



Mock CAT – 13 2019

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VARC

DILR

QA

Sec 1

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

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the great and most universal cause of the corruption of our moral sentiments."

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That marks a huge shift. Just before the financial crisis America's Congress was gaily cutting taxes for the highest earners, and Tony Blair, Britain's prime minister, said he did not care how much soccer players earned so long as he could reduce child poverty. So why has fear of inequality stormed back into fashion?

The most obvious reason for the renewed attention is inequality's apparent increase. A common yardstick is the Gini coefficient, which runs from 0 (everyone has the same income) to 1 (one person has all the income). Most countries range between 0.25 and 0.6.

The Gini coefficient has gone up a lot in some rich countries since the 1980s. For American households it climbed from 0.34 in the mid-1980s to 0.38 in the 2000s. In China it went up even more, from under 0.3 to over 0.4. But this was not universal. For decades, Latin America had the world's worst income inequality. But Brazil's Gini coefficient has fallen more than five points since 2000, to 0.55. And as poor countries are on average growing faster than rich ones, inequality in the world as a whole is falling.

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The economists Emmanuel Saez and Thomas Piketty studied the incomes of the top 0.1% of earners in America, Britain and France in 1913-2008. America's super-rich, they found, were earning about 8% of the country's total income at the end of the period—the same share as during the Gilded Era of the 1920s and up from around 2% in the 1960s. A study by the Economic Policy Institute, a think-tank in Washington, DC, looked at the ratio of the average incomes of the rich and the "bottom" 90% of the population between 1980 and 2006. It found that the top 1% earned ten times more than the rest at the start of the period and 20 times as much at the end—i.e. its "premium" doubled. But for the top 0.1% the gain rose from 20 times the earnings of the lower 90% to almost 80-fold.

Q.1

Which of the following can be inferred about the author's attitude towards the concept of inequality?

- 1 S/he is nonchalant about the issue despite its being the most serious economic concern in the world.
- 2 S/he is deeply affected by the apparent increase in the gap between the rich and the poor.
- 3 S/he is indecisive about the impact of economic issues when it comes to the current situation of the world.
- 4 S/he is interested in the topic as it is a complex issue with many layers.



Solution:

Correct Answer : 4

Your Answer : 4

Genre: Economics / Social Welfare

Word Count# 608

Bookmark

Answer key/Solution

The main idea of the passage is that the issue of inequality has received a renewed focus. Then s/he analyses whether this is really as grave an issue as it has been made out to be. Notice the use of an analytical tone by the author. S/he doesn't give a clear conclusion regarding the issue. So, the answer has to reflect this neutral stance.

Option 1 – 'Nonchalant' is not the right word to describe the author's intent.

Option 2 – The author categorically mentions that there has not been an increase in the gap between the rich and the poor. S/he says that gap has widened among the rich. So, it is an incorrect option.

Option 3 – The author can't be called 'indecisive'. The author agrees that the issue is complex. So, option 4 is the correct choice.

FeedBack

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Q.2

Which of the following best describes the 'huge shift' as per the passage?

- 1 The IMF chief's shift in focus from the rich countries to the poor nations.

- 2 The world's focus shifting from indifference to urgency in the area of economic disparity.
- 3 The world's successful tackling of the financial crisis despite the attitude of its leaders.
- 4 The American government's shift in focus from giving tax cuts to the rich to its initiatives for the underprivileged.

X**Solution:****Correct Answer : 2****Your Answer : 4****Genre: Economics / Social Welfare****Word Count# 608****Bookmark****Answer key/Solution**

Refer to the third paragraph. It starts with the sentence – “That marks a huge shift.” ‘That’ refers to the opinion of Strauss-Kahn. So, the correct answer can be found by the method of elimination.

Option 1 – The shift is about a situation, not the nations.

Option 4 – It is totally irrelevant.

Option 3 – This has not been mentioned in the passage. ‘Attitude of its leaders’ is totally irrelevant.

Option 2 is the correct choice.

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Q.3

Which of the following is an issue the author finds to be enigmatic?

- 1 The spike in the gap in income among the rich.
- 2 The ever increasing number of rich people in the world despite so many economic challenges.
- 3 The rising GINI coefficient in some unexpected countries.
- 4 The attitude of George Bush towards the rich.

Solution:**Correct Answer : 1****Genre: Economics / Social Welfare****Word Count# 608****Bookmark****Answer key/Solution**

Refer to the sentence “Here the causes are more mysterious” in the seventh paragraph.

Option 1 is clearly the right answer.

Options 2 and 4 – These are irrelevant.

Option 3 – ‘Unexpected countries’ has not been defined.

FeedBack

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Q.4

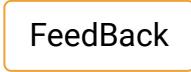
Why does the author state that the issue of income inequality is not a drastic one?

- 1 Because the gap is more pronounced at the top than it is at the bottom.
- 2 Because the income of the richest fifth rose 27% while that of the poorest fifth went up by 10%.
- 3 Because for the majority of the people in the world, the level of inequality has remained stagnant.
- 4 Because the rich are getting richer but the poor are not getting poorer.

Solution:**Correct Answer : 3****Your Answer : 2****Genre: Economics / Social Welfare****Word Count# 608** **Bookmark** **Answer key/Solution**

Refer to the lines "That is a widening income spread, but not a drastic one. Robert Gordon, an economist at Northwestern University in Illinois, reckons that for the bottom 99% of the population, inequality has not risen since 1993." Option 3 is the clear answer.

Option 1 is misleading. The gap is still pronounced at the bottom. The author states that the rate has remained constant.

 **FeedBack**

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Q.5

In terms of the structure of the passage, what is the significance of the first two paragraphs?

- 1 They help the author drive home the point about the issue of income inequality.
- 2 They help the author in building his narrative on a social issue.
- 3 They act as introductions to the issue of social welfare in a rapidly progressing world.
- 4 The act as examples which will later be used by the author to counterattack a myth.



Solution:**Correct Answer : 2****Your Answer : 2****Genre: Economics / Social Welfare****Word Count# 608****Bookmark****Answer key/Solution**

The first two paragraphs give a background or context to the main topic of discussion: the issue of income inequality and a reality check related to it.

Option 1 – The author can't drive home (conclude in an emphatic manner) any point at the beginning of the paragraph.

Option 2 – It is the right answer. Introductory paragraphs typically feature a quotation or an anecdote.

Option 3 – 'Social welfare' makes the option incorrect.

Option 4 – The author doesn't bust any myth in this passage.

FeedBack

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

[...] The idea that one culture 'owns' a particular heritage is having a profound impact on museums. [...] The National Museum of the American Indian (NMAI), which opened on The Mall in Washington, DC in 1990, has been at the forefront of implementing new museums and policies that make formal concessions to particular groups on the basis of their ethnicity. The US arts journalist Edward Rothstein calls the NMAI and its ilk 'identity museums'.

The devolving of authority at the NMAI embraced a range of activities, including who designed and built the museum, who selects what is in the collection, and how it is interpreted and presented – as well as how artefacts are conserved, and who can see them. In a similar spirit, in 1993 the Council of Australian Museum Associations endorsed a document, now titled *Continuous Cultures, Ongoing Responsibilities*, which set a new bar by compelling institutions to work collaboratively with indigenous groups on all aspects of running a museum. The premise behind this move was that indigenous people should be the ones to tell and organise their history: only Native Americans can speak for and tell the story of Native Americans. The Maori for the Maori. Aboriginal groups for the Aboriginal past.

The motives are understandable. Colonisation had a devastating impact on indigenous peoples. But the new identity museums are troubling on many levels – and not just because material is taken off display. Imagine if a museum was established, with public money (the NMAI is federally funded), where white people from one geographical area – sometimes only white men with status – were given the authority to decide what exhibits visitors could and couldn't see. There would quite rightly be outrage.

Instead of decolonising museums, the new practices echo and reinforce a racial discourse. They present an idea of culture as fixed and immutable – something people own by virtue of

biological ancestry. This racial view of the world should trouble us.

We need to ask who speaks for the relevant indigenous community, and on what basis. Even who qualifies as indigenous is a vexed question, as is the fact that 'the indigenous' rarely speak with one voice. Ethnocentric policies therefore tend to vest authority in anointed chiefs and elders (local equivalents of the privileged white male), without asking how many and which tribal members need to subscribe to the traditional view for it to remain authoritative. What about those who disagree? And what about those who want to change it, or challenge it from within?

It also follows, according to the logic of identity museum practice, that those outside the culture cannot truly understand it because they've never experienced it. It's an approach that creates barriers between people. And also between people and artefacts. It advances the idea that cultures are separate and irreconcilable. [...]

But handing over the right to narrate history to those with the approved ethnicity is not the way that knowledge works. The pursuit of truth and the understanding of history must be open to everybody, regardless of class, ethnicity or gender. There must be universal access. That is how questions can be explored, and old forms of authority challenged. [...]

Q.6

As per the passage, all of the following are signs of faulty logic used by museums like NMAI EXCEPT:

- 1 Cultures are distinct and can't merge or be compatible.
- 2 There have to be barriers between people of different cultures.
- 3 Based on biological ancestry, we can clearly define membership into a culture.
- 4 People outside a particular culture can never understand it.

Solution:

Correct Answer : 2

Genre: Cultural Studies

Word Count# 525

 **Bookmark**

 **Answer key/Solution**

Refer to the lines: "Instead of decolonising museums, the new practices echo and reinforce a racial discourse. They present an idea of culture as fixed and immutable – something people own by virtue of biological ancestry. This racial view of the world should trouble us."

'The new practices by museums' refers to those like NMAI. Options 1, 3, and 4 are clearly mentioned. Option 4 is also mentioned in the next paragraph.

Option 2 is the answer. These museums don't deliberately want people of different cultures to remain divided. It might be an inadvertent consequence of their actions.

FeedBack

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Q.7

Why does the author say “The motives are understandable” at the beginning of the third paragraph?

- 1 Because the minorities have been victims for long.
- 2 Because white supremacy had a catastrophic impact on the study of culture.
- 3 Because many of the artefacts were stolen by the museums without the express permission of the native tribes.
- 4 Because the victims of colonization want to rectify what they believe is a historical wrong.

Solution:

Correct Answer : 4

Genre: Cultural Studies

Word Count# 525

 **Bookmark**

 **Answer key/Solution**

It's an easy question. We need to look at the context. The author makes this statement with respect to the legacy of colonisation. Refer to the line: "Colonisation had a devastating impact on indigenous peoples." So, option 4 is the clear answer.

Option 1 – ‘Minority’ and ‘colonised’ are not necessarily synonymous.

Options 2 and 3 – These are not mentioned in the passage.

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The devolving of authority at the NMAI embraced a range of activities, including who designed and built the museum, who selects what is in the collection, and how it is interpreted and presented – as well as how artefacts are conserved, and who can see them. In a similar spirit, in 1993 the Council of Australian Museum Associations endorsed a document, now titled *Continuous Cultures, Ongoing Responsibilities*, which set a new bar by compelling institutions to work collaboratively with indigenous groups on all aspects of running a museum. The premise behind this move was that indigenous people should be the ones to tell and organise their history: only Native Americans can speak for and tell the story of Native Americans. The Maori for the Maori. Aboriginal groups for the Aboriginal past.

The motives are understandable. Colonisation had a devastating impact on indigenous peoples. But the new identity museums are troubling on many levels – and not just because material is taken off display. Imagine if a museum was established, with public money (the NMAI is federally funded), where white people from one geographical area – sometimes only white men with status – were given the authority to decide what exhibits visitors could and couldn't see. There would quite rightly be outrage.

Instead of decolonising museums, the new practices echo and reinforce a racial discourse. They present an idea of culture as fixed and immutable – something people own by virtue of biological ancestry. This racial view of the world should trouble us.

We need to ask who speaks for the relevant indigenous community, and on what basis. Even who qualifies as indigenous is a vexed question, as is the fact that 'the indigenous' rarely speak with one voice. Ethnocentric policies therefore tend to vest authority in anointed chiefs and elders (local equivalents of the privileged white male), without asking how many and which tribal members need to subscribe to the traditional view for it to remain authoritative. What about those who disagree? And what about those who want to change it, or challenge it from within?

It also follows, according to the logic of identity museum practice, that those outside the culture cannot truly understand it because they've never experienced it. It's an approach that creates barriers between people. And also between people and artefacts. It advances the idea that cultures are separate and irreconcilable. [...]

But handing over the right to narrate history to those with the approved ethnicity is not the way that knowledge works. The pursuit of truth and the understanding of history must be open to everybody, regardless of class, ethnicity or gender. There must be universal access. That is how questions can be explored, and old forms of authority challenged. [...]

Q.8

Which of the following is the most serious problem behind the culture of identity museums, as per the author?

- 1 **The possibility of white people being in charge of their own culture.**
- 2 **The chance that many ethnocentric questions may remain unanswered.**
- 3 **The idea that by allowing a certain group to speak for itself, we might be indirectly suppressing the voice of the majority.**
- 4 **The tendency to propagate racial segregation by defining culture in terms of biological heritage.**

Solution:

Correct Answer : 4

Genre: Cultural Studies

Word Count# 525

 **Bookmark**

 **Answer key/Solution**

This is an idea based question. We need to look at the entire passage and the main idea to get the answer to this question. The most serious problem, as per the author, is that the new approach by the museums creates a new kind of barrier between people. Now, we need to eliminate the incorrect options.

Option 1 – This is given as an example by the author. We can't take this literally.

Option 2 – This is irrelevant. The author's main concern is a reversed form of racial discrimination, not on revealing ethnic secrets.

Option 3 – This is a concern raised by the author. But note the rhetoric nature of this question in the context of the passage. It is not his/her main concern. It is an example to back the main point of the author.

Hence, option 4 is the correct answer.

FeedBack

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

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Q.9

The main aim of the passage is to:

- 1 advocate the elimination of cultural appropriation.
- 2 highlight the problems behind cultural stereotyping.
- 3 explain the nuances of a problematic scenario in the field of culture.
- 4 criticize the new authoritarian order in the name of preserving a particular culture.

Solution:

Correct Answer : 3

Genre: Cultural Studies

Word Count# 525

 **Bookmark**

 **Answer key/Solution**

This is an easy question.

Option 1 – It's too broad and cultural appropriation is not discussed in the passage.

Option 2 – It is irrelevant.

Option 3 – It is the correct answer.

Option 4 – There is no authoritarian regime. It's just a set of new museum guidelines.

FeedBack

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

[...] The idea that one culture 'owns' a particular heritage is having a profound impact on museums. [...] The National Museum of the American Indian (NMAI), which opened on The Mall in Washington, DC in 1990, has been at the forefront of implementing new museums and policies that make formal concessions to particular groups on the basis of their ethnicity. The US arts journalist Edward Rothstein calls the NMAI and its ilk 'identity museums'.

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Q.10

Which of the following, if true, would most strongly undermine the author's position in this passage?

- 1 Many of the artefacts in these museums are rightful properties of the native tribes.
- 2 The colonizers were primarily white.
- 3 Majority of the colonized believe in their native cultures.
- 4 People nowadays have better ability to see through racial stereotypes.

Solution:

Correct Answer : 3

Genre: Cultural Studies

Word Count# 525

 **Bookmark**

 **Answer key/Solution**

This question requires the application of critical reasoning. In order to weaken the author's argument, we need to find the main assumption.

Option 1 – The author doesn't dispute the ownership of any artefact. The main objection the author has is with regards to the concept of reverse racism or a new kind of racial segregation.

Option 2 – The author doesn't approve of any kind of racial segregation or cultural exclusion. So, the race of the colonisers will not weaken his/her argument.

Option 3 – The author states in the passage that there might be voices within the native people who don't approve of the majoritarian views. So, this option will weaken the author's stance. If all the native people are united, then the question of what does or does not belong to a native culture becomes meaningless. So, this challenges one of the assumptions made by the author.

Option 4 – Even if people have the ability, they don't dictate the terms and conditions of a museum and its policy. It is also not clear if people actually frame their opinions based on this ability. So, this will not necessarily weaken the author's argument.

FeedBack

Direction for questions (11-15): Read the given passage and answer the questions that follow.

[...] In twin and adoption studies, pairwise IQ correlations are roughly proportional to the degree of kinship, defined as the fraction of genes shared between the two individuals. Only small differences due to family environment were found. Biologically unrelated siblings raised in the same family have almost zero correlation in cognitive ability. These results are consistent over large studies conducted in a variety of locations, including different countries.

In the absence of deprivation, it would seem that genetic effects determine the upper limit to cognitive ability. However, in studies where subjects have experienced a wider range of environmental conditions, such as poverty, malnutrition, or lack of education, heritability estimates can be much smaller. When environmental conditions are unfavourable, individuals do not achieve their full potential.

Super-intelligence may be a distant prospect, but smaller, still-profound developments are likely in the immediate future. Large data sets of human genomes and their corresponding phenotypes (which are the physical and mental characteristics of the individual) will lead to significant progress in our ability to understand the genetic code—in particular, to predict cognitive ability. Detailed calculations suggest that millions of phenotype-genotype pairs will be required to tease out the genetic architecture, using advanced statistical algorithms. However, given the rapidly falling cost of genotyping, this is likely to happen in the next 10 years or so. If existing heritability estimates are any guide, the accuracy of genomic-based prediction of intelligence could be better than about half a population standard deviation (meaning better than plus or minus 10 IQ points).

Once predictive models are available, they can be used in reproductive applications, ranging from embryo selection (choosing which IVF zygote to implant) to active genetic editing (for example, using CRISPR techniques). In the former case, parents choosing between 10 or so zygotes could improve the IQ of their child by 15 or more IQ points. This might mean the difference between a child who struggles in school, and one who is able to complete a good college degree. Zygote genotyping from single cell extraction is already technically well developed, so the last remaining capability required for embryo selection is complex phenotype prediction. The cost of these procedures would be less than tuition at many private kindergartens, and of course the consequences will extend over a lifetime and beyond.

The corresponding ethical issues are complex and deserve serious attention in what may be a relatively short interval before these capabilities become a reality. Each society will decide for itself where to draw the line on human genetic engineering, but we can expect a diversity of perspectives. Almost certainly, some countries will allow genetic engineering, thereby opening the door for global elites who can afford to travel for access to reproductive technology. As with most technologies, the rich and powerful will be the first beneficiaries. Eventually, though, I believe many countries will not only legalize human genetic engineering, but even make it a (voluntary) part of their national healthcare systems. The alternative would be inequality of a kind never before experienced in human history.

Q.11

Which of the following, according to the author, will help us the most in our quest to improve cognitive ability?

- 1 Statistics on the genome-phenotype correlation
- 2 Advanced statistical algorithms
- 3 Wide ranging sets of data on genomes

4 Decreased cost of genotyping

Solution:

Correct Answer : 1

Genre: Biology

Word Count# 506

 **Bookmark**

 **Answer key/Solution**

This is an easy fact based question. Refer to the lines, "Large data sets of human genomes and their corresponding phenotypes (which are the physical and mental characteristics of the individual) will lead to significant progress in our ability to understand the genetic code—in particular, to predict cognitive ability." Option 1 is the clear answer.

Options 3 and 4 will also help but indirectly.

 **FeedBack**

Direction for questions (11-15): Read the given passage and answer the questions that follow.

[...] In twin and adoption studies, pairwise IQ correlations are roughly proportional to the degree of kinship, defined as the fraction of genes shared between the two individuals. Only small differences due to family environment were found. Biologically unrelated siblings raised in the same family have almost zero correlation in cognitive ability. These results are consistent over large studies conducted in a variety of locations, including different countries.

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Q.12

It can be inferred that the author mentions the word 'inequality' in the last sentence to refer to the possible:

- 1 chasm between societies that adapt to scientific advancement and those that resist these changes.
- 2 chasm between countries that are technically advanced and those that are struggling for the basic amenities.
- 3 gap between rich countries attracting the best minds and underprivileged countries struggling to retain them.
- 4 acceleration of the ever widening gap between the rich and the poor.



Solution:**Correct Answer : 1****Your Answer : 1****Genre: Biology****Word Count# 506** **Bookmark** **Answer key/Solution**

This is a slightly tricky question. The last paragraph states that with the advancement of genetic engineering, many countries will make it a part of their healthcare system. The author also talks about the possibility of rich countries taking the maximum advantage of this technology. So, 'inequality' here refers to this possible gap. Option 1 is, thus, the correct answer.

Option 2 – This is partially correct. It's not about rich vs. poor countries. It's about countries that adapt the new technology and those that don't.

Option 3 – Brain-drain is not a part of the discussion.

Option 4 – This is too generic.

 **FeedBack**

Direction for questions (11-15): Read the given passage and answer the questions that follow.

[...] In twin and adoption studies, pairwise IQ correlations are roughly proportional to the degree of kinship, defined as the fraction of genes shared between the two individuals. Only small differences due to family environment were found. Biologically unrelated siblings raised in the same family have almost zero correlation in cognitive ability. These results are consistent over large studies conducted in a variety of locations, including different countries.

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Q.13

Which of the following, if true, would most seriously undermine the author's stance on the ethical issues surrounding genetic engineering?

- 1 The rich countries will not allow the other less powerful nations to access the development in genetic engineering.
- 2 There is no way to measure the benefits and drawbacks of a technology that hasn't even come to existence.
- 3 Humans naturally resist changes and countries are nothing but an extension of the basic human psyche.
- 4 Slowly but steadily, every nation on Earth will be able to realize the benefits of genetic engineering.



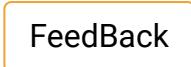
Solution:**Correct Answer : 2****Your Answer : 4****Genre: Biology****Word Count# 506** **Bookmark** **Answer key/Solution**

The author hints at the possible ethical issues in the lines “The corresponding ethical issues are complex and deserve serious attention in what may be a relatively short interval before these capabilities become a reality. Each society will decide for itself where to draw the line on human genetic engineering, but we can expect a diversity of perspectives.” However, the author goes on to list the possible benefits of this technology. So, the assumption is that this technology will provide more benefits than drawbacks. Option 2 challenges this notion. So, it is the correct answer.

Option 1 – This is not related to the topic of ethical issues.

Option 3 – This will not affect the author’s argument as the author already predicts the possibility of this occurrence. It is also not part of the issue related to ethics.

Option 4 – This will strengthen the author’s perspective.

 **FeedBack**

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Q.14

As per the passage, environmental factors such as deprivation may result in:

- 1 the loss of cognitive superiority.
- 2 a wider variety of heritable estimates.
- 3 zero correlation between heredity and cognitive similarity.
- 4 the non-realisation of one's true talent.



Solution:

Correct Answer : 4

Your Answer : 4

Genre: Biology

Word Count# 506

Bookmark

Answer key/Solution

FeedBack

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but even make it a (voluntary) part of their national healthcare systems. The alternative would be inequality of a kind never before experienced in human history.

Q.15

As per the author, a higher IQ is desirable because:

- 1 it will eventually be cost-effective for parents to get the procedure done.
- 2 it will be for the benefit of the human race in general.
- 3 it will result in long term benefits.
- 4 it will help students receive a good college degree.

**Solution:**

Correct Answer : 3

Your Answer : 3

Genre: Biology

Word Count# 506

Bookmark

Answer key/Solution

Refer to the lines, “The cost of these procedures would be less than tuition at many private kindergartens, and, of course, the consequences will extend over a lifetime and beyond.” So, option 3 is the clear answer.

Option 1 – Every cost-effective thing is not desirable.

Option 2 – This has not been mentioned in the passage.

Option 4 – This is too narrow. The author mentions degrees to prove a broader point. Option 3 is the broader point.

FeedBack

Direction for questions (16-20): Read the given passage and answer the questions that follow.

[...] Best-known among Japan's 50 different firefly species is the Genji firefly, *Luciola cruciate*. With its fast-flowing rivers and streams, Japan provides ideal habitats for this firefly, whose life cycle is intimately tied to water. Females lay their eggs along mossy riverbanks, and newly hatched larvae crawl down into the water. As juveniles, these aquatic fireflies spend several months underwater, feasting on freshwater snails. Eventually, the young fireflies crawl back onto land, before metamorphosing into the familiar adults. As forerunners of early summer, Genji fireflies' lime-green lights float silently over the water, mysterious and otherworldly.

Why did they fade away into glowing ghosts? Although Japanese fireflies faced many hazards, perhaps the most destructive was overharvesting, followed by habitat degradation.

During the Meiji period (1868-1912), the popular summer pastime of firefly-watching segued into commercial firefly harvesting. Live fireflies were in vogue, and people were willing to pay good money to enjoy their luminous beauty closer to home. Setting up shop in prime firefly locations, firefly wholesalers hired dozens of local firefly hunters. A single skilled hunter could bag up to 3,000 wild fireflies per night, working sunset to sunrise. In the morning, shop owners carefully packaged up the night's catch and dispatched cages full of live fireflies to clients in Osaka, Kyoto and Tokyo, where the insects were released into hotel, restaurant and private gardens so that city dwellers might enjoy their brightly glowing show.

Japanese fireflies, harvested for their beauty, were being loved to death. As the demand for live fireflies grew, wild populations began to decline. Apparently no one cared that, once harvested, adult fireflies survived only a week or two; when they died, they were just replaced with freshly harvested new ones. And apparently no one cared that firefly hunters indiscriminately harvested not just the males, but also the precious egg-laying females, thereby extinguishing the only hope fireflies had to replenish their own populations. At the same time, rapid industrialisation and urban development led to the degradation of the fireflies' natural habitat, as industrial effluent, agricultural runoff and household sewage flowed freely into rivers. River pollution curtailed the survival of the aquatic juveniles, and killed off their snail prey.

By the early 1920s, people took notice of the fact that firefly populations around Japan were thinning out. In response, the Japanese government in 1924 established the first National Natural Monument, providing legal protection for the Genji firefly habitat. Local communities undertook municipal projects to clean up their rivers, while commercial harvesting of wild fireflies was regulated, then banned altogether. Numerous private citizens attempted to raise the aquatic fireflies in captivity, using trial and error to coddle them through each life stage. Once these artificial breeding programmes determined how to rear large numbers of firefly larvae, they were reintroduced into rivers to bolster dwindling natural populations. While Japanese fireflies have never been restored to their former glory days, a predictably sad saga was transformed into a conservation success story by an impressive combination of national, local and private efforts. Now, Genji fireflies have become a symbol of national pride and Japanese environmentalism. [...]

We all dream about the kind of world that we want our children to inherit. Now is the time to work together to preserve for future generations these brilliant emissaries of nature's magic.

Q.16

As per the passage, all of the following are true EXCEPT:

- 1 Due to a combination of multi-layered willpower and coordination, the Genji firefly population is now back to its previous best in Japan.
- 2 Water source, which was once the catalyst for the flourishing of Genji fireflies in Japan, turned into a reason for its degradation.
- 3 Commercial harvesting led to the thinning of Genji population in Japan.

- 4 **Destruction of habitat was a major reason for the disappearance of Genji fireflies in Japan.**

Solution:

Correct Answer : 1

Genre: Ecology / Environmental Studies

Word Count# 547

 **Bookmark**

 **Answer key/Solution**

Options 2, 3, and 4 are directly mentioned in the passage.

Option 1 – It is the answer. It is a distorted option. Refer to the line, “While Japanese fireflies have never been restored to their former glory days...” This is factually incorrect.

FeedBack

Direction for questions (16-20): Read the given passage and answer the questions that follow.

[...] Best-known among Japan's 50 different firefly species is the Genji firefly, *Luciola cruciate*. With its fast-flowing rivers and streams, Japan provides ideal habitats for this firefly, whose life cycle is intimately tied to water. Females lay their eggs along mossy riverbanks, and newly hatched larvae crawl down into the water. As juveniles, these aquatic fireflies spend several months underwater, feasting on freshwater snails. Eventually, the young fireflies crawl back onto land, before metamorphosing into the familiar adults. As forerunners of early summer, Genji fireflies' lime-green lights float silently over the water, mysterious and otherworldly.

Why did they fade away into glowing ghosts? Although Japanese fireflies faced many hazards, perhaps the most destructive was overharvesting, followed by habitat degradation.

During the Meiji period (1868-1912), the popular summer pastime of firefly-watching segued into commercial firefly harvesting. Live fireflies were in vogue, and people were willing to pay good money to enjoy their luminous beauty closer to home. Setting up shop in prime firefly locations, firefly wholesalers hired dozens of local firefly hunters. A single skilled hunter could bag up to 3,000 wild fireflies per night, working sunset to sunrise. In the morning, shop owners carefully packaged up the night's catch and dispatched cages full of live fireflies to clients in Osaka, Kyoto and Tokyo, where the insects were released into hotel, restaurant and private gardens so that city dwellers might enjoy their brightly glowing show.

Japanese fireflies, harvested for their beauty, were being loved to death. As the demand for live fireflies grew, wild populations began to decline. Apparently no one cared that, once harvested, adult fireflies survived only a week or two; when they died, they were just replaced with freshly harvested new ones. And apparently no one cared that firefly hunters indiscriminately harvested not just the males, but also the precious egg-laying females, thereby extinguishing the only hope fireflies had to replenish their own populations. At the same time, rapid industrialisation and urban development led to the degradation of the

fireflies' natural habitat, as industrial effluent, agricultural runoff and household sewage flowed freely into rivers. River pollution curtailed the survival of the aquatic juveniles, and killed off their snail prey.

By the early 1920s, people took notice of the fact that firefly populations around Japan were thinning out. In response, the Japanese government in 1924 established the first National Natural Monument, providing legal protection for the Genji firefly habitat. Local communities undertook municipal projects to clean up their rivers, while commercial harvesting of wild fireflies was regulated, then banned altogether. Numerous private citizens attempted to raise the aquatic fireflies in captivity, using trial and error to coddle them through each life stage. Once these artificial breeding programmes determined how to rear large numbers of firefly larvae, they were reintroduced into rivers to bolster dwindling natural populations. While Japanese fireflies have never been restored to their former glory days, a predictably sad saga was transformed into a conservation success story by an impressive combination of national, local and private efforts. Now, Genji fireflies have become a symbol of national pride and Japanese environmentalism. [...]

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Q.17

As per the passage, why did firefly harvesting become so popular during the Meiji period?

- 1 Because people were willing to spend huge amounts of money on this activity.
- 2 Because it was considered fashionable to indulge in this activity.
- 3 Because it was the most popular summer pastime during this period.
- 4 Because it was a trend that only elites could afford.

Solution:

Correct Answer : 2

Genre: Ecology / Environmental Studies

Word Count# 547

 **Bookmark**

 **Answer key/Solution**

Refer to the line, "Live fireflies were in vogue, and people were willing to pay good money to enjoy their luminous beauty closer to home." Option 2 is the correct answer.

Option 1 – This is slightly distorted. People were ready to pay money to watch the fireflies, not harvest them.

Option 3 – We can't say that it was the 'most popular' activity of the period.

Option 4 – 'Only elites' makes this option illogical.

FeedBack

Direction for questions (16-20): Read the given passage and answer the questions that

follow.

[...] Best-known among Japan's 50 different firefly species is the Genji firefly, *Luciola cruciate*. With its fast-flowing rivers and streams, Japan provides ideal habitats for this firefly, whose life cycle is intimately tied to water. Females lay their eggs along mossy riverbanks, and newly hatched larvae crawl down into the water. As juveniles, these aquatic fireflies spend several months underwater, feasting on freshwater snails. Eventually, the young fireflies crawl back onto land, before metamorphosing into the familiar adults. As forerunners of early summer, Genji fireflies' lime-green lights float silently over the water, mysterious and otherworldly.

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Japanese fireflies, harvested for their beauty, were being loved to death. As the demand for live fireflies grew, wild populations began to decline. Apparently no one cared that, once harvested, adult fireflies survived only a week or two; when they died, they were just replaced with freshly harvested new ones. And apparently no one cared that firefly hunters indiscriminately harvested not just the males, but also the precious egg-laying females, thereby extinguishing the only hope fireflies had to replenish their own populations. At the same time, rapid industrialisation and urban development led to the degradation of the fireflies' natural habitat, as industrial effluent, agricultural runoff and household sewage flowed freely into rivers. River pollution curtailed the survival of the aquatic juveniles, and killed off their snail prey.

By the early 1920s, people took notice of the fact that firefly populations around Japan were thinning out. In response, the Japanese government in 1924 established the first National Natural Monument, providing legal protection for the Genji firefly habitat. Local communities undertook municipal projects to clean up their rivers, while commercial harvesting of wild fireflies was regulated, then banned altogether. Numerous private citizens attempted to raise the aquatic fireflies in captivity, using trial and error to coddle them through each life stage. Once these artificial breeding programmes determined how to rear large numbers of firefly larvae, they were reintroduced into rivers to bolster dwindling natural populations. While Japanese fireflies have never been restored to their former glory days, a predictably sad saga was transformed into a conservation success story by an impressive combination of national, local and private efforts. Now, Genji fireflies have become a symbol of national pride and Japanese environmentalism. [...]

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Q.18

What is the main purpose of the author in the last paragraph?

- 1 To exhort us to follow the Japanese model in conserving our natural resources.
- 2 To highlight the importance of learning a lesson in ecological conservation from Japan.
- 3 To explain the various processes associated with making this planet a better place for our future generation.
- 4 To make us understand how we can counter the extinction of species by encouraging artificial harvesting.

Solution:

Correct Answer : 2

Genre: Ecology / Environmental Studies

Word Count# 547

 **Bookmark**

 **Answer key/Solution**

The author mentions the following two points in the passage:

1. The past of the Genji fireflies in Japan and how/why they became almost extinct
2. The revival of Genji in Japan

However, the main intention of the author behind writing the first point is to create a backdrop for the second point. So, the second point is the main focus of the author. This makes option 2 the correct choice.

Option 1 – The author doesn't talk about the Japanese conservation of 'natural resources'. It is a broad option.

Option 3 – This is clearly both broad and irrelevant.

Option 4 – This is too generic. The author wants us to learn something from Japan. But the author is not focusing on the method i.e. 'artificial harvesting'.

FeedBack

Direction for questions (16-20): Read the given passage and answer the questions that follow.

[...] Best-known among Japan's 50 different firefly species is the Genji firefly, *Luciola cruciate*. With its fast-flowing rivers and streams, Japan provides ideal habitats for this firefly, whose life cycle is intimately tied to water. Females lay their eggs along mossy riverbanks, and newly hatched larvae crawl down into the water. As juveniles, these aquatic fireflies spend several months underwater, feasting on freshwater snails. Eventually, the young fireflies crawl back onto land, before metamorphosing into the familiar adults. As forerunners of early summer, Genji fireflies' lime-green lights float silently over the water, mysterious and

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Q.19

All of the following have been cited as steps the Japanese took to boost the population of Genji EXCEPT:

-
- 1 Individuals participating in the artificial breeding programmes for Genji

2 Banning commercial harvesting of Genji

3 Providing legal protection for Genji

4 Reintroducing water into the habitats of Genji to bolster their breeding grounds

Solution:

Correct Answer : 4

Genre: Ecology / Environmental Studies

Word Count# 547

 **Bookmark**

 **Answer key/Solution**

Options 1, 2, and 3 can be easily located in the passage.

Option 4 – This has not been mentioned in the passage. The author talks about releasing the larvae into the rivers.

FeedBack

Direction for questions (16-20): Read the given passage and answer the questions that follow.

[...] Best-known among Japan's 50 different firefly species is the Genji firefly, *Luciola cruciate*. With its fast-flowing rivers and streams, Japan provides ideal habitats for this firefly, whose life cycle is intimately tied to water. Females lay their eggs along mossy riverbanks, and newly hatched larvae crawl down into the water. As juveniles, these aquatic fireflies spend several months underwater, feasting on freshwater snails. Eventually, the young fireflies crawl back onto land, before metamorphosing into the familiar adults. As forerunners of early summer, Genji fireflies' lime-green lights float silently over the water, mysterious and otherworldly.

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Q.20

Which of the following situations would most justify the use of the phrase "being loved to death", as per the passage?

-
- 1 Paul can't take any independent decision as he has been raised by a very loving and protective mother.
 - 2 Rishabh is unable to realise his full potential in Cricket, despite the latter being the most popular sport in the country.
 - 3 The Moor of Venice kills his wife whom he adores more than anyone in this world.
 - 4 John leaves his band and falls out with his best friend Macca because the latter doesn't approve of John's obsession with his ladylove Yoko.
-

Solution:**Correct Answer : 3****Genre: Ecology / Environmental Studies****Word Count# 547** **Bookmark** **Answer key/Solution**

The primary logic behind the phrase, in terms of the context of the passage, is that the Japanese loved fireflies. However, this love proved to be almost fatal for the fireflies. So, we need to find an option where this 'destructive love' analogy is matched.

Option 1 – There is no mention of the mother's love being destructive. It's Paul's problem that he can't take any decision. However, this may not be deemed destructive.

Option 2 – Again, it doesn't match the analogy. There is no mention of Rishabh not being able to perform well due to high expectations or excessive admiration.

Option 3 – It is clearly the answer. Thinking of The Bard or Othello doesn't hurt either.

However, this piece of outside knowledge is not required while answering this question.

Option 4 – There is no data to support that John suffers any 'destruction' due to his obsession. 'Falling out' may or may not be destructive. You are not supposed to think of The Beatles (however, kudos if you got the reference) while answering this question.

 **FeedBack**

Direction for questions (21-24): Read the given passage and answer the questions that follow.

My brain flickered into consciousness and, a moment later, a tiny lift in my chest made itself known. Glee. A simple but palpable joy on waking. I bounded out of bed, looking forward to the day. Then a sudden jolt had me standing, motionless, gazing across the room in wonder. I'm looking forward to my day! I'm looking forward to my day? Bloody hell! A slow grin squeezed my cheeks as energy zipped around my body and, refusing to be contained, had me gyrating my hips and arms in sync, dancing, barely dressed, around my bedroom, wondering whether I'd care – or stop – if either of my teenage children walked in. I'm looking forward to my day! I'm looking forward to my day! Whaaaaa-hoo!

It was, in fact, an ordinary day. I was getting the train to work, sitting in an office, then coming home again. But my energy! I could feel it pulsing through me and my body tingled with vitality. Later, at my desk, my concentration was focused, the words I was reading hanging together. Walking around the building, my torso stood tall. In conversations, my brain and mouth played ball. None of which had been the case all on the same day for a long, long time.

The best part of this energised, vivacious me, however, was the absence of any niggling doubt. No background anxiety that I'd never feel like this again: that this was a one-off; that this was how everybody, except me, got to feel most of the time; that this being part of the human race again would be zapped away tomorrow.

No, this joyous life force, this jubilant exuberance for merely existing, was a part of me, propelling me into each moment. And, fabulously, amazingly, miraculously, I knew how to get it. After 20 years of not knowing and desperately trying, hoping, longing, and oh, so-wretchedly failing, I now knew how to *sleep*.

Sleep, the elixir of life, is something most people take for granted. Like oxygen. Or a skeleton. Or the sunrise. "I'm tired," people say. And I resist the temptation to give them my life story. Or, at least, my night-time story of the past two decades. [...]

"We are in a sleeplessness epidemic," claims Dr Guy Meadows, co-founder and clinical director of the Sleep School, which runs a chain of insomnia clinics. "Tiredness," he asserts, "is the new norm."

Colin Espie is not so sure. Professor of sleep medicine at Oxford University's Nuffield Department of Clinical Neuroscience, he argues that sleep deprivation is nothing new. "The idea that challenges with sleep are a modern phenomenon is manifestly ridiculous," he says. "People have had much more stressful lives historically than they have in the modern west. Life for people in the past, faced with a lack of clean water and food, was stressful." [...]

Q.21

The narrative style of the author can best be described as:

- 1 A humorous anecdotal narration that suddenly shifts into an argumentative stance.

- 2 A casual narration of a topic that introduces a much larger personal issue.
- 3 A problem is presented from a personal point of view before the introduction of a broader viewpoint.
- 4 A first person narrative that changes into a third person narrative so that the reader can relate better to the topic.

Solution:

Correct Answer : 3

Genre: Psychology / Cognitive Behaviour

Word Count# 473

 **Bookmark**

 **Answer key/Solution**

This is not a very difficult passage to follow. This is a logical structure question. So, we need to eliminate the incorrect options.

Option 1 – The author starts with an anecdote. However, there is no 'argumentative stance' towards the end.

Option 2 – The narration is casual and personal. However, the author moves on to talk about the larger implication of this personal issue of insomnia. So, this option is partially correct.

Option 3 – This is the correct answer. The shift of the 'narrow to broad' perspective on the issue is correctly captured by this option.

Option 4 – There is no hint that the readers understand third person narrative better.

 **FeedBack**

Direction for questions (21-24): Read the given passage and answer the questions that follow.

My brain flickered into consciousness and, a moment later, a tiny lift in my chest made itself known. Glee. A simple but palpable joy on waking. I bounded out of bed, looking forward to the day. Then a sudden jolt had me standing, motionless, gazing across the room in wonder. I'm looking forward to my day! I'm looking forward to my day? Bloody hell! A slow grin squeezed my cheeks as energy zipped around my body and, refusing to be contained, had me gyrating my hips and arms in sync, dancing, barely dressed, around my bedroom, wondering whether I'd care – or stop – if either of my teenage children walked in. I'm looking forward to my day! I'm looking forward to my day! Whaaaaa-hoo!

It was, in fact, an ordinary day. I was getting the train to work, sitting in an office, then coming home again. But my energy! I could feel it pulsing through me and my body tingled with vitality. Later, at my desk, my concentration was focused, the words I was reading hanging together. Walking around the building, my torso stood tall. In conversations, my brain and mouth played ball. None of which had been the case all on the same day for a long, long time.

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Q.22

As per the passage, the narrator has struggled with all of the following EXCEPT:

- 1 Chronic insomnia

2 Anxiety disorder

3 Physical and mental fatigue

4 Resisting deep sleep



Solution:

Correct Answer : 4

Your Answer : 4

Genre: Psychology / Cognitive Behaviour

Word Count# 473

Bookmark

Answer key/Solution

The author never resists deep sleep. Insomnia means that there is no possibility of getting 'deep sleep'. So, option 4 is the clear answer.

FeedBack

Direction for questions (21-24): Read the given passage and answer the questions that follow.

My brain flickered into consciousness and, a moment later, a tiny lift in my chest made itself known. Glee. A simple but palpable joy on waking. I bounded out of bed, looking forward to the day. Then a sudden jolt had me standing, motionless, gazing across the room in wonder. I'm looking forward to my day! I'm looking forward to my day? Bloody hell! A slow grin squeezed my cheeks as energy zipped around my body and, refusing to be contained, had me gyrating my hips and arms in sync, dancing, barely dressed, around my bedroom, wondering whether I'd care – or stop – if either of my teenage children walked in. I'm looking forward to my day! I'm looking forward to my day! Whaaaaa-hoo!

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Q.23

As per the passage, the narrator is happy because of all of the following reasons EXCEPT:

- 1 She feels energetic and well-rested.

- 2 She has a premonition that her day is going to be extraordinary.
- 3 She feels focused and enjoys the ability to concentrate after quite a while.
- 4 She feels confident that she will be able to sustain her newfound energy.

X

Solution:

Correct Answer : 2

Your Answer : 3

Genre: Psychology / Cognitive Behaviour

Word Count# 473

 **Bookmark**

 **Answer key/Solution**

Options 1, 3, and 4 are clearly mentioned in the passage.

Option 2 – This is the answer. Refer to the line, “It was, in fact, an ordinary day.”

FeedBack

Direction for questions (21-24): Read the given passage and answer the questions that follow.

My brain flickered into consciousness and, a moment later, a tiny lift in my chest made itself known. Glee. A simple but palpable joy on waking. I bounded out of bed, looking forward to the day. Then a sudden jolt had me standing, motionless, gazing across the room in wonder. I'm looking forward to my day! I'm looking forward to my day? Bloody hell! A slow grin squeezed my cheeks as energy zipped around my body and, refusing to be contained, had me gyrating my hips and arms in sync, dancing, barely dressed, around my bedroom, wondering whether I'd care – or stop – if either of my teenage children walked in. I'm looking forward to my day! I'm looking forward to my day! Whaaaaa-hoo!

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Q.24

With which of the following does Colin Espie strongly disagree?

- 1 The notion that insomnia is really a grave matter of international concern.

2 The belief that modern day stress is the root cause of all physical illnesses.

3 The notion that we should be worried about mass insomnia.

4 The belief that the current problem of insomnia is unique.



Solution:

Correct Answer : 4

Your Answer : 4

Genre: Psychology / Cognitive Behaviour

Word Count# 473



[Answer key/Solution](#)

Colin Espie's main contention as per the passage is "that sleep deprivation is nothing new." So, he will not agree with option 4. He clearly believes that it is not a unique or new phenomenon.

Options 1, 2, and 3 are not so clear. Espie may or may not agree with these. But he will surely not agree with option 4.

[FeedBack](#)

Q.25

Directions for question (25): 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. The raids reached a crescendo in the second half of the ninth century. In Ireland the Vikings established *longphorts* – fortified ports – including at Dublin, from which they dominated much of the eastern part of the island.
2. But in the 850s they began to overwinter in southern England, in Ireland and along the Seine in France, establishing bases from which they began to dominate inland areas.
3. In France they grew in strength as a divided Frankish kingdom fractured politically and in 885 a Viking army besieged and almost captured Paris.
4. At first the raids were small-scale affairs, a matter of a few boatloads of men who would return home once they had collected sufficient plunder or if the resistance they encountered was too strong.



Solution:**Correct Answer : 4213****Your Answer : 4213**

This is an easy question if we keep the chronological sequence in mind.

Bookmark**Answer key/Solution**

Sentence 4 is the opening sentence. It is a bit abrupt as this is clearly a part of a larger paragraph.

42 is a pair. 'But' shows that the raids became bigger.

1 adds to the idea mentioned in 2 with the word 'crescendo'.

3 comes after 1. It refers to the year 885. So, it will come after 2 and 1. So, 4213 is the correct sequence.

FeedBack**Q.26**

Directions for question (26): 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. It was not as if he thought he could keep his identity as the author hidden for long.**
- 2. But it was important to the book's effect that it be a kind of highly elaborate practical joke.**
- 3. The element of game-playing in this was characteristic of Swift.**
- 4. Indeed, there is evidence that he was irked when, at first, some readers attributed *Gulliver's Travels* to other authors.**

**Solution:****Correct Answer : 3142****Your Answer : 3142**

For this paragraph, keep the noun and pronoun rule. Swift is the name of the protagonist of this paragraph. Sentences 1 and 4 use the pronoun 'he'. Sentence 2 talks about 'the book'. So, it has to follow 4 (*Gulliver's Travels*). Thus 31 and 42 create two mandatory pairs. As 3 is the opening sentence, the correct sequence is 3142.

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

Even others advocate for a higher ratio than 84%, saying that women have more job displacement from childbirth and cannot achieve as many promotions as men. But shouldn't that be taken into consideration as one enormous obstacle for women? Why do only women's careers and pay suffer from childbirth, when we live in a society where men and women should be expected to equally care for their child? Why don't we have better paid leave for parents after having a baby? Many Scandinavian countries have paid leave for up to one year that can be split any way between the two parents.

- 1 Women should not be held accountable for any economic loss which results from childbirth.
- 2 Women should not be punished for playing a role that the society expects them to carry out in an efficient manner.
- 3 Women's careers suffer after childbirth but that should be considered as a valid point of debate.
- 4 Countries should follow the Scandinavian model of gender equality norms.



Solution:

Correct Answer : 3

Your Answer : 1

The author's main point is that women's careers suffer due to childbirth and it is unfair. Option 3 is the correct answer.

 **Bookmark**

 **Answer key/Solution**

Option 1 – 'Any economic loss' distorts this option.

Option 2 – Efficiently playing a societal role is not the main point. Childbirth is a biological process too. It also doesn't capture the main idea of the paragraph.

Option 4 – This just reiterates the last sentence of the paragraph. It is a conclusion, not the summary.

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. Wycherley, Etherege and Vanbrugh were aristocrats with close links to the Stuart court, and where men who saw writing plays as a gentleman's pastime.
2. Congreve was an intellectual and a Whig supporter, whose writing celebrates the values of the powerful new elite that had forced the Stuarts into exile in 1688.
3. The obscure and impoverished Aphra Behn was the only woman and the first to 'write for bread'.
4. Within this select group there is much variety.
5. With the re-establishment of a largely unchanged autocratic monarchy, first with the restoration of Charles II in 1660 and then the ascendancy of James II in 1685, leading political thinkers began to reappraise how society and politics could be better structured.



Solution:

Correct Answer : 5

Your Answer : 5

The correct order is 4312. Sentence 4 talks about a group.

Sentences 1, 2, and 3 mention writers who belonged to this group.



Answer key/Solution

FeedBack

Q.29

Directions for question (29): 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. Researchers then tested five different groups of *Arabidopsis*, broadcasting one of five different frequencies via loudspeakers for one-hour intervals, at a constant amplitude of 80 decibels overall.
2. In their study, the researchers found evidence that sonic vibrations—not unlike those from crickets or birds—cause biological reactions in vegetation.
3. They also left a selection of plants in the sound chamber without exposure to the sonic vibrations, as a control.
4. After planting and raising *Arabidopsis thaliana*, a common weed, in artificial soil for over three weeks, the Yeungnam research team transferred their subject into a soundproof chamber.

X

Solution:

Correct Answer : 2413

Your Answer : 2341

Notice the words 'then' in 1 and 'also' in 3. Sentence 4 also talk about 'after planting...'

So, sentence 2 has to be the opening sentence.

Sentence 4 mentions the first step of the experiment mentioned in 2. 1 follows with 'then'. 3 will follow at the end. So, 2413 is the correct sequence.

 **Bookmark**

 **Answer key/Solution**

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. On the other hand, some societies have the capability and means to assist others because of their experience, working knowledge, as well as available resources.
2. Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
3. In a global village where we live at present, it is in everyone's interest that any society ideally meets the above-mentioned conditions.
4. Therefore, a proactive effort to achieve such conditions should become prime vehicle for global cooperation.
5. However, some societies have difficulties achieving those conditions, despite their best effort to actively seek and work towards these goals.

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

The correct order is 3514. These sentences talk about the current global situation and the issue of sustainable development. Notice the phrase 'such conditions' in sentence 4. The conditions are mentioned in sentences 3, 5, and 1.

Bookmark**Answer key/Solution**

Sentence 2 is a generic definition of the term. So, it will most likely come before this paragraph. It is the odd one out.

FeedBack**Q.31**

Directions for question (31): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

There were some remedies to breaking a mirror. Some believed that the bad luck could be washed away by putting the pieces in water or burying them in the moonlight. Others suggested pounding the pieces into dust or leaving the mirror where it broke for 7 hours before cleaning it up. For a servant in the Middle Ages, these methods would not spare them the wrath of their master, however. In the 16th century, a much cheaper way to produce mirrors was found but by then the bad omens associated with breaking a mirror were too much a part of culture and they persisted.

- 1 The myth related to bad luck being caused by the breaking mirrors continued to remain in existence despite changed times.
- 2 Despite the increasing popularity of cheaper mirrors, the superstitions continued to affect the people who were not in power.
- 3 There were remedies prescribed for breaking a mirror during the middle ages which still didn't help the servants in escaping punishment.
- 4 The middle ages were full of superstitions such as breaking a mirror leads to bad luck.



Solution:**Correct Answer : 1****Your Answer : 1****The main points the author makes are:**

- There were some remedies to the superstition associated with breaking a mirror in the old age.
- This superstition continued despite the new way of producing a cheaper mirror.

Bookmark **Answer key/Solution****Option 1** mentions these two points. So, it is the correct answer.**Option 2** – ‘People who were not in power’ distorts the meaning.**Option 3** – This doesn’t mention the second point.**Option 4** – This is too generic and talks about ‘superstitions’ which goes beyond the scope of the paragraph.**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. What often goes unnoticed, though, is that anxieties about exhaustion are not peculiar to our age.
2. Those who imagine that life in the past was simpler, slower and better are wrong.
3. The experience of exhaustion, and anxieties about exhaustion epidemics in the wider population, are not bound to a particular time and place.
4. On the contrary: exhaustion and its effects have preoccupied thinkers since classical antiquity.

**Solution:****Correct Answer : 1234****Your Answer : 1234**

‘Our age’ in 1 is followed by ‘life in the past’ in 2. So, 12 make a mandatory pair.

Bookmark **Answer key/Solution**

3 and 4 make a pair too. ‘On the contrary’ in 4 counters the point mentioned in 3.

So, there can be two sequences 1234 and 3412. However, 1 can’t come after 4. The scope of 1 is broader as it talks about the topic of anxieties. Sentences 3 and 4 talk about experiences related to these issues. So, 1234 is a more logical sequence.

FeedBack

Q.33

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

1. In fact, the focus on individual demagogues is largely misguided.
2. It should come as little surprise, then, that rhetorical scholarship on demagoguery is also coming back into favour.
3. And yet, given the realities of national and international politics, demagoguery is back in the forefront of the world's political consciousness.
4. Political leaders in such far-flung countries as France, Turkey, and Hungary, among others, have been credibly accused of employing demagogic rhetoric in their aspirations to, or maintenance of, political power.
5. The main catalyst for American rhetoricians' interest in demagoguery has been Donald J. Trump.

X

Solution:

Correct Answer : 1

Your Answer : 4

The correct order is 3524. These sentences talk about how demagoguery has been revived in the last few years and, as a result, academicians have become interested in the topic too. These sentences are neutral and factual in nature.



Answer key/Solution

Sentence 1 abruptly talks about these studies or thoughts being misguided. It doesn't match the tone of the other sentences. So, it is the odd one out.

FeedBack

Q.34

Directions for question (34): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Before they speak or crawl or walk or achieve many of the other amazing developmental milestones in the first year of life, babies *laugh*. This simple act makes its debut around the fourth month of life, ushering in a host of social and cognitive opportunities for the infant. Yet despite the universality of this humble response and its remarkable early appearance, infant laughter has not been taken seriously. At least, not until recently. In the past decade, researchers have started to examine what infant laughter can reveal about the youngest minds, whether infants truly understand *funniness*, and if so, how.

-
- 1 Babies learn to laugh faster than adults do, a trait that has been neglected by researchers.
-
- 2 The universal aspect of funniness in children has not been given its due regard.
-
- 3 In the field of academics, laughter in children is an important cognitive concept.
-
- 4 Researchers have recently started to study the important aspect of laughter and its role in the development of infants.

Solution:

Correct Answer : 4

The main point of the author is that laughter is an important aspect of the development of infants and researchers have started to study this topic. So, option 4 is the clear answer.

 **Bookmark**

 **Answer key/Solution**

Option 1 – This is distorted. There is no comparison between ‘babies and adults’.

Option 2 – ‘Universal aspect of funniness’ is too broad. This paragraph is also about infants, not children in general.

Option 3 – This is an incomplete option. It doesn’t mention the main idea of the paragraph.

FeedBack

Sec 2

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

In a distant era called the Void century, there were many great swordsmen but five among them stood a class apart. Their names were famous all over the world and even their swords became famous. These five swordsmen were Zoro, Mihawk, Fujitora, Shiryu and Shanks. Each one of them used a different sword namely Youru, Gryphon, Enma, Raiu and Gravity, but not necessarily in that order. These swordsmen could be a Pirate or a Marine or a Lord. A historian developed the following ranking method for these swordsmen. Under this method, the physical strength of the swordsmen is categorized from level 1 to 5, with 5 being the strongest. Similarly, the quality of swords is also categorized from 1 to 5, with 5 being the strongest. Each swordsman and sword has a unique rank from 1 to 5. The overall rank of a swordsman is the sum of the ranks of his sword and his physical strength. No swordsman has the same rank for both his physical strength and the sword that he carries. Further, the historian established the following information based on his research.

- Youru is the strongest sword while Gravity is the weakest sword.
- The swordsman with the highest overall rank is neither a Pirate nor Marine, also he is not the physically strongest but has the strongest sword.
- There is only one Marine in this group of five, who yields the weakest sword but does not have the lowest overall rank.
- Zoro is stronger than Shiryu physically and uses Enma, the second strongest sword, while Shanks is physically the strongest and he uses Gryphon.
- The physically weakest pirate is also the swordsman with the least overall rank.
- The overall ranks of swordsmen seem to form an Arithmetic Progression.
- Higher is the overall rank, the more powerful the swordsman is.

Q.35

Find the overall rank of Zoro.

Solution:

Correct Answer : 6

 **Bookmark**

 **Answer key/Solution**

Rank of swordsmen = physical strength + strength of sword (so maximum power possible = 10 and minimum = 2)

From statement I, strength of sword Yoru is 5 and strength of Gravity is 1.

From statement II, strongest swordsman is a Lord. He yields the strongest sword Yoru of strength 5. But his physical strength cannot be 5, therefore, the maximum overall rank possible is 9.

From statement III, there is only one marine whose sword is Gravity. He is not the weakest which means his overall rank is not the last.

From statement IV, Enma has strength 4, and is used by Zoro. Shanks has a physical strength 5, he uses Gryphon.

From statement V, the least overall ranked swordsmen is a pirate.

Name of Swordsman	Physical Strength(a)	Name of Sword	Strength of Sword (b)	Group	Overall rank (c = a + b)
		Yoru	5	Lord	Max.9
		Gravity	1	Marine	
Zoro		Enma	4		
Shanks	5	Gryphon			
		Raiu			

Now the overall power levels are in AP. Also the individual values are sum of a and b. so the sum of AP i.e., $\Sigma C = \Sigma a + \Sigma b = 30$. The only possible AP of 5 terms with numbers between 3 to 9 and sum = 30 is 4, 5, 6, 7 and 8. This is the overall power level of five swordsmen.

The maximum power is 8. Yoru of strength 5 belongs to the swordsman with maximum overall rank. So the physical strength of that swordsman is $8 - 5 = 3$.

Strength of sword Gryphon has to be 2 otherwise Shanks will be the strongest. This means strength of sword Raiu is 3. Minimum overall power is 4 and Zoro or the Marine can't take the position. So, the person yielding Raiu is the weakest swordsman. His overall rank is 4, physical power is 1 and he is a Pirate.

Therefore, Zoro's physical strength is 2. This means Shiryu, who is physically weaker than Zoro, will have a physical strength of 1.

Name of Swordsman	Physical Strength(a)	Name of Sword	Strength of Sword (b)	Group	Overall rank (c = a + b)
Fujitora/Mihawk	3	Yoru	5	Lord	8
Mihawk/Fujitora	4	Gravity	1	Marine	5
Zoro	2	Enma	4		6
Shanks	5	Gryphon	2		7
Shiryu	1	Raiu	3	Pirate	4

The overall rank of Zoro is 6.

FeedBack

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

In a distant era called the Void century, there were many great swordsmen but five among them stood a class apart. Their names were famous all over the world and even their swords became famous. These five swordsmen were Zoro, Mihawk, Fujitora, Shiryu and Shanks. Each one of them used a different sword namely Youru, Gryphon, Enma, Raiu and Gravity, but not necessarily in that order. These swordsmen could be a Pirate or a Marine or a Lord. A historian developed the following ranking method for these swordsmen. Under this method, the physical strength of the swordsmen is categorized from level 1 to 5, with 5 being the strongest. Similarly, the quality of swords is also categorized from 1 to 5, with 5 being the strongest. Each swordsman and sword has a unique rank from 1 to 5. The overall rank of a swordsman is the sum of the ranks of his sword and his physical strength. No swordsman has the same rank for both his physical strength and the sword that he carries. Further, the historian established the following information based on his research.

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- The swordsman with the highest overall rank is neither a Pirate nor Marine, also he is not the physically strongest but has the strongest sword.
- There is only one Marine in this group of five, who yields the weakest sword but does not have the lowest overall rank.
- Zoro is stronger than Shiryu physically and uses Enma, the second strongest sword, while Shanks is physically the strongest and he uses Gryphon.
- The physically weakest pirate is also the swordsman with the least overall rank.
- The overall ranks of swordsmen seem to form an Arithmetic Progression.
- Higher is the overall rank, the more powerful the swordsman is.

Q.36

Who among the following is definitely a Pirate?

1 Shiryu

2 Shanks

3 Fujitora

4 Mihawk

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

Rank of swordsmen = physical strength + strength of sword (so maximum power possible = 10)

and minimum = 2)

From statement I, strength of sword Yoru is 5 and strength of Gravity is 1.

From statement II, strongest swordsman is a Lord. He yields the strongest sword Yoru of strength 5. But his physical strength cannot be 5, therefore, the maximum overall rank possible is 9.

From statement III, there is only one marine whose sword is Gravity. He is not the weakest which means his overall rank is not the last.

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		Gravity	1	Marine	
Zoro		Enma	4		
Shanks	5	Gryphon			
		Raiu			

Now the overall power levels are in AP. Also the individual values are sum of a and b. so the sum of AP i.e., $\Sigma C = \Sigma a + \Sigma b = 30$. The only possible AP of 5 terms with numbers between 3 to 9 and sum = 30 is 4, 5, 6, 7 and 8. This is the overall power level of five swordsmen.

The maximum power is 8. Yoru of strength 5 belongs to the swordsman with maximum overall rank. So the physical strength of that swordsman is $8 - 5 = 3$.

Strength of sword Gryphon has to be 2 otherwise Shanks will be the strongest. This means strength of sword Raiu is 3. Minimum overall power is 4 and Zoro or the Marine can't take the position. So, the person yielding Raiu is the weakest swordsman. His overall rank is 4, physical power is 1 and he is a Pirate.

Therefore, Zoro's physical strength is 2. This means Shiryu, who is physically weaker than Zoro, will have a physical strength of 1.

Name of Swordsman	Physical Strength(a)	Name of Sword	Strength of Sword (b)	Group	Overall rank (c = a + b)
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Mihawk/Fujitora	4	Gravity	1	Marine	5
Zoro	2	Enma	4		6
Shanks	5	Gryphon	2		7
Shiryu	1	Raiu	3	Pirate	4

Shiryu is definitely a pirate.

FeedBack

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

In a distant era called the Void century, there were many great swordsmen but five among them stood a class apart. Their names were famous all over the world and even their swords became famous. These five swordsmen were Zoro, Mihawk, Fujitora, Shiryu and Shanks. Each one of them used a different sword namely Youru, Gryphon, Enma, Raiu and Gravity, but not necessarily in that order. These swordsmen could be a Pirate or a Marine or a Lord. A historian developed the following ranking method for these swordsmen. Under this method, the physical strength of the swordsmen is categorized from level 1 to 5, with 5 being the strongest. Similarly, the quality of swords is also categorized from 1 to 5, with 5 being the strongest. Each swordsman and sword has a unique rank from 1 to 5. The overall rank of a swordsman is the sum of the ranks of his sword and his physical strength. No swordsman has the same rank for both his physical strength and the sword that he carries. Further, the historian established the following information based on his research.

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- Zoro is stronger than Shiryu physically and uses Enma, the second strongest sword, while Shanks is physically the strongest and he uses Gryphon.
- The physically weakest pirate is also the swordsman with the least overall rank.
- The overall ranks of swordsmen seem to form an Arithmetic Progression.
- Higher is the overall rank, the more powerful the swordsman is.

Q.37

If more than half of the group were Pirates, then who could be the Marine?

1 Mihawk

2 Zoro

3 Fujitora

4 Either (1) or (3)

Solution:**Correct Answer : 4****Bookmark****Answer key/Solution**

Rank of swordsmen = physical strength + strength of sword (so maximum power possible = 10 and minimum = 2)

From statement I, strength of sword Yoru is 5 and strength of Gravity is 1.

From statement II, strongest swordsman is a Lord. He yields the strongest sword Yoru of strength 5. But his physical strength cannot be 5, therefore, the maximum overall rank possible is 9.

From statement III, there is only one marine whose sword is Gravity. He is not the weakest which means his overall rank is not the last.

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		Raiu			

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Therefore, Zoro's physical strength is 2. This means Shiryu, who is physically weaker than Zoro, will have a physical strength of 1.

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Mihawk/Fujitora	4	Gravity	1	Marine	5
Zoro	2	Enma	4		6
Shanks	5	Gryphon	2		7
Shiryu	1	Raiu	3	Pirate	4

If the remaining swordsmen are all pirate, then either Mihawk or Fujitora could be a marine.

FeedBack

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

In a distant era called the Void century, there were many great swordsmen but five among them stood a class apart. Their names were famous all over the world and even their swords became famous. These five swordsmen were Zoro, Mihawk, Fujitora, Shiryu and Shanks. Each one of them used a different sword namely Youru, Gryphon, Enma, Raiu and Gravity, but not necessarily in that order. These swordsmen could be a Pirate or a Marine or a Lord. A historian developed the following ranking method for these swordsmen. Under this method, the physical strength of the swordsmen is categorized from level 1 to 5, with 5 being the strongest. Similarly, the quality of swords is also categorized from 1 to 5, with 5 being the strongest. Each swordsman and sword has a unique rank from 1 to 5. The overall rank of a swordsman is the sum of the ranks of his sword and his physical strength. No swordsman has the same rank for both his physical strength and the sword that he carries. Further, the historian established the following information based on his research.

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- The physically weakest pirate is also the swordsman with the least overall rank.
- The overall ranks of swordsmen seem to form an Arithmetic Progression.
- Higher is the overall rank, the more powerful the swordsman is.

Q.38

Who is the second most powerful swordsman of the Void century?

1 Fujitora

2 Shanks

3 Shiryu

4 Zoro

Solution:**Correct Answer : 2****Bookmark****Answer key/Solution**

Rank of swordsmen = physical strength + strength of sword (so maximum power possible = 10 and minimum = 2)

From statement I, strength of sword Yoru is 5 and strength of Gravity is 1.

From statement II, strongest swordsman is a Lord. He yields the strongest sword Yoru of strength 5. But his physical strength cannot be 5, therefore, the maximum overall rank possible is 9.

From statement III, there is only one marine whose sword is Gravity. He is not the weakest which means his overall rank is not the last.

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From statement V, the least overall ranked swordsmen is a pirate.

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		Gravity	1	Marine	
Zoro		Enma	4		
Shanks	5	Gryphon			
		Raiu			

Now the overall power levels are in AP. Also the individual values are sum of a and b. so the sum of AP i.e., $\Sigma C = \Sigma a + \Sigma b = 30$. The only possible AP of 5 terms with numbers between 3 to 9 and sum = 30 is 4, 5, 6, 7 and 8. This is the overall power level of five swordsmen.

The maximum power is 8. Yoru of strength 5 belongs to the swordsman with maximum overall rank. So the physical strength of that swordsman is $8 - 5 = 3$.

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Therefore, Zoro's physical strength is 2. This means Shiryu, who is physically weaker than Zoro, will have a physical strength of 1.

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Mihawk/Fujitora	4	Gravity	1	Marine	5
Zoro	2	Enma	4		6
Shanks	5	Gryphon	2		7
Shiryu	1	Raiu	3	Pirate	4

Shanks is the second most powerful swordsman.

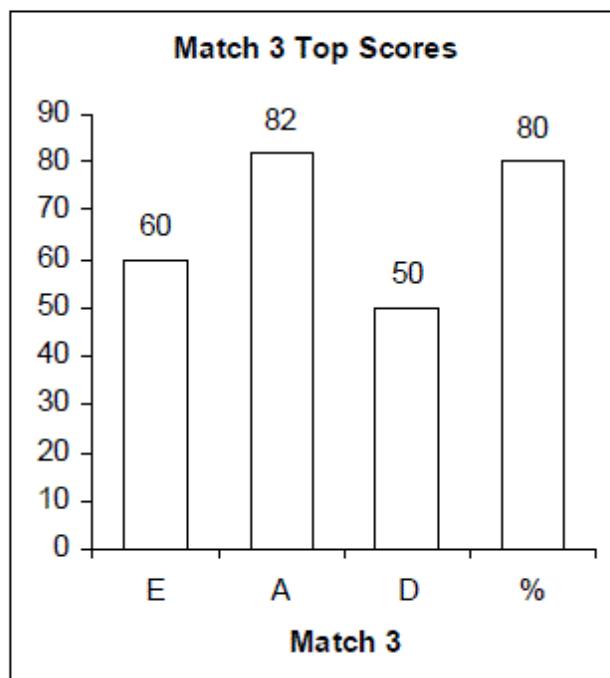
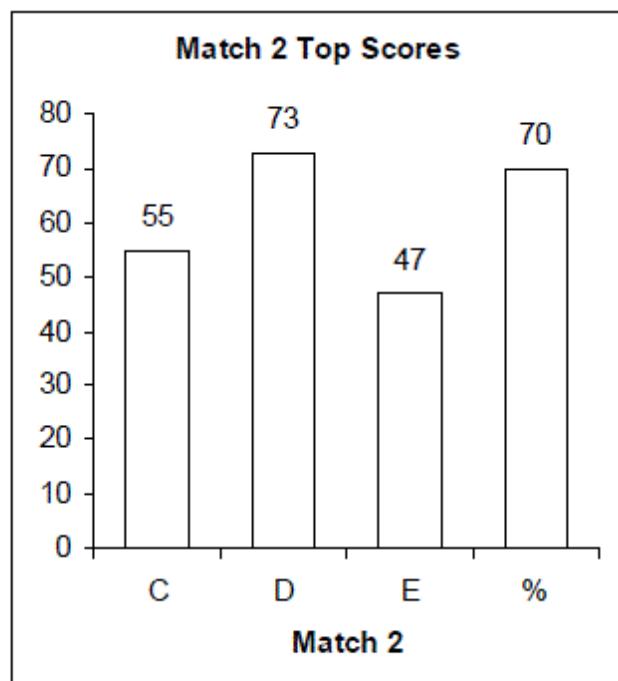
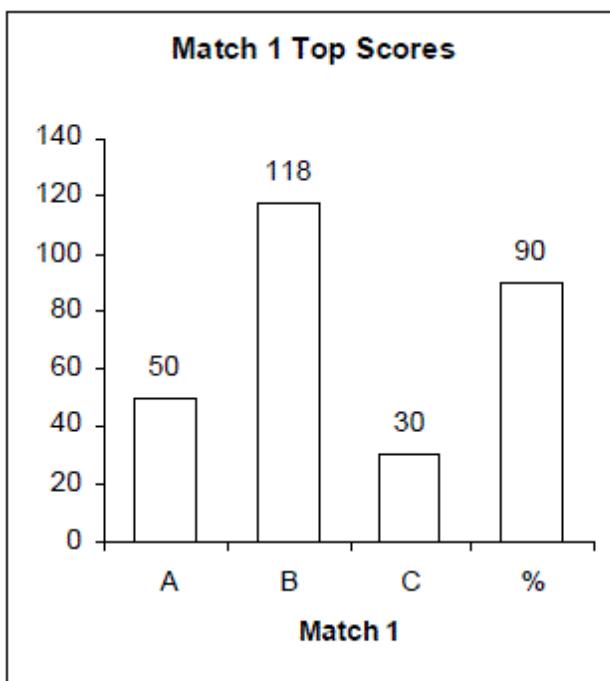
FeedBack

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

Given below are the scores of five major batsmen - A, B, C, D and E - of team India during the three ODIs of a tournament. The number of runs scored by top three batsmen in a match and the percentage of the total score that was scored by the top three batsmen of that match are represented in the given bar charts.

Take into consideration the following assumptions:

- i. The number of runs scored by any two batsmen in any match is not same.
- ii. No other batsman except these five got a chance to bat in any of the three matches.
- iii. The team remains the same for these three ODIs.



Q.39

If d is the difference between the highest and the lowest possible scores of a batsman in the three ODIs, then the value of d can be lowest for how many batsmen?

1 3

2 4

3 2

4 1

**Solution:**

Correct Answer : 2

Your Answer : 2



[Answer key/Solution](#)

Let the total number of runs scored in match 1, match 2 and match 3 are T_1 , T_2 and T_3 respectively.
As per the information given in bar graph,

$$\text{For match 1: } \frac{90}{100} \times (T_1) = (50 + 118 + 30) \\ \therefore T_1 = 220 \text{ runs}$$

$$\text{For match 2: } \frac{70}{100} \times (T_2) = (55 + 73 + 47) \\ \therefore T_2 = 250 \text{ runs}$$

$$\text{For match 3: } \frac{80}{100} \times (T_3) = (60 + 82 + 50) \\ \therefore T_3 = 240 \text{ runs}$$

Therefore, in match 1, the sum of number of runs scored by batsmen D and E is equal to $220 - (50 + 118 + 30) = 22$
i.e., $D + E = 22$ runs.

In match 2, the sum of number of runs scored by batsmen A and B is equal to $250 - (55 + 73 + 47)$
i.e., $A + B = 75$ runs.

In match 3, the sum of number of runs scored by batsmen B and C is equal to $240 - (60 + 82 + 50)$
i.e., $B + C = 48$ runs.

In match 1, the number of runs scored by each of batsmen D and E must be in the range 0 to 22.
Also, $D + E = 22$ runs.

In match 2, the number of runs scored by top 3 batsmen C, D and E are 55, 73 and 47 respectively.
So, the runs scored by each of A as well as B can not be greater than 46. Also, $A + B = 75$ runs.
So, minimum possible runs scored by A as well as B should be 29.

Similarly, in match 3, the runs scored by each of B and C must be in the range 0 to 48.
Also, $B + C = 48$ runs.

Now, we have the following final table:

	Match 1	Match 2	Match 3	Highest Score	Middle Score	Lowest Score	Total Score Range	S(Average)
Player A	50	75-y	82	82	50	75-y	161 to 178	169.5
Player B	118	y	48-z	118	-	-	147 to 212	179.5
Player C	30	55	z	55	-	-	85 to 133	109
Player D	x	73	50	73	50	x	123 to 145	134
Player E	22-x	47	60	60	47	22-x	107 to 129	118
TOTAL	220	250	240					

where, 'x' is the number of runs scored by player D in match 1 and $0 \leq x, 22 - x \leq 22$. 'y' is the number of runs scored by player B in match 2 and $29 \leq y, 75 - y \leq 46$ 'z' is the number of runs scored by player C in match 3 and $0 \leq z, 48 - z \leq 48$.

For the value of 'd' to be minimum for batsmen A, the possible number of runs scored by all the players can be

Player	Highest Score	Lowest Score	d(difference)
A	82	46	36 (Minimum)

B	118	46	72
C	55	18	37
D	73	22	51
E	60	22	38

For the value of 'd' to be minimum for batsman C, the possible number of runs scored by all the players can be

Player	Highest Score	Lowest Score	d(difference)
A	82	46	36
B	118	46	72
C	55	30	25 (Minimum)
D	73	22	51
E	60	22	38

For the value of 'd' to be minimum for batsman D, the possible number of runs scored by all the players can be

Player	Highest Score	Lowest Score	d(difference)
A	82	30	52
B	118	46	72
C	55	0	55
D	73	22	51 (Minimum)
E	60	0	60

For the value of 'd' to be minimum for batsman E, the possible number of runs scored by all the players can be.

Player	Highest Score	Lowest Score	d(difference)
A	82	30	52
B	118	46	72
C	55	0	55
D	73	22	51
E	60	22	38 (Minimum)

The value of 'd' can not be lowest for batsmen B.

∴ From above tables, we can conclude that the value of 'd' can be lowest for four batsmen i.e., A, C, D and E.
So, correct option is 2.

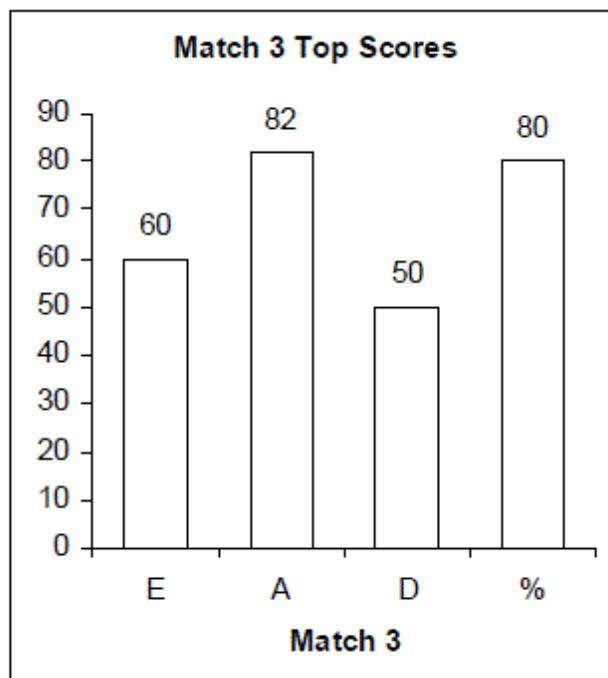
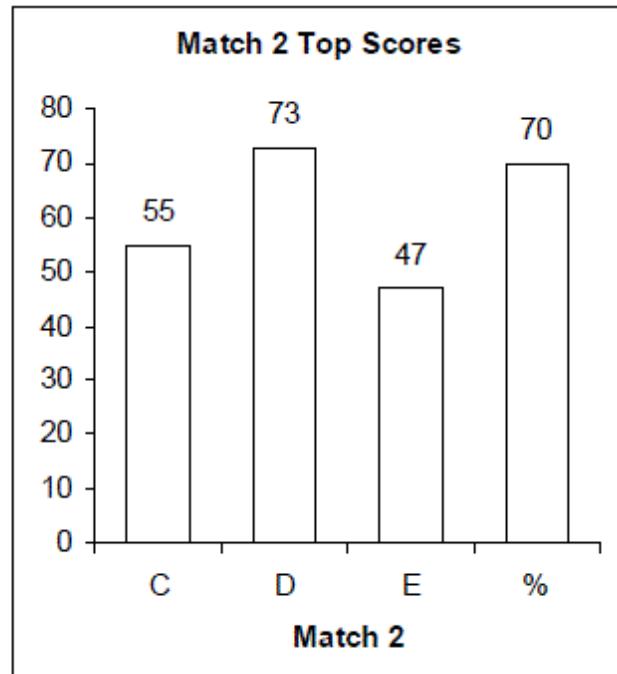
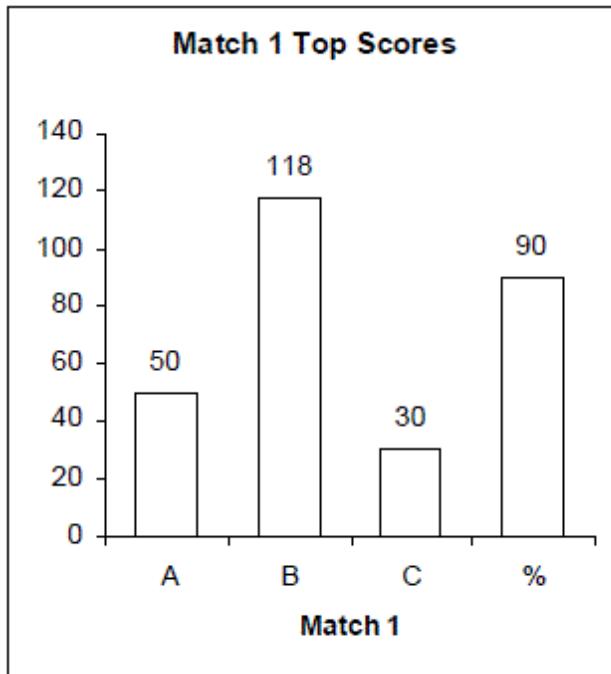
FeedBack

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

Given below are the scores of five major batsmen - A, B, C, D and E - of team India during the three ODIs of a tournament. The number of runs scored by top three batsmen in a match and the percentage of the total score that was scored by the top three batsmen of that match are represented in the given bar charts.

Take into consideration the following assumptions:

- i. The number of runs scored by any two batsmen in any match is not same.
- ii. No other batsman except these five got a chance to bat in any of the three matches.
- iii. The team remains the same for these three ODIs.



Q.40

Among the given batsmen, how many batsmen definitely scored less than A in these three ODIs?

1 0

2 1

3 2

4 More than 2

Solution:**Correct Answer : 4****Your Answer : 4****Bookmark****Answer key/Solution**

Let the total number of runs scored in match 1, match 2 and match 3 are T_1 , T_2 and T_3 respectively.
As per the information given in bar graph,

$$\text{For match 1: } \frac{90}{100} \times (T_1) = (50 + 118 + 30) \\ \therefore T_1 = 220 \text{ runs}$$

$$\text{For match 2: } \frac{70}{100} \times (T_2) = (55 + 73 + 47) \\ \therefore T_2 = 250 \text{ runs}$$

$$\text{For match 3: } \frac{80}{100} \times (T_3) = (60 + 82 + 50) \\ \therefore T_3 = 240 \text{ runs}$$

Therefore, in match 1, the sum of number of runs scored by batsmen D and E is equal to $220 - (50 + 118 + 30) = 22$
i.e., $D + E = 22$ runs.

In match 2, the sum of number of runs scored by batsmen A and B is equal to $250 - (55 + 73 + 47)$
i.e., $A + B = 75$ runs.

In match 3, the sum of number of runs scored by batsmen B and C is equal to $240 - (60 + 82 + 50)$
i.e., $B + C = 48$ runs.

In match 1, the number of runs scored by each of batsmen D and E must be in the range 0 to 22.
Also, $D + E = 22$ runs.

In match 2, the number of runs scored by top 3 batsmen C, D and E are 55, 73 and 47 respectively.
So, the runs scored by each of A as well as B can not be greater than 46. Also, $A + B = 75$ runs.
So, minimum possible runs scored by A as well as B should be 29.

Similarly, in match 3, the runs scored by each of B and C must be in the range 0 to 48.

Also, $B + C = 48$ runs.

Now, we have the following final table:

	Match 1	Match 2	Match 3	Highest Score	Middle Score	Lowest Score	Total Score Range	S(Average)
Player A	50	75-y	82	82	50	75-y	161 to 178	169.5
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Player C	30	55	z	55	-	-	85 to 133	109
Player D	x	73	50	73	50	x	123 to 145	134
Player E	22-x	47	60	60	47	22-x	107 to 129	118
TOTAL	220	250	240					

where, 'x' is the number of runs scored by player D in match 1 and $0 \leq x, 22 - x \leq 22$. 'y' is the number of runs scored by player B in match 2 and $29 \leq y, 75 - y \leq 46$ 'z' is the number of runs scored by player C in match 3 and $0 \leq z, 48 - z \leq 48$.

The minimum score possible for batsmen A in all the three ODI's is $(50 + 29 + 82) = 161$.

The maximum score possible batsmen B in all the three ODI's is $(118 + 46 + 48) = 212$.

The maximum score possible for batsmen C in all the three ODI's is $(30 + 55 + 48) = 133$.

The maximum score possible for batsmen D in all the three ODI's is $(22 + 73 + 50) = 145$.

The maximum score possible for batsmen E in all the three ODI's is $(22 + 47 + 60) = 129$.

\therefore We can conclude that three batsmen i.e., C, D and E definitely scored less than A in these three ODI's

So, correct answer is 4.

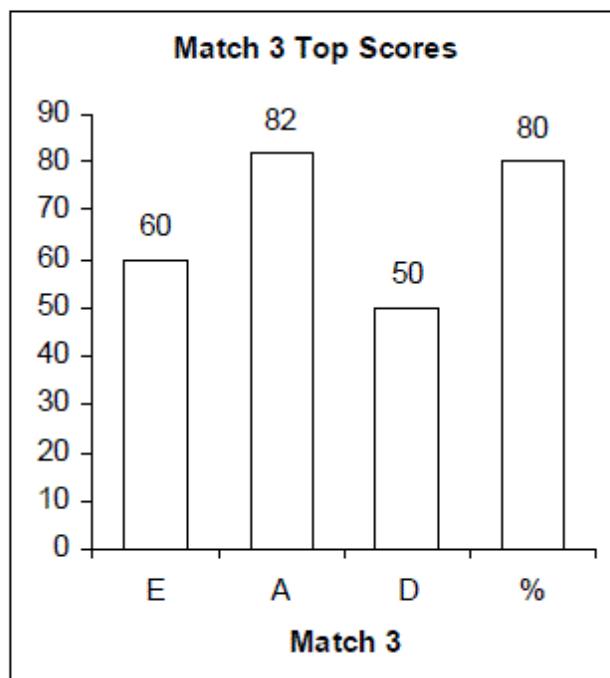
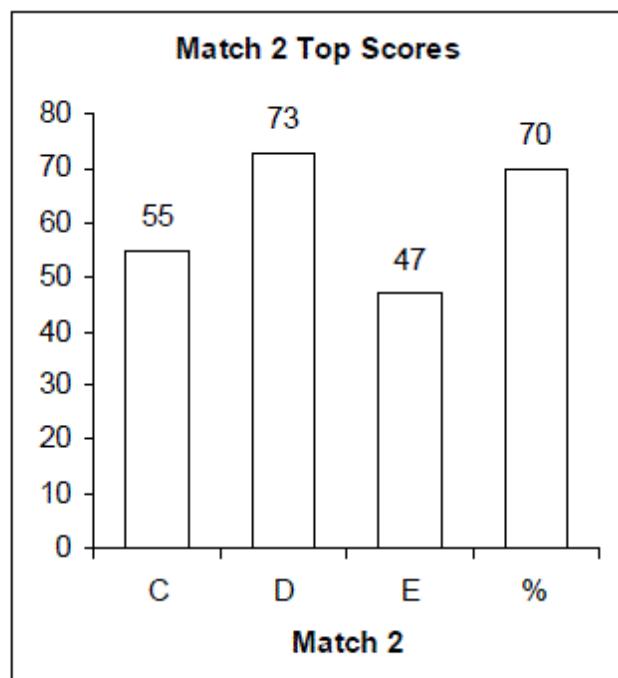
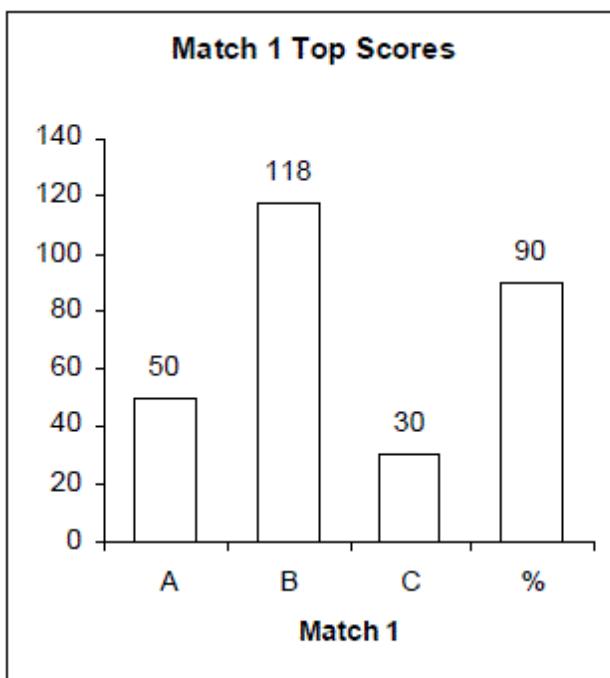
FeedBack

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

Given below are the scores of five major batsmen - A, B, C, D and E - of team India during the three ODIs of a tournament. The number of runs scored by top three batsmen in a match and the percentage of the total score that was scored by the top three batsmen of that match are represented in the given bar charts.

Take into consideration the following assumptions:

- i. The number of runs scored by any two batsmen in any match is not same.
- ii. No other batsman except these five got a chance to bat in any of the three matches.
- iii. The team remains the same for these three ODIs.



Q.41

If for each batsman, scores in three ODIs are arranged in decreasing order, then for how many players is it possible to calculate the middle number?

1 More than 2

2 2

3 1

4 0



Solution:

Correct Answer : 1

Your Answer : 1

 **Bookmark**

 **Answer key/Solution**

Let the total number of runs scored in match 1, match 2 and match 3 are T_1 , T_2 and T_3 respectively.
As per the information given in bar graph,

$$\text{For match 1: } \frac{90}{100} \times (T_1) = (50 + 118 + 30)$$

$$\therefore T_1 = 220 \text{ runs}$$

$$\text{For match 2: } \frac{70}{100} \times (T_2) = (55 + 73 + 47)$$

$$\therefore T_2 = 250 \text{ runs}$$

$$\text{For match 3: } \frac{80}{100} \times (T_3) = (60 + 82 + 50)$$

$$\therefore T_3 = 240 \text{ runs}$$

Therefore, in match 1, the sum of number of runs scored by batsmen D and E is equal to $220 - (50 + 118 + 30) = 22$
i.e., $D + E = 22$ runs.

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i.e., $A + B = 75$ runs.

In match 3, the sum of number of runs scored by batsmen B and C is equal to $240 - (60 + 82 + 50)$
i.e., $B + C = 48$ runs.

In match 1, the number of runs scored by each of batsmen D and E must be in the range 0 to 22.
Also, $D + E = 22$ runs.

In match 2, the number of runs scored by top 3 batsmen C, D and E are 55, 73 and 47 respectively.
So, the runs scored by each of A as well as B can not be greater than 46. Also, $A + B = 75$ runs.

So, minimum possible runs scored by A as well as B should be 29.

Similarly, in match 3, the runs scored by each of B and C must be in the range 0 to 48.

Also, $B + C = 48$ runs.

Now, we have the following final table:

	Match 1	Match 2	Match 3	Highest Score	Middle Score	Lowest Score	Total Score Range	S(Average)
Player A	50	75-y	82	82	50	75-y	161 to 178	169.5
Player B	118	y	48-z	118	-	-	147 to 212	179.5
Player C	30	55	z	55	-	-	85 to 133	109
Player D	x	73	50	73	50	x	123 to 145	134
Player E	22-x	47	60	60	47	22-x	107 to 129	118
TOTAL	220	250	240					

where, 'x' is the number of runs scored by player D in match 1 and $0 \leq x, 22 - x \leq 22$. 'y' is the number of runs scored by player B in match 2 and $29 \leq y, 75 - y \leq 46$ 'z' is the number of runs scored by player C in match 3 and $0 \leq z, 48 - z \leq 48$.

From the above table, we can find out that there are three players whose middle number is possible to calculate.

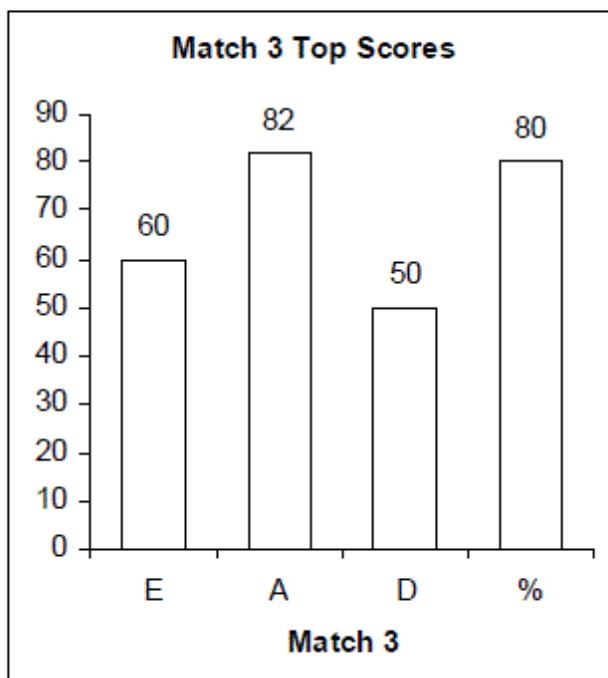
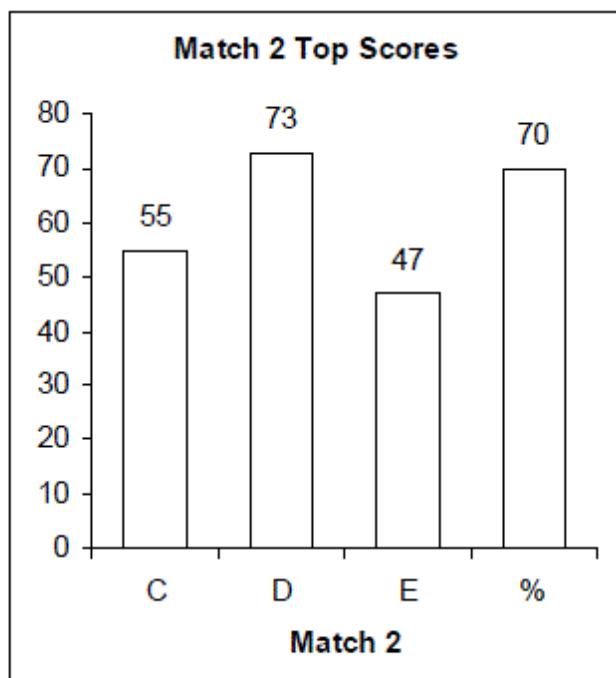
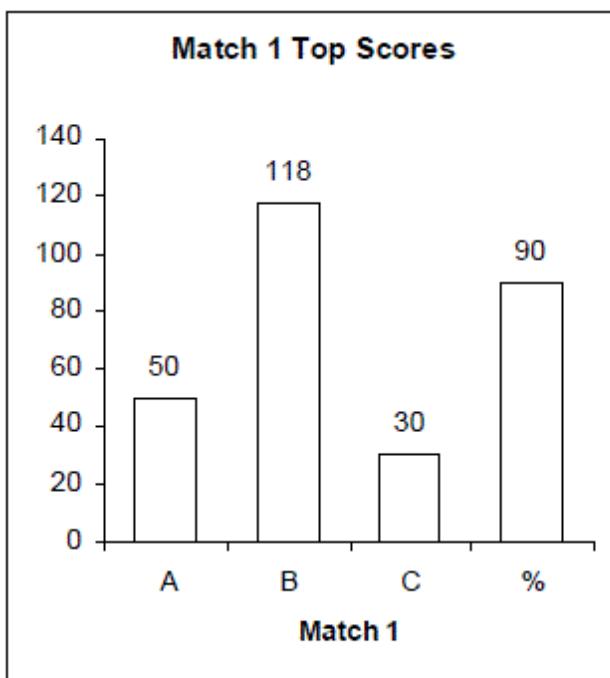
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Directions for questions 39 to 42: Answer the questions on the basis of the information given below.

Given below are the scores of five major batsmen - A, B, C, D and E - of team India during the three ODIs of a tournament. The number of runs scored by top three batsmen in a match and the percentage of the total score that was scored by the top three batsmen of that match are represented in the given bar charts.

Take into consideration the following assumptions:

- i. The number of runs scored by any two batsmen in any match is not same.
- ii. No other batsman except these five got a chance to bat in any of the three matches.
- iii. The team remains the same for these three ODIs.



Q.42

Let S be the average of the range of total scores that any player has scored. Which player has the highest value of S?

1 Player A

2 Player B

3 Player D

4 Player E

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

Let the total number of runs scored in match 1, match 2 and match 3 are T_1 , T_2 and T_3 respectively.

As per the information given in bar graph,

$$\text{For match 1: } \frac{90}{100} \times (T_1) = (50 + 118 + 30) \\ \therefore T_1 = 220 \text{ runs}$$

$$\text{For match 2: } \frac{70}{100} \times (T_2) = (55 + 73 + 47) \\ \therefore T_2 = 250 \text{ runs}$$

$$\text{For match 3: } \frac{80}{100} \times (T_3) = (60 + 82 + 50) \\ \therefore T_3 = 240 \text{ runs}$$

Therefore, in match 1, the sum of number of runs scored by batsmen D and E is equal to $220 - (50 + 118 + 30) = 22$ i.e., $D + E = 22$ runs.

In match 2, the sum of number of runs scored by batsmen A and B is equal to $250 - (55 + 73 + 47)$ i.e., $A + B = 75$ runs.

In match 3, the sum of number of runs scored by batsmen B and C is equal to $240 - (60 + 82 + 50)$ i.e., $B + C = 48$ runs.

In match 1, the number of runs scored by each of batsmen D and E must be in the range 0 to 22. Also, $D + E = 22$ runs.

In match 2, the number of runs scored by top 3 batsmen C, D and E are 55, 73 and 47 respectively. So, the runs scored by each of A as well as B can not be greater than 46. Also, $A + B = 75$ runs. So, minimum possible runs scored by A as well as B should be 29.

Similarly, in match 3, the runs scored by each of B and C must be in the range 0 to 48.

Also, $B + C = 48$ runs.

Now, we have the following final table:

	Match 1	Match 2	Match 3	Highest Score	Middle Score	Lowest Score	Total Score Range	S(Average)
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Player E	22-x	47	60	60	47	22-x	107 to 129	118
TOTAL	220	250	240					

where, 'x' is the number of runs scored by player D in match 1 and $0 \leq x, 22 - x \leq 22$. 'y' is the number of runs scored by player B in match 2 and $29 \leq y, 75 - y \leq 46$ 'z' is the number of runs scored by player C in match 3 and $0 \leq z, 48 - z \leq 48$.

Player B has the highest value of S.

FeedBack

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

In an International soccer tournament, there were 16 teams to participate. These teams were divided into four groups with each group consisting of four teams. The four groups with their teams are as shown below in the following table:

Groups	Team 1	Team 2	Team 3	Team 4
I	Argentina	Portugal	Egypt	Japan
II	Brazil	Belgium	Senegal	South Korea
III	Uruguay	Spain	Ghana	Qatar
IV	Chile	France	Algeria	Australia

The tournament consisted of two stages - League and Knockout. In the League stage, the teams faced off against each other exactly once, in the group. Each team was awarded 3 points for a win, 1 point for a draw/tie and no points for a loss. The top two teams from the League stage, in each group, progressed to the Knockout stage. In case the two teams had the same total points i.e, the second highest total, some additional parameters were used to decide which team would qualify for the next stage.

Further, some additional information about the League stage is also known:

- 1) Uruguay, in group III, was unbeaten but it finished last in the group.
- 2) Brazil won all its matches in that stage and there were no draws in Group II.
- 3) All teams in Group II ended up with distinct total points.
- 4) The two teams that were progressed to the Knockout stage from Group I got equal number of points and were beaten at least once in the League stage.
- 5) The two teams in Group IV that did not get through to the Knockout stage, each registered 1 win, 1 draw and 1 loss.

Q.43

Which of the following could have been the points scored by Spain in Group III?

1 3

2 5

3 6

4 4

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

From statement 1, Uruguay must have had 3 draw matches, so its score is 3. All others in group III must have more than 3 points, which is possible only when other teams win 1 match, lose 1 match and draw 1 match. So, their score would be 4 points each.

From statement 2, Brazil scored 9 points. From statement 3, to get a distinct score for each team, the only possibility is that one team wins 2 matches, one team wins 1 match and the other team loses all match, so that scores are 9, 6, 3 and 0.

From statement 4, two teams must have won 2 matches and lost 1 match each to progress to knockout stage.

From statement 5, two teams that did not get through in group IV scored 4 points each. The two teams that got through must also have scored 4 points each.

Group III:

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain		1		
Ghana		1		
Qatar		1		

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain	1	1	1	4
Ghana	1	1	1	4
Qatar	1	1	1	4

Group II:

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
Belgium		0	1	
Senegal		0	1	
South Korea		0	1	

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
team 2	2	0	1	6
team 3	1	0	2	3
team 4	0	0	3	0

Group IV:

Team s	Won	Draw	Lost	Points
team 1			0	
team 2			0	
team 3	1	1	1	4
team 4	1	1	1	4

Teams	Won	Draw	Lost	Points
Chile	1	1	1	4
France	1	1	1	4
Algeria	1	1	1	4
Australia	1	1	1	4

Group I:

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3				
team 4				

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	0	2	3
team 4	1	0	2	3

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	1	1	4
team 4	0	1	2	1

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	2	0	1	6
team 4	0	0	3	0

Since Spain is in group III, its score would be 4.

FeedBack

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

In an International soccer tournament, there were 16 teams to participate. These teams were divided into four groups with each group consisting of four teams. The four groups with their teams are as shown below in the following table:

Groups	Team 1	Team 2	Team 3	Team 4
I	Argentina	Portugal	Egypt	Japan
II	Brazil	Belgium	Senegal	South Korea
III	Uruguay	Spain	Ghana	Qatar
IV	Chile	France	Algeria	Australia

The tournament consisted of two stages - League and Knockout. In the League stage, the teams faced off against each other exactly once, in the group. Each team was awarded 3 points for a win, 1 point for a draw/tie and no points for a loss. The top two teams from the League stage, in each group, progressed to the Knockout stage. In case the two teams had the same total points i.e, the second highest total, some additional parameters were used to decide which team would qualify for the next stage.

Further, some additional information about the League stage is also known:

- 1) Uruguay, in group III, was unbeaten but it finished last in the group.
- 2) Brazil won all its matches in that stage and there were no draws in Group II.
- 3) All teams in Group II ended up with distinct total points.
- 4) The two teams that were progressed to the Knockout stage from Group I got equal number of points and were beaten at least once in the League stage.
- 5) The two teams in Group IV that did not get through to the Knockout stage, each registered 1 win, 1 draw and 1 loss.

Q.44

What is the second highest total points scored by the teams in Group II?

1 5

2 6

3 4

4 3

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

From statement 1, Uruguay must have had 3 draw matches, so its score is 3. All others in group III must have more than 3 points, which is possible only when other teams win 1 match, lose 1 match and draw 1 match. So, their score would be 4 points each.

From statement 2, Brazil scored 9 points. From statement 3, to get a distinct score for each team, the only possibility is that one team wins 2 matches, one team wins 1 match and the other team loses all match, so that scores are 9, 6, 3 and 0.

From statement 4, two teams must have won 2 matches and lost 1 match each to progress to knockout stage.

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Group III:

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain		1		
Ghana		1		
Qatar		1		

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain	1	1	1	4
Ghana	1	1	1	4
Qatar	1	1	1	4

Group II:

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
Belgium		0	1	
Senegal		0	1	
South Korea		0	1	

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
team 2	2	0	1	6
team 3	1	0	2	3
team 4	0	0	3	0

Group IV:

Team s	Won	Draw	Lost	Points
team 1			0	
team 2			0	
team 3	1	1	1	4
team 4	1	1	1	4

Teams	Won	Draw	Lost	Points
Chile	1	1	1	4
France	1	1	1	4
Algeria	1	1	1	4
Australia	1	1	1	4

Group I:

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3				
team 4				

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	0	2	3
team 4	1	0	2	3

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	1	1	4
team 4	0	1	2	1

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	2	0	1	6
team 4	0	0	3	0

In group II, the second highest score is 6.

FeedBack

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

In an International soccer tournament, there were 16 teams to participate. These teams were divided into four groups with each group consisting of four teams. The four groups with their teams are as shown below in the following table:

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The tournament consisted of two stages - League and Knockout. In the League stage, the teams faced off against each other exactly once, in the group. Each team was awarded 3 points for a win, 1 point for a draw/tie and no points for a loss. The top two teams from the League stage, in each group, progressed to the Knockout stage. In case the two teams had the same total points i.e, the second highest total, some additional parameters were used to decide which team would qualify for the next stage.

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- 4) The two teams that were progressed to the Knockout stage from Group I got equal number of points and were beaten at least once in the League stage.
- 5) The two teams in Group IV that did not get through to the Knockout stage, each registered 1 win, 1 draw and 1 loss.

Q.45

What could be the maximum number of points scored by the team at the third place in Group I?

1 6

2 4

3 3

4 None of these

Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

From statement 1, Uruguay must have had 3 draw matches, so its score is 3. All others in group III must have more than 3 points, which is possible only when other teams win 1 match, lose 1 match and draw 1 match. So, their score would be 4 points each.

From statement 2, Brazil scored 9 points. From statement 3, to get a distinct score for each team, the only possibility is that one team wins 2 matches, one team wins 1 match and the other team loses all match, so that scores are 9, 6, 3 and 0.

From statement 4, two teams must have won 2 matches and lost 1 match each to progress to knockout stage.

From statement 5, two teams that did not get through in group IV scored 4 points each. The two teams that got through must also have scored 4 points each.

Group III:

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain		1		
Ghana		1		
Qatar		1		

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain	1	1	1	4
Ghana	1	1	1	4
Qatar	1	1	1	4

Group II:

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
Belgium		0	1	
Senegal		0	1	
South Korea		0	1	

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
team 2	2	0	1	6
team 3	1	0	2	3
team 4	0	0	3	0

Group IV:

Teams	Won	Draw	Lost	Points
team 1			0	
team 2			0	
team 3	1	1	1	4
team 4	1	1	1	4

Teams	Won	Draw	Lost	Points
Chile	1	1	1	4
France	1	1	1	4
Algeria	1	1	1	4
Australia	1	1	1	4

Group I:

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3				
team 4				

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	0	2	3
team 4	1	0	2	3

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	1	1	4
team 4	0	1	2	1

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	2	0	1	6
team 4	0	0	3	0

As it can be seen in case 3 for Group I, maximum possible score for third team could be 6.

Feedback

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

In an International soccer tournament, there were 16 teams to participate. These teams were divided into four groups with each group consisting of four teams. The four groups with their teams are as shown below in the following table:

Groups	Team 1	Team 2	Team 3	Team 4
I	Argentina	Portugal	Egypt	Japan
II	Brazil	Belgium	Senegal	South Korea
III	Uruguay	Spain	Ghana	Qatar
IV	Chile	France	Algeria	Australia

The tournament consisted of two stages - League and Knockout. In the League stage, the teams faced off against each other exactly once, in the group. Each team was awarded 3 points for a win, 1 point for a draw/tie and no points for a loss. The top two teams from the League stage, in each group, progressed to the Knockout stage. In case the two teams had the same total points i.e, the second highest total, some additional parameters were used to decide which team would qualify for the next stage.

Further, some additional information about the League stage is also known:

- 1) Uruguay, in group III, was unbeaten but it finished last in the group.
- 2) Brazil won all its matches in that stage and there were no draws in Group II.
- 3) All teams in Group II ended up with distinct total points.
- 4) The two teams that were progressed to the Knockout stage from Group I got equal number of points and were beaten at least once in the League stage.
- 5) The two teams in Group IV that did not get through to the Knockout stage, each registered 1 win, 1 draw and 1 loss.

Q.46

What could be the total points scored by the team at the second place in Group IV?

1 6

2 5

3 4

4 3

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

From statement 1, Uruguay must have had 3 draw matches, so its score is 3. All others in group III must have more than 3 points, which is possible only when other teams win 1 match, lose 1 match and draw 1 match. So, their score would be 4 points each.

From statement 2, Brazil scored 9 points. From statement 3, to get a distinct score for each team, the only possibility is that one team wins 2 matches, one team wins 1 match and the other team loses all match, so that scores are 9, 6, 3 and 0.

From statement 4, two teams must have won 2 matches and lost 1 match each to progress to knockout stage.

From statement 5, two teams that did not get through in group IV scored 4 points each. The two teams that got through must also have scored 4 points each.

Group III:

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain		1		
Ghana		1		
Qatar		1		

Teams	Won	Draw	Lost	Points
Uruguay	0	3	0	3
Spain	1	1	1	4
Ghana	1	1	1	4
Qatar	1	1	1	4

Group II:

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
Belgium		0	1	
Senegal		0	1	
South Korea		0	1	

Teams	Won	Draw	Lost	Points
Brazil	3	0	0	9
team 2	2	0	1	6
team 3	1	0	2	3
team 4	0	0	3	0

Group IV:

Team s	Won	Draw	Lost	Points
team 1			0	
team 2			0	
team 3	1	1	1	4
team 4	1	1	1	4

Teams	Won	Draw	Lost	Points
Chile	1	1	1	4
France	1	1	1	4
Algeria	1	1	1	4
Australia	1	1	1	4

Group I:

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3				
team 4				

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	0	2	3
team 4	1	0	2	3

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	1	1	1	4
team 4	0	1	2	1

Teams	Won	Draw	Lost	Points
team 1	2	0	1	6
team 2	2	0	1	6
team 3	2	0	1	6
team 4	0	0	3	0

Total points scored by team at second place must be 4.

FeedBack

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

Net asset value (NAV) represents the market value per unit of a mutual fund and this is subjected to change with market fluctuations. Customers buy and redeem (or sell) units of a particular fund at NAV. There is a 2% processing fee while buying and 5% tax is to be paid on redemption. On a given day a customer purchases some units of funds in the morning and sells in the evening. There are four funds - A, B, C and D - in the customer's portfolio. It is known that:

1. While purchasing as well as while selling, the NAV of A and B are in the ratio of 3 : 1 respectively and that of C and D are in the ratio of 1 : 3 respectively.
2. The number of units of B purchased is equal to the number of units of D purchased and also equal to the total number of units purchased of A and C together.
3. The number of units of A, B and C that are redeemed at the end of the day are 800, 2400 and 1100 respectively.
4. The customer redeems 1200 units of fund D and receives Rs.1,02,600 whereas he had paid Rs.88,650 more to purchase the total units of fund D.
5. The money paid while buying 1000 units of fund A was Rs.76,500.
6. The customer held back 100 units of B and redeemed the remaining at an NAV that was Rs.2 higher than the NAV at purchase.

Q.47

What was the increase/decrease (in Rs.) in the NAV of fund D during the day?

Solution:

Correct Answer : 15

 **Bookmark**

 **Answer key/Solution**

The given information can be represented in the following table:

Fund		A	B	C	D
Purchase	NAV	3x	1x	1y	3y
	Units	1000	-	-	-
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	-	-	-
Redemption	NAV	3z	1z	1w	3w
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	-	-	-	102600

- Given that the money paid while buying 1000 units of fund A was Rs. 76,500.

$$\text{NAV of A at the time of purchase} = \frac{76500}{1.02 \times 1000} = \text{Rs.} 75$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of B at the time of purchase} = \text{Rs.} 25$$

- Given that NAV of fund B at the time of redemption was higher than that at the time of purchase by Rs. 2.

$$\therefore \text{NAV of B at the time of redemption} = \text{Rs.} 27$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of A at the time of redemption} = \text{Rs.} 81$$

- Given that the customer held back 100 units of B.

$$\therefore \text{Number of units of B purchased} = 2400 + 100 = 2500$$

$$\text{Total amount paid while buying units of fund B} = 25 \times 2500 \times 1.02 = \text{Rs.} 63,750$$

$$\text{Total amount received on redemption of given units of fund B} = 27 \times 2400 \times 0.95 = \text{Rs.} 61,560$$

$$\text{Total amount received on redemption of given units of fund A} = 81 \times 800 \times 0.95 = \text{Rs.} 61,560$$

- Given that the number of units purchased of B is equal to the number of units purchased of D and also equal to the total number of units of A and C together.

$$\therefore \text{Number of units of D purchased} = 2500$$

$$\Rightarrow \text{Number of units of C purchased} = \text{Number of units of B purchased} - \text{Number of units of A purchased} = 2500 - 1000 = 1500$$

- Given that the customer redeems 1200 units of fund D and receives Rs. 1,02,600.

$$\therefore \text{NAV of fund D at redemption} = \frac{120600}{0.95 \times 1200} = \text{Rs.} 90$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at redemption} = \text{Rs.} 30$$

$$\Rightarrow \text{Total amount received on redemption of given units of fund C} = 30 \times 1100 \times 0.95 = \text{Rs.} 31,350$$

- Given that he paid Rs. 88,650 more to purchase the total units of fund D.

$$\text{Total amount paid} = 102600 + 88650 = \text{Rs.} 1,91,250$$

$$\therefore \text{NAV of D at the time of purchase} = \frac{191250}{1.02 \times 2500} = \text{Rs.} 75$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at the time of purchase} = \text{Rs.} 25$$

$$\text{Total amount paid while buying units of fund C} = 25 \times 1500 \times 1.02 = \text{Rs.} 38,250$$

Final table:

Fund		A	B	C	D
Purchase	NAV in Rs.	75	25	25	75
	Units	1000	2500	1500	2500
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	63750	38250	191250
Redemption	NAV in Rs.	81	27	30	90
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	61560	61560	31350	102600

The increase in the NAV of fund D during the day was Rs. $(90 - 75) = \text{Rs.} 15$.

[FeedBack](#)

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

Net asset value (NAV) represents the market value per unit of a mutual fund and this is subjected to change with market fluctuations. Customers buy and redeem (or sell) units of a particular fund at NAV. There is a 2% processing fee while buying and 5% tax is to be paid on redemption. On a given day a customer purchases some units of funds in the morning and sells in the evening. There are four funds - A, B, C and D - in the customer's portfolio. It is known that:

1. While purchasing as well as while selling, the NAV of A and B are in the ratio of 3 : 1 respectively and that of C and D are in the ratio of 1 : 3 respectively.
2. The number of units of B purchased is equal to the number of units of D purchased and also equal to the total number of units purchased of A and C together.
3. The number of units of A, B and C that are redeemed at the end of the day are 800, 2400 and 1100 respectively.
4. The customer redeems 1200 units of fund D and receives Rs.1,02,600 whereas he had paid Rs.88,650 more to purchase the total units of fund D.
5. The money paid while buying 1000 units of fund A was Rs,76,500.
6. The customer held back 100 units of B and redeemed the remaining at an NAV that was Rs.2 higher than the NAV at purchase.

Q.48

How many units of fund C did the customer buy on that day?

1 1000

2 1500

3 1200

4 1100

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

The given information can be represented in the following table:

Fund		A	B	C	D
Purchase	NAV	3x	1x	1y	3y
	Units	1000	-	-	-
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	-	-	-
Redemption	NAV	3z	1z	1w	3w
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	-	-	-	102600

- Given that the money paid while buying 1000 units of fund A was Rs. 76,500.

$$\text{NAV of A at the time of purchase} = \frac{76500}{1.02 \times 1000} = \text{Rs.} 75$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of B at the time of purchase} = \text{Rs.} 25$$

- Given that NAV of fund B at the time of redemption was higher than that at the time of purchase by Rs. 2.

$$\therefore \text{NAV of B at the time of redemption} = \text{Rs.} 27$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of A at the time of redemption} = \text{Rs.} 81$$

- Given that the customer held back 100 units of B.

$$\therefore \text{Number of units of B purchased} = 2400 + 100 = 2500$$

$$\text{Total amount paid while buying units of fund B} = 25 \times 2500 \times 1.02 = \text{Rs.} 63,750$$

$$\text{Total amount received on redemption of given units of fund B} = 27 \times 2400 \times 0.95 = \text{Rs.} 61,560$$

$$\text{Total amount received on redemption of given units of fund A} = 81 \times 800 \times 0.95 = \text{Rs.} 61,560$$

- Given that the number of units purchased of B is equal to the number of units purchased of D and also equal to the total number of units of A and C together.

$$\therefore \text{Number of units of D purchased} = 2500$$

$$\Rightarrow \text{Number of units of C purchased} = \text{Number of units of B purchased} - \text{Number of units of A purchased} = 2500 - 1000 = 1500$$

- Given that the customer redeems 1200 units of fund D and receives Rs. 1,02,600.

$$\therefore \text{NAV of fund D at redemption} = \frac{120600}{0.95 \times 1200} = \text{Rs.} 90$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at redemption} = \text{Rs.} 30$$

$$\Rightarrow \text{Total amount received on redemption of given units of fund C} = 30 \times 1100 \times 0.95 = \text{Rs.} 31,350$$

- Given that he paid Rs. 88,650 more to purchase the total units of fund D.

$$\text{Total amount paid} = 102600 + 88650 = \text{Rs.} 1,91,250$$

$$\therefore \text{NAV of D at the time of purchase} = \frac{191250}{1.02 \times 2500} = \text{Rs.} 75$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at the time of purchase} = \text{Rs.} 25$$

$$\text{Total amount paid while buying units of fund C} = 25 \times 1500 \times 1.02 = \text{Rs.} 38,250$$

Final table:

Fund		A	B	C	D
Purchase	NAV in Rs.	75	25	25	75
	Units	1000	2500	1500	2500
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	63750	38250	191250
Redemption	NAV in Rs.	81	27	30	90
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	61560	61560	31350	102600

The customer bought 1500 units of fund C on that day.

[FeedBack](#)

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

Net asset value (NAV) represents the market value per unit of a mutual fund and this is subjected to change with market fluctuations. Customers buy and redeem (or sell) units of a particular fund at NAV. There is a 2% processing fee while buying and 5% tax is to be paid on redemption. On a given day a customer purchases some units of funds in the morning and sells in the evening. There are four funds - A, B, C and D - in the customer's portfolio. It is known that:

1. While purchasing as well as while selling, the NAV of A and B are in the ratio of 3 : 1 respectively and that of C and D are in the ratio of 1 : 3 respectively.
2. The number of units of B purchased is equal to the number of units of D purchased and also equal to the total number of units purchased of A and C together.
3. The number of units of A, B and C that are redeemed at the end of the day are 800, 2400 and 1100 respectively.
4. The customer redeems 1200 units of fund D and receives Rs.1,02,600 whereas he had paid Rs.88,650 more to purchase the total units of fund D.
5. The money paid while buying 1000 units of fund A was Rs.76,500.
6. The customer held back 100 units of B and redeemed the remaining at an NAV that was Rs.2 higher than the NAV at purchase.

Q.49

What was the ratio of the amount received by the redemption of the given units of funds A and B respectively?

- 1 3 : 1
- 2 1 : 3
- 3 1 : 1
- 4 5 : 2

Solution:

Correct Answer : 3

 [Bookmark](#)

 [Answer key/Solution](#)

The given information can be represented in the following table:

Fund		A	B	C	D
Purchase	NAV	3x	1x	1y	3y
	Units	1000	-	-	-
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	-	-	-
Redemption	NAV	3z	1z	1w	3w
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	-	-	-	102600

- Given that the money paid while buying 1000 units of fund A was Rs. 76,500.

$$\text{NAV of A at the time of purchase} = \frac{76500}{1.02 \times 1000} = \text{Rs.} 75$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of B at the time of purchase} = \text{Rs.} 25$$

- Given that NAV of fund B at the time of redemption was higher than that at the time of purchase by Rs. 2.

$$\therefore \text{NAV of B at the time of redemption} = \text{Rs.} 27$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of A at the time of redemption} = \text{Rs.} 81$$

- Given that the customer held back 100 units of B.

$$\therefore \text{Number of units of B purchased} = 2400 + 100 = 2500$$

$$\text{Total amount paid while buying units of fund B} = 25 \times 2500 \times 1.02 = \text{Rs.} 63,750$$

$$\text{Total amount received on redemption of given units of fund B} = 27 \times 2400 \times 0.95 = \text{Rs.} 61,560$$

$$\text{Total amount received on redemption of given units of fund A} = 81 \times 800 \times 0.95 = \text{Rs.} 61,560$$

- Given that the number of units purchased of B is equal to the number of units purchased of D and also equal to the total number of units of A and C together.

$$\therefore \text{Number of units of D purchased} = 2500$$

$$\Rightarrow \text{Number of units of C purchased} = \text{Number of units of B purchased} - \text{Number of units of A purchased} = 2500 - 1000 = 1500$$

- Given that the customer redeems 1200 units of fund D and receives Rs. 1,02,600.

$$\therefore \text{NAV of fund D at redemption} = \frac{120600}{0.95 \times 1200} = \text{Rs.} 90$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at redemption} = \text{Rs.} 30$$

$$\Rightarrow \text{Total amount received on redemption of given units of fund C} = 30 \times 1100 \times 0.95 = \text{Rs.} 31,350$$

- Given that he paid Rs. 88,650 more to purchase the total units of fund D.

$$\text{Total amount paid} = 102600 + 88650 = \text{Rs.} 1,91,250$$

$$\therefore \text{NAV of D at the time of purchase} = \frac{191250}{1.02 \times 2500} = \text{Rs.} 75$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at the time of purchase} = \text{Rs.} 25$$

$$\text{Total amount paid while buying units of fund C} = 25 \times 1500 \times 1.02 = \text{Rs.} 38,250$$

Final table:

Fund		A	B	C	D
Purchase	NAV in Rs.	75	25	25	75
	Units	1000	2500	1500	2500
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	63750	38250	191250
Redemption	NAV in Rs.	81	27	30	90
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	61560	61560	31350	102600

The required ratio was 1 : 1.

[FeedBack](#)

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

Net asset value (NAV) represents the market value per unit of a mutual fund and this is subjected to change with market fluctuations. Customers buy and redeem (or sell) units of a particular fund at NAV. There is a 2% processing fee while buying and 5% tax is to be paid on redemption. On a given day a customer purchases some units of funds in the morning and sells in the evening. There are four funds - A, B, C and D - in the customer's portfolio. It is known that:

1. While purchasing as well as while selling, the NAV of A and B are in the ratio of 3 : 1 respectively and that of C and D are in the ratio of 1 : 3 respectively.
2. The number of units of B purchased is equal to the number of units of D purchased and also equal to the total number of units purchased of A and C together.
3. The number of units of A, B and C that are redeemed at the end of the day are 800, 2400 and 1100 respectively.
4. The customer redeems 1200 units of fund D and receives Rs.1,02,600 whereas he had paid Rs.88,650 more to purchase the total units of fund D.
5. The money paid while buying 1000 units of fund A was Rs,76,500.
6. The customer held back 100 units of B and redeemed the remaining at an NAV that was Rs.2 higher than the NAV at purchase.

Q.50

What was the NAV (in Rs.) of fund C at the time of redemption?

Solution:

Correct Answer : 30

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

The given information can be represented in the following table:

Fund		A	B	C	D
Purchase	NAV	3x	1x	1y	3y
	Units	1000	-	-	-
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	-	-	-
Redemption	NAV	3z	1z	1w	3w
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	-	-	-	102600

- Given that the money paid while buying 1000 units of fund A was Rs. 76,500.

$$\text{NAV of A at the time of purchase} = \frac{76500}{1.02 \times 1000} = \text{Rs.75}$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of B at the time of purchase} = \text{Rs. 25}$$

- Given that NAV of fund B at the time of redemption was higher than that at the time of purchase by Rs. 2.

$$\therefore \text{NAV of B at the time of redemption} = \text{Rs. 27}$$

- Given that ratio of NAV of A and B = 3 : 1

$$\therefore \text{NAV of A at the time of redemption} = \text{Rs. 81}$$

- Given that the customer held back 100 units of B.

$$\therefore \text{Number of units of B purchased} = 2400 + 100 = 2500.$$

$$\text{Total amount paid while buying units of fund B} = 25 \times 2500 \times 1.02 = \text{Rs.63,750}.$$

$$\text{Total amount received on redemption of given units of fund B} = 27 \times 2400 \times 0.95 = \text{Rs.61,560}.$$

$$\text{Total amount received on redemption of given units of fund A} = 81 \times 800 \times 0.95 = \text{Rs.61,560}.$$

- Given that the number of units purchased of B is equal to the number of units purchased of D and also equal to the total number of units of A and C together.

$$\therefore \text{Number of units of D purchased} = 2500$$

$$\Rightarrow \text{Number of units of C purchased} = \text{Number of units of B purchased} - \text{Number of units of A purchased} = 2500 - 1000 = 1500.$$

- Given that the customer redeems 1200 units of fund D and receives Rs. 1,02,600.

$$\therefore \text{NAV of fund D at redemption} = \frac{120600}{0.95 \times 1200} = \text{Rs.90}$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at redemption} = \text{Rs. 30}$$

$$\Rightarrow \text{Total amount received on redemption of given units of fund C} = 30 \times 1100 \times 0.95 = \text{Rs.31,350}.$$

- Given that he paid Rs. 88,650 more to purchase the total units of fund D.

$$\text{Total amount paid} = 102600 + 88650 = \text{Rs. 1,91,250}$$

$$\therefore \text{NAV of D at the time of purchase} = \frac{191250}{1.02 \times 2500} = \text{Rs.75}$$

- Given that ratio of NAV of C and D = 1 : 3

$$\therefore \text{NAV of fund C at the time of purchase} = \text{Rs. 25}$$

$$\text{Total amount paid while buying units of fund C} = 25 \times 1500 \times 1.02 = \text{Rs.38,250}.$$

Final table:

Fund		A	B	C	D
Purchase	NAV in Rs.	75	25	25	75
	Units	1000	2500	1500	2500
	Total Amount in Rs. (inclusive of 2% processing fee)	76500	63750	38250	191250
Redemption	NAV in Rs.	81	27	30	90
	Units	800	2400	1100	1200
	Total Amount in Rs. (inclusive of 5% tax)	61560	61560	31350	102600

The NAV of fund C at the time of redemption was Rs. 30.

FeedBack

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

Six senior faculty members - Abhishek, Himani, Jatin, Kashish, Punita, and Vedant - in CL take classes of six different subjects - QA, LA, GA, LR, DI and VA - of batch 'CAT2019', not necessarily in that order. Each of these senior faculties has to teach for six hours in a week i.e. from Tuesday to Sunday, Monday being the weekly off day. No faculty can teach for more than 3 hours on a single day. On each day, a distinct number of total hours are taught in that batch and on any day the number of total hours taught, in that batch, is less than 10. Number of hours taught by any faculty on any day is an integer.

The information given below is about the classes taken, in the last week, of batch 'CAT2019':

1. QA was taken by Abhishek and he did not teach on Saturday and Sunday.
2. On Tuesday, only 3 sessions of an hour each were taken by Abhishek, Punita and Vedant.
3. Punita taught on all six days of the week.
4. The GA faculty did not teach on Saturday.
5. Himani, who didn't teach DI, taught on 3 days and for equal number of hours on each day and did not teach on Sunday.
6. Maximum number of faculty taught on Thursday and maximum number of hours were taught on Sunday.
7. Jatin taught on only two days i.e. Saturday and Sunday.
8. Number of hours taught by Kashish was distinct on each day she had taught in that batch.
9. The number of hours taught on Wednesday is more than that on Friday and the average of number of hours taught on Thursday, Saturday and Sunday is eight.
10. LA faculty taught only on Thursday, Saturday and Sunday and difference between the number of hours taught by him on Thursday and Sunday was two.
11. Vedant taught on all the days except Saturday. Abhishek taught for 2 hours on Friday.
12. LR was taught on minimum number of days and GA was taught on five days except Saturday.

Q.51

For how many hours did Kashish teach on Sunday?

1

2

3

4 Either (1) or (3)

x

Solution:**Correct Answer : 3****Your Answer : 4****Bookmark****Answer key/Solution**

As it is given that each of the six faculties taught for 6 hours a week, we can conclude that total number of hours taught in a week is 36 and everyday a distinct number of total hours were taught. Also on any day the total number of hours were less than 10.

Using statement 2, it can be concluded that faculties taught for 3 hrs only on Tuesday.

Using statement 3, it can be said that Punita taught for 1 hour on all the six days of the week.

Using statement 5, Himani taught for 2 hours on 3 days except Sunday.

Using statement 7, Jatin taught for 3 hours each on Saturday and Sunday, as no one can teach for more than 3 hrs on a single day.

Using statement 9, total number of hours taught on Thursday, Saturday and Sunday were 24. And hence using statement 6, it can be conclude that on Sunday number of hours taught were 9 and on Thursday and Saturday were 7 and 8 in any order. So, total number of hours taught on Wednesday and Friday = $36 - 24 - 3 = 9$.

Using statement 9, on Wednesday the total number of hours for which the faculties taught the students were 5 and on Friday were 4.

Using statement 12, since LR was taught on minimum number of days, that must by taught by Jatin only on 2 days i.e., Saturday and Sunday.

Using statement 10, Number of hours taught on Thursday and Saturday in LA were 1 and 3 in any order. So, on Saturday LA was taught for 2 hours. Also, with some direct information provided, we can form the following table:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA							
LR	Jatin	0	0	0	0	3	3
DI							
GA	Vedant	1				0	
LA		0	0		0	2	
	Total	3	5		4		9

Now using statement 2 and 5, it can be concluded that LA was taught by Kashish. And hence Himani taught VA and Punita taught DI.

Since Himani taught for 2 hours on 3 days, she must had taught on Saturday and must not on Friday. Also, she didn't teach on Sunday, so she must have taught on Wednesday and Thursday.

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1			1	0	
LA	Kashish	0	0		0	2	
	Total	3	5	7	4	8	9

Since for total of 9 hours were taught on Sunday, only possibility is when GA was taught for 2 hours and LA for 3 hours. So, the final table will look like as given below:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1	1	2	2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1	1	1	1	0	2
LA	Kashish	0	0	1	0	2	3
	Total	3	5	7	4	8	9

Kashish taught for 3 hours on Sunday.

FeedBack

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

Six senior faculty members - Abhishek, Himani, Jatin, Kashish, Punita, and Vedant - in CL take classes of six different subjects - QA, LA, GA, LR, DI and VA - of batch 'CAT2019', not necessarily in that order. Each of these senior faculties has to teach for six hours in a week i.e. from Tuesday to Sunday, Monday being the weekly off day. No faculty can teach for more than 3 hours on a single day. On each day, a distinct number of total hours are taught in that batch and on any day the number of total hours taught, in that batch, is less than 10. Number of hours taught by any faculty on any day is an integer.

The information given below is about the classes taken, in the last week, of batch 'CAT2019':

1. QA was taken by Abhishek and he did not teach on Saturday and Sunday.
2. On Tuesday, only 3 sessions of an hour each were taken by Abhishek, Punita and Vedant.
3. Punita taught on all six days of the week.
4. The GA faculty did not teach on Saturday.
5. Himani, who didn't teach DI, taught on 3 days and for equal number of hours on each day and did not teach on Sunday.
6. Maximum number of faculty taught on Thursday and maximum number of hours were taught on Sunday.
7. Jatin taught on only two days i.e. Saturday and Sunday.
8. Number of hours taught by Kashish was distinct on each day she had taught in that batch.
9. The number of hours taught on Wednesday is more than that on Friday and the average of number of hours taught on Thursday, Saturday and Sunday is eight.
10. LA faculty taught only on Thursday, Saturday and Sunday and difference between the number of hours taught by him on Thursday and Sunday was two.
11. Vedant taught on all the days except Saturday. Abhishek taught for 2 hours on Friday.
12. LR was taught on minimum number of days and GA was taught on five days except Saturday.

Q.52

What is the absolute difference between the number of total hours taught on Saturday and Wednesday?

1 2

2 4

3 5

4 3



Solution:**Correct Answer : 4****Your Answer : 4****Bookmark****Answer key/Solution**

As it is given that each of the six faculties taught for 6 hours a week, we can conclude that total number of hours taught in a week is 36 and everyday a distinct number of total hours were taught. Also on any day the total number of hours were less than 10.

Using statement 2, it can be concluded that faculties taught for 3 hrs only on Tuesday.

Using statement 3, it can be said that Punita taught for 1 hour on all the six days of the week.

Using statement 5, Himani taught for 2 hours on 3 days except Sunday.

Using statement 7, Jatin taught for 3 hours each on Saturday and Sunday, as no one can teach for more than 3 hrs on a single day.

Using statement 9, total number of hours taught on Thursday, Saturday and Sunday were 24. And hence using statement 6, it can be conclude that on Sunday number of hours taught were 9 and on Thursday and Saturday were 7 and 8 in any order. So, total number of hours taught on Wednesday and Friday = $36 - 24 - 3 = 9$.

Using statement 9, on Wednesday the total number of hours for which the faculties taught the students were 5 and on Friday were 4.

Using statement 12, since LR was taught on minimum number of days, that must by taught by Jatin only on 2 days i.e., Saturday and Sunday.

Using statement 10, Number of hours taught on Thursday and Saturday in LA were 1 and 3 in any order. So, on Saturday LA was taught for 2 hours. Also, with some direct information provided, we can form the following table:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA							
LR	Jatin	0	0	0	0	3	3
DI							
GA	Vedant	1				0	
LA		0	0		0	2	
	Total	3	5		4		9

Now using statement 2 and 5, it can be concluded that LA was taught by Kashish. And hence Himani taught VA and Punita taught DI.

Since Himani taught for 2 hours on 3 days, she must had taught on Saturday and must not on Friday. Also, she didn't teach on Sunday, so she must have taught on Wednesday and Thursday.

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1			1	0	
LA	Kashish	0	0		0	2	
	Total	3	5	7	4	8	9

Since for total of 9 hours were taught on Sunday, only possibility is when GA was taught for 2 hours and LA for 3 hours. So, the final table will look like as given below:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1	1	2	2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1	1	1	1	0	2
LA	Kashish	0	0	1	0	2	3
	Total	3	5	7	4	8	9

Required difference = $|8 - 5| = 3$

FeedBack

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

Six senior faculty members - Abhishek, Himani, Jatin, Kashish, Punita, and Vedant - in CL take classes of six different subjects - QA, LA, GA, LR, DI and VA - of batch 'CAT2019', not necessarily in that order. Each of these senior faculties has to teach for six hours in a week i.e. from Tuesday to Sunday, Monday being the weekly off day. No faculty can teach for more than 3 hours on a single day. On each day, a distinct number of total hours are taught in that batch and on any day the number of total hours taught, in that batch, is less than 10. Number of hours taught by any faculty on any day is an integer.

The information given below is about the classes taken, in the last week, of batch 'CAT2019':

1. QA was taken by Abhishek and he did not teach on Saturday and Sunday.
 2. On Tuesday, only 3 sessions of an hour each were taken by Abhishek, Punita and Vedant.
 3. Punita taught on all six days of the week.
 4. The GA faculty did not teach on Saturday.
 5. Himani, who didn't teach DI, taught on 3 days and for equal number of hours on each day and did not teach on Sunday.
 6. Maximum number of faculty taught on Thursday and maximum number of hours were taught on Sunday.
 7. Jatin taught on only two days i.e. Saturday and Sunday.
 8. Number of hours taught by Kashish was distinct on each day she had taught in that batch.
 9. The number of hours taught on Wednesday is more than that on Friday and the average of number of hours taught on Thursday, Saturday and Sunday is eight.
 10. LA faculty taught only on Thursday, Saturday and Sunday and difference between the number of hours taught by him on Thursday and Sunday was two.
 11. Vedant taught on all the days except Saturday. Abhishek taught for 2 hours on Friday.
 12. LR was taught on minimum number of days and GA was taught on five days except Saturday.
-

Q.53

Which subject did Punita teach?

1 DI

2 VA

3 GA

4 LA



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

As it is given that each of the six faculties taught for 6 hours a week, we can conclude that total number of hours taught in a week is 36 and everyday a distinct number of total hours were taught. Also on any day the total number of hours were less than 10.

Using statement 2, it can be concluded that faculties taught for 3 hrs only on Tuesday.

Using statement 3, it can be said that Punita taught for 1 hour on all the six days of the week.

Using statement 5, Himani taught for 2 hours on 3 days except Sunday.

Using statement 7, Jatin taught for 3 hours each on Saturday and Sunday, as no one can teach for more than 3 hrs on a single day.

Using statement 9, total number of hours taught on Thursday, Saturday and Sunday were 24. And hence using statement 6, it can be conclude that on Sunday number of hours taught were 9 and on Thursday and Saturday were 7 and 8 in any order. So, total number of hours taught on Wednesday and Friday = $36 - 24 - 3 = 9$.

Using statement 9, on Wednesday the total number of hours for which the faculties taught the students were 5 and on Friday were 4.

Using statement 12, since LR was taught on minimum number of days, that must by taught by Jatin only on 2 days i.e., Saturday and Sunday.

Using statement 10, Number of hours taught on Thursday and Saturday in LA were 1 and 3 in any order. So, on Saturday LA was taught for 2 hours. Also, with some direct information provided, we can form the following table:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA							
LR	Jatin	0	0	0	0	3	3
DI							
GA	Vedant	1				0	
LA		0	0		0	2	
	Total	3	5		4		9

Now using statement 2 and 5, it can be concluded that LA was taught by Kashish. And hence Himani taught VA and Punita taught DI.

Since Himani taught for 2 hours on 3 days, she must had taught on Saturday and must not on Friday. Also, she didn't teach on Sunday, so she must have taught on Wednesday and Thursday.

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1			1	0	
LA	Kashish	0	0		0	2	
	Total	3	5	7	4	8	9

Since for total of 9 hours were taught on Sunday, only possibility is when GA was taught for 2 hours and LA for 3 hours. So, the final table will look like as given below:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1	1	2	2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1	1	1	1	0	2
LA	Kashish	0	0	1	0	2	3
	Total	3	5	7	4	8	9

Punita taught DI.

Feedback

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

Six senior faculty members - Abhishek, Himani, Jatin, Kashish, Punita, and Vedant - in CL take classes of six different subjects - QA, LA, GA, LR, DI and VA - of batch 'CAT2019', not necessarily in that order. Each of these senior faculties has to teach for six hours in a week i.e. from Tuesday to Sunday, Monday being the weekly off day. No faculty can teach for more than 3 hours on a single day. On each day, a distinct number of total hours are taught in that batch and on any day the number of total hours taught, in that batch, is less than 10. Number of hours taught by any faculty on any day is an integer.

The information given below is about the classes taken, in the last week, of batch 'CAT2019':

1. QA was taken by Abhishek and he did not teach on Saturday and Sunday.
2. On Tuesday, only 3 sessions of an hour each were taken by Abhishek, Punita and Vedant.
3. Punita taught on all six days of the week.
4. The GA faculty did not teach on Saturday.
5. Himani, who didn't teach DI, taught on 3 days and for equal number of hours on each day and did not teach on Sunday.
6. Maximum number of faculty taught on Thursday and maximum number of hours were taught on Sunday.
7. Jatin taught on only two days i.e. Saturday and Sunday.
8. Number of hours taught by Kashish was distinct on each day she had taught in that batch.
9. The number of hours taught on Wednesday is more than that on Friday and the average of number of hours taught on Thursday, Saturday and Sunday is eight.
10. LA faculty taught only on Thursday, Saturday and Sunday and difference between the number of hours taught by him on Thursday and Sunday was two.
11. Vedant taught on all the days except Saturday. Abhishek taught for 2 hours on Friday.
12. LR was taught on minimum number of days and GA was taught on five days except Saturday.

Q.54

What is the sum of the number of hours taught on Wednesday, Thursday and Friday?

1 20

2 18

3 17

4 16



Solution:**Correct Answer : 4****Your Answer : 4****Bookmark****Answer key/Solution**

As it is given that each of the six faculties taught for 6 hours a week, we can conclude that total number of hours taught in a week is 36 and everyday a distinct number of total hours were taught. Also on any day the total number of hours were less than 10.

Using statement 2, it can be concluded that faculties taught for 3 hrs only on Tuesday.

Using statement 3, it can be said that Punita taught for 1 hour on all the six days of the week.

Using statement 5, Himani taught for 2 hours on 3 days except Sunday.

Using statement 7, Jatin taught for 3 hours each on Saturday and Sunday, as no one can teach for more than 3 hrs on a single day.

Using statement 9, total number of hours taught on Thursday, Saturday and Sunday were 24. And hence using statement 6, it can be conclude that on Sunday number of hours taught were 9 and on Thursday and Saturday were 7 and 8 in any order. So, total number of hours taught on Wednesday and Friday = $36 - 24 - 3 = 9$.

Using statement 9, on Wednesday the total number of hours for which the faculties taught the students were 5 and on Friday were 4.

Using statement 12, since LR was taught on minimum number of days, that must by taught by Jatin only on 2 days i.e., Saturday and Sunday.

Using statement 10, Number of hours taught on Thursday and Saturday in LA were 1 and 3 in any order. So, on Saturday LA was taught for 2 hours. Also, with some direct information provided, we can form the following table:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA							
LR	Jatin	0	0	0	0	3	3
DI							
GA	Vedant	1				0	
LA		0	0		0	2	
	Total	3	5		4		9

Now using statement 2 and 5, it can be concluded that LA was taught by Kashish. And hence Himani taught VA and Punita taught DI.

Since Himani taught for 2 hours on 3 days, she must had taught on Saturday and must not on Friday. Also, she didn't teach on Sunday, so she must have taught on Wednesday and Thursday.

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1			2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1			1	0	
LA	Kashish	0	0		0	2	
	Total	3	5	7	4	8	9

Since for total of 9 hours were taught on Sunday, only possibility is when GA was taught for 2 hours and LA for 3 hours. So, the final table will look like as given below:

Subject	Faculty	T	W	TH	F	Sat	Su
QA	Abhishek	1	1	2	2	0	0
VA	Himani	0	2	2	0	2	0
LR	Jatin	0	0	0	0	3	3
DI	Punita	1	1	1	1	1	1
GA	Vedant	1	1	1	1	0	2
LA	Kashish	0	0	1	0	2	3
	Total	3	5	7	4	8	9

Required sum = $5 + 7 + 4 = 16$

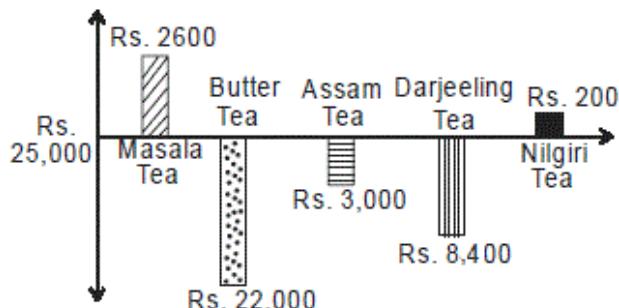
FeedBack

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

A Tea retailer sells five types of tea - Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea. The pie-chart given below shows the percentage share (weight wise) of all types of tea sold in the year 2017-18 and 2018-19.



The below bar graph depicts the difference between the value of sales (in Rs.) during the year 2018-19 with respect to 2017-18 for each type of tea.



e.g. The retailer sold Masala Tea of Rs. 27600 i.e., $(25000 + 2600)$ more in the year 2018-19 with respect of that in the year 2017-18. The additional information is as below:-

- (I) The price per kg of Masala Tea, Butter Tea, Assam Tea Darjeeling Tea and Nilgiri Tea in the year 2018-19 was increased by 10%, 25%, 20%, 12.50% and 6.67% respectively with respect to the year 2017-18.
- (II) Total 2750 kg Tea were sold in the year 2017-18 and 2018-19 together.
- (III) The price of Butter Tea in the year 2017-18 was Rs. 120 per kg.

Q.55

Darjeeling Tea sold in 2018-19 was by what percentage more than that in 2017-18?

- 1 25%
- 2 35%
- 3 33.33%
- 4 40%

Solution:

Correct Answer : 2

Bookmark

Let the price per kg of Masala Tea, Butter Tea, Assam Tea, Nilgiri Tea and Darjeeling Tea in the year 2017-18 be Rs.A, Rs.B, Rs.C, Rs. D and Rs.E respectively.

Now, percentage share of all types of tea sold in the year 2018-19 is given as:

$$\text{Masala Tea} = \frac{79.2}{360} \times 100 = 22\%$$

$$\text{Butter Tea} = \frac{57.6}{360} \times 100 = 16\%$$

$$\text{Assam Tea} = \frac{72}{360} \times 100 = 20\%$$

$$\text{Nilgiri Tea} = \frac{86.4}{360} \times 100 = 24\%$$

$$\text{Darjeeling Tea} = \frac{64.8}{360} \times 100 = 18\%$$

Using statement I and above given information, percentage share of tea sold and their price are as below:

Tea	2017-18		2018-19	
	% share	Price per kg	% share	price per kg
Masala Tea	18%	Rs. A	22%	$\frac{11}{10}A$
Butter Tea	22%	Rs. B	16%	$\frac{5}{4}B$
Assam Tea	20%	Rs. C	20%	$\frac{6}{5}C$
Nilgiri Tea	24%	Rs. D	24%	$\frac{16}{15}D$
Darjeeling Tea	16%	Rs. E	18%	$\frac{9}{8}E$

We can also calculate the difference between the sale (in Rs.) of all types of tea in 2018-19 and 2017-18.

Tea	Difference in Sale
Masala Tea	$25000 + 2600 = \text{Rs. } 27,600$
Butter Tea	$25000 - 22000 = \text{Rs. } 3,000$
Assam Tea	$25000 - 3000 = \text{Rs. } 22,000$
Nilgiri Tea	$25000 + 200 = \text{Rs. } 25,200$
Darjeeling Tea	$25000 - 8400 = \text{Rs. } 16,600$

Let total tea sold in the year 2017-18 and 2018-19 be $100x$ and $100y$ kg, respectively.

Therefore, from statement (ii),

$$100x + 100y = 2750$$

$$\Rightarrow x + y = 27.50 = \frac{55}{2}$$

\therefore Price of Butter Tea in 2017-18 = Rs. 120 per kg.

$$\text{Price of Butter Tea in 2018-19} = 120 \times \frac{5}{4} = 150 \text{ per kg.}$$

We have, difference between the sale of the Butter Tea in 2017-18 and 2018-19 is Rs.3,000.

$$\therefore 16y \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow 16\left(\frac{55}{2} - x\right) \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow -2400x - 2640x = 3000 - 440 \times 150$$

$$\Rightarrow -5040x = -63000$$

$$\Rightarrow x = \frac{63000}{5040} = 12.5$$

$$\therefore y = 27.5 - 12.5 = 15$$

Now, we have total weight of Tea sold in 2017-18 and 2018-19 was 1250 kg and 1500 kg respectively.

Now, Tea sold in the year 2017-18 and 2018-19 is given as:

Tea	2017-18	2018-19
Masala Tea	225 kg	330 kg

	2017-18 kg	2018-19 kg
Butter Tea	275 kg	240 kg
Assam Tea	250 kg	300 kg
Nilgiri Tea	300 kg	360 kg
Darjeeling Tea	200 kg	270 kg

For Masala tea, the difference between the sale in 2017-18 and 2018-19 is Rs. 27,600

$$\therefore 330 \times \frac{11}{10} A - 225 A = 27600$$

$$\Rightarrow 138 A = 27600$$

$$\therefore A = \text{Rs. } 200 \text{ per kg}$$

Similarly; we can calculate that;

B = Rs. 120 per kg, C = Rs. 200 per kg, D = Rs. 300 per kg and E = Rs. 160 per kg.

Price per kg of tea sold in 2017-18 and 2018-19 is given in the table below.

Tea	Price per kg in 2017-18 (in Rs.)	Price per kg in 2018-19 (in Rs.)
Masala Tea	A = 200	220
Butter Tea	B = 120	150
Assam Tea	C = 200	240
Nilgiri Tea	D = 300	320
Darjeeling Tea	E = 160	180

$$\text{Required percentage} = \frac{270 - 200}{200} \times 100 = 35\%$$

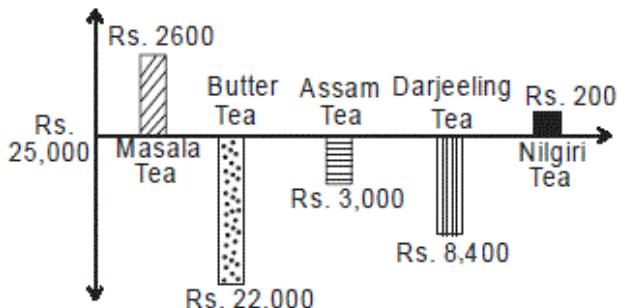
FeedBack

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

A Tea retailer sells five types of tea - Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea. The pie-chart given below shows the percentage share (weight wise) of all types of tea sold in the year 2017-18 and 2018-19.



The below bar graph depicts the difference between the value of sales (in Rs.) during the year 2018-19 with respect to 2017-18 for each type of tea.



e.g. The retailer sold Masala Tea of Rs. 27600 i.e., (25000 + 2600) more in the year 2018-19 with respect of that in the year 2017-18. The additional information is as below:-

- (I) The price per kg of Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea in the year 2018-19 was increased by 10%, 25%, 20%, 12.50% and 6.67% respectively with respect to the year 2017-18.
- (II) Total 2750 kg Tea were sold in the year 2017-18 and 2018-19 together.
- (III) The price of Butter Tea in the year 2017-18 was Rs. 120 per kg.

Q.56

The total value (in Rs.) of Tea sold in 2018-19 was

Solution:

Correct Answer : 344400

Bookmark

Answer key/Solution

Let the price per kg of Masala Tea, Butter Tea, Assam Tea, Nilgiri Tea and Darjeeling Tea in the year 2017-18 be Rs.A, Rs.B, Rs.C, Rs.D and Rs.E respectively.

Now, percentage share of all types of tea sold in the year 2018-19 is given as:

$$\text{Masala Tea} = \frac{79.2^\circ}{360^\circ} \times 100 = 22\%$$

$$\text{Butter Tea} = \frac{57.6^\circ}{360^\circ} \times 100 = 16\%$$

$$\text{Assam Tea} = \frac{12}{360} \times 100 = 20\%$$

$$\text{Nilgiri Tea} = \frac{86.4}{360} \times 100 = 24\%$$

$$\text{Darjeeling Tea} = \frac{64.8}{360} \times 100 = 18\%$$

Using statement I and above given information, percentage share of tea sold and their price are as below:

Tea	2017-18		2018-19	
	% share	Price per kg	% share	price per kg
Masala Tea	18%	Rs. A	22%	$\frac{11}{10}A$
Butter Tea	22%	Rs. B	16%	$\frac{5}{4}B$
Assam Tea	20%	Rs. C	20%	$\frac{6}{5}C$
Nilgiri Tea	24%	Rs. D	24%	$\frac{16}{15}D$
Darjeeling Tea	16%	Rs. E	18%	$\frac{9}{8}E$

We can also calculate the difference between the sale (in Rs.) of all types of tea in 2018-19 and 2017-18.

Tea	Difference in Sale
Masala Tea	$25000 + 2600 = \text{Rs. } 27,600$
Butter Tea	$25000 - 22000 = \text{Rs. } 3,000$
Assam Tea	$25000 - 3000 = \text{Rs. } 22,000$
Nilgiri Tea	$25000 + 200 = \text{Rs. } 25,200$
Darjeeling Tea	$25000 - 8400 = \text{Rs. } 16,600$

Let total tea sold in the year 2017-18 and 2018-19 be $100x$ and $100y$ kg, respectively.

Therefore, from statement (ii),

$$100x + 100y = 2750$$

$$\Rightarrow x + y = 27.50 = \frac{55}{2}$$

\therefore Price of Butter Tea in 2017-18 = Rs. 120 per kg.

$$\text{Price of Butter Tea in 2018-19} = 120 \times \frac{5}{4} = 150 \text{ per kg.}$$

We have, difference between the sale of the Butter Tea in 2017-18 and 2018-19 is Rs.3,000.

$$\therefore 16y \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow 16\left(\frac{55}{2} - x\right) \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow -2400x - 2640x = 3000 - 440 \times 150$$

$$\Rightarrow -5040x = -63000$$

$$\Rightarrow x = \frac{63000}{5040} = 12.5$$

$$\therefore y = 27.5 - 12.5 = 15$$

Now, we have total weight of Tea sold in 2017-18 and 2018-19 was 1250 kg and 1500 kg respectively.

Now, Tea sold in the year 2017-18 and 2018-19 is given as:

Tea	2017-18	2018-19
Masala Tea	225 kg	330 kg
Butter Tea	275 kg	240 kg
Assam Tea	250 kg	300 kg
Nilgiri Tea	300 kg	360 kg
Darjeeling Tea	200 kg	270 kg

For Masala tea, the difference between the sale in 2017-18 and 2018-19 is Rs. 27,600

$$\therefore 330 \times \frac{11}{10}A - 225A = 27600$$

$$\Rightarrow 138A = 27600$$

$$\therefore A = \text{Rs. } 200 \text{ per kg}$$

Similarly we can calculate that

B = Rs. 120 per kg, C = Rs. 200 per kg, D = Rs. 300 per kg and E = Rs. 160 per kg.
Price per kg of tea sold in 2017-18 and 2018-19 is given in the table below.

Tea	Price per kg in 2017-18 (in Rs.)	Price per kg in 2018-19 (in Rs.)
Masala Tea	A = 200	220
Butter Tea	B = 120	150
Assam Tea	C = 200	240
Nilgiri Tea	D = 300	320
Darjeeling Tea	E = 160	180

$$\text{Total value} = (330 \times 220) + (240 \times 150) + (300 \times 240) + (360 \times 320) + (270 \times 180) \\ = 72600 + 36000 + 72000 + 115200 + 48600 = \text{Rs. } 3,44,400$$

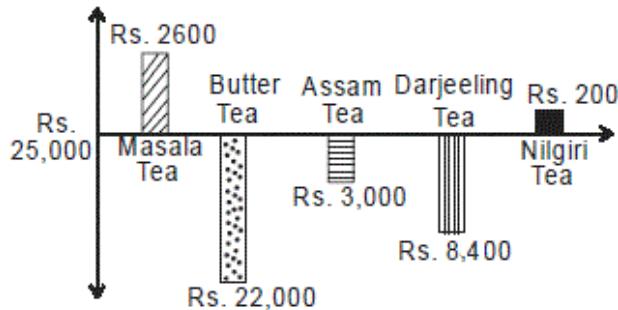
[FeedBack](#)

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

A Tea retailer sells five types of tea - Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea. The pie-chart given below shows the percentage share (weight wise) of all types of tea sold in the year 2017-18 and 2018-19.



The below bar graph depicts the difference between the value of sales (in Rs.) during the year 2018-19 with respect to 2017-18 for each type of tea.



e.g. The retailer sold Masala Tea of Rs. 27600 i.e., (25000 + 2600) more in the year 2018-19 with respect of that in the year 2017-18. The additional information is as below:-

- (I) The price per kg of Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea in the year 2018-19 was increased by 10%, 25%, 20%, 12.50% and 6.67% respectively with respect to the year 2017-18.
- (II) Total 2750 kg Tea were sold in the year 2017-18 and 2018-19 together.
- (III) The price of Butter Tea in the year 2017-18 was Rs. 120 per kg.

Q.57

The price (per kg) of Darjeeling Tea in the year 2018-19 was

1 **Rs. 135**

2 **Rs. 144**

3 **Rs. 180**

4 **Rs. 225**

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

Let the price per kg of Masala Tea, Butter Tea, Assam Tea, Nilgiri Tea and Darjeeling Tea in the year 2017-18 be Rs.A, Rs.B, Rs.C, Rs. D and Rs.E respectively.

Now, percentage share of all types of tea sold in the year 2018-19 is given as:

$$\text{Masala Tea} = \frac{79.2^\circ}{360^\circ} \times 100 = 22\%$$

$$\text{Butter Tea} = \frac{57.6^\circ}{360^\circ} \times 100 = 16\%$$

$$\text{Assam Tea} = \frac{72^\circ}{360^\circ} \times 100 = 20\%$$

$$\text{Nilgiri Tea} = \frac{86.4^\circ}{360^\circ} \times 100 = 24\%$$

$$\text{Darjeeling Tea} = \frac{64.8^\circ}{360^\circ} \times 100 = 18\%$$

Using statement I and above given information, percentage share of tea sold and their price are as below:

Tea	2017-18		2018-19	
	% share	Price per kg	% share	price per kg
Masala Tea	18%	Rs. A	22%	$\frac{11}{10}A$
Butter Tea	22%	Rs. B	16%	$\frac{5}{4}B$
Assam Tea	20%	Rs. C	20%	$\frac{6}{5}C$
Nilgiri Tea	24%	Rs. D	24%	$\frac{16}{15}D$
Darjeeling Tea	16%	Rs. E	18%	$\frac{9}{8}E$

We can also calculate the difference between the sale (in Rs.) of all types of tea in 2018-19 and 2017-18.

Tea	Difference in Sale
Masala Tea	$25000 + 2600 = \text{Rs. } 27,600$
Butter Tea	$25000 - 22000 = \text{Rs. } 3,000$
Assam Tea	$25000 - 3000 = \text{Rs. } 22,000$
Nilgiri Tea	$25000 + 200 = \text{Rs. } 25,200$
Darjeeling Tea	$25000 - 8400 = \text{Rs. } 16,600$

Let total tea sold in the year 2017-18 and 2018-19 be $100x$ and $100y$ kg. respectively.

Therefore, from statement (ii),

$$100x + 100y = 2750$$

$$\Rightarrow x + y = 27.50 = \frac{55}{2}$$

\therefore Price of Butter Tea in 2017-18 = Rs. 120 per kg.

$$\text{Price of Butter Tea in 2018-19} = 120 \times \frac{5}{4} = 150 \text{ per kg.}$$

We have, difference between the sale of the Butter Tea in 2017-18 and 2018-19 is Rs.3,000.

$$\therefore 16y \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow 16\left(\frac{55}{2} - x\right) \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow -2400x - 2640x = 3000 - 440 \times 150$$

$$\Rightarrow -5040x = -63000$$

$$\Rightarrow x = \frac{63000}{5040} = 12.5$$

$$\therefore y = 27.5 - 12.5 = 15$$

Now, we have total weight of Tea sold in 2017-18 and 2018-19 was 1250 kg and 1500 kg respectively.

Now, Tea sold in the year 2017-18 and 2018-19 is given as:

Tea	2017-18	2018-19
Masala Tea	225 kg	330 kg
Butter Tea	275 kg	240 kg
Assam Tea	250 kg	300 kg
Nilgiri Tea	300 kg	360 kg
Darjeeling Tea	200 kg	270 kg

For Masala tea, the difference between the sale in 2017-18 and 2018-19 is Rs. 27,600

$$\therefore 330 \times \frac{11}{10} A - 225 A = 27600$$

$$\Rightarrow 138 A = 27600$$

$\therefore A$ = Rs. 200 per kg

Similarly; we can calculate that;

B = Rs.120 per kg, C = Rs. 200 per kg, D = Rs. 300 per kg and E = Rs. 160 per kg.

Price per kg of tea sold in 2017-18 and 2018-19 is given in the table below.

Tea	Price per kg in 2017-18 (in Rs.)	Price per kg in 2018-19 (in Rs.)
Masala Tea	A = 200	220
Butter Tea	B = 120	150
Assam Tea	C = 200	240
Nilgiri Tea	D = 300	320
Darjeeling Tea	E = 160	180

Required price = Rs.180.

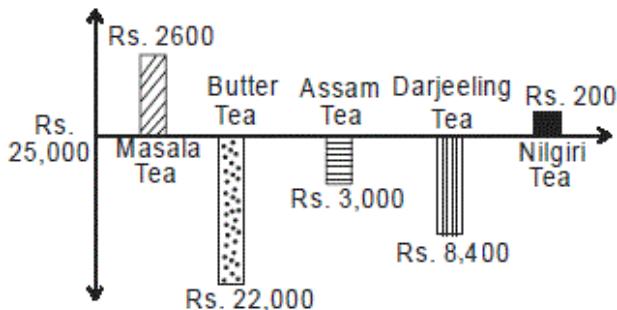
FeedBack

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

A Tea retailer sells five types of tea - Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea. The pie-chart given below shows the percentage share (weight wise) of all types of tea sold in the year 2017-18 and 2018-19.



The below bar graph depicts the difference between the value of sales (in Rs.) during the year 2018-19 with respect to 2017-18 for each type of tea.



e.g. The retailer sold Masala Tea of Rs. 27600 i.e., $(25000 + 2600)$ more in the year 2018-19 with respect of that in the year 2017-18. The additional information is as below:-

- (I) The price per kg of Masala Tea, Butter Tea, Assam Tea, Darjeeling Tea and Nilgiri Tea in the year 2018-19 was increased by 10%, 25%, 20%, 12.50% and 6.67% respectively with respect to the year 2017-18.
- (II) Total 2750 kg Tea were sold in the year 2017-18 and 2018-19 together.
- (III) The price of Butter Tea in the year 2017-18 was Rs. 120 per kg.

Q.58

The total value of Tea sold in 2017-18 was by how much percentage less than that in 2018-19?

- 1 23.59%
- 2 27.41%
- 3 32.21%
- 4 24.89%

Solution:

Correct Answer : 2

Bookmark

Let the price per kg of Masala Tea, Butter Tea, Assam Tea, Nilgiri Tea and Darjeeling Tea in the year 2017-18 be Rs.A, Rs.B, Rs.C, Rs. D and Rs.E respectively.

Now, percentage share of all types of tea sold in the year 2018-19 is given as:

$$\text{Masala Tea} = \frac{79.2}{360} \times 100 = 22\%$$

$$\text{Butter Tea} = \frac{57.6}{360} \times 100 = 16\%$$

$$\text{Assam Tea} = \frac{72}{360} \times 100 = 20\%$$

$$\text{Nilgiri Tea} = \frac{86.4}{360} \times 100 = 24\%$$

$$\text{Darjeeling Tea} = \frac{64.8}{360} \times 100 = 18\%$$

Using statement I and above given information, percentage share of tea sold and their price are as below:

Tea	2017-18		2018-19	
	% share	Price per kg	% share	price per kg
Masala Tea	18%	Rs. A	22%	$\frac{11}{10}A$
Butter Tea	22%	Rs. B	16%	$\frac{5}{4}B$
Assam Tea	20%	Rs. C	20%	$\frac{6}{5}C$
Nilgiri Tea	24%	Rs. D	24%	$\frac{16}{15}D$
Darjeeling Tea	16%	Rs. E	18%	$\frac{9}{8}E$

We can also calculate the difference between the sale (in Rs.) of all types of tea in 2018-19 and 2017-18.

Tea	Difference in Sale
Masala Tea	$25000 + 2600 = \text{Rs. } 27,600$
Butter Tea	$25000 - 22000 = \text{Rs. } 3,000$
Assam Tea	$25000 - 3000 = \text{Rs. } 22,000$
Nilgiri Tea	$25000 + 200 = \text{Rs. } 25,200$
Darjeeling Tea	$25000 - 8400 = \text{Rs. } 16,600$

Let total tea sold in the year 2017-18 and 2018-19 be $100x$ and $100y$ kg. respectively.

Therefore, from statement (ii),

$$100x + 100y = 2750$$

$$\Rightarrow x + y = 27.50 = \frac{55}{2}$$

\therefore Price of Butter Tea in 2017-18 = Rs. 120 per kg.

$$\text{Price of Butter Tea in 2018-19} = 120 \times \frac{5}{4} = 150 \text{ per kg.}$$

We have, difference between the sale of the Butter Tea in 2017-18 and 2018-19 is Rs.3,000.

$$\therefore 16y \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow 16\left(\frac{55}{2} - x\right) \times 150 - 22x \times 120 = 3000$$

$$\Rightarrow -2400x - 2640x = 3000 - 440 \times 150$$

$$\Rightarrow -5040x = -63000$$

$$\Rightarrow x = \frac{63000}{5040} = 12.5$$

$$\therefore y = 27.5 - 12.5 = 15$$

Now, we have total weight of Tea sold in 2017-18 and 2018-19 was 1250 kg and 1500 kg respectively.

Now, Tea sold in the year 2017-18 and 2018-19 is given as:

Tea	2017-18	2018-19
Masala Tea	225 kg	330 kg
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Nilgiri Tea	300 kg	360 kg
Darjeeling Tea	200 kg	270 kg

For Masala tea, the difference between the sale in 2017-18 and 2018-19 is Rs. 27,600

$$\therefore 330 \times \frac{11}{10} A - 225 A = 27600$$

$$\Rightarrow 138 A = 27600$$

$\therefore A = \text{Rs. } 200 \text{ per kg}$

Similarly; we can calculate that;

B = Rs. 120 per kg, C = Rs. 200 per kg, D = Rs. 300 per kg and E = Rs. 160 per kg.

Price per kg of tea sold in 2017-18 and 2018-19 is given in the table below.

Tea	Price per kg in 2017-18 (in Rs.)	Price per kg in 2018-19 (in Rs.)
Masala Tea	A = 200	220
Butter Tea	B = 120	150
Assam Tea	C = 200	240
Nilgiri Tea	D = 300	320
Darjeeling Tea	E = 160	180

Total value of tea sold in 2017-18 = $(225 \times 200) + (275 \times 120) + (250 \times 200) + (300 \times 300) + (200 \times 160)$
 $= 45000 + 33000 + 50000 + 90000 + 32000 = \text{Rs. } 2,50,000$

$$\text{Required percentage} = \frac{344400 - 250000}{344400} \times 100 = 27.41\% .$$

FeedBack

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

In a shooting competition, involving 2 shooters - Shasha and Palash, a total of 10 shots were fired - shot 1, then shot 2, then shot 3, ... and so on till shot 10. Each shooter fired 5 shots alternatively starting with Shasha who fired shot 1. The points awarded were not the same for any two shots and the points awarded for each shot was a multiple of 10, with 100 points being the maximum and 10 points being the minimum for each shot. Further, if points awarded for shot 2 were less than that awarded for shot 1, then Palash gave Rs. 1000 to Shasha, otherwise he got Rs. 1000 from Shasha. Similarly, if points awarded for shot 3 were less than that awarded for shot 2, then Shasha gave Rs. 1000 to Palash, otherwise he got Rs. 1000 from Palash and so on till the last shot was fired.

Q.59

It is known that after all the ten shots were fired, Palash got Rs. 1000 after each of shot 2, shot 3 and shot 5 only. Which of the following could be the shot in which the minimum possible points were awarded?

1 shot 3

2 shot 4

3 shot 8

4 ● shot 9

Solution:**Correct Answer : 3**

Let the points awarded for

- shot 1 a
- shot 2 b
- shot 3 c
- shot 4 d
- shot 5 e
- shot 6 f
- shot 7 g
- shot 8 h
- shot 9 i
- shot 10 j

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

Based on the information given, following can be deduced :

$$\Rightarrow a < b \rightarrow \text{Since Palash got Rs. 1,000 after shot 2}$$

$$\Rightarrow c < b \rightarrow \text{he got Rs. 1,000 after shot 3}$$

$$\Rightarrow d < c \rightarrow \text{he did not get Rs. 1,000 after shot 4}$$

$$\Rightarrow e < d \rightarrow \text{he got Rs. 1,000 after shot 5}$$

$$\Rightarrow f < e, g$$

$$\Rightarrow h < g, i$$

$$\Rightarrow j < i$$

Hence,

$$\Rightarrow a < b$$

$$\text{and } f < e < d < c < b$$

$$\text{and } h, j < i$$

Min. value could be either a or f or h or j.

[FeedBack](#)

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

In a shooting competition, involving 2 shooters - Shasha and Palash, a total of 10 shots were fired - shot 1, then shot 2, then shot 3, ... and so on till shot 10. Each shooter fired 5 shots alternatively starting with Shasha who fired shot 1. The points awarded were not the same for any two shots and the points awarded for each shot was a multiple of 10, with 100 points being the maximum and 10 points being the minimum for each shot. Further, if points awarded for shot 2 were less than that awarded for shot 1, then Palash gave Rs. 1000 to Shasha, otherwise he got Rs. 1000 from Shasha. Similarly, if points awarded for shot 3 were less than that awarded for shot 2, then Shasha gave Rs. 1000 to Palash, otherwise he got Rs. 1000 from Palash and so on till the last shot was fired.

Q.60

It is known that after all the ten shots were fired, Palash got Rs. 1000 after each of shot 2, shot 3 and shot 5 only. How many different values for the points awarded for shot 2 are possible?

Solution:**Correct Answer : 5** **Bookmark** **Answer key/Solution**

Let the points awarded for

- shot 1 a
- shot 2 b
- shot 3 c
- shot 4 d
- shot 5 e
- shot 6 f
- shot 7 g
- shot 8 h
- shot 9 i
- shot 10 j

'b' must be greater than f, e, d, c and a. Hence, b could take any value from 60 to 100. Hence, 5 possible values.

FeedBack

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

In a shooting competition, involving 2 shooters - Shasha and Palash, a total of 10 shots were fired - shot 1, then shot 2, then shot 3, ... and so on till shot 10. Each shooter fired 5 shots alternatively starting with Shasha who fired shot 1. The points awarded were not the same for any two shots and the points awarded for each shot was a multiple of 10, with 100 points being the maximum and 10 points being the minimum for each shot. Further, if points awarded for shot 2 were less than that awarded for shot 1, then Palash gave Rs. 1000 to Shasha, otherwise he got Rs. 1000 from Shasha. Similarly, if points awarded for shot 3 were less than that awarded for shot 2, then Shasha gave Rs. 1000 to Palash, otherwise he got Rs. 1000 from Palash and so on till the last shot was fired.

Q.61

It is known that after all 10 shots were fired, Palash got Rs. 1000 after shot 4 only and also the points awarded for shot 1 were the maximum. For how many shots the awarded points could be second highest?

Solution:**Correct Answer : 3**

Let the points awarded for
 shot 1 a
 shot 2 b
 shot 3 c
 shot 4 d
 shot 5 e
 shot 6 f
 shot 7 g
 shot 8 h
 shot 9 i
 shot 10 j

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

Based on the information given, following can be deduced :

$\Rightarrow b < a$

And $b < c < d < e$

And $f < e, g$

And $h < g$

And $h, j < i$

It is given that a is the highest, so out of these only e, g and i could be the highest.

FeedBack

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

In a shooting competition, involving 2 shooters - Shasha and Palash, a total of 10 shots were fired - shot 1, then shot 2, then shot 3, ... and so on till shot 10. Each shooter fired 5 shots alternatively starting with Shasha who fired shot 1. The points awarded were not the same for any two shots and the points awarded for each shot was a multiple of 10, with 100 points being the maximum and 10 points being the minimum for each shot. Further, if points awarded for shot 2 were less than that awarded for shot 1, then Palash gave Rs. 1000 to Shasha, otherwise he got Rs. 1000 from Shasha. Similarly, if points awarded for shot 3 were less than that awarded for shot 2, then Shasha gave Rs. 1000 to Palash, otherwise he got Rs. 1000 from Palash and so on till the last shot was fired.

Q.62

If Palash got Rs. 1000 after each of shot 3, shot 6 and shot 9 only, then which of the following could be the shots in which the minimum and the maximum points were awarded respectively?

- 1 Shot 10 and shot 6
- 2 Shot 9 and shot 1
- 3 Shot 7 and shot 1
- 4 Shot 4 and shot 7

Solution:**Correct Answer : 4**

Let the points awarded for
shot 1 a
shot 2 b
shot 3 c
shot 4 d
shot 5 e
shot 6 f
shot 7 g
shot 8 h
shot 9 i
shot 10 j

Based on the information given, following can be deduced:

$\Rightarrow a > b > c > d \rightarrow$ since Palash got Rs. 1,000 after shot 3.

$\Rightarrow g > f > e > d \rightarrow$ He got Rs. 1,000 after shot 6.

$\Rightarrow g > h > i > j \rightarrow$ He got Rs. 1,000 after shot 9.

Hence, a or g \rightarrow could be maximum points.

d or j \rightarrow could be \rightarrow minimum points.

So, option (4) is correct.

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

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

Each of three NGOs - 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' - opened three major relief fund categories - "2205", "2220" and "2221" - to collect fund for flood victims of Bihar. Funds under these categories were received in the form of cash, cloths, food packets and bicycles. The value (in Rs.) of each of these commodities and the total number of commodities received are tabulated below.

Commodity	Price/piece	Total pieces
Cloth	Rs. 2000/-	10
Bicycle	Rs. 3500/-	10
Food Packets	Rs. 50/-	100

Some additional information known is as given below:

- (I) Only two different commodities were received under each category for each NGO. The value of the total funds received in each category was a multiple of Rs.500.
- (II) Food Packets were received in a total of five relief fund categories in all three NGOs taken together. If there is cash received in any category, then it must be at least Rs. 5000 and always a multiple of 1000. Cash and cloths were received in exactly one and two categories respectively of each NGO. The category in which cash was received by each NGO was always different.
- (III) Bicycles were received by only two NGOs and total number of food packets received by 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' were in the ratio of 1 : 7 : 2.
- (IV) The total value of relief funds received by 'Vikiran' was Rs. 34000 and that by 'Mat Ruko' was Rs. 26500, which had received Rs. 9000 as cash under fund category "2221". The value of relief funds received under category "2220" and "2221" by all NGOs taken together were Rs.19000 and Rs. 36000 respectively.
- (V) The total value of funds received by 'Badhe Chalo' under categories "2220" and "2221" taken together was equal to that received by 'Mat Ruko' under category "2221". 'Vikiran' and 'Mat Ruko' each got 2 bicycles in fund categories "2220" and "2205" respectively.
- (VI) The value of funds received by 'Mat Ruko' under one of the three categories was Rs. 3000.
- (VII) Total cash of worth Rs. 20000 was received in all three categories taken together.

Q.63

How many food packets were received by NGO 'Badho Chalo' under the category "2221"?

Solution:**Correct Answer : 30**
 **Bookmark**
 **Answer key/Solution**

Total value of funds = $20000 + (2000 \times 10) + (3500 \times 10) + (50 \times 100) = \text{Rs. } 80,000$

The value of funds received by Badhe Chalo = $80000 - (34000 + 26500) = 19,500$

The value of funds received under category "2205" = $80000 - (19000 + 36000) = 25,000$

Food Packets received by Vikiran, Badhe Chalo and Mat Ruko are 10, 70 and 20 respectively. As the value of funds received by Mat Ruko in Rs. 26,500 we can conclude that number of cycles received by Mat Ruko must be an odd number (greater than 2). Suppose Mat Ruko gets five cycles then total value of funds received by them will exceed Rs. 26,500 because they have got Rs. 9,000 cash and 20 food packets also. Therefore, we can conclude that 'Mat Ruko' and 'Vikiran' had got 3 and 7 cycles respectively. Further, we conclude that 'Mat Ruko' had received 3 cloths worth Rs. 6,000. Since the value of funds received by 'Badhe Chalo' is Rs. 19,500, we observe that they must get 5 cloths worth Rs. 10,000, Rs. 6,000 cash and 70 food packets worth Rs. 3,500. Now we have the following table:

NGO	Vikiran	Badhe Chalo	Mat Ruko
Cycle	7	x	3
Cloth	2	5	3
Cash	Rs. 5,000	Rs. 6,000	Rs. 9,000
Food Packets	10	70	20

Since clothes are received by each NGO under two categories; we need to arrange food packets and cash in a way that each category gets two different commodity. This is possible only when food packets are received in category different from the category in which Rs. 6,000 cash was received, and food packets would have been received in each category. Five cycles must be received by Vikiran under category 2221 in orders to get total value in 2221 equal to Rs. 36,000. To make the sum of fund in category 2205 equal to 25,000, cash of Rs. 5,000 must be received under 2205 by Vikiran. Only possible combination for the value of commodities received under one category by 'Mat Ruko' equal to Rs. 3,000 is 1 cloth and 20 food packets. Since each category has two different commodities, there must be 2 cloths in 2205 and 1 cycle in 2221. The categories 2220 and 2221 together of 'Badhe Chalo' must have food packets worth Rs. 2,500 in order to make sum of value of funds under these two categories equal to that in 2221 of 'Mat Ruko'. It resulted into 20 food packets in 2205 of 'Badhe Chalo'. As, sum of funds worth under 2221 is Rs. 36,000, there must be 10 food packets in 2221 of Vikiran. Some further analysis leads to the following table:-

	Vikiran (Rs. 34,000)	Badhe Chalo (Rs. 19,500)	Mat Ruko (Rs. 26,500)
2220 (Rs.19,000)	2 cycles + 1 cloth	Rs. 6,000 cash + 20 food packets	1 cloth + 20 food packets
2221(Rs. 36,000)	5 cycles + 10 food packets	2 cloths + 30 food packets	Rs. 9,000 cash + 1 cycle
2205 (Rs. 25,000)	Rs. 5,000 cash + 1 cloth	3 cloths + 20 food packets	2 cycles + 2 cloths

Badhe Chalo got 30 food packets under category 2,221.

 **FeedBack**

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

Each of three NGOs - 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' - opened three major relief fund categories - "2205", "2220" and "2221" - to collect fund for flood victims of Bihar. Funds under these categories were received in the form of cash, cloths, food packets and bicycles. The value (in Rs.) of each of these commodities and the total number of commodities received are tabulated below.

Commodity	Price/piece	Total pieces
Cloth	Rs. 2000/-	10
Bicycle	Rs. 3500/-	10
Food Packets	Rs. 50/-	100

Some additional information known is as given below:

- (I) Only two different commodities were received under each category for each NGO. The value of the total funds received in each category was a multiple of Rs.500.
- (II) Food Packets were received in a total of five relief fund categories in all three NGOs taken together. If there is cash received in any category, then it must be at least Rs. 5000 and always a multiple of 1000. Cash and cloths were received in exactly one and two categories respectively of each NGO. The category in which cash was received by each NGO was always different.
- (III) Bicycles were received by only two NGOs and total number of food packets received by 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' were in the ratio of 1 : 7 : 2.
- (IV) The total value of relief funds received by 'Vikiran' was Rs. 34000 and that by 'Mat Ruko' was Rs. 26500, which had received Rs. 9000 as cash under fund category "2221". The value of relief funds received under category "2220" and "2221" by all NGOs taken together were Rs.19000 and Rs. 36000 respectively.
- (V) The total value of funds received by 'Badhe Chalo' under categories "2220" and "2221" taken together was equal to that received by 'Mat Ruko' under category "2221". 'Vikiran' and 'Mat Ruko' each got 2 bicycles in fund categories "2220" and "2205" respectively.
- (VI) The value of funds received by 'Mat Ruko' under one of the three categories was Rs. 3000.
- (VII) Total cash of worth Rs. 20000 was received in all three categories taken together.

Q.64

How many cloths were received under the category "2205"?

Solution:**Correct Answer : 6**
 **Bookmark**
 **Answer key/Solution**

$$\text{Total value of funds} = 20000 + (2000 \times 10) + (3500 \times 10) + (50 \times 100) = \text{Rs. } 80,000$$

$$\text{The value of funds received by Badhe Chalo} = 80000 - (34000 + 26500) = 19,500$$

$$\text{The value of funds received under category "2205"} = 80000 - (19000 + 36000) = 25,000$$

Food Packets received by Vikiran, Badhe Chalo and Mat Ruko are 10, 70 and 20 respectively. As the value of funds received by Mat Ruko in Rs. 26,500 we can conclude that number of cycles received by Mat Ruko must be an odd number (greater than 2). Suppose Mat Ruko gets five cycles then total value of funds received by them will exceed Rs. 26,500 because they have got Rs. 9,000 cash and 20 food packets also. Therefore, we can conclude that 'Mat Ruko' and 'Vikiran' had got 3 and 7 cycles respectively. Further, we conclude that 'Mat Ruko' had received 3 cloths worth Rs. 6,000. Since the value of funds received by 'Badhe Chalo' is Rs. 19,500, we observe that they must get 5 cloths worth Rs. 10,000, Rs. 6,000 cash and 70 food packets worth Rs. 3,500. Now we have the following table:

NGO	Vikiran	Badhe Chalo	Mat Ruko
Cycle	7	x	3
Cloth	2	5	3
Cash	Rs. 5,000	Rs. 6,000	Rs. 9,000
Food Packets	10	70	20

Since clothes are received by each NGO under two categories; we need to arrange food packets and cash in a way that each category gets two different commodity. This is possible only when food packets are received in category different from the category in which Rs. 6,000 cash was received, and food packets would have been received in each category. Five cycles must be received by Vikiran under category 2221 in orders to get total value in 2221 equal to Rs. 36,000. To make the sum of fund in category 2205 equal to 25,000, cash of Rs. 5,000 must be received under 2205 by Vikiran. Only possible combination for the value of commodities received under one category by 'Mat Ruko' equal to Rs. 3,000 is 1 cloth and 20 food packets. Since each category has two different commodities, there must be 2 cloths in 2205 and 1 cycle in 2221. The categories 2220 and 2221 together of 'Badhe Chalo' must have food packets worth Rs. 2,500 in order to make sum of value of funds under these two categories equal to that in 2221 of 'Mat Ruko'. It resulted into 20 food packets in 2205 of 'Badhe Chalo'. As, sum of funds worth under 2221 is Rs. 36,000, there must be 10 food packets in 2221 of Vikiran. Some further analysis leads to the following table:-

	Vikiran (Rs. 34,000)	Badhe Chalo (Rs. 19,500)	Mat Ruko (Rs. 26,500)
2220 (Rs.19,000)	2 cycles + 1 cloth	Rs. 6,000 cash + 20 food packets	1 cloth + 20 food packets
2221(Rs. 36,000)	5 cycles + 10 food packets	2 cloths + 30 food packets	Rs. 9,000 cash + 1 cycle
2205 (Rs. 25,000)	Rs. 5,000 cash + 1 cloth	3 cloths + 20 food packets	2 cycles + 2 cloths

Total 6 cloths were received in 2,205.

 **FeedBack**

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

Each of three NGOs - 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' - opened three major relief fund categories - "2205", "2220" and "2221" - to collect fund for flood victims of Bihar. Funds under these categories were received in the form of cash, cloths, food packets and bicycles. The value (in Rs.) of each of these commodities and the total number of commodities received are tabulated below.

Commodity	Price/piece	Total pieces
Cloth	Rs. 2000/-	10
Bicycle	Rs. 3500/-	10
Food Packets	Rs. 50/-	100

Some additional information known is as given below:

- (I) Only two different commodities were received under each category for each NGO. The value of the total funds received in each category was a multiple of Rs.500.
- (II) Food Packets were received in a total of five relief fund categories in all three NGOs taken together. If there is cash received in any category, then it must be at least Rs. 5000 and always a multiple of 1000. Cash and cloths were received in exactly one and two categories respectively of each NGO. The category in which cash was received by each NGO was always different.
- (III) Bicycles were received by only two NGOs and total number of food packets received by 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' were in the ratio of 1 : 7 : 2.
- (IV) The total value of relief funds received by 'Vikiran' was Rs. 34000 and that by 'Mat Ruko' was Rs. 26500, which had received Rs. 9000 as cash under fund category "2221". The value of relief funds received under category "2220" and "2221" by all NGOs taken together were Rs.19000 and Rs. 36000 respectively.
- (V) The total value of funds received by 'Badhe Chalo' under categories "2220" and "2221" taken together was equal to that received by 'Mat Ruko' under category "2221". 'Vikiran' and 'Mat Ruko' each got 2 bicycles in fund categories "2220" and "2205" respectively.
- (VI) The value of funds received by 'Mat Ruko' under one of the three categories was Rs. 3000.
- (VII) Total cash of worth Rs. 20000 was received in all three categories taken together.

Q.65

Vikiran got food packets under the category

1 2205

2 2220

3 2221

4 Any two of the above

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

$$\text{Total value of funds} = 20000 + (2000 \times 10) + (3500 \times 10) + (50 \times 100) = \text{Rs. } 80,000$$

$$\text{The value of funds received by Badhe Chalo} = 80000 - (34000 + 26500) = 19,500$$

$$\text{The value of funds received under category "2205"} = 80000 - (19000 + 36000) = 25,000$$

Food Packets received by Vikiran, Badhe Chalo and Mat Ruko are 10, 70 and 20 respectively. As the value of funds received by Mat Ruko in Rs. 26,500 we can conclude that number of cycles received by Mat Ruko must be an odd number (greater than 2). Suppose Mat Ruko gets five cycles then total value of funds received by them will exceed Rs. 26,500 because they have got Rs. 9,000 cash and 20 food packets also. Therefore, we can conclude that 'Mat Ruko' and 'Vikiran' had got 3 and 7 cycles respectively. Further, we conclude that 'Mat Ruko' had received 3 cloths worth Rs. 6,000. Since the value of funds received by 'Badhe Chalo' is Rs. 19,500, we observe that they must get 5 cloths worth Rs. 10,000, Rs. 6,000 cash and 70 food packets worth Rs. 3,500. Now we have the following table:

NGO	Vikiran	Badhe Chalo	Mat Ruko
Cycle	7	x	3
Cloth	2	5	3
Cash	Rs. 5,000	Rs. 6,000	Rs. 9,000
Food Packets	10	70	20

Since clothes are received by each NGO under two categories; we need to arrange food packets and cash in a way that each category gets two different commodity. This is possible only when food packets are received in category different from the category in which Rs. 6,000 cash was received, and food packets would have been received in each category. Five cycles must be received by Vikiran under category 2221 in orders to get total value in 2221 equal to Rs. 36,000. To make the sum of fund in category 2205 equal to 25,000, cash of Rs. 5,000 must be received under 2205 by Vikiran. Only possible combination for the value of commodities received under one category by 'Mat Ruko' equal to Rs. 3,000 is 1 cloth and 20 food packets. Since each category has two different commodities, there must be 2 cloths in 2205 and 1 cycle in 2221. The categories 2220 and 2221 together of 'Badhe Chalo' must have food packets worth Rs. 2,500 in order to make sum of value of funds under these two categories equal to that in 2221 of 'Mat Ruko'. It resulted into 20 food packets in 2205 of 'Badhe Chalo'. As, sum of funds worth under 2221 is Rs. 36,000, there must be 10 food packets in 2221 of Vikiran. Some further analysis leads to the following table:-

	Vikiran (Rs. 34,000)	Badhe Chalo (Rs. 19,500)	Mat Ruko (Rs. 26,500)
2220 (Rs.19,000)	2 cycles + 1 cloth	Rs. 6,000 cash + 20 food packets	1 cloth + 20 food packets
2221(Rs. 36,000)	5 cycles + 10 food packets	2 cloths + 30 food packets	Rs. 9,000 cash + 1 cycle
2205 (Rs. 25,000)	Rs. 5,000 cash + 1 cloth	3 cloths + 20 food packets	2 cycles + 2 cloths

Vikiran got food packets in 2,221.

FeedBack

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

Each of three NGOs - 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' - opened three major relief fund categories - "2205", "2220" and "2221" - to collect fund for flood victims of Bihar. Funds under these categories were received in the form of cash, cloths, food packets and bicycles. The value (in Rs.) of each of these commodities and the total number of commodities received are tabulated below.

Commodity	Price/piece	Total pieces
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Food Packets	Rs. 50/-	100

Some additional information known is as given below:

- (I) Only two different commodities were received under each category for each NGO. The value of the total funds received in each category was a multiple of Rs.500.
- (II) Food Packets were received in a total of five relief fund categories in all three NGOs taken together. If there is cash received in any category, then it must be at least Rs. 5000 and always a multiple of 1000. Cash and cloths were received in exactly one and two categories respectively of each NGO. The category in which cash was received by each NGO was always different.
- (III) Bicycles were received by only two NGOs and total number of food packets received by 'Vikiran', 'Badhe Chalo' and 'Mat Ruko' were in the ratio of 1 : 7 : 2.
- (IV) The total value of relief funds received by 'Vikiran' was Rs. 34000 and that by 'Mat Ruko' was Rs. 26500, which had received Rs. 9000 as cash under fund category "2221". The value of relief funds received under category "2220" and "2221" by all NGOs taken together were Rs.19000 and Rs. 36000 respectively.
- (V) The total value of funds received by 'Badhe Chalo' under categories "2220" and "2221" taken together was equal to that received by 'Mat Ruko' under category "2221". 'Vikiran' and 'Mat Ruko' each got 2 bicycles in fund categories "2220" and "2205" respectively.
- (VI) The value of funds received by 'Mat Ruko' under one of the three categories was Rs. 3000.
- (VII) Total cash of worth Rs. 20000 was received in all three categories taken together.

Q.66

Badhe chalo got maximum value of funds under category

1 2205

2 2220

3 2221

4 Both (1) and (2)

Solution:**Correct Answer : 4** **Bookmark** **Answer key/Solution**

$$\text{Total value of funds} = 20000 + (2000 \times 10) + (3500 \times 10) + (50 \times 100) = \text{Rs. } 80,000$$

$$\text{The value of funds received by Badhe Chalo} = 80000 - (34000 + 26500) = 19,500$$

$$\text{The value of funds received under category "2205"} = 80000 - (19000 + 36000) = 25,000$$

Food Packets received by Vikiran, Badhe Chalo and Mat Ruko are 10, 70 and 20 respectively. As the value of funds received by Mat Ruko in Rs. 26,500 we can conclude that number of cycles received by Mat Ruko must be an odd number (greater than 2). Suppose Mat Ruko gets five cycles then total value of funds received by them will exceed Rs. 26,500 because they have got Rs. 9,000 cash and 20 food packets also. Therefore, we can conclude that 'Mat Ruko' and 'Vikiran' had got 3 and 7 cycles respectively. Further, we conclude that 'Mat Ruko' had received 3 cloths worth Rs. 6,000. Since the value of funds received by 'Badhe Chalo' is Rs. 19,500, we observe that they must get 5 cloths worth Rs. 10,000, Rs. 6,000 cash and 70 food packets worth Rs. 3,500. Now we have the following table:

NGO	Vikiran	Badhe Chalo	Mat Ruko
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	Vikiran (Rs. 34,000)	Badhe Chalo (Rs. 19,500)	Mat Ruko (Rs. 26,500)
2220 (Rs. 19,000)	2 cycles + 1 cloth	Rs. 6,000 cash + 20 food packets	1 cloth + 20 food packets
2221(Rs. 36,000)	5 cycles + 10 food packets	2 cloths + 30 food packets	Rs. 9,000 cash + 1 cycle
2205 (Rs. 25,000)	Rs. 5,000 cash + 1 cloth	3 cloths + 20 food packets	2 cycles + 2 cloths

Badhe Chalo got Rs. 7,000 in 2205 and 2,220.

FeedBack
Sec 3**Q.67**

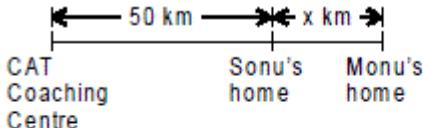
The average runs scored by Rohit Sharma in five ODI matches is 55. In the sixth match, Rohit scores some runs such that his average now becomes 66. In the 7th match, he scores 16 runs more than his sixth match and now the average of his last six matches becomes 84. If he does not remain not out in any of the matches, then how many runs did he score in his first match?



Solution:**Correct Answer : 29****Your Answer : 29**Runs scored by Rohit in first 5 matches = $55 \times 5 = 275$ Total runs scored after 6 matches = $66 \times 6 = 396$ Runs scored by Rohit in sixth match = $396 - 275 = 121$ Therefore, runs scored by Rohit in 7th match = $121 + 16 = 137$ Therefore, total runs scored in 7 matches = $396 + 137 = 533$ Total runs scored in the last 6 matches = $84 \times 6 = 504$ Hence, runs scored in the first match = $533 - 504 = 29$. **Bookmark** **Answer key/Solution****FeedBack****Q.68**

After attending the CAT coaching class, two students Sonu and Monu, go back to their home by sharing an auto which has a speed of 30 km/hr. Sonu takes 16.66% less time to reach his home than Monu. Find the distance between their homes if the distance between Sonu's home and coaching class centre is 50 km.

1 **10 km**2 **15 km**3 **20 km**4 **25 km**

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

Let the distance between their homes be x km.

If we consider time taken by the auto to reach Monu's home as 't' hr, then the time required to reach Sonu's home will be $\frac{5}{6}t$.

Given that speed of the auto = 30 km/hr

As per the question,

$$\frac{50}{30} = \frac{5}{6}t$$

$\therefore t = 2$ hours.

$$\therefore \frac{50+x}{30} = t$$

$$\Rightarrow 50 + x = 30(2) = 60$$

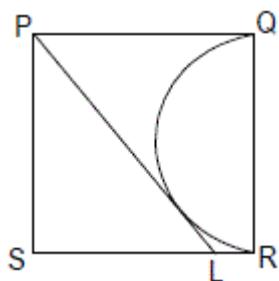
$$\Rightarrow x = 10 \text{ km.}$$

\therefore Distance between Sonu's home and Monu's home is 10 km.

FeedBack

Q.69

Square PQRS has side length of 1 cm. A semicircle with diameter QR is constructed inside the square, and the tangent to the semicircle from P intersects side SR at L. Find the length (in cm) of PL.

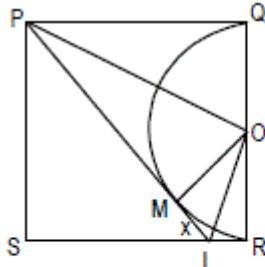


1 $\frac{5}{4}$

2 $\frac{5}{2}$

3 $\sqrt{5}$

4 $\frac{(1+\sqrt{5})}{4}$

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

Let M be the point at which PL is tangent to the semicircle, and let O be the midpoint of QR. Because PM and PQ are both tangents to the semicircle, $PM = PQ = 1$ cm. Similarly, $LR = LM$.

Let $LR = x$.

In triangle PSL,

$$(1 - x)^2 + 1^2 = (1 + x)^2 \Rightarrow x = 1/4$$

Hence, $PL = 1 + x = 5/4$ cm.

FeedBack**Q.70**

If $x + 5$ is divisible by 23 where x is a positive integer, then which of the following integer will necessarily divide $(x + 28)(x + 51)$?

1 71342 31743 34174 1374**Solution:****Correct Answer : 2****Your Answer : 2****Bookmark****Answer key/Solution**

$$\begin{aligned}
 & (x + 28)(x + 51) \\
 &= (x + 5 + 23)(x + 5 + 46) \\
 &= (P + 23)(P + 46) \quad \{ \text{Let } P = x + 5 = 23 \text{ m} \} \\
 &= P^2 + 69P + 23 \times 46 \\
 &= (23 \text{ m})^2 + 69 \times 23 \text{ m} + 23 \times 46 \\
 &= 529 \text{ m}^2 + 529 \times 3 \text{ m} + 529 \times 2 \\
 &= 529 (\text{m}^2 + 3 \text{ m} + 2) \\
 &\text{If m = 1, then} \\
 &= 529(1 + 3 + 2) = 529 \times 6 = 3174.
 \end{aligned}$$

FeedBack

Q.71

The graph of a quadratic expression, $ax^2 + bx + c$, attains its maximum value of 10 at $x = 2$. If the graph intersects the x-axis at two points, one positive and the other negative, then which of the coefficients i.e. 'a', 'b' and 'c' is/are definitely positive?

- 1 Only c
- 2 Only b
- 3 Both b and c
- 4 Both a and c

**Solution:**

Correct Answer : 3

Your Answer : 3



[Answer key/Solution](#)

As the quadratic expression attains a maximum value of 10 at $x = 2$, the graph of the given expression must be the parabola pointing downwards and hence coefficient of x^2 i.e., 'a' is negative.

Again, maximum value of the expression is at $x = -\frac{b}{2a} = 2 \Rightarrow b = -4a$

As 'a' is negative, therefore 'b' must be positive.

Again product of the roots = $\left(\frac{c}{a}\right)$.

As one root is negative and other is positive, so product must be negative.
Therefore, 'c' must be positive.

Therefore, 'a' is negative whereas both 'b' and 'c' are positive.

[FeedBack](#)

Q.72

Anuj and Rishi working together can complete a work in 4.5 days. However, if Anuj works alone and completes half the work and then Rishi takes over and completes the remaining half alone, they will be able to complete the work in 12 days. If Anuj is more efficient than Rishi, then in how many days can Rishi alone complete the work?



Solution:**Correct Answer : 18****Your Answer : 6**

Let Anuj works for x days to complete half of the work.

$$\text{Then, Anuj's one day's work} = \frac{1}{2x}$$

Therefore, Rishi takes $(12 - x)$ days to complete the remaining half of the work.

$$\text{Then, Rishi's one day's work} = \frac{1}{2(12 - x)}$$

$$\text{Therefore, } \frac{1}{2x} + \frac{1}{2(12 - x)} = \frac{2}{9}$$

$$\Rightarrow (x - 3)(x - 9) = 0$$

$$\Rightarrow x = 3 \text{ or } x = 9$$

Since Anuj is more efficient than Rishi, then $x = 3$.

$$\text{Therefore, Rishi's one day's work} = \frac{1}{2 \times 9} = \frac{1}{18}$$

Hence, Rishi alone can complete the work in 18 days.

[FeedBack](#)
 **Bookmark**
 **Answer key/Solution**
Q.73

How many ordered pairs (a, b) satisfy the equation $a^4 - b^4 = 9876$, where a and b are positive integers?

1 0

2 1

3 2

4 3

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

$$a^4 - b^4 = 9876$$

$$\Rightarrow (a^2 + b^2)(a - b)(a + b) = 9876$$

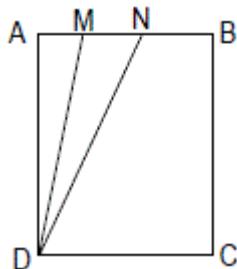
As 9876 is an even number, either both a and b are odd or both are even.

If both a and b are odd, then each of $(a^2 + b^2)$, $(a - b)$ and $(a + b)$ must be divisible by 2 and therefore their product must be divisible by 8.

Similarly, if both a and b are even, then also each of $(a^2 + b^2)$, $(a - b)$ and $(a + b)$ must be divisible by 2 and therefore their product must be divisible by 8.

But 9876 is not divisible by 8 and hence there is no real solution for the given equation.

[FeedBack](#)

Q.74

In the figure, ABCD is a rectangle with $AM : MN : NB = 1 : 2 : 3$. What is the ratio of area of triangle MND to area of quadrilateral NDCB?

1 1 : 9

2 2 : 9

3 1 : 6

4 3 : 4

Solution:

Correct Answer : 2

Let $AB = x$ and $AD = y$

$$\therefore AM = \frac{1}{6}AB = \frac{x}{6}$$

$$AN = \frac{3}{6}AB = \frac{x}{2}$$

$$\therefore \text{Area of } \triangle AMD = \frac{1}{2} \times AD \times AM = \frac{1}{2}y\left(\frac{x}{6}\right) = \frac{xy}{12}$$

$$\text{Area of } \triangle AND = \frac{1}{2} \times AN \times AD = \frac{1}{2} \times \frac{x}{2} \times y = \frac{xy}{4}$$

$$\therefore \text{Area of } \triangle MND = \text{Area of } \triangle AND - \text{Area of } \triangle AMD = \frac{xy}{4} - \frac{xy}{12} = \frac{2xy}{12} = \frac{xy}{6}$$

Area of quadrilateral NDCB = Area of rectangle ABCD – Area of $\triangle AND$

\therefore Area of rectangle ABCD = xy

$$\therefore \text{Area of quadrilateral NDCB} = xy - \frac{xy}{4} = \frac{3xy}{4}$$

$$\text{So, the ratio of area of } \triangle MND \text{ to area of quadrilateral NDCB} = \frac{\frac{xy}{6}}{\frac{3xy}{4}} = \frac{2}{9}.$$

Bookmark

Answer key/Solution

FeedBack

Q.75

If d_3 and d_2 are the difference between the interest accrued in CI and SI for 3 years and 2 years respectively and $\frac{d_3 - d_2}{d_3} = \frac{21}{31}$, then find the rate of interest. [Given that the rate of interest is same in case of SI and CI]

1 20%

2 10%

3 15%

4 25%

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

$$d_3 = \text{Difference between CI and SI for 3 years} = P \left(\frac{r}{100} \right)^2 \left(3 + \frac{r}{100} \right)$$

$$d_2 = \text{Difference between CI and SI for 2 years} = P \left(\frac{r}{100} \right)^2$$

where, P and r are principal and rate of interest respectively.
According to the question,

$$\frac{d_3 - d_2}{d_3} = \frac{P \left(\frac{r}{100} \right)^2 \left(3 + \frac{r}{100} \right) - P \left(\frac{r}{100} \right)^2}{P \left(\frac{r}{100} \right)^2 \left(3 + \frac{r}{100} \right)} = \frac{21}{31} \Rightarrow \frac{P \left(\frac{r}{100} \right)^2 \left[3 + \frac{r}{100} - 1 \right]}{P \left(\frac{r}{100} \right)^2 \left(3 + \frac{r}{100} \right)} = \frac{21}{31} \Rightarrow \frac{200+r}{300+r} = \frac{21}{31}$$

$$\Rightarrow 31r - 21r = 6300 - 6200 = 100 \Rightarrow r = \frac{100}{10} = 10\%.$$

FeedBack

Q.76

$f(a+b) = f(a) + f(b)$ and $f\left(\frac{a}{b}\right) = f(a) - f(b)$ then

$f\left(\frac{9}{27}\right) + f\left(\frac{14}{28}\right) + f\left(\frac{21}{31}\right) + \dots + f\left(\frac{63}{49}\right) + f\left(\frac{70}{52}\right)$ is equal to

Solution:**Correct Answer : 0**

$$f\left(\frac{9}{27}\right) = f(9) - f(27)$$

$$f\left(\frac{14}{28}\right) = f(14) - f(28)$$

Similarly, $f\left(\frac{63}{49}\right) = f(63) - f(49)$

$$f\left(\frac{70}{52}\right) = f(70) - f(52)$$

$$\begin{aligned} & \therefore f\left(\frac{9}{27}\right) + f\left(\frac{14}{28}\right) + f\left(\frac{21}{31}\right) + \dots + f\left(\frac{63}{49}\right) + f\left(\frac{70}{52}\right) \\ & = f(9) - f(27) + f(14) - f(28) + f(21) - f(31) \dots + f(63) - f(49) + f(70) - f(52) \\ & = f(9 + 14 + 21 + \dots + 63 + 70) - f(27 + 28 + 31 + \dots + 49 + 52) \\ & = f\left(9 + \frac{9}{2}(14 + 70)\right) - f\left(27 + \frac{9}{2}(28 + 52)\right) \\ & = f(9 + 378) - f(27 + 360) = f(387) - f(387) = 0 \end{aligned}$$

Bookmark**Answer key/Solution****FeedBack****Q.77**

The dealer of a sports goods shop marks a bicycle at Rs.10,875 whereas the same bicycle is available at a discount during New Year on an online shopping site at Rs.5,625. The profit earned by the dealer is 13 times the loss incurred by the online sale. What should be the marked price of the bicycle marked by the dealer to gain a profit of 18%?

1 **Rs.7,800**2 **Rs.6,300**3 **Rs.6,000**4 **Rs.7,080****Solution:****Correct Answer : 4****Bookmark****Answer key/Solution**

Let the cost price of the bicycle be Rs. x.

According to the question,

$$(10875 - x) = 13 \times (x - 5625) \Rightarrow 14x = 13 \times 5625 + 10875 \Rightarrow x = \text{Rs. } 6,000.$$

Hence, to earn a profit of 18%, the marked price of the bicycle marked by the dealer should be $= 6000 \times \frac{118}{100} = \text{Rs. } 7,080$.

FeedBack

Q.78

The sides of an isosceles triangle are $(5p + 20)$, $(p + 196)$ and $(3p + 76)$. If p is a positive integer, then what can be the maximum possible perimeter of the triangle?

1 431

2 544

3 688

4 832

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

$$\text{Perimeter of the triangle} = (5p + 20) + (p + 196) + (3p + 76) = 9p + 292$$

Since we need to maximize the perimeter, we need to maximize the value of p .

Since the triangle is isosceles, we have the following possibilities:

Case I: If $5p + 20 = p + 196 \Rightarrow p = 44$

\Rightarrow The three sides are: $(5p + 20)$, $(p + 196)$, $(3p + 76) = 240$, 240 and 208 , which also satisfy the condition that sum of two sides should be greater than the third side.

Therefore, perimeter of the triangle = $9p + 292 = 688$

Case II: If $5p + 20 = 3p + 76 \Rightarrow p = 28$

Since this value of p is less than the previous value, we need not verify whether the sum of two sides is greater than the third side because it will give a lesser value for perimeter.

Case III: If $3p + 76 = p + 196 \Rightarrow p = 60$

\Rightarrow The three sides are: $(5p + 20)$, $(p + 196)$, $(3p + 76) = 320$, 256 and 256 , which also satisfy the condition that sum of two sides should be greater than the third side.

Therefore, perimeter = $9p + 292 = 832$

Thus, the maximum possible perimeter of the triangle is 832.

FeedBack

Q.79

If $2 \log_6 a + 4 \log_{36} b + 6 \log_{216} c \geq 2$, then find the minimum value of $(a^2b + b^2c + c^2a)$.

Solution:**Correct Answer : 18**

$$\begin{aligned}2 \log_6 a + 4 \log_{36} b + 6 \log_{216} c &\geq 2 \\ \Rightarrow \log_6 a^2 + \log_6 b^2 + \log_6 c^2 &\geq 2 \\ \Rightarrow \log_6 (abc)^2 &\geq 2 \\ \Rightarrow (abc)^2 &\geq 36\end{aligned}$$

$$\Rightarrow abc \geq 6 \quad (\because a, b, c \text{ can be positive})$$

$$\Rightarrow (abc)^3 \geq 216$$

$$\Rightarrow (a^2b)(b^2c)(c^2a) \geq 6 \times 6 \times 6$$

Using AM \geq GM,

$$\frac{a^2b + b^2c + c^2a}{3} \geq [(a^2b)(b^2c)(c^2a)]^{1/3}$$

$$\Rightarrow a^2b + b^2c + c^2a \geq 18$$

Hence, the minimum value of $(a^2b + b^2c + c^2a)$ is 18.

Bookmark**Answer key/Solution****FeedBack****Q.80**

A shopkeeper purchased two lot of pens, first at Rs. 70 per dozen and second at Rs. 90 per dozen. He sold all the pens at Rs. 80 per dozen. Find his profit or loss percentage, if he spent the same amount of money on buying both the lots.

1 1.58%2 0.93%3 5.33%4 3.28%**Solution:****Correct Answer : 1****Your Answer : 1**

Let us assume that he spent Rs. 630 on buying each lot of pens.

So, he bought lot 1 \rightarrow 9 dozen at Rs. 70/dozen,
and lot 2 \rightarrow 7 dozen at Rs. 90/dozen.

Therefore, total cost to the shopkeeper = $630 \times 2 = \text{Rs. } 1,260$
and total revenue = $(9 + 7) \times 80 = \text{Rs. } 1,280$

$$\text{Therefore, profit percentage} = \frac{1280 - 1260}{1260} \times 100 = \frac{200}{126} = 1.58\%.$$

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

Q.81

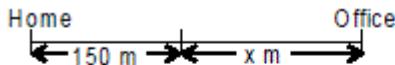
Chahat and Muskan stay in the same building and also work in the same office. They start walking towards their office at the speed of 3 km/hr and 5 km/hr respectively at the same time. Muskan, being faster, reaches the office first and then turns around to start walking back towards her house building. If Chahat and Muskan meet at 150 m away from the house, then what is the distance (in meters) between their house and their office?

Solution:

Correct Answer : 200

Bookmark

Answer key/Solution



Let the distance where they met be 'x' metres away from the office.

As speed of Chahat is less than that of Muskan, the distance travelled by Chahat = 150 m and the distance travelled by Muskan = $(2x + 150)$ m by the time they meet.

Since the ratio of their speeds is 3 : 5, the ratio of the distances travelled should also be 3 : 5.

$$\text{Hence, we have } \frac{150}{2x+150} = \frac{3}{5} \Rightarrow 750 = 6x + 450 \Rightarrow 300 = 6x$$

$$\therefore x = 50 \text{ m.}$$

$$\therefore \text{The required distance between their building and the office} = (150 + x) = 150 + 50 = 200 \text{ m.}$$

FeedBack

Q.82

In how many ways can you arrange 6 equally sized marble balls in a row if among them 2 are blue, 3 are red and 1 is white in color and white ball and blue ball can not be next to each other?

1 **35**

2 **30**

3 **24**

4 **40**

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

There are 6 balls out of which 2 are blue, 3 are red and 1 is white in colour. In order to arrange the balls in a row such that no white and blue ball will be next to each other, we will first find the number of ways (n) in which white and blue ball will be next to each other and then, n will be subtracted from the total number of ways in which 6 balls can be arranged in a row in any manner.

$$\text{Total ways} = \frac{6!}{2! \times 3!} = 60$$

Now, white and blue balls can be arranged next to each other in following ways.

B B _____

In this case, white ball can be in the third position only, so that white and blue ball will be next to each other. So, 1 way is possible.

_____ B B _____

Similarly, here, white ball can be in either 2nd or 4th position. So, 2 ways are possible.

Similarly,

_____ B B _____ = 3 ways

_____ B _____ B _____ = 3 ways

_____ B _____ B _____ = 2 ways

_____ B B _____ = 2 ways

_____ B B _____ = 3 ways

_____ B _____ B _____ = 4 ways

_____ B _____ B _____ = 3 ways

_____ B B _____ = 2 ways

_____ B B _____ = 3 ways

_____ B B _____ = 3 ways

_____ B B _____ = 2 ways

_____ B B _____ = 2 ways

_____ B B _____ = 1 way

So, total 36 ways are there, when white and blue ball will be next to each other.

∴ Required ways = $60 - 36 = 24$ ways.

FeedBack

Q.83

Find the number of integral solutions for the inequality: $(|x - 1| - 4)(|x + 2| - 5) < 0$.



Solution:**Correct Answer : 4****Your Answer : 4** **Bookmark** **Answer key/Solution**

Given $(|x - 1| - 4)(|x + 2| - 5) < 0$

We consider 3 cases as we have two critical points for the given equation:

Case 1: $x > 1$;

Equation becomes $(x - 5)(x - 3) < 0 \Rightarrow x \in (3, 5)$

Case 2: $-2 < x < 1$;

Equation becomes $(-x - 3)(x - 3) < 0 \Rightarrow (x - 3)(x + 3) > 0 \Rightarrow x > 3$ or $x < -3$.

But this is not in accordance with the taken range $-2 < x < 1$, so, no solution in this case.

Case 3: $x < -2$;

Equation becomes $(-x - 3)(-x - 7) < 0 \Rightarrow (x + 3)(x + 7) < 0 \Rightarrow x \in (-7, -3)$

Hence, the integral solutions are $x = -6, -5, -4, 4$

So, the number of integral solutions for the given equation is 4.

FeedBack
Q.84

A tank is fitted with 10 pipes in which some are inlet pipes and the other are outlet pipes. When all the inlet pipes are open, they together fill the tank in 90 hours. When all the outlet pipes are open, they drain the completely filled tank in 50 hours. The efficiency of the outlet pipe is $6/5$ times that of inlet pipe. Find the number of outlet pipes connected to the tank.

1 2

2 4

3 6

4 8



Solution:**Correct Answer : 3****Your Answer : 3****Bookmark****Answer key/Solution**

Let the number of outlet pipes be 'n'.

So the number of inlet pipes = $10 - n$.

As n pipes together empty the filled tank in 50 hours, one outlet pipe will empty it in $50n$ hours.

Similarly, all inlet pipes together fill the empty tank in 90 hours, so one inlet pipe alone fill in $90(10-n)$ hours.

Efficiency of outlet pipe : efficiency of inlet pipe = 6 : 5

Therefore, time taken by outlet pipe : time taken by inlet pipe = 5 : 6

$$\text{Hence, } \frac{50n}{90(10-n)} = \frac{5}{6}$$

$$\Rightarrow 2n = 30 - 3n$$

$$\Rightarrow 5n = 30$$

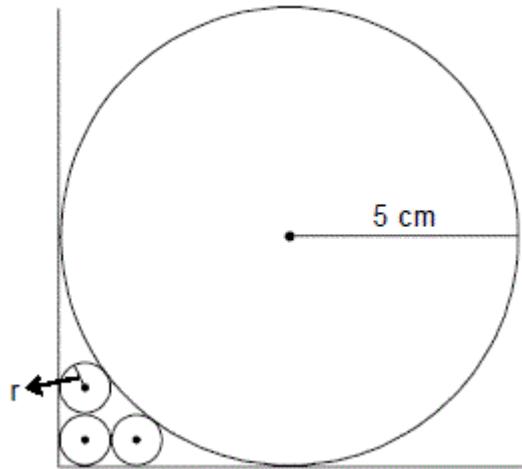
Therefore, $n = 6$

Hence, the number of outlet pipes connected to the tank = 6.

FeedBack

Q.85

Three circles of radius r are drawn in the first quadrant of the xy -plane. The first circle is tangent to both axes, the second is tangent to the first circle and the x -axis, and the third is tangent to the first circle and the y -axis. A circle of radius 5 cm $> r$ is tangent to both axes and to the second and third circles. What is the value (in cm) of ' r '?

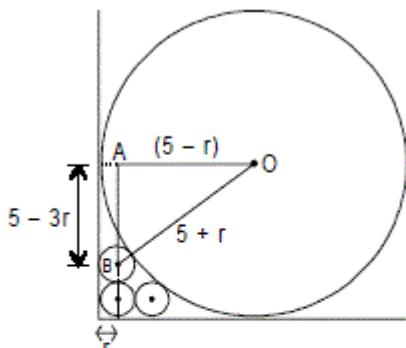


1 5

2 $5/8$

3 $5/9$

4 $4/9$

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

In right angled triangle OAB,
 $(5 + r)^2 = (5 - r)^2 + (5 - 3r)^2$
 $\Rightarrow (r - 5)(9r - 5) = 0$
 $\Rightarrow r = 5 \text{ or } r = 5/9$
Since $r < 5 \text{ cm}$, therefore, $r = 5/9 \text{ cm}$.

FeedBack**Q.86**

N is an 8-digit number and $S(N)$ denotes the sum of its digit. If $N + S(N) = 100000000$, then find the tens place digit of N .

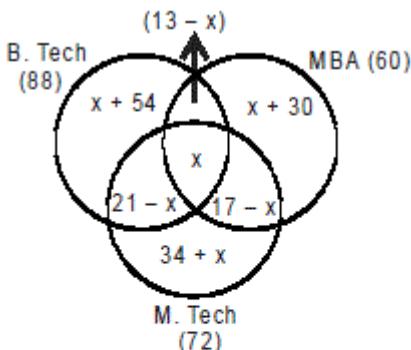
Solution:**Correct Answer : 4****Bookmark****Answer key/Solution**

If N was a sequence of eight 9's, then $S(N) = 72$.
So, $S(N) \leq 72 \dots (1)$
 $N + S(N) = 100000000$
 $\Rightarrow N \geq 99999928$
So, the first 6 digits of N must be 9 each.
Let $N = 999999xy$
 $S(N) = 54 + x + y$
 $N + S(N) = 99999900 + 10x + y + 54 + x + y = 100000000$
i.e., $11x + 2y = 46$
11x must be even number and less than 46 $\Rightarrow x = 4$
If $x = 4$, $y = 1$ whereas if $x = 2$, $y = 12$
But y must be a single digit, so the only possible case is $x = 4$, $y = 1$.
Hence, the tens place digit of N is 4.

FeedBack**Q.87**

There were 174 dignitaries in a conference hall, where each one was a degree holder. Out of which 88 were B.Tech degree holders, 72 were M.Tech degree holders and 60 were MBA degree holders. 13 were B.Tech and MBA, 17 were MBA and M.Tech and 21 were B.Tech and M.Tech degree holders. How many dignitaries were only MBA degree holders?



Solution:**Correct Answer : 35****Your Answer : 35**

According to the question,

$$88 + 34 + x + 17 - x + 30 + x = 174$$

$$\Rightarrow 169 + x = 174$$

$$\Rightarrow x = 5$$

∴ Number of dignitaries who were only MBA degree holder = $x + 30 = 5 + 30 = 35$.

Bookmark**Answer key/Solution****FeedBack****Q.88****The owner of a Maruti Suzuki showroom has Alto, Swift and Brezza cars in the ratio of 3 : 7 :****11. If the number of Swift cars is more than the number of Alto cars by a number that is a multiple of both 7 and 8, then find the minimum sum of these cars in his showroom.**1 **588**2 **336**3 **252**4 **294****Solution:****Correct Answer : 4****Your Answer : 4**Let the number of cars be $3x$, $7x$ and $11x$.Then, $7x - 3x = \text{multiple of 7 and 8}$ Let $7x - 3x = 56k$

$$\Rightarrow 4x = 56k$$

For x to be a natural number and have minimum value, k should be equal to 1.

$$4x = 56 \Rightarrow x = 14.$$

Hence, the minimum sum of these cars = $3x + 7x + 11x = 21 \times 14 = 294$.**Bookmark****Answer key/Solution****FeedBack**

Q.89

A certain quantity 'a' varies with the sum of two quantities, out of which one is directly proportional to another quantity b whereas the other is inversely proportional to b. If a = 16 when b = 1 or 3, then find the value of 'a' when b = 6.

Solution:

Correct Answer : 26

It is given that,

$$a = k_1 b + \frac{k_2}{b}, \text{ where } k_1 \text{ and } k_2 \text{ are constants.}$$

Substituting the two values given for a and b, we get the following two equations:

$$16 = k_1 + k_2 \quad \dots(1)$$

$$16 = 3k_1 + \frac{k_2}{3} \quad \dots(2)$$

Solving equations (1) and (2), we get

$$k_1 = 4 \text{ and } k_2 = 12$$

Therefore, the equation becomes $a = 4b + \frac{12}{b}$,

hence when $b = 6$, we get $a = 4(6) + \frac{12}{6} = 26$.

Bookmark

Answer key/Solution

FeedBack

Q.90

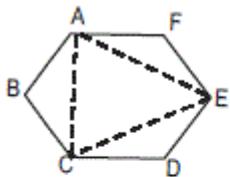
Find the area of the circle inscribed in a triangle ACE made using the vertices of a regular hexagon ABCDEF of side 9 cm.

1 $\frac{81}{3}\pi \text{ cm}^2$

2 $\frac{81}{4}\pi \text{ cm}^2$

3 $\frac{81}{2}\pi \text{ cm}^2$

4 $9\pi \text{ cm}^2$

Solution:**Correct Answer : 2****Bookmark****Answer key/Solution**

As we know, that $AC = CE = AE = \sqrt{3} \times \text{Side of Hexagon} = 9\sqrt{3} \text{ cm}$.

$$\text{Inradius of } \triangle ACE = \frac{1}{2\sqrt{3}} \times \text{Side of triangle} = \frac{1}{2\sqrt{3}} \times 9\sqrt{3} = \frac{9}{2} \text{ cm.}$$

$$\text{Area of the circle} = \pi \times \left(\frac{9}{2}\right)^2 = \frac{81}{4}\pi \text{ cm}^2.$$

FeedBack**Q.91**

The diluted milk contains 6 litres of milk and the rest is water. Then some volume of this mixture is taken out and replaced with equal quantity of milk. If this replacement process is done twice such that the final concentration of milk in the new mixture formed is 60%, then find the volume of the mixture that was taken out in each step, given that there was initially 54 litres of water in the mixture and the volume of mixture taken out in each step were equal.

1 10 litres2 20 litres3 12 litres4 15 litres

Solution:**Correct Answer : 2****Your Answer : 2****Bookmark****Answer key/Solution**

Milk	Water
6 litres	54 litres
1 : 9	

Let x litre of mixture be replaced in each step.

In 1st step:

Milk	Water
$6 - \frac{1}{10}x + x$	$54 - \frac{9x}{10}$
$= 6 + \frac{9}{10}x$	$54 - \frac{9x}{10}$

In 2nd step: Again x litres of the mixture formed will be replaced with x litres of milk.

∴ Final quantity of milk becomes

$$6 + \frac{9x}{10} - \left(\frac{6 + \frac{9x}{10}}{60} \right) x + x = 6 + \frac{9x}{10} - \frac{x}{10} - \frac{3x^2}{200} + x = 6 + \frac{9x}{5} - \frac{3x^2}{200}$$

Final concentration of milk is 60%.

$$\therefore 6 + \frac{9x}{5} - \frac{3x^2}{200} = \frac{60}{100} \times 60$$

On solving above equation, we get,

 $x = 100$ or 20 litres. (100 litres is not possible as total volume of the mixture is 60 litres).∴ The volume of the mixture that was taken out in each step is 20 litres.**FeedBack****Q.92**There are seven numbers $a_1, a_2, a_3, \dots, a_7$ such that for $i = 1, 2, 3, 4$ and 5 ,

$$a_i + a_{i+1} + a_{i+2} = 1, \text{ if } i \text{ is odd}$$

$$= -1, \text{ if } i \text{ is even.}$$

If $a_6 + a_7 + a_1 = -1$ and $a_7 + a_1 + a_2 = 1$, then find (a_4, a_7) .

1 $\left(\frac{2}{3}, -\frac{1}{3}\right)$

2 $\left(-\frac{4}{3}, -\frac{1}{3}\right)$

3 $\left(\frac{1}{3}, -\frac{1}{3}\right)$

4 $\left(-\frac{5}{3}, \frac{1}{3}\right)$

Solution:**Correct Answer : 4**

Using the given relation, we can form the following equations:

$$a_1 + a_2 + a_3 = 1$$

$$a_2 + a_3 + a_4 = -1$$

$$a_3 + a_4 + a_5 = 1$$

$$a_4 + a_5 + a_6 = -1$$

$$a_5 + a_6 + a_7 = 1$$

$$a_6 + a_7 + a_1 = -1$$

$$a_7 + a_1 + a_2 = 1$$

On adding 7 equations, we get

$$3(a_1 + a_2 + a_3 + a_4 + a_5 + a_6 + a_7) = 1 \quad \dots(1)$$

$$\Rightarrow 3(a_1 + a_2 + a_3) + 3a_4 + 3(a_5 + a_6 + a_7) = 1$$

$$\Rightarrow 3 + 3a_4 + 3 = 1$$

$$\Rightarrow 3a_4 = -5 \Rightarrow a_4 = \frac{-5}{3}$$

$$\text{Again, } 3(a_1 + a_2 + a_3) + 3(a_4 + a_5 + a_6) + 3a_7 = 1$$

$$\Rightarrow 0 + 3a_7 = 1 \Rightarrow a_7 = \frac{1}{3}$$

$$\text{Therefore, } (a_4, a_7) = \left(-\frac{5}{3}, \frac{1}{3}\right).$$

[FeedBack](#)
 **Bookmark**
 **Answer key/Solution**
Q.93

A club wants to raise money for the upcoming Diwali celebrations, so they make phone calls to their members. By calling 60% of the members they raise 80% of the money required and each of these members donates an average amount of Rs.1,400. If there are no hidden expenses, then what is the average donation (in Rs.) from the remaining members ?

Solution:**Correct Answer : 525**
 **Bookmark**
 **Answer key/Solution**

Let the total number of members of the club be x and the total amount required be Rs.A.

According to the question,

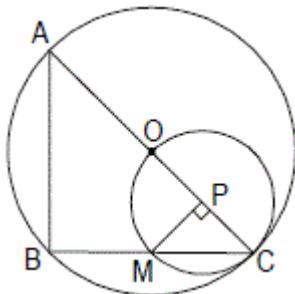
$$\frac{60}{100} \times x \times 1400 = \frac{80}{100} \times A \Rightarrow A = \frac{60 \times x \times 1400}{80}$$

$$\text{Remaining amount to be collected} = \frac{20}{100} \times A$$

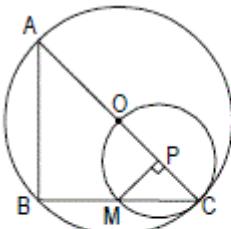
$$\text{Remaining members} = \frac{40}{100} \times x$$

$$\text{Hence, the average donation from the remaining members will be} = \frac{20}{100} \times \left(\frac{60 \times x \times 1400}{80}\right) \times \frac{100}{40 \times x} = \text{Rs.525.}$$

[FeedBack](#)

Q.94

Two circles with centre O and P respectively touch each other internally at point 'C'. A chord BC of bigger circle intersect the smaller circle at M, where M is also the mid point of BC and MP is perpendicular to OC. If the length of BM is $3\sqrt{2}$ cm, then find the length (in cm) of chord AB.

1 122 $8\sqrt{2}$ 3 $6\sqrt{2}$ 4 None of these**Solution:****Correct Answer : 3****Bookmark****Answer key/Solution**

Let the radius of smaller circle i.e., $MP = PC = r$ cm.

$\therefore \triangle MPC$ is an isosceles right angled triangle.

$\therefore MP^2 + PC^2 = MC^2$ (As Pythagoras theorem)

$\therefore r^2 + r^2 = MC^2$

$\Rightarrow 2r^2 = MC^2 \dots (i)$

Since M is mid point of BC

$\therefore BM = MC = 3\sqrt{2}$

$$\therefore r^2 = \frac{(3\sqrt{2})^2}{2} = 9$$

$\Rightarrow r = 3$ cm.

As, AC is diameter of bigger circle, therefore $AC = AO + OC$

$$= 2(OC) = 2(2r) = 4r = 12 \text{ cm}$$

and $BC = BM + MC = 3\sqrt{2} + 3\sqrt{2} = 6\sqrt{2}$ cm.

As ABC is the triangle in semicircle, triangle ABC is a right angled triangle.

According to Pythagoras theorem,

in $\triangle ABC$, $AB^2 + BC^2 = AC^2$

$$AB^2 = AC^2 - BC^2 = (12)^2 - (6\sqrt{2})^2$$

$$\Rightarrow AB^2 = 72$$

$$\Rightarrow AB = 6\sqrt{2} \text{ cm.}$$

FeedBack

Q.95

Among the first year students of a girl's college, each girl was either a blonde or a brunette. Also, each girl was either blue-eyed or dark-eyed. The number of dark-eyed blondes was equal to the number of blue-eyed brunettes. The number of dark-eyed brunettes was 30 more than the number of blue-eyed blondes, which in-turn, was one-third of the total number of brunettes. If among the brunettes, there were more dark-eyed girls than blue-eyed girls, then the total number of the first year students in that college can be at most

Solution:

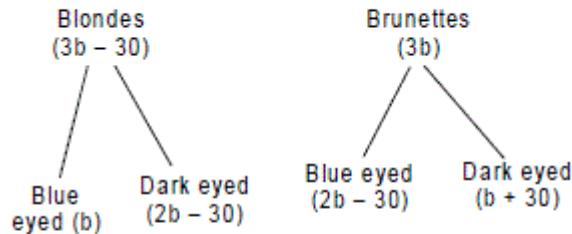
Correct Answer : 324

Bookmark

Answer key/Solution

Let us denote the number of blue eyed blondes by ' b '.

Therefore, the total number of brunettes = $3b$ and the number of dark eyed brunettes = $b + 30$



Again it is given that among the brunettes,

$$b + 30 > 2b - 30$$

$$\Rightarrow b < 60$$

Therefore, the maximum value that b can take is 59 and hence the maximum possible number of the total students in the college = $6b - 30 = 6(59) - 30 = 324$.

FeedBack

Q.96

A monkey wants to reach at the top of a tree which is 144 metres tall. Every successive hour, he climbs half the distance that he covered last hour. If in the first hour, he climbs 72 metres from the ground, then how long will that monkey take to reach the top?

1 18 hour

2 9 hour

3 27 hour

4 None of these



Solution:**Correct Answer : 4****Your Answer : 4** **Bookmark** **Answer key/Solution**

The distance covered per hour forms a decreasing geometric progression. i.e., 72, 36, 18, ... where, first term = 72 and common ratio = $\frac{1}{2}$

Let the monkey reach the top in 'n' hours.

$$\therefore \frac{a(1-r^n)}{1-r} = 144 \Rightarrow 72 \left(\frac{1-r^n}{1-\frac{1}{2}} \right) = 144 \Rightarrow \frac{1-r^n}{1-\frac{1}{2}} = 2$$

$$\Rightarrow 1 - r^n = 2 - 2r \Rightarrow r^n - 2r + 1 = 0 \Rightarrow \left(\frac{1}{2}\right)^n = 0 \quad \left(\because r = \frac{1}{2}\right)$$

$\frac{1}{2^n} = 0$, which is possible only when n tends to infinity.

FeedBack
Q.97

If $\log_{50}(2\sqrt{x} + 32) = \sum_{k=1}^{50} \frac{1}{\log_k 50!}$, then find the value of x.

1 **9**2 **25**3 **36**4 **81****Solution:****Correct Answer : 4** **Bookmark** **Answer key/Solution**

$$\log_{50}(2\sqrt{x} + 32) = \sum_{k=1}^{50} \frac{1}{\log_k 50!}$$

$$\Rightarrow \log_{50}(2\sqrt{x} + 32) = \frac{1}{\log_1 50!} + \frac{1}{\log_2 50!} + \dots + \frac{1}{\log_{50} 50!}$$

$$\Rightarrow \log_{50}(2\sqrt{x} + 32) = \log_{50!} 1 + \log_{50!} 2 + \dots + \log_{50!} 50 = \log_{50!}(1 \cdot 2 \cdot 3 \cdot 4 \dots 50)$$

$$\Rightarrow \log_{50}(2\sqrt{x} + 32) = \log_{50!} 50!$$

$$\Rightarrow \log_{50}(2\sqrt{x} + 32) = 1 \Rightarrow (2\sqrt{x} + 32) = 50 \Rightarrow \sqrt{x} = 9$$

Therefore, x = 81

FeedBack

Q.98

Three friends A, B and C sit in a pub to have wine and begin to play a game. The friend whose drink has the highest alcohol percentage will pour 50 ml from his drink into the drink of friend whose drink has least alcohol percentage. This game continues till one of the glass gets empty. If the three friends A, B and C begin with 100 ml wine each with alcohol content of 60%, 50% and 48% respectively, then what is the highest alcohol percentage left in any glass when game gets over?

1 48%

2 50.5%

3 53.33%

4 55%

**Solution:**

Correct Answer : 3

Your Answer : 3

Bookmark

Answer key/Solution

In the first round of game, A will pour 50 ml into glass of C. Concentration of A's drink will remain 60% and of C's drink

$$\text{will become } \frac{0.48 \times 100 + 0.6 \times 50}{100 + 50} = 52\%$$

In the next round, A will again pour 50 ml into glass of B. Then the drink of A gets over and the new concentration of B's

$$\text{glass is } \frac{0.5 \times 100 + 0.6 \times 50}{100 + 50} = 53.33\%$$

Among B and C, B's drink has highest alcohol content of 53.33%.

FeedBack

Q.99

Two numbers are selected at random from the first 1000 natural numbers. If their sum is even, then find the probability that both selected numbers are odd numbers.

1 $\frac{500}{1000} C_2$

2 $\frac{500 C_2}{1000 C_2}$

3 $\frac{501}{1001}$

4 $\frac{1}{2}$

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

There are 500 odd numbers and 500 even numbers in the first 1000 natural numbers.

Sum of two natural numbers will be even only when both numbers are even or both numbers are odd. Number of ways

in which sum may be even = ${}^{500}C_2 + {}^{500}C_2$.

Number of ways of selection of 2 numbers from first 500 odd numbers = ${}^{500}C_2$

$$\therefore \text{Required probability} = \frac{{}^{500}C_2}{{}^{500}C_2 + {}^{500}C_2} = \frac{1}{2}.$$

FeedBack

Q.100

Bhola was asked by his master to fill a water tank by carrying water from the nearby pool. If the volume of the tank was 11 cu. ft. and Bhola used a bucket which is in the shape of the frustum of a cone with the radii of the top and bottom surfaces being 1/2 ft and 1/4 ft respectively and height being 1 ft, then how many buckets of water did Bhola need to fill the tank?

Assume that the tank was initially empty and that he fills the bucket to its brim every time.

Solution:

Correct Answer : 24

 **Bookmark**

 **Answer key/Solution**

The volume of the frustum of a cone of height 'h', smaller and larger radii being 'r' and 'R' respectively is given by

$$= \frac{1}{3} \pi h(R^2 + r^2 + Rr)$$

Volume of water that the bucket can hold when it is filled to its brim

$$= \frac{1}{3} \times \frac{22}{7} \times 1 \left[\left(\frac{1}{2} \right)^2 + \left(\frac{1}{4} \right)^2 + \frac{1}{2} \times \frac{1}{4} \right] = \frac{22}{3 \times 7} \left[\frac{1}{4} + \frac{1}{16} + \frac{1}{8} \right] = \frac{22}{3 \times 7} \left[\frac{4+1+2}{16} \right] = \frac{22}{3 \times 7} \left[\frac{7}{16} \right] = \frac{11}{24} \text{ cu ft.}$$

As the total volume of the tank to be filled is 11 cu. ft., the number of buckets of water that Bhola needs to fill the tank

$$= \frac{11 \times 24}{11} = 24.$$

FeedBack