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Mock CAT – 02 2019

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VARC

LRDI

QA

Sec 1

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 1

The animals of neuroscience research are an eclectic bunch, and for good reason. Different model organisms—like zebra fish larvae, C. elegans worms, fruit flies, and mice—give researchers the opportunity to answer specific questions. The first two, for example, have transparent bodies, which let scientists easily peer into their brains; the last two have eminently tweakable genomes, which allow scientists to isolate the effects of specific genes. For cognition studies, researchers have relied largely on primates and, more recently, rats,

which I use in my own work. But the time is ripe for this exclusive club of research animals to accept a new, avian member: the corvid family.

Corvids, such as crows, ravens and magpies, are among the most intelligent birds on the planet—the list of their cognitive achievements goes on and on—yet neuroscientists have not scrutinized their brains for one simple reason: They don't have a neocortex. The obsession with the neocortex in neuroscience research is not unwarranted; what's unwarranted is the notion that the neocortex alone is responsible for sophisticated cognition. Because birds lack this structure—the most recently evolved portion of the mammalian brain, crucial to human intelligence—neuroscientists have largely and unfortunately neglected the neural basis of corvid intelligence.

This makes them miss an opportunity for an important insight. Having diverged from mammals more than 300 million years ago, avian brains have had plenty of time to develop along remarkably different lines (instead of a cortex with its six layers of neatly arranged neurons, birds evolved groups of neurons densely packed into clusters called nuclei). So, any computational similarities between corvid and primate brains—which are so different neurally—would indicate the development of common solutions to shared evolutionary problems, like creating and storing memories, or learning from experience. If neuroscientists want to know how brains produce intelligence, looking solely at the neocortex won't cut it; they must study how corvid brains achieve the same clever behaviors that we see in ourselves and other mammals.

While there have been a number of fascinating behavioral studies in corvids (especially from the lab of Nicola Clayton at the University of Cambridge) so far only Andreas Nieder, a neuroscientist at the University of Tübingen, has examined the neuronal activity of crows during sophisticated behavior. In Nieder's first of such studies, published in 2013 in *Nature Communications*, he and graduate student Lena Veit wanted to see what crows' brains did when following an abstract rule.

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Q.1
Why have researchers neglected the neural basis of corvid intelligence?

1 Because they are obsessed with neocortex.

2 Because birds lack the structure of neocortex.

3 Because they believe that neocortex alone is responsible for sophisticated cognition.

4 Because the mammalian brain is recently evolved.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Biology / Neuroscience
Word Count# 585
This is a tricky question. At first glance, it may appear to be quite simple. However, it's not that straightforward.
Refer to the lines: "The obsession with the neocortex in neuroscience research is not unwarranted; what's unwarranted is the notion that the neocortex alone is responsible for sophisticated cognition. Because birds lack this structure—the most recently evolved portion of the mammalian brain, crucial to human intelligence—neuroscientists have largely and unfortunately neglected the neural basis of corvid intelligence."
The key phrase is 'Because birds lack this structure...' So, the answer has to be the noun that is referred to by 'this'. Hence, option 2 is the answer.

FeedBack

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Q.2

As per the passage, which of the following can be inferred about the purpose of the first paragraph?

1 **It discusses the different model organisms and their special features.**

2 **It introduces the theme of the passage – the cognition studies on mammals.**

3 **It subtly highlights the need to include corvids in neuroscience studies.**

4 **It highlights the fact that the club of animal being studied by neuroscience should no longer remain exclusive.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Genre: Biology / Neuroscience
Word Count# 585
The last sentence of the first paragraph introduces corvids, the main focus of this passage. So, option 3 is the correct answer.
Option 1 – It is part of the passage. But it is not the main focus. Otherwise, the author would have continued with this discussion.
Option 2 – It is too broad as 'mammals' are not discussed in detail in the passage.
Option 4 – This is a sentence from the paragraph. It has been twisted by this option. The author doesn't highlight this and the author is not literal when he mentions this. It's a subtle way of introducing the idea of the corvid brain.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 1

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how brains produce intelligence, looking solely at the neocortex won't cut it; they must study how corvid brains achieve the same clever behaviors that we see in ourselves and other mammals.

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Q.3

Which of the following best describes the main idea of the passage?

1 **To show how neuroscientists have to study the corvid brains if they want to succeed professionally**

2 **To show how corvid brains achieved the same level of neurological sophistication as other animals did**

3 **To show how PFC in mammals have been replicated in corvids allowing the latter to have traits of decision-making, short-term memory, and planning for the future**

4 **To show the importance of the corvid brain in the field of animal neuroscience**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Genre: Biology / Neuroscience
Word Count# 585
The main idea should definitely entail a discussion of the corvid brain. This question can be answered by the method of elimination.
Option 1 – It may look close but 'succeed professionally' makes it an irrelevant option.
Option 2 – It is a twisted option. The author doesn't state that the corvid brain is equally sophisticated to that of other animals. It is mentioned in a narrow context and the focus is on the 'kind of sophistication'. There is no comparison.
Option 3 – This is again a twisted interpretation of the last sentence of the passage. These birds have not really developed these skills. The passage makes a reference to that area of the brain which controls the development of these skills.
Option 4 – This is the correct answer.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

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Q.4

Which of the following is not true regarding the corvid brain?

1 **It contains a cortex with six layers of neurons.**

2 **It shows some features of sophisticated cognition.**

3 **It has a lot of significance for the researchers studying animal neuroscience.**

4 **It is neurally different from primate brains.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Genre: Biology / Neuroscience
Word Count# 585
Options 2, 3, and 4 are clearly mentioned in the passage.
Option 1 – It is twisted. Refer to the sentence: '...instead of a cortex with its six layers of neatly arranged neurons, birds evolved groups of neurons densely packed into clusters called nuclei...' So, it is not true according to the passage.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

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Q.5

All of the following are true according to the passage EXCEPT:

1 **Avian brains developed on different lines than those of mammals.**

2 **Andreas Nieder alone published a study in 2013 that dealt with crows during sophisticated behaviour.**

3 **The crows in the Nieder's study of matching game were given both auditory as well as visual clues.**

4 **A lab in Cambridge has done some fascinating behavioural studies on corvids.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Biology / Neuroscience
Word Count# 585
It's a tricky question.
Option 1 can be found in the line: 'Having diverged from mammals more than 300 million years ago, avian brains have had plenty of time to develop along remarkably different lines...'
Option 2 is wrong. It is clearly mentioned that Nieder and Lena Veit conducted the study. So, we can't say that Neider alone published the study.
Option 3 can be found in the last two paragraphs.
Option 4 is true from the line: '...especially from the lab of Nicola Clayton at the University of Cambridge...'

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 2

Almost 200 countries are in the process of negotiating a series of resolutions on pollution at the United Nations, and cities around the world are being encouraged to be part of the UN Environment's BreatheLife campaign to clear their air to meet health targets by 2030.

Cities can learn quickly from each other about what works, with transport policies crucial. Curitiba in southern Brazil has been said to set the gold standard in sustainable urban planning, with a comprehensive, high-quality public transport system and bus system used by 85% of local people.

In the UK, Nottingham introduced an all-electric park-and-ride service and one of the biggest electric bus fleets in Europe, while Birmingham promotes a "bicycle revolution", offering free bikes, cycle training and maintenance lessons. Freiburg in Germany coordinated transport and land use to increase journeys by bike threefold, double public transport use, and cut the share of trips by car to less than one third.

But how could the UK government deliver a meaningful right to clean air? There could be a nationwide duty on all public bodies to take into account the impact of air pollution and climate change whenever they make a decision about public services or public funds. A precedent exists in the form of the public sector equality duty, which assesses whether the decisions of public bodies will have a discriminatory impact on vulnerable groups, and if so take reasonable steps to prevent discrimination. It is now embedded in almost every public body decision-making process.

We urgently need to change how we live, work and run the economy, to stop avoidable, premature deaths, tackle climate change, and advance visions of a world in which the air is fit

to breathe. Today's awareness-raising Smog Day is a step in the right direction.

Thought for the day comes from the book of Luke: "There will be more joy in heaven over one sinner who repents than over 99 righteous ones who do not need to repent." Might we place in the repenting category the UK boss of bankers Santander, the former chairs of Marks & Spencer and HSBC, and the heads of the Confederation of British Industry, Barclays and Lloyds?

All have now, in one way or other, questioned the viability of capitalism as we currently practise it, blaming management greed, tax evasion, and other corporate sins. It has been reported that Shriti Vadera – once Gordon Brown's eyes and ears at the Treasury, now head of Santander – told a conference that "the underlying promise of western capitalist economies – that a rising tide lifts all boats – has been broken"; a "better model" is needed.

Robert Swannell, once of M&S, said capitalism has "lost its way", with companies and investors preoccupied by short-termism. Carolyn Fairbairn, of the CBI, spoke of capitalism's wrong turnings. "The financial crash, a fixation on shareholder value at the expense of purpose, and the toxic issues of … payment of tax and executive pay stand in the way of redemption," she said.

These sentiments aren't new. Reflecting on the financial crash, Brexit, and the rise of conservatism on the back of America's left-behinds, many have said much the same. But still it is a moment to hear the stewards of the capitalist system admit that the game, as it has been ruinously played, is up.

Q.6

The author in the passage primarily aims to:

1 **question the continued existence and effectiveness of capitalism.**

2 **highlight the need for a better social model for sustainable consumption.**

3 **explain the need for better governance in order to have a cleaner environment.**

4 **showcase some examples that back the fact that the world is becoming more breathable.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Genre: Ecology / Environmental Studies
Word Count# 550
The focus of the author is to highlight the need to curb air pollution. S/he gives all the examples (UN campaign, cities and their steps, the changing attitude of capitalists, suggestions to fight air pollution etc.) to highlight this point.
Option 1- It is both narrow and extreme.
Option 2 – It talks about sustainable consumption which is beyond the scope of the passage.
Option 4 – It is too optimistic and premature a conclusion to be drawn from this discussion.
The author says that we need to continue to find ways to make our air clean.
So, option 3 is the best choice.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 2

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Q.7

Which of the following options can be inferred from Shriti Vadera's comments?

1 **Capitalists are now repenting their greed.**

2 **The current model of capitalism is unsustainable.**

3 **Capitalists are now repenting their short-sightedness.**

4 **The current model of capitalism is not the most effective, but it is for the best.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Ecology / Environmental Studies
Word Count# 550
The author cites Shriti Vadera to show that at least some capitalists have started to sing a different tune regarding the current state of capitalism in the West. The author takes it as an encouraging sign.
So, option 4 can be eliminated as it factually distorts the author's aim.
Options 1 and 3 are too extreme. These are conclusions that are too generic to be drawn from this one example.
Option 2 is the main aim of Shriti Vadera's speech. So, it is the correct answer.

FeedBack

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Thought for the day comes from the book of Luke: “There will be more joy in heaven over one sinner who repents than over 99 righteous ones who do not need to repent.” Might we place in the repenting category the UK boss of bankers Santander, the former chairs of Marks & Spencer and HSBC, and the heads of the Confederation of British Industry, Barclays and Lloyds?

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These sentiments aren’t new. Reflecting on the financial crash, Brexit, and the rise of conservatism on the back of America’s left-behinds, many have said much the same. But still it is a moment to hear the stewards of the capitalist system admit that the game, as it has been ruinously played, is up.

Q.8

As per the passage, all of the following are not true except:

1 **Curitiba is the cleanest city in the world.**

2 **Nottingham has taken a commendable step in fighting air pollution by promoting the use of bicycles.**

3 **Capitalism continues to thrive despite efforts to eradicate it.**

4 **Smog Day is a welcome step in the world’s effort to fight air pollution.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Genre: Ecology / Environmental Studies
Word Count# 550
The question asks us to find the statement which is true.
Option 1 may or may not be true. The passage mentions Curitiba as a city that has led in urban planning. However, this statement is too extreme.
Option 2 is wrong. This statement is true about Birmingham.
Option 3 is beyond the scope of this passage.
Option 4 is true according to the sentence – "Today's awareness-raising Smog Day is a step in the right direction."

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 2

Almost 200 countries are in the process of negotiating a series of resolutions on pollution at the United Nations, and cities around the world are being encouraged to be part of the UN Environment's BreatheLife campaign to clear their air to meet health targets by 2030.

Cities can learn quickly from each other about what works, with transport policies crucial. Curitiba in southern Brazil has been said to set the gold standard in sustainable urban planning, with a comprehensive, high-quality public transport system and bus system used by 85% of local people.

In the UK, Nottingham introduced an all-electric park-and-ride service and one of the biggest electric bus fleets in Europe, while Birmingham promotes a "bicycle revolution", offering free bikes, cycle training and maintenance lessons. Freiburg in Germany coordinated transport and land use to increase journeys by bike threefold, double public transport use, and cut the share of trips by car to less than one third.

But how could the UK government deliver a meaningful right to clean air? There could be a nationwide duty on all public bodies to take into account the impact of air pollution and climate change whenever they make a decision about public services or public funds. A precedent exists in the form of the public sector equality duty, which assesses whether the decisions of public bodies will have a discriminatory impact on vulnerable groups, and if so take reasonable steps to prevent discrimination. It is now embedded in almost every public body decision-making process.

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These sentiments aren’t new. Reflecting on the financial crash, Brexit, and the rise of conservatism on the back of America’s left-behinds, many have said much the same. But still it is a moment to hear the stewards of the capitalist system admit that the game, as it has been ruinously played, is up.

Q.9

What can be inferred about the author’s intention behind writing the last sentence of the passage?

1 **To show that some welcome changes are taking place in our efforts to fight air pollution**

2 **To show that all economic policies eventually become obsolete**

3 **To show that despite all the proclamations by these business leaders, there is nothing new to be offered**

4 **To show that these business leaders are simply stating something that is neither new nor useful**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Genre: Ecology / Environmental Studies
Word Count# 550
The last sentence uses the phrase "But still it is a moment..." This shows that the author thinks of the statements made by the business leaders in a positive light. So, options 3 and 4 are eliminated.
Option 2 is too generic.
Option 1 is the best choice. The author cites all these examples to show that the fight against air pollution is on the right track.

FeedBack

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Q.10

As per the passage, which of the following best represents the gist of the quotation from Book of Luke?

1 **Sinners who repent are dearer to God than those who never sin.**

2 **Heaven acknowledges the importance of repentance.**

3 **It is better to sin and repent than to never sin at all.**

4 **In heaven, sinners who repent are better liked than the righteous ones.**

Solution:
Correct Answer : 2
Genre: Ecology / Environmental Studies
Word Count# 550
Only option 2 comes close to the meaning of the quotation:
"There will be more joy in heaven over one sinner who repents than over 99 righteous ones who do not need to repent." This sentence doesn't literally mean that sinners who repent are better than those who have never sinned. It simply means that repentance is a sign of courage and it is acknowledged by religion.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 3

Despite massive campaign spending in India, there is barely any public scrutiny of such spending because of the opaque nature of the transactions. The electoral bonds scheme amplifies such opacity by not disclosing the identity of the donor. In reality, the scheme undermines the complementary nature of the rights to privacy and information, namely, to make the state more transparent.

Electoral bonds were introduced in 2017 when the Finance Act amended four different statues: the Reserve Bank of India Act, 1934; the Representation of Peoples Act, 1951; the Income Tax Act, 1961; and the Companies Act, 2013. However, the terms of the scheme appear to have disastrous consequences for political transparency. Under the scheme, both the purchaser of the bond and the political party receiving the money has a right to not disclose the identity of the donor. Also, the policy dismantles several restrictions that checked illegal corporate sponsoring previously — for example, by removing a cap on corporate sponsorship. Donations can now be made by any "artificial juridical person". This means that even foreign donations are now allowed. The requirement that a company has to be in existence for three years for it to make political donations has also been removed. This ignores all the concerns regarding the use of shell companies to siphon black money into the system.

The Centre informed the Supreme Court that protecting the privacy of electoral bond buyers is vital. While the right to privacy in India safeguards the individual's autonomy and dignity, it is subject to restriction on the basis of "compelling public interest". If the information pertains to matters which affect the lives of others, or is closely linked to a public person, it must be disclosed. The policy choices and decisions of public officials have to be brought under public scrutiny to ensure that they have not acted in a manner that unfairly benefits them or their benefactors. The same logic can then be extended to the funding of political parties, where the funder's actions are bound to have an influence on the policy decisions of the party, if the party wins.

A clear conflict of interest would likely arise if important policy decisions are taken that could affect the donors to the party. Let's imagine that an Indian company decides to make a huge political donation through the electoral bonds scheme and the political party it donates to emerges victorious. What if the government decides to provide favourable deals to the sector in question? The public will have no way of knowing what guided such a biased action.

Q.11

How do electoral bonds increase the opacity in political transactions?

1 **By having no lower limit on the permissible amount**

2 **By not disclosing the identity of the donor**

3 **By providing incentive for high political donations**

4 **By providing income tax rebate on such donations and giving incentive to donors to hide their donations**

Solution:
Correct Answer : 2
Genre: Political Science / Current Affairs / Civics
Word Count# 427
As mentioned in the passage the electoral bonds make transactions opaque by not disclosing the identity of the donors.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (1-24): Read the given passages and answer the questions that follow.

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Q.12

Which of the following describes a feature of the scheme of electoral bonds?

1 **Both the donors and the political parties receiving the donation can hide their identities.**

2 **The donors can hide the identity of the political parties they are funding.**

3 **The donors and political parties both can hide the identities of the donors.**

4 **Only the political parties alone can hide the identities of the donors.**

Solution:
Correct Answer : 3
Genre: Political Science / Current Affairs / Civics
Word Count# 427
The passage states that the consequences for political transparency under this scheme are disastrous. The provision of anonymity of the donors maintained by themselves as well as by the political parties is the key point harming transparency.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (1-24): Read the given passages and answer the questions that follow.

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Q.13

Which of the following provisions in the Finance Act encourages siphoning of black money through shell companies?

1 **Removing a cap on corporate sponsorship**

2 **Allowing foreign donations**

3 **Removing the compulsions of three years of existence for companies before making donations**

4 **Artificial juridical person can also donate to parties**

Solution:
Correct Answer : 3
Genre: Political Science / Current Affairs / Civics
Word Count# 427
Allowing the new companies to make donations would encourage shell companies to pop up and thus harming transparency.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (1-24): Read the given passages and answer the questions that follow.

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Q.14

Which of the following restricts the right to privacy in India?

1 **If the information hidden through right to privacy affects public interest then it must be disclosed.**

2 **If the beneficiaries of right to privacy abuse that privilege then that right must be revoked.**

3 **The actions of specifically the executives in Indian democracy must remain open to public scrutiny.**

4 **The right to privacy of individuals can be revoked without citing any reason.**

Solution:
Correct Answer : 1
Genre: Political Science / Current Affairs / Civics
Word Count# 427
The right to privacy in India is not absolute. Any information protected by right to privacy can be disclosed if it affects the public at large. Thus option 1 is correct.

Bookmark

Answer key/Solution

FeedBack

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Q.15

What vested interests do the donors have in mysteriously funding the political parties?

1 **These donors enjoy high income tax rebates on such donations.**

2 **The donors could very likely affect the policy of the government they have financed to bring in power.**

3 **The political parties so funded by these hidden donors tend to give tax benefits to their funders.**

4 **These donors derive huge moral satisfaction in supporting the political party of their liking.**

Solution:
Correct Answer : 2
Genre: Political Science / Current Affairs / Civics
Word Count# 427
As explained in the concluding lines of the passage, a political party emerging victorious after being funded by such anonymous donors could quite easily structure its policy while in government favouring these donors. This would rob the society of any kind of political accountability and transparency. Thus option 2 is correct.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 4

It may give you some idea of rural humour if I begin this tale with an anecdote that concerns me. I was walking alone through a village at night when I met an old man carrying a lantern. I found, to my surprise, that the man was blind. 'Old man,' I asked, 'if you cannot see, why do you carry a lantern?'

'I carry this,' he replied, 'so that fools do not stumble against me in the dark.'

This incident has only a slight connection with the story that follows, but I think it provides the right sort of tone and setting. Mr. Oliver, an Anglo-Indian teacher, was returning to his school late one night, on the outskirts of Simla. Mr. Oliver had been teaching in the school for several years. The Simla bazaar, was about two miles from the school; and Mr. Oliver, a bachelor, usually strolled into the town in the evening, returning after dark, when he would take a short cut through a pine forest.

When there was a strong wind, the pine trees made sad, eerie sounds that kept most people to the main road. But Mr. Oliver was not a nervous or imaginative man. He carried a torch and, on the night I write of, its pale gleam — the batteries were running down — moved fitfully over the narrow forest path. When its flickering light fell on the figure of a boy, who was sitting alone on a rock, Mr. Oliver stopped. Boys were not supposed to be out of school after 7 p.m., and it was now well past nine.

'What are you doing out here, boy?' asked Mr. Oliver sharply, moving closer so that he could recognise the miscreant. But even as he approached the boy, he sensed that something was wrong. The boy appeared to be crying. 'Well — what's the matter?' he asked, his anger giving

way to concern. 'What are you crying for?' Tell me the trouble. Look up!' The boy looked up. He took his hands from his face and looked up at his teacher. The light from Mr. Oliver's torch fell on the boy's face — if you could call it a face.

He had no eyes, ears, nose or mouth. It was just a round smooth head — with a school cap on top of it. And that's where the story should end — as indeed it has, for several people who have had similar experiences and dropped dead of inexplicable heart attacks But for Mr. Oliver it did not end there.

The torch fell from his trembling hand. He turned and scrambled down the path, running blindly through the trees and calling for help. Mr. Oliver had never before been so pleased to see the night-watchman. He stumbled up the watchman, gasping for breath and speaking incoherently. 'What is it, Sahib?' asked the watchman. 'Has there been an accident? Why are you running?'

'I saw something — something horrible — a boy weeping in the forest — and he had no face!' 'No face, Sahib?' 'No eyes, nose, mouth — nothing.' 'Do you mean it was like this, Sahib?' asked the watchman, and raised the lamp to his own face. The watchman had no eyes, no ears, no features at all — not even an eyebrow! The wind blew the lamp out, and Mr. Oliver had his heart attack.

Q.16

What could be the writer's intention behind introducing an anecdote before the story?

1 **To bring some humour to the story**

2 **To personalize himself to the readers**

3 **To relate his story to reality**

4 **To set the tone and setting for the story**

Solution:
Correct Answer : 4
Genre: Short Story / Fiction
Word Count# 553
As a message in the passage, the anecdote serves as a pretext to the setting of the story. So, option 4 is the correct answer.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 4

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Q.17

Mr. Oliver often used to take the secluded shortcut through a pine forest, what does that indicate about his character?

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1 He was a fearless man.

2 He was an unimaginative man.

3 He was very fond of nature.

4 He was searching for a partner.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Genre: Short Story / Fiction
Word Count# 553
It's mentioned in the passage that Mr. Oliver was an unimaginative man, whereas he was most certainly not a fearless person, for it was his fear that caused him the heart attack. The other two options are unrelated to the passage.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

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It may give you some idea of rural humour if I begin this tale with an anecdote that concerns me. I was walking alone through a village at night when I met an old man carrying a lantern. I found, to my surprise, that the man was blind. 'Old man,' I asked, 'if you cannot see, why do you carry a lantern?'

'I carry this,' he replied, 'so that fools do not stumble against me in the dark.'

This incident has only a slight connection with the story that follows, but I think it provides the right sort of tone and setting. Mr. Oliver, an Anglo-Indian teacher, was returning to his school late one night, on the outskirts of Simla. Mr. Oliver had been teaching in the school for several years. The Simla bazaar, was about two miles from the school; and Mr. Oliver, a bachelor, usually strolled into the town in the evening, returning after dark, when he would take a short cut through a pine forest.

When there was a strong wind, the pine trees made sad, eerie sounds that kept most people to the main road. But Mr. Oliver was not a nervous or imaginative man. He carried a torch and, on the night I write of, its pale gleam — the batteries were running down — moved fitfully over the narrow forest path. When its flickering light fell on the figure of a boy, who was sitting alone on a rock, Mr. Oliver stopped. Boys were not supposed to be out of school after 7 p.m., and it was now well past nine.

'What are you doing out here, boy?' asked Mr. Oliver sharply, moving closer so that he could recognise the miscreant. But even as he approached the boy, he sensed that something was

wrong. The boy appeared to be crying. 'Well — what's the matter?' he asked, his anger giving way to concern. 'What are you crying for?' Tell me the trouble. Look up!' The boy looked up. He took his hands from his face and looked up at his teacher. The light from Mr. Oliver's torch fell on the boy's face — if you could call it a face.

He had no eyes, ears, nose or mouth. It was just a round smooth head — with a school cap on top of it. And that's where the story should end — as indeed it has, for several people who have had similar experiences and dropped dead of inexplicable heart attacks But for Mr. Oliver it did not end there.

The torch fell from his trembling hand. He turned and scrambled down the path, running blindly through the trees and calling for help. Mr. Oliver had never before been so pleased to see the night-watchman. He stumbled up the watchman, gasping for breath and speaking incoherently. 'What is it, Sahib?' asked the watchman. 'Has there been an accident? Why are you running?'

'I saw something — something horrible — a boy weeping in the forest — and he had no face!' 'No face, Sahib?' 'No eyes, nose, mouth — nothing.' 'Do you mean it was like this, Sahib?' asked the watchman, and raised the lamp to his own face. The watchman had no eyes, no ears, no features at all — not even an eyebrow! The wind blew the lamp out, and Mr. Oliver had his heart attack.

Q.18

What should have marked the end of the story but didn't for Mr. Oliver?

1 **Mr. Oliver strolling down the town lanes**

2 **Mr. Oliver's encounter with the faceless boy**

3 **Mr. Oliver choosing the short-cut over the main road**

4 **Mr. Oliver stumbling upon the watchman**

Solution:
Correct Answer : 2
Genre: Short Story / Fiction
Word Count# 553
As mentioned in the passage, the encounter with the boy would have marked the end of the story for anyone else but it didn't for Mr. Oliver.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 4

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When there was a strong wind, the pine trees made sad, eerie sounds that kept most people to the main road. But Mr. Oliver was not a nervous or imaginative man. He carried a torch and, on the night I write of, its pale gleam — the batteries were running down — moved fitfully over the narrow forest path. When its flickering light fell on the figure of a boy, who was sitting alone on a rock, Mr. Oliver stopped. Boys were not supposed to be out of school after 7 p.m., and it was now well past nine.

'What are you doing out here, boy?' asked Mr. Oliver sharply, moving closer so that he could recognise the miscreant. But even as he approached the boy, he sensed that something was wrong. The boy appeared to be crying. 'Well — what's the matter?' he asked, his anger giving way to concern. 'What are you crying for?' Tell me the trouble. Look up!' The boy looked up. He took his hands from his face and looked up at his teacher. The light from Mr. Oliver's torch fell on the boy's face — if you could call it a face.

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'I saw something — something horrible — a boy weeping in the forest — and he had no face!' 'No face, Sahib?' 'No eyes, nose, mouth — nothing.' 'Do you mean it was like this, Sahib?' asked the watchman, and raised the lamp to his own face. The watchman had no eyes, no ears, no features at all — not even an eyebrow! The wind blew the lamp out, and Mr. Oliver had his heart attack.

Q.19

What caused Mr. Oliver's heart attack?

---

1 The sight of the faceless boy

2 Watching the boy cry and sob

3 The encounter with the faceless watchman

4 The eerie sounds of the pine forests

Solution:
Correct Answer : 3
Genre: Short Story / Fiction
Word Count# 553
As mentioned in the passage Mr. Oliver had a heart attack when he discovered that the watchman was faceless as well.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 5

It is not enough for a country to attempt to increase its national income. It is also necessary to ensure that it is evenly distributed. But inequality of income is an important feature of capitalist economies. The socialist countries like the U.S.S.R. and Communist China have established systems whose aim is to reduce inequalities of incomes. Even they have failed to attain perfect equality. In the capitalist countries, on the other hand, it is generally recognized that inequalities will remain and that cannot be helped. Some economists make even virtue of this necessity and they see lot of good in these inequalities from the point of view of capital formation.

Some persons are born with a silver spoon. Rich inheritance gives them a start in life and if they are reasonably prudent, they keep up the lead. Some persons are born landless; others inherit a few acres and still others thousands of acres. So long as the system of inheritance lasts, inequalities are bound to be perpetuated.

Inequality of incomes leads to some very serious economic and social consequences. It has created two sections in society—the 'haves' and the 'have-not's—which are ever on the war path. This has resulted in ever mounting social tensions and political discontent. The rich dominate the political machinery, and they use it to promote their own exclusive interests. This results in corruption, graft and social injustice. Thus inequality of incomes is an important cause of social and political instability.

Unequal incomes promote monopolies. These powerful monopolies and industrial combines charge unfair prices from the consumer? And crush the small producers. It is not easy for a poor man to make his way in life, however brilliant he may be. It is a great social loss that

brainy people without money are unable to make their due contribution to social welfare. Democracy is a farce when there is a wide gulf between the rich and the poor. Political equality is a myth without economic equality.

One step that can be taken in the direction of more egalitarian society is to guarantee each citizen a minimum wage consistent with a minimum standard of living. The recruitment to all jobs may be made by an impartial Selection Board or Public Services Commission. Recruitment even in the private sector may be done by employment exchanges or independent selection agencies.

Mere leveling up will not bridge the gulf between the rich and the poor. It will also be necessary to raze to the ground the high mountains of privilege. For this purpose all possible fiscal devices should be adopted. One such device is the steeply progressive taxes on incomes. All conspicuous consumption by the rich may be ruthlessly crushed by means of heavy taxation of the consumption of luxuries by them. With a view the reducing inequalities between the big and small farmers, ceilings on agricultural land holdings can be imposed.

As a counterpart, a ceiling on urban property can be imposed so that inequalities in urban areas can also be toned down. More radical socioeconomic reforms seem to be in the offing in India. These are some of the measures that can be adopted to reduce inequalities. While inequalities can be reduced, they cannot be eliminated altogether. In fact, absolute equality is unattainable.

Q.20

Which of the following reasons do the capitalistic economists cite for the necessity of income inequality?

1 **It boosts industrial production as the richer section consumes more.**

2 **It aids in higher tax revenues as the more affluent class contribute higher tax.**

3 **It helps in the process of capital formation in a capitalist economy.**

4 **Income inequality gradually eliminates poverty by eradicating the poor strata of the society.**

Solution:
Correct Answer : 3
Genre: Economics
Word Count# 546
Capitalist economists tend to theorise the importance of income inequality as a necessary cause for capital formation. Thus option 3 is the best option.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 5

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inequalities can be reduced, they cannot be eliminated altogether. In fact, absolute equality is unattainable.

Q.21

Which of the following is the most potent factor of income inequality?

1 **Inheritance from one generation to another**

2 **Government's taxation policy**

3 **Exploitation of the poor by the rich**

4 **Inability of the poor section to rise from the backward environment that surrounds them**

Solution:
Correct Answer : 1
Genre: Economics
Word Count# 546
All the option could be seen as a cause of income inequality but inheritance is the most influential one as mentioned by the passage. It gives incentive to the 'haves' for wealth creation as well as wealth accumulation. Thus option 1 is the correct choice.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 5

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Q.22

How is inequality of income related to social and political instability?

1 **The 'haves not' are frustrated with the injustices of the society and they rise against the political machinery.**

2 **The rich dominate the political machinery furthering their interests, thus, causing political injustice.**

3 **Income inequality leads to social tensions and political discontent.**

4 **The workforce that mainly consists of the lower economic strata becomes dysfunctional.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Economics
Word Count# 546
Options 1 and 4 are presumptuous. Option 3 points out the consequences of income inequality but doesn't mention how it leads to them. Option 2 delivers on that point of answering the cause and thus it is the right answer.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 5

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Q.23

What purpose would be served by heavily taxing the rich?

1 It would increase the tax revenues for the government.

2 It would check the bodacious consumption by the rich of luxury commodities.

3 It would promote the production of necessary goods in the economy.

4 It would help in transferring wealth to the poor.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Economics
Word Count# 546
As mentioned in the passage, heavy taxation of the rich would check their conspicuous consumption which would lead to a more equal society.

FeedBack

Direction for questions (1-24): Read the given passages and answer the questions that follow.

Passage 5

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Q.24

Which of the given choices could help in reducing urban inequality?

1 ○ **Providing mass scale high paying jobs**

2 **Imposing a ceiling on urban investments in bonds**

3 **Imposing a ceiling on urban property**

4 **Converting slum areas into low priced apartments**

Solution:
Correct Answer : 3
Genre: Economics
Word Count# 546
The passage offers a solution to curb urban inequality by imposing a ceiling on how much people can invest on urban property, thus making sure that over-investment can be prevented.

Bookmark

Answer key/Solution

FeedBack

Directions for question (25): 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.

Q.25

1. This is according to the Internal Security Threat Report of 2017 by Symantec.
2. Till June 2017, 27,482 cybersecurity threats had been reported in the country, according to the Indian Computer Emergency Response Team's report.
3. India's technological achievements come with a serious problem.
4. Historically, criminal law has focused on the injury or harm caused by a single incident, rather than the cumulative fear and damage caused by repeated incidents in cases of domestic violence and stalking.
5. Innovation in technology, enhanced connectivity, and increasing integration in commerce and governance also make India the fifth most vulnerable country in the world in terms of cybersecurity breaches.

Solution:
Correct Answer : 4
The correct order is 3512. However, it's an easy question. The odd sentence talks about stalking. The other sentences talk about cybersecurity problem in India. So, there is no need to rearrange the other sentences. 4 is clearly the odd sentence.

Bookmark

Answer key/Solution

FeedBack

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

Q.26

Hate crimes are particularly serious because of their potential to provoke panic. The speed with which the videos travelled on social media frames a difficult challenge for law enforcement authorities. A temporary Internet shutdown that was enforced in Rajsamand may appear unavoidable, but these are post-hoc measures and cannot prevent the problem of provocative, even grisly, content being made available and even spreading online. Such crimes pose a very stiff challenge in a democratic society. They may be isolated but the impact of these crimes spills into the wider community. There is only one way to counter them: with a clear, unambiguous consensus against hate.

1 **Hate crimes are serious as their consequences can be far reaching.**

2 **Hate crimes are serious and their solution needs a clear stance against the concept of hate, instead of short-term measures.**

3 **Hate crimes have become more serious in the world of social media and communication revolution.**

4 **Hate crimes can be solved only if we come together to fight the menace of technology and social media.**

Solution:
Correct Answer : 2
Option 4 is an opinion. It's not a summary.
Option 1 is partially complete. It doesn't talk about the measures to be taken against hate crimes.
Option 3 only focuses on the cause and doesn't talk about the solution.
Option 2 is the most complete answer.

Bookmark

Answer key/Solution

FeedBack

Directions for question (27): 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.

Q.27

1. We spend one-third of our day sleeping, and studies have reported that seven-eight hours of sleep is positively associated with health and longevity.
2. Sleep is the most important piece of the health and wellness puzzle.
3. So, sleep plays a vital role in overall well-being.
4. It has a profound impact on both psychological and physical state of our health.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2413
2 has to be the opening sentence. It introduces the topic of Sleep.
24 is a pair. (important – explained in 4 with 'profound').
1 comes next as it gives the details about 'health' as mentioned in 4.
3 is the conclusion (notice the use of 'so'). It creates a 'cause-effect' pair with 1.
So, 2413 is the correct sequence.

FeedBack

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.

Q.28

1. As regimes are forming only now, it is possible to study them at an early stage to compare their structure, content, and driving variables with environmental regimes found in other areas such as South Asia and the Mediterranean.
2. As a "latecomer" to environmental cooperation, the states of Northeast Asia have the opportunity to learn from prior regional experience.
3. Northeast Asia also poses many challenges to paradigms of environmental cooperation derived from other regions.
4. Northeast Asia is an excellent region in which to study environmental conflict and cooperation.
5. The precise scale and impact of transfrontier acid rain deposition remains unclear, in part due to the lack of monitoring stations and ecological studies.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 5
The correct order is 4231. However, we don't need to arrange these four sentences. They talk about the general ecological condition in Northeast Asia. 5 is the odd one out as it talks about acid rain. It's a very specific topic. The other four sentences don't talk about any particular environmental problem. So, 5 is clearly not part of this paragraph.

FeedBack

Directions for question (29): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.29

The idea that intelligence could be quantified, like blood pressure or shoe size, was barely a century old when I took the test that would decide my place in the world. But the notion that intelligence could determine one's station in life was already much older. It runs like a red thread through Western thought, from the philosophy of Plato to the policies of UK Prime Minister Theresa May. To say that someone is or is not intelligent has never been merely a comment on their mental faculties. It is always also a judgment on what they are permitted to do. Intelligence, in other words, is political.

1 **Intelligence tests are politically motivated and many times politicians take advantage of this.**

2 **The assertion of someone's intelligence is not only limited to the individual's ability, but it also determines the person's social position.**

3 **The idea of intelligence as a determiner of one's potential has been there for a long time.**

4 **Intelligence can be quantified, tested, and proven.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
The author's main idea here is to show that one's intelligence (or as it is measured by society) decides one's future. The author doesn't say whether this is good or bad.
Option 4 is a very illogical conclusion, not a summary.
Options 1 and 3 both miss the main point of the author. They unnecessarily focus on a narrow part of the paragraph.
Option 2 is the correct summary.

FeedBack

Directions for question (30): 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.

Q.30

1. The baby Sun -born about 4.6 billion years ago, 50 million years before the Earth - was no exception.
2. Ice-blue crystals, called hibonite, found in a meteorite preserved at the Field Museum in the University of Chicago revealed that our Sun too went through the "terrible twos".
3. Understanding the early history of the Sun will help scientists know the physics and chemistry of our natural world and predict the future better.
4. Stars are typically violently active in their early phase of evolution.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4123
The strongest clue in this question is 41. (Early phase of evolution – Baby Sun).
23 is a pair too as 'understanding the early history' in 3 refers to the research mentioned in 2.
Now 2 can't be the opening sentence. It has to be 4 as it is the best introductory sentence.
So, 4123 is the correct sequence.

FeedBack

Directions for question (31): 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.

Q.31

1. The adoption of specific movement and gesture distinguished one from the other.
2. Lee-Hart seeks music which is "liberating and beautiful".
3. Contemporary visual art falls into many categories (figurative, abstract, conceptual etc).
4. Whatever modern classical music is (experimental, atonal, electro-acoustic), it requires one to invest of oneself in the audition process.
5. Similarly, "modern classical music" cannot just be lumped into one nebulous category.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
This is another easy question. The four sentences talk about contemporary visual art and modern classical music. Sentence 1 talks about dance (movement and gesture). So, it is clearly the odd one out. The correct order of the other four sentences is 3524.

FeedBack

Directions for question (32): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.32

History is at its most exciting and stimulating for students and teachers alike when there is scope to look at connectivity, to identify and work through deep rhythms and trends, and to explore the past by challenging assumptions that the story of the world can be charted through a linear progression – as the AP College Board seems to think with its statement linking 1200 with the 'modern era'. If you really want to see how foolish this view is – and how unfortunate it is to narrow down the scope of the World History course, then take a look at the front pages in just about any country in the world today. In China, news is dominated by the Belt and Road Initiative, the Chinese-led plan to re-galvanise the ancient networks of the past into the modern-day Silk Roads: there are many and sharply divergent views about the aims, motivations and likely outcomes of the Belt and Road Initiative. This is far and away the single most important geopolitical development in the modern world today. Understanding why Beijing is trying to return to the glory years of the Silk Roads (which date back 2,000 years) would seem to be both interesting, and important – and largely to be bypassed by the new World History scope.

1 **The attempt of China to go back to its glory days shows how misguided the study of History can be.**

2 **History is studied in a more holistic manner if it is analysed, and a lack of perspective acts as a hindrance to understanding this subject.**

3 **If students and teachers are not encouraged to ask questions, the real value of studying History will be defeated, as it is proven in case of China.**

4 **The single most geopolitical development of the modern era is most likely to be ignored by History, thus proving the futility of attempting to understand socio-historical complexities.**

Solution:
Correct Answer : 2
The main point of the author here is to state that History as a subject is studied effectively if those who are dealing with the subject get to ask questions, challenge assumptions etc. China is given as an example. Option 2 is the correct summary of the given paragraph.
Option 4 incorrectly talks about this one example as a trend. The author never states that socio-historical complexities can never be understood.
Option 1 incorrectly mentions China and its politics as the main point of the paragraph.
Option 3 raises the issue of freedom to ask questions. It is not within the scope of the given paragraph.

Bookmark

Answer key/Solution

FeedBack

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

Q.33

1. Scientists are not sure where snakes originated and how they spread around the world.
2. Trapped inside the amber was a 99-million-year-old snakeskin.
3. Lida Xing, a paleontologist from the China University of Geosciences in Beijing, was combing the amber markets of Myanmar when he came across an interesting piece.
4. This discovery may give them some clues.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3214
3 is the opening sentence as it gives the context of the discussion. It also gives us the full name of the person.
32 is a pair (interesting piece – the amber).
21 is a pair (origin of snake explains the details of the interesting piece).
14 is a pair ('give them some clues' refers to 'scientists are not sure...').
So, 3214 is the correct sequence.

FeedBack

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

Q.34

1. You can make an egg into an omelet, but you can't turn an omelet back into an egg.
2. Above all, we age and become decrepit; there is no return to youth.
3. As conscious beings, we are constantly aware of the relentless march of time.
4. Dropped glasses, too, shatter and do not reassemble themselves.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3142
This question can be answered by eliminating sentences that can't begin a paragraph.
2 uses the word 'above all' and 4 uses 'too'. These two can't start the paragraph.
Between, 1 and 3, the latter is the better opening pair.
1 gives an example of 'the relentless march of time' mentioned in 3. So, 31 is a pair.
4 adds to 1 and 2 gives a conclusion to the entire discussion.
So, 3142 is the correct sequence.

FeedBack

Sec 2

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

Divanshu, the father to a son Vihaan and a daughter Nidhi, decided to do Diwali shopping for himself and his kids. So, Vihaan and Nidhi gave him their individual list of toys, which is as follows, to buy from the market.

Vihaan's list: Robot, Rocket, Activity Ball, Bicycle, and Racing Car
Nidhi's list: Barbie Doll, Guitar, Fidget Spinner, Building Blocks and Toy House.

After seeing such a big list from both the kids, Divanshu decided to buy at least three toys for Nidhi and at most three toys for Vihaan in such a way that the total number of toys should sum up to be exactly six.
While shopping, Divanshu thought of buying the items by following the set of certain rules.
1. If he buys a barbie doll, then he should buy at most one out of the rocket and building blocks.
2. If he buys a robot, then he should not buy a bicycle and racing car.
3. He should buy at least one and at most two from guitar, fidget spinner and building blocks.
4. If fidget spinner is bought, then he should not buy a toy house and barbie doll.
5. If he has bought a racing car, then he must buy a guitar.
Note: The quantity of the toy of a kind to buy is at most one.

Q.35
In how many different ways can Divanshu buy the equal number of toys for his son and daughter?

1 **8**

2 **5**

3 **11**

4 **13**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

According to conditions, Divanshu can buy at least 3 toys for Nidhi and at most 3 toys for Vihaan such that the total number of toys sum up to be 6. So, the possible number of toys he can buy for Nidhi and Vihaan, that is, (a, b) where a is the number of toys for Nidhi and b is number of toys for Vihaan can be either (3, 3), (2, 4) or (5,1). Further from statement 3 and 5, we can conclude that he will not be able to buy Fidget Spinner in any case so, the case of (5, 1) is not possible.

Number of ways of selections

Case I: If Divanshu buys 3 toys for Nidhi and 3 toys for Vihaan.

Possible combinations of 3 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll), (Guitar, Building Blocks, Toy House), (Guitar, Barbie Doll, Toy House), and (Barbie Doll, Building Blocks, Toy House).

1. (Guitar, Building Blocks, Barbie Doll) the only corresponding combination of toys for Vihaan is (Activity Ball, Bicycle, racing Car), by statement 1 and 2.

2. (Guitar, Building Blocks, Toy House) the corresponding combination of toys for Vihaan are:
(Robot, Rocket, Activity ball)
(Rocket, Activity ball, Racing car)
(Rocket, Activity ball, Bicycle)
(Activity ball, Racing Car, Bicycle)
(Rocket, Racing Car, Bicycle)

3. (Guitar, Barbie Doll, Toy House) the corresponding combination of toys for Vihaan are:
→ Rocket, Robot, Activity ball
→ Rocket, Bicycle, Racing Car
→ Rocket, Bicycle, Activity ball
→ Rocket, Racing car, Bicycle
→ Activity Ball, Racing car, Bicycle

4. (Barbie Doll, Building Blocks, Toy House)
He cannot buy Racing car → as he has to buy Guitar in that case. Also, he cannot buy Rocket → as Building blocks and Barbie Doll are already bought and he cannot buy Robot - as in that case he will not be able to buy bicycle or racing car. So, 0 cases.

Case II: If Divanshu buys 4 toys for Nidhi and 2 toys for Vihaan. Only possible combinations of 4 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll, Toy House), the corresponding combination of toys for Vihaan are:
Robot, Activity ball
Racing Car, Bicycle
Racing Car, Activity Ball
Bicycle, Activity ball

In 11 different ways Divanshu can buy the equal number of toys for his son and daughter.

FeedBack

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

Divanshu, the father to a son Vihaan and a daughter Nidhi, decided to do Diwali shopping for himself and his kids. So, Vihaan and Nidhi gave him their individual list of toys, which is as follows, to buy from the market.

Vihaan's list: Robot, Rocket, Activity Ball, Bicycle, and Racing Car
Nidhi's list: Barbie Doll, Guitar, Fidget Spinner, Building Blocks and Toy House.

After seeing such a big list from both the kids, Divanshu decided to buy at least three toys for Nidhi and at most three toys for Vihaan in such a way that the total number of toys should sum up to be exactly six.
While shopping, Divanshu thought of buying the items by following the set of certain rules.
1. If he buys a barbie doll, then he should buy at most one out of the rocket and building blocks.
2. If he buys a robot, then he should not buy a bicycle and racing car.
3. He should buy at least one and at most two from guitar, fidget spinner and building blocks.
4. If fidget spinner is bought, then he should not buy a toy house and barbie doll.
5. If he has bought a racing car, then he must buy a guitar.
Note: The quantity of the toy of a kind to buy is at most one.

Q.36
In how many different ways can Divanshu buy more toys for Nidhi than for Vihaan?

1 **4**

2 **3**

3 **5**

4 **7**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

According to conditions, Divanshu can buy at least 3 toys for Nidhi and at most 3 toys for Vihaan such that the total number of toys sum up to be 6. So, the possible number of toys he can buy for Nidhi and Vihaan, that is, (a, b) where a is the number of toys for Nidhi and b is number of toys for Vihaan can be either (3, 3), (2, 4) or (5,1). Further from statement 3 and 5, we can conclude that he will not be able to buy Fidget Spinner in any case so, the case of (5, 1) is not possible.

Number of ways of selections

Case I: If Divanshu buys 3 toys for Nidhi and 3 toys for Vihaan.

Possible combinations of 3 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll), (Guitar, Building Blocks, Toy House), (Guitar, Barbie Doll, Toy House), and (Barbie Doll, Building Blocks, Toy House).

1. (Guitar, Building Blocks, Barbie Doll) the only corresponding combination of toys for Vihaan is (Activity Ball, Bicycle, racing Car), by statement 1 and 2.

2. (Guitar, Building Blocks, Toy House) the corresponding combination of toys for Vihaan are:
(Robot, Rocket, Activity ball)
(Rocket, Activity ball, Racing car)
(Rocket, Activity ball, Bicycle)
(Activity ball, Racing Car, Bicycle)
(Rocket, Racing Car, Bicycle)

3. (Guitar, Barbie Doll, Toy House) the corresponding combination of toys for Vihaan are:
→ Rocket, Robot, Activity ball
→ Rocket, Bicycle, Racing Car
→ Rocket, Bicycle, Activity ball
→ Rocket, Racing car, Bicycle
→ Activity Ball, Racing car, Bicycle

4. (Barbie Doll, Building Blocks, Toy House)
He cannot buy Racing car → as he has to buy Guitar in that case. Also, he cannot buy Rocket → as Building blocks and Barbie Doll are already bought and he cannot buy Robot - as in that case he will not be able to buy bicycle or racing car. So, 0 cases.

Case II: If Divanshu buys 4 toys for Nidhi and 2 toys for Vihaan. Only possible combinations of 4 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll, Toy House), the corresponding combination of toys for Vihaan are:
Robot, Activity ball
Racing Car, Bicycle
Racing Car, Activity Ball
Bicycle, Activity ball

In 4 ways Divanshu can buy more toys for Nidhi than Vihaan.

FeedBack

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

Divanshu, the father to a son Vihaan and a daughter Nidhi, decided to do Diwali shopping for himself and his kids. So, Vihaan and Nidhi gave him their individual list of toys, which is as follows, to buy from the market.

Vihaan's list: Robot, Rocket, Activity Ball, Bicycle, and Racing Car
Nidhi's list: Barbie Doll, Guitar, Fidget Spinner, Building Blocks and Toy House.

After seeing such a big list from both the kids, Divanshu decided to buy at least three toys for Nidhi and at most three toys for Vihaan in such a way that the total number of toys should sum up to be exactly six.
While shopping, Divanshu thought of buying the items by following the set of certain rules.
1. If he buys a barbie doll, then he should buy at most one out of the rocket and building blocks.
2. If he buys a robot, then he should not buy a bicycle and racing car.
3. He should buy at least one and at most two from guitar, fidget spinner and building blocks.
4. If fidget spinner is bought, then he should not buy a toy house and barbie doll.
5. If he has bought a racing car, then he must buy a guitar.
Note: The quantity of the toy of a kind to buy is at most one.

Q.37
Which of the following toys will definitely be bought by Divanshu?

1 **Barbie doll**

2 **Guitar**

3 **Building Blocks**

4 **Rocket**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

According to conditions, Divanshu can buy at least 3 toys for Nidhi and at most 3 toys for Vihaan such that the total number of toys sum up to be 6. So, the possible number of toys he can buy for Nidhi and Vihaan, that is, (a, b) where a is the number of toys for Nidhi and b is number of toys for Vihaan can be either (3, 3), (2, 4) or (5,1). Further from statement 3 and 5, we can conclude that he will not be able to buy Fidget Spinner in any case so, the case of (5, 1) is not possible.

Number of ways of selections

Case I: If Divanshu buys 3 toys for Nidhi and 3 toys for Vihaan.

Possible combinations of 3 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll), (Guitar, Building Blocks, Toy House), (Guitar, Barbie Doll, Toy House), and (Barbie Doll, Building Blocks, Toy House).

1. (Guitar, Building Blocks, Barbie Doll) the only corresponding combination of toys for Vihaan is (Activity Ball, Bicycle, racing Car), by statement 1 and 2.

2. (Guitar, Building Blocks, Toy House) the corresponding combination of toys for Vihaan are:
(Robot, Rocket, Activity ball)
(Rocket, Activity ball, Racing car)
(Rocket, Activity ball, Bicycle)
(Activity ball, Racing Car, Bicycle)
(Rocket, Racing Car, Bicycle)

3. (Guitar, Barbie Doll, Toy House) the corresponding combination of toys for Vihaan are:
→ Rocket, Robot, Activity ball
→ Rocket, Bicycle, Racing Car
→ Rocket, Bicycle, Activity ball
→ Rocket, Racing car, Bicycle
→ Activity Ball, Racing car, Bicycle

4. (Barbie Doll, Building Blocks, Toy House)
He cannot buy Racing car → as he has to buy Guitar in that case. Also, he cannot buy Rocket → as Building blocks and Barbie Doll are already bought and he cannot buy Robot - as in that case he will not be able to buy bicycle or racing car. So, 0 cases.

Case II: If Divanshu buys 4 toys for Nidhi and 2 toys for Vihaan. Only possible combinations of 4 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll, Toy House), the corresponding combination of toys for Vihaan are:
Robot, Activity ball
Racing Car, Bicycle
Racing Car, Activity Ball
Bicycle, Activity ball

Guitar will be definitely bought by Divanshu.

FeedBack

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

Divanshu, the father to a son Vihaan and a daughter Nidhi, decided to do Diwali shopping for himself and his kids. So, Vihaan and Nidhi gave him their individual list of toys, which is as follows, to buy from the market.

Vihaan's list: Robot, Rocket, Activity Ball, Bicycle, and Racing Car
Nidhi's list: Barbie Doll, Guitar, Fidget Spinner, Building Blocks and Toy House.

After seeing such a big list from both the kids, Divanshu decided to buy at least three toys for Nidhi and at most three toys for Vihaan in such a way that the total number of toys should sum up to be exactly six.
While shopping, Divanshu thought of buying the items by following the set of certain rules.
1. If he buys a barbie doll, then he should buy at most one out of the rocket and building blocks.
2. If he buys a robot, then he should not buy a bicycle and racing car.
3. He should buy at least one and at most two from guitar, fidget spinner and building blocks.
4. If fidget spinner is bought, then he should not buy a toy house and barbie doll.
5. If he has bought a racing car, then he must buy a guitar.
Note: The quantity of the toy of a kind to buy is at most one.

Q.38
Which of the following toys will definitely not be bought by Divanshu?

1 **Barbie doll**

2 **Robot**

3 **Building Blocks**

4 **Fidget spinner**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

According to conditions, Divanshu can buy at least 3 toys for Nidhi and at most 3 toys for Vihaan such that the total number of toys sum up to be 6. So, the possible number of toys he can buy for Nidhi and Vihaan, that is, (a, b) where a is the number of toys for Nidhi and b is number of toys for Vihaan can be either (3, 3), (2, 4) or (5,1). Further from statement 3 and 5, we can conclude that he will not be able to buy Fidget Spinner in any case so, the case of (5, 1) is not possible.

Number of ways of selections

Case I: If Divanshu buys 3 toys for Nidhi and 3 toys for Vihaan.

Possible combinations of 3 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll), (Guitar, Building Blocks, Toy House), (Guitar, Barbie Doll, Toy House), and (Barbie Doll, Building Blocks, Toy House).

1. (Guitar, Building Blocks, Barbie Doll) the only corresponding combination of toys for Vihaan is (Activity Ball, Bicycle, racing Car), by statement 1 and 2.

2. (Guitar, Building Blocks, Toy House) the corresponding combination of toys for Vihaan are:
(Robot, Rocket, Activity ball)
(Rocket, Activity ball, Racing car)
(Rocket, Activity ball, Bicycle)
(Activity ball, Racing Car, Bicycle)
(Rocket, Racing Car, Bicycle)

3. (Guitar, Barbie Doll, Toy House) the corresponding combination of toys for Vihaan are:
→ Rocket, Robot, Activity ball
→ Rocket, Bicycle, Racing Car
→ Rocket, Bicycle, Activity ball
→ Rocket, Racing car, Bicycle
→ Activity Ball, Racing car, Bicycle

4. (Barbie Doll, Building Blocks, Toy House)
He cannot buy Racing car → as he has to buy Guitar in that case. Also, he cannot buy Rocket → as Building blocks and Barbie Doll are already bought and he cannot buy Robot - as in that case he will not be able to buy bicycle or racing car. So, 0 cases.

Case II: If Divanshu buys 4 toys for Nidhi and 2 toys for Vihaan. Only possible combinations of 4 toys for Nidhi are : (Guitar, Building Blocks, Barbie Doll, Toy House), the corresponding combination of toys for Vihaan are:
Robot, Activity ball
Racing Car, Bicycle
Racing Car, Activity Ball
Bicycle, Activity ball

Fidget Spinner will not be bought by Divanshu definitely.

FeedBack

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

Air-India operates round trip flights between cities A and B, B and C, C and D, and D and E. All these cities are in different time zones. The 'To' flights are from A to B, B to C, C to D and D to E whereas the 'Fro' flights are from B to A, C to B, D to C and E to D. Also the speed of airplane for a 'To' journey is half of the 'Fro' journey for any particular set of cities whereas the path taken is same for both sides.

The following table shows the local time of departure(arrival) from(to) a city. '↑ stands for departure' and '↓ stands for arrival'. The arrival and departure are given in adjacent cells only. For example, the flight from A that departs at 7:00 AM (in A's time zone) reaches B at 11:00 AM(in B's time zone), and the flight from C which departs at 3:00 PM(in C's time zone) reaches B at 4:00 PM(in B's time zone). All the given timings are for the same day.

A	B	C	D	E
7:00 AM ↑	11:00 AM ↓	4:00 PM ↓	3:45 PM ↑	
11:45 AM ↓	12:00 Noon ↑		10:00 AM ↑	4:30 PM ↓
	9:30 AM ↑	12:30 PM ↓	8:15 PM ↓	5:45 PM ↑
	4:00 PM ↓	3:00 PM ↑		
		7:45 AM ↑	2:15 PM ↓	

Q.39

When the flight from C reaches D, what is the local time in A?

1 **10:25 AM**

2 **10:25 PM**

3 **6:05 PM**

4 **6:05 AM**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Let the time taken by the 'To' flight from A to B be '2t' minutes and city B be 'h' minutes ahead of city A.
So the time taken by the 'Fro' flight from B to A will be 't' minutes.
Now, 2t + h = 240 minutes (7 AM – 11 AM)
Also, t – h = –15 minutes (12 PM – 11:45 AM)
On solving this equation, t = 75 minutes and h = 90 minutes.
This means a flight from A to B takes 150 minutes for a 'To' journey and city B is 90 minutes ahead of city A.
Let the time taken by the 'To' flight from B to C be '$2t_1$', minutes and city C be 'h_1' minutes ahead of city B.
So, the time taken by a 'Fro' flight from C to B will be t_1 minutes.
$2t_1 + h_1 = 180$ (9:30 AM – 12:30 PM)
$t_1 - h_1 = 60$ (3 PM – 4 PM)
So, the values of t_1 and h_1 are 80 and 20, respectively.

This means a 'To' journey from B to C takes 2 hr 40 minutes and city C is 20 minutes ahead of city B.
Similarly, using the same logic, a 'To' journey from C to D takes 4 hr 30 minutes and D is 2 hours ahead of city C.
A 'To' journey from D to E takes 6 hours and city E is 30 minutes ahead of city D.

Flights	To' flight Time	Fro' flight Time	Time zone difference
A-B	150 minutes	75 minutes	B ahead by 90 minutes
B-C	2 hr 40 minutes	80 minutes	C ahead by 20 minutes
C-D	4 hr 30 minutes	2 hr 15 minutes	D ahead by 2 hrs
D-E	6 hrs	3 hrs	E ahead by 30 minutes

City D is 2 hours ahead of city C, which in turn is 20 minutes ahead of city B, which again is 90 minutes ahead of city A. Hence, city D is 3 hour 50 minutes ahead of city A. The flight from C reached D at 2:15 PM and the time in A will be 10:25 AM.

FeedBack

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

Air-India operates round trip flights between cities A and B, B and C, C and D, and D and E. All these cities are in different time zones. The 'To' flights are from A to B, B to C, C to D and D to E whereas the 'Fro' flights are from B to A, C to B, D to C and E to D. Also the speed of airplane for a 'To' journey is half of the 'Fro' journey for any particular set of cities whereas the path taken is same for both sides.

The following table shows the local time of departure(arrival) from(to) a city. '↑ stands for departure' and '↓ stands for arrival'. The arrival and departure are given in adjacent cells only. For example, the flight from A that departs at 7:00 AM (in A's time zone) reaches B at 11:00 AM(in B's time zone), and the flight from C which departs at 3:00 PM(in C's time zone) reaches B at 4:00 PM(in B's time zone). All the given timings are for the same day.

A	B	C	D	E
7:00 AM ↑	11:00 AM ↓	4:00 PM ↓	3:45 PM ↑	
11:45 AM ↓	12:00 Noon ↑		10:00 AM ↑	4:30 PM ↓
	9:30 AM ↑	12:30 PM ↓	8:15 PM ↓	5:45 PM ↑
	4:00 PM ↓	3:00 PM ↑		
		7:45 AM ↑	2:15 PM ↓	

Q.40

The total time taken (in minutes) for a round trip between B and C (excluding the stoppage time) is

Solution:
Correct Answer : 240

Bookmark

Answer key/Solution

Let the time taken by the 'To' flight from A to B be '2t' minutes and city B be 'h' minutes ahead of city A.
So the time taken by the 'Fro' flight from B to A will be 't' minutes.
Now, 2t + h = 240 minutes (7 AM – 11 AM)
Also, t – h = –15 minutes (12 PM – 11:45 AM)
On solving this equation, t = 75 minutes and h = 90 minutes.
This means a flight from A to B takes 150 minutes for a 'To' journey and city B is 90 minutes ahead of city A.
Let the time taken by the 'To' flight from B to C be '$2t_1$', minutes and city C be 'h_1' minutes ahead of city B.
So, the time taken by a 'Fro' flight from C to B will be t_1 minutes.
$2t_1 + h_1 = 180$ (9:30 AM – 12:30 PM)
$t_1 - h_1 = 60$ (3 PM – 4 PM)
So, the values of t_1 and h_1 are 80 and 20, respectively.

This means a 'To' journey from B to C takes 2 hr 40 minutes and city C is 20 minutes ahead of city B.
Similarly, using the same logic, a 'To' journey from C to D takes 4 hr 30 minutes and D is 2 hours ahead of city C.
A 'To' journey from D to E takes 6 hours and city E is 30 minutes ahead of city D.

Flights	To' flight Time	Fro' flight Time	Time zone difference
A-B	150 minutes	75 minutes	B ahead by 90 minutes
B-C	2 hr 40 minutes	80 minutes	C ahead by 20 minutes
C-D	4 hr 30 minutes	2 hr 15 minutes	D ahead by 2 hrs
D-E	6 hrs	3 hrs	E ahead by 30 minutes

The total time taken for a round trip between B to C is = 160 minutes (from B to C) + 80 minutes (from C to B)
= 240 minutes

FeedBack

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

Air-India operates round trip flights between cities A and B, B and C, C and D, and D and E. All these cities are in different time zones. The 'To' flights are from A to B, B to C, C to D and D to E whereas the 'Fro' flights are from B to A, C to B, D to C and E to D. Also the speed of airplane for a 'To' journey is half of the 'Fro' journey for any particular set of cities whereas the path taken is same for both sides.

The following table shows the local time of departure(arrival) from(to) a city. '↑ stands for departure' and '↓ stands for arrival'. The arrival and departure are given in adjacent cells only. For example, the flight from A that departs at 7:00 AM (in A's time zone) reaches B at 11:00 AM(in B's time zone), and the flight from C which departs at 3:00 PM(in C's time zone) reaches B at 4:00 PM(in B's time zone). All the given timings are for the same day.

A	B	C	D	E
7:00 AM ↑	11:00 AM ↓	4:00 PM ↓	3:45 PM ↑	
11:45 AM ↓	12:00 Noon ↑		10:00 AM ↑	4:30 PM ↓
	9:30 AM ↑	12:30 PM ↓	8:15 PM ↓	5:45 PM ↑
	4:00 PM ↓	3:00 PM ↑		
		7:45 AM ↑	2:15 PM ↓	

Q.41

When the time is 8:30 AM in city B, what time is it in city E?

1 **8:50 AM**

2 **9:00 AM**

3 **10:50 AM**

4 **11:20 AM**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let the time taken by the 'To' flight from A to B be '2t' minutes and city B be 'h' minutes ahead of city A.
So the time taken by the 'Fro' flight from B to A will be 't' minutes.
Now, 2t + h = 240 minutes (7 AM – 11 AM)
Also, t – h = –15 minutes (12 PM – 11:45 AM)
On solving this equation, t = 75 minutes and h = 90 minutes.
This means a flight from A to B takes 150 minutes for a 'To' journey and city B is 90 minutes ahead of city A.
Let the time taken by the 'To' flight from B to C be '$2t_1$', minutes and city C be 'h_1' minutes ahead of city B.
So, the time taken by a 'Fro' flight from C to B will be t_1 minutes.
$2t_1 + h_1 = 180$ (9:30 AM – 12:30 PM)
$t_1 - h_1 = 60$ (3 PM – 4 PM)
So, the values of t_1 and h_1 are 80 and 20, respectively.

This means a 'To' journey from B to C takes 2 hr 40 minutes and city C is 20 minutes ahead of city B.
Similarly, using the same logic, a 'To' journey from C to D takes 4 hr 30 minutes and D is 2 hours ahead of city C.
A 'To' journey from D to E takes 6 hours and city E is 30 minutes ahead of city D.

Flights	To' flight Time	Fro' flight Time	Time zone difference
A-B	150 minutes	75 minutes	B ahead by 90 minutes
B-C	2 hr 40 minutes	80 minutes	C ahead by 20 minutes
C-D	4 hr 30 minutes	2 hr 15 minutes	D ahead by 2 hrs
D-E	6 hrs	3 hrs	E ahead by 30 minutes

City E is ahead of city B by 2 hrs 50 minutes.
So, when time is 8:30 AM in city B, then the time in city E is 11:20 AM.

FeedBack

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

Air-India operates round trip flights between cities A and B, B and C, C and D, and D and E. All these cities are in different time zones. The 'To' flights are from A to B, B to C, C to D and D to E whereas the 'Fro' flights are from B to A, C to B, D to C and E to D. Also the speed of airplane for a 'To' journey is half of the 'Fro' journey for any particular set of cities whereas the path taken is same for both sides.

The following table shows the local time of departure(arrival) from(to) a city. '↑ stands for departure' and '↓ stands for arrival'. The arrival and departure are given in adjacent cells only. For example, the flight from A that departs at 7:00 AM (in A's time zone) reaches B at 11:00 AM(in B's time zone), and the flight from C which departs at 3:00 PM(in C's time zone) reaches B at 4:00 PM(in B's time zone). All the given timings are for the same day.

A	B	C	D	E
7:00 AM ↑	11:00 AM ↓	4:00 PM ↓	3:45 PM ↑	
11:45 AM ↓	12:00 Noon ↑		10:00 AM ↑	4:30 PM ↓
	9:30 AM ↑	12:30 PM ↓	8:15 PM ↓	5:45 PM ↑
	4:00 PM ↓	3:00 PM ↑		
		7:45 AM ↑	2:15 PM ↓	

Q.42

If all the flights mentioned in the table operate daily at the given timings, then what is the minimum time taken (in minutes) by a person to reach D from A?

Solution:
Correct Answer : 3085

Bookmark

Answer key/Solution

Let the time taken by the 'To' flight from A to B be '2t' minutes and city B be 'h' minutes ahead of city A.
So the time taken by the 'Fro' flight from B to A will be 't' minutes.
Now, 2t + h = 240 minutes (7 AM – 11 AM)
Also, t – h = –15 minutes (12 PM – 11:45 AM)
On solving this equation, t = 75 minutes and h = 90 minutes.
This means a flight from A to B takes 150 minutes for a 'To' journey and city B is 90 minutes ahead of city A.
Let the time taken by the 'To' flight from B to C be '$2t_1$', minutes and city C be 'h_1' minutes ahead of city B.
So, the time taken by a 'Fro' flight from C to B will be t_1 minutes.
$2t_1 + h_1 = 180$ (9:30 AM – 12:30 PM)
$t_1 - h_1 = 60$ (3 PM – 4 PM)
So, the values of t_1 and h_1 are 80 and 20, respectively.

This means a 'To' journey from B to C takes 2 hr 40 minutes and city C is 20 minutes ahead of city B.
Similarly, using the same logic, a 'To' journey from C to D takes 4 hr 30 minutes and D is 2 hours ahead of city C.
A 'To' journey from D to E takes 6 hours and city E is 30 minutes ahead of city D.

Flights	To' flight Time	Fro' flight Time	Time zone difference
A-B	150 minutes	75 minutes	B ahead by 90 minutes
B-C	2 hr 40 minutes	80 minutes	C ahead by 20 minutes
C-D	4 hr 30 minutes	2 hr 15 minutes	D ahead by 2 hrs
D-E	6 hrs	3 hrs	E ahead by 30 minutes

The time taken from A to B, B to C and C to D is 2 hr 30 minutes + 2 hr 40 minutes + 4 hr 30 minutes i.e. 9 hr 40 minutes. Also, he will have to wait for 22 hr 30 minutes at B, and 19 hr 15 minutes at C. So, the total time taken is 51 hr 25 minutes i.e. 3085 minutes.

FeedBack

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

Six girls – Alka, Barkha, Chitra, Devi, Ela, and Fiza - talk about their parents having surnames - Saxena, Sinha, Singh, Arora, Pandey and Gupta - not necessarily in this order. For no two girls the surnames of their Mothers is the same. Same is true for their fathers.
Further, no two girls have parents with the same pair of surnames. Also, the surnames of both, father and mother of any girl, cannot be the same. Further, it is known that the age of each girl, is a distinct positive integer less than 28 and more than 20 except 22.

Some additional information is also known about the mothers, fathers and the ages of the six girls.
1. The surname of the father of Alka is the same as that of the mother of Devi, but neither of their parents is Sinha.
2. The age of Chitra is 3 years more than that of Ela.
3. The surname of the mother of one of the girls is Saxena and that of her father is Gupta and her age is 23.
4. The age of Fiza, whose father is Singh, is less than twenty-seven years, while the age of the girl whose mother is Singh is 24 years.
5. The age of Barkha, whose mother is Pandey, is the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and it is an even number.
6. The girl whose father's surname is Sinha has her mother's surname as Singh, while the surname of Devi's mother is not Gupta.

Q.43
The surname of the father of 27 year old girl is

1 **Arora**

2 **Gupta**

3 **Saxena**

4 **Singh**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

- From statement 1 and 6, we can say that the surnames of the father of Alka and the mother of Devi are same and both cannot be Gupta and Sinha.
- From statement 4 and 6, we can say that the girl whose age is 24 has her mother's surname as Singh and father's surname as Sinha.
- From statement 5, Barkha's age is an even number so her age can be either 24 or 26. Her age cannot be 24 as her mother's surname is Pandey not Singh. So, Barkha's age is 26.
- From statement 2, the age of Chitra is 3 years more than that of Ela. So, from the given ages, we can say that two cases are possible:
  a) When Chitra's age is 27 years then the age of Ela will be 24 years.
  b) When Chitra's age is 24 years then Ela's will be 21 years.

Consider case (a): i.e. Chitra's age is 27 years and Ela's age is 24 years.
From statement 5, Bharkha's age is equal to the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and Barkha's age is 26 years, so, the only possible ages of these two girls whose mother's surnames are Arora and Gupta are 25 and 27.

Chitra's age is 27 years so her surname can be Arora or Gupta. Both cases are not possible as shown in the table.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	27	Arora/Gupta	
Devi		× Sinha × Gupta	
Ela	24	Singh	Sinha
Fiza		Sinha	Singh

Not possible

Consider case (b): i.e. Chitra's age is 24 years and Ela's age is 21 years. Fiza's age is less than 27 years, so, Alka's age is 27 years and that of Fiza is 25 years.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi		× Gupta × Sinha	
Ela	21		
Fiza			Singh

Sinha will be the surname of the mother of Ela, not of Fiza as then Chitra's and Fiza's parents will have same pair of surnames; which is contradicting.
The girl whose age is 23 has her mother's surname as Saxena and father's surname as Gupta. So, in the above table, that girl cannot be Alka as her father's surname cannot be Gupta. So, that girl will be Devi. The table till now becomes:

Name	Age	Surname of mother	Surname of father
Alka	27		Saxena
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	
Fiza	25		Singh

Note: The surname of the father of Alka is the same as that of the mother of Devi.

Now, the surname of the mother of Alka cannot be Gupta as then Alka's and Devi's parents will have same pair of surnames. Therefore, the surname of the mother of Alka is Arora and that of the mother of Fiza is Gupta.
Given that the surnames of both, father and mother of any girl, cannot be same therefore, Pandey cannot be the surname of the father of Barkha.
Hence, the surname of the father of Barkha will be Arora and that of the father of Ela will be Pandey. Hence, the final table will be as follows:

Name	Age	Surname of mother	Surname of father
Alka	27	Arora	Saxena
Barkha	26	Pandey	Arora
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	Pandey
Fiza	25	Gupta	Singh

The surname of the father of 27 years old girl is Saxena.

FeedBack

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

Six girls – Alka, Barkha, Chitra, Devi, Ela, and Fiza - talk about their parents having surnames - Saxena, Sinha, Singh, Arora, Pandey and Gupta - not necessarily in this order. For no two girls the surnames of their Mothers is the same. Same is true for their fathers.
Further, no two girls have parents with the same pair of surnames. Also, the surnames of both, father and mother of any girl, cannot be the same. Further, it is known that the age of each girl, is a distinct positive integer less than 28 and more than 20 except 22.

Some additional information is also known about the mothers, fathers and the ages of the six girls.
1. The surname of the father of Alka is the same as that of the mother of Devi, but neither of their parents is Sinha.
2. The age of Chitra is 3 years more than that of Ela.
3. The surname of the mother of one of the girls is Saxena and that of her father is Gupta and her age is 23.
4. The age of Fiza, whose father is Singh, is less than twenty-seven years, while the age of the girl whose mother is Singh is 24 years.
5. The age of Barkha, whose mother is Pandey, is the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and it is an even number.
6. The girl whose father's surname is Sinha has her mother's surname as Singh, while the surname of Devi's mother is not Gupta.

Q.44
What is the age (in years) of Barkha?

1 **25**

2 **26**

3 **27**

4 **21**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

- From statement 1 and 6, we can say that the surnames of the father of Alka and the mother of Devi are same and both cannot be Gupta and Sinha.
- From statement 4 and 6, we can say that the girl whose age is 24 has her mother's surname as Singh and father's surname as Sinha.
- From statement 5, Barkha's age is an even number so her age can be either 24 or 26. Her age cannot be 24 as her mother's surname is Pandey not Singh. So, Barkha's age is 26.
- From statement 2, the age of Chitra is 3 years more than that of Ela. So, from the given ages, we can say that two cases are possible:
  a) When Chitra's age is 27 years then the age of Ela will be 24 years.
  b) When Chitra's age is 24 years then Ela's will be 21 years.

Consider case (a): i.e. Chitra's age is 27 years and Ela's age is 24 years.
From statement 5, Bharkha's age is equal to the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and Barkha's age is 26 years, so, the only possible ages of these two girls whose mother's surnames are Arora and Gupta are 25 and 27.

Chitra's age is 27 years so her surname can be Arora or Gupta. Both cases are not possible as shown in the table.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	27	Arora/Gupta	
Devi		× Sinha × Gupta	
Ela	24	Singh	Sinha
Fiza		Sinha	Singh

Not possible

Consider case (b): i.e. Chitra's age is 24 years and Ela's age is 21 years. Fiza's age is less than 27 years, so, Alka's age is 27 years and that of Fiza is 25 years.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi		× Gupta × Sinha	
Ela	21		
Fiza			Singh

Sinha will be the surname of the mother of Ela, not of Fiza as then Chitra's and Fiza's parents will have same pair of surnames; which is contradicting.
The girl whose age is 23 has her mother's surname as Saxena and father's surname as Gupta. So, in the above table, that girl cannot be Alka as her father's surname cannot be Gupta. So, that girl will be Devi. The table till now becomes:

Name	Age	Surname of mother	Surname of father
Alka	27		Saxena
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	
Fiza	25		Singh

Note: The surname of the father of Alka is the same as that of the mother of Devi.

Now, the surname of the mother of Alka cannot be Gupta as then Alka's and Devi's parents will have same pair of surnames. Therefore, the surname of the mother of Alka is Arora and that of the mother of Fiza is Gupta.
Given that the surnames of both, father and mother of any girl, cannot be same therefore, Pandey cannot be the surname of the father of Barkha.
Hence, the surname of the father of Barkha will be Arora and that of the father of Ela will be Pandey. Hence, the final table will be as follows:

Name	Age	Surname of mother	Surname of father
Alka	27	Arora	Saxena
Barkha	26	Pandey	Arora
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	Pandey
Fiza	25	Gupta	Singh

The age of Barkha is 26 years.

FeedBack

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

Six girls – Alka, Barkha, Chitra, Devi, Ela, and Fiza - talk about their parents having surnames - Saxena, Sinha, Singh, Arora, Pandey and Gupta - not necessarily in this order. For no two girls the surnames of their Mothers is the same. Same is true for their fathers.
Further, no two girls have parents with the same pair of surnames. Also, the surnames of both, father and mother of any girl, cannot be the same. Further, it is known that the age of each girl, is a distinct positive integer less than 28 and more than 20 except 22.

Some additional information is also known about the mothers, fathers and the ages of the six girls.
1. The surname of the father of Alka is the same as that of the mother of Devi, but neither of their parents is Sinha.
2. The age of Chitra is 3 years more than that of Ela.
3. The surname of the mother of one of the girls is Saxena and that of her father is Gupta and her age is 23.
4. The age of Fiza, whose father is Singh, is less than twenty-seven years, while the age of the girl whose mother is Singh is 24 years.
5. The age of Barkha, whose mother is Pandey, is the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and it is an even number.
6. The girl whose father's surname is Sinha has her mother's surname as Singh, while the surname of Devi's mother is not Gupta.

Q.45
Which of the following is a correct combination of mother's surname - father's surname (in that order only)?

1 **Saxena- Arora**

2 **Pandey-Sinha**

3 **Gupta- Singh**

4 **Arora-Gupta**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

- From statement 1 and 6, we can say that the surnames of the father of Alka and the mother of Devi are same and both cannot be Gupta and Sinha.
- From statement 4 and 6, we can say that the girl whose age is 24 has her mother's surname as Singh and father's surname as Sinha.
- From statement 5, Barkha's age is an even number so her age can be either 24 or 26. Her age cannot be 24 as her mother's surname is Pandey not Singh. So, Barkha's age is 26.
- From statement 2, the age of Chitra is 3 years more than that of Ela. So, from the given ages, we can say that two cases are possible:
  a) When Chitra's age is 27 years then the age of Ela will be 24 years.
  b) When Chitra's age is 24 years then Ela's will be 21 years.

Consider case (a): i.e. Chitra's age is 27 years and Ela's age is 24 years.
From statement 5, Bharkha's age is equal to the average of the ages of the girl whose mother is Arora and the girl whose mother

is Gupta and Barkha's age is 26 years, so, the only possible ages of these two girls whose mother's surnames are Arora and Gupta are 25 and 27.
Chitra's age is 27 years so her surname can be Arora or Gupta. Both cases are not possible as shown in the table.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	27	Arora/Gupta	
Devi		× Sinha × Gupta	
Ela	24	Singh	Sinha
Fiza		Sinha	Singh

Not possible

Consider case (b): i.e. Chitra's age is 24 years and Ela's age is 21 years. Fiza's age is less than 27 years, so, Alka's age is 27 years and that of Fiza is 25 years.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi		× Gupta × Sinha	
Ela	21		
Fiza			Singh

Sinha will be the surname of the mother of Ela, not of Fiza as then Chitra's and Fiza's parents will have same pair of surnames; which is contradicting.
The girl whose age is 23 has her mother's surname as Saxena and father's surname as Gupta. So, in the above table, that girl cannot be Alka as her father's surname cannot be Gupta. So, that girl will be Devi. The table till now becomes:

Name	Age	Surname of mother	Surname of father
Alka	27		Saxena
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	
Fiza	25		Singh

Note: The surname of the father of Alka is the same as that of the mother of Devi.

Now, the surname of the mother of Alka cannot be Gupta as then Alka's and Devi's parents will have same pair of surnames. Therefore, the surname of the mother of Alka is Arora and that of the mother of Fiza is Gupta.
Given that the surnames of both, father and mother of any girl, cannot be same therefore, Pandey cannot be the surname of the father of Barkha.
Hence, the surname of the father of Barkha will be Arora and that of the father of Ela will be Pandey. Hence, the final table will be as follows:

Name	Age	Surname of mother	Surname of father
Alka	27	Arora	Saxena
Barkha	26	Pandey	Arora
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	Pandey
Fiza	25	Gupta	Singh

Gupta – Singh is a correct combination.

FeedBack

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

Six girls – Alka, Barkha, Chitra, Devi, Ela, and Fiza - talk about their parents having surnames - Saxena, Sinha, Singh, Arora, Pandey and Gupta - not necessarily in this order. For no two girls the surnames of their Mothers is the same. Same is true for their fathers.
Further, no two girls have parents with the same pair of surnames. Also, the surnames of both, father and mother of any girl, cannot be the same. Further, it is known that the age of each girl, is a distinct positive integer less than 28 and more than 20 except 22.

Some additional information is also known about the mothers, fathers and the ages of the six girls.
1. The surname of the father of Alka is the same as that of the mother of Devi, but neither of their parents is Sinha.
2. The age of Chitra is 3 years more than that of Ela.
3. The surname of the mother of one of the girls is Saxena and that of her father is Gupta and her age is 23.
4. The age of Fiza, whose father is Singh, is less than twenty-seven years, while the age of the girl whose mother is Singh is 24 years.
5. The age of Barkha, whose mother is Pandey, is the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and it is an even number.
6. The girl whose father's surname is Sinha has her mother's surname as Singh, while the surname of Devi's mother is not Gupta.

Q.46

If the age of the girl whose mother's surname is Gupta is mistakenly interchanged with the age of the girl whose father's surname is Gupta, in some singing competition's form, then what is the average (in years) of the ages of the girls, among these 6 girls, whose father's surname start with same initials in the singing competition?

1 **25.33**

2 **22**

3 **24.66**

4 **23.66**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

- From statement 1 and 6, we can say that the surnames of the father of Alka and the mother of Devi are same and both cannot be Gupta and Sinha.
- From statement 4 and 6, we can say that the girl whose age is 24 has her mother's surname as Singh and father's surname as Sinha.
- From statement 5, Barkha's age is an even number so her age can be either 24 or 26. Her age cannot be 24 as her mother's surname is Pandey not Singh. So, Barkha's age is 26.
- From statement 2, the age of Chitra is 3 years more than that of Ela. So, from the given ages, we can say that two cases are possible:
  a) When Chitra's age is 27 years then the age of Ela will be 24 years.
  b) When Chitra's age is 24 years then Ela's will be 21 years.

Consider case (a): i.e. Chitra's age is 27 years and Ela's age is 24 years.
From statement 5, Bharkha's age is equal to the average of the ages of the girl whose mother is Arora and the girl whose mother is Gupta and Barkha's age is 26 years, so, the only possible ages of these two girls whose mother's surnames are Arora and Gupta are 25 and 27.
Chitra's age is 27 years so her surname can be Arora or Gupta. Both cases are not possible as shown in the table.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	27	Arora/Gupta	
Devi		× Sinha × Gupta	
Ela	24	Singh	Sinha
Fiza		Sinha	Singh

Not possible

Consider case (b): i.e. Chitra's age is 24 years and Ela's age is 21 years. Fiza's age is less than 27 years, so, Alka's age is 27 years and that of Fiza is 25 years.

Name	Age	Surname of mother	Surname of father
Alka		× Sinha	× Gupta
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi		× Gupta × Sinha	
Ela	21		
Fiza			Singh

Sinha will be the surname of the mother of Ela, not of Fiza as then Chitra's and Fiza's parents will have same pair of surnames; which is contradicting.
The girl whose age is 23 has her mother's surname as Saxena and father's surname as Gupta. So, in the above table, that girl cannot be Alka as her father's surname cannot be Gupta. So, that girl will be Devi. The table till now becomes:

Name	Age	Surname of mother	Surname of father
Alka	27		Saxena
Barkha	26	Pandey	
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	
Fiza	25		Singh

Note: The surname of the father of Alka is the same as that of the mother of Devi.

Now, the surname of the mother of Alka cannot be Gupta as then Alka's and Devi's parents will have same pair of surnames. Therefore, the surname of the mother of Alka is Arora and that of the mother of Fiza is Gupta.
Given that the surnames of both, father and mother of any girl, cannot be same therefore, Pandey cannot be the surname of the father of Barkha.
Hence, the surname of the father of Barkha will be Arora and that of the father of Ela will be Pandey. Hence, the final table will be as follows:

Name	Age	Surname of mother	Surname of father
Alka	27	Arora	Saxena
Barkha	26	Pandey	Arora
Chitra	24	Singh	Sinha
Devi	23	Saxena	Gupta
Ela	21	Sinha	Pandey
Fiza	25	Gupta	Singh

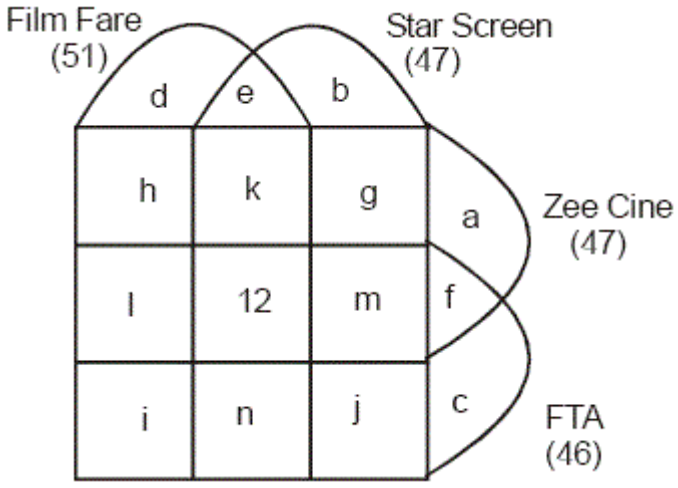
According to the question, the age of Fiza is interchanged with the age of Devi. So, now Fiza's age becomes 23 and Devi's age becomes 25.
Those girls whose father's surnames start with same initial i.e. 'S' from the final table are Alka, Chitra and Fiza.

$\therefore$ The average of their ages (in years) is $= \frac{27 + 24 + 23}{3} = 24.66.$

FeedBack

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

An Indian news channel "Khabardar news 24 x 7" is collecting some data of 82 actors to know the awards won by them from these four famous awards - Filmfare, Star Screen, Zee Cine and FTA. Each of these 82 actors has got at least one of the four awards. The Venn-diagram shown below represents these awards and the various possible combination of awards given to these actors. It is known from the diagram that 51 actors won Filmfare, 47 actors won Star Screen, 47 won Zee Cine and 46 won FTA. Every alphabet written in the figure represents the number of actors winning the respective combination of awards.



Some additional information is also known:
(i) The number of actors who got exactly 1 award, 2 awards and all 4 awards is 14, 39 and 12 respectively.
(ii) a, b, c and d are in an Arithmetic Progression having common difference 1 (in that order). Same is true for e, f, g, h, i and j, in that same order.

Q.47
Find the number of actors who won Filmfare, Star Screen and Zee Cine awards but not FTA.

1 **3**

2 **9**

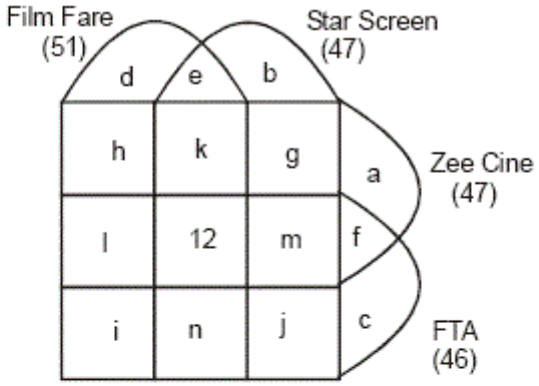
3 **4**

4 **6**

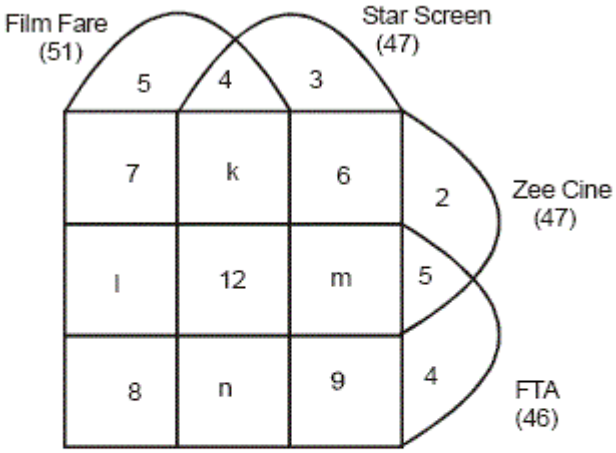
Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

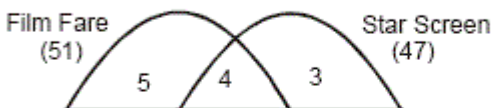


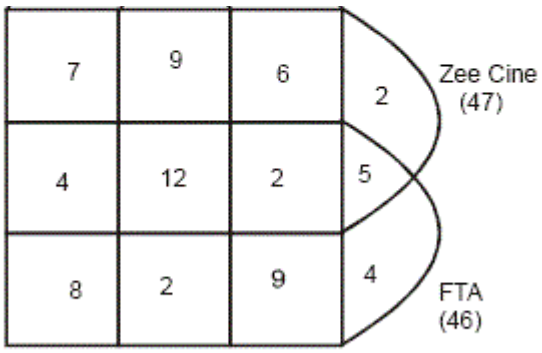
Let I, II, III and IV denote the number of actors who got exactly 1 award, 2 awards, 3 awards and 4 awards respectively.
I + II + III + IV = 82
14 + 39 + III + 12 = 82
$\Rightarrow$ III = 17
So, k + l + m + n = 17 ... (1)
a + b + c + d = 14 ... given
$\Rightarrow$ a + (a + 1) + (a + 2) + (a + 3) = 14 (as a, b, c, d are in A.P.)
$\Rightarrow$ 4a = 8 $\Rightarrow$ a = 2
So, a = 2, b = 3, c = 4 and d = 5
Similarly,
e + f + g + h + i + j = 39
$\Rightarrow$ e + (e + 1) + (e + 2) + (e + 3) + (e + 4) + (e + 5) = 39
$\Rightarrow$ 6e + 15 = 39
$\Rightarrow$ e = 4
So, e = 4, f = 5, g = 6, h = 7, i = 8, j = 9
Putting the values in the venn-diagram, we get



Now, from Filmfare awards, we can say that
51 = 5 + 4 + 7 + k + l + 12 + n + 8
$\Rightarrow$ k + l + n = 15
As we know, III = 17
$\Rightarrow$ k + l + n + m = 17
$\therefore$ m = 2
Similarly, from Star Screen
47 = 4 + 3 + k + 6 + 12 + m + n + 9
$\Rightarrow$ k + m + n = 13
$\therefore$ l = 17 – 13 = 4
From Zee Cine,
47 = 7 + k + 6 + 2 + l + 12 + m + 5
$\Rightarrow$ k + l + m = 15
$\therefore$ n = 2

Now, m = 2, l = 4, n = 2
$\therefore$ k = 17 – (2 + 4 + 2) = 9
Now, final venn-diagram will look like



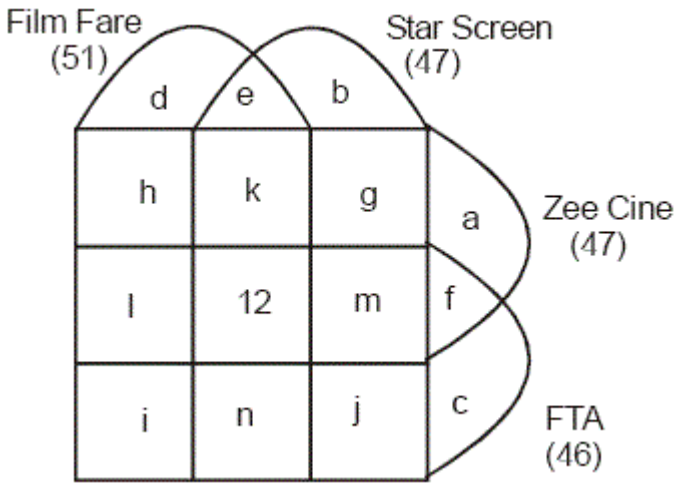


The number of actors who won Filmfare, Star Screen and Zee Cine awards, but not FTA is 9.

FeedBack

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

An Indian news channel "Khabardar news 24 x 7" is collecting some data of 82 actors to know the awards won by them from these four famous awards - Filmfare, Star Screen, Zee Cine and FTA. Each of these 82 actors has got at least one of the four awards. The Venn-diagram shown below represents these awards and the various possible combination of awards given to these actors. It is known from the diagram that 51 actors won Filmfare, 47 actors won Star Screen, 47 won Zee Cine and 46 won FTA. Every alphabet written in the figure represents the number of actors winning the respective combination of awards.



Some additional information is also known:
(i) The number of actors who got exactly 1 award, 2 awards and all 4 awards is 14, 39 and 12 respectively.
(ii) a, b, c and d are in an Arithmetic Progression having common difference 1 (in that order). Same is true for e, f, g, h, i and j, in that same order.

Q.48
The number of actors who won Zee Cine and FTA only is

1 **4**

2 **5**

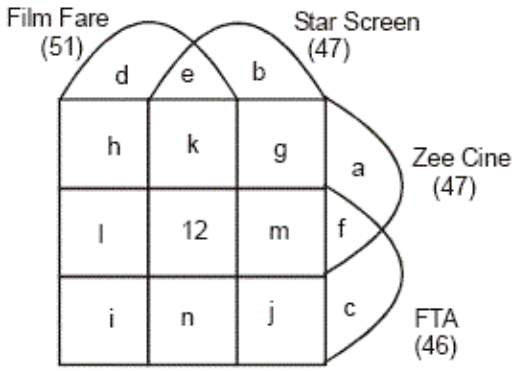
3 **6**

4 **7**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution



Let I, II, III and IV denote the number of actors who got exactly 1 award, 2 awards, 3 awards and 4 awards respectively.
I + II + III + IV = 82
14 + 39 + III + 12 = 82
$\Rightarrow$ III = 17
So, k + l + m + n = 17 ... (1)
a + b + c + d = 14 ... given
$\Rightarrow$ a + (a + 1) + (a + 2) + (a + 3) = 14 (as a, b, c, d are in A.P.)
$\Rightarrow$ 4a = 8 $\Rightarrow$ a = 2
So, a = 2, b = 3, c = 4 and d = 5
Similarly,
e + f + g + h + i + j = 39
$\Rightarrow$ e + (e + 1) + (e + 2) + (e + 3) + (e + 4) + (e + 5) = 39
$\Rightarrow$ 6e + 15 = 39
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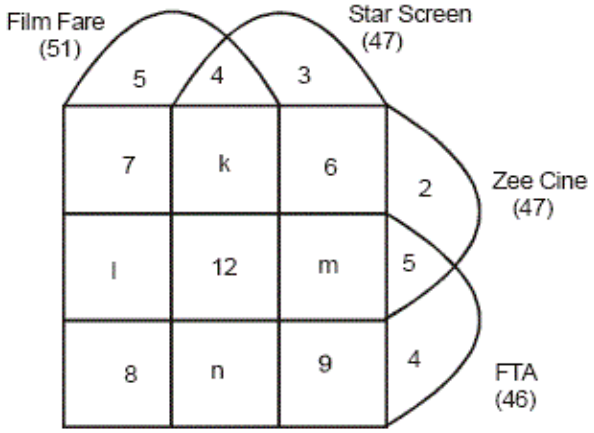
So, e = 4, f = 5, g = 6, h = 7, i = 8, j = 9
Putting the values in the venn-diagram, we get



Now, from Filmfare awards, we can say that
51 = 5 + 4 + 7 + k + l + 12 + n + 8
$\Rightarrow$ k + l + n = 15
As we know, III = 17
$\Rightarrow$ k + l + n + m = 17
$\therefore$ m = 2
Similarly, from Star Screen

$47 = 4 + 3 + k + 6 + 12 + m + n + 9$
$\Rightarrow k + m + n = 13$
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$\Rightarrow k + l + m = 15$
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Now, $m = 2$, $l = 4$, $n = 2$
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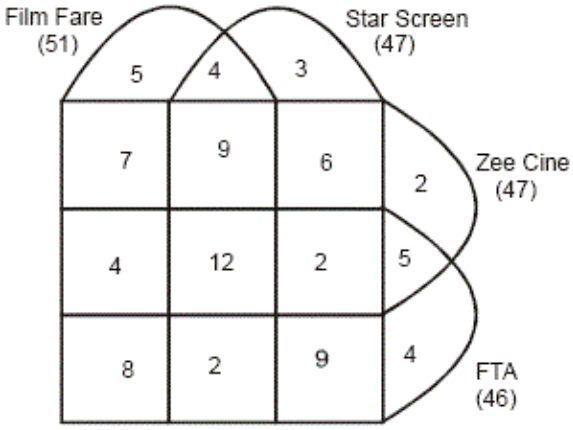
Now, final venn-diagram will look like

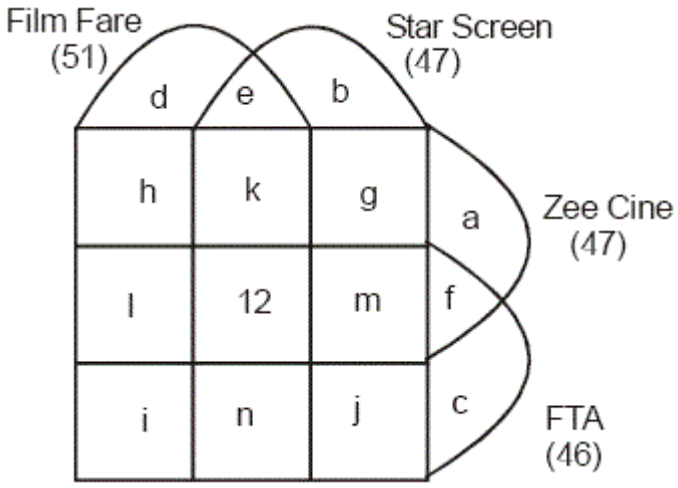


The number of actors who won Zee Cine and FTA only is 5.

FeedBack

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

An Indian news channel "Khabardar news 24 x 7" is collecting some data of 82 actors to know the awards won by them from these four famous awards - Filmfare, Star Screen, Zee Cine and FTA. Each of these 82 actors has got at least one of the four awards. The Venn-diagram shown below represents these awards and the various possible combination of awards given to these actors. It is known from the diagram that 51 actors won Filmfare, 47 actors won Star Screen, 47 won Zee Cine and 46 won FTA. Every alphabet written in the figure represents the number of actors winning the respective combination of awards.



Some additional information is also known:
(i) The number of actors who got exactly 1 award, 2 awards and all 4 awards is 14, 39 and 12 respectively.
(ii) a, b, c and d are in an Arithmetic Progression having common difference 1 (in that order). Same is true for e, f, g, h, i and j, in that same order.

Q.49
k, l, m, n are in

1 **A.P. with common difference 1**

2 **G.P. with common ratio 1**

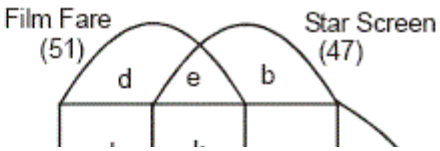
3 **A.P. with common difference 2**

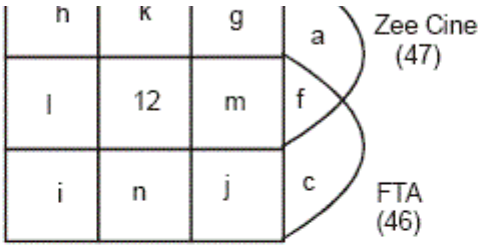
4 **No special order**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution





Let I, II, III and IV denote the number of actors who got exactly 1 award, 2 awards, 3 awards and 4 awards respectively.
I + II + III + IV = 82
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e + f + g + h + i + j = 39
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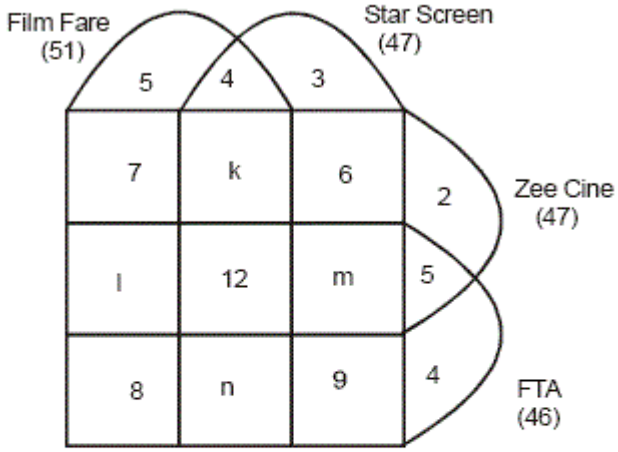
Putting the values in the venn-diagram, we get



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$\Rightarrow$ k + l + n = 15
As we know, III = 17
$\Rightarrow$ k + l + n + m = 17
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Similarly, from Star Screen
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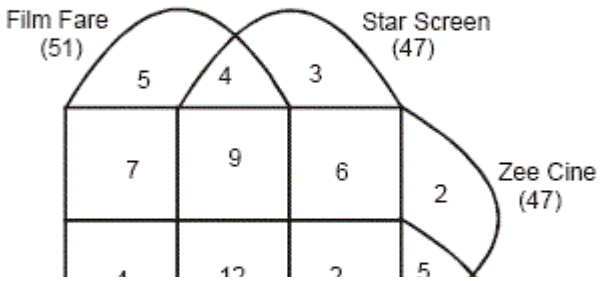
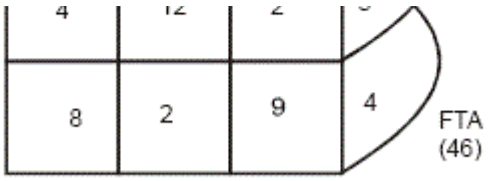
Now, m = 2, l = 4, n = 2
$\therefore$ k = 17 – (2 + 4 + 2) = 9
Now, final venn-diagram will look like



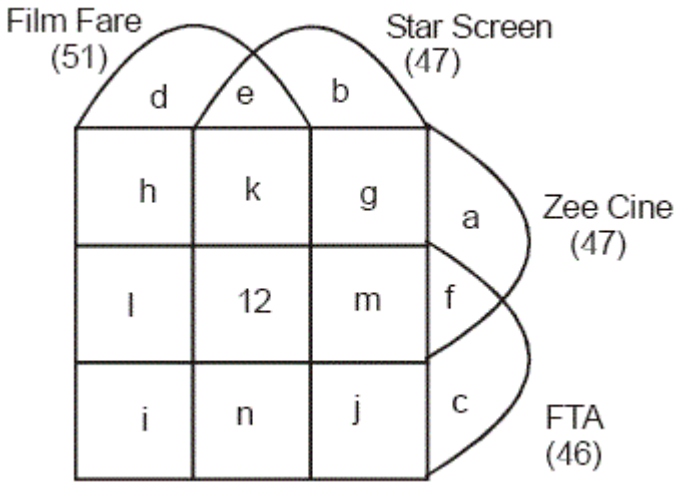


k, l, m and n are in no special order.

FeedBack

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

An Indian news channel "Khabardar news 24 x 7" is collecting some data of 82 actors to know the awards won by them from these four famous awards - Filmfare, Star Screen, Zee Cine and FTA. Each of these 82 actors has got at least one of the four awards. The Venn-diagram shown below represents these awards and the various possible combination of awards given to these actors. It is known from the diagram that 51 actors won Filmfare, 47 actors won Star Screen, 47 won Zee Cine and 46 won FTA. Every alphabet written in the figure represents the number of actors winning the respective combination of awards.



Some additional information is also known:
(i) The number of actors who got exactly 1 award, 2 awards and all 4 awards is 14, 39 and 12 respectively.
(ii) a, b, c and d are in an Arithmetic Progression having common difference 1 (in that order). Same is true for e, f, g, h, i and j, in that same order.

Q.50
How many actors won at least 3 awards out of the given four awards?

1 **29**

2 **30**

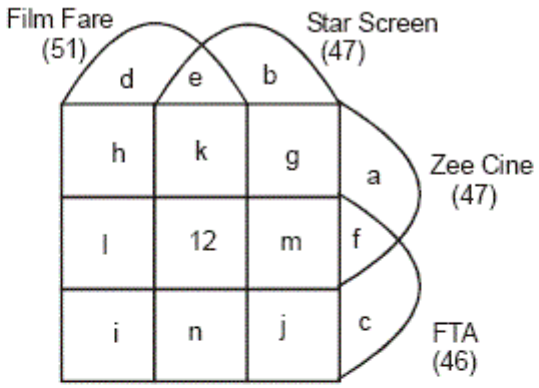
3 **35**

4 **40**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution



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I + II + III + IV = 82
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So, k + l + m + n = 17 ... (1)
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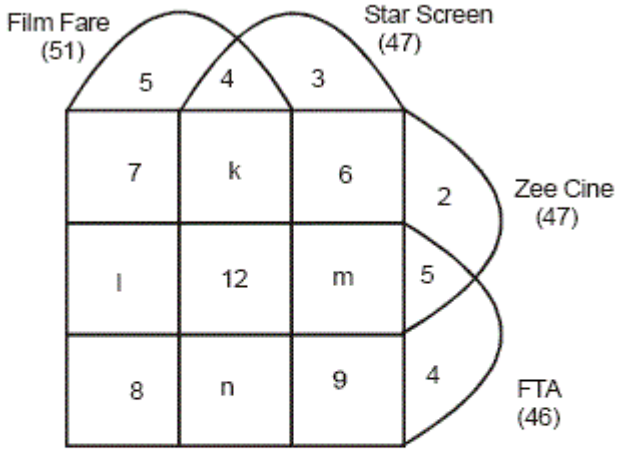
$\Rightarrow$ 6e + 15 = 39
$\Rightarrow$ e = 4
So, e = 4, f = 5, g = 6, h = 7, i = 8, j = 9
Putting the values in the venn-diagram, we get



Now, from Filmfare awards, we can say that
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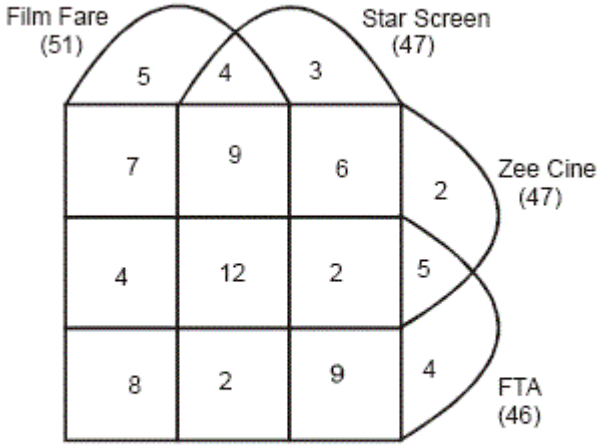
Now, final venn-diagram will look like



Total 29 actors won atleast 3 awards out of the given four awards.

FeedBack

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

Eight players - A, B, C, D, E, F, G and H - played in a chess tournament. Initially, in round-1 there were 4 matches (match 1, match 2, match 3 and match 4) involving 2 players in each match, and no one played more than one match in a round. The winners of these four matches played in round-2 having 2 matches (match 1 and match 2), where again every player played only in one match in that round. The winners of these two matches reached to the next round i.e, the final.

It is also known that:
I. A and B won at least 1 match, C and D lost 1 match, E and F did not win more than 1 match and G and H did not win more than 2 matches.
II. A did not play match 1 (of any of the 2 rounds) and B did not play match 2 (of any of the 2 rounds).

Q.51
For how many players, out of these 8 players, was it possible to reach the final?

Solution:
Correct Answer : 6

Bookmark

Answer key/Solution

E and F surely did not play the final as they did not win more than 1 match. Also, A and B must have played round 2 as they have won atleast 1 match.

Now consider a particular case:

	Match 1	Match 2	Match 3	Match 4
Round 1	B vs E	A vs F	C vs G	D vs H
Winners in Round 1	B	A	C/G	D/H
	Match 1		Match 2	
Round 2	B vs C/D/G/H		A vs C/D/G/H	

As C and D lost 1 match and G and H did not win more than 2 matches, so, clearly one of A and B must have won the final. This implies that either both A and B or one of them reached the final. Accordingly, the possibilities of winners in round 2 are–

	Winners of Match 1 in round 2	Winners of Match 2 in round 2
(i)	B	A/C/D/G/H
(ii)	B/C/D/G/H	A

So, clearly, it was possible for total 6 players i.e. A, B, C, D, G and H to reach the final.

FeedBack

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

Eight players - A, B, C, D, E, F, G and H - played in a chess tournament. Initially, in round-1 there were 4 matches (match 1, match 2, match 3 and match 4) involving 2 players in each match, and no one played more than one match in a round. The winners of these four matches played in round-2 having 2 matches (match 1 and match 2), where again every player played only in one match in that round. The winners of these two matches reached to the next round i.e, the final.

It is also known that:
I. A and B won at least 1 match, C and D lost 1 match, E and F did not win more than 1 match and G and H did not win more than 2 matches.
II. A did not play match 1 (of any of the 2 rounds) and B did not play match 2 (of any of the 2 rounds).

Q.52
How many different pairs are possible who could have played match 2 of round 2?

Solution:
Correct Answer : 6

Bookmark

Answer key/Solution

E and F surely did not play the final as they did not win more than 1 match. Also, A and B must have played round 2 as they have won atleast 1 match.

	Match 1	Match 2	Match 3	Match 4
Round 1	B vs E	A vs F	C vs G	D vs H
Winners in Round 1	B	A	C/G	D/H
	Match 1		Match 2	
Round 2	B vs C/D/G/H		A vs C/D/G/H	

From the above table, four different pairs are possible who could have played match 2 of round 2. i.e. AC, AD, AG and AH.

Now, consider another possible case when E and F won round 1 but as they did not win more than 1 match so they cannot win round 2. A and B won atleast 1 match so, they definitely won round 1.

	Match 1	Match 2	Match 3	Match 4
Round 1	E vs D	F vs C	A vs G	B vs H
Winners in Round 1	E	F	A	B
	Match 1		Match 2	
Round 2	B vs E/F		A vs E/F	

From the above table, 2 more pairs are possible i.e. AE and AF who could have played match 2 of round 2.
Hence, in total 6 different pairs are possible.

FeedBack

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

Eight players - A, B, C, D, E, F, G and H - played in a chess tournament. Initially, in round-1 there were 4 matches (match 1, match 2, match 3 and match 4) involving 2 players in each match, and no one played more than one match in a round. The winners of these four matches played in round-2 having 2 matches (match 1 and match 2), where again every player played only in one match in that round. The winners of these two matches reached to the next round i.e, the final.

It is also known that:
I. A and B won at least 1 match, C and D lost 1 match, E and F did not win more than 1 match and G and H did not win more than 2 matches.
II. A did not play match 1 (of any of the 2 rounds) and B did not play match 2 (of any of the 2 rounds).

Q.53

If the winners of match 3 and match 4 played in the final, and the winners of match 1 and match 3 of round 1 played against each other in match 2 of round 2, then who won the tournament in final?

1 **Either A or B**

2 **Definitely A**

3 **Definitely B**

4 **Either G or H**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

E and F surely did not play the final as they did not win more than 1 match. Also, A and B must have played round 2 as they have won atleast 1 match.

Consider a particular case:

	Match 1	Match 2	Match 3	Match 4
Round 1	E vs D	F vs C	A vs G	B vs H
Winners in Round 1	E	F	A	B
	Match 1		Match 2	
Round 2	B vs F		A vs E	

From the above table, the winners of match 3 and match 4 i.e. A and B played in the final. The winners of match 1 and match 3 of round 1 i.e. E and A played against each other in match 2 of round 2, this clearly means that in match 1 of round 2, B played against F. As E and F did not win more than one match, so, definitely, either A or B won the tournament in final.

FeedBack

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

Eight players - A, B, C, D, E, F, G and H - played in a chess tournament. Initially, in round-1 there were 4 matches (match 1, match 2, match 3 and match 4) involving 2 players in each match, and no one played more than one match in a round. The winners of these four matches played in round-2 having 2 matches (match 1 and match 2), where again every player played only in one match in that round. The winners of these two matches reached to the next round i.e, the final.

It is also known that:
I. A and B won at least 1 match, C and D lost 1 match, E and F did not win more than 1 match and G and H did not win more than 2 matches.
II. A did not play match 1 (of any of the 2 rounds) and B did not play match 2 (of any of the 2 rounds).

Q.54
If G and H played against each other in match 1 of round 1, and B and D played against each other in match1 of round 2, then how many pairs of players are possible who could have played the final?

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

E and F surely did not play the final as they did not win more than 1 match. Also, A and B must have played round 2 as they have won atleast 1 match.

G and H played against each other in match 1 of round 1, and B and D played against each other in match 1 of round 2.
So, the possible case is

	Match 1	Match 2	Match 3	Match 4
Round 1	G vs H	A vs F	B vs E	C vs D
Winners in Round 1	G/H	A	B	D
	Match 1		Match 2	
Round 2	B vs D		A vs G/H	

As we know that either A or B won the tournament in the final so, the different pairs of players are possible who could have played the final.
1) B vs A
2) B vs G
3) D vs A
4) B vs H
Hence, total 4 pairs are possible.

FeedBack

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

Punjab National Bank, to get their defaulted money back, has decided to auction certain properties of Vijay Mallya which includes - 2 bungalows, 1 jet,1 yacht, a farmhouse of 5-acre area, a farmhouse of 6-acre area and a private resort. Five well-known billionaires of our country - Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar - planned to take part in that auction. Each of them has some fixed budget amount in their mind to buy these properties within that amount. The total budget of Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar are Rs. 290 crores, 350 crores, 275 crores, 270 crores and 280 crores respectively. The following table shows the price bid by each person for each property. The order of properties to be auctioned is same as written in the table i.e, first Farmhouse 1 (5-acre), then Farmhouse -2 (6 acre) and so on till Yacht auctioned at the end. It is also known that every property was sold out among these five billionaires only. Each of them tried to bid the best possible amount within their budget. Each property was sold to the one bidding the highest amount for that property and also that amount must be a multiple of 10 crores. Some cells in the table are left blank intentionally.

Billionaires	Value (in crores)						
	Farmhouse1	Farmhouse2	Resort	Bungalow1	Bungalow2	Jet	Yacht
Mr.Heera	190	100		100		92	95
Mr.Panna	140		160		150		40
Mr.Tara		180				80	90
Mr.Moti	160	170	150	120			120
Mr.Jawahar	150		170	110	105	90	

It is also known that each of them is left with some money at the end of the auction which is (Rs. in crores) 40, 50, 95, 100 and 110, not necessarily in the same order.

Q.55

Find the difference between the money (in crores) spent by Mr. Heera and by Mr. Panna.

1 **120**

2 **100**

3 **150**

4 **130**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Mr. Heera has bid the highest among the five people to buy Farmhouse 1 at a price of Rs 190 crores. He has a total budget of Rs 290 crores, so his leftover amount will be Rs. 100 crores.
Mr. Tara has bid the highest amount, which is Rs. 180 crores, to buy Farmhouse 2. He has a total budget of Rs. 275 crores, so his leftover amount will be Rs. 95 crores.
Mr. Jawahar has bid an amount of Rs. 170 crores to buy Resort and this amount is highest among all five people. So, he must have bought this property at this amount.
So, Mr. Jawahar's leftover amount = 280 – 170 = Rs. 110 crores
Mr. Moti bid the highest amount of Rs. 120 crores for Yacht. Since, Heera, Tara and Jawahar have already bought properties and Panna's bidding amount is lower than that of Moti, so, Yacht was bought by Moti.
Further, from the table, provided in the question, it can be concluded that the other item Moti would have bought is Jet for Rs. 100 crores.
So, Moti's leftover amount = 270 – 220 = Rs. 50 crores.

From the table, we can conclude that Panna must have left with Rs. 40 crore as his last bid for Yacht is of Rs. 40 crore and there is one person who has left with final 40 crores at the end. So the total amount spent by Panna must be Rs. 310 crores.
So final table will look like:

	Initial Amount (in crores)	Left amount (in Crores)	Property bought
Heera	290	100	Farmhouse-1 - 190 crores
Panna	350	40	Bungalow 1 & 2 - 160 & 150 crores
Tara	275	95	Farmhouse-2 - 180 crores
Moti	270	50	Jet-100 crores, Yacht-120 crores
Jawahar	280	110	Jawahar - 170 crores- Resort

Difference between the money spent by Mr. Heera and Panna = 310 – 190 = Rs. 120 crores.

FeedBack

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

Punjab National Bank, to get their defaulted money back, has decided to auction certain properties of Vijay Mallya which includes - 2 bungalows, 1 jet,1 yacht, a farmhouse of 5-acre area, a farmhouse of 6-acre area and a private resort. Five well-known billionaires of our country - Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar - planned to take part in that auction. Each of them has some fixed budget amount in their mind to buy these properties within that amount. The total budget of Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar are Rs. 290 crores, 350 crores, 275 crores, 270 crores and 280 crores respectively. The following table shows the price bid by each person for each property. The order of properties to be auctioned is same as written in the table i.e, first Farmhouse 1 (5-acre), then Farmhouse -2 (6 acre) and so on till Yacht auctioned at the end. It is also known that every property was sold out among these five billionaires only. Each of them tried to bid the best possible amount within their budget. Each property was sold to the one bidding the highest amount for that property and also that amount must be a multiple of 10 crores. Some cells in the table are left blank intentionally.

Billionaires	Value (in crores)						
	Farmhouse1	Farmhouse2	Resort	Bungalow1	Bungalow2	Jet	Yacht
Mr.Heera	190	100		100		92	95
Mr.Panna	140		160		150		40
Mr.Tara		180				80	90
Mr.Moti	160	170	150	120			120
Mr.Jawahar	150		170	110	105	90	

It is also known that each of them is left with some money at the end of the auction which is (Rs. in crores) 40, 50, 95, 100 and 110, not necessarily in the same order.

Q.56

Which of the following is the difference between the final price (in crores) of Resort and that of the Bungalow 2?

1 **55**

2 **30**

3 **40**

4 **20**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Mr. Heera has bid the highest among the five people to buy Farmhouse 1 at a price of Rs 190 crores. He has a total budget of Rs 290 crores, so his leftover amount will be Rs. 100 crores.
Mr. Tara has bid the highest amount, which is Rs. 180 crores, to buy Farmhouse 2. He has a total budget of Rs. 275 crores, so his leftover amount will be Rs. 95 crores.
Mr. Jawahar has bid an amount of Rs. 170 crores to buy Resort and this amount is highest among all five people. So, he must have bought this property at this amount.
So, Mr. Jawahar's leftover amount = 280 – 170 = Rs. 110 crores
Mr. Moti bid the highest amount of Rs. 120 crores for Yacht. Since, Heera, Tara and Jawahar have already bought properties and Panna's bidding amount is lower than that of Moti, so, Yacht was bought by Moti.
Further, from the table, provided in the question, it can be concluded that the other item Moti would have bought is Jet for Rs. 100 crores.
So, Moti's leftover amount = 270 – 220 = Rs. 50 crores.

From the table, we can conclude that Panna must have left with Rs. 40 crore as his last bid for Yacht is of Rs. 40 crore and there is one person who has left with final 40 crores at the end. So the total amount spent by Panna must be Rs. 310 crores.
So final table will look like:

	Initial Amount (in crores)	Left amount (in Crores)	Property bought
Heera	290	100	Farmhouse-1 - 190 crores
Panna	350	40	Bungalow 1 & 2 - 160 & 150 crores
Tara	275	95	Farmhouse-2 - 180 crores
Moti	270	50	Jet-100 crores, Yacht-120 crores
Jawahar	280	110	Jawahar - 170 crores- Resort

Price of Resort = Rs. 170 crores.
Price of Bungalow 2 = Rs. 150 crores
Difference = 170 – 150 = Rs. 20 crores.

FeedBack

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

Punjab National Bank, to get their defaulted money back, has decided to auction certain properties of Vijay Mallya which includes - 2 bungalows, 1 jet,1 yacht, a farmhouse of 5-acre area, a farmhouse of 6-acre area and a private resort. Five well-known billionaires of our country - Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar - planned to take part in that auction. Each of them has some fixed budget amount in their mind to buy these properties within that amount. The total budget of Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar are Rs. 290 crores, 350 crores, 275 crores, 270 crores and 280 crores respectively. The following table shows the price bid by each person for each property. The order of properties to be auctioned is same as written in the table i.e, first Farmhouse 1 (5-acre), then Farmhouse -2 (6 acre) and so on till Yacht auctioned at the end. It is also known that every property was sold out among these five billionaires only. Each of them tried to bid the best possible amount within their budget. Each property was sold to the one bidding the highest amount for that property and also that amount must be a multiple of 10 crores. Some cells in the table are left blank intentionally.

Billionaires	Value (in crores)						
	Farmhouse1	Farmhouse2	Resort	Bungalow1	Bungalow2	Jet	Yacht
Mr.Heera	190	100		100		92	95
Mr.Panna	140		160		150		40
Mr.Tara		180				80	90
Mr.Moti	160	170	150	120			120
Mr.Jawahar	150		170	110	105	90	

It is also known that each of them is left with some money at the end of the auction which is (Rs. in crores) 40, 50, 95, 100 and 110, not necessarily in the same order.

Q.57

Which of the following is the final price (in crores) of Farmhouse-2?

1 **200**

2 **210**

3 **180**

4 **170**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Mr. Heera has bid the highest among the five people to buy Farmhouse 1 at a price of Rs 190 crores. He has a total budget of Rs 290 crores, so his leftover amount will be Rs. 100 crores.
Mr. Tara has bid the highest amount, which is Rs. 180 crores, to buy Farmhouse 2. He has a total budget of Rs. 275 crores, so his leftover amount will be Rs. 95 crores.
Mr. Jawahar has bid an amount of Rs. 170 crores to buy Resort and this amount is highest among all five people. So, he must have bought this property at this amount.
So, Mr. Jawahar's leftover amount = 280 – 170 = Rs. 110 crores
Mr. Moti bid the highest amount of Rs. 120 crores for Yacht. Since, Heera, Tara and Jawahar have already bought properties and Panna's bidding amount is lower than that of Moti, so, Yacht was bought by Moti.
Further, from the table, provided in the question, it can be concluded that the other item Moti would have bought is Jet for Rs. 100 crores.
So, Moti's leftover amount = 270 – 220 = Rs. 50 crores.

From the table, we can conclude that Panna must have left with Rs. 40 crore as his last bid for Yacht is of Rs. 40 crore and there is one person who has left with final 40 crores at the end. So the total amount spent by Panna must be Rs. 310 crores.
So final table will look like:

	Initial Amount (in crores)	Left amount (in Crores)	Property bought
Heera	290	100	Farmhouse-1 - 190 crores
Panna	350	40	Bungalow 1 & 2 - 160 & 150 crores
Tara	275	95	Farmhouse-2 - 180 crores
Moti	270	50	Jet-100 crores, Yacht-120 crores
Jawahar	280	110	Jawahar - 170 crores- Resort

FeedBack

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

Punjab National Bank, to get their defaulted money back, has decided to auction certain properties of Vijay Mallya which includes - 2 bungalows, 1 jet,1 yacht, a farmhouse of 5-acre area, a farmhouse of 6-acre area and a private resort. Five well-known billionaires of our country - Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar - planned to take part in that auction. Each of them has some fixed budget amount in their mind to buy these properties within that amount. The total budget of Mr. Heera, Mr. Panna, Mr. Tara, Mr. Moti and Mr. Jawahar are Rs. 290 crores, 350 crores, 275 crores, 270 crores and 280 crores respectively. The following table shows the price bid by each person for each property. The order of properties to be auctioned is same as written in the table i.e, first Farmhouse 1 (5-acre), then Farmhouse -2 (6 acre) and so on till Yacht auctioned at the end. It is also known that every property was sold out among these five billionaires only. Each of them tried to bid the best possible amount within their budget. Each property was sold to the one bidding the highest amount for that property and also that amount must be a multiple of 10 crores. Some cells in the table are left blank intentionally.

Billionaires	Value (in crores)						
	Farmhouse1	Farmhouse2	Resort	Bungalow1	Bungalow2	Jet	Yacht
Mr.Heera	190	100		100		92	95
Mr.Panna	140		160		150		40
Mr.Tara		180				80	90
Mr.Moti	160	170	150	120			120
Mr.Jawahar	150		170	110	105	90	

It is also known that each of them is left with some money at the end of the auction which is (Rs. in crores) 40, 50, 95, 100 and 110, not necessarily in the same order.

Q.58

Which of the following is the amount (in crores) spent by Panna in the auction?

1 **180**

2 **310**

3 **250**

4 **220**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Mr. Heera has bid the highest among the five people to buy Farmhouse 1 at a price of Rs 190 crores. He has a total budget of Rs 290 crores, so his leftover amount will be Rs. 100 crores.
Mr. Tara has bid the highest amount, which is Rs. 180 crores, to buy Farmhouse 2. He has a total budget of Rs. 275 crores, so his leftover amount will be Rs. 95 crores.
Mr. Jawahar has bid an amount of Rs. 170 crores to buy Resort and this amount is highest among all five people. So, he must have bought this property at this amount.
So, Mr. Jawahar's leftover amount = 280 – 170 = Rs. 110 crores
Mr. Moti bid the highest amount of Rs. 120 crores for Yacht. Since, Heera, Tara and Jawahar have already bought properties and Panna's bidding amount is lower than that of Moti, so, Yacht was bought by Moti.
Further, from the table, provided in the question, it can be concluded that the other item Moti would have bought is Jet for Rs. 100 crores.
So, Moti's leftover amount = 270 – 220 = Rs. 50 crores.

From the table, we can conclude that Panna must have left with Rs. 40 crore as his last bid for Yacht is of Rs. 40 crore and there is one person who has left with final 40 crores at the end. So the total amount spent by Panna must be Rs. 310 crores.
So final table will look like:

	Initial Amount (in crores)	Left amount (in Crores)	Property bought
Heera	290	100	Farmhouse-1 - 190 crores
Panna	350	40	Bungalow 1 & 2 - 160 & 150 crores
Tara	275	95	Farmhouse-2 - 180 crores
Moti	270	50	Jet-100 crores, Yacht-120 crores
Jawahar	280	110	Jawahar - 170 crores- Resort

FeedBack

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

'CLUB'S', a famous card game, can be played between two players at a time.
In this game, initially, 4 cards are given to each of the two players.
To start the game, each player selects one card by looking into his cards.
Based on their selected card, one of the following will be done:

Case 1: If the selected cards, one from each player, are of the same suit, then each player will give an amount equivalent to the double of the denomination of the opponent's card to his opponent.

Case 2: If selected cards, one from each player, are of the same colour, then each player will give an amount equivalent to the denomination of the opponent's card to his opponent.

Case 3: If selected cards, one from each player, are of a different colour, then each player will give an amount equivalent to the denomination of his own card to his opponent.

Denomination of J, Q, K and A will be taken as 11, 12, 13 and 1 respectively. Also, suit of Diamonds and Hearts is of red colour and that of Spades and Clubs is of black colour.

Following are the details of the cards received by the two friends, Jon and Snow, interested in playing that game.

Jon : J of Diamonds, 7 of Hearts, 8 of Spades, K of Clubs.
Snow : 9 of Hearts, 6 of Diamonds, Q of Diamonds, 10 of Spades.
Also, it is known that each of them has a sufficient amount with them to pay another player.

Q.59
What can be the maximum amount won by Jon by the end of the game?

Solution:
Correct Answer : 13

Bookmark

Answer key/Solution

As, suit of Diamonds and Hearts is of red colour. So, when Jon selects J of Diamonds and Snow selects 9 of Hearts, then according to Case 2 amount received by Jon = 11 (Denominator of J)
Amount given by Jon = 9
So, total amount won by Jon during this exchange = +2
Similarly, when J of Diamonds is paired against other cards of Snow, then we get different total amounts.
Same is the case with other cards of Jon i.e. 7 of hearts, 8 of spades, K of clubs.

Cards of Jon	Cards of Snow	Amount Received by Jon	Amount Received by Snow	Total Amount	
				Jon	Snow
J (D)	9 (H)	11	9	+2	–2
	6 (D)	22	12	+10	–10
	Q (D)	22	24	–2	+2
	10 (S)	10	11	–1	+1
7 (H)	9 (H)	14	18	–4	+4
	6 (D)	7	6	+1	–1
	Q (D)	7	12	–5	+5
	10 (S)	10	7	+3	–3
8 (S)	9 (H)	9	8	+1	–1
	6 (D)	6	8	–2	+2
	Q (D)	12	8	+4	–4
	10 (S)	16	20	–4	+4
K (C)	9 (H)	9	13	–4	+4
	6 (D)	6	13	–7	+7
	Q (D)	12	13	–1	+1
	10 (S)	13	10	+3	+3

From the table, it can be seen that Jon wins an amount of 10 when he pairs J of Diamonds against 6 of Diamonds.
Similarly, he wins an amount of 3 when 7 of Hearts is paired against 10 of Spades.
Jon wins an amount of 4 when 8 of Spades is paired against Q of Diamonds.
Since K of clubs can only be paired against 9 of hearts, as it is the only card remaining with Snow, so, Jon loses an amount of 4 here.
So, maximum amount won by Jon by the end of the game = 10 + 3 + 4 – 4 = 13.

FeedBack

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

'CLUB'S', a famous card game, can be played between two players at a time.
In this game, initially, 4 cards are given to each of the two players.
To start the game, each player selects one card by looking into his cards.
Based on their selected card, one of the following will be done:

Case 1: If the selected cards, one from each player, are of the same suit, then each player will give an amount equivalent to the double of the denomination of the opponent's card to his opponent.

Case 2: If selected cards, one from each player, are of the same colour, then each player will give an amount equivalent to the denomination of the opponent's card to his opponent.

Case 3: If selected cards, one from each player, are of a different colour, then each player will give an amount equivalent to the denomination of his own card to his opponent.

Denomination of J, Q, K and A will be taken as 11, 12, 13 and 1 respectively. Also, suit of Diamonds and Hearts is of red colour and that of Spades and Clubs is of black colour.

Following are the details of the cards received by the two friends, Jon and Snow, interested in playing that game.

Jon : J of Diamonds, 7 of Hearts, 8 of Spades, K of Clubs.
Snow : 9 of Hearts, 6 of Diamonds, Q of Diamonds, 10 of Spades.
Also, it is known that each of them has a sufficient amount with them to pay another player.

Q.60
What can be the minimum amount with Snow by the end of the game?

1 **2 more than his initial amount**

2 **2 less than his initial amount**

3 **14 more than his initial amount**

4 **13 less than his initial amount**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

As, suit of Diamonds and Hearts is of red colour. So, when Jon selects J of Diamonds and Snow selects 9 of Hearts, then according to Case 2 amount received by Jon = 11 (Denominator of J)
Amount given by Jon = 9
So, total amount won by Jon during this exchange = +2
Similarly, when J of Diamonds is paired against other cards of Snow, then we get different total amounts.
Same is the case with other cards of Jon i.e. 7 of hearts, 8 of spades, K of clubs.

Cards of Jon	Cards of Snow	Amount Received by Jon	Amount Received by Snow	Total Amount	
				Jon	Snow
J (D)	9 (H)	11	9	+2	–2
	6 (D)	22	12	+10	–10
	Q (D)	22	24	–2	+2
	10 (S)	10	11	–1	+1
7 (H)	9 (H)	14	18	–4	+4
	6 (D)	7	6	+1	–1
	Q (D)	7	12	–5	+5
	10 (S)	10	7	+3	–3
8 (S)	9 (H)	9	8	+1	–1
	6 (D)	6	8	–2	+2
	Q (D)	12	8	+4	–4
	10 (S)	16	20	–4	+4
K (C)	9 (H)	9	13	–4	+4
	6 (D)	6	13	–7	+7
	Q (D)	12	13	–1	+1
	10 (S)	13	10	+3	+3

It can be seen from the table that maximum amount lost by Snow is when he pairs 6 of Diamonds against J of Diamonds. This amount is equal to 10.
Next amount will be –4 which Snow receives when he pairs Q of Diamonds against 8 of Spades.
Snow loses an amount of 3 when he pairs 10 of Spades against 7 of Hearts.
Now, the only card remaining with him is 9 of Hearts, for which he wins an amount of 4.
So, minimum amount with snow = –10 – 4 – 3 + 4 = –13.
As Snow had an initial amount of 37(9 + 6 + 12 + 10), so his final amount will be 13 less than his initial amount.

FeedBack

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

'CLUB'S', a famous card game, can be played between two players at a time.
In this game, initially, 4 cards are given to each of the two players.
To start the game, each player selects one card by looking into his cards.
Based on their selected card, one of the following will be done:

Case 1: If the selected cards, one from each player, are of the same suit, then each player will give an amount equivalent to the double of the denomination of the opponent's card to his opponent.

Case 2: If selected cards, one from each player, are of the same colour, then each player will give an amount equivalent to the denomination of the opponent's card to his opponent.

Case 3: If selected cards, one from each player, are of a different colour, then each player will give an amount equivalent to the denomination of his own card to his opponent.

Denomination of J, Q, K and A will be taken as 11, 12, 13 and 1 respectively. Also, suit of Diamonds and Hearts is of red colour and that of Spades and Clubs is of black colour.

Following are the details of the cards received by the two friends, Jon and Snow, interested in playing that game.

Jon : J of Diamonds, 7 of Hearts, 8 of Spades, K of Clubs.
Snow : 9 of Hearts, 6 of Diamonds, Q of Diamonds, 10 of Spades.
Also, it is known that each of them has a sufficient amount with them to pay another player.

Q.61
What can be the maximum amount won by Snow by the end of the game?

1 **14**

2 **17**

3 **15**

4 **None of these**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As, suit of Diamonds and Hearts is of red colour. So, when Jon selects J of Diamonds and Snow selects 9 of Hearts, then according to Case 2 amount received by Jon = 11 (Denominator of J)
Amount given by Jon = 9
So, total amount won by Jon during this exchange = +2
Similarly, when J of Diamonds is paired against other cards of Snow, then we get different total amounts.
Same is the case with other cards of Jon i.e. 7 of hearts, 8 of spades, K of clubs.

Cards of Jon	Cards of Snow	Amount Received by Jon	Amount Received by Snow	Total Amount	
				Jon	Snow
J (D)	9 (H)	11	9	+2	–2
	6 (D)	22	12	+10	–10
	Q (D)	22	24	–2	+2
	10 (S)	10	11	–1	+1
7 (H)	9 (H)	14	18	–4	+4
	6 (D)	7	6	+1	–1
	Q (D)	7	12	–5	+5
	10 (S)	10	7	+3	–3
8 (S)	9 (H)	9	8	+1	–1
	6 (D)	6	8	–2	+2
	Q (D)	12	8	+4	–4
	10 (S)	16	20	–4	+4
K (C)	9 (H)	9	13	–4	+4
	6 (D)	6	13	–7	+7
	Q (D)	12	13	–1	+1
	10 (S)	13	10	+3	+3

Snow wins an amount of 7 when he pairs 6 of Diamonds against K of Clubs.
He wins an amount of 4 when he pairs 10 of Spades against 8 of Spades.
He wins an amount of 4 when he pairs 9 of Hearts against 7 of Hearts.
Only card yet to be paired by Snow is Q of Diamonds, which he pairs against J of Diamonds to win an amount of 2.
So, the maximum amount won by Snow = 7 + 4 + 4 + 2 = 17.

FeedBack

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

'CLUB'S', a famous card game, can be played between two players at a time.
In this game, initially, 4 cards are given to each of the two players.
To start the game, each player selects one card by looking into his cards.
Based on their selected card, one of the following will be done:

Case 1: If the selected cards, one from each player, are of the same suit, then each player will give an amount equivalent to the double of the denomination of the opponent's card to his opponent.

Case 2: If selected cards, one from each player, are of the same colour, then each player will give an amount equivalent to the denomination of the opponent's card to his opponent.

Case 3: If selected cards, one from each player, are of a different colour, then each player will give an amount equivalent to the denomination of his own card to his opponent.

Denomination of J, Q, K and A will be taken as 11, 12, 13 and 1 respectively. Also, suit of Diamonds and Hearts is of red colour and that of Spades and Clubs is of black colour.

Following are the details of the cards received by the two friends, Jon and Snow, interested in playing that game.

Jon : J of Diamonds, 7 of Hearts, 8 of Spades, K of Clubs.
Snow : 9 of Hearts, 6 of Diamonds, Q of Diamonds, 10 of Spades.
Also, it is known that each of them has a sufficient amount with them to pay another player.

Q.62
If instead of having K of clubs, Jon had A of spades, then what can be the maximum amount won by him by the end of the game?

Solution:
Correct Answer : 25

Bookmark

Answer key/Solution

As, suit of Diamonds and Hearts is of red colour. So, when Jon selects J of Diamonds and Snow selects 9 of Hearts, then according to Case 2 amount received by Jon = 11 (Denominator of J)
Amount given by Jon = 9
So, total amount won by Jon during this exchange = +2
Similarly, when J of Diamonds is paired against other cards of Snow, then we get different total amounts.
Same is the case with other cards of Jon i.e. 7 of hearts, 8 of spades, K of clubs.

Cards of Jon	Cards of Snow	Amount Received by Jon	Amount Received by Snow	Total Amount	
				Jon	Snow
J (D)	9 (H)	11	9	+2	–2
	6 (D)	22	12	+10	–10
	Q (D)	22	24	–2	+2
	10 (S)	10	11	–1	+1
7 (H)	9 (H)	14	18	–4	+4
	6 (D)	7	6	+1	–1
	Q (D)	7	12	–5	+5
	10 (S)	10	7	+3	–3
8 (S)	9 (H)	9	8	+1	–1
	6 (D)	6	8	–2	+2
	Q (D)	12	8	+4	–4
	10 (S)	16	20	–4	+4
K (C)	9 (H)	9	13	–4	+4
	6 (D)	6	13	–7	+7
	Q (D)	12	13	–1	+1
	10 (S)	13	10	+3	+3

Cards of Jon	Cards of Snow	Amount Received by Jon	Amount Received by Snow	Total Amount	
				Jon	Snow
J (D)	9 (H)	11	9	+2	–2
	6 (D)	22	12	+10	–10
	Q (D)	22	24	–2	+2
	10 (S)	10	11	–1	+1
7 (H)	9 (H)	14	18	–4	+4
	6 (D)	7	6	+1	–1
	Q (D)	7	12	–5	+5
	10 (S)	10	7	+3	–3
8 (S)	9 (H)	9	8	+1	–1
	6 (D)	6	8	–2	+2
	Q (D)	12	8	+4	–4
	10 (S)	16	20	–4	+4
A (S)	9 (H)	9	1	+8	–8
	6 (D)	6	1	+5	–5
	Q (D)	12	1	+11	–11
	10 (S)	2	20	–18	+18

It can be seen from the table that Jon wins an amount of 11 when he pairs A of Spades against Q of Diamonds. Similarly, he wins an amount of 10 when he pairs 6 of Diamonds against J of Diamonds.
He wins an amount of 3 when he pairs 10 of spades against 7 of hearts.
In the same way, Jon wins an amount of 1 when he pairs 8 of Spades against 9 of Hearts.
So, the maximum amount won by Jon by the end of the game = 10 + 11 + 3 + 1 = 25.

FeedBack

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

A square matrix of dimension n x n is drawn where n denotes the number of rows and columns each. The cells of the matrix are denoted as P(r, c), where r denotes the row number counted from top and c denotes the column number counted from left. For example, P(2, 3) is the cell which is in the second row from the top and third column from left.

In the square matrix, as defined above, when a token (say a coin) is kept at some random cell, it can move only horizontally and vertically, i.e, along the rows and columns only. For a token placed in a cell, the remaining cells of the matrix are marked with numbers which denote the minimum number of steps required by the token to reach that given cell. For example, if the token is put in cell P(1, 1), then the cells P(1, 2) and P(2, 1) both will be numbered 1, cells P(1, 3), P(2, 2) and P(3, 1) all will be numbered 2 and so on.

Q.63

Two tokens T1 and T2 are positioned one by one at P(1, 1) and P(5, 5) respectively in a matrix of dimension 5 × 5. How many cells will have the same number written on them respective to both tokens?

Solution:

Correct Answer : 5

	1	2	3	4	5
1	T1	1/7	2/6	3/5	4/4
2	1/7	2/6	3/5	4/4	5/3
3	2/6	3/5	4/4	5/3	6/2
4	3/5	4/4	5/3	6/2	7/1
5	4/4	5/3	6/2	7/1	T2

Here a/b represents the steps of T1/T2 respectively.
∴ 5 cells have the same number written on them.

FeedBack

Bookmark

Answer key/Solution

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

A square matrix of dimension n x n is drawn where n denotes the number of rows and columns each. The cells of the matrix are denoted as P(r, c), where r denotes the row number counted from top and c denotes the column number counted from left. For example, P(2, 3) is the cell which is in the second row from the top and third column from left.

In the square matrix, as defined above, when a token (say a coin) is kept at some random cell, it can move only horizontally and vertically, i.e, along the rows and columns only. For a token placed in a cell, the remaining cells of the matrix are marked with numbers which denote the minimum number of steps required by the token to reach that given cell. For example, if the token is put in cell P(1, 1), then the cells P(1, 2) and P(2, 1) both will be numbered 1, cells P(1, 3), P(2, 2) and P(3, 1) all will be numbered 2 and so on.

Q.64

Two tokens T1 and T2 are positioned one by one at P(1, 1) and P(a, b) respectively in a matrix of dimension 4 × 4. If the number of cells having the same number for both the tokens is 4, then how many value(s) of (a, b) are possible?

1 **3**

2 **4**

3 **5**

4 **6**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let P(a, b) be P(4, 4), then

	1	2	3	4
1	T1	1/5	2/4	3/3
2	1/5	2/4	3/3	4/2
3	2/4	3/3	4/2	5/1
4	3/3	4/2	5/1	T2

Here number of cells having same numbers for both the tokens is 4.
By similar, hit and trial we find that (a, b) = (3, 1), (4, 2), (1, 3), (2, 4), so, number of cells having same numbers for both tokens T1 and T2 is 4.
∴ Total 5 values are possible.

FeedBack

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

A square matrix of dimension n x n is drawn where n denotes the number of rows and columns each. The cells of the matrix are denoted as P(r, c), where r denotes the row number counted from top and c denotes the column number counted from left. For example, P(2, 3) is the cell which is in the second row from the top and third column from left.

In the square matrix, as defined above, when a token (say a coin) is kept at some random cell, it can move only horizontally and vertically, i.e, along the rows and columns only. For a token placed in a cell, the remaining cells of the matrix are marked with numbers which denote the minimum number of steps required by the token to reach that given cell. For example, if the token is put in cell P(1, 1), then the cells P(1, 2) and P(2, 1) both will be numbered 1, cells P(1, 3), P(2, 2) and P(3, 1) all will be numbered 2 and so on.

Q.65

Two tokens T1 and T2 are positioned respectively at P(1, 1) and P(a, b) in a matrix of dimension 4 × 4. If both the tokens have no cell with the same number, then which of the following cannot be the value of (a, b)?

1 **(4, 3)**

2 **(4, 2)**

3 **(2, 3)**

4 **Both (2) and (3)**

Solution:

Correct Answer : 2

Let (a, b) = (4, 2)

T1	1/3	2/4	3/5
1/3	2/2	3/3	4/4
2/2	3/1	4/2	5/3
3/1	T2	5/1	6/2

Here, four cells have same numbers.
∴ (a, b) = (4, 2) cannot be the value.
But, (a, b) = (4, 3) and (2, 3) will have no cell with the same number.

FeedBack

Bookmark

Answer key/Solution

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

A square matrix of dimension n x n is drawn where n denotes the number of rows and columns each. The cells of the matrix are denoted as P(r, c), where r denotes the row number counted from top and c denotes the column number counted from left. For example, P(2, 3) is the cell which is in the second row from the top and third column from left.

In the square matrix, as defined above, when a token (say a coin) is kept at some random cell, it can move only horizontally and vertically, i.e, along the rows and columns only. For a token placed in a cell, the remaining cells of the matrix are marked with numbers which denote the minimum number of steps required by the token to reach that given cell. For example, if the token is put in cell P(1, 1), then the cells P(1, 2) and P(2, 1) both will be numbered 1, cells P(1, 3), P(2, 2) and P(3, 1) all will be numbered 2 and so on.

Q.66

Two tokens T1 and T2 are positioned one by one at P(1, 1) and P(a, b) respectively in a matrix of dimension 5 × 5. If 'x' is the number of cells having the same number for both the tokens, then how many value(s) of (a, b) are possible for which 'x' is a maximum possible integer?

1 **1**

2 **3**

3 **4**

4 **5**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

T1	1/1	2/2	3/3	4/4
1/1	T2	3/1	4/2	5/3
2/2	3/1	4/2	5/3	6/4
3/3	4/2	5/3	6/4	7/5
4/4	5/3	6/4	7/5	8/6

If T2 is positioned at (2, 2) then 'x' is a maximum possible integer that is 8. (By hit and trial).

FeedBack

Sec 3

Q.67

Three friends - Amit, Sanjeev and Vicky - start building a wall. Amit is 50% more efficient than Sanjeev, who is 25% more efficient than Vicky. All 3 of them work together on each day but exactly one of them reduces his efficiency by 50% in such a way that no one works with his original efficiency for more than 2 consecutive days. If Vicky alone can build the wall in 26 days, then what is the maximum number of days in which the wall can be built?

1 $7\frac{5}{8}$ days

2 $7\frac{35}{51}$ days

3 $8\frac{6}{51}$ days

4 **None of these**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

The ratio of the efficiencies of Vicky, Sanjeev and Amit is $1:\frac{5}{4}:\frac{15}{8} = 8 : 10 : 15$.
Let us assume, they do 8, 10 and 15 units of work per day respectively.
So, total work needs to be done = 8 × 26 = 208 units.
If Vicky, Sanjeev or Amit reduces their efficiency one by one by 50%, together they will be able to do (4 + 10 + 15 = 29 units/day), (8 + 5 + 15 = 28 units/day) or (8 + 10 + 7.5 = 25.5 units/day) respectively.
If no person can work with his original efficiency for more than 2 consecutive days, then a different person should work at his reduced efficiency on every 3rd consecutive day.
To make time maximum, we will assume the work done on each day is 25.5, 28, 29, 25.5, 28, 29 and so on.
So, 82.5 units of work is done in 3 days and hence 165 units in 6 days. On 7th day 25.5 units more is done, so total work done in 7 days is 190.5 units. Now, remaining 17.5 units can be done in $\frac{17.5}{28}$ = 0.375 day. So, total number of days taken to complete the work is $7\frac{5}{8}$ days.

FeedBack

Q.68

If each alphabet in the figure given below represents a distinct non-zero digit, then the value of S must be

$$\begin{array}{cccc} & S & E & E \\ + & E & Y & E \\ \hline & Y & E & S \end{array}$$

Solution:

Correct Answer : 2

2E = S + 10 (because E + Y = E , Y not equal to zero)
E + Y + 1 = E + 10
S + E + 1 = Y
So, Y = 9.
Hence, S + E = 8
i.e, 2(8 – S) = S + 10
Therefore, S = 2.

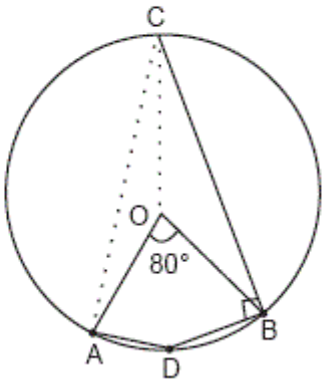
FeedBack

Bookmark

Answer key/Solution

Q.69

In the figure shown below, O is the centre of the circle. If ∠DBC = 90°, ∠AOB = 80°, AD = BD and area of ΔBOC = P sq. units, then find the area (in sq. units) of the quadrilateral ACBD.



1 **3P**

2 **9P/2**

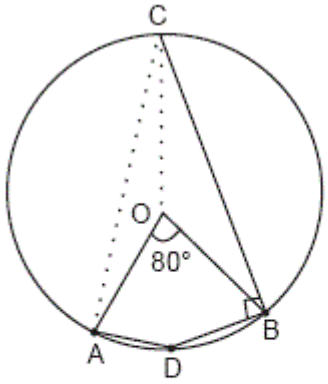
3 **4P**

4 **11P/2**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution



Here, ∠DBC = 90°
∴ CD is the diameter of the circle passing through O.
Since BO is the median of the ΔBCD, area of ΔOBC = area of ΔOBD = P sq. units
Similarly, area of ΔOAC = area of ΔOAD
In ΔACD and ΔBCD, ΔACD is congruent to the ΔBCD (By RHS property)
⇒ area of ΔACD = area of ΔBCD = 2P sq. units.
Therefore, area of □ ACBD = P + P + P + P = 4P sq. units.

FeedBack

Q.70

The concentration of milk in two solutions A and B are 30% and 50% respectively. The two solutions are mixed in a ratio of x : y and the concentration of milk in the resulting solution is a%. An equal quantity of this resulting solution and another solution C, having concentration of milk as 45%, are mixed to form a new solution with the concentration of milk as 40%. What is the minimum value of (x + y), where both x and y are integers?

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

As the resulting solution, after first process, and the solution C are mixed in equal quantities,
so $\frac{a\% + 45\%}{2} = 40\%$ i.e, a = 35%.
Now, using allegation, $\frac{x}{y} = \frac{50-35}{35-30}$.
We get x : y = 15 : 5 = 3 : 1.
Hence, minimum value for 'x + y' = 4.

FeedBack

Q.71

Ravi has a bottle full of mango juice. He pours half the content of the bottle into an empty can, then fills the bottle completely with water and mixes thoroughly. Then he repeats this process for 43 times more. Afterward, he pours the whole content of the bottle into the can. If the capacity of the bottle is 3 liters, then what is the ratio of the volume of the mango juice to the volume of water in the can?

1 **1 : 19**

2 **1 : 20**

3 **1 : 21**

4 **1 : 22**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Ravi pours 1.5 liters of liquid total 44 times and also he pours 3 liters of mango juice into the can in this process.
So, total volume of the liquid in the can = 1.5 × 44 + 3 = 69 liters.
Entire 3 liters of mango juice is emptied in the can.
So, the can has total 69 liters of liquid, out of which 3 liters is mango juice.
Hence, the remaining 66 liters is water.
Therefore, the ratio of mango juice to water in the can = 3 : 66 = 1 : 22.

FeedBack

Q.72

Find the value of $\sqrt{x}$, such that x satisfies the following expression:

$2^{((\log_x 9)+1)} + 3 = 9^{(\log_x 4)}$

1 **2**

2 **3**

3 **4**

4 **9**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

$2^{(\log_x 9+1)} + 3 = 9^{(\log_x 4)}$

$\Rightarrow 2^{(\log_x 9)} \times 2 + 3 = 9^{(\log_x 4)}$

$\Rightarrow 9^{(\log_x 2)} \times 2 + 3 = 9^{(2\log_x 2)}$

Let $9^{(\log_x 2)} = y$

So, equation becomes $2y + 3 = y^2$

$\Rightarrow y^2 - 2y - 3 = 0$

$\Rightarrow y^2 - 3y + y - 3 = 0$

$\Rightarrow (y + 1)(y - 3) = 0$

$\Rightarrow y = -1, 3$

$\Rightarrow$ As $y = -1$ is not possible, so $y = 3$ means

$9^{(\log_x 2)} = 3 \Rightarrow 3^{(2\log_x 2)} = 3$

$\Rightarrow 2\log_x 2 = 1$ or $\log_x 4 = 1$

$\therefore x = 4$

Hence, required value = 2.

FeedBack

Q.73

There are ten positive integers less than 1000 out of which 4 have equal values, 3 others also have equal values and the remaining 3 are distinct. If one of these integers is equal to the average of all these ten integers and is less than 100, then what can be the largest possible value of one of the ten integers?

Solution:
Correct Answer : 878

Bookmark

Answer key/Solution

Let us assume the integers are a, a, a, a, b, b, b, c, d, e. As we want to maximize one of the integers, we need to keep the average largest possible and all other integers minimum possible.
So, the integers must be 1, 1, 1, 1, 2, 2, 2, 3, A and B where A is the average of all integers and B is the largest integer among them.
A can be maximum 99, since average is less than 100.
And hence sum of these 10 integers is 99 × 10 = 990.
So, the value of B = 990 – 1 – 1 – 1 – 1 – 2 – 2 – 2 – 3 – 99 = 878.

FeedBack

Q.74

A function 'f' is defined as $f(x) = (1 + x)^2$ for $-3 \le x \le 3$. What is the range of f(x)?

1 **[0, 9]**

2 **[0, 16]**

3 **[4, 9]**

4 **[4, 16]**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Since $(1 + x)^2$ is a perfect square, the minimum value of the function is 0, which occurs when $x = -1$.
The maximum value of 'f' occurs when x is maximum i.e, $x = 3$ and $f(3) = 16$. Thus, the range is $0 \leq f(x) \leq 16$.

FeedBack

Q.75

What is the minimum value of K such that the equation 20x + 27y = K has exactly 8 positive integral solutions?

1 **3888**

2 **3780**

3 **4320**

4 **3827**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

$20x + 27y = K$.

To have minimum value of K, we need to put minimum values of x and y too.
As we need positive integral solutions, let $y = 1$ is the first solution of this equation. As the slope of the equation is $-20/27$, the value of y will increase by 20 and x will decrease by 27.
So, the next values of y will be 21, 41,.... and the 8th solution will be 141.
Now, when y is 141, x must be having its minimum value at this stage i.e. 1.
So, the minimum value of $K = 20 \times 1 + 27 \times 141 = 3827$.

FeedBack

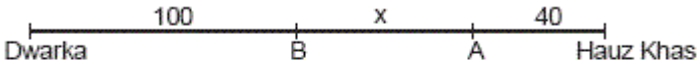
Q.76

P and Q are standing between Dwarka and Hauz Khas, talking to each other, at a point 40 km from Hauz Khas. They started travelling towards opposite ends, then turned back from the ends and again travelled towards each other to meet at a point 100 km from Dwarka. If the ratio of the speeds of P and Q is 1 : 2, then what is the distance (in kilometers) between Dwarka and Hauz Khas?

Solution:
Correct Answer : 180

Bookmark

Answer key/Solution



Let the first point at which P and Q were talking be A and the point where they meet second time be B. Let the distance from B to A be x. From point A, one of them would cover 40 + 40 + x i.e. 80 + x to reach B, whereas the other person would have covered x + 100 + 100 i.e. 200 + x to reach B at same time with A.
As the speeds are in the ratio 1 : 2 and time remains same for both, 200 + x must be twice of 80 + x i.e. 160 + 2x = 200 + x.
Solving, we get x = 40.
So, distance between Hauz Khas and Dwarka = 100 + 40 + 40 = 180 km.

FeedBack

Q.77

The height of a cylinder is twice the height of a hemisphere but the radius of the cylinder is half the radius of the hemisphere. What is the ratio of the curved surface area of the cylinder to that of the hemisphere?

1 **1 : 1**

2 **1 : 2**

3 **2 : 3**

4 **3 : 4**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

As the height and radius of a hemisphere are equal, let it be r.
So, height and radius of the cylinder become 2r and r/2 respectively.
Now, curved surface area of the cylinder = $2\pi rh = 2\pi \times 2r \times r/2 = 2\pi r^2$
and curved surface area of the hemisphere = $2\pi r^2$.
Hence, the required ratio is 1:1.

FeedBack

Q.78

How many natural numbers, below 600, are not divisible by 9 or 5 but are divisible by 8?

Solution:

Correct Answer : 53

Total natural numbers below 600 that are divisible by 8 are 74 i.e. 600/8 = 75 – 1.
Numbers divisible by both 8 and 9 i.e. divisible by 72 are 8 i.e. 600/72.
Numbers divisible by both 8 and 5 i.e. divisible by 40 are 14 i.e. 600/40 = 15 – 1.
Also, numbers divisible by 8, 9 and 5 i.e. divisible by 360 is 1.
Hence, the required number = 74 – 8 – 14 + 1 = 53.

FeedBack

Bookmark

Answer key/Solution

Q.79

Ashish and Munish started running simultaneously on a circular track from the same point but in opposite directions. If the speed of Ashish is 2.5 times the speed of Munish, then for how many times will they meet during the 4th round of Munish around the track (excluding their meeting at the starting point, if any)?

1 **4**

2 **1**

3 **2**

4 **3**

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

The ratio of the speeds of Ashish and Munish is 5 : 2.
By the time Munish completed 3 rounds, Ashish must have completed 7.5 rounds and hence they completed 10.5 rounds together. This means that they would have met 10 times till now.
By the time Munish completed 4 rounds, Ashish must have completed 10 rounds and hence they completed 14 rounds together. This means they would have met 14 times till now.
Hence, they met 4 times in the 4th round of Munish but 4th of these meetings occurred at the starting point. So, answer will be 3 meetings.

FeedBack

Q.80

In a class, 31 students passed in Physics, 19 in Chemistry and 12 in Biology. If 13 students passed in at least two subjects, then find the minimum number of students who passed in exactly one subject. (Given that every student appeared for these three exams only.)

1 **23**

2 **24**

3 **22**

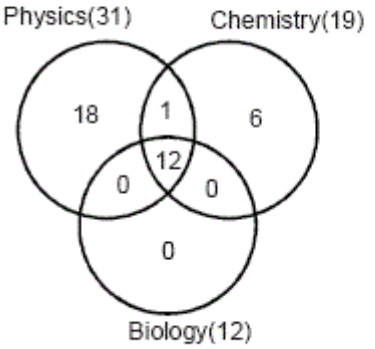
4 **36**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

To find the minimum number of students who passed in exactly one subject, we need to maximize the number of students who passed in all the three subjects.
Maximum number of students who can pass in all three subjects will be 12 (if we assume that 12 students who passed in Biology also passed in other two subjects)
So, 1 student will pass in Physics and Chemistry but not in biology.
We can make the venn-diagram as follows:



So, total number of students who passed in exactly 1 subject will be 18 + 6 + 0 = 24.

FeedBack

Q.81
An operation '*', on the set of positive integers, is defined as a*b = (a + b)(a – b).
Evaluate: 1024 * (512 * (256 * (128 * (64 * (32 * (16 * (8 * (4 * (2 * 1)))))))))

Solution:
Correct Answer : 2047

Bookmark

Answer key/Solution

1024 * (512 * (256 * (128 * (64 * (32 * (16 * (8 * (4 * (2 * 1)))))))))
Starting with the innermost bracket:
(2*1) = (2 + 1)(2 – 1) = 3
(4*3) = (4 + 3)(4 – 3) = 7
(8*7) = (8 + 7)(8 – 7) = 15
⋮
So on
(1024*1023) = (1024 + 1023)(1024 – 1023) = 2047.

FeedBack

Q.82

In an examination paper, there are 20 questions, each having 4 options. In how many ways can one attempt the paper such that exactly 2 questions are answered correctly? (Note: Each question will have only one correct answer and a question can remain unattempted, too)

1 $^{20}C_2 \times 3^{18}$

2 $^{20}C_2 \times 4^{18}$

3 $^{20}C_2 \times 2^{18}$

4 $^{20}C_2 \times 5^{18}$

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Each question has 5 possibilities i.e., 4 options and an option of not attempting the question.
So, to attempt exactly 2 questions correctly, one can chose any two question in $^{20}C_2$ ways with only one correct answer. Also, remaining 18 questions can be answered in 4 ways each i.e. 3 incorrect and 1 way to leave unattempted.
So, total number of ways = $^{20}C_2\ 4^{18}$.

FeedBack

Q.83

A, B and C entered a room and saw a bowl full of grapes. Firstly, A ate 5/8th of all the grapes and three more grapes. Then, B ate 1/3rd of the remaining grapes and two more grapes. Finally, C ate 3/ 4th of the remaining grapes and one more grape. To their surprise, one grape was still left in the bowl. Find the difference between the number of grapes eaten by A and C.

1 **6**

2 **26**

3 **30**

4 **48**

Solution:

Correct Answer : 2

Let the total number of grapes be T.
A ate (5/8)T + 3 grapes.
So, remaining grapes = (3/8)T – 3

Now, B ate $\frac{1}{3}\left(\frac{3T}{8}-3\right)+2=\frac{T}{8}+1$ grapes.

So, remaining ones = $\frac{3T}{8}-3-\frac{T}{8}-1=\frac{T}{4}-4$

C ate $\frac{3}{4}\left(\frac{T}{4}-4\right)+1=\frac{3T}{16}-2$ grapes

Remaining = $\frac{T}{16}-2=1\Rightarrow T=48$

So, number of grapes eaten by A and C are 33 and 7 respectively.
Hence, the required difference = 33 – 7 = 26.

FeedBack

Bookmark

Answer key/Solution

Q.84

Aman, Baman and Chaman invested some amount in a partnership. The amounts invested by the three are in the ratio of x : y : z and the profits earned by them are in the ratio of z : y : x. Find the ratio of the time period for which the amount is invested by them respectively.

1 $x^2 : y^2 : z^2$

2 xy : yz : zx

3 $z^2 : zx : x^2$

4 $x^2 : xz : z^2$

Solution:

Correct Answer : 3

Profit = investment × duration
Let the ratio for duration be a : b : c.
So, z : y : x = ax : by : cz
Comparing any two ratios at a time, ax : by = z : y.
Also, ax : cz = z : x
So, a : b : c = a : (x/z)a : (x^2/z^2)a = $z^2 : xz : x^2$.

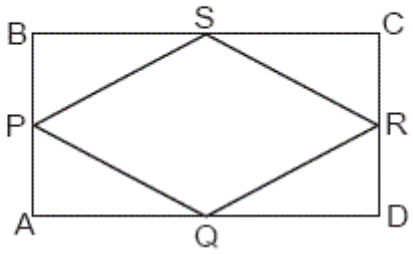
FeedBack

Bookmark

Answer key/Solution

Q.85

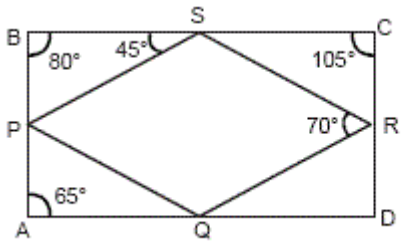
A quadrilateral PQRS is formed by joining the mid-points of the quadrilateral ABCD, as shown in the figure given below. If ∠A = 65°, ∠B = 80°, ∠C = 105°, ∠QRS = 70° and ∠BSP = 45°, then the value (in degrees) of ∠DQR is



Solution:
Correct Answer : 10

Bookmark

Answer key/Solution



As we know, a quadrilateral formed by joining the mid-points of a quadrilateral is always a parallelogram, therefore, PSRQ is a parallelogram.
In quadrilateral ABCD,
∠D = 360° – (65° + 80° + 105°) = 110°
In ΔBPS,
∠BPS = 180° – (80° + 45°) = 55°
In parallelogram, PSRQ; ∠QPS = 70°, ∠PQR = 110°
In ΔAPQ, ∠APQ = 180° – (∠BPS + ∠QPS) = 180° – (55° + 70°) = 55°
and ∠AQP = 180° – (65° + 55°) = 60°
So, ∠DQR = 180° – (∠AQP + ∠PQR) = 180° – (60° + 110°) = 10°.

FeedBack

Q.86

The selling price of 25 oranges is equal to the cost price of 35 oranges, which in turn is equal to the one-third of the total discount offered upon the marked price of 175 oranges. If the mark-up percentage is halved and the discount percentage is decreased by 10 percentage points, then find the profit / loss percentage on oranges.

1 **7.5% loss**

2 **20% profit**

3 **12.5% profit**

4 **10% loss**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let S, C and M be the selling price, cost price and marked price of each orange.
Given that 25S = 35C ⇒ S = 1.4 C

Also, $35C = \frac{175}{3}(M - S)$

⇒ 3C = 5M - 5S
Using both equation, we get M = 2C.

So, originally discount percent = $\frac{2C - 1.4C}{2C} \times 100 = 30\%$

and mark-up percentage = $\frac{2C - C}{C} \times 100 = 100\%$

Now, mark-up percentage is halved i.e. 50% and discount is decreased by 10% points i.e. 30% – 10% = 20% .
So, if cost price is Rs.100, then marked price is Rs.150 and selling price is 150 × 80% = Rs.120
So, the profit is 20% now.

FeedBack

Q.87

A student has some books, out of which, he is unable to fit 17 books in his bookshelf. He exchanges his bookshelf with a new bookshelf having capacity 25% higher than that of the previous one. Now he has space for 8 more books. How many books does the student have? (Assume that the size of all the books is same.)

Solution:
Correct Answer : 117

Bookmark

Answer key/Solution

Suppose the student has x books.
So, the initial capacity of bookshelf = x – 17
New capacity = x + 8 = (x – 17) 1.25
i.e, 4x + 32 = 5x – 85 or x = 117.
So, the student has 117 books.

FeedBack

Q.88

A sum of money gets doubled in less than 6 years but more than 5 years at X% per annum simple interest. Also, the same sum becomes thrice in less than 9 years but more than 8 years at Y% per annum simple interest. What is the minimum value of (Y – X), where both X and Y are integers?

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

If a sum gets doubled on SI, then the interest earned is 100%.

So, interest per year (i.e. X) is between $\frac{100}{5}$ and $\frac{100}{6}$ i.e. between 20% and 16.66%.

And if the sum gets thrice, then the interest earned is 200%.

So, interest per year (i.e. Y) is between $\frac{200}{8}$ and $\frac{200}{9}$ i.e. 25% and 22.22%.

As it is given that X and Y can be integers only, so possible values of X are 17, 18, 19 and possible values of Y are 23, 24.
Hence, minimum value for Y – X is when X = 19 and Y = 23. So, Y – X = 4.

FeedBack

Q.89

A shopkeeper purchases toffees at the rate of 8 toffees per rupee. He sells these toffees at 6 toffees per rupee. If he starts selling them at 7 toffees per rupee, then by what percentage his sales per hour must be increased so that his profit per hour remains the same?

1 **16.66%**

2 **33.33%**

3 **116.66%**

4 **133.33%**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let the shopkeeper purchases 168 toffees for Rs.21. By selling these toffees @ 6 toffees per rupee, his revenue will be Rs.28 and hence an overall profit of Rs.7.
By selling toffees @ 7 toffees per rupee, his revenue would have been Rs. 24 and hence a profit of Rs.3.

To have the same profit, he must increase his sales by $\frac{7-3}{3} \times 100 = 133.33\%$.

FeedBack

Q.90

Find the number of different triangles that can be formed from a heptagon in such a way that its vertices coincide with the vertices of the heptagon but none of its sides coincide with any side of the heptagon.

Solution:
Correct Answer : 7

Bookmark

Answer key/Solution

In any heptagon ABCDEFG, the only possible triangles satisfying the given conditions are ACE, ACF, BDF, BDG, CEG, AFD and EGB.
Hence, total 7 triangles are possible.

Alternate method:

Number of triangles = $\frac{n(n-4)(n-5)}{6} = \frac{7(7-4)(7-5)}{6} = 7.$

FeedBack

Q.91

Vikram bought three different varieties of rice - R_1, R_2 and R_3 - costing Rs. 20/kg, Rs. 50/kg and Rs. 100/kg respectively. He mixes them in some ratio and sells them at Rs. 100/kg which earns him a profit of 25%. In what ratio did he mix R_1, R_2 and R_3?

1 **1 : 5 : 9**

2 **1 : 1 : 1**

3 **3 : 2 : 12**

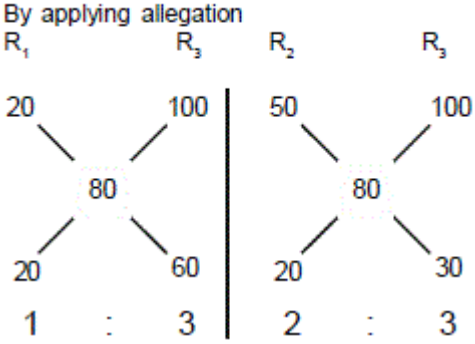
4 **3 : 2 : 15**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

As the selling price of the mixture is Rs. 100 with 25% profit, so the cost price must be Rs. 80.
By applying allegation



20 : 50 : 100
a 3a
2b 3b
So final ratio be a : 2b : 3a + 3b
for a = 1 and b = 2 the ratio possible is 1 : 4 : 9
for a = 2 and b = 1 the ratio possible is 2 : 2 : 9
for a = 3 and b = 1 the ratio possible is 3 : 2 : 12.

Alternative method:
Best way to solve this kind of questions is by options.
Only option (3) can provide the required cost price of the mixture.

FeedBack

Q.92

The ratio of the sum of the first 25 terms of an Arithmetic Progression (AP) to the sum of the next 20 terms of the same AP is 13 : 19. Find the ratio of the 13th term to the 23rd term of the Arithmetic Progression.

1 **169 : 437**

2 **299 : 247**

3 **117 : 160**

4 **169 : 361**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

$$\frac{\text{Sum of first 25 terms}}{\text{Sum of next 20 terms}} = \frac{13}{19}$$

$$\Rightarrow \frac{\text{Sum of first 25 terms}}{\text{Sum of first 45 terms}} = \frac{13}{19+13} = \frac{13}{32}$$

$$\Rightarrow \frac{\frac{25}{2}(2a+24d)}{\frac{45}{2}(2a+44d)} = \frac{25(a+12d)}{45(a+22d)}$$

$$\Rightarrow \frac{T_{13} \times 25}{T_{23} \times 45} = \frac{13}{32}$$, where T_{13} = 13th terms and T_{23} = 23rd term

So, $\frac{T_{13}}{T_{23}} = \frac{117}{160}$.

FeedBack

Q.93

Two triangles, ABC and PQR, are similar with AB : PQ = 2 : 3. AD and PS are the medians to the sides BC and QR respectively. What is the value of $(BD/QS)^2$?

1 **3/5**

2 **4/9**

3 **2/3**

4 **4/7**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Since ΔABC is similar to ΔPQR, $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{2}{3}$

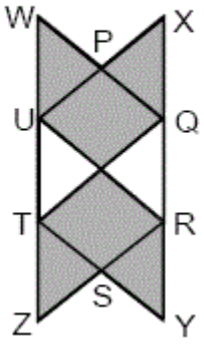
So, $\frac{BD}{QS} = \frac{\frac{BC}{2}}{\frac{QR}{2}} = \frac{2}{3}$

$\therefore \frac{BD^2}{QS^2} = \frac{4}{9}$.

FeedBack

Q.94

PQRSTU is a regular hexagon whose side is 4 cm. PWU, PXQ, STZ and SRY are equilateral triangles, as shown in the figure given below. What is the area (in cm^2) of the shaded region?



1 **$24\sqrt{3}$**

2 **$16\sqrt{3}$**

3 **$32\sqrt{3}$**

4 **$36\sqrt{3}$**

Solution:
Correct Answer : 3

Area of each of triangles PXQ, PWU, TSZ and SRY = $\frac{\sqrt{3}}{4} \times (4)^2 = 4\sqrt{3}$

Also, area of triangle PUQ = 1/2 × PU × PQ × sin 120° = $4\sqrt{3}$

So, total area of the shaded region = $4(4\sqrt{3}) + 4(4\sqrt{3}) = 32\sqrt{3}$.

FeedBack

Bookmark

Answer key/Solution

Q.95

The equation of a circle is $(x - 17)^2 + (y - 15)^2 = 369$. P, a point on the circle, is taken in such a way that it is farthest from a point having coordinates (47, 39). Find the distance between P and (47, 39).

1 **$7\sqrt{41}$**

2 **$5\sqrt{41}$**

3 **$9\sqrt{41}$**

4 **$10\sqrt{41}$**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

The circle is $(x - 17)^2 + (y - 15)^2 = 369$
As $(47 - 17)^2 + (39 - 15)^2 > 369$, hence (47,39) lies outside the circle.
The maximum distance between any point Y outside the circle and any point X on the circle occurs when X lies on the diameter of the circle passing through Y.
Y must then be the point which is the farthest end of the diameter with respect to X.
So, distance from P to (47, 39) = Distance from (17, 15) to (47, 39) + Radius of circle
$= \sqrt{(47-17)^2 + (39-15)^2} + \sqrt{369} = 9\sqrt{41}$.

FeedBack

Q.96

A bacteria, Abeoma, has a property to get split into 15 bacteria of the next generation. But due to environmental haphazard, only 60% of one generation can produce the next generation and the remaining 40% don't survive. If the number of bacteria in the seventh generation is 531441 million, then what was the number (in millions) of bacteria in the first generation?

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Let there be x bacterias in 1st generation.
Due to environment haphazard, 60% i.e. 3x/5 would be able to produce the next generation and they will give rise to 15(3x/5) = 9x bacterias.
Likewise 60% of it i.e. 27x/5 would be able to produce the next generation and they will give rise to 15(27x/5) = 81x bacterias.
So, the number of bacterias in every generation forms a G.P.,
x, 9x, 81x, 729x,..
So, the seventh generation number = $a \times r^{n-1} = x \times 9^6 = 531441$
$\Rightarrow x = 531441/9^6 = 1$ million

FeedBack

Q.97

Eight couples participated in a reality game show called "The Great Family Show", in which each couple formed a team, having one male and one female. Now, for a particular round, the game show host decided to randomly select 6 people who will earn a cash prize of rupees one thousand for their respective teams based on their performances in that round. What is the probability that both the male and the female member of exactly one team get selected?

1 ○ **80/143**

2 **82/143**

3 **64/143**

4 **72/143**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Out of the 16 people available for selection, 6 people can be chosen at random in $^{16}C_6$ ways.
Both the members of same team get selected. The number of ways of selecting one particular team is $^8C_1$. So, now we need to select 4 more people (no two of which can be from the same team) from 14 people which can be done in $\frac{14 \times 12 \times 10 \times 8}{4 \times 3 \times 2 \times 1}$ = 560 ways
(After every round of selection, both that member as well as the other member of his/her team are out of the pool from which we are to choose the rest.)
∴ The required probability = ($^8C_1$ × 560) / $^{16}C_6$ = 80/143.

FeedBack

Q.98
The equation |x – 3| + |x – 1| = x – 4 has

1 **Infinitely many roots**

2 **No roots**

3 **Two roots**

4 **None of these**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

|x – 3| > 0 and |x – 1| > 0
If in an equation LHS is greater than 0, then RHS is also greater than 0.
So x – 4 > 0
If x – 4 > 0, then x > 4 ...(i)
If x > 4, then x – 3 > 0 and x – 1 > 0
x – 3 + x – 1 = x – 4
⇒ 2x – 4 = x – 4
⇒ x = 0 ...(ii)
Hence, from (i) and (ii), we cannot find any solution, which means that the equation has no roots.

FeedBack

Q.99

X is the product of the positive integers from 90 to 96, both inclusive, and N, a, b, c, d and e are positive integers such that X = (N)(2^a 3^b 5^c 7^d 13^e), where a, b, c, d and e are the highest possible exponents of 2, 3, 5, 7 and 13, respectively. What is the number of factors that N has?

Solution:

Correct Answer : 16

Bookmark

Answer key/Solution

We have:
$X = 90 \times 91 \times 92 \times 93 \times 94 \times 95 \times 96$
We need to factorize each of the above numbers in their prime form:
$90 = 2 \times 3^2 \times 5$
$91 = 7 \times 13$
$92 = 2^2 \times 23$
$93 = 3 \times 31$
$94 = 2 \times 47$
$95 = 5 \times 19$
$96 = 2^5 \times 3$
Thus, we have
$X = 2^9 \times 3^4 \times 5^2 \times 7^1 \times 13^1 \times (19 \times 23 \times 31 \times 47)$
So, $N = 19 \times 23 \times 31 \times 47$
Thus, the number of factors of $N = (1 + 1)(1 + 1)(1 + 1)(1 + 1) = 16$ factors.

FeedBack

Q.100

If $25^{(\log_5 12 + 3\log_x 16)} = \frac{9}{256}$, then find the value of x.

1 $5^{-\frac{1}{2}}$

2 5^{-2}

3 $5^{-\frac{1}{3}}$

4 $5^{\frac{1}{4}}$

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

$$25^{(\log_5 12+3\log_x 16)}=\frac{9}{256} \Rightarrow 5^{2(\log_5 12+3\log_x 16)}=\frac{9}{256}$$

$$\Rightarrow 2\log_5 12+6\log_x 16=\log_5 9-\log_5 256$$

$$\Rightarrow 6\log_x 2^4=\log_5 3^2-\log_5 2^8-2\log_5(2^2\times 3) \Rightarrow 24\log_x 2=\log_5\frac{3^2}{2^8\times 2^4\times 3^2}$$

$$\Rightarrow 24\log_x 2=\log_5 2^{-12} \Rightarrow 2\log_x 2=-\log_5 2 \Rightarrow \frac{2\log 2}{\log x}=\frac{-\log 2}{\log 5} \Rightarrow \log x=\log(5)^{-2} \Rightarrow x=5^{-2}.$$

FeedBack