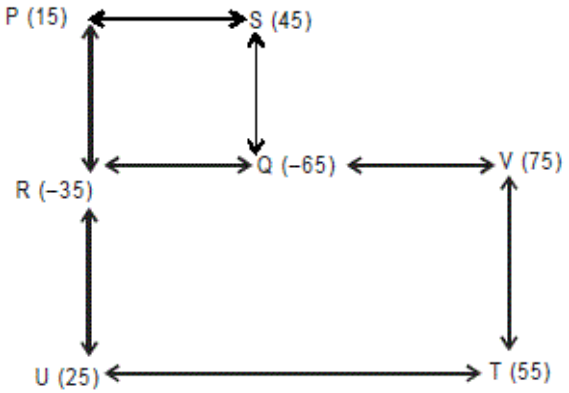
4 **155**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

The network through which a ball can be moved is drawn below, where direction of arrows shows the direction of movement between any two points. The values in the brackets indicate the amount (in Rs.), won/lost, at these points:



The possible routes starting from point P are:

- P — R — U — T — V → 15 – 35 + 25 + 55 + 75 = 135
- P — R — Q — V — T — U → 15 – 35 – 65 + 75 + 55 + 25 = 70
- P — R — Q — S → 15 – 35 – 65 + 45 = – 40
- P — S — Q — V — T — U → 15 + 45 – 65 + 75 + 55 + 25 = 150
- P — S — Q — R — U — T — V → 15 + 45 – 65 – 35 + 25 + 55 + 75 = 115

∴ The maximum amount that can be won starting from P = Rs. 150.

FeedBack

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

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.45

What is the maximum possible amount (in rupees) a player may lose by moving the ball, touching exactly 4 points?

1 **10**

2 **20**

3 **30**

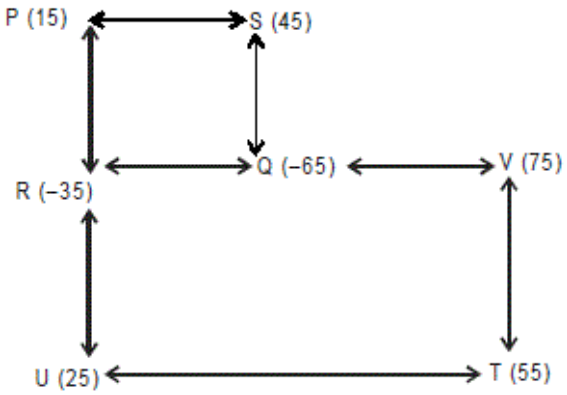
4 **40**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The network through which a ball can be moved is drawn below, where direction of arrows shows the direction of movement between any two points. The values in the brackets indicate the amount (in Rs.), won/lost, at these points:



For the maximum lose, one must tries to move the ball including both points R and Q, as both points carry negative amount. The possible ways in which a player can lose using exactly 4 points:

- V — Q — R — P → 75 – 65 – 35 + 15 = –10
- T — U — R — Q → 55 + 25 – 35 – 65 = –20
- U — R — Q — S → 25 – 35 – 65 + 45 = –30
- Q — S — P — R → –65 + 45 + 15 – 35 = –40

So, the maximum amount a player may lose = Rs. 40.

FeedBack

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

In a game called 'STRAIGHTUN' a ball can be moved in straight lines among seven points – P, Q, R, S, T, U, and V in the following manner:
The ball can be moved between the points: P and S, P and R, Q and R, Q and V, R and U, V and T, S and Q, T and U in either way. The ball cannot be moved between any two points directly other than those mentioned above. Each time one player is allowed to move the ball among these points, with the condition that the ball does not touch any point more than once. A player wins Rs. 15, Rs. 25, Rs. 45, Rs. 55 and Rs. 75 when the ball touches the points P, U, S, T and V respectively. A player loses Rs. 35 and Rs. 65 when the ball touches the points R and Q respectively.
At the beginning of the game, a player is given a starting point from where the ball has to be started and the end point where the ball has to be stopped. At the end of the game the player wins/loses the money which is the total amount that one wins/loses at each point which the ball touches, including the starting and ending points. A player tries to win the maximum possible amount while moving the ball between these points.

Q.46
In how many distinct ways can the ball be moved from point P to point T?

1 **0**

2 **1**

3 **2**

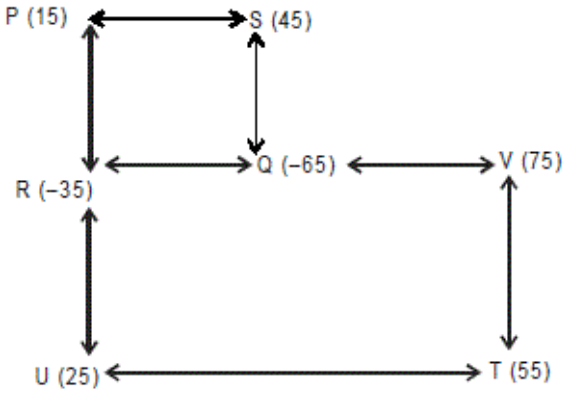
4 **more than 2**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The network through which a ball can be moved is drawn below, where direction of arrows shows the direction of movement between any two points. The values in the brackets indicate the amount (in Rs.), won/lost, at these points:



The distinct routes from P to T are:

- P — S — Q — V — T
- P — R — U — T
- P — R — Q — V — T
- P — S — Q — R — U — T

So, 4 ways are possible.

FeedBack

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

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
2. If both the teams have equal score, then penalty shootout needs to be done just to decide the winner but the goals scored during the penalty shootout won't be counted in the total goals scored by these teams.
Note: Total score of the team = Number of goals scored by that team

There were total three rounds in the Champions league, with each round being a knockout round. Four teams qualified for the second round.
Matches played in round 1 between the two groups are as follows:

Match 1: Liverpool vs Napoli
Match 2: Barcelona vs Bayern Munich
Match 3: Real Madrid vs Manchester city
Match 4: Juventus vs Ajax

In round 2, match 1 was played between the winners of match 1 and match 2 of round 1, and match 2 was played between the winners of match 3 and match 4 of round 1.
The following table gives the information regarding the total goals scored and goals conceded by the teams in the first two rounds:

Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
Liverpool	5	5
Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.47
How many goals were scored by the team, which lost the match 2 of round 2, in that match?

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

It is clearly mentioned that the table shows the total score of only round 1 and round 2. So, between the two teams who played against each other in round 1, the one having higher goals scored in the table must be the winner in round 1 of its respective match.
So, winner of match 1, 2, 3 and 4 in round 1 must be Liverpool, Barcelona, Real Madrid and Ajax respectively. Now the teams who lose in round 1 would not play in round 2 and hence for these teams the goals scored and conceded in round 1 equals to the data given in the table.

Also, if we consider match 1 of round 1, the number of goals scored by the losing team must be equal to the number of goals conceded by the winning team. Similarly the number of goals conceded by losing team must be same as the number of goals scored by the losing team. Using all these observations, we can form the following table.

Match-1	Liverpool* (3 | 2)	Napoli (2 | 3)
Match-2	Barcelona* (4 | 1)	Bayern Munich (1 | 4)
Match-3	Real Madrid (3 | 3)	Manchester city (3 | 3)
Match-4	Juventus (0 | 2)	Ajax* (2 | 0)

where (a | b) represented as (goals scored | goals conceded) and hence * marks the winning team.
It is clear from the above table that the only penalty shootout played was played in match-3, as both the teams had equal number of goals scored. But also from the given table it is clear that Real Madrid played in round 2 and hence must be the winner of round 1 or say the winner of the penalty shootout.

Now, the scores made by the winning team in round 2 must be as follows:

Liverpool,	Barcelona,	Real Madrid,	Ajax
(2 | 3)	(3 | 2)	(1 | 4)	(4 | 1)

Also, matches played in round 2 should be
Match-1: Liverpool v/s Barcelona*
Match-2: Real Madrid v/s Ajax*

From their goals scored in round 2, as written above, round-3 or the final must be played between Barcelona and Ajax.

Match-2 of round 2 was lost by the team Real Madrid by scoring 1 goal against 4 goals scored by the team Ajax.

FeedBack

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

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
2. If both the teams have equal score, then penalty shootout needs to be done just to decide the winner but the goals scored during the penalty shootout won't be counted in the total goals scored by these teams.
Note: Total score of the team = Number of goals scored by that team

There were total three rounds in the Champions league, with each round being a knockout round. Four teams qualified for the second round.
Matches played in round 1 between the two groups are as follows:

Match 1: Liverpool vs Napoli
Match 2: Barcelona vs Bayern Munich
Match 3: Real Madrid vs Manchester city
Match 4: Juventus vs Ajax

In round 2, match 1 was played between the winners of match 1 and match 2 of round 1, and match 2 was played between the winners of match 3 and match 4 of round 1.
The following table gives the information regarding the total goals scored and goals conceded by the teams in the first two rounds:

Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
Liverpool	5	5
Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.48
Which of the following teams was involved in the penalty shootout?

1 Ajax

2 Barcelona

3 Real Madrid

4 Liverpool

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

It is clearly mentioned that the table shows the total score of only round 1 and round 2. So, between the two teams who played against each other in round 1, the one having higher goals scored in the table must be the winner in round 1 of its respective match.
So, winner of match 1, 2, 3 and 4 in round 1 must be Liverpool, Barcelona, Real Madrid and Ajax respectively. Now the teams who lose in round 1 would not play in round 2 and hence for these teams the goals scored and conceded in round 1 equals to the data given in the table.

Also, if we consider match 1 of round 1, the number of goals scored by the losing team must be equal to the number of goals conceded by the winning team. Similarly the number of goals conceded by losing team must be same as the number of goals scored by the losing team. Using all these observations, we can form the following table.

Match-1	Liverpool* (3 | 2)	Napoli (2 | 3)
Match-2	Barcelona* (4 | 1)	Bayern Munich (1 | 4)
Match-3	Real Madrid (3 | 3)	Manchester city (3 | 3)
Match-4	Juventus (0 | 2)	Ajax* (2 | 0)

where (a | b) represented as (goals scored | goals conceded) and hence * marks the winning team.
It is clear from the above table that the only penalty shootout played was played in match-3, as both the teams had equal number of goals scored. But also from the given table it is clear that Real Madrid played in round 2 and hence must be the winner of round 1 or say the winner of the penalty shootout.

Now, the scores made by the winning team in round 2 must be as follows:

Liverpool,	Barcelona,	Real Madrid,	Ajax
(2 | 3)	(3 | 2)	(1 | 4)	(4 | 1)

Also, matches played in round 2 should be
Match-1: Liverpool v/s Barcelona*
Match-2: Real Madrid v/s Ajax*

From their goals scored in round 2, as written above, round-3 or the final must be played between Barcelona and Ajax.

The two teams involved in the penalty shootout was Real Madrid and Manchester city.

FeedBack

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

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
2. If both the teams have equal score, then penalty shootout needs to be done just to decide the winner but the goals scored during the penalty shootout won't be counted in the total goals scored by these teams.
Note: Total score of the team = Number of goals scored by that team

There were total three rounds in the Champions league, with each round being a knockout round. Four teams qualified for the second round.
Matches played in round 1 between the two groups are as follows:

Match 1: Liverpool vs Napoli
Match 2: Barcelona vs Bayern Munich
Match 3: Real Madrid vs Manchester city
Match 4: Juventus vs Ajax

In round 2, match 1 was played between the winners of match 1 and match 2 of round 1, and match 2 was played between the winners of match 3 and match 4 of round 1.
The following table gives the information regarding the total goals scored and goals conceded by the teams in the first two rounds:

Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
Liverpool	5	5
Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.49
Which two teams played the final round?

1 **Barcelona, Madrid**

2 **Liverpool, Ajax**

3 **Barcelona, Ajax**

4 **Liverpool, Madrid.**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

It is clearly mentioned that the table shows the total score of only round 1 and round 2. So, between the two teams who played against each other in round 1, the one having higher goals scored in the table must be the winner in round 1 of its respective match.
So, winner of match 1, 2, 3 and 4 in round 1 must be Liverpool, Barcelona, Real Madrid and Ajax respectively. Now the teams who lose in round 1 would not play in round 2 and hence for these teams the goals scored and conceded in round 1 equals to the data given in the table.

Also, if we consider match 1 of round 1, the number of goals scored by the losing team must be equal to the number of goals conceded by the winning team. Similarly the number of goals conceded by losing team must be same as the number of goals scored by the losing team. Using all these observations, we can form the following table.

Match-1	Liverpool* (3 | 2)	Napoli (2 | 3)
Match-2	Barcelona* (4 | 1)	Bayern Munich (1 | 4)
Match-3	Real Madrid (3 | 3)	Manchester city (3 | 3)
Match-4	Juventus (0 | 2)	Ajax* (2 | 0)

where (a | b) represented as (goals scored | goals conceded) and hence * marks the winning team.
It is clear from the above table that the only penalty shootout played was played in match-3, as both the teams had equal number of goals scored. But also from the given table it is clear that Real Madrid played in round 2 and hence must be the winner of round 1 or say the winner of the penalty shootout.

Now, the scores made by the winning team in round 2 must be as follows:

Liverpool,	Barcelona,	Real Madrid,	Ajax
(2 | 3)	(3 | 2)	(1 | 4)	(4 | 1)

Also, matches played in round 2 should be
Match-1: Liverpool v/s Barcelona*
Match-2: Real Madrid v/s Ajax*

From their goals scored in round 2, as written above, round-3 or the final must be played between Barcelona and Ajax.

The finale was played between Barcelona and Ajax.

FeedBack

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

In the 2018 edition of Champions league, eight teams participated - Liverpool, Barcelona, Real Madrid, Juventus, Ajax, Manchester City, Napoli and Bayern Munich. There were divided into two groups, where one group consisted of teams Liverpool, Barcelona, Real Madrid and Juventus, and the other group consisted of the remaining four teams. Each team of a group played one match against only one team of the other group. In order to qualify for the next round following rules had to be followed:
1. Team with a higher score wins the round.
2. If both the teams have equal score, then penalty shootout needs to be done just to decide the winner but the goals scored during the penalty shootout won't be counted in the total goals scored by these teams.
Note: Total score of the team = Number of goals scored by that team

There were total three rounds in the Champions league, with each round being a knockout round. Four teams qualified for the second round.
Matches played in round 1 between the two groups are as follows:

Match 1: Liverpool vs Napoli
Match 2: Barcelona vs Bayern Munich
Match 3: Real Madrid vs Manchester city
Match 4: Juventus vs Ajax

In round 2, match 1 was played between the winners of match 1 and match 2 of round 1, and match 2 was played between the winners of match 3 and match 4 of round 1.
The following table gives the information regarding the total goals scored and goals conceded by the teams in the first two rounds:

Teams	Goals Conceded (Goals scored by its opposite team)	Goals Scored
Liverpool	5	5
Napoli	3	2
Barcelona	3	7
Bayern Munich	4	1
Real Madrid	7	4
Manchester City	3	3
Juventus	2	0
Ajax	1	6

There was only one match where penalty shootout was played and this match was played in the 1st round.

Q.50
Total how many goals were scored in all the matches of the 1st round?

1 **22**

2 **17**

3 **20**

4 **18**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

It is clearly mentioned that the table shows the total score of only round 1 and round 2. So, between the two teams who played against each other in round 1, the one having higher goals scored in the table must be the winner in round 1 of its respective match.
So, winner of match 1, 2, 3 and 4 in round 1 must be Liverpool, Barcelona, Real Madrid and Ajax respectively. Now the teams who lose in round 1 would not play in round 2 and hence for these teams the goals scored and conceded in round 1 equals to the data given in the table.

Also, if we consider match 1 of round 1, the number of goals scored by the losing team must be equal to the number of goals conceded by the winning team. Similarly the number of goals conceded by losing team must be same as the number of goals scored by the losing team. Using all these observations, we can form the following table.

Match-1	Liverpool* (3 | 2)	Napoli (2 | 3)
Match-2	Barcelona* (4 | 1)	Bayern Munich (1 | 4)
Match-3	Real Madrid (3 | 3)	Manchester city (3 | 3)
Match-4	Juventus (0 | 2)	Ajax* (2 | 0)

where (a | b) represented as (goals scored | goals conceded) and hence * marks the winning team.
It is clear from the above table that the only penalty shootout played was played in match-3, as both the teams had equal number of goals scored. But also from the given table it is clear that Real Madrid played in round 2 and hence must be the winner of round 1 or say the winner of the penalty shootout.

Now, the scores made by the winning team in round 2 must be as follows:

Liverpool,	Barcelona,	Real Madrid,	Ajax
(2 | 3)	(3 | 2)	(1 | 4)	(4 | 1)

Also, matches played in round 2 should be
Match-1: Liverpool v/s Barcelona*
Match-2: Real Madrid v/s Ajax*

From their goals scored in round 2, as written above, round-3 or the final must be played between Barcelona and Ajax.

Total goals scored in round-1are
3 + 2 + 4 + 1 + 3 + 3 + 0 + 2 = 18.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.51

What is the total time (in minutes) taken by Akanksha to cook all the dishes?

1 **85**

2 **80**

3 **70**

4 **75**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Mrs. Akanksha opened her oven for 7 times in such a way that all six food items are cooked perfectly in the exact required time. As oven get opened for 7 times it means there were 6 intervals of cooking in the oven between every time it was opened. Let the time between 1st time and 2nd time the oven opened is denoted by 'I', between the 2nd time and 3rd time be denoted by 'II' and so on till 'VI' which denotes the time interval between the 6th and the 7th time. All the cooking has been done till then. Now, Haggis was placed first in the oven and cooked up by the time she opened the oven for the forth time. So from 1st to 4th time it took exactly 44 minutes, so I + II + III = 44 .... (i)
Scotch eggs was cooked up by the time oven opened for fifth time, so I + II + III + IV = 52 ... (ii)
Similarly for the remaining four food items, we can make the following equation:
II + III = 37; ...(iii)
III + IV = 25; ...(iv)
IV + V = 26; ...(v)
V + VI = 28. ...(vi)
Using (i) and (iii), I = 7 minutes
Using (i) and (ii), IV = 8 minutes
Using (iv) and value of IV, III = 17 minutes
Using (i), value of I and III, II = 20 minutes
Using (v) and value of IV, V = 18 minutes
Using (vi) and value of V, VI = 10 minutes

The total time taken to cook up all the dishes = I + II + III + IV + V + VI = 7 + 20 + 17 + 8 + 18 + 10 = 80 minutes.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.52

For how many minutes Offal and White pudding were together in the oven?

1 **8**

2 **10**

3 **12**

4 **6**

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

Mrs. Akanksha opened her oven for 7 times in such a way that all six food items are cooked perfectly in the exact required time. As oven get opened for 7 times it means there were 6 intervals of cooking in the oven between every time it was opened. Let the time between 1st time and 2nd time the oven opened is denoted by 'I', between the 2nd time and 3rd time be denoted by 'II' and so on till 'VI' which denotes the time interval between the 6th and the 7th time. All the cooking has been done till then. Now, Haggis was placed first in the oven and cooked up by the time she opened the oven for the forth time. So from 1st to 4th time it took exactly 44 minutes, so I + II + III = 44 .... (i)
Scotch eggs was cooked up by the time oven opened for fifth time, so I + II + III + IV = 52 ... (ii)
Similarly for the remaining four food items, we can make the following equation:
II + III = 37; ...(iii)
III + IV = 25; ...(iv)
IV + V = 26; ...(v)
V + VI = 28. ...(vi)
Using (i) and (iii), I = 7 minutes
Using (i) and (ii), IV = 8 minutes
Using (iv) and value of IV, III = 17 minutes
Using (i), value of I and III, II = 20 minutes
Using (v) and value of IV, V = 18 minutes
Using (vi) and value of V, VI = 10 minutes

White pudding was placed in the oven at 3rd time and took out at 5th while Offal was placed at 4th and took out at 5th. So, the interval between the 4th and the 5th time oven get opened i.e for interval 'IV', Offal and White pudding were together in the oven. Hence, the required time = 8 minutes.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.53

For how many minutes exactly two dishes were there in the oven?

1 **33**

2 **18**

3 **25**

4 **20**

✖

Solution:
Correct Answer : 3
Your Answer : 2

Bookmark

Answer key/Solution

Mrs. Akanksha opened her oven for 7 times in such a way that all six food items are cooked perfectly in the exact required time.
As oven get opened for 7 times it means there were 6 intervals of cooking in the oven between every time it was opened.
Let the time between 1st time and 2nd time the oven opened is denoted by 'I', between the 2nd time and 3rd time be denoted by 'II' and so on till 'VI' which denotes the time interval between the 6th and the 7th time. All the cooking has been done till then.
Now, Haggis was placed first in the oven and cooked up by the time she opened the oven for the forth time. So from 1st to 4th time it took exactly 44 minutes, so I + II + III = 44 .... (i)
Scotch eggs was cooked up by the time oven opened for fifth time, so I + II + III + IV = 52 ... (ii)
Similarly for the remaining four food items, we can make the following equation:
II + III = 37; ...(iii)
III + IV = 25; ...(iv)
IV + V = 26; ...(v)
V + VI = 28. ...(vi)
Using (i) and (iii), I = 7 minutes
Using (i) and (ii), IV = 8 minutes
Using (iv) and value of IV, III = 17 minutes
Using (i), value of I and III, II = 20 minutes
Using (v) and value of IV, V = 18 minutes
Using (vi) and value of V, VI = 10 minutes

During I, Haggis and Scotch eggs were in the oven.
During V, Offal and Black pudding were in the oven.
And no other time was possible when exactly two dishes were in the oven.
So, the required time = I + V = 7 + 18 = 25 minutes.

FeedBack

Directions for questions 51 to 54: Answer the questions on the basis of the information given below.

Mrs. Akanksha is having a busy day as some guests are arriving at her place for lunch. She decided to cook six different dishes for the guests. The dishes she decided for the meal are Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs. She decided to use her large sized oven so that she can manage to cook all the dishes on time. Further each dish has a fixed cooking time as per the recipe book she is following. That cooking time (in minutes) for Haggis, Offal, Black pudding, White pudding, Trifle, and Scotch eggs are 44, 26, 28, 25, 37 and 52 respectively. It is known that she opens the oven for seven times. Everytime she opened the oven, she either placed some dishes in it or took out the cooked dishes from it or both. The order she followed to place or take out the dishes is given in the following table. She started her cooking at 11 am.

Oven Opened	Dish placed in	Dish cooked out
1st Time	Haggis, Scotch eggs	
2nd time	Trifle	
3rd Time	White pudding	
4th Time	Offal	Haggis, Trifle
5th Time	Black pudding	White pudding, Scotch eggs
6th Time		Offal
7th Time		Black pudding

Q.54

If Akanksha decides to cook Steak and Kidney Pie also, whose cooking time is 36 minutes, then when must she place it in the oven so that she does not need to open the oven for extra time?

1 **1st time**

2 **2nd time**

3 **3rd time**

4 **4th time**

Solution:
Correct Answer : 4
Your Answer : 3

Bookmark

Answer key/Solution

Mrs. Akanksha opened her oven for 7 times in such a way that all six food items are cooked perfectly in the exact required time. As oven get opened for 7 times it means there were 6 intervals of cooking in the oven between every time it was opened. Let the time between 1st time and 2nd time the oven opened is denoted by 'I', between the 2nd time and 3rd time be denoted by 'II' and so on till 'VI' which denotes the time interval between the 6th and the 7th time. All the cooking has been done till then. Now, Haggis was placed first in the oven and cooked up by the time she opened the oven for the forth time. So from 1st to 4th time it took exactly 44 minutes, so I + II + III = 44 .... (i)
Scotch eggs was cooked up by the time oven opened for fifth time, so I + II + III + IV = 52 ... (ii)
Similarly for the remaining four food items, we can make the following equation:
II + III = 37; ...(iii)
III + IV = 25; ...(iv)
IV + V = 26; ...(v)
V + VI = 28. ...(vi)
Using (i) and (iii), I = 7 minutes
Using (i) and (ii), IV = 8 minutes
Using (iv) and value of IV, III = 17 minutes
Using (i), value of I and III, II = 20 minutes
Using (v) and value of IV, V = 18 minutes
Using (vi) and value of V, VI = 10 minutes

Total cooking time for Steak and Kidney Pie is 36 minutes and she wants to cook it in such a way that she need not open the oven for extra time except those given 7 times, so the intervals which gives a total of exact 36 minutes would have solved the purpose. Now, sum of IV, V and VI is exactly 36 minutes. Hence, if she placed Steak and Kidney Pie at the 4th time she opened the oven, she would have cooked it perfectly.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.
• One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.
• Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.
• Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.
• The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.
• Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.
• Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.
• Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.

Q.55

Who likes cooking?

1 **Chiya**

2 **Boby**

3 **Jaadu**

4 **Cannot be determined**

Solution:

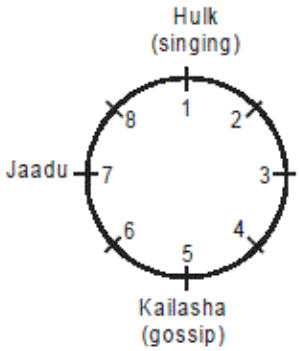
Correct Answer : 4

Bookmark

Answer key/Solution

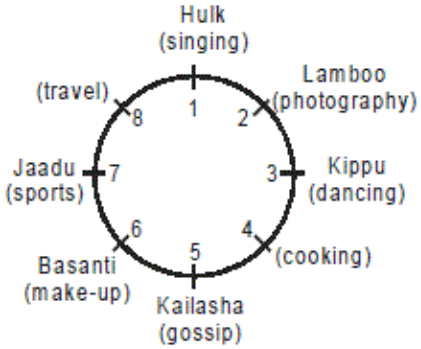
On the basis of the statements I, II, III & VII, we can conclude the following.

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo	×
1st	Boby		



From statement IV and V, Lamboo sits with the one who likes dancing. The friend who likes cooking can only be placed at seat 3 or 4, away from Lamboo. Therefore the only way to arrange this is to place the person who likes cooking at seat 4, the person who likes dancing at seat 3 and Lamboo at seat 2.
Using statement I and VII, it can be concluded that Basanti likes makeup and is sitting at seat 6.
Since Jaadu does not like dancing or photography and cannot like singing, cooking, gossip, travel or makeup, he must like sports.
From statement II and III, Lamboo cannot stay with Jaadu and Jaadu shares the floor with the one who likes to travel, hence Lamboo does not like to travel. He must like photography.
So, the arrangement till now is:

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby		

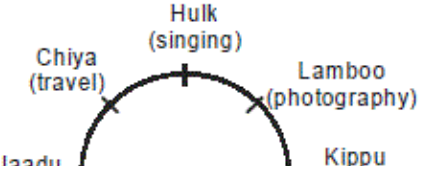


Now, two possible cases arise, i.e. when Jaadu lives in the 3rd floor or in the 1st floor.

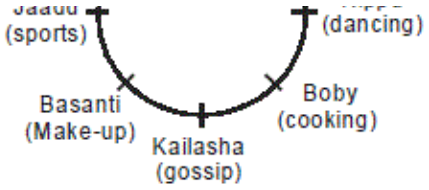
Case I: Jaadu lives on the 3rd floor

Using statement VI and II, Boby and Chiya occupy 4th/8th seat and it can be uniquely determined that Boby likes cooking and Chiya will stay with Jaadu.
Hence, Kippu and Basanti will stay on the 1st floor.
So, the final arrangement will look like:

Floor			
3rd	Kailasha (gossip)	Jaadu (sports)	Chiya (travel)
2nd	Hulk	Lamboo	



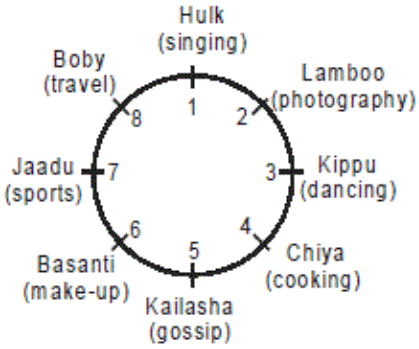
2nd	(singing)	(photography)	×
1st	Boby (cooking)	Basanti (make-up)	Kippu (dancing)



Case II: Jaadu lives on the 1st floor:

Using statement VI and IV it can be understood that Boby and Chiya occupy seat 4 and 8. Since Boby lives on the first floor, he likes to travel. Chiya stays on the 3rd floor and likes cooking.
Now among Kippu and Basanti, one lives on the 1st floor and the other on the 3rd floor.
So, now the arrangement will look like:

Floor			
3rd	Kailasha (gossip)	Chiya (cooking)	Kippu/ Basanti
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby (travel)	Jaadu (sports)	Basanti/ Kippu



If Jaadu lives on the 3rd floor, Boby likes cooking. But if Jaadu lives on the 1st floor, Chiya likes cooking. Therefore, it cannot be uniquely determined who likes cooking.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.

• One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.

• Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.

• Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.

• The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.

• Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.

• Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.

• Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.

Q.56

If Jaadu lives on the 3rd floor, then on which floor did Kippu live?

1 **1st**

2 **2nd**

3 **3rd**

4 **Cannot be determined**

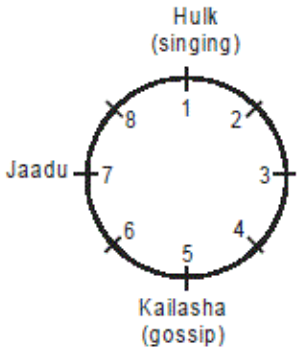
Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

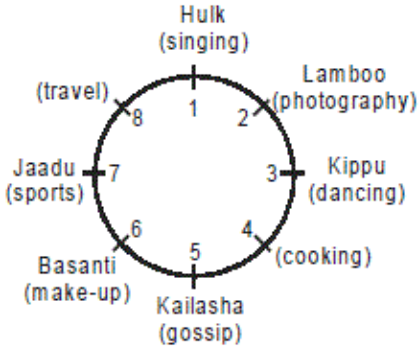
On the basis of the statements I, II, III & VII, we can conclude the following.

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo	×
1st	Boby		



From statement IV and V, Lamboo sits with the one who likes dancing. The friend who likes cooking can only be placed at seat 3 or 4, away from Lamboo. Therefore the only way to arrange this is to place the person who likes cooking at seat 4, the person who likes dancing at seat 3 and Lamboo at seat 2.
Using statement I and VII, it can be concluded that Basanti likes makeup and is sitting at seat 6.
Since Jaadu does not like dancing or photography and cannot like singing, cooking, gossip, travel or makeup, he must like sports.
From statement II and III, Lamboo cannot stay with Jaadu and Jaadu shares the floor with the one who likes to travel, hence Lamboo does not like to travel. He must like photography.
So, the arrangement till now is:

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby		

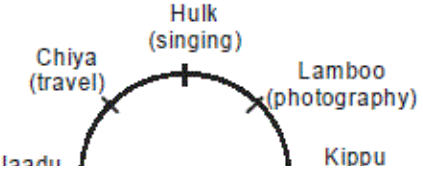


Now, two possible cases arise, i.e. when Jaadu lives in the 3rd floor or in the 1st floor.

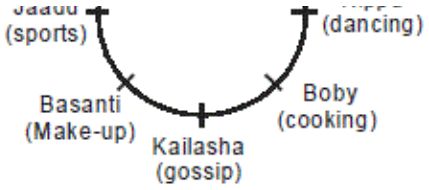
Case I: Jaadu lives on the 3rd floor

Using statement VI and II, Boby and Chiya occupy 4th/8th seat and it can be uniquely determined that Boby likes cooking and Chiya will stay with Jaadu.
Hence, Kippu and Basanti will stay on the 1st floor.
So, the final arrangement will look like:

Floor			
3rd	Kailasha (gossip)	Jaadu (sports)	Chiya (travel)
2nd	Hulk	Lamboo	



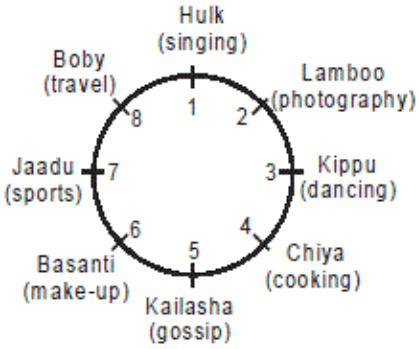
2nd	(singing)	(photography)	×
1st	Boby (cooking)	Basanti (make-up)	Kippu (dancing)



Case II: Jaadu lives on the 1st floor:

Using statement VI and IV it can be understood that Boby and Chiya occupy seat 4 and 8. Since Boby lives on the first floor, he likes to travel. Chiya stays on the 3rd floor and likes cooking.
Now among Kippu and Basanti, one lives on the 1st floor and the other on the 3rd floor.
So, now the arrangement will look like:

Floor			
3rd	Kailasha (gossip)	Chiya (cooking)	Kippu/ Basanti
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby (travel)	Jaadu (sports)	Basanti/ Kippu



In case-I, when Jaadu lives on the 3rd floor, it can be clearly seen that Kippu lives on the 1st floor.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.
• One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.
• Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.
• Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.
• The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.
• Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.
• Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.
• Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.

Q.57

If Jaadu lives on the 1st floor, then who among the following definitely lives on the 3rd floor?

1 **Kippu**

2 **Basanti**

3 **Chiya**

4 **Lamboo**

✔

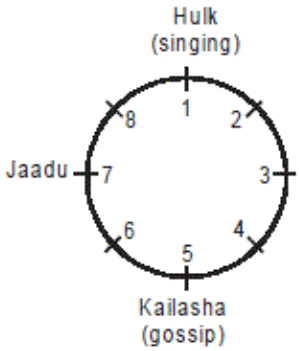
Solution:
Correct Answer : 3
Your Answer : 3

Bookmark

Answer key/Solution

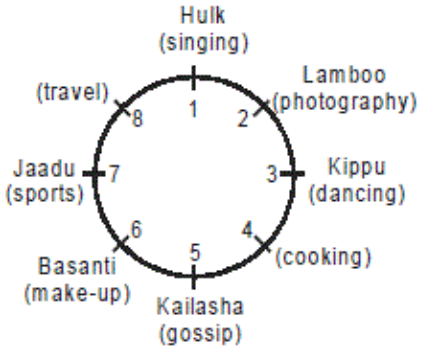
On the basis of the statements I, II, III & VII, we can conclude the following.

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo	×
1st	Boby		



From statement IV and V, Lamboo sits with the one who likes dancing. The friend who likes cooking can only be placed at seat 3 or 4, away from Lamboo. Therefore the only way to arrange this is to place the person who likes cooking at seat 4, the person who likes dancing at seat 3 and Lamboo at seat 2.
Using statement I and VII, it can be concluded that Basanti likes makeup and is sitting at seat 6.
Since Jaadu does not like dancing or photography and cannot like singing, cooking, gossip, travel or makeup, he must like sports.
From statement II and III, Lamboo cannot stay with Jaadu and Jaadu shares the floor with the one who likes to travel, hence Lamboo does not like to travel. He must like photography.
So, the arrangement till now is:

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby		

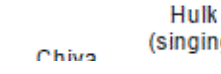


Now, two possible cases arise, i.e. when Jaadu lives in the 3rd floor or in the 1st floor.

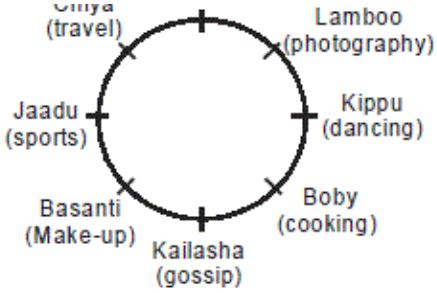
Case I: Jaadu lives on the 3rd floor

Using statement VI and II, Boby and Chiya occupy 4th/8th seat and it can be uniquely determined that Boby likes cooking and Chiya will stay with Jaadu.
Hence, Kippu and Basanti will stay on the 1st floor.
So, the final arrangement will look like:

Floor			



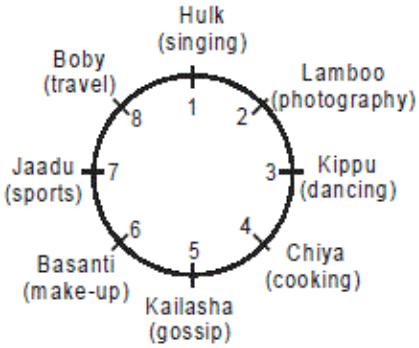
3rd	Kailasha (gossip)	Jaadu (sports)	Chiya (travel)
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby (cooking)	Basanti (make-up)	Kippu (dancing)



Case II: Jaadu lives on the 1st floor:

Using statement VI and IV it can be understood that Boby and Chiya occupy seat 4 and 8. Since Boby lives on the first floor, he likes to travel. Chiya stays on the 3rd floor and likes cooking.
Now among Kippu and Basanti, one lives on the 1st floor and the other on the 3rd floor.
So, now the arrangement will look like:

Floor			
3rd	Kailasha (gossip)	Chiya (cooking)	Kippu/ Basanti
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby (travel)	Jaadu (sports)	Basanti/ Kippu



In case-II, when Jaadu lives on the 1st floor, Chiya will have to stay on the third floor.

FeedBack

Directions for questions 55 to 58: Answer the questions on the basis of the information given below.

Eight friends – Jaadu, Basanti, Hulk, Kailasha, Boby, Lamboo, Kippu and Chiya - are sitting at a circular table, facing towards the center. Each of them has a distinct hobby among - gossiping, make-up, sports, photography, cooking, traveling, dancing and singing - not necessarily in the same order. They live in same building, having three floors. Not more than three friends are living on the same floor. The floors in the building are numbered from bottom to top i.e, the bottom most floor is numbered as 1st and the topmost as 3rd.

• One of the friends sitting adjacent to Kailasha, who likes gossiping and lives on the 3rd floor, likes makeup.

• Jaadu is sitting second to the left of Kailasha and shares the floor in the building with the one who likes to travel.

• Lamboo does not share the floor with anyone except Hulk, who likes singing and is sitting opposite to Kailasha.

• The one who likes cooking neither sits nor shares the floor with Jaadu and the one who likes singing.

• Lamboo and the one who likes dancing sit together but Lamboo is not sitting with the one who likes cooking or gossip.

• Jaadu does not like dancing or photography. Boby is sitting opposite to Chiya but he does not live on the 3rd floor.

• Hulk lives on the 2nd floor and only two people are sitting between him and Basanti.

Q.58

How many friends are sitting between Hulk and Basanti, when counted clockwise from Hulk?

1 **3**

2 **4**

3 **2**

4 **5**

✖

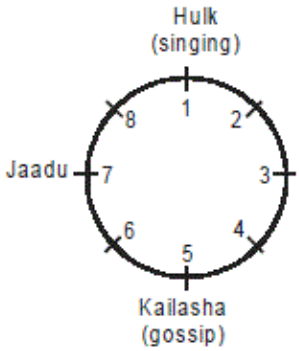
Solution:
Correct Answer : 2
Your Answer : 3

Bookmark

Answer key/Solution

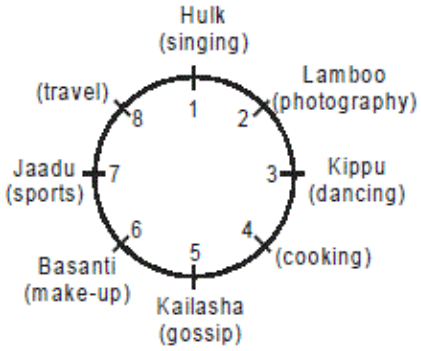
On the basis of the statements I, II, III & VII, we can conclude the following.

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo	×
1st	Boby		



From statement IV and V, Lamboo sits with the one who likes dancing. The friend who likes cooking can only be placed at seat 3 or 4, away from Lamboo. Therefore the only way to arrange this is to place the person who likes cooking at seat 4, the person who likes dancing at seat 3 and Lamboo at seat 2.
Using statement I and VII, it can be concluded that Basanti likes makeup and is sitting at seat 6.
Since Jaadu does not like dancing or photography and cannot like singing, cooking, gossip, travel or makeup, he must like sports.
From statement II and III, Lamboo cannot stay with Jaadu and Jaadu shares the floor with the one who likes to travel, hence Lamboo does not like to travel. He must like photography.
So, the arrangement till now is:

Floor			
3rd	Kailasha (gossip)		
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby		



Now, two possible cases arise, i.e. when Jaadu lives in the 3rd floor or in the 1st floor.

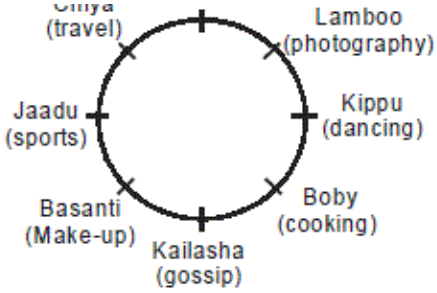
Case I: Jaadu lives on the 3rd floor

Using statement VI and II, Boby and Chiya occupy 4th/8th seat and it can be uniquely determined that Boby likes cooking and Chiya will stay with Jaadu.
Hence, Kippu and Basanti will stay on the 1st floor.
So, the final arrangement will look like:

Floor			

Hulk
(singing)
Chiya

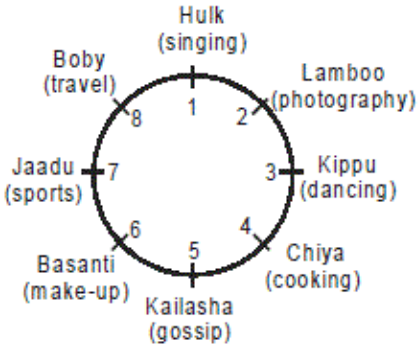
3rd	Kailasha (gossip)	Jaadu (sports)	Chiya (travel)
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby (cooking)	Basanti (make-up)	Kippu (dancing)



Case II: Jaadu lives on the 1st floor:

Using statement VI and IV it can be understood that Boby and Chiya occupy seat 4 and 8. Since Boby lives on the first floor, he likes to travel. Chiya stays on the 3rd floor and likes cooking.
Now among Kippu and Basanti, one lives on the 1st floor and the other on the 3rd floor.
So, now the arrangement will look like:

Floor			
3rd	Kailasha (gossip)	Chiya (cooking)	Kippu/ Basanti
2nd	Hulk (singing)	Lamboo (photography)	×
1st	Boby (travel)	Jaadu (sports)	Basanti/ Kippu



4 friends sit between Hulk and Basanti when counted clockwise from Hulk.

FeedBack

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

	Parameters				
Ratings	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.59

Find the maximum possible number of employees who have received same rating in all 5 parameters.

1 **68**

2 **78**

3 **60**

4 **80**

✔

Solution:
Correct Answer : 2
Your Answer : 2

Bookmark

Answer key/Solution

	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17
0	22	10	19	11	15

We need to find the maximum number of employees who have received the same rating in all 5 parameters.
We can see the minimum number is 14 in 1st row. i.e. maximum 14 employees can get rating of 5 in all parameters.
Similarly, for rating 4, it is 12.
Similarly, for rating 3, it is 13.
Similarly, for rating 2, it is 14.
Similarly, for rating 1, it is 15.
Similarly, for rating 0, it is 10.
So, total number of employees = 14 + 12 + 13 + 14 + 15 + 10 = 78.

FeedBack

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

Ratings \ Parameters	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.60

Which of the following can be the maximum number of employees who have received rating of 3 in exactly 4 parameters?

1 **17**

2 **16**

3 **13**

4 **14**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17
0	22	10	19	11	15

Number of employees, who got a rating of 3 in different parameters are:
R 13
O 16
O 17
H 22
I 24
Now, we can see maximum 16 employees can be common in exactly 4 parameters i.e O, O, H and I.

R 13 → 13
O 16 → 0
O 17 → 1
H 22 → 6
I 24 → 8

After taking out 16, common, 1 more employee can be taken out as common to R, O, H and I, parameters.

R 13 → 12
O 0 → 0
O 1 → 0
H 6 → 5
I 8 → 7

So, total number of required employees = 16 + 1 = 17

FeedBack

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

Ratings \ Parameters	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.61

If S is the total number of employees who received rating of 2 or more than 2 and 4 or less than 4 i.e. 2 ≤ rating ≤ 4, in each parameter, then the value of S can be

1 **49**

2 **41**

3 **78**

4 **65**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17
0	22	10	19	11	15

Total employees receiving rating of 2, 3 and 4 in
R → 14 + 13 + 14 = 41
O → 18 + 16 + 23 = 57
O → 14 + 17 + 18 = 49
H → 20 + 22 + 14 = 56
I → 18 + 24 + 12 = 54
So, here 41 is a value that could be common to all parameters.

FeedBack

Directions for questions 59 to 62: Answer the questions on the basis of the information given below.

Hundred CL employees, during the appraisal period, have been given ratings from 0 to 5, on five parameters i.e. R – Risk taking, O – Openness, O – Ownership, H – Honesty, I – Innovation, of their core values. The table given below provides the number of employees who were given rating from 1 to 5 in each parameter.

Parameters

Ratings	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17

Q.62
Find the minimum number of employees who received rating of 2 or more than 2 and 4 or less than 4, in at least 2 parameters.

1 **37**

2 **38**

3 **39**

4 **40**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

	R	O	O	H	I
5	15	18	16	15	14
4	14	23	18	14	12
3	13	16	17	22	24
2	14	18	14	20	18
1	22	15	16	18	17
0	22	10	19	11	15

The number of employees who got rating of 5 in parameters: R, O, O, H and I are 15, 18, 16, 15 and 14 respectively.
So total number of employees who got rating of 5 = 15 + 18 + 16 + 15 + 14 = 78.
Similarly, the total number of employees who got rating of 4 = 14 + 23 + 18 + 14 + 12 = 81
Those who got rating of 3 = 13 + 16 + 17 + 22 + 24 = 92
Those who got rating of 2 = 14 + 18 + 14 + 20 + 18 = 84
Those who got rating of 1 = 22 + 15 + 16 + 18 + 17 = 88
Those who got rating of 0 = 22 + 10 + 19 + 11 + 15 = 77
So, the total sum of those having rating of 0, 1 and 5 = 77 + 88 + 78 = 243
Now, in order to find the minimum number of employees who received rating of 2, 3 and 4 in atleast two parameters, we will give 0, 1 and 5 ratings in the four parameters out of five and rating of 2, 3 and 4 in the remaining one parameter to an employee.

$\therefore \frac{243}{4}$ will give the quotient as 60.

That means total 60 employees will be there who had rating of 2, 3 and 4 in one parameter and 0, 1 and 5 in the other four parameters.
Since total employees in CL = 100, hence, 100 – 60 = 40 is the minimum number of employees who received rating of 2, 3 and 4 in at least 2 parameters.

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.63
If B and F are in the same column, then for how many people will it not be possible to determine the colour of their shirt?

1 **1**

2 **2**

3 **3**

4 **0**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

From 1st, 2nd and 4th statements, we can conclude that I, G and E are in the 2nd column wearing white coloured shirt and in the 1st, 4th and 5th standard respectively. From statements 2nd and 5th, we can conclude that B, O and N are in the 2nd standard. Also A is in 1st standard C is in 3rd standard also not wearing a white coloured shirt.

From 6th and 7th statements, we can conclude that D, H and O are wearing saffron coloured shirt and they are in the 4th, 3rd and 2nd standard respectively. We can also conclude from this that C will be wearing the green coloured shirt.

We can also conclude from this that J will be wearing green coloured shirt and is in the 1st standard and L will be in the 4th standard.

Hence, the final table is

	Saffron	White	Green
1st	A	I	J
2nd	O	B/N	N/B
3rd	H	M	C
4th	D	G	L
5th	K/F	E	F/K

↑ North

Clearly, if B and F are in the same column, then we can uniquely determine the colour of the shirt of each student. Hence answer is zero.

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.64

For how many students is it possible to uniquely determine the colour of the shirt they are wearing?

1 **11**

2 **13**

3 **10**

4 **12**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

From 1st, 2nd and 4th statements, we can conclude that I, G and E are in the 2nd column wearing white coloured shirt and in the 1st, 4th and 5th standard respectively. From statements 2nd and 5th, we can conclude that B, O and N are in the 2nd standard. Also A is in 1st standard C is in 3rd standard also not wearing a white coloured shirt.

From 6th and 7th statements, we can conclude that D, H and O are wearing saffron coloured shirt and they are in the 4th, 3rd and 2nd standard respectively. We can also conclude from this that C will be wearing the green coloured shirt.

We can also conclude from this that J will be wearing green coloured shirt and is in the 1st standard and L will be in the 4th standard.

Hence, the final table is

	Saffron	White	Green
1st	A	I	J
2nd	O	B/N	N/B
3rd	H	M	C
4th	D	G	L
5th	K/F	E	F/K

↑ North

Except, B, N, K and F, we can uniquely determine the colour of the shirt of remaining 11 students given in the table.

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.65
How many possible combinations are there in which students can be arranged?

1 **8**

2 **6**

3 **4**

4 **9**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

From 1st, 2nd and 4th statements, we can conclude that I, G and E are in the 2nd column wearing white coloured shirt and in the 1st, 4th and 5th standard respectively. From statements 2nd and 5th, we can conclude that B, O and N are in the 2nd standard. Also A is in 1st standard C is in 3rd standard also not wearing a white coloured shirt.

From 6th and 7th statements, we can conclude that D, H and O are wearing saffron coloured shirt and they are in the 4th, 3rd and 2nd standard respectively. We can also conclude from this that C will be wearing the green coloured shirt.

We can also conclude from this that J will be wearing green coloured shirt and is in the 1st standard and L will be in the 4th standard.

Hence, the final table is

	Saffron	White	Green
1st	A	I	J
2nd	O	B/N	N/B
3rd	H	M	C
4th	D	G	L
5th	K/F	E	F/K

↑ North

There are total 4 possible combinations.

	Saffron	White	Green
lst	A	I	J
2nd	O	B	N
3rd	H	M	C
4th	D	G	L
5th	K/F	E	F/K

	Saffron	White	Green
lst	A	I	J
2nd	O	N	B
3rd	H	M	C
4th	D	G	L
5th	K/F	E	F/K

FeedBack

Directions for questions 63 to 66: Answer the questions on the basis of the information given below.

Fifteen students from A to O have been selected from 5 standards - 1st, 2nd, 3rd, 4th and 5th - of a school, with 3 students selected from each standard, to lead for the Republic day parade. Every student from a standard has to wear a shirt of distinct colour among Saffron, White and Green, to form a Tri-colour. Further, all the students were arranged in five rows and three columns. Each row has the students of the same standard whereas each column has the students wearing same coloured shirt. All the students are facing North and rows are numbered as 1 to 5 from North to South. All of them are standing in such a way that their row number is same as their standard i.e, all students from 1st standard are standing in row 1, students from 2nd standard are standing in row 2 and so on.
Further, some additional information is also known.
1. A is in the 1st standard and G is wearing a white coloured shirt.
2. D and G are in the same row and G is immediately ahead of E.
3. C is in the 3rd standard and he is not in the same row or column as of E.
4. There are three people standing between E and I. Also K and F share the same row with E.
5. B, O and N are in the same row.
6. L is wearing a green coloured shirt and is standing behind J.
7. D, H and O are standing in the same column at three consecutive positions, not necessarily in that order.

Q.66
Who among the following students is definitely wearing a green coloured shirt?

1 **B**

2 **C**

3 **N**

4 **F**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

From 1st, 2nd and 4th statements, we can conclude that I, G and E are in the 2nd column wearing white coloured shirt and in the 1st, 4th and 5th standard respectively. From statements 2nd and 5th, we can conclude that B, O and N are in the 2nd standard. Also A is in 1st standard C is in 3rd standard also not wearing a white coloured shirt.

From 6th and 7th statements, we can conclude that D, H and O are wearing saffron coloured shirt and they are in the 4th, 3rd and 2nd standard respectively. We can also conclude from this that C will be wearing the green coloured shirt.

We can also conclude from this that J will be wearing green coloured shirt and is in the 1st standard and L will be in the 4th standard.

Hence, the final table is

	Saffron	White	Green
1st	A	I	J
2nd	O	B/N	N/B
3rd	H	M	C
4th	D	G	L
5th	K/F	E	F/K

↑ North

Among the given options, C is definitely wearing a green coloured shirt.

FeedBack

Sec 3

Q.67

If 'm' Harmonic Means are inserted between a and b, where 'm' is a root of the equation $(1 - ab)x^2 - (a^2 + b^2)x - (1 + ab) = 0$, then the difference between the last and the first Harmonic means is

1 **(b – a)**

2 **ab(b – a)**

3 **a(b – a)**

4 **ab(a – b)**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As m is the root of the given equation, $(1 - ab)x^2 - (a^2 + b^2)x - (1 + ab) = 0$
It must satisfies the equation $\Rightarrow m(a^2 + b^2) + (m^2 + 1)ab = m^2 - 1$ ...(i)
Let us assume $H_1, H_2, ..., H_m$ be the m Harmonic means inserted between a and b.
This implies a, $H_1, H_2, ..., H_m$, b are in H.P.

Hence, $\frac{1}{a}, \frac{1}{H_1}, \frac{1}{H_2}, ..., \frac{1}{H_m}, \frac{1}{b}$ are in AP with common difference = $\frac{\frac{1}{b} - \frac{1}{a}}{m+1}$

So H_1 = first HM between a and $b = \frac{(m+1)ab}{a+mb}$ and

H_m = last HM between a and $b = \frac{(m+1)ab}{b+ma}$

$H_m - H_1 = (m+1)ab\left[\frac{1}{b+ma} - \frac{1}{a+mb}\right]$

$= (m+1)ab\frac{(m-1)(b-a)}{(b+ma)(a+mb)} = \frac{(m^2-1)ab(b-a)}{m(a^2+b^2)+(m^2+1)ab}$

Using (i), $H_m - H_1 = \frac{(m^2-1)ab(b-a)}{(m^2-1)} = ab(b-a)$.

FeedBack

Q.68

A container contains 160 ml solution of ethanol, H_2SO_4 and water such that their respective volumes are in an Arithmetic Progression, in that order. Later 100ml of H_2SO_4 and water solution is added to that container, so that the volume of the three liquids still remains in an A.P. with same order. Find the percentage of the H_2SO_4 in the solution that was added.

1 **16.67 %**

2 **33.33%**

3 **50%**

4 **75%**

Solution:
Correct Answer : 2
Your Answer : 2

Bookmark

Answer key/Solution

Let the volume of ethanol, H_2SO_4 and water initially be (a – d), a, and (a + d) ml respectively.
Let the concentration of later added acid solution be p%. Therefore, 100 ml of H_2SO_4 acid solution has 'p' ml H_2SO_4 and '100 – p' ml of water.
Now when H_2SO_4 acid solution is added to the container, then the volume of ethanol, H_2SO_4 and water will become 'a – d', 'a + p' ,'a + d + 100 – p' respectively
Since they are also in A.P., so
(a + p) – (a – d) = (a + d + 100 – p) – (a + p)
$\Rightarrow$ p + d = d + 100 – 2p $\Rightarrow$ 3p = 100 $\Rightarrow$ p = 33.33%.
So, the required percentage is 33.33%.

FeedBack

Q.69

A circle, having radius equals to 3 units, is drawn with its centre at (8, 7) and another circle is drawn taking the line segment, joining (–12, 8) and (4, –4), as diameter. Find the number of common tangents to these two circles.

1 **3**

2 **2**

3 **4**

4 **None of these**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

The length of the diameter = $\sqrt{(4+12)^2+(-4-8)^2}$ = 20 units.
So, radius of the circle = 10 units and

centre of the circle $=\left(\frac{-12+4}{2}, \frac{8-4}{2}\right)$ =(–4, 2)

Now, the distance between the centres of the two circles = $\sqrt{(8+4)^2+(7-2)^2}$ = 13 units
This implies, distance between the two centres equals to the sum of the radius of the two circles.
Hence, the two circles touch each other externally and so the number of common tangents is 3.

FeedBack

Q.70

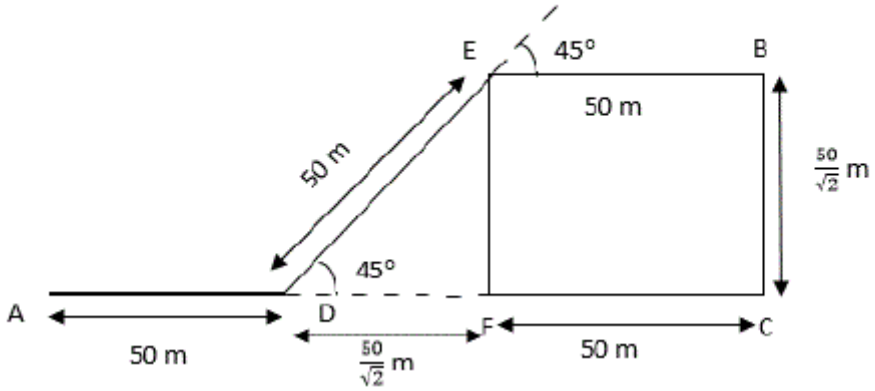
Parimal, a hard working IIT-JEE aspirant, takes coaching from two different teachers who lives in city A and city B. Parimal starts from city A and travels 50 metres to the East, then 50 metres North-East, and finally another 50 metres East to reach city B. If the shortest distance between cities A and B is in the form of $a\sqrt{b+\sqrt{c}}$ metres, then find the value of a + b + c.

Solution:
Correct Answer : 63

Bookmark

Answer key/Solution

According to the description given in the question, we can draw the following path.



In the above diagram it can be seen that the shortest distance between cities A and B is AB.
Now, in triangle DEF,

$DF = EF = \frac{50}{\sqrt{2}}$

Therefore, $AB = \sqrt{\left(100+\frac{50}{\sqrt{2}}\right)^2+\left(\frac{50}{\sqrt{2}}\right)^2}$

$\Rightarrow AB = 50\sqrt{5+\sqrt{8}} = a\sqrt{b+\sqrt{c}}$

So, a = 50, b = 5, c = 8
Hence, a + b + c = 50 + 5 + 8 = 63.

FeedBack

Q.71

Three men A, B and C are running around concentric circular race tracks, of respective lengths 100 m, 200m and 400 m, in the same direction at the speeds of 6 m/s, 16 m/s and 8 m/s respectively. They all started at the same time from the points, on their track, intersected by a line joining the three circles and the center of the tracks. After how long will they again be in a straight line formed by joining the center of the tracks and the outermost track for the first time?

1 **25 seconds**

2 **50 seconds**

3 **100 seconds**

4 **Never**

✖

Solution:
Correct Answer : 2
Your Answer : 4

Bookmark

Answer key/Solution

LCM of the time taken by A and B on their respective tracks $= \text{LCM}\left(\frac{100}{6}, \frac{200}{16}\right) = 100$ seconds

LCM of the time taken by B and C on their respective tracks $= \text{LCM}\left(\frac{200}{16}, \frac{400}{8}\right) = 50$ seconds

In order to find out the time after which they will again be in a straight line formed by joining the center of the tracks and the outermost track for the first time, we will take HCF of 100 and 50.
$\therefore$ HCF (100, 50) = 50 seconds.

FeedBack

Q.72

In a sequence, the sum of first n terms is equal to $5n^2 + 6n$. Find the sum of the 3rd, 4th and 5th terms of the sequence.

Solution:
Correct Answer : 123

Bookmark

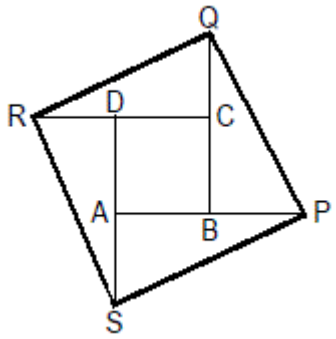
Answer key/Solution

$S_n = 5n^2 + 6n$
$S_5 = t_1 + t_2 + t_3 + t_4 + t_5 = 5(5)^2 + 6(5) = 155$
$S_2 = t_1 + t_2 = 5(2)^2 + 6(2) = 32$
So, the required sum $= t_3 + t_4 + t_5 = S_5 - S_2 = 155 - 32 = 123$.

FeedBack

Q.73

Each side of a square ABCD is produced to equal to its length to form another square PQRS, as shown in the diagram below. What is the ratio of the areas of the square ABCD and square PQRS?



1 **1 : 3**

2 **1 : 4**

3 **1 : 5**

4 **1 : 8**

Solution:

Correct Answer : 3

Let side of square ABCD be 1 unit.
Since the sides of the square ABCD are produced to equal to its length,
$\Rightarrow$ SD = RC = QB = PA = 2 units
In triangle QCR,

$QR = \sqrt{QC^2 + RC^2} = \sqrt{1+4} = \sqrt{5}$

Similarly, $PQ = RS = SP = \sqrt{5}$

Thus, area of square ABCD : area of square PQRS = $1^2 : (\sqrt{5})^2 = 1 : 5$.

FeedBack

Bookmark

Answer key/Solution

Q.74

For two sets A and B, (A – B) denotes the set of elements which belong to A and not in B.
If P = {2, 5, 7, 8}, Q = {5, 6, 9, 10}, R = {1, 4, 9, 11} and S = {2, 6, 10, 11},
then find $((P - Q) \cup (R - S)) \cap ((P \cap S) - (Q \cap R))$.

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

P = {2, 5, 7, 8}, Q = {5, 6, 9, 10}, R = {1, 4, 9, 11} and S = {2, 6, 10, 11},
To find ((P – Q) ∪ (R – S)) ∩ ((P ∩ S) – (Q ∩ R)),
P – Q = {2, 7, 8}
R – S = {1, 4, 9}
P ∩ S = {2}
Q ∩ R = {9}
So, ((P – Q) ∪ (R – S)) = {1, 2, 4, 7, 8, 9}
and ((P ∩ S) – (Q ∩ R)) = {2}
Hence, ((P – Q) ∪ (R – S)) ∩ ((P ∩ S) – (Q ∩ R)) = {2}

FeedBack

Q.75

If w, x, y and z are integers such that 1 < w ≤ x ≤ y ≤ z and wxyz = 924, then how many possible values exist for z?

1 **3**

2 **4**

3 **7**

4 **6**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

$924 = 2^2 \times 3 \times 7 \times 11$
We see that there is an extra '2' since the exponent of 2 is 2.
This extra '2' can be combined with the other factors to generate different values of z.
Also, keeping the two 2's separate, the other factors may be combined to generate different values of z.
Thus, possible values of w, x, y and z such that $1 < w \le x \le y \le z$, are:

w	x	y	z
3	2 × 2 = 4	7	11
2	2 × 3 = 6	7	**11**
2	3	7	2 × 11 = **22**
2	3	11	2 × 7 = **14**
2	2	7	3 × 11 = **33**
2	2	11	3 × 7 = **21**
2	2	3	7 × 11 = **77**

Thus, there are 6 different values are possible of z, which are 11, 14, 21, 22, 33 and 77.

FeedBack

Q.76

If a, b and c are positive numbers in a G.P. such that $a^{25} = b^{45} = c^n$, then find the value of n.

Solution:

Correct Answer : 225

Let $a^{25} = b^{45} = c^n = k$

$\Rightarrow a = k^{\frac{1}{25}}, b = k^{\frac{1}{45}}, c = k^{\frac{1}{n}}$

As a, b, c are in G.P., $b^2 = ac$

$\Rightarrow k^{\frac{2}{45}} = k^{\frac{1}{25}+\frac{1}{n}} \Rightarrow \frac{2}{45} = \frac{1}{25} + \frac{1}{n} \Rightarrow \frac{2}{45} - \frac{1}{25} = \frac{1}{n} \Rightarrow \frac{1}{n} = \frac{10-9}{45\times 5} = \frac{1}{225}$

$\therefore n = 225$

FeedBack

Bookmark

Answer key/Solution

Q.77

A milkman started with 20 liters of pure milk and then mixed 10 liters of water to it. Realizing that the milk has turned very watery, he added 5 liters of pure milk to the solution. And since it turned out to be quite milky again, he sold 15 liters of this solution at the original price of the milk. He then added another 10 liters of water and then again 5 liters of additional pure milk to the remaining solution. He then sold this whole solution at the original price of the milk. The absolute difference between the profit percentage earned when he first sold the 15 liters solution and when he sold the remaining 35 liters solution is

1 **less than 50%**

2 **equal to 50%**

3 **greater than 50%**

4 **Data Insufficient**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Let cost/litre of pure milk = Rs. 100
Initially, he adds to 20 litres milk, 10 litres water and then again 5 litres milk.
So, total volume of solution is 35 litres with ratio of milk : water as 5 : 2.
Now, he sold 15 l of this solution in Rs. 1,500

But real cost of this solution to the milkman = $\frac{5}{7}\times 15\times 100 = \frac{7500}{7}$

So, profit on this sale = $\frac{1500-\frac{7500}{7}}{\frac{7500}{7}}\times 100 = \frac{3000}{7500}\times 100 = 40\%$

Remaining solution with milkman is 20 litres with ratio of milk and water 5 : 2.
Now he adds again 10 litres water and 5 litres milk.

Amount of pure milk in this solution = $\left(\frac{5}{7}\times 20\right)+5 = \frac{135}{7}$

Selling price of this remaining 35 litres solutions = Rs. 3,500
Actual cost of pure milk in this solution = Rs. 13500/7

So, profit on this sale = $\frac{3500-\frac{13500}{7}}{\frac{13500}{7}}\times 100 = \frac{24500-13500}{13500}\times 100 = \frac{11000}{13500}\times 100 = 81.48\%$

Therefore, the required difference = 81.48 – 40 = 41.48 i.e., less than 50%.

FeedBack

Q.78

A function S(n) is defined as the sum of the digits of n. If S(S(S(n))) = 1, then find the minimum value of S(n) × n.

Solution:
Correct Answer : 1
In order to find the minimum value of S(n) × n, we put n = 1, such that S(1) = 1
So, S(S(n)) = S(S(1)) = S(1) = 1
And S(S(S(n))) = 1, satisfying the given condition.
Hence, the minimum value of S(n) × n = S(1) × 1 = 1.

Bookmark

Answer key/Solution

FeedBack

Q.79

If $y = -\frac{x^2+3\sqrt{x}(2x+9)+162}{x+9\sqrt{x}+18}$, where x is an integer in the interval [16, 81], then find the range of y.

1 **13 ≤ y ≤ 63**

2 **−63 ≤ y ≤ −13**

3 **39 ≤ y ≤ 75**

4 **−39 ≤ y ≤ −52**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Given, $-y = \frac{x^2+3\sqrt{x}(2x+9)+162}{x+9\sqrt{x}+18} = \frac{\left(x^{\frac{3}{2}}+27\right)(\sqrt{x}+6)}{(\sqrt{x}+3)(\sqrt{x}+6)} = \frac{\left(x^{\frac{3}{2}}+27\right)}{(\sqrt{x}+3)}$

$= \frac{(\sqrt{x}+3)(x-3\sqrt{x}+9)}{(\sqrt{x}+3)} = (x-3\sqrt{x}+9)$ for $16 \le x \le 81 \Rightarrow 13 \le -y \le 63 \Rightarrow -63 \le y \le -13$.

FeedBack

Q.80

If a : b = 2 : 3 and c : d = 4 : 5 where a, b, c and d are positive, then which of the following options contain the required information using which a : d can be calculated?

1 **ac : d = 8 : 1**

2 **bc : a = 6 : 1**

3 **ab : c^2 = 3 : 8**

4 **None of these**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let a and b be 2k and 3k respectively. Also let c and d be $4k_1$ and $5k_1$ respectively.
Now, a : d is 2k : $5k_1$. So, to calculate it we need k : k_1.
Option (1) gives us the value of k, option (2) gives us the value of k_1 but option (3) gives us the value of k : k_1.

FeedBack

Q.81

If $\left(\alpha, \frac{1}{\alpha}\right)$ are the roots of the equation $px^2 + qx + r = 0$, then the roots of the equation $4rx^2 - 2qx + p = 0$ are

1 $\left(\frac{\alpha}{2}, \frac{1}{2\alpha}\right)$

2 $\left(\frac{-\alpha}{2}, \frac{-1}{2\alpha}\right)$

3 $\left(\frac{2}{\alpha}, \frac{\alpha}{2}\right)$

4 $\left(\frac{\alpha}{4}, \frac{1}{4\alpha}\right)$

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Given $\left(\alpha, \frac{1}{\alpha}\right)$ are the roots of the equation $px^2 + qx + r = 0$

$\Rightarrow q = -p\left(\alpha + \frac{1}{\alpha}\right)$ and $r = p$

The roots of the equation $4rx^2 - 2qx + p = 0$ are

$$= \frac{(2q) \pm \sqrt{(-2q)^2 - (4)(4r)(p)}}{8r} = \frac{2q \pm \sqrt{4q^2 - 16p^2}}{8p} = \frac{-2p\left(\alpha + \frac{1}{\alpha}\right) \pm \sqrt{4p^2\left(\alpha + \frac{1}{\alpha}\right)^2 - 16p^2}}{8p}$$

$$= \frac{-\left(\alpha + \frac{1}{\alpha}\right) \pm \sqrt{\alpha^2 + \frac{1}{\alpha^2} + 2 - 4}}{4} = \frac{-\left(\alpha + \frac{1}{\alpha}\right) \pm \left(\alpha - \frac{1}{\alpha}\right)}{4} = \frac{-\alpha}{2}, \frac{-1}{2\alpha}$$

FeedBack

Q.82

Vijay has a collection of n books. If the number of ways in which he can select at least one of the n books is 65535, then what is the number of ways in which he can select exactly four books?

Solution:
Correct Answer : 1820

Bookmark

Answer key/Solution

Number of ways of selecting at least one book from a collection of n books = $2^n - 1 = 65535$
$\Rightarrow 2^n = 65536 \Rightarrow n = 16$
There are 16 books and the number of ways of selecting four books = ${}^{16}C_4 = 1820$.

FeedBack

Q.83

A wall is to be built in exactly 15 days. Rahul, along with his friend, started working and when 20% of the work was left, Rahul left the work. To complete the work in the remaining 5 days now, Rahul's friend worked with his efficiency increased by 60%. If they both work together to complete the work in 15 days and Rahul works for all 15 days, then after how many days his friend needs to stop working?

Solution:
Correct Answer : 7

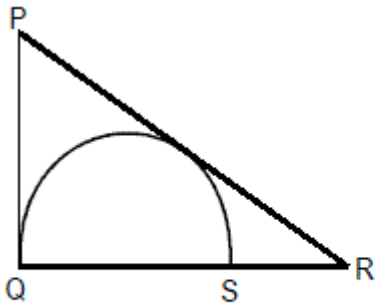
Bookmark

Answer key/Solution

As Rahul's friend can complete 20% of work in 5 days working within 60% more efficiency.
∴ Rahul's friend can complete 20% of work in 8 days working with normal efficiency.
∴ He can complete the whole work in (8 × 5) = 40 days.
As Rahul left 5 days before the completion of work, i.e. Rahul and his friend worked for 10 days together.
Work done by Rahul's friend in those 10 days = (10/40) × 100 = 25%
Total work done in 10 days = 80%
∴ Work done by Rahul = 55%
∴ Rahul would complete the entire work in = (10/55) × 100 = 18.18 days.
Work done by Rahul in 15 days = (15/18.18) × 100 = 82.5%
Time taken by Rahul's friend to complete 17.5% work = (40 × 17.5)/100 = 7 days.
∴ Rahul's friend should stop working after 7 days.

FeedBack

Q.84

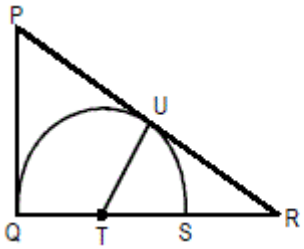


Find the radius (in cm) of the semicircle inscribed in a triangle as shown above, where the sides PQ, QR and PR are 15 cm, 36 cm and 39 cm respectively.

Solution:
Correct Answer : 10

Bookmark

Answer key/Solution



Let U be the point of tangency of the semi-circle with PR and T be the center of the semi-circle.
Since QT is radius and PQ ⊥ QT , PQ must be tangent.
So, the length of two tangents drawn to a circle from a point must be same.
∴ PU = PQ = 15 cm
⇒ UR = 39 – 15 = 24 cm
If the radius is taken to be 'r'
Then $RT^2 = UR^2 + UT^2$
⇒ $(36 - r)^2 = 24^2 + r^2$ ⇒ r = 10 cm.

FeedBack

Q.85

If a and b are real numbers, then which of the following CANNOT be inferred?

1 **In order for a^2 to be equal to b^2, it is sufficient that a be equal to b.**

2 **If a^2 is equal to b^2, then a is equal to b.**

3 **a is equal to b implies that a^2 is equal to b^2.**

4 **If a^2 is not equal to b^2, then a is not equal to b.**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

It is given that if a = b, then $a^2 = b^2$. You need to examine each choice to see if it can or cannot be inferred. Choice (1) can be inferred. If a = b, we know that a^2 must be equal to b^2 from the given statement. Choice (2) cannot be inferred. If $a^2 = b^2$, then a = b or a = –b. Choice (3) can be inferred. This is another way to state that if a = b, then $a^2 = b^2$. Choice (4) can be inferred. If $a^2 \neq b^2$ then it is not possible for a to equal b.

FeedBack

Q.86

N is a 'n' digit number with all distinct non zero digits. N, when multiplied by 1, 2, 3,…. n, gives numbers which have the same digits as that of N but in different order. But when multiplied by (n+1), gives a number containing n digits with all its digits as 9 only. Find the value of number N.

Solution:
Correct Answer : 142857

Bookmark

Answer key/Solution

As N multiplied by (n + 1) gives a number with all 9's so n must be even.
n = 2, 4 and 8 will not satisfy the initial condition that when multiplied by 1, 2, 3,....,n, gives numbers which have the same digits as that of N, but in different order so n must be 6.
So 999999 divided by 7 gives 142857.

FeedBack

Q.87

In a trapezium PQRS, SR = PQ = 25 cm and SP is parallel to RQ. A circle, with center C, is inscribed in the trapezium. If the area of the trapezium is 600 cm^2, then find the radius of the circle.

1 **7.5cm**

2 **8cm**

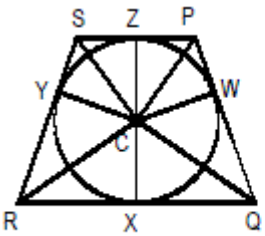
3 **12cm**

4 **9cm**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution



Let the radius of circle be r.
The radii CW, CX, CY and CZ are perpendicular to the edges of the trapezium PQ, QR, RS and SP, respectively. The area of the trapezium, which is the sum of the areas of the triangles CPQ, CQR, CRS and CSP i.e.

$$\frac{1}{2}rPQ+\frac{1}{2}rQR+\frac{1}{2}rRS+\frac{1}{2}rSP=\frac{r}{2}(PQ+QR+RS+SP)$$

Now using the property that the two tangents to a circle from a given point have equal length, it is clear that SP + QR = SZ + PZ + QX + RX = SY + PW + QW + RY = (PW + QW) + (RY + SY) = PQ + RS = 25 + 25 = 50 cm.
Hence PQ + QR + RS + SP = 50 + 50 = 100 cm.

Therefore, as the area of the trapezium is 600 cm², we have $\frac{1}{2}\times r\times(100)$ = 600 and hence r = 12 cm.

FeedBack

Q.88

Jar P contains 6 liters of a 54% milk solution, Jar Q contains 3 liters of a 57% milk solution and Jar R contains 1 liter of x% milk solution. 'y/z' liters of the solution from Jar R is transferred to Jar P and the remaining solution of Jar R is transferred to Jar Q such that resulting solutions in jar P and jar Q both contain 50% milk solution. If y and z are positive integers co prime to each other, then find the value of x + y + z.

1 **57**

2 **28**

3 **39**

4 **Cannot be determined**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Total quantity of solution is 6 + 3 + 1 = 10 liters out of which 50% i.e. 5 liters is milk.
So 0.54 × 6 + 0.57 × 3 + x/100 = 5. Simplifying we get x = 5.
Now let 'n' liters be transferred from Jar R to Jar P,
so we get 0.54 × 6 + 0.05 × n = 0.5(6 + n).
Simplifying we get n = y/z = 8/15.
So x + y + z = 5 + 8 + 15 = 28.

FeedBack

Q.89

How many integers are present in the domain of $\frac{\sqrt{4-x^2}}{\log|x|}$?

Solution:
Correct Answer : 2

Let $f(x) = \frac{\sqrt{4-x^2}}{\log|x|}$

$x \neq 0$ ($\because$ log 0 is not defined)
$x \neq -1$ and $x \neq 1$ (as log| x | would be 0 and f(x) would not be defined)
Also $4 - x^2 \geq 0 \Rightarrow -2 \leq x \leq 2$
Therefore, x can be –2 or 2, there are only two values.

FeedBack

Bookmark

Answer key/Solution

Q.90

A shopkeeper sells articles worth Rs. 220 each with a mark-up of 40%. He has 2 schemes for the customers:
1) For every 4 articles purchased, get an article free, OR
2) On a purchase of 6 articles get a bag worth Rs. 500 free.
On a day, 50 customers purchased 4 articles each and hence took use of scheme 1 whereas 30 customers purchased 6 articles each and took use of scheme 2. If these were the only customers who purchased from his shop that day, then what is the total profit (in Rupees) earned by the shopkeeper?

Solution:
Correct Answer : 7440

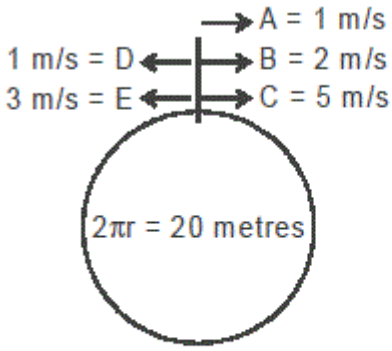
Bookmark

Answer key/Solution

Cost Price = Rs.220
Mark up = 40%
Marked price = Rs.308
So, the profit earned by the shopkeeper in one article = 308 – 220 = Rs.88
$\therefore$ The total profit earned by him through the 1st scheme = 50(4 × 88 – 220) = Rs.6,600
The total profit earned by him through the 2nd scheme = 30 (6 × 88 – 500) = Rs.840
Hence, the overall profit earned by him from both the schemes = 6600 + 840 = Rs. 7,440.

FeedBack

Q.91



What is the total number of distinct meeting points of any 2 persons? (All persons start at the same time)

1 **29**

2 **28**

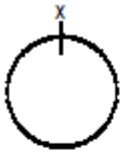
3 **16**

4 **None of these**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution



As $2\pi r$ = 20 metres is the total distance of the track, so, we can calculate the meeting point for each pair using ratio of their speeds.
Let x be the starting point

1. Now $s_A : s_B = 1 : 2$ (same direction)
   So, meeting point of A and B is only 1, which is the starting point 'x'.
2. $s_A : s_C = 1 : 5$ (same direction)
   So, meeting points of A and C are 4 at equal distance from x, i.e. 'x', x + 5', 'x + 10', 'x + 15'.
3. $s_A : s_D = 1 : 1$ (opposite direction)
   So, meeting points of A and D are 2, which are 'x' and 'x + 10'.
4. $s_A : s_E = 1 : 3$ (opposite direction)
   So, meeting points of A and E are 4, which are 'x', 'x + 5', 'x + 10', 'x + 15'.
5. $s_B : s_C = 2 : 5$ (same direction)
   So, meeting points of B and C are 3, which are 'x', 'x + 6.67', 'x + 13.33'.
6. $s_B : s_D = 2 : 1$ (opposite direction)
   So, meeting points of B and D are 3, i.e.,
   'x', 'x + 6.67', 'x + 13.33'.
7. $s_B : s_E = 2 : 3$ (opposite direction),
   So, meeting points of B and E are 5, i.e.,
   x, x + 4, x + 8, x + 12, x + 16.
8. $s_C : s_D = 5 : 1$ (opposite direction)
   So, meeting points of C and D are 6, i.e.,
   x, x + 3.33, x + 6.67, x + 10, x + 13.33, x + 16.66
9. $s_C : s_E = 5 : 3$ (opposite direction)
   So, meeting points of C and E are 8 i.e.,
   x, x + 2.5, x + 5, x + 7.5, x + 10, x + 12.5, x + 15, x + 17.5.
10. $s_D : s_E = 1 : 3$ (same direction)
    So, meeting points of D and E are 2 i.e.,
    'x' and 'x + 10'.
    Hence, distinct 16 points are there.

FeedBack

Q.92

A man gets 20 minutes late to his office, if he drives at 40 km/h and is 4 minutes early, if he drives at 50 km/h. By how much time will he be early or late, if he drives at 48km/h?

1 **1 minute early**

2 **On time**

3 **1 minute late**

4 **2 minutes late**

✖

Solution:
Correct Answer : 2
Your Answer : 1

Bookmark

Answer key/Solution

Let the distance travelled by the man is = 'd' km.
Time taken to travel the distance d at 40 km/h = d/40
Time taken to travel the distance d at 50 km/h = d/50

Difference in timing is $\frac{d}{40}-\frac{d}{50}=\frac{4}{60}+\frac{20}{60} \Rightarrow \frac{10d}{2000}=\frac{24}{60} \Rightarrow d = 80$ km

∴ Actual time is = 80/40 – 20/60 = 100 minutes

If the man is travelling at 48 km/h, the time taken to cover 80 km $=\frac{80}{48}\times 60$ = 100 minutes

∴ He will be on time.

FeedBack

Q.93

Raj invested in a piece of land for Rs. 5,00,000. Its value increased by T% every year for 3 years. Had he invested in a scheme which gives T% p.a. simple interest, the value of his investment would have been Rs. 64,000 less. Find the value of T.

1 **14**

2 **17**

3 **20**

4 **21**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Check by option putting method:
Put option (3), i.e. let the value of T be 20
When its value increased by 20% every year for 3 years, it becomes

$= 500000 \times \frac{120}{100} \times \frac{120}{100} \times \frac{120}{100} =$ Rs.8,64,000

When he had invested in a scheme which gives 20% p.a. simple interest, then the amount becomes,

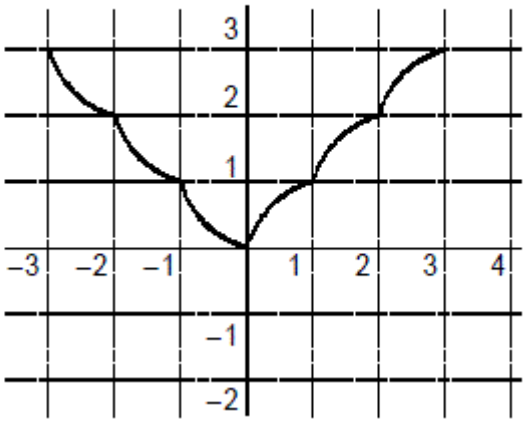
$SI = 500000 \times \frac{20}{100} \times 3 =$ Rs.3,00,000

Amount = 500000 + 300000 = Rs.8,00,000
∴ Difference between these amounts = 864000 – 800000 = Rs.64,000, and hence satisfies the given condition.
So, the value of T is 20.

FeedBack

Q.94

The graph given below represents which of the following function?



1 $y = |[x] + \sqrt{x - [x]}|$

2 $y = |[x] - \sqrt{x + [x]}|$

3 $y = |\sqrt{x - [x]} - [x]|$

4 $y = |x - \sqrt{x - [x]}|$

Solution:
Correct Answer : 1

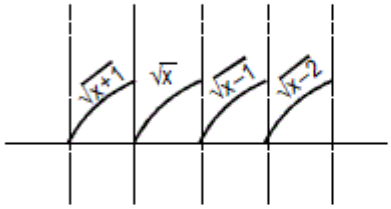
Bookmark

Answer key/Solution

Let us suppose $g(x) = \sqrt{x-[x]}$

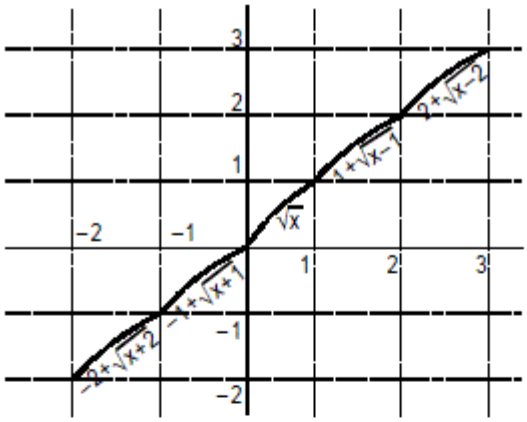
$\sqrt{x}$	$0 \le x < 1$
$\sqrt{x-1}$	$1 \le x < 2$
$\sqrt{x-2}$	$2 \le x < 3$
$\sqrt{x-4}$	$3 \le x < 4$

So, its graph will be



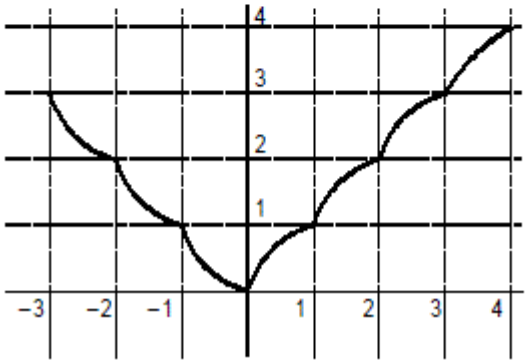
So graph of $h(x) = [x]+\sqrt{x-[x]}$

$-1+\sqrt{x+1}$	$-1 \le x < 0$
$0+\sqrt{x-1}$	$0 \le x < 1$
$1+\sqrt{x-1}$	$1 \le x < 2$
$2+\sqrt{x-2}$	$2 \le x < 3$
$3+\sqrt{x-3}$	$3 \le x < 4$



And to plot graph of $|[x]+\sqrt{x-[x]}|$

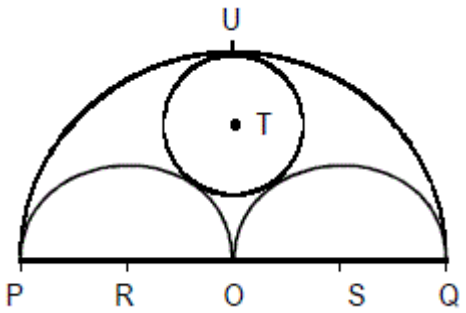
From $[x]+\sqrt{x-[x]}$ we retrace the graph above x-axis and take mirror image of graph below x-axis about x-axis and neglect the graph below x-axis.



FeedBack

Q.95

In the figure shown below, PQ is the diameter of a semicircular field. O is the midpoint of PQ. R is the center of the semicircle, with diameter OP, and S is the center of the semicircle, with diameter OQ. T is the center of the circle touching these three semicircles. A horse is tied at each point R, S and T, with a rope equivalent to that semicircle or circle's respective radius, such that each horse can graze over the respective inner semicircular region or the circular region in which it is tied. Find the approximate percentage of the area of the outer semicircular field over which the horses cannot graze.



1 **28%**

2 **36%**

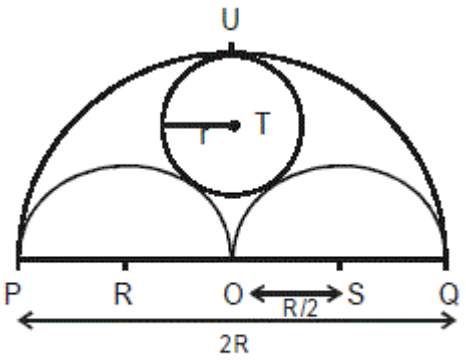
3 **39%**

4 **42%**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution



Let the radius of the semicircle with diameter PQ be R units.
Let TU be r units.
OU = OT + TU = R units
OT = OU – TU
OT = R – r
Now in ΔTOR,
$RT^2 = OR^2 + OT^2$

$$\left(\frac{R}{2}+r\right)^2=\left(\frac{R}{2}\right)^2+(R-r)^2 \Rightarrow \frac{R^2}{4}+Rr+r^2=\frac{R^2}{4}+R^2-2Rr+r^2 \Rightarrow r=\frac{R}{3}$$

$$\text{Therefore, required percentage } =100\%-\left[\frac{\pi\left(\frac{R}{3}\right)^2+\pi\left(\frac{R}{2}\right)^2}{\frac{\pi}{2}R^2}\right]100\%=\frac{5}{18}(100\%)\sim 28\%.$$

FeedBack

Q.96

If $\log_3 2, \log_3(\log_x 2)$ and $\log_{\sqrt{2}} 9$ are in a Geometric Progression, then which of the following values can x assume?

1 2^9 or $2^{\frac{1}{9}}$

2 3^9 or $3^{\frac{1}{9}}$

3 9^2 or $9^{\frac{1}{2}}$

4 **None of these**

Solution:

Correct Answer : 1

Since $\log_3 2$, $\log_3(\log_x 2)$ and $\log_{\sqrt{2}} 9$ are in G.P.

$(\log_3(\log_x 2))^2 = \log_3 2 \times \log_{\sqrt{2}} 9$

$\Rightarrow (\log_3(\log_x 2))^2 = \log_3 2 \times \frac{1}{\frac{1}{2}} \log_2 3^2 = 4 \times \log_3 2 \times \log_2 3 = 4 \quad \{\text{As } \log_3 2 = \frac{1}{\log_2 3}\}$

$\Rightarrow \log_3(\log_x 2) = \sqrt{4} = \pm 2$

If $\log_3(\log_x 2) = 2$

$\Rightarrow \log_x 2 = 9 \Rightarrow x = 2^{\frac{1}{9}}$

If $\log_3(\log_x 2) = -2$

$\Rightarrow (\log_x 2) = \frac{1}{9} \Rightarrow x = 2^9$.

FeedBack

Bookmark

Answer key/Solution

Q.97

Three men - P, Q and R - working together, completes a job in 6 hours less time than P alone, in 1 hour less time than Q alone, and in one-half of the time needed by R when working alone. Let 't' be the number of hours taken by P and Q, working together, to complete the job. Find the value of 't'.

1 **3/2**

2 **4/3**

3 **5/4**

4 **3/4**

Solution:
Correct Answer : 2
Your Answer : 4

Bookmark

Answer key/Solution

Let P, Q and R working together take x hours to do the job.
∴ P alone take's x + 6 hours to do the same job.
Q takes x + 1 hours and R takes 2x hours to do the job.
Their 1 hour work working together is

$$\frac{1}{x+6}+\frac{1}{x+1}+\frac{1}{2x}=\frac{1}{x}$$

$$\therefore \frac{1}{x+6}+\frac{1}{1+x}=\frac{1}{2x} \quad \ldots(i)$$

On solving the above equation, we get $x=\frac{2}{3}$.

From equation (i), we can say that L.H.S. is actually the one-hour work of P and Q working together. This implies that they take 2x hours to do the same job while working together.

$$\therefore t = 2x = 2\times\frac{2}{3}=\frac{4}{3}.$$

FeedBack

Q.98

If a + b = 10, where a and b are positive real numbers, then what is the maximum value of $a^2 b^3$?

✖

Solution:
Correct Answer : 3456
Your Answer : 3

Bookmark

Answer key/Solution

$a^2 b^3 = a \times a \times b \times b \times b$

$$a + b = \frac{a}{2}+\frac{a}{2}+\frac{b}{3}+\frac{b}{3}+\frac{b}{3}=10$$

The product of $\frac{a}{2}\times\frac{a}{2}\times\frac{b}{3}\times\frac{b}{3}\times\frac{b}{3}=\frac{a^2b^3}{108}$

The value of $\frac{a^2b^3}{108}$ and $a^2 b^3$ will be maximum when a/2 = b/3 = 2

a = 4, b = 6
Maximum value of $a^2 b^3$ is $4^2 \times 6^3 = 16 \times 216 = 3456$.

FeedBack

Q.99

A tank is filled by three pipes P, Q and R. Pipe P is kept open throughout, pipe Q is kept open for the first 12 minutes and then closed. Three minutes after pipe Q is closed, pipe R is opened and is kept open till the tank is full. This whole process takes 'h' minutes to completely fill the tank and each pipe fills an equal share of the tank. It is also known that if pipes P and Q are kept open continuously, the tank would be filled completely in 'h' minutes. How long (in minutes) will pipe R alone take to fill the tank?

1 **24**

2 **72**

3 **36**

4 **27**

✖

Solution:
Correct Answer : 4
Your Answer : 1

Bookmark

Answer key/Solution

Pipe P is kept open throughout that means it takes h minutes to fill one-third of the volume of the tank.
In order to fill the whole tank, it takes 3 × h = 3h minutes.
Pipe Q is kept open for first 12 minutes only to fill one-third of the tank, therefore it takes 12 × 3 = 36 minutes to fill the tank completely .
Similarly, R will take = 3 × [h – 15] minutes to fill the tank completely.
Now, P and Q, together takes h minutes to fill the tank completely.

$\therefore \frac{1}{3h} + \frac{1}{36} = \frac{1}{h}$

On solving, we get h = 24 minutes.
Hence, R alone takes 3(24 – 15) = 27 minutes to fill the tank completely.

FeedBack

Q.100

A coin is tossed for fixed number of times. If the probability of getting 6 heads is equal to the probability of getting 9 heads, then the probability of getting 3 heads is

1 $\frac{455}{2^{15}}$

2 $\frac{89}{3(2^{16})}$

3 $\frac{85}{2(3^{14})}$

4 $\frac{99}{2^{15}}$

Solution:

Correct Answer : 1

Let the coin be tossed n times.

$P(6 \text{ heads}) = {}^{n}C_{6}(\frac{1}{2})^{6}(\frac{1}{2})^{n-6}$

And $P(9 \text{ heads}) = {}^{n}C_{9}(\frac{1}{2})^{9}(\frac{1}{2})^{n-9}$

Since P (6 heads) = P (9 heads)

$\Rightarrow {}^{n}C_{6} = {}^{n}C_{9} \Rightarrow n = 15$

$\therefore P(3 \text{ heads}) = {}^{15}C_{3}(\frac{1}{2})^{3}(\frac{1}{2})^{15-3} = {}^{15}C_{3}(\frac{1}{2})^{15} = \frac{455}{2^{15}}.$

FeedBack

Bookmark

Answer key/Solution