aspiration.ai

Mock CAT – 12 2019

Scorecard (procreview.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Accuracy (AccSelectGraph.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Qs Analysis (QsAnalysis.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Booster Analysis (BoosterAnalysis.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Video Attempt (VideoAnalysis.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Solutions (Solution.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Bookmarks (Bookmarks.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

Toppers (Toppers.jsp?sid=aaaacfmeUdDwo8biKQs_wSat Jan 11 23:16:14 IST 2020&qsetId=YJCubfnF4N8=&qsetName=Mock CAT – 12 2019)

VARC

DILR

QA

Sec 1

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

[…] Statistics indicate that the cause of suicide in more than 90% of cases is depression, a clinical illness. And depression, like all other disorders, is treatable. In fact, the earlier the intervention, the less the suffering, with individuals managing their mental health as they

would their diabetes or asthma or high blood pressure. Depression is an illness, not a weakness.

We need public education around mental health. And we can begin by breaking the stigma, the silence and the shame around mental ill-health. Were you ashamed the last time you had the flu? Why then be ashamed of an illness just because it is above the neck? We actually need to be much more open about our mental health as it affects our most important organ: our brain. And without a healthy brain, there can be no question of any health.

The objective of the awareness days of the IASP and the WHO is not only public education around mental health, but also to reduce the stigma and discrimination that people who have a mental illness are subjected to and which, too often, lead to them to not realise or recognise – or acknowledge – their symptoms. One statistic indicates that people wait up to 10 years before seeking help after experiencing the first symptoms of depression. In a recent US study it was found that between 2009 and 2017, rates of depression among teens between 14 and 17 increased by more than 60%. In fact, among young people rates of suicidal thoughts, plans, as well as attempts, all increased significantly. In some cases it more than doubled.

But we have the power within us to change the grip of this silent stalker. By speaking up, we almost literally open up to something that is suffocating individuals, families, and communities. We should not be afraid to say the first s-word: Suicide. And then break down all those words that go with it: stigma, silence, shame. We can break the vicious cycle by disempowering those s-words and empowering ourselves by speaking up and by being informed about mental health.

Especially in view of another s-word: social media. We are only starting to see the effects of social media on our mental health. The "always on culture", of never letting go of yet another s-word, our smartphones, is detrimental to our well-being. The FOMO factor – fear of missing out – is already recognised as a serious condition and part of smartphone addiction.

If the rate of depression among teens in the US has risen with 60% over almost a decade, with suicidal thoughts, plans and attempts in some cases doubling, we can accept that the prevalence among South African youth would be the same – if not higher, as there are so many more stressors in our society.

The WHO's global survey on common mental disorders (CMDs) among first-year students showed that one in three arrived with a diagnosable condition on campus. Two South African campuses were part of the study, and while it is acknowledged that our campuses are at risk of experiencing a mental health crisis, there are just not enough resources to support students. Suicide is the second leading cause of death among 20- to 24-year-olds in the US, and it affects one in 12 US students. In South Africa, campus resources are by far not enough to support students, while the emotional stress leading to CMDs is increasing as a result of many factors.

But we can all *do* something. One example is a project that was held on the medical campus of the University of the Free State. Their Faculty of Health Sciences held their "Starry, Starry

Night" suicide prevention and awareness initiative against the background of healthcare professionals and students who are at higher risk to suffer from mental ill-health, and medical doctors having the highest rate of suicide. Among others, survival skills were passed on to students, including measures of how to cope under pressure. We need more such interventions, and not only on medical campuses. […]

Q.1
Which of the following is the author's main message regarding depression?

1 **It is not a weakness, it's an illness.**

2 **It is treatable; so people should not fear it.**

3 **It needs to be the main rallying point around which the issue of mental health is to be highlighted.**

4 **It needs to be destigmatised so as to encourage more patient to seek timely treatment.**

Solution:
Correct Answer : 4
Genre: Opinion Article

Bookmark

Answer key/Solution

Word Count# 669

The author in the passage does say that depression is an illness and it is treatable. However, it is not the main message. The main message of the passage is that we need to encourage people suffering from depression to seek treatment. The concepts of shame or silence are highlighted to show this need for destigmatising the issue of mental health and suicide. So, option 4 is the correct answer. Options 1 and 2 are narrow. Option 3 is too extreme. The author never says that mental health issue should be talked around depression only.

FeedBack

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

[…] Statistics indicate that the cause of suicide in more than 90% of cases is depression, a clinical illness. And depression, like all other disorders, is treatable. In fact, the earlier the intervention, the less the suffering, with individuals managing their mental health as they would their diabetes or asthma or high blood pressure. Depression is an illness, not a weakness.

We need public education around mental health. And we can begin by breaking the stigma, the silence and the shame around mental ill-health. Were you ashamed the last time you had the flu? Why then be ashamed of an illness just because it is above the neck? We actually need to be much more open about our mental health as it affects our most important organ: our brain. And without a healthy brain, there can be no question of any health.

The objective of the awareness days of the IASP and the WHO is not only public education around mental health, but also to reduce the stigma and discrimination that people who have a mental illness are subjected to and which, too often, lead to them to not realise or recognise – or acknowledge – their symptoms. One statistic indicates that people wait up to 10 years before seeking help after experiencing the first symptoms of depression. In a recent US study it was found that between 2009 and 2017, rates of depression among teens between 14 and 17 increased by more than 60%. In fact, among young people rates of suicidal thoughts, plans, as well as attempts, all increased significantly. In some cases it more than doubled.

But we have the power within us to change the grip of this silent stalker. By speaking up, we almost literally open up to something that is suffocating individuals, families, and communities. We should not be afraid to say the first s-word: Suicide. And then break down all those words that go with it: stigma, silence, shame. We can break the vicious cycle by disempowering those s-words and empowering ourselves by speaking up and by being informed about mental health.

Especially in view of another s-word: social media. We are only starting to see the effects of social media on our mental health. The "always on culture", of never letting go of yet another s-word, our smartphones, is detrimental to our well-being. The FOMO factor – fear of missing out – is already recognised as a serious condition and part of smartphone addiction.

If the rate of depression among teens in the US has risen with 60% over almost a decade, with suicidal thoughts, plans and attempts in some cases doubling, we can accept that the prevalence among South African youth would be the same – if not higher, as there are so many more stressors in our society.

The WHO's global survey on common mental disorders (CMDs) among first-year students showed that one in three arrived with a diagnosable condition on campus. Two South African campuses were part of the study, and while it is acknowledged that our campuses are at risk of experiencing a mental health crisis, there are just not enough resources to support students. Suicide is the second leading cause of death among 20- to 24-year-olds in the US, and it affects one in 12 US students. In South Africa, campus resources are by far not enough to support students, while the emotional stress leading to CMDs is increasing as a result of many factors.

But we can all *do* something. One example is a project that was held on the medical campus of the University of the Free State. Their Faculty of Health Sciences held their "Starry, Starry Night" suicide prevention and awareness initiative against the background of healthcare professionals and students who are at higher risk to suffer from mental ill-health, and medical doctors having the highest rate of suicide. Among others, survival skills were passed on to students, including measures of how to cope under pressure. We need more such interventions, and not only on medical campuses. […]

Q.2

As per the author, social media and smartphones have:

---

1 turned a local issue into a global epidemic.

2 added to the severity of the issue of mental health.

3 made matters worse by making people even afraid of missing out.

4 worsened the plight of mentally ill people by encouraging their bullying.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Opinion Article

Word Count# 669

This is an easy fact based question.

Option 1 – There is no mention of any local or global epidemic.

Option 2 – It is correct. It can be clearly found in the paragraph where the author talks about the role of social media.

Option 3 – It is vague. The author mentions FOMO as an example.

Option 4 – 'Bullying' has not been discussed in the passage.

FeedBack

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

[…] Statistics indicate that the cause of suicide in more than 90% of cases is depression, a clinical illness. And depression, like all other disorders, is treatable. In fact, the earlier the intervention, the less the suffering, with individuals managing their mental health as they would their diabetes or asthma or high blood pressure. Depression is an illness, not a weakness.

We need public education around mental health. And we can begin by breaking the stigma, the silence and the shame around mental ill-health. Were you ashamed the last time you had the flu? Why then be ashamed of an illness just because it is above the neck? We actually need to be much more open about our mental health as it affects our most important organ: our brain. And without a healthy brain, there can be no question of any health.

The objective of the awareness days of the IASP and the WHO is not only public education around mental health, but also to reduce the stigma and discrimination that people who have a mental illness are subjected to and which, too often, lead to them to not realise or recognise – or acknowledge – their symptoms. One statistic indicates that people wait up to 10 years before seeking help after experiencing the first symptoms of depression. In a recent

US study it was found that between 2009 and 2017, rates of depression among teens between 14 and 17 increased by more than 60%. In fact, among young people rates of suicidal thoughts, plans, as well as attempts, all increased significantly. In some cases it more than doubled.

But we have the power within us to change the grip of this silent stalker. By speaking up, we almost literally open up to something that is suffocating individuals, families, and communities. We should not be afraid to say the first s-word: Suicide. And then break down all those words that go with it: stigma, silence, shame. We can break the vicious cycle by disempowering those s-words and empowering ourselves by speaking up and by being informed about mental health.

Especially in view of another s-word: social media. We are only starting to see the effects of social media on our mental health. The "always on culture", of never letting go of yet another s-word, our smartphones, is detrimental to our well-being. The FOMO factor – fear of missing out – is already recognised as a serious condition and part of smartphone addiction.

If the rate of depression among teens in the US has risen with 60% over almost a decade, with suicidal thoughts, plans and attempts in some cases doubling, we can accept that the prevalence among South African youth would be the same – if not higher, as there are so many more stressors in our society.

The WHO's global survey on common mental disorders (CMDs) among first-year students showed that one in three arrived with a diagnosable condition on campus. Two South African campuses were part of the study, and while it is acknowledged that our campuses are at risk of experiencing a mental health crisis, there are just not enough resources to support students. Suicide is the second leading cause of death among 20- to 24-year-olds in the US, and it affects one in 12 US students. In South Africa, campus resources are by far not enough to support students, while the emotional stress leading to CMDs is increasing as a result of many factors.

But we can all *do* something. One example is a project that was held on the medical campus of the University of the Free State. Their Faculty of Health Sciences held their "Starry, Starry Night" suicide prevention and awareness initiative against the background of healthcare professionals and students who are at higher risk to suffer from mental ill-health, and medical doctors having the highest rate of suicide. Among others, survival skills were passed on to students, including measures of how to cope under pressure. We need more such interventions, and not only on medical campuses. […]

Q.3

Why do people wait for almost 10 years in America before seeking treatment for depression?

1 **Because they are not able to recognise or realise their symptoms.**

2 **Because they are afraid of being treated with shaming or prejudice.**

3 **Because they are unaware of the consequences of depression.**

4 **Because there is a genuine lack of knowledge among people regarding the issue of mental health.**

Solution:
Correct Answer : 2
Genre: Opinion Article

Bookmark

Answer key/Solution

Word Count# 669

This is a straightforward fact based question. Refer to the lines preceding the statistics about the 10 year delay in seeking treatment. Option 2 is the clear answer. Option 1 can be a reason but even that is attributed to the stigma attached to depression. So, option 2 is the best choice.

FeedBack

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

[…] Statistics indicate that the cause of suicide in more than 90% of cases is depression, a clinical illness. And depression, like all other disorders, is treatable. In fact, the earlier the intervention, the less the suffering, with individuals managing their mental health as they would their diabetes or asthma or high blood pressure. Depression is an illness, not a weakness.

We need public education around mental health. And we can begin by breaking the stigma, the silence and the shame around mental ill-health. Were you ashamed the last time you had the flu? Why then be ashamed of an illness just because it is above the neck? We actually need to be much more open about our mental health as it affects our most important organ: our brain. And without a healthy brain, there can be no question of any health.

The objective of the awareness days of the IASP and the WHO is not only public education around mental health, but also to reduce the stigma and discrimination that people who have a mental illness are subjected to and which, too often, lead to them to not realise or recognise – or acknowledge – their symptoms. One statistic indicates that people wait up to 10 years before seeking help after experiencing the first symptoms of depression. In a recent US study it was found that between 2009 and 2017, rates of depression among teens between 14 and 17 increased by more than 60%. In fact, among young people rates of suicidal thoughts, plans, as well as attempts, all increased significantly. In some cases it more than doubled.

But we have the power within us to change the grip of this silent stalker. By speaking up, we almost literally open up to something that is suffocating individuals, families, and communities. We should not be afraid to say the first s-word: Suicide. And then break down all those words that go with it: stigma, silence, shame. We can break the vicious cycle by disempowering those s-words and empowering ourselves by speaking up and by being informed about mental health.

Especially in view of another s-word: social media. We are only starting to see the effects of social media on our mental health. The "always on culture", of never letting go of yet another s-word, our smartphones, is detrimental to our well-being. The FOMO factor – fear of missing out – is already recognised as a serious condition and part of smartphone addiction.

If the rate of depression among teens in the US has risen with 60% over almost a decade, with suicidal thoughts, plans and attempts in some cases doubling, we can accept that the prevalence among South African youth would be the same – if not higher, as there are so many more stressors in our society.

The WHO's global survey on common mental disorders (CMDs) among first-year students showed that one in three arrived with a diagnosable condition on campus. Two South African campuses were part of the study, and while it is acknowledged that our campuses are at risk of experiencing a mental health crisis, there are just not enough resources to support students. Suicide is the second leading cause of death among 20- to 24-year-olds in the US, and it affects one in 12 US students. In South Africa, campus resources are by far not enough to support students, while the emotional stress leading to CMDs is increasing as a result of many factors.

But we can all *do* something. One example is a project that was held on the medical campus of the University of the Free State. Their Faculty of Health Sciences held their "Starry, Starry Night" suicide prevention and awareness initiative against the background of healthcare professionals and students who are at higher risk to suffer from mental ill-health, and medical doctors having the highest rate of suicide. Among others, survival skills were passed on to students, including measures of how to cope under pressure. We need more such interventions, and not only on medical campuses. […]

Q.4

Why does the author end the passage by asking for more interventions?

1 **Because the author is impressed by their altruistic intentions.**

2 **Because s/he finds it to be the best way to prevent depression or suicidal thought.**

3 **Because s/he believes it to be an effective way for the common people to get involved in preventing suicide.**

4 **Because s/he thinks that these actions will eradicate the social barriers that have so far hindered the progress of mental health awareness.**

Solution:
Correct Answer : 3
Genre: Opinion Article

Bookmark

Answer key/Solution

Word Count# 669

Refer to the first line of the last paragraph. The author clearly states that we need not be helpless in the face of mental health issues. We all can do our part. The example of the intervention is to show that even non-medical people can help those in need. This makes option 3 the correct choice.

Option 1 – This is a vague option that doesn't directly fit the main idea of the passage.

Option 2 – The issue here is not the prevention of suicidal thoughts. That is the job of medical professionals. The issue here is to prevent suicide by timely intervention.

Option 4 – This looks correct. However, 'social barriers' is a broad term. Secondly, 'eradication' can't be defined from this passage as the author has not given any such data.

FeedBack

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

[…] Statistics indicate that the cause of suicide in more than 90% of cases is depression, a clinical illness. And depression, like all other disorders, is treatable. In fact, the earlier the intervention, the less the suffering, with individuals managing their mental health as they would their diabetes or asthma or high blood pressure. Depression is an illness, not a weakness.

We need public education around mental health. And we can begin by breaking the stigma, the silence and the shame around mental ill-health. Were you ashamed the last time you had the flu? Why then be ashamed of an illness just because it is above the neck? We actually need to be much more open about our mental health as it affects our most important organ: our brain. And without a healthy brain, there can be no question of any health.

The objective of the awareness days of the IASP and the WHO is not only public education around mental health, but also to reduce the stigma and discrimination that people who have a mental illness are subjected to and which, too often, lead to them to not realise or recognise – or acknowledge – their symptoms. One statistic indicates that people wait up to 10 years before seeking help after experiencing the first symptoms of depression. In a recent US study it was found that between 2009 and 2017, rates of depression among teens between 14 and 17 increased by more than 60%. In fact, among young people rates of suicidal thoughts, plans, as well as attempts, all increased significantly. In some cases it more than doubled.

But we have the power within us to change the grip of this silent stalker. By speaking up, we almost literally open up to something that is suffocating individuals, families, and communities. We should not be afraid to say the first s-word: Suicide. And then break down all those words that go with it: stigma, silence, shame. We can break the vicious cycle by disempowering those s-words and empowering ourselves by speaking up and by being informed about mental health.

Especially in view of another s-word: social media. We are only starting to see the effects of social media on our mental health. The "always on culture", of never letting go of yet another s-word, our smartphones, is detrimental to our well-being. The FOMO factor – fear of missing out – is already recognised as a serious condition and part of smartphone addiction.

If the rate of depression among teens in the US has risen with 60% over almost a decade, with suicidal thoughts, plans and attempts in some cases doubling, we can accept that the prevalence among South African youth would be the same – if not higher, as there are so many more stressors in our society.

The WHO's global survey on common mental disorders (CMDs) among first-year students showed that one in three arrived with a diagnosable condition on campus. Two South African campuses were part of the study, and while it is acknowledged that our campuses are at risk of experiencing a mental health crisis, there are just not enough resources to support students. Suicide is the second leading cause of death among 20- to 24-year-olds in the US, and it affects one in 12 US students. In South Africa, campus resources are by far not enough to support students, while the emotional stress leading to CMDs is increasing as a result of many factors.

But we can all *do* something. One example is a project that was held on the medical campus of the University of the Free State. Their Faculty of Health Sciences held their "Starry, Starry Night" suicide prevention and awareness initiative against the background of healthcare professionals and students who are at higher risk to suffer from mental ill-health, and medical doctors having the highest rate of suicide. Among others, survival skills were passed on to students, including measures of how to cope under pressure. We need more such interventions, and not only on medical campuses. […]

Q.5

Which of the following has not been cited by the author as a roadblock to providing effective mental healthcare?

1 **Debilitating willpower among the victims**

2 **Societal perception of the issue**

3 **The lack of resources**

4 **The lack of public education around the issue**

Solution:
Correct Answer : 1
Genre: Opinion Article

Word Count# 669

Options 2 and 4 are mentioned in the first two paragraphs. Option 3 is mentioned in the penultimate paragraph. Option 1 is the answer as it has not been mentioned anywhere in the passage.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (6-9): Read the given passage and answer the questions that follow.

[…] There is no dispute about the basic facts of the trial of Socrates. It is less obvious why Athenians found Socrates guilty, and what it might mean today. People who believe in both democracy and the rule of law ought to be very interested in this trial. If the takeaway is either that democracy, as direct self-government by the people, is fatally prone to repress dissent, or that those who dissent against democracy must be regarded as oligarchic traitors, then we are left with a grim choice between democracy and intellectual freedom.

But that is the wrong way to view Socrates' trial. Rather, the question it answers concerns civic obligation and commitment. The People's Court convicted Socrates because he refused to accept that a norm of personal responsibility for the effects of public speech applied to his philosophical project. Socrates accepted the guilty verdict as binding, and drank the hemlock, because he acknowledged the authority of the court and the laws under which he was tried. And he did so even though he believed that the jury had made a fundamental mistake in interpreting the law.

The conventional wisdom maintains that the impiety charge against Socrates was a smokescreen, that politics motivated his trial. Just four years earlier, a democratic uprising had overthrown a junta that ruled Athens for several tumultuous months. Meletus' prosecution speech at the trial likely urged the citizens of Athens to focus on Socrates' long association with members of this vicious and anti-democratic junta.

In his influential interpretation *The Trial of Socrates* (1988), the US journalist-turned-classicist I F Stone saw this trial as an embattled democracy defending itself. In Stone's view, Socrates had helped to justify the junta's savage programme of oligarchic misrule and was a traitor. More commonly, Socrates is seen as a victim of an opportunistic prosecutor and a wilfully ignorant citizenry. In truth, politics is indispensable to understanding the trial of Socrates, but in a slightly more sophisticated way. Seeing Socrates as the paradigm of the autonomous individual, as a simple martyr to free speech, is wrong. Athenian political culture and, specifically, the civic commitments required of Athenian citizens are essential to understanding the trial. Socrates' own commitments to his city influenced the trial's course, and those commitments were core parts of Athenian political culture, shaping the relationship between public speech and responsibility. Indeed, the actions of Socrates, Meletus and the jury must be understood in the context of the Athenians' emphasis on the role of the responsible citizen in the democratic state, on their ideal of civic responsibility. […]

Q.6

As per the author, what is the wrong way of examining the trial of Socrates?

1 **To focus on the way Socrates accepted his verdict without protest**

2 **To try to understand Socrates as an epitome of martyrdom**

3 **To emphasise on the democratic aspect of the issue**

4 **To think of the trial as an example of the subversion of free speech**

Solution:
Correct Answer : 4
Genre: Civics

Bookmark

Answer key/Solution

Word Count# 428

The answer can be found in the first paragraph. It also is mentioned in the line: “Seeing Socrates as the paradigm of the autonomous individual, as a simple martyr to free speech, is wrong.” So, option 4 is the clear answer. Option 3 looks close but it is actually vague. The author questions one aspect of the democratic process.

FeedBack

Direction for questions (6-9): Read the given passage and answer the questions that follow.

[…] There is no dispute about the basic facts of the trial of Socrates. It is less obvious why Athenians found Socrates guilty, and what it might mean today. People who believe in both democracy and the rule of law ought to be very interested in this trial. If the takeaway is either that democracy, as direct self-government by the people, is fatally prone to repress dissent, or that those who dissent against democracy must be regarded as oligarchic traitors, then we are left with a grim choice between democracy and intellectual freedom.

But that is the wrong way to view Socrates' trial. Rather, the question it answers concerns civic obligation and commitment. The People's Court convicted Socrates because he refused to accept that a norm of personal responsibility for the effects of public speech applied to his philosophical project. Socrates accepted the guilty verdict as binding, and drank the hemlock, because he acknowledged the authority of the court and the laws under which he was tried. And he did so even though he believed that the jury had made a fundamental mistake in interpreting the law.

The conventional wisdom maintains that the impiety charge against Socrates was a smokescreen, that politics motivated his trial. Just four years earlier, a democratic uprising had overthrown a junta that ruled Athens for several tumultuous months. Meletus' prosecution speech at the trial likely urged the citizens of Athens to focus on Socrates' long association with members of this vicious and anti-democratic junta.

In his influential interpretation *The Trial of Socrates* (1988), the US journalist-turned-classicist I F Stone saw this trial as an embattled democracy defending itself. In Stone's view, Socrates had helped to justify the junta's savage programme of oligarchic misrule and was a traitor. More commonly, Socrates is seen as a victim of an opportunistic prosecutor and a wilfully ignorant citizenry. In truth, politics is indispensable to understanding the trial of Socrates, but in a slightly more sophisticated way. Seeing Socrates as the paradigm of the autonomous individual, as a simple martyr to free speech, is wrong. Athenian political culture and, specifically, the civic commitments required of Athenian citizens are essential to understanding the trial. Socrates' own commitments to his city influenced the trial's course, and those commitments were core parts of Athenian political culture, shaping the relationship between public speech and responsibility. Indeed, the actions of Socrates, Meletus and the jury must be understood in the context of the Athenians' emphasis on the role of the responsible citizen in the democratic state, on their ideal of civic responsibility. […]

Q.7

As per the passage, what is the meaning of 'impiety'?

1 **Illegal**

2 **A code of rebellion**

3 **Lack of respect**

4 **Reverence**

Solution:
Correct Answer : 3
Genre: Civics

Word Count# 428

Socrates was convicted for speaking up his mind. Impiety means not showing respect or being sacrilegious. So, option 3 is the best answer.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (6-9): Read the given passage and answer the questions that follow.

[…] There is no dispute about the basic facts of the trial of Socrates. It is less obvious why Athenians found Socrates guilty, and what it might mean today. People who believe in both democracy and the rule of law ought to be very interested in this trial. If the takeaway is either that democracy, as direct self-government by the people, is fatally prone to repress dissent, or that those who dissent against democracy must be regarded as oligarchic traitors, then we are left with a grim choice between democracy and intellectual freedom.

But that is the wrong way to view Socrates' trial. Rather, the question it answers concerns civic obligation and commitment. The People's Court convicted Socrates because he refused to accept that a norm of personal responsibility for the effects of public speech applied to his philosophical project. Socrates accepted the guilty verdict as binding, and drank the hemlock, because he acknowledged the authority of the court and the laws under which he was tried. And he did so even though he believed that the jury had made a fundamental mistake in interpreting the law.

The conventional wisdom maintains that the impiety charge against Socrates was a smokescreen, that politics motivated his trial. Just four years earlier, a democratic uprising had overthrown a junta that ruled Athens for several tumultuous months. Meletus' prosecution speech at the trial likely urged the citizens of Athens to focus on Socrates' long association with members of this vicious and anti-democratic junta.

In his influential interpretation *The Trial of Socrates* (1988), the US journalist-turned-classicist I F Stone saw this trial as an embattled democracy defending itself. In Stone's view, Socrates had helped to justify the junta's savage programme of oligarchic misrule and was a traitor. More commonly, Socrates is seen as a victim of an opportunistic prosecutor and a wilfully ignorant citizenry. In truth, politics is indispensable to understanding the trial of Socrates, but in a slightly more sophisticated way. Seeing Socrates as the paradigm of the autonomous individual, as a simple martyr to free speech, is wrong. Athenian political culture and, specifically, the civic commitments required of Athenian citizens are essential to understanding the trial. Socrates' own commitments to his city influenced the trial's course, and those commitments were core parts of Athenian political culture, shaping the relationship between public speech and responsibility. Indeed, the actions of Socrates, Meletus and the jury must be understood in the context of the Athenians' emphasis on the role of the responsible citizen in the democratic state, on their ideal of civic responsibility. […]

Q.8

Which of the following is not true regarding I F Stone's observations on the trial of Socrates?

1 **The actual reason for the trial was a rage against the Junta.**

2 **The case was about the lack of appreciation of people for a thinker like Socrates.**

3 **Socrates was convicted because of perceived political affiliations.**

4 **During the course of the trial, the political vendetta was aided by lack of knowledge of people.**

Solution:
Correct Answer : 2
Genre: Civics

Word Count# 428

Refer to the last paragraph. Options 1, 3, and 4 can be found. Option 2 is not mentioned anywhere in the passage. So, it is the clear answer.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (6-9): Read the given passage and answer the questions that follow.

[…] There is no dispute about the basic facts of the trial of Socrates. It is less obvious why Athenians found Socrates guilty, and what it might mean today. People who believe in both democracy and the rule of law ought to be very interested in this trial. If the takeaway is either that democracy, as direct self-government by the people, is fatally prone to repress dissent, or that those who dissent against democracy must be regarded as oligarchic traitors, then we are left with a grim choice between democracy and intellectual freedom.

But that is the wrong way to view Socrates' trial. Rather, the question it answers concerns civic obligation and commitment. The People's Court convicted Socrates because he refused to accept that a norm of personal responsibility for the effects of public speech applied to his philosophical project. Socrates accepted the guilty verdict as binding, and drank the hemlock, because he acknowledged the authority of the court and the laws under which he was tried. And he did so even though he believed that the jury had made a fundamental mistake in interpreting the law.

The conventional wisdom maintains that the impiety charge against Socrates was a smokescreen, that politics motivated his trial. Just four years earlier, a democratic uprising had overthrown a junta that ruled Athens for several tumultuous months. Meletus' prosecution speech at the trial likely urged the citizens of Athens to focus on Socrates' long association with members of this vicious and anti-democratic junta.

In his influential interpretation *The Trial of Socrates* (1988), the US journalist-turned-classicist I F Stone saw this trial as an embattled democracy defending itself. In Stone's view, Socrates had helped to justify the junta's savage programme of oligarchic misrule and was a traitor. More commonly, Socrates is seen as a victim of an opportunistic prosecutor and a wilfully ignorant citizenry. In truth, politics is indispensable to understanding the trial of Socrates, but in a slightly more sophisticated way. Seeing Socrates as the paradigm of the autonomous individual, as a simple martyr to free speech, is wrong. Athenian political culture and, specifically, the civic commitments required of Athenian citizens are essential to understanding the trial. Socrates' own commitments to his city influenced the trial's course, and those commitments were core parts of Athenian political culture, shaping the relationship between public speech and responsibility. Indeed, the actions of Socrates, Meletus and the jury must be understood in the context of the Athenians' emphasis on the role of the responsible citizen in the democratic state, on their ideal of civic responsibility. […]

Q.9

The author's main conclusion about the democratic process is:

1 ○ **that it is both complex and layered.**

2 ○ **that it is more important than the issue of free speech.**

3 ○ **that it is always plagued by the issue of intellectual freedom against civic duty.**

4 ○ **that it was directly responsible for the death of Socrates.**

Solution:
Correct Answer : 1
Genre: Civics

Bookmark

Answer key/Solution

Word Count# 428

Option 1 best captures the main idea of the passage. The author is consistent about one thing throughout the passage i.e. the trial of Socrates was not a simple issue. It had multiple facets.

Option 2 – It is too narrow.

Option 3 – It is extreme.

Option 4 – This is a distorted option.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

Two millennia ago, a small Greco-Roman temple in present-day Turkey awed and enthralled its residents. Just beyond its stone gate, in a grotto shrouded in a heavy mist, a strange force worked dark deeds: Bulls ushered inside would lie down and perish; the castrated priests in charge would emerge unscathed.

Was it the bloodthirsty will of Pluto, the god of the underworld? The supernatural power of the priests? New research published in the journal Archaeological and Anthropological Sciences suggests a far earthlier explanation to the cave's mystery: noxious carbon dioxide.

Using a portable gas analyser, volcano biologist Hardy Pfanz led a team of scientists to discover that vapours emitted from the mouth of the cave — belched from a fissure running deep beneath the area—reached levels of 4% to 53% volcanic carbon dioxide, depending on the distance from the ground. The lower to the cave floor, the higher the amount of suffocating gas, which formed a lethal lake of carbon dioxide. The noxious gas is heavier than oxygen, so it settles lower, which is one reason CO_2 leaks in your house make basements deadly. Animals with noses to the ground likely breathed in far more gas than the humans walking upright beside them, which could explain the priests' miraculous imperviousness.

Although rediscovered only in 2013 near the town of Pamukkale — famous for its surreal, UNESCO-designate travertine hot spring terraces — the cave's existence has been known since antiquity as part of what was then Hierapolis. Known as "Plutonium" after Pluto, it was thought to be a gate to the underworld and a way to convene with the god by offering animal sacrifices. Spectators would watch in disbelief from a nearby arena. A description written by

the Greek geographer Strabo, who lived from 63 B.C. to 24 A.D., makes a great deal more sense given what we know today: “This space is full of a vapor so misty and dense that one can scarcely see the ground … bulls that are led into it fall and are dragged out dead,” he wrote. But although priests entered and left the cave unharmed, Strabo noted that they would “hold their breath as much as they [could]” and displayed “an indication of a kind of suffocating attack.”

Two thousand years later, visitors should still be wary of the gate; during the 2013 excavation, archaeologists witnessed several birds drop dead after flying too close.

Granted, merely getting here might prove a challenge. Beginning in 2015, Turkey’s rough relationship with Russia has tanked its tourism industry, which despite a brief resurgence last year continues to suffer following tensions with the U.S. government. In December, the U.S. and Turkey mutually suspended visa services amid a feud over the arrest of a local employee of the U.S. Consulate in Istanbul. Services later resumed, but the U.S. government urged its citizens in January to hold off on travel plans to the region, citing terrorism concerns.

The silver lining? Fear generally keeps tourist crowds at bay. Should you visit, you might have the plutonium all to yourself.

Q.10

If there were a paragraph after the last, the author would most likely discuss:

1 **how the site can be promoted as a tourist spot.**

2 **why plutonium should be a tourist hub.**

3 **how one can enjoy in a major tourist attraction.**

4 **why fear matters to the tourism industry.**

Solution:
Correct Answer : 1
Genre: Archaeology

Bookmark

Answer key/Solution

Word Count# 506

In the passage, the author talks about a particular historical heritage site. Then the author gives a background to a strange phenomenon that used to be its main attraction. In the last paragraph the author talks about a major political hurdle to reaching the place and then s/he ends with a funny quip. So, the next paragraph is most likely to continue in the same vein.

Option 1 – It makes sense. So, it can be an answer. It matches the theme of the penultimate paragraph.
Option 2 – The author doesn't have to justify the allure of plutonium. It has already been done in the first few paragraphs of the passage.
Options 3 and 4 – These are beyond the scope of the passage.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

Two millennia ago, a small Greco-Roman temple in present-day Turkey awed and enthralled its residents. Just beyond its stone gate, in a grotto shrouded in a heavy mist, a strange force worked dark deeds: Bulls ushered inside would lie down and perish; the castrated priests in charge would emerge unscathed.

Was it the bloodthirsty will of Pluto, the god of the underworld? The supernatural power of the priests? New research published in the journal Archaeological and Anthropological Sciences suggests a far earthlier explanation to the cave's mystery: noxious carbon dioxide.

Using a portable gas analyser, volcano biologist Hardy Pfanz led a team of scientists to discover that vapours emitted from the mouth of the cave — belched from a fissure running deep beneath the area—reached levels of 4% to 53% volcanic carbon dioxide, depending on the distance from the ground. The lower to the cave floor, the higher the amount of suffocating gas, which formed a lethal lake of carbon dioxide. The noxious gas is heavier than oxygen, so it settles lower, which is one reason CO_2 leaks in your house make basements deadly. Animals with noses to the ground likely breathed in far more gas than the humans walking upright beside them, which could explain the priests' miraculous imperviousness.

Although rediscovered only in 2013 near the town of Pamukkale — famous for its surreal, UNESCO-designate travertine hot spring terraces — the cave's existence has been known since antiquity as part of what was then Hierapolis. Known as "Plutonium" after Pluto, it was thought to be a gate to the underworld and a way to convene with the god by offering animal

sacrifices. Spectators would watch in disbelief from a nearby arena. A description written by the Greek geographer Strabo, who lived from 63 B.C. to 24 A.D., makes a great deal more sense given what we know today: "This space is full of a vapor so misty and dense that one can scarcely see the ground … bulls that are led into it fall and are dragged out dead," he wrote. But although priests entered and left the cave unharmed, Strabo noted that they would "hold their breath as much as they [could]" and displayed "an indication of a kind of suffocating attack."

Two thousand years later, visitors should still be wary of the gate; during the 2013 excavation, archaeologists witnessed several birds drop dead after flying too close.

Granted, merely getting here might prove a challenge. Beginning in 2015, Turkey's rough relationship with Russia has tanked its tourism industry, which despite a brief resurgence last year continues to suffer following tensions with the U.S. government. In December, the U.S. and Turkey mutually suspended visa services amid a feud over the arrest of a local employee of the U.S. Consulate in Istanbul. Services later resumed, but the U.S. government urged its citizens in January to hold off on travel plans to the region, citing terrorism concerns.

The silver lining? Fear generally keeps tourist crowds at bay. Should you visit, you might have the plutonium all to yourself.

Q.11

What is the tone of the author in the last paragraph?

1 **Sarcastic and condescending**

2 **Ignorant and scornful**

3 **Humorous and Observant**

4 **Scathing and Teasing**

Solution:
Correct Answer : 3
Genre: Archaeology

Word Count# 506

The author's tone in the last paragraph (the last two lines) is definitely not negative. So, options 1, 2, and 4 can be eliminated. They all have a highly negative tone each. So, option 3 is the best choice.

Bookmark

Answer key/Solution

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

Two millennia ago, a small Greco-Roman temple in present-day Turkey awed and enthralled its residents. Just beyond its stone gate, in a grotto shrouded in a heavy mist, a strange force worked dark deeds: Bulls ushered inside would lie down and perish; the castrated priests in charge would emerge unscathed.

Was it the bloodthirsty will of Pluto, the god of the underworld? The supernatural power of the priests? New research published in the journal Archaeological and Anthropological Sciences suggests a far earthlier explanation to the cave's mystery: noxious carbon dioxide.

Using a portable gas analyser, volcano biologist Hardy Pfanz led a team of scientists to discover that vapours emitted from the mouth of the cave — belched from a fissure running deep beneath the area—reached levels of 4% to 53% volcanic carbon dioxide, depending on the distance from the ground. The lower to the cave floor, the higher the amount of suffocating gas, which formed a lethal lake of carbon dioxide. The noxious gas is heavier than oxygen, so it settles lower, which is one reason CO_2 leaks in your house make basements deadly. Animals with noses to the ground likely breathed in far more gas than the humans walking upright beside them, which could explain the priests' miraculous imperviousness.

Although rediscovered only in 2013 near the town of Pamukkale — famous for its surreal, UNESCO-designate travertine hot spring terraces — the cave's existence has been known since antiquity as part of what was then Hierapolis. Known as "Plutonium" after Pluto, it was thought to be a gate to the underworld and a way to convene with the god by offering animal sacrifices. Spectators would watch in disbelief from a nearby arena. A description written by the Greek geographer Strabo, who lived from 63 B.C. to 24 A.D., makes a great deal more sense given what we know today: "This space is full of a vapor so misty and dense that one can scarcely see the ground … bulls that are led into it fall and are dragged out dead," he wrote. But although priests entered and left the cave unharmed, Strabo noted that they would "hold their breath as much as they [could]" and displayed "an indication of a kind of suffocating attack."

Two thousand years later, visitors should still be wary of the gate; during the 2013 excavation, archaeologists witnessed several birds drop dead after flying too close.

Granted, merely getting here might prove a challenge. Beginning in 2015, Turkey's rough relationship with Russia has tanked its tourism industry, which despite a brief resurgence last year continues to suffer following tensions with the U.S. government. In December, the U.S. and Turkey mutually suspended visa services amid a feud over the arrest of a local employee of the U.S. Consulate in Istanbul. Services later resumed, but the U.S. government urged its citizens in January to hold off on travel plans to the region, citing terrorism concerns.

The silver lining? Fear generally keeps tourist crowds at bay. Should you visit, you might have the plutonium all to yourself.

Q.12

As per the passage, why were people fascinated by Plutonium?

1 **Because it gave rise to the possible power of Pluto.**

2 **Because it told a tale of mysterious death.**

3 **Because animals died there mysteriously.**

4 **Because bulls died there whereas humans survived.**

Solution:
Correct Answer : 4
Genre: Archaeology

Word Count# 506

Bookmark

Answer key/Solution

Refer to the lines: "Bulls ushered inside would lie down and perish; the castrated priests in charge would emerge unscathed." Clearly, option 4 is the best choice. It gives both aspects of the phenomenon.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

Two millennia ago, a small Greco-Roman temple in present-day Turkey awed and enthralled its residents. Just beyond its stone gate, in a grotto shrouded in a heavy mist, a strange force worked dark deeds: Bulls ushered inside would lie down and perish; the castrated priests in charge would emerge unscathed.

Was it the bloodthirsty will of Pluto, the god of the underworld? The supernatural power of the priests? New research published in the journal Archaeological and Anthropological Sciences suggests a far earthlier explanation to the cave's mystery: noxious carbon dioxide.

Using a portable gas analyser, volcano biologist Hardy Pfanz led a team of scientists to discover that vapours emitted from the mouth of the cave — belched from a fissure running deep beneath the area—reached levels of 4% to 53% volcanic carbon dioxide, depending on the distance from the ground. The lower to the cave floor, the higher the amount of suffocating gas, which formed a lethal lake of carbon dioxide. The noxious gas is heavier than oxygen, so it settles lower, which is one reason CO_2 leaks in your house make basements deadly. Animals with noses to the ground likely breathed in far more gas than the humans walking upright beside them, which could explain the priests' miraculous imperviousness.

Although rediscovered only in 2013 near the town of Pamukkale — famous for its surreal, UNESCO-designate travertine hot spring terraces — the cave's existence has been known since antiquity as part of what was then Hierapolis. Known as "Plutonium" after Pluto, it was thought to be a gate to the underworld and a way to convene with the god by offering animal sacrifices. Spectators would watch in disbelief from a nearby arena. A description written by the Greek geographer Strabo, who lived from 63 B.C. to 24 A.D., makes a great deal more sense given what we know today: "This space is full of a vapor so misty and dense that one can scarcely see the ground … bulls that are led into it fall and are dragged out dead," he wrote. But although priests entered and left the cave unharmed, Strabo noted that they would "hold their breath as much as they [could]" and displayed "an indication of a kind of suffocating attack."

Two thousand years later, visitors should still be wary of the gate; during the 2013 excavation, archaeologists witnessed several birds drop dead after flying too close.

Granted, merely getting here might prove a challenge. Beginning in 2015, Turkey's rough relationship with Russia has tanked its tourism industry, which despite a brief resurgence last year continues to suffer following tensions with the U.S. government. In December, the U.S. and Turkey mutually suspended visa services amid a feud over the arrest of a local employee of the U.S. Consulate in Istanbul. Services later resumed, but the U.S. government urged its citizens in January to hold off on travel plans to the region, citing terrorism concerns.

The silver lining? Fear generally keeps tourist crowds at bay. Should you visit, you might have the plutonium all to yourself.

Q.13

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

1 **Carbon dioxide attacks lower level grounds more.**

2 **The site remains harmful for animals.**

3 **Tourism in Turkey has suffered because Americans no longer want to visit the country.**

4 **The priests remained alive because they were breathing at a higher ground.**

Solution:
Correct Answer : 3
Genre: Archaeology

Word Count# 506

Options 1, 2, and 4 can be easily located in the passage.

Option 3 is misleading. The passage says that the American government has warned its citizens not to go to Turkey for the time being. It is not mentioned that Americans don't 'want' to go there.

FeedBack

Bookmark

Answer key/Solution

Direction for questions (10-14): Read the given passage and answer the questions that follow.

Two millennia ago, a small Greco-Roman temple in present-day Turkey awed and enthralled its residents. Just beyond its stone gate, in a grotto shrouded in a heavy mist, a strange force worked dark deeds: Bulls ushered inside would lie down and perish; the castrated priests in charge would emerge unscathed.

Was it the bloodthirsty will of Pluto, the god of the underworld? The supernatural power of the priests? New research published in the journal Archaeological and Anthropological Sciences suggests a far earthlier explanation to the cave's mystery: noxious carbon dioxide.

Using a portable gas analyser, volcano biologist Hardy Pfanz led a team of scientists to discover that vapours emitted from the mouth of the cave — belched from a fissure running deep beneath the area—reached levels of 4% to 53% volcanic carbon dioxide, depending on the distance from the ground. The lower to the cave floor, the higher the amount of suffocating gas, which formed a lethal lake of carbon dioxide. The noxious gas is heavier than oxygen, so it settles lower, which is one reason CO_2 leaks in your house make basements deadly. Animals with noses to the ground likely breathed in far more gas than the humans walking upright beside them, which could explain the priests' miraculous imperviousness.

Although rediscovered only in 2013 near the town of Pamukkale — famous for its surreal, UNESCO-designate travertine hot spring terraces — the cave's existence has been known since antiquity as part of what was then Hierapolis. Known as "Plutonium" after Pluto, it was thought to be a gate to the underworld and a way to convene with the god by offering animal sacrifices. Spectators would watch in disbelief from a nearby arena. A description written by the Greek geographer Strabo, who lived from 63 B.C. to 24 A.D., makes a great deal more sense given what we know today: "This space is full of a vapor so misty and dense that one can scarcely see the ground … bulls that are led into it fall and are dragged out dead," he wrote. But although priests entered and left the cave unharmed, Strabo noted that they would "hold their breath as much as they [could]" and displayed "an indication of a kind of suffocating attack."

Two thousand years later, visitors should still be wary of the gate; during the 2013 excavation, archaeologists witnessed several birds drop dead after flying too close.

Granted, merely getting here might prove a challenge. Beginning in 2015, Turkey's rough relationship with Russia has tanked its tourism industry, which despite a brief resurgence last year continues to suffer following tensions with the U.S. government. In December, the U.S. and Turkey mutually suspended visa services amid a feud over the arrest of a local employee of the U.S. Consulate in Istanbul. Services later resumed, but the U.S. government urged its citizens in January to hold off on travel plans to the region, citing terrorism concerns.

The silver lining? Fear generally keeps tourist crowds at bay. Should you visit, you might have the plutonium all to yourself.

Q.14

The author in the passage tries to:

1 **adopt a conversational style to drive home his/her main point.**

2 **engage the readers in the description of a place by keeping the style casual.**

3 **explore the possibility of the existence of a phenomenon by analysing empirical data.**

4 **highlight the ridiculous nature of mysteries with the help of scientific research.**

Solution:
Correct Answer : 2
Genre: Archaeology

Bookmark

Answer key/Solution

Word Count# 506

As it's a logical structure question, it should only be done via the method of elimination.
Option 1 – The author doesn't adopt a conversational style. S/he doesn't address anyone.
Option 2 – It is the best choice. The author keeps the language simple and engaging.
Option 3 – The author doesn't explore any phenomenon. S/he already knows the reason behind the ancient mystery.
Option 4 – The author does not ridicule 'mysteries'.

FeedBack

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

The philosopher Agnes Callard tells us that, sometimes, when she's on a deserted road at night, she likes to walk on the double yellow lines. One evening, she decided to lie there in the middle of the road. She kept her arms pinned to her sides so that cars could pass on her left and right. A policeman approached, alarmed and confused. Was she drunk, high, suicidal? Callard explained that she had many reasons for being there; she wondered, among other things, what the stars would look like from the road's perspective. Mostly, though, she wanted to know how it would feel. "Lying on the road is not a thing one does," she writes, in an essay called "Unruliness." When one is in an "unruly" frame of mind, such an act can be appealing for precisely that reason.

Callard is careful to distinguish unruliness from rebellion. By lying down in the road, she wasn't critiquing the status quo or sticking it to the Man. Unruly people might flatter themselves as rebels, but unruliness is nothing so determinate—it's just an unwillingness to play by the rules. It's a near-neighbour, therefore, to perversity, a topic long central to theology and philosophy. A classic example of a perverse desire appears in Augustine's "Confessions," written around the year 400. Augustine recounts how, in his youth, he and his friends stole some pears. They weren't hungry—in fact, they threw the fruit to the hogs. Instead, Augustine writes, their act was "gratuitously wanton, having no inducement to evil but the evil itself." Accounting for his behaviour, he concludes, "I loved the evil in me." We still explain perverse behaviour this way. Think of how Alfred describes the Joker in Christopher Nolan's film "The Dark Knight": "Some men aren't looking for anything logical, like money. They can't be bought, bullied, reasoned or negotiated with. Some men just want to watch the world burn."

In 2009, in *The Journal of Philosophy*, the philosopher David Sussman published an article called "For Badness' Sake." In it, he defined perverse actions as those undertaken when our normal desire for the good—perhaps the moral good, or maybe just the narrower good of self-interest—is reversed. This state of reversal can be expressed as wickedness, as in Augustine's case, but it doesn't have to be. Sussman considers the appeal of truly awful movies, or of corpses and grisly accidents, and notes our interest in sniffing spoiled food even though—or perhaps because—we know it to be disgusting. He reminds us that it's hard to see the "fragile beauty of icicles" without wanting to smash them, and points out that "most of us know what it is like to pick at a scab or worry a loose tooth simply because of the peculiar way in which doing so hurts."

Perverse actors—I won't call them "perverts," since that word evokes distracting connotations—can also be creative or funny. Scientific papers have had to be retracted because of so-called mischievous responders. Researchers who study teen-agers have it worst. In one study, nineteen per cent of high-school students who claimed to be adopted turned out to be kidding. In another, ninety-nine per cent of students who said they used an artificial limb really didn't. Adults aren't immune to the temptations of mischief. The blogger Scott Alexander points out that four per cent of Americans tell pollsters that they think reptilian aliens rule the Earth. […]

Q.15

The purpose of this passage is to:

1 **distinguish between rebellion, perversity, and unruliness.**

2 **introduce the similarities between unruliness and perversity.**

3 **illustrate the range of perverse behaviour with examples.**

4 **explain the causes and consequences of the instinct to break rules.**

Solution:
Correct Answer : 2
Genre: Philosophy

Word Count# 573

Bookmark

Answer key/Solution

The main idea of the passage is that unruliness is closer to perversity. Then the author gives some examples to explain what perverse behaviour or action is. So, option 2 is the correct answer. The author has just introduced a concept.

Option 1 – The purpose of the second paragraph is to show how unruliness is closer to perversity, not rebellion. It is not the main idea. This option distorts that narrow idea to show that all three categories are given the same attention.

Option 3 – The author doesn't discuss the 'range' of the behavioural pattern.

Option 4 – This is too broad. Unruliness may or may not be the only instinct to break rules. So, this is not the answer.

FeedBack

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

The philosopher Agnes Callard tells us that, sometimes, when she's on a deserted road at night, she likes to walk on the double yellow lines. One evening, she decided to lie there in the middle of the road. She kept her arms pinned to her sides so that cars could pass on her left and right. A policeman approached, alarmed and confused. Was she drunk, high, suicidal? Callard explained that she had many reasons for being there; she wondered, among other things, what the stars would look like from the road's perspective. Mostly, though, she wanted to know how it would feel. "Lying on the road is not a thing one does," she writes, in an essay called "Unruliness." When one is in an "unruly" frame of mind, such an act can be appealing for precisely that reason.

Callard is careful to distinguish unruliness from rebellion. By lying down in the road, she wasn't critiquing the status quo or sticking it to the Man. Unruly people might flatter themselves as rebels, but unruliness is nothing so determinate—it's just an unwillingness to play by the rules. It's a near-neighbour, therefore, to perversity, a topic long central to theology and philosophy. A classic example of a perverse desire appears in Augustine's "Confessions," written around the year 400. Augustine recounts how, in his youth, he and his friends stole some pears. They weren't hungry—in fact, they threw the fruit to the hogs. Instead, Augustine writes, their act was "gratuitously wanton, having no inducement to evil but the evil itself." Accounting for his behaviour, he concludes, "I loved the evil in me." We still explain perverse behaviour this way. Think of how Alfred describes the Joker in Christopher Nolan's film "The Dark Knight": "Some men aren't looking for anything logical, like money. They can't be bought, bullied, reasoned or negotiated with. Some men just want to watch the world burn."

In 2009, in *The Journal of Philosophy*, the philosopher David Sussman published an article called "For Badness' Sake." In it, he defined perverse actions as those undertaken when our normal desire for the good—perhaps the moral good, or maybe just the narrower good of self-interest—is reversed. This state of reversal can be expressed as wickedness, as in Augustine's case, but it doesn't have to be. Sussman considers the appeal of truly awful movies, or of corpses and grisly accidents, and notes our interest in sniffing spoiled food even though—or perhaps because—we know it to be disgusting. He reminds us that it's hard to see the "fragile beauty of icicles" without wanting to smash them, and points out that "most of us know what it is like to pick at a scab or worry a loose tooth simply because of the peculiar way in which doing so hurts."

Perverse actors—I won't call them "perverts," since that word evokes distracting connotations—can also be creative or funny. Scientific papers have had to be retracted because of so-called mischievous responders. Researchers who study teen-agers have it worst. In one study, nineteen per cent of high-school students who claimed to be adopted turned out to be kidding. In another, ninety-nine per cent of students who said they used an artificial limb really didn't. Adults aren't immune to the temptations of mischief. The blogger Scott Alexander points out that four per cent of Americans tell pollsters that they think reptilian aliens rule the Earth. […]

Q.16

All of the following statements are true, as per the passage, EXCEPT:

1 **Sometimes, humans find disgusting things appealing.**

2 **Not all evil people need an external cause to act a certain way.**

3 **When one is in an 'unruly' state, one does things which are not normal.**

4 **Mischievous teens have caused some problem for researchers.**

Solution:
Correct Answer : 3
Genre: Philosophy

Word Count# 573

Bookmark

Answer key/Solution

Options 1, 2, and 4 are clearly mentioned in the passage. Note the use of tentative terms like 'sometimes' and 'can'.

Option 3 is a distortion of the sentence "When one is in an "unruly" frame of mind, such an act can be appealing for precisely that reason." The author writes it in a tentative sense. The option makes it look certain.

FeedBack

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

The philosopher Agnes Callard tells us that, sometimes, when she's on a deserted road at night, she likes to walk on the double yellow lines. One evening, she decided to lie there in the middle of the road. She kept her arms pinned to her sides so that cars could pass on her left and right. A policeman approached, alarmed and confused. Was she drunk, high, suicidal? Callard explained that she had many reasons for being there; she wondered, among other things, what the stars would look like from the road's perspective. Mostly, though, she wanted to know how it would feel. "Lying on the road is not a thing one does," she writes, in an essay called "Unruliness." When one is in an "unruly" frame of mind, such an act can be appealing for precisely that reason.

Callard is careful to distinguish unruliness from rebellion. By lying down in the road, she wasn't critiquing the status quo or sticking it to the Man. Unruly people might flatter themselves as rebels, but unruliness is nothing so determinate—it's just an unwillingness to play by the rules. It's a near-neighbour, therefore, to perversity, a topic long central to theology and philosophy. A classic example of a perverse desire appears in Augustine's "Confessions," written around the year 400. Augustine recounts how, in his youth, he and his friends stole some pears. They weren't hungry—in fact, they threw the fruit to the hogs. Instead, Augustine writes, their act was "gratuitously wanton, having no inducement to evil but the evil itself." Accounting for his behaviour, he concludes, "I loved the evil in me." We still explain perverse behaviour this way. Think of how Alfred describes the Joker in Christopher Nolan's film "The Dark Knight": "Some men aren't looking for anything logical, like money. They can't be bought, bullied, reasoned or negotiated with. Some men just want to watch the world burn."

In 2009, in *The Journal of Philosophy*, the philosopher David Sussman published an article called "For Badness' Sake." In it, he defined perverse actions as those undertaken when our normal desire for the good—perhaps the moral good, or maybe just the narrower good of self-interest—is reversed. This state of reversal can be expressed as wickedness, as in Augustine's case, but it doesn't have to be. Sussman considers the appeal of truly awful movies, or of corpses and grisly accidents, and notes our interest in sniffing spoiled food even though—or perhaps because—we know it to be disgusting. He reminds us that it's hard to see the "fragile beauty of icicles" without wanting to smash them, and points out that "most of us know what it is like to pick at a scab or worry a loose tooth simply because of the peculiar way in which doing so hurts."

Perverse actors—I won't call them "perverts," since that word evokes distracting connotations—can also be creative or funny. Scientific papers have had to be retracted because of so-called mischievous responders. Researchers who study teen-agers have it worst. In one study, nineteen per cent of high-school students who claimed to be adopted turned out to be kidding. In another, ninety-nine per cent of students who said they used an artificial limb really didn't. Adults aren't immune to the temptations of mischief. The blogger Scott Alexander points out that four per cent of Americans tell pollsters that they think reptilian aliens rule the Earth. […]

Q.17

Based on this extract, David Sussman would most likely consider which of the following actions perverse?

1 **A young man sees an old man with a cane and decides to break the latter.**

2 **A lady sees that a child is crying alone in a railway station and decides to not call the police.**

3 **A young girl sees that her friend is being bullied and decides to teach the bullies a lesson by becoming an even harsher bully.**

4 **A man sees that a mob is beating a suspected thief and decides to join.**

Solution:
Correct Answer : 1
Genre: Philosophy

Bookmark

Answer key/Solution

Word Count# 573

Refer to the lines: "…he defined perverse actions as those undertaken when our normal desire for the good—perhaps the moral good, or maybe just the narrower good of self-interest—is reversed." So, the clearest logic is that it is an evil action taken without any justification. It is just for the sake of being evil.

Option 1 – There is no reason why the boy should make life difficult for the old man. So, it is the most likely choice.

Option 2 – There is no action. There is no desire to do evil. So, this can't be the answer.

Options 3 and 4 – There is some self-interest of doing good in these two. It may be misguided but it's not pure evil. Mob is beating a suspected thief. So, the man who joins might do it under a mistaken notion. So, these two are not the answers.

FeedBack

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

The philosopher Agnes Callard tells us that, sometimes, when she's on a deserted road at night, she likes to walk on the double yellow lines. One evening, she decided to lie there in the middle of the road. She kept her arms pinned to her sides so that cars could pass on her left and right. A policeman approached, alarmed and confused. Was she drunk, high, suicidal? Callard explained that she had many reasons for being there; she wondered, among other things, what the stars would look like from the road's perspective. Mostly, though, she wanted to know how it would feel. "Lying on the road is not a thing one does," she writes, in an essay called "Unruliness." When one is in an "unruly" frame of mind, such an act can be appealing for precisely that reason.

Callard is careful to distinguish unruliness from rebellion. By lying down in the road, she wasn't critiquing the status quo or sticking it to the Man. Unruly people might flatter themselves as rebels, but unruliness is nothing so determinate—it's just an unwillingness to play by the rules. It's a near-neighbour, therefore, to perversity, a topic long central to theology and philosophy. A classic example of a perverse desire appears in Augustine's "Confessions," written around the year 400. Augustine recounts how, in his youth, he and his friends stole some pears. They weren't hungry—in fact, they threw the fruit to the hogs. Instead, Augustine writes, their act was "gratuitously wanton, having no inducement to evil but the evil itself." Accounting for his behaviour, he concludes, "I loved the evil in me." We still explain perverse behaviour this way. Think of how Alfred describes the Joker in Christopher Nolan's film "The Dark Knight": "Some men aren't looking for anything logical, like money. They can't be bought, bullied, reasoned or negotiated with. Some men just want to watch the world burn."

In 2009, in *The Journal of Philosophy*, the philosopher David Sussman published an article called "For Badness' Sake." In it, he defined perverse actions as those undertaken when our normal desire for the good—perhaps the moral good, or maybe just the narrower good of self-interest—is reversed. This state of reversal can be expressed as wickedness, as in Augustine's case, but it doesn't have to be. Sussman considers the appeal of truly awful movies, or of corpses and grisly accidents, and notes our interest in sniffing spoiled food even though—or perhaps because—we know it to be disgusting. He reminds us that it's hard to see the "fragile beauty of icicles" without wanting to smash them, and points out that "most of us know what it is like to pick at a scab or worry a loose tooth simply because of the peculiar way in which doing so hurts."

Perverse actors—I won't call them "perverts," since that word evokes distracting connotations—can also be creative or funny. Scientific papers have had to be retracted because of so-called mischievous responders. Researchers who study teen-agers have it worst. In one study, nineteen per cent of high-school students who claimed to be adopted turned out to be kidding. In another, ninety-nine per cent of students who said they used an artificial limb really didn't. Adults aren't immune to the temptations of mischief. The blogger Scott Alexander points out that four per cent of Americans tell pollsters that they think reptilian aliens rule the Earth. […]

Q.18

As per the passage, which of the following best summarises the similarities between Augustine and Joker?

1 **They have a desire to maximise violence.**

2 **Both are unapologetic about the evil in them.**

3 **Neither of them can be bullied or coaxed into doing something.**

4 **Both are examples of pure evil.**

Solution:
Correct Answer : 2
Genre: Philosophy

Word Count# 573

Bookmark

Answer key/Solution

This can be answered by the method of elimination. The example of Augustine is given to show an example of perversity in the ancient times. Augustine has not been painted as a purely evil man. Joker, as per Alfred, is a purely evil man.

Option 1 – We can't infer that Augustine wanted to maximise violence.

Option 2 – It's the correct answer.

Options 3 and 4 – It can't be said for sure about Augustine. His example was related to his action as a boy. So, neither of these is the answer.

FeedBack

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

The philosopher Agnes Callard tells us that, sometimes, when she's on a deserted road at night, she likes to walk on the double yellow lines. One evening, she decided to lie there in the middle of the road. She kept her arms pinned to her sides so that cars could pass on her left and right. A policeman approached, alarmed and confused. Was she drunk, high, suicidal? Callard explained that she had many reasons for being there; she wondered, among other things, what the stars would look like from the road's perspective. Mostly, though, she wanted to know how it would feel. "Lying on the road is not a thing one does," she writes, in an essay called "Unruliness." When one is in an "unruly" frame of mind, such an act can be appealing for precisely that reason.

Callard is careful to distinguish unruliness from rebellion. By lying down in the road, she wasn't critiquing the status quo or sticking it to the Man. Unruly people might flatter themselves as rebels, but unruliness is nothing so determinate—it's just an unwillingness to play by the rules. It's a near-neighbour, therefore, to perversity, a topic long central to theology and philosophy. A classic example of a perverse desire appears in Augustine's "Confessions," written around the year 400. Augustine recounts how, in his youth, he and his friends stole some pears. They weren't hungry—in fact, they threw the fruit to the hogs. Instead, Augustine writes, their act was "gratuitously wanton, having no inducement to evil but the evil itself." Accounting for his behaviour, he concludes, "I loved the evil in me." We still explain perverse behaviour this way. Think of how Alfred describes the Joker in Christopher Nolan's film "The Dark Knight": "Some men aren't looking for anything logical, like money. They can't be bought, bullied, reasoned or negotiated with. Some men just want to watch the world burn."

In 2009, in *The Journal of Philosophy*, the philosopher David Sussman published an article called "For Badness' Sake." In it, he defined perverse actions as those undertaken when our normal desire for the good—perhaps the moral good, or maybe just the narrower good of self-interest—is reversed. This state of reversal can be expressed as wickedness, as in Augustine's case, but it doesn't have to be. Sussman considers the appeal of truly awful movies, or of corpses and grisly accidents, and notes our interest in sniffing spoiled food even though—or perhaps because—we know it to be disgusting. He reminds us that it's hard to see the "fragile beauty of icicles" without wanting to smash them, and points out that "most of us know what it is like to pick at a scab or worry a loose tooth simply because of the peculiar way in which doing so hurts."

Perverse actors—I won't call them "perverts," since that word evokes distracting connotations—can also be creative or funny. Scientific papers have had to be retracted because of so-called mischievous responders. Researchers who study teen-agers have it worst. In one study, nineteen per cent of high-school students who claimed to be adopted turned out to be kidding. In another, ninety-nine per cent of students who said they used an artificial limb really didn't. Adults aren't immune to the temptations of mischief. The blogger Scott Alexander points out that four per cent of Americans tell pollsters that they think reptilian aliens rule the Earth. […]

Q.19

What can be inferred from the last paragraph?

1 **The author is shy of using strong terms to define morally reprehensive actions.**

2 **The field of scientific research is plagued by perverse actors.**

3 **Teenagers and children should not be allowed to participate in scientific research.**

4 **The action of certain perverse actors can affect an entire field.**

Solution:
Correct Answer : 4
Genre: Philosophy

Word Count# 573

Options 1, 2, and 3 – All these are extreme conclusions.

Option 4 – This uses a tentative term 'can'. So, it is the best choice.

FeedBack

Bookmark

Answer key/Solution

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

How flexible should constitutions be? How often, and how, should they change? Is a written constitution – unlike the unwritten British one – an invitation to the political polarities of instability or stasis? There is no simple answer to these questions. But history offers some guidance. Law, when it emerged in the great ancient Mesopotamian civilisations, was a 'tool of government'. Such a demystified, pragmatic view of law suggests legal constitutions are *technologies for governing* , designed and implemented to bring about socially negotiated outcomes. Depending on the histories and needs of their 'parent societies', different kinds of constitutions come about, generating histories of political, legal and economic evolution, and being altered by them in turn. The histories of the US and Indian constitutions show two related political and legal systems evolving over time, their variations underwritten by their country's historical experiences. The history of the Indian state and constitution includes a pragmatic American influence, with which the US would now benefit being reacquainted.

In 1947, Justice Felix Frankfurter wrote to a member of India's drafting committee, Sir Benegal Narsing Rau, advising him to delete references to 'the due process of law' from the working draft of the Constitution of India. Justice Frankfurter's logic was simple. In the so-called 'Lochner era' (1897-1937), the US Supreme Court, by utilising its power of judicial review, had often struck down social welfare legislation enacted by a busy US legislature. The legislature's social welfare programmes were responses to the needs of an economically desperate polity; the court answered by reasserting the needs of the 'business class' and the

'haves'. Such antidemocratic inclinations were arrested only by the 'switch in time that saved nine'. That was how Thomas Reed Powell of the Harvard Law School characterised the US Supreme Court's reversal of its rulings in this domain in the face of President Franklin Roosevelt's threat to place additional judges more sympathetic to his legislative initiatives on the Supreme Court. Politics, in other words, compelled a historic constitutional transformation.

In 1947, as India looked ahead to its nascent republic status, its new Constituent Assembly planned extensive land reforms. These reforms sought to reduce the entrenched power of India's landlords and bring relief to their serfs in India's provinces; they would, at a minimum, involve some 'seizures' or 'takings' of landed property. An Indian landlord equipped with a copy of the American due process clause might expect to find the new Indian Supreme Court willing to stand by him and, as the US Supreme Court first tried to do with the New Deal, thwart the democratic reforms of the legislature. Such judicial intervention, likely in the name of 'due process', would threaten India's post-independence progress toward the eventual realisation of a republic that ensured the wellbeing of *all* its citizens. The drafters of the Indian constitution paid heed to Frankfurter's advice.

The first version of the due process clause in the Constitution of India had read: 'Nor shall any State deprive any person of life, liberty and property without due process of law.' Soon, the word 'property' was deleted. Moreover, to prevent the broad interpretation of 'liberty' that the US Supreme Court had shown in *Lochner v New York* , when it had struck down minimum-wage legislation, 'liberty' was qualified as 'personal liberty' – not corporate. Lastly, to minimise the expressive impact of 'due process of law', that phrase was replaced by 'procedure established by law'. Finally, Article 21 of the Constitution of India read: 'No person shall be deprived of his life or personal liberty except according to procedure established by law.' India's land reforms went through – partially – helping a newly independent democracy, the world's largest, move beyond feudalism.

Q.20

As per the passage, Justice Felix Frankfurter wrote to the member of the drafting committee in order to:

1 **encourage him to subvert the rule of law.**

2 **guide him to learn from a historical episode.**

3 **teach him a lesson in history.**

4 **help him make India a more democratic nation.**

Solution:
Correct Answer : 2
Genre: Political Theory

Bookmark

Answer key/Solution

Word Count# 608

This is an easy question. Refer to the lines: "Justice Frankfurter's logic was simple. In the so-called 'Lochner era' (1897-1937), the US Supreme Court, by utilising its power of judicial review, had often struck down social welfare legislation enacted by a busy US legislature."

Option 1 is wrong. The idea was never to 'subvert the rule of law'. It's a very negative option.

Option 2 is the correct answer. The historical episode is the one involving the US constitution.

Option 3 has a different meaning. Frankfurter was giving a suggestion or a piece of advice, not trying to teach anything.

Option 4 is too broad.

FeedBack

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

How flexible should constitutions be? How often, and how, should they change? Is a written constitution – unlike the unwritten British one – an invitation to the political polarities of instability or stasis? There is no simple answer to these questions. But history offers some guidance. Law, when it emerged in the great ancient Mesopotamian civilisations, was a 'tool of government'. Such a demystified, pragmatic view of law suggests legal constitutions are *technologies for governing* , designed and implemented to bring about socially negotiated outcomes. Depending on the histories and needs of their 'parent societies', different kinds of constitutions come about, generating histories of political, legal and economic evolution, and being altered by them in turn. The histories of the US and Indian constitutions show two related political and legal systems evolving over time, their variations underwritten by their country's historical experiences. The history of the Indian state and constitution includes a pragmatic American influence, with which the US would now benefit being reacquainted.

In 1947, Justice Felix Frankfurter wrote to a member of India's drafting committee, Sir Benegal Narsing Rau, advising him to delete references to 'the due process of law' from the working draft of the Constitution of India. Justice Frankfurter's logic was simple. In the so-called 'Lochner era' (1897-1937), the US Supreme Court, by utilising its power of judicial review, had often struck down social welfare legislation enacted by a busy US legislature. The legislature's social welfare programmes were responses to the needs of an economically desperate polity; the court answered by reasserting the needs of the 'business class' and the

'haves'. Such antidemocratic inclinations were arrested only by the 'switch in time that saved nine'. That was how Thomas Reed Powell of the Harvard Law School characterised the US Supreme Court's reversal of its rulings in this domain in the face of President Franklin Roosevelt's threat to place additional judges more sympathetic to his legislative initiatives on the Supreme Court. Politics, in other words, compelled a historic constitutional transformation.

In 1947, as India looked ahead to its nascent republic status, its new Constituent Assembly planned extensive land reforms. These reforms sought to reduce the entrenched power of India's landlords and bring relief to their serfs in India's provinces; they would, at a minimum, involve some 'seizures' or 'takings' of landed property. An Indian landlord equipped with a copy of the American due process clause might expect to find the new Indian Supreme Court willing to stand by him and, as the US Supreme Court first tried to do with the New Deal, thwart the democratic reforms of the legislature. Such judicial intervention, likely in the name of 'due process', would threaten India's post-independence progress toward the eventual realisation of a republic that ensured the wellbeing of *all* its citizens. The drafters of the Indian constitution paid heed to Frankfurter's advice.

The first version of the due process clause in the Constitution of India had read: 'Nor shall any State deprive any person of life, liberty and property without due process of law.' Soon, the word 'property' was deleted. Moreover, to prevent the broad interpretation of 'liberty' that the US Supreme Court had shown in *Lochner v New York* , when it had struck down minimum-wage legislation, 'liberty' was qualified as 'personal liberty' – not corporate. Lastly, to minimise the expressive impact of 'due process of law', that phrase was replaced by 'procedure established by law'. Finally, Article 21 of the Constitution of India read: 'No person shall be deprived of his life or personal liberty except according to procedure established by law.' India's land reforms went through – partially – helping a newly independent democracy, the world's largest, move beyond feudalism.

Q.21

Which of the following, is most likely to answer the first question the author raises in the paragraph?

1 **It should be flexible as long as it fulfils a practical requirement.**

2 **It should be flexible but stay within the scope of the intentions of its makers.**

3 **It must never go beyond the scope of its original premise.**

4 **It can be flexible as long as the legal principles are followed.**

Solution:
Correct Answer : 1
Genre: Political Theory

Bookmark

Answer key/Solution

Word Count# 608

This is an inference based question. The author raises the question on flexibility in the first line. S/he indirectly answers it by the end of the first paragraph. The rest of the passage is dedicated to illustrate that answer. Refer to the lines: "The history of the Indian state and constitution includes a pragmatic American influence, with which the US would now benefit being reacquainted." That means the question of flexibility should be decided by the need of the hour. The example concerning the amendment to the draft of the Indian Constitution further explains this. So, option 1 is the correct answer.

Options 3 and 4 are clearly wrong. The author says that the Constitution should in appropriate cases, decide the law, not the other way round. So, these two don't match the author's main point.

Option 2 is vague. The intention of the makers has not been mentioned in the passage.

FeedBack

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

How flexible should constitutions be? How often, and how, should they change? Is a written constitution – unlike the unwritten British one – an invitation to the political polarities of instability or stasis? There is no simple answer to these questions. But history offers some guidance. Law, when it emerged in the great ancient Mesopotamian civilisations, was a 'tool of government'. Such a demystified, pragmatic view of law suggests legal constitutions are *technologies for governing* , designed and implemented to bring about socially negotiated outcomes. Depending on the histories and needs of their 'parent societies', different kinds of constitutions come about, generating histories of political, legal and economic evolution, and being altered by them in turn. The histories of the US and Indian constitutions show two related political and legal systems evolving over time, their variations underwritten by their country's historical experiences. The history of the Indian state and constitution includes a pragmatic American influence, with which the US would now benefit being reacquainted.

In 1947, Justice Felix Frankfurter wrote to a member of India's drafting committee, Sir Benegal Narsing Rau, advising him to delete references to 'the due process of law' from the working draft of the Constitution of India. Justice Frankfurter's logic was simple. In the so-called 'Lochner era' (1897-1937), the US Supreme Court, by utilising its power of judicial review, had often struck down social welfare legislation enacted by a busy US legislature. The legislature's social welfare programmes were responses to the needs of an economically desperate polity; the court answered by reasserting the needs of the 'business class' and the

'haves'. Such antidemocratic inclinations were arrested only by the 'switch in time that saved nine'. That was how Thomas Reed Powell of the Harvard Law School characterised the US Supreme Court's reversal of its rulings in this domain in the face of President Franklin Roosevelt's threat to place additional judges more sympathetic to his legislative initiatives on the Supreme Court. Politics, in other words, compelled a historic constitutional transformation.

In 1947, as India looked ahead to its nascent republic status, its new Constituent Assembly planned extensive land reforms. These reforms sought to reduce the entrenched power of India's landlords and bring relief to their serfs in India's provinces; they would, at a minimum, involve some 'seizures' or 'takings' of landed property. An Indian landlord equipped with a copy of the American due process clause might expect to find the new Indian Supreme Court willing to stand by him and, as the US Supreme Court first tried to do with the New Deal, thwart the democratic reforms of the legislature. Such judicial intervention, likely in the name of 'due process', would threaten India's post-independence progress toward the eventual realisation of a republic that ensured the wellbeing of *all* its citizens. The drafters of the Indian constitution paid heed to Frankfurter's advice.

The first version of the due process clause in the Constitution of India had read: 'Nor shall any State deprive any person of life, liberty and property without due process of law.' Soon, the word 'property' was deleted. Moreover, to prevent the broad interpretation of 'liberty' that the US Supreme Court had shown in *Lochner v New York* , when it had struck down minimum-wage legislation, 'liberty' was qualified as 'personal liberty' – not corporate. Lastly, to minimise the expressive impact of 'due process of law', that phrase was replaced by 'procedure established by law'. Finally, Article 21 of the Constitution of India read: 'No person shall be deprived of his life or personal liberty except according to procedure established by law.' India's land reforms went through – partially – helping a newly independent democracy, the world's largest, move beyond feudalism.

Q.22

The author uses the phrase "antidemocratic inclinations" in the second paragraph to indicate that:

1 **sometimes even good intention can result in an undesirable consequence.**

2 **it's the President's prerogative in the US to threaten the judiciary.**

3 **the legal system is biased against the underprivileged due to corrupt judges.**

4 **the law doesn't necessarily always act in favour of the public.**

Solution:
Correct Answer : 4
Genre: Political Theory

Bookmark

Answer key/Solution

Word Count# 608

The author gives the example in the second paragraph to show that in one case in the past the legislative and executive branches had to step in to check the abuse of power by the judiciary. In that case the judge in question sided with the rich, against the interest of the masses (anti-democratic). So, option 4 best captures this.

Option 1 – It is wrong. There was no good intention in case of the judge.

Option 2 – It is a distorted option. The author would never support (at least there is no hint of it in the passage) a President threatening the judiciary without just cause. So, 'prerogative' makes it a wrong option. It should be necessitated by exigent circumstances.

Option 3 – This is too generic to be true. The entire legal system is not blamed by the author.

FeedBack

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

How flexible should constitutions be? How often, and how, should they change? Is a written constitution – unlike the unwritten British one – an invitation to the political polarities of instability or stasis? There is no simple answer to these questions. But history offers some guidance. Law, when it emerged in the great ancient Mesopotamian civilisations, was a 'tool of government'. Such a demystified, pragmatic view of law suggests legal constitutions are *technologies for governing* , designed and implemented to bring about socially negotiated outcomes. Depending on the histories and needs of their 'parent societies', different kinds of constitutions come about, generating histories of political, legal and economic evolution, and being altered by them in turn. The histories of the US and Indian constitutions show two related political and legal systems evolving over time, their variations underwritten by their country's historical experiences. The history of the Indian state and constitution includes a pragmatic American influence, with which the US would now benefit being reacquainted.

In 1947, Justice Felix Frankfurter wrote to a member of India's drafting committee, Sir Benegal Narsing Rau, advising him to delete references to 'the due process of law' from the working draft of the Constitution of India. Justice Frankfurter's logic was simple. In the so-called 'Lochner era' (1897-1937), the US Supreme Court, by utilising its power of judicial review, had often struck down social welfare legislation enacted by a busy US legislature. The legislature's social welfare programmes were responses to the needs of an economically desperate polity; the court answered by reasserting the needs of the 'business class' and the 'haves'. Such antidemocratic inclinations were arrested only by the 'switch in time that saved

nine'. That was how Thomas Reed Powell of the Harvard Law School characterised the US Supreme Court's reversal of its rulings in this domain in the face of President Franklin Roosevelt's threat to place additional judges more sympathetic to his legislative initiatives on the Supreme Court. Politics, in other words, compelled a historic constitutional transformation.

In 1947, as India looked ahead to its nascent republic status, its new Constituent Assembly planned extensive land reforms. These reforms sought to reduce the entrenched power of India's landlords and bring relief to their serfs in India's provinces; they would, at a minimum, involve some 'seizures' or 'takings' of landed property. An Indian landlord equipped with a copy of the American due process clause might expect to find the new Indian Supreme Court willing to stand by him and, as the US Supreme Court first tried to do with the New Deal, thwart the democratic reforms of the legislature. Such judicial intervention, likely in the name of 'due process', would threaten India's post-independence progress toward the eventual realisation of a republic that ensured the wellbeing of *all* its citizens. The drafters of the Indian constitution paid heed to Frankfurter's advice.

The first version of the due process clause in the Constitution of India had read: 'Nor shall any State deprive any person of life, liberty and property without due process of law.' Soon, the word 'property' was deleted. Moreover, to prevent the broad interpretation of 'liberty' that the US Supreme Court had shown in *Lochner v New York* , when it had struck down minimum-wage legislation, 'liberty' was qualified as 'personal liberty' – not corporate. Lastly, to minimise the expressive impact of 'due process of law', that phrase was replaced by 'procedure established by law'. Finally, Article 21 of the Constitution of India read: 'No person shall be deprived of his life or personal liberty except according to procedure established by law.' India's land reforms went through – partially – helping a newly independent democracy, the world's largest, move beyond feudalism.

Q.23

Why was the word 'personal' used to refer to 'liberty' in the amendment to the draft?

1 **In order to follow the example of the US Court**

2 **To minimise the impact of 'due process of law'**

3 **To make the clarification of the term simpler**

4 **In order to facilitate India's 'anti-feudal' stance**

Solution:
Correct Answer : 3
Genre: Political Theory

Word Count# 608

Bookmark

Answer key/Solution

It's a simple fact based question. Refer to the phrase "to prevent the broad interpretation of 'liberty'" in the last paragraph. This is clearly stated by option 3. The other options are wrong. Option 1 doesn't answer the question; it simply states a fact that there was a precedence. It was not the reason. Option 4 is irrelevant to the given question.

FeedBack

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

How flexible should constitutions be? How often, and how, should they change? Is a written constitution – unlike the unwritten British one – an invitation to the political polarities of instability or stasis? There is no simple answer to these questions. But history offers some guidance. Law, when it emerged in the great ancient Mesopotamian civilisations, was a 'tool of government'. Such a demystified, pragmatic view of law suggests legal constitutions are *technologies for governing* , designed and implemented to bring about socially negotiated outcomes. Depending on the histories and needs of their 'parent societies', different kinds of constitutions come about, generating histories of political, legal and economic evolution, and being altered by them in turn. The histories of the US and Indian constitutions show two related political and legal systems evolving over time, their variations underwritten by their country's historical experiences. The history of the Indian state and constitution includes a pragmatic American influence, with which the US would now benefit being reacquainted.

In 1947, Justice Felix Frankfurter wrote to a member of India's drafting committee, Sir Benegal Narsing Rau, advising him to delete references to 'the due process of law' from the working draft of the Constitution of India. Justice Frankfurter's logic was simple. In the so-called 'Lochner era' (1897-1937), the US Supreme Court, by utilising its power of judicial review, had often struck down social welfare legislation enacted by a busy US legislature. The legislature's social welfare programmes were responses to the needs of an economically desperate polity; the court answered by reasserting the needs of the 'business class' and the 'haves'. Such antidemocratic inclinations were arrested only by the 'switch in time that saved nine'. That was how Thomas Reed Powell of the Harvard Law School characterised the US Supreme Court's reversal of its rulings in this domain in the face of President Franklin Roosevelt's threat to place additional judges more sympathetic to his legislative initiatives on the Supreme Court. Politics, in other words, compelled a historic constitutional transformation.

In 1947, as India looked ahead to its nascent republic status, its new Constituent Assembly planned extensive land reforms. These reforms sought to reduce the entrenched power of

India's landlords and bring relief to their serfs in India's provinces; they would, at a minimum, involve some 'seizures' or 'takings' of landed property. An Indian landlord equipped with a copy of the American due process clause might expect to find the new Indian Supreme Court willing to stand by him and, as the US Supreme Court first tried to do with the New Deal, thwart the democratic reforms of the legislature. Such judicial intervention, likely in the name of 'due process', would threaten India's post-independence progress toward the eventual realisation of a republic that ensured the wellbeing of *all* its citizens. The drafters of the Indian constitution paid heed to Frankfurter's advice.

The first version of the due process clause in the Constitution of India had read: 'Nor shall any State deprive any person of life, liberty and property without due process of law.' Soon, the word 'property' was deleted. Moreover, to prevent the broad interpretation of 'liberty' that the US Supreme Court had shown in *Lochner v New York* , when it had struck down minimum-wage legislation, 'liberty' was qualified as 'personal liberty' – not corporate. Lastly, to minimise the expressive impact of 'due process of law', that phrase was replaced by 'procedure established by law'. Finally, Article 21 of the Constitution of India read: 'No person shall be deprived of his life or personal liberty except according to procedure established by law.' India's land reforms went through – partially – helping a newly independent democracy, the world's largest, move beyond feudalism.

Q.24

As per the passage, why were the land reform laws crucial for India?

1 **To enhance the power of the government to seize property for national causes**

2 **To make the process of India's independence smoother by eliminating private properties**

3 **To reduce poverty in the country by a more equitable distribution of resources**

4 **To encourage a more equal society by reducing the gap between two classes**

Solution:
Correct Answer : 4
Genre: Political Theory

Word Count# 608

Refer to the portion: "…sought to reduce the entrenched power of India's landlords and bring relief to their serfs in India's provinces." So, option 4 is the clear answer. The other options can be easily eliminated. Option 1 is thematically wrong. Options 2 and 3 are too broad or vague. 'Reducing poverty' has not been mentioned. 'Eliminating private property' is too extreme.

FeedBack

Bookmark

Answer key/Solution

Q.25

Directions for question (25): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. A more modern and social understanding of disasters, however, views this distinction as artificial since most disasters result from the action or inaction of people and their social and economic structures.
2. A disaster is an extreme disruption of the functioning of a society that causes widespread human, material, or environmental losses that exceed the ability of the affected society to cope with its own resources.
3. India's geo-climatic conditions as well as its high degree of socio-economic vulnerability, makes it one of the most disaster-prone country in the world.
4. Disasters are sometimes classified according to whether they are "natural" disasters, or "human-made" disasters.

Solution:
Correct Answer : 2413
This is an easy question. The scope of the sentences makes the sequence very clear.

Bookmark

Answer key/Solution

2 starts the paragraph because it defines a disaster. Keep in mind the definition-explanation flow of sentences.

24 is a pair – 2 defines the concept. 4 gives a classification of disasters.
41 is a pair – 1 gives a mild contradiction to the classification with 'however'.
3 can come at the beginning or at the end of the paragraph. But 3 makes more sense at the end as it gives the name of a specific country that is disaster prone.
So, 2413 is the correct sequence.

FeedBack

Q.26

Directions for question (26): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. Fritts reported that the selenium module produced a current "that is continuous, constant, and of considerable force."
2. So, Fritts created what was a low impact solar cell, but still, it was the beginning of photovoltaic solar panel innovation in America.
3. This cell achieved an energy conversion rate of 1 to 2 percent; most modern solar cells work at an efficiency of 15 to 20 percent.
4. Take a *light* step back to 1883 when New York inventor Charles Fritts created the first solar cell by coating selenium with a thin layer of gold.
5. That same year, a Russian scientist by the name of Aleksandr Stoletov created the first solar cell based on the photoelectric effect, which is when light falls on a material and electrons are released.

Solution:
Correct Answer : 5
The correct order is 4132. The fifth sentence is a trap. The other four sentences talk about Fritts and his achievement. 'That same year' in 5 may or may not refer to the year 1883. It talks about a separate invention. So, it is the odd one out.

FeedBack

Bookmark

Answer key/Solution

Q.27

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

For many years, the experts have focused on self-esteem. Research has consistently shown that self-esteem is related to psychological wellbeing, suggesting that a positive self-image is an important ingredient in the recipe for a happy and successful life. Seeing this link between self-esteem and an array of desirable life outcomes, many parents bent over backwards to ensure that their children had positive views of themselves, teachers tried to provide feedback in ways that protected students' self-esteem, and many people became convinced that self-esteem should be widely promoted as a remedy for personal problems and social ills.

1 **Due to researchers and their overzealous findings, many parents and teachers go out of their way to make students achieve self-esteem.**

2 **Parents and teachers see the link between self-esteem and success for their wards, and as a result they treat the achieving of self-esteem as the highest goal.**

3 **Self-esteem is held highly as a desirable virtue by many due to the long-standing belief that it is beneficial in multiple ways.**

4 **Researchers have shown for many years now that a positive sense of self or self-esteem gives children a higher possibility of success.**

Solution:
Correct Answer : 3
This is a moderate level question. There are two main points in the paragraph:

Bookmark

Answer key/Solution

• Self-esteem has received positive feedback by researchers
• Parents and teachers have accepted this link and have tried to make sure that the children under their care achieve this

Everything else in the paragraph is a supporting idea. The main idea is that self-esteem has been held as a desirable goal.
Option 1 – 'Overzealous' introduces a negative connotation. It also creates a faulty cause-effect relation. So, this is a distorted option.
Option 2 – 'Highest goal' can't be defined by this paragraph. Secondly, it misses the first point.
Option 3 – It may look vague, but it covers both the points. So, it is the answer.
Option 4 – It only mentions the first point. The second half of the paragraph is missing. So, it is an incomplete option.

FeedBack

Q.28
Directions for question (28): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. There they were – visible and audible at most times of day; occupying all the domains of land, sea and air; and in an abundance and diversity we can only dream of today.
2. This progression from daily familiarity to symbolic representation must be what Claude Lévi-Strauss had in mind in the much-quoted dictum: 'Animals are good to think with.'
3. Not surprising either, therefore, that they also populated people's minds and imaginations and re-emerged in their culture, language, myths and patterns of thought in some symbolic form.
4. Small wonder, then, that birds impressed their physical presence on people's daily lives, to a degree now hard to imagine.

Solution:
Correct Answer : 4132
This is a slightly tough question. However, the trick is to find the themes.

Bookmark

Answer key/Solution

Sentence 4 – It talks about the physical presence of birds.
Sentence 3 – It talks about the impact birds had on the human mind.
Sentence 1 matches the theme of sentence 4. (Physical presence – explained by 1)
Sentence 2 matches with theme of sentence 3. (Symbolic – dictum by a writer)
So, 41 and 32 are two pairs. 'Also' in 3 rules it out as the opening sentence. Though, 4 starts with 'then', it is the best opening sentence. 'Then' shows a chronological sequence. So, this paragraph must have been taken from the middle of a larger paragraph. 'Also' creates a thematic link. Hence, 4132 is the correct sequence.

FeedBack

Q.29
Directions for question (29): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. What is this thing we call meaning, and why might we need it so badly?
2. We fret about the 'nihilism' of this or that aspect of our culture.
3. How did this life get here?
4. When we lose a sense of meaning, we get depressed.
5. We fear meaninglessness.

Solution:
Correct Answer : 3
The correct order is 5241. The paragraph starts with an observation about our reaction to meaninglessness. 2 explains this. 'Nihilism' is a synonym of meaninglessness. 4 adds to this idea. 1 asks a question which summarises the main idea of the paragraph.

Bookmark

Answer key/Solution

3 is a vague sentence. It may or may not refer to the idea of our lives being meaningless or our fear of the same thing. 'Here' has no clear definition in the paragraph. So, 3 is the odd sentence.

FeedBack

Q.30

Directions for question (30): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

A study reviews Earth's rarest minerals, those found at five or fewer locations on the planet. Researchers divided the 2,500 rare minerals that they identified into four categories that relate to the conditions under which they form, how rare their ingredients are, how stable they are, and whether they come from poorly studied locations. The resulting catalogue will assist in determining where and how large certain rare minerals' reserves may be; it also will help geophysicists study the fundamental construction of Earth.

1 **Geophysicists are reviewing the rarest minerals on Earth so that they can determine how they are formed and where they are reserved.**

2 **A study that reviewed the rarest minerals on Earth has the potential to enhance our understanding of the construction of Earth and mineral reserves.**

3 **A certain review of the rarest minerals on Earth will help geophysicists determine the location of the mineral reserves, their size, and their fundamental construction.**

4 **Geophysicists are now trying to ascertain how large certain minerals' reserves are by trying to understand their fundamental construction.**

Solution:
Correct Answer : 2
The paragraph makes the following main points:

Bookmark

Answer key/Solution

• What researchers identified in the study
• How it will help them

Option 2 best captures these two points. The other options are distorted.
Option 1 – The formation is related to Earth, not the minerals.
Option 3 – Again, the fundamental construction is related to Earth, not the minerals.
Option 4 – It is twisted for similar reasons as mentioned above.

FeedBack

Q.31

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

1. Certainly all her progeny were feral.
2. Cats can "go wild" within a generation.
3. Once on the island and allowed to roam, Tibbles likely came and went at will.
4. Over time, she probably became more and more wild.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3412
One sequence in this paragraph is clear. 3 will come before 1 and 4 as Tibbles is the noun for the pronoun 'she' in sentences 1 and 4.

34 makes a pair as both talk about Tibbles. 1 comes next as it talks about her kittens.

2 can come at the beginning but then 3 can't follow it. However, 2 can come at the end as it talks about what happened after Tibbles in an indirect manner. 'Progeny' and 'generation' make a stronger pair.

So, 3412 is the correct sequence. It is taken from a larger paragraph. Hence, the meaning might look incomplete.

FeedBack

Q.32

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

1. If the very definition of war involves a discussion reaching back 2,000 years, what of the concepts of modern war?
2. Was the slaughter of World War I due to a narrow concept of how to fight a war?
3. Did the Japanese learn western concepts of war and so adopt an unwinnable strategy in China?
4. The question of the origins and causes of our concept of war is not only interesting in itself, but has major implications for our armed forces.
5. Did the United States fail in Vietnam because of a flawed strategy, based on western concepts?

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
The correct sequence is 4253. There is one assertive sentence in this paragraph which is sentence 4. So, it has to start the paragraph. It talks about the implications of the origins and causes of war. It is mostly talking about how it will help us in understanding our armed forces better. Sentences 2, 3, and 5 ask questions which are related to this theme only.

Sentence 1 talks about the definition of war, its ancient link, and the modern concept of war. It is related to the subject but it doesn't match the rest of the paragraph. So, it is the odd sentence out.

FeedBack

Q.33

Directions for question (33): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

At the simplest level, deviance refers to something different from something else. Deviants are people not like us. They behave differently, or so many people think. But deviance extends beyond simple, everyday observations of differences among people and their behaviour. Some differences in styles of dress, for example, don't amount to deviance. Persons who wear a common style of clothing may still favour different colours without becoming deviant.

1 **The definition of deviance is problematic as it doesn't refer to all everyday observations of difference.**

2 **Deviants are not like common people as they dress differently and have differences which are not normal.**

3 **Many people think that deviants behave differently; however, their deviance is not difficult to diagnose.**

4 **The definition of deviance is not simple as the behaviour goes beyond simple everyday observations.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
It is a very easy question as the options are not really close. The paragraph simply says that the definition of deviance at its simplest level is 'different from others'. However, it is more complicated. Then the example of dressing style is given.

Option 1 – It is distorted. It is not a problematic concept. It is just complex.
Option 2 – This is clearly distorted and it doesn't match the facts given in the paragraph. There is no suggestion that people who are called deviant dress differently. The reference to dressing style is just an example.
Option 3 – This is wrong too. The diagnosis of deviant behaviour is not part of this paragraph. So, whether it is easy or not doesn't matter.
Option 4 – This is the correct option. It is the only option that mentions the main point of the paragraph.

FeedBack

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

1. It sounds like a fairly cut and dry murder case, but after going to trial, Kenneth Parks walked free.
2. Because all that evidence pointed to the unlikely and bewildering truth that Parks had been sleepwalking.
3. Thanks to a combination of a lack of motive, his consistent version of events, and data gathered from EEG readings, no charges were pressed against him.
4. It remains one of the most remarkable cases of homicidal sleepwalking in history.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1324
The paragraph can only start with 1. It gives the name of the person who is being discussed.

'Because' in 2 shows that it needs a sentence before it. 'That evidence' in 2 shows that it has to come after 3. 3 gives all the evidence. So, 32 is a pair.

4 is the last sentence as it summarises the main observation of the author.
So, 1324 is the correct sequence.

FeedBack

Sec 2

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

While sitting idle at home, Nipun starts writing numbers from 1 to 64 in square boxes in a 8 × 8 chess board. The columns are labeled a to h from left to right and rows are numbered 1-8 from bottom to top such that the box in the first column and the bottom row is denoted by a1 and that in the second column and the bottom row by b1 and so on. He starts writing the numbers in all the central four boxes first i.e., d4, d5, e4 and e5, not necessarily in this order and continues writing the consecutive numbers next to each other in the other square boxes and finally he ends with writing number at a8. The numbers written in the corner square boxes are – 64, 57, 50 and 43, in any order.
[Note:- If a number is written in any square box then the next number Nipun writes will be either to the left or right or top or bottom of that box, but not diagonally.]

Q.35
Find the sum of all the numbers which will not change its position in any of its arrangements.

1 **208**

2 **200**

3 **196**

4 **175**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

As a8 is the last point, so a8 has to be 64. But we need to start writing the numbers in all the four central boxes first and continue to write the consecutive numbers next to each other. So, there are two possible arrangements of the numbers.

Case 1

8	64	37	38	39	40	41	42	43
7	63	36	17	18	19	20	21	44
6	62	35	16	5	6	7	22	45
5	61	34	15	4	1	8	23	46
4	60	33	14	3	2	9	24	47
3	59	32	13	12	11	10	25	48
2	58	31	30	29	28	27	26	49
1	57	56	55	54	53	52	51	50
	a	b	c	d	e	f	g	h

Case 2

8	64	63	62	61	60	59	58	57
7	37	36	35	34	33	32	31	56
6	38	17	16	15	14	13	30	55
5	39	18	5	4	3	12	29	54
4	40	19	6	1	2	11	28	53
3	41	20	7	8	9	10	27	52
2	42	21	22	23	24	25	26	51
1	43	44	45	46	47	48	49	50
	a	b	c	d	e	f	g	h

By observing both the squares, we see the primary diagonal has identical values. So, sum of the numbers on diagonal is 208.

FeedBack

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

While sitting idle at home, Nipun starts writing numbers from 1 to 64 in square boxes in a 8 × 8 chess board. The columns are labeled a to h from left to right and rows are numbered 1-8 from bottom to top such that the box in the first column and the bottom row is denoted by a1 and that in the second column and the bottom row by b1 and so on. He starts writing the numbers in all the central four boxes first i.e., d4, d5, e4 and e5, not necessarily in this order and continues writing the consecutive numbers next to each other in the other square boxes and finally he ends with writing number at a8. The numbers written in the corner square boxes are – 64, 57, 50 and 43, in any order.
[Note:- If a number is written in any square box then the next number Nipun writes will be either to the left or right or top or bottom of that box, but not diagonally.]

Q.36

If two prime numbers are written next to each other row wise, column wise or diagonally, then they are called neighbours. How many prime numbers are not neighbours?

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As a8 is the last point, so a8 has to be 64. But we need to start writing the numbers in all the four central boxes first and continue to write the consecutive numbers next to each other. So, there are two possible arrangements of the numbers.

Case 1

8	64	37	38	39	40	41	42	43
7	63	36	17	18	19	20	21	44
6	62	35	16	5	6	7	22	45
5	61	34	15	4	1	8	23	46
4	60	33	14	3	2	9	24	47
3	59	32	13	12	11	10	25	48
2	58	31	30	29	28	27	26	49
1	57	56	55	54	53	52	51	50
	a	b	c	d	e	f	g	h

Case 2

8	64	63	62	61	60	59	58	57
7	37	36	35	34	33	32	31	56
6	38	17	16	15	14	13	30	55
5	39	18	5	4	3	12	29	54
4	40	19	6	1	2	11	28	53
3	41	20	7	8	9	10	27	52
2	42	21	22	23	24	25	26	51
1	43	44	45	46	47	48	49	50
	a	b	c	d	e	f	g	h

Only 43 and 61 are two prime numbers which are neither adjacent to any prime number row-wise, column wise or diagonally. So answer is 2.

FeedBack

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

While sitting idle at home, Nipun starts writing numbers from 1 to 64 in square boxes in a 8 × 8 chess board. The columns are labeled a to h from left to right and rows are numbered 1-8 from bottom to top such that the box in the first column and the bottom row is denoted by a1 and that in the second column and the bottom row by b1 and so on. He starts writing the numbers in all the central four boxes first i.e., d4, d5, e4 and e5, not necessarily in this order and continues writing the consecutive numbers next to each other in the other square boxes and finally he ends with writing number at a8. The numbers written in the corner square boxes are – 64, 57, 50 and 43, in any order.
[Note:- If a number is written in any square box then the next number Nipun writes will be either to the left or right or top or bottom of that box, but not diagonally.]

Q.37
How many numbers in the chess board are middle numbers, where the middle number is equal to the average of its adjacent two numbers (row wise or column wise)?

Solution:
Correct Answer : 48

Bookmark

Answer key/Solution

As a8 is the last point, so a8 has to be 64. But we need to start writing the numbers in all the four central boxes first and continue to write the consecutive numbers next to each other. So, there are two possible arrangements of the numbers.

Case 1

8	64	37	38	39	40	41	42	43
7	63	36	17	18	19	20	21	44
6	62	35	16	5	6	7	22	45
5	61	34	15	4	1	8	23	46
4	60	33	14	3	2	9	24	47
3	59	32	13	12	11	10	25	48
2	58	31	30	29	28	27	26	49
1	57	56	55	54	53	52	51	50
	a	b	c	d	e	f	g	h

Case 2

8	64	63	62	61	60	59	58	57
7	37	36	35	34	33	32	31	56
6	38	17	16	15	14	13	30	55
5	39	18	5	4	3	12	29	54
4	40	19	6	1	2	11	28	53
3	41	20	7	8	9	10	27	52
2	42	21	22	23	24	25	26	51
1	43	44	45	46	47	48	49	50
	a	b	c	d	e	f	g	h

By observation we can count that exactly 48 numbers are their which are mean of adjacent two numbers.

FeedBack

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

While sitting idle at home, Nipun starts writing numbers from 1 to 64 in square boxes in a 8 × 8 chess board. The columns are labeled a to h from left to right and rows are numbered 1-8 from bottom to top such that the box in the first column and the bottom row is denoted by a1 and that in the second column and the bottom row by b1 and so on. He starts writing the numbers in all the central four boxes first i.e., d4, d5, e4 and e5, not necessarily in this order and continues writing the consecutive numbers next to each other in the other square boxes and finally he ends with writing number at a8. The numbers written in the corner square boxes are – 64, 57, 50 and 43, in any order.
[Note:- If a number is written in any square box then the next number Nipun writes will be either to the left or right or top or bottom of that box, but not diagonally.]

Q.38

If all the numbers in the main diagonal are converted into base system 8, then how many times 1 will be used as digit in those numbers after conversion?

1 **5**

2 **2**

3 **8**

4 **7**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As a8 is the last point, so a8 has to be 64. But we need to start writing the numbers in all the four central boxes first and continue to write the consecutive numbers next to each other. So, there are two possible arrangements of the numbers.
Case 1

8	64	37	38	39	40	41	42	43
7	63	36	17	18	19	20	21	44
6	62	35	16	5	6	7	22	45
5	61	34	15	4	1	8	23	46
4	60	33	14	3	2	9	24	47
3	59	32	13	12	11	10	25	48
2	58	31	30	29	28	27	26	49
1	57	56	55	54	53	52	51	50
	a	b	c	d	e	f	g	h

Case 2

8	64	63	62	61	60	59	58	57
7	37	36	35	34	33	32	31	56
6	38	17	16	15	14	13	30	55
5	39	18	5	4	3	12	29	54
4	40	19	6	1	2	11	28	53
3	41	20	7	8	9	10	27	52
2	42	21	22	23	24	25	26	51
1	43	44	45	46	47	48	49	50
	a	b	c	d	e	f	g	h

If all the numbers in the main diagonal are converted into base system 8, then the numbers after conversion in which 1 will be used are 100 and 12. So, 1 will be used 2 times as a digit.

FeedBack

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

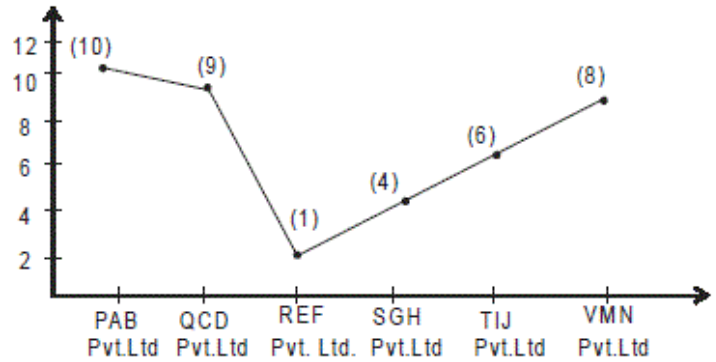
Each of ten students - Akbar, Birbal, Chatur, Dhritrastra, Eklawya, Faizan, Gems, Hitler, Imara and Jalan - joined eight companies - PAB Pvt. Ltd., QCD Pvt. Ltd., REF Pvt. Ltd., SGH Pvt. Ltd., TIJ Pvt. ltd., UKL Pvt. Ltd., VMN Pvt. Ltd. and WOP Pvt. Ltd. as consultant. They perform their duties either in morning shift or in evening shift.

The numerical value of some symbols, $, ∈, @ and ∝ are 1, 2, 2 and 4 respectively. The number of companies in which these students perform duty in evening session is represented as below:-

Akbar	-	∈ × @ + $
Birbal	-	∈ + @
Chatur	-	∝ ÷ @ – $
Dhritrastra	-	$ × ∈
Eklavya	-	∈ ÷ @ – $
Faizan	-	∝ × @ – $
Gems	-	∈ × @ + $
Hitler	-	@ × ∈ ÷ $
Imara	-	∈ × @ – $
Jalan	-	@ × ∈ + @

[**Note:-** Here, +, –, × and ÷ represent addition, subtraction, multiplication and division respectively.]

The line graph given below shows the number of students who perform duty in morning shift in the companies shown below:-



It is also known that the number of students who perform duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd.

Q.39

Who perform duty in evening shift in UKL Pvt. Ltd.?

1 **Akbar, Birbal, Chatur, Dhritrastra, Eklavya and Imara.**

2 **Akbar, Birbal, Chatur, Dhritrastra, Eklavya Imara and Jalan.**

3 **Akbar, Birbal, Chatur, Dhritrastra, Eklavya and Jalan.**

4 **None of these.**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The number of companies in which evening duty is performed by each of the ten students is as calculated below:

Akbar	=	2 × 2 + 1 = 5
Birbal	=	2 + 2 = 4
Chatur	=	4 ÷ 2 – 1 = 1
Dhritrastra	=	1 × 2 = 2
Eklavya	=	2 ÷ 2 – 1 = 0
Faizan	=	4 × 2 – 1 = 7
Gems	=	2 × 2 + 1 = 5
Hitler	=	2 × 2 ÷ 1 = 4
Imara	=	2 × 2 – 1 = 3
Jalan	=	2 × 2 + 2 = 6

So, total number of duties performed in evening shift = 5 + 4 + 1 + 2 + 0 + 7 + 5 + 4 + 3 + 6 = 37
Therefore, number of duties performed in morning shift = 10 × 8 – 37 = 43

Using line graph, the sum of number of morning duties performed in UKL Pvt. Ltd. and WOP Pvt. Ltd.
= 43 – (10 + 9 + 1 + 4 + 6 + 8) = 43 – 38 = 5.
As it is given that the number of students who performed duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd., we may conclude that either 3 and 2 or 4 and 1 morning duties would have been performed in UKL Pvt. Ltd. and in WOP Pvt. Ltd.

Case I :- Three morning duties in UKL Pvt. Ltd. and two morning duties in WOP Pvt. Ltd.
Lets create the table about the duty for each student in every company.

Name (No. of morning shift)	PAB	QCD	REF	SGH	TIJ	VMN	UKL	WOP
Akbar (3)	M	M	E	E	E	M	E	E
Birbal (4)	M	M	E	E	M	M	E	E
Chatur (7)	M	M	E	M	M	M	M	M
Dhritrastra (6)	M	M	E	M	M	M	M	E
Eklavya (8)	M	M	M	M	M	M	M	M
Faizan (1)	M	E	E	E	E	E	E	E
Gems (3)	M	M	E	E	E	M	E	E
Hitler (4)	M	M	E	E	M	M	E	E
Imara (5)	M	M	E	M	M	M	E	E
Jalan (2)	M	M	E	E	E	E	E	E

In the above table 'M' and 'E' represents morning and evening respectively.

Case II :- Four morning duties in UKL Pvt. Ltd. and 1 in WOP Pvt. Ltd..
While preparing the table for that case, since Eklavya performs all duties in morning shift, he must have performed morning duties in REF Pvt. Ltd. and WOP Pvt. Ltd. also. In this case, Chatur, who performs 7 morning duties, cannot perform morning duty in REF Pvt. Ltd. and WOP Pvt. Ltd. which contradicts some other information given in the question.

Akbar, Birbal, Faizan, Gems, Hitler, Imara and Jalan perform evening duty in UKL Pvt. Ltd.

FeedBack

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

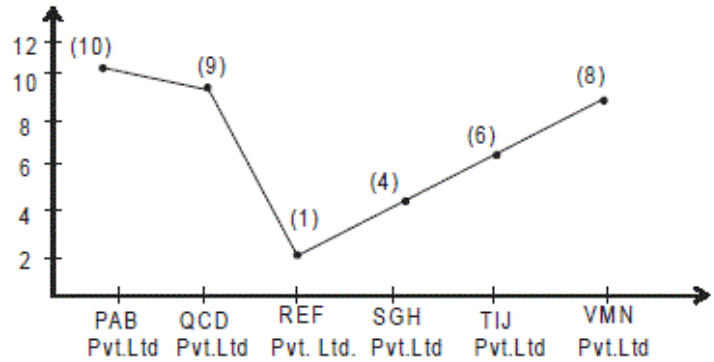
Each of ten students - Akbar, Birbal, Chatur, Dhritrastra, Eklawya, Faizan, Gems, Hitler, Imara and Jalan - joined eight companies - PAB Pvt. Ltd., QCD Pvt. Ltd., REF Pvt. Ltd., SGH Pvt. Ltd., TIJ Pvt. ltd., UKL Pvt. Ltd., VMN Pvt. Ltd. and WOP Pvt. Ltd. as consultant. They perform their duties either in morning shift or in evening shift.

The numerical value of some symbols, $, ∈, @ and ∝ are 1, 2, 2 and 4 respectively. The number of companies in which these students perform duty in evening session is represented as below:-

Akbar	-	∈ × @ + $
Birbal	-	∈ + @
Chatur	-	∝ ÷ @ – $
Dhritrastra	-	$ × ∈
Eklavya	-	∈ ÷ @ – $
Faizan	-	∝ × @ – $
Gems	-	∈ × @ + $
Hitler	-	@ × ∈ ÷ $
Imara	-	∈ × @ – $
Jalan	-	@ × ∈ + @

[**Note:-** Here, +, –, × and ÷ represent addition, subtraction, multiplication and division respectively.]

The line graph given below shows the number of students who perform duty in morning shift in the companies shown below:-



It is also known that the number of students who perform duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd.

Q.40

How many friends perform morning duty in PAB Pvt. Ltd. and QCD Pvt. Ltd. but evening duty in SGH Pvt. Ltd.?

1 **3**

2 **4**

3 **5**

4 **6**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

The number of companies in which evening duty is performed by each of the ten students is as calculated below:

Akbar	=	2 × 2 + 1 = 5
Birbal	=	2 + 2 = 4
Chatur	=	4 ÷ 2 – 1 = 1
Dhritrastra	=	1 × 2 = 2
Eklavya	=	2 ÷ 2 – 1 = 0
Faizan	=	4 × 2 – 1 = 7
Gems	=	2 × 2 + 1 = 5
Hitler	=	2 × 2 ÷ 1 = 4
Imara	=	2 × 2 – 1 = 3
Jalan	=	2 × 2 + 2 = 6

So, total number of duties performed in evening shift = 5 + 4 + 1 + 2 + 0 + 7 + 5 + 4 + 3 + 6 = 37
Therefore, number of duties performed in morning shift = 10 × 8 – 37 = 43

Using line graph, the sum of number of morning duties performed in UKL Pvt. Ltd. and WOP Pvt. Ltd.
= 43 – (10 + 9 + 1 + 4 + 6 + 8) = 43 – 38 = 5.
As it is given that the number of students who performed duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd., we may conclude that either 3 and 2 or 4 and 1 morning duties would have been performed in UKL Pvt. Ltd. and in WOP Pvt. Ltd.

Case I :- Three morning duties in UKL Pvt. Ltd. and two morning duties in WOP Pvt. Ltd.
Lets create the table about the duty for each student in every company.

Name (No. of morning shift)	PAB	QCD	REF	SGH	TIJ	VMN	UKL	WOP
Akbar (3)	M	M	E	E	E	M	E	E
Birbal (4)	M	M	E	E	M	M	E	E
Chatur (7)	M	M	E	M	M	M	M	M
Dhritrastra (6)	M	M	E	M	M	M	M	E
Eklavya (8)	M	M	M	M	M	M	M	M
Faizan (1)	M	E	E	E	E	E	E	E
Gems (3)	M	M	E	E	E	M	E	E
Hitler (4)	M	M	E	E	M	M	E	E
Imara (5)	M	M	E	M	M	M	E	E
Jalan (2)	M	M	E	E	E	E	E	E

In the above table 'M' and 'E' represents morning and evening respectively.

Case II :- Four morning duties in UKL Pvt. Ltd. and 1 in WOP Pvt. Ltd..
While preparing the table for that case, since Eklavya performs all duties in morning shift, he must have performed morning duties in REF Pvt. Ltd. and WOP Pvt. Ltd. also. In this case, Chatur, who performs 7 morning duties, cannot perform morning duty in REF Pvt. Ltd. and WOP Pvt. Ltd. which contradicts some other information given in the question.

Akbar, Birbal, Gems, Hitler and Jalan are five friends perform morning duty in PAB Pvt. Ltd. and QCD Pvt. Ltd. but evening duty in SGH Pvt. Ltd.

FeedBack

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

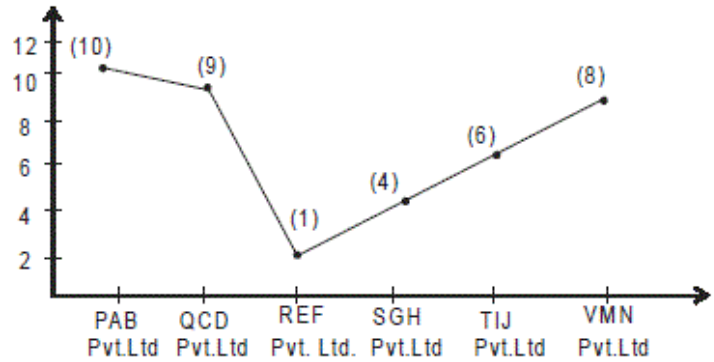
Each of ten students - Akbar, Birbal, Chatur, Dhritrastra, Eklawya, Faizan, Gems, Hitler, Imara and Jalan - joined eight companies - PAB Pvt. Ltd., QCD Pvt. Ltd., REF Pvt. Ltd., SGH Pvt. Ltd., TIJ Pvt. ltd., UKL Pvt. Ltd., VMN Pvt. Ltd. and WOP Pvt. Ltd. as consultant. They perform their duties either in morning shift or in evening shift.

The numerical value of some symbols, $, ∈, @ and ∝ are 1, 2, 2 and 4 respectively. The number of companies in which these students perform duty in evening session is represented as below:-

Akbar	-	∈ × @ + $
Birbal	-	∈ + @
Chatur	-	∝ ÷ @ – $
Dhritrastra	-	$ × ∈
Eklavya	-	∈ ÷ @ – $
Faizan	-	∝ × @ – $
Gems	-	∈ × @ + $
Hitler	-	@ × ∈ ÷ $
Imara	-	∈ × @ – $
Jalan	-	@ × ∈ + @

[**Note:-** Here, +, –, × and ÷ represent addition, subtraction, multiplication and division respectively.]

The line graph given below shows the number of students who perform duty in morning shift in the companies shown below:-



It is also known that the number of students who perform duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd.

Q.41

In how many companies did Gems and Hitler perform morning duty but Faizan performs evening duty?

1 **2**

2 **3**

3 **4**

4 **5**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

The number of companies in which evening duty is performed by each of the ten students is as calculated below:

Akbar	=	2 × 2 + 1 = 5
Birbal	=	2 + 2 = 4
Chatur	=	4 ÷ 2 – 1 = 1
Dhritrastra	=	1 × 2 = 2
Eklavya	=	2 ÷ 2 – 1 = 0
Faizan	=	4 × 2 – 1 = 7
Gems	=	2 × 2 + 1 = 5
Hitler	=	2 × 2 ÷ 1 = 4
Imara	=	2 × 2 – 1 = 3
Jalan	=	2 × 2 + 2 = 6

So, total number of duties performed in evening shift = 5 + 4 + 1 + 2 + 0 + 7 + 5 + 4 + 3 + 6 = 37
Therefore, number of duties performed in morning shift = 10 × 8 – 37 = 43

Using line graph, the sum of number of morning duties performed in UKL Pvt. Ltd. and WOP Pvt. Ltd.
= 43 – (10 + 9 + 1 + 4 + 6 + 8) = 43 – 38 = 5.
As it is given that the number of students who performed duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd., we may conclude that either 3 and 2 or 4 and 1 morning duties would have been performed in UKL Pvt. Ltd. and in WOP Pvt. Ltd.

Case I :- Three morning duties in UKL Pvt. Ltd. and two morning duties in WOP Pvt. Ltd.
Lets create the table about the duty for each student in every company.

Name (No. of morning shift)	PAB	QCD	REF	SGH	TIJ	VMN	UKL	WOP
Akbar (3)	M	M	E	E	E	M	E	E
Birbal (4)	M	M	E	E	M	M	E	E
Chatur (7)	M	M	E	M	M	M	M	M
Dhritrastra (6)	M	M	E	M	M	M	M	E
Eklavya (8)	M	M	M	M	M	M	M	M
Faizan (1)	M	E	E	E	E	E	E	E
Gems (3)	M	M	E	E	E	M	E	E
Hitler (4)	M	M	E	E	M	M	E	E
Imara (5)	M	M	E	M	M	M	E	E
Jalan (2)	M	M	E	E	E	E	E	E

In the above table 'M' and 'E' represents morning and evening respectively.

Case II :- Four morning duties in UKL Pvt. Ltd. and 1 in WOP Pvt. Ltd..
While preparing the table for that case, since Eklavya performs all duties in morning shift, he must have performed morning duties in REF Pvt. Ltd. and WOP Pvt. Ltd. also. In this case, Chatur, who performs 7 morning duties, cannot perform morning duty in REF Pvt. Ltd. and WOP Pvt. Ltd. which contradicts some other information given in the question.

In QCD Pvt. Ltd. and in VMN Pvt. Ltd.

FeedBack

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

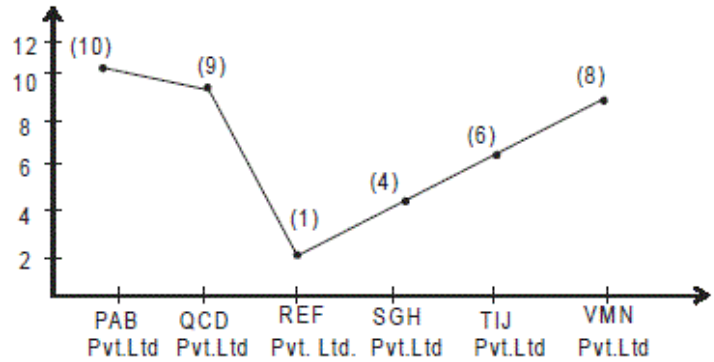
Each of ten students - Akbar, Birbal, Chatur, Dhritrastra, Eklawya, Faizan, Gems, Hitler, Imara and Jalan - joined eight companies - PAB Pvt. Ltd., QCD Pvt. Ltd., REF Pvt. Ltd., SGH Pvt. Ltd., TIJ Pvt. ltd., UKL Pvt. Ltd., VMN Pvt. Ltd. and WOP Pvt. Ltd. as consultant. They perform their duties either in morning shift or in evening shift.

The numerical value of some symbols, $, ∈, @ and ∝ are 1, 2, 2 and 4 respectively. The number of companies in which these students perform duty in evening session is represented as below:-

Akbar	-	∈ × @ + $
Birbal	-	∈ + @
Chatur	-	∝ ÷ @ – $
Dhritrastra	-	$ × ∈
Eklavya	-	∈ ÷ @ – $
Faizan	-	∝ × @ – $
Gems	-	∈ × @ + $
Hitler	-	@ × ∈ ÷ $
Imara	-	∈ × @ – $
Jalan	-	@ × ∈ + @

[**Note:-** Here, +, –, × and ÷ represent addition, subtraction, multiplication and division respectively.]

The line graph given below shows the number of students who perform duty in morning shift in the companies shown below:-



It is also known that the number of students who perform duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd.

Q.42

Who performed morning duty in UKL Pvt. Ltd. and evening duty in WOP Pvt. Ltd.?

1 **Gems**

2 **Hitler**

3 **Faizan**

4 **Dhritrastra**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The number of companies in which evening duty is performed by each of the ten students is as calculated below:

Akbar	=	2 × 2 + 1 = 5
Birbal	=	2 + 2 = 4
Chatur	=	4 ÷ 2 – 1 = 1
Dhritrastra	=	1 × 2 = 2
Eklavya	=	2 ÷ 2 – 1 = 0
Faizan	=	4 × 2 – 1 = 7
Gems	=	2 × 2 + 1 = 5
Hitler	=	2 × 2 ÷ 1 = 4
Imara	=	2 × 2 – 1 = 3
Jalan	=	2 × 2 + 2 = 6

So, total number of duties performed in evening shift = 5 + 4 + 1 + 2 + 0 + 7 + 5 + 4 + 3 + 6 = 37
Therefore, number of duties performed in morning shift = 10 × 8 – 37 = 43

Using line graph, the sum of number of morning duties performed in UKL Pvt. Ltd. and WOP Pvt. Ltd.
= 43 – (10 + 9 + 1 + 4 + 6 + 8) = 43 – 38 = 5.
As it is given that the number of students who performed duty in morning shift in UKL Pvt. Ltd. is more than that in WOP Pvt. Ltd., we may conclude that either 3 and 2 or 4 and 1 morning duties would have been performed in UKL Pvt. Ltd. and in WOP Pvt. Ltd.

Case I :- Three morning duties in UKL Pvt. Ltd. and two morning duties in WOP Pvt. Ltd.
Lets create the table about the duty for each student in every company.

Name (No. of morning shift)	PAB	QCD	REF	SGH	TIJ	VMN	UKL	WOP
Akbar (3)	M	M	E	E	E	M	E	E
Birbal (4)	M	M	E	E	M	M	E	E
Chatur (7)	M	M	E	M	M	M	M	M
Dhritrastra (6)	M	M	E	M	M	M	M	E
Eklavya (8)	M	M	M	M	M	M	M	M
Faizan (1)	M	E	E	E	E	E	E	E
Gems (3)	M	M	E	E	E	M	E	E
Hitler (4)	M	M	E	E	M	M	E	E
Imara (5)	M	M	E	M	M	M	E	E
Jalan (2)	M	M	E	E	E	E	E	E

In the above table 'M' and 'E' represents morning and evening respectively.

Case II :- Four morning duties in UKL Pvt. Ltd. and 1 in WOP Pvt. Ltd..
While preparing the table for that case, since Eklavya performs all duties in morning shift, he must have performed morning duties in REF Pvt. Ltd. and WOP Pvt. Ltd. also. In this case, Chatur, who performs 7 morning duties, cannot perform morning duty in REF Pvt. Ltd. and WOP Pvt. Ltd. which contradicts some other information given in the question.

Only Dhritrastra performed morning duty in UKL Pvt. Ltd. and evening duty in WOP Pvt. Ltd.

FeedBack

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

There are eighty workers - $w_1, w_2, w_3,..., w_{80}$ - in a factory, producing an automobile part. To go towards the production area, the workers need to pass through a long corridor, stretching from North to South, with 100 doors - $d_1, d_2, d_3.....d_{100}$ - side by side, on East wall of the corridor, such that the first door is d_1, then the door d_2 and so on till the last door d_{100} at the south end of corridor. Initially, all the doors are closed. The workers pass through the corridor, one by one, starting with the worker w_{80}, then worker w_{79}, followed by w_{78} and so on till worker w_1. When a worker passes through the corridor, he changes the state i.e., open or close, of doors which are multiple of the number i in his w_i i.e., w_1 will change the state of all the doors, w_2 will change the state of doors - $d_2, d_4, d_6,..., d_{100}$ and similarly w_{80} will change the state of d_{80} only. By changing the state of the door it is meant that if the door is open, he closes it and if the door is close, he opens it. They do this twice a day, once in the morning while going to the production area and once in the evening while coming back from the production area. Assume that no other person passes through the corridor during the day and no worker passes through the corridor at any other time.

Q.43

For how many doors the state was changed for exactly four times in the morning?

1 **21**

2 **23**

3 **24**

4 **25**

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

The state of any door is changed by the workers with numbers which are factors of the number of the door for example, the state of door d_6 is changed by workers w_1, w_2, w_3, and w_6 only i.e., 1, 2, 3 and 6 are nothing but factors of 6.

Need to check, for how many of the first 100 natural numbers, there are 4 factors less than or equal to 80 (since there are 80 workers w_1, w_2, ..., w_{80})
With 2, there are 11 possibilities i.e., 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37. (i.e., $2 \times 3 = 6 \rightarrow$ factors are 1, 2, 3, 6 ; $2 \times 5 = 10 \rightarrow$ factors are 1, 2, 5, 10 and so on till $2 \times 37 = 74 \rightarrow$ factors are 1, 2, 37, 74).
With 3, there are 7 possibilities i.e., 5, 7, 11, 13, 17, 19, 23.
With 5, there are 3 possibilities i.e., 7, 11, 13.
With 7, only one possibility i.e.,11. ($7 \times 11 = 77 \rightarrow$ factors are 1, 7, 11, 77)
Then, number of the door can also be a cube of a prime number i.e., $8 \rightarrow$ factors are 1, 2, 4, 8; and 27 factors are $\rightarrow$ 1, 3, 9, 27; (since to get 4 factors, either the number should be product of 2 prime numbers or a cube of a prime number)
Total = 11 + 7 + 3 + 1 + 2 = 24.

FeedBack

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

There are eighty workers - w_1, w_2, w_3,..., w_{80} - in a factory, producing an automobile part. To go towards the production area, the workers need to pass through a long corridor, stretching from North to South, with 100 doors - d_1, d_2, d_3.....d_{100} - side by side, on East wall of the corridor, such that the first door is d_1, then the door d_2 and so on till the last door d_{100} at the south end of corridor. Initially, all the doors are closed. The workers pass through the corridor, one by one, starting with the worker w_{80}, then worker w_{79}, followed by w_{78} and so on till worker w_1. When a worker passes through the corridor, he changes the state i.e., open or close, of doors which are multiple of the number i in his w_i i.e., w_1 will change the state of all the doors, w_2 will change the state of doors - d_2, d_4, d_6,..., d_{100} and similarly w_{80} will change the state of d_{80} only. By changing the state of the door it is meant that if the door is open, he closes it and if the door is close, he opens it. They do this twice a day, once in the morning while going to the production area and once in the evening while coming back from the production area. Assume that no other person passes through the corridor during the day and no worker passes through the corridor at any other time.

Q.44

For how many doors the state was changed for the maximum number of times in a day?

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

The state of any door is changed by the workers with numbers which are factors of the number of the door for example, the state of door d_6 is changed by workers w_1, w_2, w_3, and w_6 only i.e., 1, 2, 3 and 6 are nothing but factors of 6.

Out of the first 100 natural numbers, only 5 have the maximum number of factors i.e., 60, 72, 84, 90 and 96, both of which have 12 factors each. For less than 80, there are only two numbers – 60 and 72. So, answer is 2.

FeedBack

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

There are eighty workers - w_1, w_2, w_3,..., w_{80} - in a factory, producing an automobile part. To go towards the production area, the workers need to pass through a long corridor, stretching from North to South, with 100 doors - d_1, d_2, d_3.....d_{100} - side by side, on East wall of the corridor, such that the first door is d_1, then the door d_2 and so on till the last door d_{100} at the south end of corridor. Initially, all the doors are closed. The workers pass through the corridor, one by one, starting with the worker w_{80}, then worker w_{79}, followed by w_{78} and so on till worker w_1. When a worker passes through the corridor, he changes the state i.e., open or close, of doors which are multiple of the number i in his w_i i.e., w_1 will change the state of all the doors, w_2 will change the state of doors - d_2, d_4, d_6,..., d_{100} and similarly w_{80} will change the state of d_{80} only. By changing the state of the door it is meant that if the door is open, he closes it and if the door is close, he opens it. They do this twice a day, once in the morning while going to the production area and once in the evening while coming back from the production area. Assume that no other person passes through the corridor during the day and no worker passes through the corridor at any other time.

Q.45

What is the maximum number of times for which the state of any door is changed in a day?

1 **25**

2 **20**

3 **24**

4 **23**

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

The state of any door is changed by the workers with numbers which are factors of the number of the door for example, the state of door d_6 is changed by workers w_1, w_2, w_3, and w_6 only i.e., 1, 2, 3 and 6 are nothing but factors of 6.

The number of factors of 72 is 12; so, it's state is changed 12 times in the morning and 12 times in the evening. Hence, 24 doors changed state the maximum times in a day.

FeedBack

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

There are eighty workers - w_1, w_2, w_3,..., w_{80} - in a factory, producing an automobile part. To go towards the production area, the workers need to pass through a long corridor, stretching from North to South, with 100 doors - d_1, d_2, d_3.....d_{100} - side by side, on East wall of the corridor, such that the first door is d_1, then the door d_2 and so on till the last door d_{100} at the south end of corridor. Initially, all the doors are closed. The workers pass through the corridor, one by one, starting with the worker w_{80}, then worker w_{79}, followed by w_{78} and so on till worker w_1. When a worker passes through the corridor, he changes the state i.e., open or close, of doors which are multiple of the number i in his w_i i.e., w_1 will change the state of all the doors, w_2 will change the state of doors - d_2, d_4, d_6,..., d_{100} and similarly w_{80} will change the state of d_{80} only. By changing the state of the door it is meant that if the door is open, he closes it and if the door is close, he opens it. They do this twice a day, once in the morning while going to the production area and once in the evening while coming back from the production area. Assume that no other person passes through the corridor during the day and no worker passes through the corridor at any other time.

Q.46

The state of how many doors was changed only twice in a day?

1 **3**

2 **4**

3 **2**

4 **1**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

The state of any door is changed by the workers with numbers which are factors of the number of the door for example, the state of door d_6 is changed by workers w_1, w_2, w_3, and w_6 only i.e., 1, 2, 3 and 6 are nothing but factors of 6.

For doors with change of state twice in a day means it changed once in the morning and once in the evening. So, we need to find out how many first 100 natural numbers have only 1 factor less than or equal to 80. The numbers which satisfy this are 1 and prime numbers greater than 80 but less than 100 i.e., door d_{83}, d_{89}, d_{97}, d_1.

FeedBack

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

A cube is first painted using the 3 available colors - Red, Blue and Green - such that each face is painted with one of the 3 colors, and then it is cut into 216 smaller cubes of equal dimensions. While painting the cube, followings restrictions are to be followed :
i. There is always at least one color which is painted on more number of faces than that of green color.
ii. No two adjacent faces are painted blue.
iii. If at least 3 faces are painted red, then at least 1 face must be painted with blue.

Q.47
In how many different ways can the cube be painted?

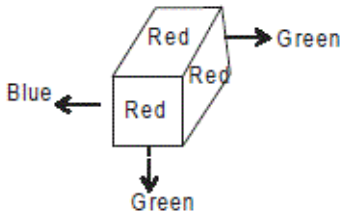
Solution:
Correct Answer : 8

Bookmark

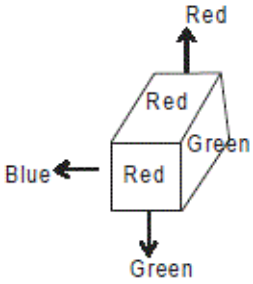
Answer key/Solution

Using (ii), it can be concluded that blue cannot be painted on more than 2 faces. Using (i), it can be concluded that green cannot be painted on more than 2 faces and when green is painted on 2 faces then Red is painted on 3 faces and blue on one face. [using point (iii)]. So, considering all the above, following are the possible ways of painting the cube:
→ indicates the color painted on the back/bottom faces.

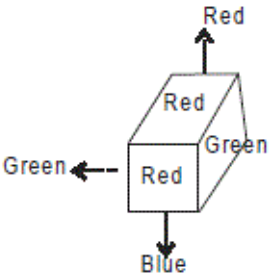
Case I:



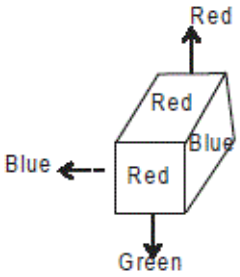
Case II:



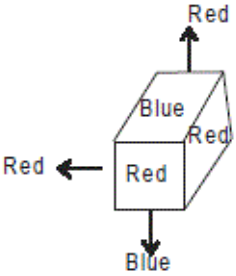
Case III:



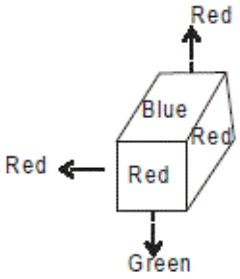
Case IV:



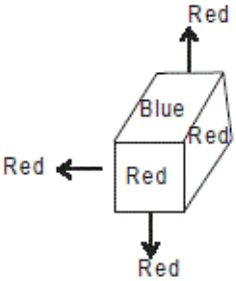
Case V:



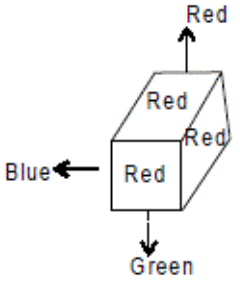
Case VI:



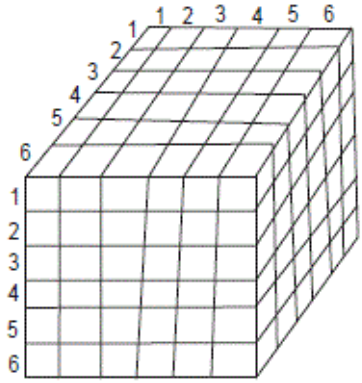
Case VII:



Case VIII:



Then the cube is divided into 216 smaller identical cubes as follows:



The cube can be painted in 8 different ways.

FeedBack

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

A cube is first painted using the 3 available colors - Red, Blue and Green - such that each face is painted with one of the 3 colors, and then it is cut into 216 smaller cubes of equal dimensions. While painting the cube, followings restrictions are to be followed :
i. There is always at least one color which is painted on more number of faces than that of green color.
ii. No two adjacent faces are painted blue.
iii. If at least 3 faces are painted red, then at least 1 face must be painted with blue.

Q.48
What can be the maximum number of smaller cubes with both red and blue color painted on their faces?

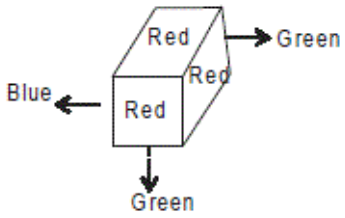
Solution:
Correct Answer : 40

Bookmark

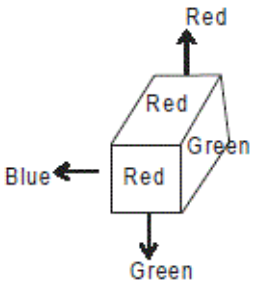
Answer key/Solution

Using (ii), it can be concluded that blue cannot be painted on more than 2 faces. Using (i), it can be concluded that green cannot be painted on more than 2 faces and when green is painted on 2 faces then Red is painted on 3 faces and blue on one face. [using point (iii)]. So, considering all the above, following are the possible ways of painting the cube:
→ indicates the color painted on the back/bottom faces.

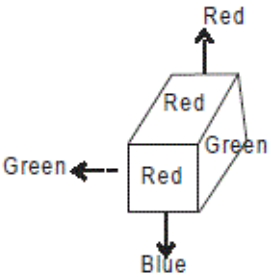
Case I:



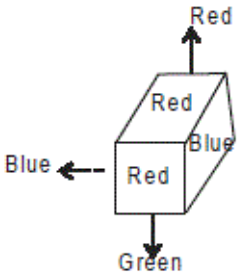
Case II:



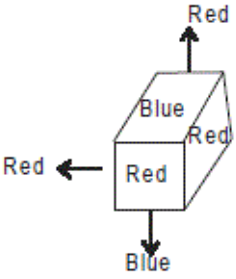
Case III:



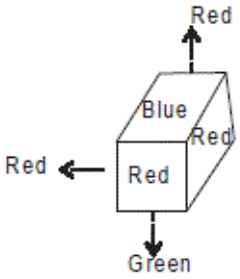
Case IV:



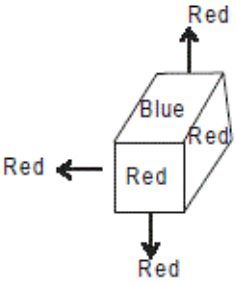
Case V:



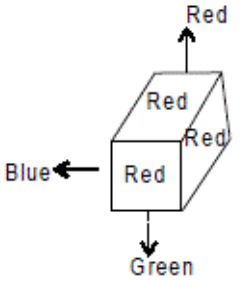
Case VI:



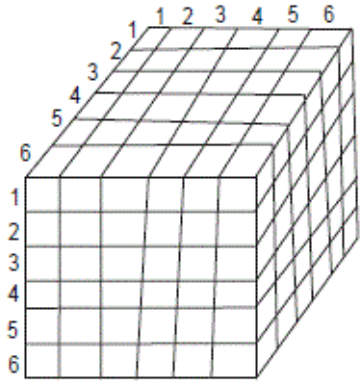
Case VII:



Case VIII:



Then the cube is divided into 216 smaller identical cubes as follows:



Refer case V,
There are 8 smaller cube, one at each of the 8 corners of the bigger cube. There are 8 edges with the 2 colors, and along each edge, there are 4 smaller cubes, (excluding the smaller cubes at the corners).
So, that makes it 8 × 4 = 32 smaller cubes on the edges (excluding the corners) with the 2 colors. Hence, 8 + 32 = 40 smaller cubes.

FeedBack

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

A cube is first painted using the 3 available colors - Red, Blue and Green - such that each face is painted with one of the 3 colors, and then it is cut into 216 smaller cubes of equal dimensions. While painting the cube, followings restrictions are to be followed :
i. There is always at least one color which is painted on more number of faces than that of green color.
ii. No two adjacent faces are painted blue.
iii. If at least 3 faces are painted red, then at least 1 face must be painted with blue.

Q.49
If the number of smaller cubes painted with red color on at least one of its faces is minimum possible, then what is the number of smaller cubes with green color painted on their faces?

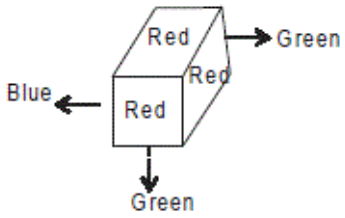
Solution:
Correct Answer : 66

Bookmark

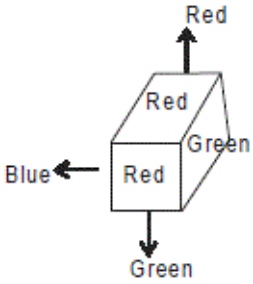
Answer key/Solution

Using (ii), it can be concluded that blue cannot be painted on more than 2 faces. Using (i), it can be concluded that green cannot be painted on more than 2 faces and when green is painted on 2 faces then Red is painted on 3 faces and blue on one face. [using point (iii)]. So, considering all the above, following are the possible ways of painting the cube:
→ indicates the color painted on the back/bottom faces.

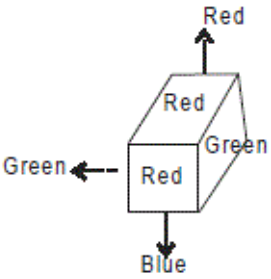
Case I:



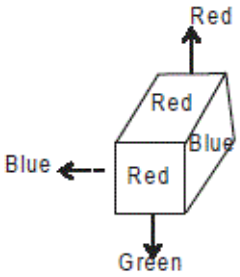
Case II:



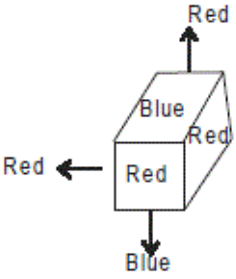
Case III:



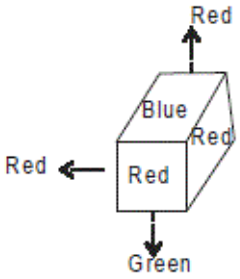
Case IV:



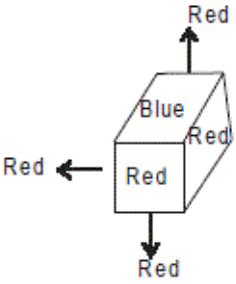
Case V:



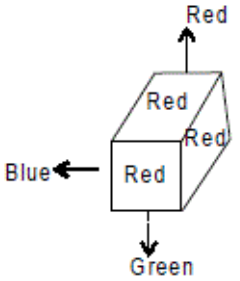
Case VI:



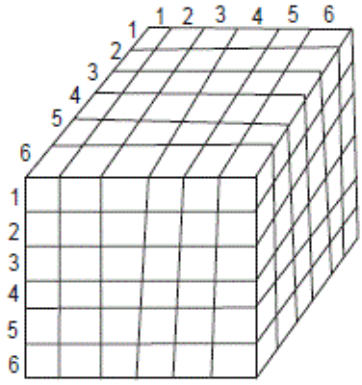
Case VII:



Case VIII:



Then the cube is divided into 216 smaller identical cubes as follows:



Refer case I, the number of smaller cubes with green color painted on their faces is 66.

FeedBack

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

A cube is first painted using the 3 available colors - Red, Blue and Green - such that each face is painted with one of the 3 colors, and then it is cut into 216 smaller cubes of equal dimensions. While painting the cube, followings restrictions are to be followed :
i. There is always at least one color which is painted on more number of faces than that of green color.
ii. No two adjacent faces are painted blue.
iii. If at least 3 faces are painted red, then at least 1 face must be painted with blue.

Q.50
What is the maximum possible sum of the number of smaller cubes with 3 faces painted in 3 different colors and the number of smaller cubes with only red color on them?

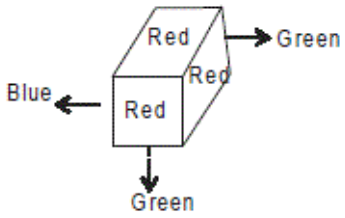
Solution:
Correct Answer : 88

Bookmark

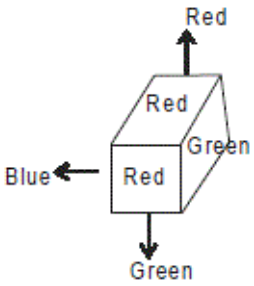
Answer key/Solution

Using (ii), it can be concluded that blue cannot be painted on more than 2 faces. Using (i), it can be concluded that green cannot be painted on more than 2 faces and when green is painted on 2 faces then Red is painted on 3 faces and blue on one face. [using point (iii)]. So, considering all the above, following are the possible ways of painting the cube:
→ indicates the color painted on the back/bottom faces.

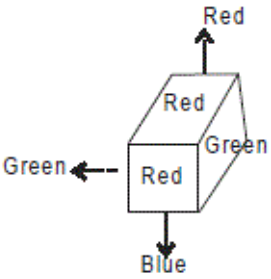
Case I:



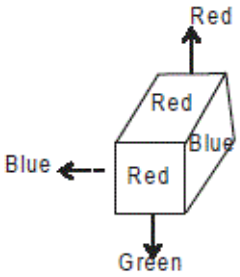
Case II:



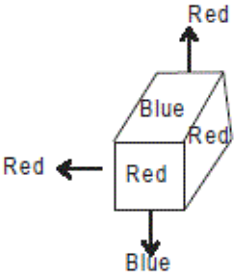
Case III:



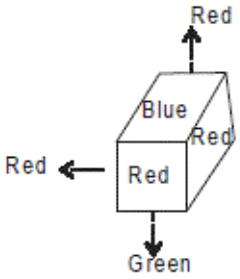
Case IV:



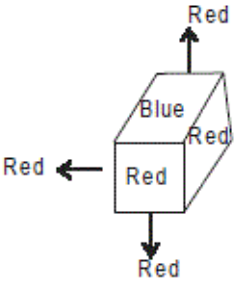
Case V:



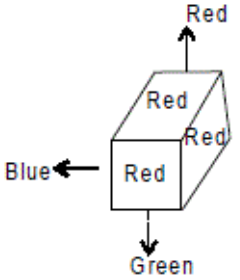
Case VI:



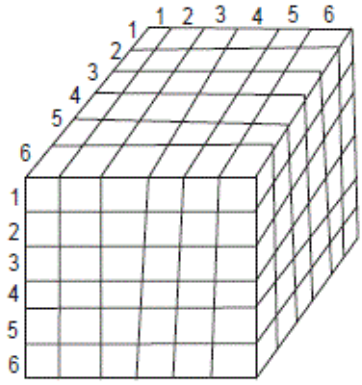
Case VII:



Case VIII:



Then the cube is divided into 216 smaller identical cubes as follows:



For maximum possible sum of the smaller cubes with 3 faces painted in 3 different colors and the number of smaller cubes with only red color on them, consider case VIII, the number of smaller cubes with 3 faces painted in 3 different colors = 2.
The number of smaller cubes with only red color on them = 86
∴ Total sum = 88.

FeedBack

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

Five Political parties - AIC, BLP, CJP, DLP and ENP contested election in the year 2018 for 400 seats. Each seat was won by exactly one party and it was not necessary that all parties contested election from all the seats. Votes gained and seat conversion ratio of each party are shown below:-

Party	Vote gained	Seat conversion ratio
AIC	15%	$\frac{2}{37500}$
BLP	20%	0.00003
CJP	30%	$\frac{1}{30000}$
DLP	10%	0.00006
ENP	25%	0.00004

$$[\text{Seat conversion ratio} = \frac{\text{Number of seats won}}{\text{Number of votes gained}}]$$

$$\text{Strike rate (in \%)} = \frac{\text{Number of seats won by a party}}{\text{Number of seats from where that particular party contested the election}} \times 100$$

The strike rate for each party was more than or equal to 30% but less than or equal to 80%.
The overall strike rate for all five parties together was not more than 40%.
(Note:- Strike rate is always a multiple of 10.)
The additional information is also given
(i) No party contested election from less than 100 seats.
(ii) The number of seats contested by party AIC was not less than that by CJP. Party ENP had contested from maximum number of seats among all parties. The number of seats contested by the party BLP was less than that by DLP.

Q.51
The party that had minimum strike rate was

1 **AIC**

2 **BLP**

3 **CJP**

4 **DLP**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let total votes cast be x,

For Party AIC; seat conversion ratio = $\frac{\text{Number of seats won}}{\text{votes gained}}$

$\Rightarrow \frac{2}{37500} = \frac{\text{Number of seats won}}{0.15x}$

$\Rightarrow$ Number of seats won by AIC = $0.15x \times \frac{2}{37500} = \frac{2x}{250000}$

Similarly; Number of seats won by BLP = $\frac{3x}{500000}$

Number of seats won by CJP = $\frac{x}{100000}$

Number of seats won by DLP = $\frac{3x}{500000}$

Number of seats won by ENP = $\frac{x}{100000}$

According to the question,

$$\frac{2x}{250000} + \frac{3x}{500000} + \frac{x}{100000} + \frac{3x}{500000} + \frac{x}{100000} = 400$$

$$\Rightarrow \frac{4x+3x+5x+3x+5x}{500000} = 400 \Rightarrow x = \frac{400 \times 500000}{20} = 100,00,000$$

We can find that ; seats won by AIC, BLP, CJP, DLP & ENP was 80, 60, 100, 60 & 100 respectively. Strike rate may be 30% or 40% or 50% or 60% or 70% or 80%. The below table shows the possible number of seats contested by each party.

Party	30%	40%	50%	60%	70%	80%
AIC	-	200	160	-	-	100
BLP	200	150	120	100	X	X
CJP	-	250	200	-	-	125
DLP	200	150	120	100	X	X
ENP	-	250	200	-	-	125

('–' is the case where number of seats are not integer and 'x' are the cases where no. of seats are less than 100). The overall strike rate is less than or equal to 40%. Since total seats won by all parties together were 400, the least possible sum of number of seats from where these parties had contested election would be 1000 {∵ 40% of 1000 = 400}. From statement II ; ENP had contested from maximum number of seats. Hence, we can conduce that ENP had contested from 250 seats. As the number of seats contested by AIC was equal to or more than that by CJP; therefore, the seats contested by AIC and CJP maybe 200 and 200/125 or 160 and 125. Similarly, the number of seats contested by DLP and BLP may be 200 and 150/120/100 or 150 and 120/100 or 120 and 100. The maximum possible sum of seats contested by all parties together = 250 + 200 + 150 + 200 + 200 = 1000. As per earlier discussion, we know that minimum possible sum of number of seats from where all parties contested election = 1000.

Now; we have the following table:-

Party	Seats won	Strike rate	Seats contested
AIC	80	40%	200
BLP	60	40%	150
CJP	100	50%	200
DLP	60	30%	200
ENP	100	40%	250

DLP had minimum strike rate.

FeedBack

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

Five Political parties - AIC, BLP, CJP, DLP and ENP contested election in the year 2018 for 400 seats. Each seat was won by exactly one party and it was not necessary that all parties contested election from all the seats. Votes gained and seat conversion ratio of each party are shown below:-

Party	Vote gained	Seat conversion ratio
AIC	15%	$\frac{2}{37500}$
BLP	20%	0.00003
CJP	30%	$\frac{1}{30000}$
DLP	10%	0.00006
ENP	25%	0.00004

$$[\text{Seat conversion ratio} = \frac{\text{Number of seats won}}{\text{Number of votes gained}}]$$

$$\text{Strike rate (in \%)} = \frac{\text{Number of seats won by a party}}{\text{Number of seats from where that particular party contested the election}} \times 100$$

The strike rate for each party was more than or equal to 30% but less than or equal to 80%.
The overall strike rate for all five parties together was not more than 40%.
(Note:- Strike rate is always a multiple of 10.)
The additional information is also given
(i) No party contested election from less than 100 seats.
(ii) The number of seats contested by party AIC was not less than that by CJP. Party ENP had contested from maximum number of seats among all parties. The number of seats contested by the party BLP was less than that by DLP.

Q.52
How many party/parties had strike rate equal to 40%?

1 **1**

2 **2**

3 **3**

4 **Either (2) or (3)**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let total votes cast be x,

For Party AIC; seat conversion ratio = $\frac{\text{Number of seats won}}{\text{votes gained}}$

$\Rightarrow \frac{2}{37500} = \frac{\text{Number of seats won}}{0.15x}$

$\Rightarrow$ Number of seats won by AIC = $0.15x \times \frac{2}{37500} = \frac{2x}{250000}$

Similarly; Number of seats won by BLP = $\frac{3x}{500000}$

Number of seats won by CJP = $\frac{x}{100000}$

Number of seats won by DLP = $\frac{3x}{500000}$

Number of seats won by ENP = $\frac{x}{100000}$

According to the question,

$$\frac{2x}{250000} + \frac{3x}{500000} + \frac{x}{100000} + \frac{3x}{500000} + \frac{x}{100000} = 400$$

$$\Rightarrow \frac{4x+3x+5x+3x+5x}{500000} = 400 \Rightarrow x = \frac{400 \times 500000}{20} = 100,00,000$$

We can find that ; seats won by AIC, BLP, CJP, DLP & ENP was 80, 60, 100, 60 & 100 respectively. Strike rate may be 30% or 40% or 50% or 60% or 70% or 80%. The below table shows the possible number of seats contested by each party.

Party	30%	40%	50%	60%	70%	80%
AIC	-	200	160	-	-	100
BLP	200	150	120	100	X	X
CJP	-	250	200	-	-	125
DLP	200	150	120	100	X	X
ENP	-	250	200	-	-	125

('–' is the case where number of seats are not integer and 'x' are the cases where no. of seats are less than 100). The overall strike rate is less than or equal to 40%. Since total seats won by all parties together were 400, the least possible sum of number of seats from where these parties had contested election would be 1000 {∵ 40% of 1000 = 400}. From statement II ; ENP had contested from maximum number of seats. Hence, we can conduce that ENP had contested from 250 seats. As the number of seats contested by AIC was equal to or more than that by CJP; therefore, the seats contested by AIC and CJP maybe 200 and 200/125 or 160 and 125. Similarly, the number of seats contested by DLP and BLP may be 200 and 150/120/100 or 150 and 120/100 or 120 and 100. The maximum possible sum of seats contested by all parties together = 250 + 200 + 150 + 200 + 200 = 1000. As per earlier discussion, we know that minimum possible sum of number of seats from where all parties contested election = 1000.

Now; we have the following table:-

Party	Seats won	Strike rate	Seats contested
AIC	80	40%	200
BLP	60	40%	150
CJP	100	50%	200
DLP	60	30%	200
ENP	100	40%	250

AIC, BLP and ENP had strike rate of 40%.

FeedBack

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

Five Political parties - AIC, BLP, CJP, DLP and ENP contested election in the year 2018 for 400 seats. Each seat was won by exactly one party and it was not necessary that all parties contested election from all the seats. Votes gained and seat conversion ratio of each party are shown below:-

Party	Vote gained	Seat conversion ratio
AIC	15%	$\frac{2}{37500}$
BLP	20%	0.00003
CJP	30%	$\frac{1}{30000}$
DLP	10%	0.00006
ENP	25%	0.00004

$$[\text{Seat conversion ratio} = \frac{\text{Number of seats won}}{\text{Number of votes gained}}]$$

$$\text{Strike rate (in \%)} = \frac{\text{Number of seats won by a party}}{\text{Number of seats from where that particular party contested the election}} \times 100$$

The strike rate for each party was more than or equal to 30% but less than or equal to 80%.
The overall strike rate for all five parties together was not more than 40%.
(Note:- Strike rate is always a multiple of 10.)
The additional information is also given
(i) No party contested election from less than 100 seats.
(ii) The number of seats contested by party AIC was not less than that by CJP. Party ENP had contested from maximum number of seats among all parties. The number of seats contested by the party BLP was less than that by DLP.

Q.53
The difference between the number of votes gained by the party AIC and BLP was

1 **2500000**

2 **500000**

3 **1500000**

4 **None of these**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let total votes cast be x,

For Party AIC; seat conversion ratio = $\frac{\text{Number of seats won}}{\text{votes gained}}$

$\Rightarrow \frac{2}{37500} = \frac{\text{Number of seats won}}{0.15x}$

$\Rightarrow$ Number of seats won by AIC = $0.15x \times \frac{2}{37500} = \frac{2x}{250000}$

Similarly; Number of seats won by BLP = $\frac{3x}{500000}$

Number of seats won by CJP = $\frac{x}{100000}$

Number of seats won by DLP = $\frac{3x}{500000}$

Number of seats won by ENP = $\frac{x}{100000}$

According to the question,

$$\frac{2x}{250000} + \frac{3x}{500000} + \frac{x}{100000} + \frac{3x}{500000} + \frac{x}{100000} = 400$$

$$\Rightarrow \frac{4x + 3x + 5x + 3x + 5x}{500000} = 400 \Rightarrow x = \frac{400 \times 500000}{20} = 100,00,000$$

We can find that ; seats won by AIC, BLP, CJP, DLP & ENP was 80, 60, 100, 60 & 100 respectively. Strike rate may be 30% or 40% or 50% or 60% or 70% or 80%. The below table shows the possible number of seats contested by each party.

Party	30%	40%	50%	60%	70%	80%
AIC	-	200	160	-	-	100
BLP	200	150	120	100	X	X
CJP	-	250	200	-	-	125
DLP	200	150	120	100	X	X
ENP	-	250	200	-	-	125

('–' is the case where number of seats are not integer and 'x' are the cases where no. of seats are less than 100). The overall strike rate is less than or equal to 40%. Since total seats won by all parties together were 400, the least possible sum of number of seats from where these parties had contested election would be 1000 {∵ 40% of 1000 = 400}. From statement II ; ENP had contested from maximum number of seats. Hence, we can conduce that ENP had contested from 250 seats. As the number of seats contested by AIC was equal to or more than that by CJP; therefore, the seats contested by AIC and CJP maybe 200 and 200/125 or 160 and 125. Similarly, the number of seats contested by DLP and BLP may be 200 and 150/120/100 or 150 and 120/100 or 120 and 100. The maximum possible sum of seats contested by all parties together = 250 + 200 + 150 + 200 + 200 = 1000. As per earlier discussion, we know that minimum possible sum of number of seats from where all parties contested election = 1000.

Now; we have the following table:-

Party	Seats won	Strike rate	Seats contested
AIC	80	40%	200
BLP	60	40%	150
CJP	100	50%	200
DLP	60	30%	200
ENP	100	40%	250

The difference between votes gained by AIC and BLP was (20 – 15 =) 5% of total votes i.e., $\frac{5}{100} \times 100,00,000$ = 5,00,000.

FeedBack

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

Five Political parties - AIC, BLP, CJP, DLP and ENP contested election in the year 2018 for 400 seats. Each seat was won by exactly one party and it was not necessary that all parties contested election from all the seats. Votes gained and seat conversion ratio of each party are shown below:-

Party	Vote gained	Seat conversion ratio
AIC	15%	$\frac{2}{37500}$
BLP	20%	0.00003
CJP	30%	$\frac{1}{30000}$
DLP	10%	0.00006
ENP	25%	0.00004

$$[\text{Seat conversion ratio} = \frac{\text{Number of seats won}}{\text{Number of votes gained}}]$$

$$\text{Strike rate (in \%)} = \frac{\text{Number of seats won by a party}}{\text{Number of seats from where that particular party contested the election}} \times 100$$

The strike rate for each party was more than or equal to 30% but less than or equal to 80%.
The overall strike rate for all five parties together was not more than 40%.
(Note:- Strike rate is always a multiple of 10.)
The additional information is also given
(i) No party contested election from less than 100 seats.
(ii) The number of seats contested by party AIC was not less than that by CJP. Party ENP had contested from maximum number of seats among all parties. The number of seats contested by the party BLP was less than that by DLP.

Q.54
By how much percentage was the number of seats won by BLP and CJP together less than that by AIC and CJP together?

1 **10%**

2 **20%**

3 $13\frac{1}{3}\%$

4 $11\frac{1}{9}\%$

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let total votes cast be x,

For Party AIC; seat conversion ratio = $\frac{\text{Number of seats won}}{\text{votes gained}}$

$\Rightarrow \frac{2}{37500} = \frac{\text{Number of seats won}}{0.15x}$

$\Rightarrow$ Number of seats won by AIC = $0.15x \times \frac{2}{37500} = \frac{2x}{250000}$

Similarly; Number of seats won by BLP = $\frac{3x}{500000}$

Number of seats won by CJP = $\frac{x}{100000}$

Number of seats won by DLP = $\frac{3x}{500000}$

Number of seats won by ENP = $\frac{x}{100000}$

According to the question,

$$\frac{2x}{250000} + \frac{3x}{500000} + \frac{x}{100000} + \frac{3x}{500000} + \frac{x}{100000} = 400$$

$$\Rightarrow \frac{4x+3x+5x+3x+5x}{500000} = 400 \Rightarrow x = \frac{400 \times 500000}{20} = 100,00,000$$

We can find that ; seats won by AIC, BLP, CJP, DLP & ENP was 80, 60, 100, 60 & 100 respectively. Strike rate may be 30% or 40% or 50% or 60% or 70% or 80%. The below table shows the possible number of seats contested by each party.

Party	30%	40%	50%	60%	70%	80%
AIC	-	200	160	-	-	100
BLP	200	150	120	100	X	X
CJP	-	250	200	-	-	125
DLP	200	150	120	100	X	X
ENP	-	250	200	-	-	125

('–' is the case where number of seats are not integer and 'x' are the cases where no. of seats are less than 100). The overall strike rate is less than or equal to 40%. Since total seats won by all parties together were 400, the least possible sum of number of seats from where these parties had contested election would be 1000 {∵ 40% of 1000 = 400}. From statement II ; ENP had contested from maximum number of seats. Hence, we can conduce that ENP had contested from 250 seats. As the number of seats contested by AIC was equal to or more than that by CJP; therefore, the seats contested by AIC and CJP maybe 200 and 200/125 or 160 and 125. Similarly, the number of seats contested by DLP and BLP may be 200 and 150/120/100 or 150 and 120/100 or 120 and 100. The maximum possible sum of seats contested by all parties together = 250 + 200 + 150 + 200 + 200 = 1000. As per earlier discussion, we know that minimum possible sum of number of seats from where all parties contested election = 1000.

Now; we have the following table:-

Party	Seats won	Strike rate	Seats contested
AIC	80	40%	200
BLP	60	40%	150
CJP	100	50%	200
DLP	60	30%	200
ENP	100	40%	250

Required percentage = $\frac{|(60+100)-(80+100)|}{(80+100)} \times 100 = \frac{20}{180} \times 100 = \frac{100}{9}\% = 11\frac{1}{9}\%$.

FeedBack

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

In T-20 cricket world cup tournament, a total of ten teams participated - India, Australia, England, New Zealand, Pakistan, Afghanistan, Srilanka, South Africa, Bangladesh and West Indies. The tournament is played in 2 stages - stage I which follows Round Robin format where each team plays with all the other teams once and the top 4 teams on the basis of the points earned, qualify to stage II, which follows knock out format i.e., semi-finals and finals. The winner of the finals is declared as the champion. In stage I, a team gets 2 points for a win, no points are awarded for a loss and one point each is awarded to the 2 teams in case a match ends in no result. Following is the table indicating points when only 3 matches are left to be played in stage I :

Team	Number of matches played	Number of wins	Number of matches end in 'No Result'	Points
India	9	7	0	14
Australia	8	6	0	12
New Zealand	9	5	1	11
England	8	5	0	10
Pakistan	8	4	1	9
West Indies	7	4	0	8
Bangladesh	8	4	0	8
South Africa	9	3	0	6
Srilanka	9	2	0	4
Afghanistan	9	1	0	2

Further, it is known that both Australia and West Indies did beat England in their respective opening match. After the completion of all matches of stage I, if two teams end with same points, then there are other criteria to decide the standings of the team. But no 2 teams can have the same standing (i.e., same position/Rank). In stage II, one team always wins and the other team loses in a match i.e., no match ends in 'No Result'. The two semi-finals played are semi-final I between 1st and 4th placed teams of stage I and semi-final II between 2nd and 3rd placed teams of stage I.

Q.55

If West Indies and Pakistan won all their remaining matches, then which of the following team (s) would definitely never make it to stage II?

1 **New Zealand**

2 **Bangladesh**

3 **England**

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

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Teams	No. of matches left	Final points possible
Australia	1	12/13/14
England	1	10/11/12
Bangladesh	1	8/9/10
Pakistan	1	9/10/11
West Indies	2	8/9/10/11/12

Since Australia and West Indies already played against England, so England played its remaining match either against Pakistan or against Bangladesh. There are 2 possible cases:
Case I: England Vs Pakistan
West Indies Vs Australia
West Indies Vs Bangladesh
Case II: England Vs Bangladesh
West Indies Vs Australia
West Indies Vs Pakistan

If West Indies and Pakistan won all their remaining matches, then it is possible in case I only where they are not playing each other in the remaining matches. So, West Indies end up with 12 points, Pakistan with 11 points, England with 10 points and Bangladesh with 8 points. Then the teams qualified to stage II would be India, Australia, West Indies and one of either Pakistan or New Zealand. So, neither Bangladesh nor England would make it to stage II.

FeedBack

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

In T-20 cricket world cup tournament, a total of ten teams participated - India, Australia, England, New Zealand, Pakistan, Afghanistan, Srilanka, South Africa, Bangladesh and West Indies. The tournament is played in 2 stages - stage I which follows Round Robin format where each team plays with all the other teams once and the top 4 teams on the basis of the points earned, qualify to stage II, which follows knock out format i.e., semi-finals and finals. The winner of the finals is declared as the champion. In stage I, a team gets 2 points for a win, no points are awarded for a loss and one point each is awarded to the 2 teams in case a match ends in no result. Following is the table indicating points when only 3 matches are left to be played in stage I :

Team	Number of matches played	Number of wins	Number of matches end in 'No Result'	Points
India	9	7	0	14
Australia	8	6	0	12
New Zealand	9	5	1	11
England	8	5	0	10
Pakistan	8	4	1	9
West Indies	7	4	0	8
Bangladesh	8	4	0	8
South Africa	9	3	0	6
Srilanka	9	2	0	4
Afghanistan	9	1	0	2

Further, it is known that both Australia and West Indies did beat England in their respective opening match. After the completion of all matches of stage I, if two teams end with same points, then there are other criteria to decide the standings of the team. But no 2 teams can have the same standing (i.e., same position/Rank). In stage II, one team always wins and the other team loses in a match i.e., no match ends in 'No Result'. The two semi-finals played are semi-final I between 1st and 4th placed teams of stage I and semi-final II between 2nd and 3rd placed teams of stage I.

Q.56

If England won its remaining match, then for how many teams could it be possible to finish at 4th place after stage I?

Solution:
Correct Answer : 5

Bookmark

Answer key/Solution

Teams	No. of matches left	Final points possible
Australia	1	12/13/14
England	1	10/11/12
Bangladesh	1	8/9/10
Pakistan	1	9/10/11
West Indies	2	8/9/10/11/12

Since Australia and West Indies already played against England, so England played its remaining match either against Pakistan or against Bangladesh. There are 2 possible cases:
Case I: England Vs Pakistan
West Indies Vs Australia
West Indies Vs Bangladesh
Case II: England Vs Bangladesh
West Indies Vs Australia
West Indies Vs Pakistan

If England won its last match, then it would end with 12 points. So following are the different scenarios possible:
Scenario I :
If West Indies won its remaining two matches, then all the 3 teams i.e., England, Australia and West Indies would end with 12 points each and any one of them could finish at 4th place after stage I.
Scenario II:
If its case II and Pakistan wins its match against West Indies, then both Pakistan and New Zealand would end with 11 points each and hence could finish at 4th place after stage I.
(No need to look at other scenarios as Bangladesh could not finish at 4th place, if England wins its last match).
Hence, any one of England, Australia, West Indies, New Zealand or Pakistan could finish at 4th place.

FeedBack

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

In T-20 cricket world cup tournament, a total of ten teams participated - India, Australia, England, New Zealand, Pakistan, Afghanistan, Srilanka, South Africa, Bangladesh and West Indies. The tournament is played in 2 stages - stage I which follows Round Robin format where each team plays with all the other teams once and the top 4 teams on the basis of the points earned, qualify to stage II, which follows knock out format i.e., semi-finals and finals. The winner of the finals is declared as the champion. In stage I, a team gets 2 points for a win, no points are awarded for a loss and one point each is awarded to the 2 teams in case a match ends in no result. Following is the table indicating points when only 3 matches are left to be played in stage I :

Team	Number of matches played	Number of wins	Number of matches end in 'No Result'	Points
India	9	7	0	14
Australia	8	6	0	12
New Zealand	9	5	1	11
England	8	5	0	10
Pakistan	8	4	1	9
West Indies	7	4	0	8
Bangladesh	8	4	0	8
South Africa	9	3	0	6
Srilanka	9	2	0	4
Afghanistan	9	1	0	2

Further, it is known that both Australia and West Indies did beat England in their respective opening match. After the completion of all matches of stage I, if two teams end with same points, then there are other criteria to decide the standings of the team. But no 2 teams can have the same standing (i.e., same position/Rank). In stage II, one team always wins and the other team loses in a match i.e., no match ends in 'No Result'. The two semi-finals played are semi-final I between 1st and 4th placed teams of stage I and semi-final II between 2nd and 3rd placed teams of stage I.

Q.57

If semi-final I is played between Australia and New Zealand then against which team did India play semi-final II?

1 **England**

2 **Pakistan or England**

3 **West Indies or Pakistan**

4 **England or West Indies**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Teams	No. of matches left	Final points possible
Australia	1	12/13/14
England	1	10/11/12
Bangladesh	1	8/9/10
Pakistan	1	9/10/11
West Indies	2	8/9/10/11/12

Since Australia and West Indies already played against England, so England played its remaining match either against Pakistan or against Bangladesh. There are 2 possible cases:
Case I: England Vs Pakistan
West Indies Vs Australia
West Indies Vs Bangladesh
Case II: England Vs Bangladesh
West Indies Vs Australia
West Indies Vs Pakistan

If semi-final I is played between Australia and New Zealand then it implies that Australia won its match against West Indies and finished at 1st position and playing against New Zealand means New Zealand finished at 4th. So, any team playing against India in semi-final II needs to finish at 3rd place i.e., higher than New Zealand. So, only two teams are possible i.e, England (either by winning its last match and ending with 12 points or with no result in its last match and ending with 11 points and still can be placed higher than New Zealand) or Pakistan (by winning its last match and ending with 11 points with the possibility of being placed higher than New Zealand).

FeedBack

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

In T-20 cricket world cup tournament, a total of ten teams participated - India, Australia, England, New Zealand, Pakistan, Afghanistan, Srilanka, South Africa, Bangladesh and West Indies. The tournament is played in 2 stages - stage I which follows Round Robin format where each team plays with all the other teams once and the top 4 teams on the basis of the points earned, qualify to stage II, which follows knock out format i.e., semi-finals and finals. The winner of the finals is declared as the champion. In stage I, a team gets 2 points for a win, no points are awarded for a loss and one point each is awarded to the 2 teams in case a match ends in no result. Following is the table indicating points when only 3 matches are left to be played in stage I :

Team	Number of matches played	Number of wins	Number of matches end in 'No Result'	Points
India	9	7	0	14
Australia	8	6	0	12
New Zealand	9	5	1	11
England	8	5	0	10
Pakistan	8	4	1	9
West Indies	7	4	0	8
Bangladesh	8	4	0	8
South Africa	9	3	0	6
Srilanka	9	2	0	4
Afghanistan	9	1	0	2

Further, it is known that both Australia and West Indies did beat England in their respective opening match. After the completion of all matches of stage I, if two teams end with same points, then there are other criteria to decide the standings of the team. But no 2 teams can have the same standing (i.e., same position/Rank). In stage II, one team always wins and the other team loses in a match i.e., no match ends in 'No Result'. The two semi-finals played are semi-final I between 1st and 4th placed teams of stage I and semi-final II between 2nd and 3rd placed teams of stage I.

Q.58

Which of the following events must happen for a possibility of Bangladesh to qualify to stage II?

1 **Pakistan must lose its last match.**

2 **England must lose its last match.**

3 **West Indies must lose both its remaining matches.**

4 **West Indies must not win both its matches.**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Teams	No. of matches left	Final points possible
Australia	1	12/13/14
England	1	10/11/12
Bangladesh	1	8/9/10
Pakistan	1	9/10/11
West Indies	2	8/9/10/11/12

Since Australia and West Indies already played against England, so England played its remaining match either against Pakistan or against Bangladesh. There are 2 possible cases:
Case I: England Vs Pakistan
West Indies Vs Australia
West Indies Vs Bangladesh
Case II: England Vs Bangladesh
West Indies Vs Australia
West Indies Vs Pakistan

Option (1) : Even if Pakistan loses its last match, then either West Indies won against Pakistan or England won against Pakistan , which means points of West Indies and England would become 10 and 12 respectively and Bangladesh could also end with 10 points, by winning its last match. But in this case top 4 would be India, Australia, New Zealand and England.
Option (2) → Even if England's last match ends in 'No Result', then it would end with 11 points, which is more than the maximum points that Bangladesh could get to. So, England's losing its last match is must for Bangladesh to have a chance for stage II.
Option (3) and Option (4) → If West Indies last 2 matches ends in 'No Result' then it would finish with 10 points only which still keeps Bangladesh alive. But if West Indies wins one of its match and the other match ends in 'No Result' then also Bangladesh could not reach stage II.

FeedBack

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

In a class of 'n' students, a test was conducted, the maximum marks for which was 1000. No student got the maximum possible marks and the marks scored by each student was positive integer such that the marks of any two students were co-prime and the marks of no student was a prime number.

Q.59
What could be the maximum number of students in the class?

1 **9**

2 **11**

3 **12**

4 **10**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Since marks of no students is a prime number and still marks of any two students are co-prime, so we can take marks to be product of 2 prime numbers or powers of a prime numbers (i.e., squares of prime numbers or cubes of prime numbers or any other powers of prime numbers).

But to maximize the number of students, it should be powers of prime numbers, (otherwise in case of product of 2 prime numbers, two prime numbers would be used for each student) with marks of one of the of the student being 1. So, following is a possibility for marks (to maximize the number of students) : 1, 2^2, 3^2, 5^2, 7^2, ..., 31^2; (since squares of prime numbers greater than 31 would be more than 1000). So from 2 to 31 there are 11 prime numbers and marks of one of the student can be 1. Hence, a maximum of 12 students are possible.

FeedBack

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

In a class of 'n' students, a test was conducted, the maximum marks for which was 1000. No student got the maximum possible marks and the marks scored by each student was positive integer such that the marks of any two students were co-prime and the marks of no student was a prime number.

Q.60
What could be the maximum number of students who scored more than 100 marks in the test?

1 **11**

2 **7**

3 **10**

4 **8**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Since marks of no students is a prime number and still marks of any two students are co-prime, so we can take marks to be product of 2 prime numbers or powers of a prime numbers (i.e., squares of prime numbers or cubes of prime numbers or any other powers of prime numbers).

Instead of taking marks of a student as 2^2 it can be 2^7 (i.e., a power of 2 greater than 100) or 2^8 or 2^9 ; Similarly, in place of 3^2, it can be either 3^5 or 3^6. For 5^2, it can be 5^3 or 5^4. So barring one student who got 1 mark rest all can get more than 100 marks. Hence, a maximum of 11 students.

FeedBack

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

In a class of 'n' students, a test was conducted, the maximum marks for which was 1000. No student got the maximum possible marks and the marks scored by each student was positive integer such that the marks of any two students were co-prime and the marks of no student was a prime number.

Q.61

What could be the maximum value of the second highest marks scored by a student when the number of students in the class is maximum?

1 **998**

2 **841**

3 **864**

4 **900**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Since marks of no students is a prime number and still marks of any two students are co-prime, so we can take marks to be product of 2 prime numbers or powers of a prime numbers (i.e., squares of prime numbers or cubes of prime numbers or any other powers of prime numbers).

To maximize the second highest marks when the number of students is maximum we need to maximize the highest marks also. The highest marks possible (without reducing the number of students) is 999 since $999 = 37 \times 27$ and therefore instead of taking the marks of one student to be powers of 3 (i.e., 3^2 or 3^3 ...) it can be taken as $3^3 \times 37$ i.e., 999. The second highest marks possible is 998 since $998 = 2 \times 499$ and therefore instead of taking the marks to be any powers of 2 (i.e., 2^2 or 2^3 ...) it can be taken as 2×499 i.e., 998. (It can be checked that 499 is a prime number).

FeedBack

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

In a class of 'n' students, a test was conducted, the maximum marks for which was 1000. No student got the maximum possible marks and the marks scored by each student was positive integer such that the marks of any two students were co-prime and the marks of no student was a prime number.

Q.62

How many different possible values can the marks of the student with the second lowest marks take, if it is less than 100 and when the number of students in the class is maximum possible?

1 **7**

2 **8**

3 **9**

4 **10**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Since marks of no students is a prime number and still marks of any two students are co-prime, so we can take marks to be product of 2 prime numbers or powers of a prime numbers (i.e., squares of prime numbers or cubes of prime numbers or any other powers of prime numbers).

When the number of students is maximum, then the marks of the student with lowest marks has to be 1. For the marks of the student with the second lowest marks there are following possibilities :
(a) 2^2
(b) 2^3 (instead of 2^2)
(c) 3^2 (if instead of 2^2 the marks are taken as 2^4)
(d) 2^4 (instead of 2^2) if instead of 3^2, the marks are taken as 3^3
(e) 5^2, if instead of 2^2, the marks are taken as 2^5 and instead of 3^2, the marks are taken as 3^3 ; Similarly, working with other powers of 2 and 3 ; So the possibilities are -
2^2, 2^3, 2^4, 2^5, 2^6, 3^2, 3^3, 3^4; 5^2; 7^2.

FeedBack

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

Eight bottles of softdrinks - Coke, Thums up, Pepsi, Maaza, Sprite, Limca, Fanta and Mirinda - having cost Rs. 10, Rs. 11, Rs. 12, Rs. 13, Rs. 14, Rs. 15, Rs. 16 and Rs. 17, not necessarily in that order, were kept in a row on a table. Maaza and Limca were kept on even numbered positions. Fanta, having cost of Rs. 13, was kept immediate right to the softdrink having cost of Rs. 11 and immediate left of Thums up. The cost of Coke was neither Rs. 12 nor Rs. 15. Only Pepsi bottle was kept between the bottles that cost Rs. 10 and Rs. 14. Four bottles were kept between Coke bottle and the softdrink which costs Rs.11. Neither Pepsi nor Sprite costs Rs.16. Bottles which cost Rs. 12 and Rs.15 were kept on two successive positions. Thums up was kept on a position that was left to the position on which Sprite was kept.

Q.63

Which of the following softdrinks cost maximum?

1 **Thums up**

2 **Pepsi**

3 **Mirinda**

4 **Data insufficient**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

From statements "Fanta having cost of Rs. 13 was kept immediate right of the softdrink which costs Rs. 11 and immediate left of Thumsup", "Four bottles were kept between the bottle that cost Rs. 11 and Coke" and "Thumsup was kept on left of Sprite"; we can conclude that the bottle which cost Rs. 11 might be placed at 1st, 2nd or 3rd position from left end.
Case I:- When the bottle that costs Rs. 11 was kept at leftmost position. In this case coke was kept on 6th from the left end, Limca and Maaza were kept on 2nd and 4th position from the left end, not necessarily in that order.
Now, there are two possibilities under case I.
Possibility 1:- Pepsi and Sprite were kept at 5th and 7th position respectively from left end. And, the further analysis leads to the following arrangement.

11	13	16	10/14	17	14/10	12/15	15/12
Mirinda	Fanta	Thumsup	Limca/Maaza	Pepsi	Coke	Sprite	Maaza/Limca

Possibility 2:- Pepsi and Sprite were kept at 7th and 5th position from left end.

11	13	16	12/15	15/12	14/10	17	10/14
Mirinda	Fanta	Thumsup	Limca/Maaza	Sprite	Coke	Pepsi	Maaza/Limca

Case II:- When the bottle which costs Rs. 11 was kept at 2nd position from left end, you will find that this case is not possible because the statement "Bottles which cost Rs. 12 and Rs. 15 were kept on two successive positions" is not satisfied.
Case III:- The bottle which costs Rs. 11 was kept at 3rd position from left end. You will find that this case is also not possible.

Pepsi costs Rs. 17.

FeedBack

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

Eight bottles of softdrinks - Coke, Thums up, Pepsi, Maaza, Sprite, Limca, Fanta and Mirinda - having cost Rs. 10, Rs. 11, Rs. 12, Rs. 13, Rs. 14, Rs. 15, Rs. 16 and Rs. 17, not necessarily in that order, were kept in a row on a table. Maaza and Limca were kept on even numbered positions. Fanta, having cost of Rs. 13, was kept immediate right to the softdrink having cost of Rs. 11 and immediate left of Thums up. The cost of Coke was neither Rs. 12 nor Rs. 15. Only Pepsi bottle was kept between the bottles that cost Rs. 10 and Rs. 14. Four bottles were kept between Coke bottle and the softdrink which costs Rs.11. Neither Pepsi nor Sprite costs Rs.16. Bottles which cost Rs. 12 and Rs.15 were kept on two successive positions. Thums up was kept on a position that was left to the position on which Sprite was kept.

Q.64
What is the cost of Mirinda bottle?

1 **Rs. 11**

2 **Rs. 10**

3 **Rs. 14**

4 **Either (2) or (3)**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

From statements "Fanta having cost of Rs. 13 was kept immediate right of the softdrink which costs Rs. 11 and immediate left of Thumsup", "Four bottles were kept between the bottle that cost Rs. 11 and Coke" and "Thumsup was kept on left of Sprite"; we can conclude that the bottle which cost Rs. 11 might be placed at 1st, 2nd or 3rd position from left end.
Case I:- When the bottle that costs Rs. 11 was kept at leftmost position. In this case coke was kept on 6th from the left end, Limca and Maaza were kept on 2nd and 4th position from the left end, not necessarily in that order.
Now, there are two possibilities under case I.
Possibility 1:- Pepsi and Sprite were kept at 5th and 7th position respectively from left end. And, the further analysis leads to the following arrangement.

11	13	16	10/14	17	14/10	12/15	15/12
Mirinda	Fanta	Thumsup	Limca/Maaza	Pepsi	Coke	Sprite	Maaza/Limca

Possibility 2:- Pepsi and Sprite were kept at 7th and 5th position from left end.

11	13	16	12/15	15/12	14/10	17	10/14
Mirinda	Fanta	Thumsup	Limca/Maaza	Sprite	Coke	Pepsi	Maaza/Limca

Case II:- When the bottle which costs Rs. 11 was kept at 2nd position from left end, you will find that this case is not possible because the statement "Bottles which cost Rs. 12 and Rs. 15 were kept on two successive positions" is not satisfied.
Case III:- The bottle which costs Rs. 11 was kept at 3rd position from left end. You will find that this case is also not possible.

Mirinda costs Rs. 11.

FeedBack

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

Eight bottles of softdrinks - Coke, Thums up, Pepsi, Maaza, Sprite, Limca, Fanta and Mirinda - having cost Rs. 10, Rs. 11, Rs. 12, Rs. 13, Rs. 14, Rs. 15, Rs. 16 and Rs. 17, not necessarily in that order, were kept in a row on a table. Maaza and Limca were kept on even numbered positions. Fanta, having cost of Rs. 13, was kept immediate right to the softdrink having cost of Rs. 11 and immediate left of Thums up. The cost of Coke was neither Rs. 12 nor Rs. 15. Only Pepsi bottle was kept between the bottles that cost Rs. 10 and Rs. 14. Four bottles were kept between Coke bottle and the softdrink which costs Rs.11. Neither Pepsi nor Sprite costs Rs.16. Bottles which cost Rs. 12 and Rs.15 were kept on two successive positions. Thums up was kept on a position that was left to the position on which Sprite was kept.

Q.65
For how many soft drinks can we determine the exact positions at which they were kept?

1 **3**

2 **4**

3 **5**

4 **6**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

From statements "Fanta having cost of Rs. 13 was kept immediate right of the softdrink which costs Rs. 11 and immediate left of Thumsup", "Four bottles were kept between the bottle that cost Rs. 11 and Coke" and "Thumsup was kept on left of Sprite"; we can conclude that the bottle which cost Rs. 11 might be placed at 1st, 2nd or 3rd position from left end.
Case I:- When the bottle that costs Rs. 11 was kept at leftmost position. In this case coke was kept on 6th from the left end, Limca and Maaza were kept on 2nd and 4th position from the left end, not necessarily in that order.
Now, there are two possibilities under case I.
Possibility 1:- Pepsi and Sprite were kept at 5th and 7th position respectively from left end. And, the further analysis leads to the following arrangement.

11	13	16	10/14	17	14/10	12/15	15/12
Mirinda	Fanta	Thumsup	Limca/Maaza	Pepsi	Coke	Sprite	Maaza/Limca

Possibility 2:- Pepsi and Sprite were kept at 7th and 5th position from left end.

11	13	16	12/15	15/12	14/10	17	10/14
Mirinda	Fanta	Thumsup	Limca/Maaza	Sprite	Coke	Pepsi	Maaza/Limca

Case II:- When the bottle which costs Rs. 11 was kept at 2nd position from left end, you will find that this case is not possible because the statement "Bottles which cost Rs. 12 and Rs. 15 were kept on two successive positions" is not satisfied.
Case III:- The bottle which costs Rs. 11 was kept at 3rd position from left end. You will find that this case is also not possible.

We could determine the positions for four softdrinks.

FeedBack

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

Eight bottles of softdrinks - Coke, Thums up, Pepsi, Maaza, Sprite, Limca, Fanta and Mirinda - having cost Rs. 10, Rs. 11, Rs. 12, Rs. 13, Rs. 14, Rs. 15, Rs. 16 and Rs. 17, not necessarily in that order, were kept in a row on a table. Maaza and Limca were kept on even numbered positions. Fanta, having cost of Rs. 13, was kept immediate right to the softdrink having cost of Rs. 11 and immediate left of Thums up. The cost of Coke was neither Rs. 12 nor Rs. 15. Only Pepsi bottle was kept between the bottles that cost Rs. 10 and Rs. 14. Four bottles were kept between Coke bottle and the softdrink which costs Rs.11. Neither Pepsi nor Sprite costs Rs.16. Bottles which cost Rs. 12 and Rs.15 were kept on two successive positions. Thums up was kept on a position that was left to the position on which Sprite was kept.

Q.66
The bottle positioned second from the right end was a bottle of

1 **Maaza**

2 **Pepsi**

3 **Sprite**

4 **Either (2) or (3)**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

From statements "Fanta having cost of Rs. 13 was kept immediate right of the softdrink which costs Rs. 11 and immediate left of Thumsup", "Four bottles were kept between the bottle that cost Rs. 11 and Coke" and "Thumsup was kept on left of Sprite"; we can conclude that the bottle which cost Rs. 11 might be placed at 1st, 2nd or 3rd position from left end.
Case I:- When the bottle that costs Rs. 11 was kept at leftmost position. In this case coke was kept on 6th from the left end, Limca and Maaza were kept on 2nd and 4th position from the left end, not necessarily in that order.
Now, there are two possibilities under case I.
Possibility 1:- Pepsi and Sprite were kept at 5th and 7th position respectively from left end. And, the further analysis leads to the following arrangement.

11	13	16	10/14	17	14/10	12/15	15/12
Mirinda	Fanta	Thumsup	Limca/Maaza	Pepsi	Coke	Sprite	Maaza/Limca

Possibility 2:- Pepsi and Sprite were kept at 7th and 5th position from left end.

11	13	16	12/15	15/12	14/10	17	10/14
Mirinda	Fanta	Thumsup	Limca/Maaza	Sprite	Coke	Pepsi	Maaza/Limca

Case II:- When the bottle which costs Rs. 11 was kept at 2nd position from left end, you will find that this case is not possible because the statement "Bottles which cost Rs. 12 and Rs. 15 were kept on two successive positions" is not satisfied.
Case III:- The bottle which costs Rs. 11 was kept at 3rd position from left end. You will find that this case is also not possible.

Second from right end was a bottle of either Sprite or Pepsi.

FeedBack

Sec 3

Q.67

A Quantitative Aptitude faculty gave a test to a class in which 30% of the students are graduates and 70% are non-graduates. The average score of the class was 91. All the graduates received the same score, and the average score of the non-graduates was 88. What score did each of the graduates receive in the test?

Solution:
Correct Answer : 98

Bookmark

Answer key/Solution

Let 'n' be the total number of students in the class. Then, there are 0.3n graduates and 0.7n are non-graduates. Let x be the score of each graduate. Then,

$91n = 88 \times 0.7n + x \times 0.3n \Rightarrow x = \frac{91 - 88 \times 0.7}{0.3} = 98.$

FeedBack

Q.68

Every day on his way to college, Supandi crosses a bus coming from the opposite direction, at a certain point on the way. One day Supandi was late by 15 minutes and as a result, he crossed the bus five minutes later than the usual time. What is the ratio of the speed of the bus to that of Supandi?

1 **3:2**

2 **2:1**

3 **3:1**

4 **5:2**

Solution:
Correct Answer : 2

Bookmark

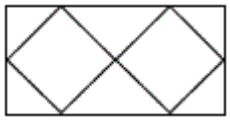
Answer key/Solution

Let us suppose everyday Supandi crossed the bus at 7 a.m. at point A (say). On the specified day Supandi was late, he crossed the bust at 7 : 05 a.m. at point B (say).
Supandi being 15 minutes late, will reach point A at 7 : 15 a.m. Then, Supandi takes 10 minutes to go from B to A.
The bus is on time and it takes 5 minutes to go from A to B.
Thus, the speed of the bus is twice that of Supandi and hence the ratio of their speeds is 2 : 1.

FeedBack

Q.69

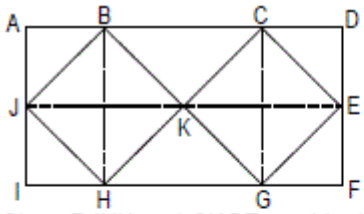
In the figure shown below, two identical squares are inscribed in a rectangle. If the perimeter of the rectangle is $18\sqrt{2}$ cm, then what is the perimeter (in cm) of each square?



Solution:
Correct Answer : 12

Bookmark

Answer key/Solution



Since BJHK and CKGE are identical squares, we have:
BH = CG = JK = KE (since diagonals of a square are equal)
Thus, we have:
AD = JK + KE = BH + CG = AI + AI (since BH = CG = AI)
$\Rightarrow$ AD = 2 × AI.

Since perimeter of the rectangle is $18\sqrt{2}$, we have:

$2 \times (AD + AI) = 18\sqrt{2} \Rightarrow AI = 3\sqrt{2}$ cm

$\Rightarrow$ Diagonal of each square = $3\sqrt{2}$ cm

If the side of each square be x, then the length of the diagonal = $x\sqrt{2}$

Thus, we have $x\sqrt{2} = 3\sqrt{2} \Rightarrow x = 3$
Thus, perimeter of each square = 4x = 4 × 3 = 12 cm.

FeedBack

Q.70

If n is a positive integer, then what is the remainder when $(7^{(4n+3)} \times 6^n)$ is divided by 10?

1 **1**

2 **2**

3 **4**

4 **8**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The remainder when a number is divided by 10 is essentially the units' digit of the number.
Thus, we need to determine the units' digit of $(7^{4n+3} \times 6^n)$.
The units' digit of exponents of 7 follows a cycle as shown below:
$7^{4k+1} \equiv 7$
$7^{4k+2} \equiv 9$
$7^{4k+3} \equiv 3$
$7^{4k} \equiv 1$
The units' digit of exponents of 6 always remains 6 for any exponent.
Thus, the units' digit of $(7^{4n+3} \times 6^n)$ will be 3 × 6 = 8.
Thus, the required remainder is 8.

FeedBack

Q.71

In an examination comprising T questions, Arif correctly solved 15 of the first 24 questions. Of the remaining questions, he answered one-fourth correctly. If he was able to correctly answer 40% of the questions in the paper overall, how many possible values can T assume?

Solution:

Correct Answer : 1

Number of questions correctly answered by Arif = $15+\frac{T-24}{4}$

It is given that, he correctly answered 40% of the questions in the paper overall.

$\therefore 15+\frac{T-24}{4}=\frac{40}{100}T \Rightarrow 15+\frac{T}{4}-6=\frac{2}{5}T \Rightarrow \frac{2}{5}T-\frac{T}{4}=9 \Rightarrow \frac{3}{20}T=9 \Rightarrow T=60.$

Therefore, T can assume only one value.

FeedBack

Bookmark

Answer key/Solution

Q.72

A tank of 325 liter capacity has two inlet pipes. The tank gets completely filled when the first pipe is opened for 5 hours less than the 2nd pipe. If the first pipe was open as long as the second pipe and the second pipe was open as long as the first pipe, then the pipes would deliver equal quantities of water. When the two pipes are opened simultaneously for equal number of hours, the tank gets completely filled in 13 hours. For how long was the second pipe kept open?

1 **12 hours**

2 **15 hours**

3 **5 hours**

4 **10 hours**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let the two pipes be A and B and let the quantities of water delivered by them be a liter/hour and b liter/hour respectively.

$13 \times (a+b) = 325 \Rightarrow a+b = 25$ ... (i)

Let B be opened for t hours.

According to the question,

$a(t-5) + bt = 325$ ... (ii)

$at = b(t-5)$ ... (iii)

Using (i) and (ii) we get,

$t = \frac{65+a}{5}$ ... (iv)

Using (i), (iii) and (iv) we get,

t = 15 hours.

FeedBack

Q.73

Find the minimum value of $\frac{(a+b)(b+c)(c+a)}{abc}$ if a, b, and c are positive real numbers.

1 **5**

2 **6**

3 **8**

4 **10**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

We use the fact that for any positive real numbers, AM ≥ GM.

So, $\frac{a+b}{2} \geq \sqrt{ab} \Rightarrow \frac{b+c}{2} \geq \sqrt{bc} \Rightarrow \frac{c+a}{2} \geq \sqrt{ca}$

Multiplying the inequalities given above, we get

$\frac{(a+b)(b+c)(c+a)}{8} \geq abc$

$\therefore \frac{(a+b)(b+c)(c+a)}{abc} \geq 8$

Therefore, the minimum value is 8.

FeedBack

Q.74

In a triangle PQR, ∠R is a right angle and RQ > RP. Point S is located on QR such that ∠RPS = 2 ∠SPQ and RS = 5 cm. If PR/PS = 2/3, then find the value of QS (in cm).

1 **9**

2 **4**

3 **6**

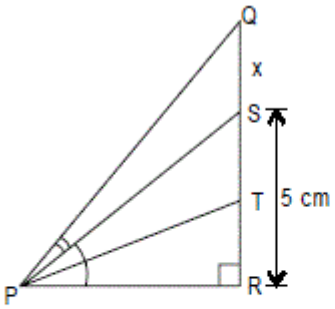
4 **8**

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution



Let T denotes the point on QR for which PT bisects ∠RPS.

$\because \frac{PR}{PS} = \frac{2}{3} \Rightarrow PR = 2k$ and $PS = 3k$

$\therefore$ In ΔPRS,

$(2k)^2 + 5^2 = (3k)^2 \Rightarrow k = \sqrt{5}$

$\therefore PR = 2\sqrt{5}$ and $PS = 3\sqrt{5}$

And RT = 2 and TS = 3 [Using angle bisector theorem]

Now, in ΔPRT,

$PT^2 = (2\sqrt{5})^2 + 2^2 = 24$

$\Rightarrow PT = \sqrt{24}$ cm.

Using angle bisector theorem in triangle TPQ,

$\frac{PT}{PQ} = \frac{3}{x} \Rightarrow \frac{\sqrt{24}}{PQ} = \frac{3}{x} \Rightarrow PQ = \left(\frac{x}{3}\right)\sqrt{24}$

In ΔPRQ,

$(2\sqrt{5})^2 + (x + 5^2) = \left(\frac{x}{3}\sqrt{24}\right)^2 \Rightarrow x = 9.$

$\therefore$ QS = 9 cm.

FeedBack

Q.75

An amount was borrowed at 8% per annum simple rate of interest. After one year, Rs.6,960 was repaid and it was decided that the remaining amount would be repaid at the end of the second year at 5% per annum. If the interest accrued at the end of the second year was 13/30 of the interest accrued during the first year, then find the borrowed amount (in Rs.).

Solution:
Correct Answer : 18000

Bookmark

Answer key/Solution

Let the amount borrowed be Rs. P.
According to the question,

$$(1.08\times P-6960)\times\frac{5}{100}=\frac{13}{30}\times\left(\frac{8}{100}\times P\right)$$

$$\Rightarrow 162\times P-1044000=104\times P$$

$$\therefore P=\text{Rs.}18{,}000.$$

FeedBack

Q.76

If p is a natural number, then how many values of p exist such that $\frac{(2p+1)^2}{2p+7}$ is an integer?

1 **4**

2 **3**

3 **1**

4 **5**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

$$\frac{(2p+1)^2}{2p+7}=\frac{4p^2+4p+1}{2p+7}=\frac{(2p+7)(2p-5)+36}{2p+7}=2p-5+\frac{36}{2p+7}$$

Therefore 2p + 7 must be factor of 36.
The factors of 36 are 1, 2, 3, 4, 6, 9, 12, 18 and 36.
Out of these, 2p + 7 can take only one value i.e., 9 when p = 1 (Since p has to be a positive integer).

FeedBack

Q.77

Atul and Megha buy two items for Rs. 2,500 and Rs. 1,500 respectively. Atul marks his item up by 2p% and offers a discount of p%, while Megha marks her item up by p%. If both make the same non-zero profit, then what is the value of 'p'?

1 **20**

2 **12.5**

3 **17.5**

4 **25**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Selling price of Atul = 2500(1 + 2p)(1 – p)
Profit of Atul = 2500(1 + 2p)(1 – p) – 2500
Selling price of Megha = 1500(1 + p)
Profit of Megha = 1500(1 + p) – 1500
Since both make the same profit,
2500(1 + 2p)(1 – p) – 2500 = 1500(1 + p) – 1500
$\Rightarrow 5(p - 2p^2) = 3p \Rightarrow 2p = 10p^2$
$\Rightarrow p = 1/5$ i.e., 20% (Since p is not equal to zero).

FeedBack

Q.78

In a rectangle ABCD, if X and Y are the midpoints of sides AB and BC respectively, then find the ratio of the area of triangle DXY and that of the rectangle.

1 **1 : 4**

2 **3 : 8**

3 **2 : 5**

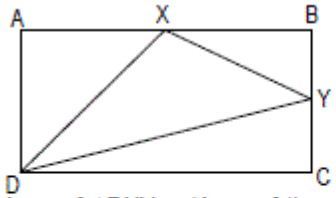
4 **5 : 8**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let the length and breadth of the rectangle be l and b respectively.



Area of ΔDXY = (Area of the rectangle) – (Area of the three triangles DAX, XBY and DCY)

$$= lb - \left(\left(\frac{1}{2}b \times \frac{l}{2}\right) + \frac{1}{2} \times \frac{l}{2} \times \frac{b}{2} + \left(\frac{1}{2}l \times \frac{b}{2}\right)\right) = lb - \frac{5}{8}lb = \frac{3}{8}lb$$

$$\therefore \frac{\text{Area of the } \Delta DXY}{\text{Area of the rectangle}} = \frac{\frac{3}{8}lb}{lb} = \frac{3}{8} = 3:8$$

FeedBack

Q.79

If $f(x) = x^{\log_{60} 27}$, then find the value of $f(15) \times f(8) \times f(5) \times f(6)$.

Solution:
Correct Answer : 729

Bookmark

Answer key/Solution

$f(15) \times f(8) \times f(5) \times f(6) = 15^{\log_{60} 27} \times 8^{\log_{60} 27} \times 5^{\log_{60} 27} \times 6^{\log_{60} 27}$

$= (15 \times 8 \times 5 \times 6)^{\log_{60} 27} = (3600)^{\log_{60} 27} = (60)^{2\log_{60} 27} = 60^{\log_{60}(27)^2} = 27^2 = 729$ $(\because a^{\log_a b} = b)$.

FeedBack

Q.80

Two types of sugar, P and Q, are mixed and then sold at Rs.50 per kg. The profit is 20% if P and Q are mixed in the ratio 5 : 3, and 10% if this ratio is 3 : 5. Find the ratio of the cost prices, per kg, of P and Q.

1 **9 : 14**

2 **17 : 28**

3 **19 : 27**

4 **21 : 26**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let the cost prices per kg of P and Q be Rs. y and Rs. z respectively.
Total CP when mixed in the ratio of 5 : 3 or 5x : 3x (say) = (5xy + 3xz)
SP = 8x × 50 = 400x.
Therefore, 400x = 1.2(5xy + 3xz)
⇒ 6y + 3.6z = 400 ... (i)
Similarly, when P and Q are mixed in the ratio of 3 : 5, then
400x = 1.1(3xy + 5xz)
⇒ 3.3y + 5.5z = 400 ... (ii)
Equating (i) and (ii), we get, 6y + 3.6z = 3.3y + 5.5z
⇒ 2.7y = 1.9z
⇒ y/z = 19/27.

FeedBack

Q.81

A train T1 travelling at 79.2 km/hr takes 24 seconds to cross another train T2 when travelling in opposite direction whereas it takes 64 seconds to overtake it when travelling in the same direction. If the length of the train T2 is 420 meters, then what is the length (in meters) of train T1?

1 **336**

2 **348**

3 **360**

4 **372**

Solution:

Correct Answer : 2

Let the length of Train T1 be 'x' meter and the speed of Train T2 be 's' m/sec.

Then, $\frac{x+420}{22+s} = 24$ ... (i) [79.2 km/hr = 22 m/sec]

and $\frac{x+420}{22-s} = 64$ ... (ii)

Dividing (i) by (ii), we get, $\frac{22-s}{22+s} = \frac{24}{64} \Rightarrow s = 10$ m/sec.

Putting s = 10 in equation (i), we get
x = 348 meters.

FeedBack

Bookmark

Answer key/Solution

Q.82

A family has a father, a mother, and their six children - A, B, C, D, E, and F. They have to attend a party, for which they decide that only one among the father or the mother will attend, along with any number of children, subject to the following constraints:
(a) Neither B nor C will go along with their mother.
(b) F goes, only if A or D goes.

In how many different ways can the family attend the party?

1 **55**

2 **60**

3 **65**

4 **70**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

If the father attends the party each child can either attend the party or not attend the party i.e., each child has 2 options.
Therefore for 6 children we get = (2)(2)(2)(2)(2)(2) = 2^6 = 64 ways.
If the mother attends the party, the total numbers of ways = (2)(2)(2)(2) = 16 (as B or C won't attend the party with their mother)
Given, F doesn't go when none of A or D attend.
Since F does not go with B, C, E
(with Father) $\Rightarrow 1 \times 2 \times 2 \times 2 \Rightarrow 8$ ways should be removed from 1st case (i.e.,: FB, FC, FE, FBC, FCE, FBE, FBCE and F)
(with Mother) $\Rightarrow 1 \times 2$ ways should be removed from 2nd case as F will not go with E.
Required number of ways = 64 + 16 – 8 – 2 = 70.

FeedBack

Q.83

If $|x + y| + |x - y| = 6$, then find the minimum value of $x^2 + y^2 + 5xy$.

1 **–27**

2 **–15**

3 **0**

4 **10**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

It is given that $|x + y| + |x - y| = 6$
If $x + y \geq 0$, then $|x + y| = x + y$ and if $x + y < 0$, then $|x + y| = -(x + y)$.
Again if $x - y \geq 0$, then $|x - y| = x - y$.
And if $x - y < 0$, then $|x - y| = -(x - y)$.
Applying the above conditions, we get four cases:
I. $x + y \geq 0, x - y \geq 0 \Rightarrow x + y + x - y = 6 \Rightarrow x = 3$
II. $x + y \geq 0, x - y < 0 \Rightarrow x + y - x + y = 6 \Rightarrow y = 3$
III. $x + y < 0, x - y \geq 0 \Rightarrow -x - y + x - y = 6 \Rightarrow y = -3$
IV. $x + y < 0, x - y < 0 \Rightarrow -x - y - x + y = 6 \Rightarrow x = -3$
Now $x^2 + y^2 + 5xy$ will be minimum when xy is negative so one of x and y is 3 and the other is –3.
Then $x^2 + y^2 + 5xy = (\pm 3)^2 + (\pm 3)^2 + 5(-9) = 9 + 9 - 45 = -27$.
Therefore, the minimum value of $x^2 + y^2 + 5xy$ is –27.

FeedBack

Q.84

Two teams - A and B - are working together to complete a job. Team A alone can complete the job in 15 days but working along with team B, the job is completed in 12 days. Team B consists of two men - Ram and Shyam. Ram's efficiency is one-third more than the efficiency of Shyam. If the total wages for the job is Rs. 21,000, then find Shyam's wages (in Rs.).

Solution:

Correct Answer : 1800

Let Team B take x days to complete the work alone.

$\frac{1}{15}+\frac{1}{x}=\frac{1}{12}\Rightarrow\frac{1}{x}=\frac{5-4}{60}\Rightarrow x=60$ days

When Team A completes 4 units of work, Team B completes one unit.
Let time taken by Shyam to complete the work be y days.

Time taken by Ram = $\frac{3}{4}y$ days.

$\frac{4}{3y}+\frac{1}{y}=\frac{1}{60}\Rightarrow\frac{7}{3y}=\frac{1}{60}\Rightarrow y=140$ days $\Rightarrow\frac{3y}{4}=105$ days

Let the total work be 2100 units (5 × LCM of 140 and 105)
Work done by Team A and Team B will be 1680 units and 420 units.
Work done by Ram and Shyam will be 240 units and 180 units respectively.
Hence, Shyam's wages out of Rs.21,000 = Rs.1,800.

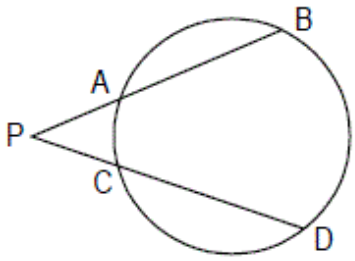
FeedBack

Bookmark

Answer key/Solution

Q.85

In the figure given below, if CD = 2 PA, AB = 14 cm and PC = 12 cm, then find the measure (in cm) of PB + PD.



Solution:

Correct Answer : 80

Let PA = x
Therefore, CD = 2x
As, (PA)(PB) = (PC)(PD)
x(x + 14) = 12(12 + 2x)
$\Rightarrow x^2 + 14x = 144 + 24x$
$\Rightarrow x^2 - 10x - 144 = 0$
$\Rightarrow (x - 18)(x + 8) = 0$
$\because x \neq -8, x = 18$
$\therefore$ PB = 18 + 14 = 32 and PD = 12 + 36 = 48
$\therefore$ PB + PD = 32 + 48 = 80.

FeedBack

Bookmark

Answer key/Solution

Q.86

If the sum of all the odd factors of a number is $16\frac{2}{3}\%$ of the sum of all its even factors, then find the remainder when the number is divided by 4.

1 **2**

2 **4**

3 **6**

4 **0**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Sum of odd factors = $16\frac{2}{3}\%$ of sum of even factors.

Let the number be $N = 2^a \times 3^b \times 5^c \times \ldots \times n^m$
So, sum of odd factors of $N = 2^0 \times (3^0 + 3^1 + 3^2 + \ldots + 3^b)(5^0 + 5^1 + \ldots + 5^c) \ldots (n^0 + n^1 + \ldots + n^m)$
Sum of even factors $= (2^1 + 2^2 + \ldots + 2^a)(3^0 + 3^1 + \ldots + 3^b)(5^0 + 5^1 + \ldots + 5^c) \ldots (n^0 + n^1 + \ldots + n^m)$

$\Rightarrow$ Sum of odd factors $= \frac{1}{(2^1 + 2^2 + \ldots + 2^a)} \times$ Sum of even factors

$\Rightarrow \frac{1}{(2^1 + 2^2 + \ldots + 2^a)} = \frac{50}{300} = \frac{1}{6} \Rightarrow$ a has to be 2.

So, $N = 2^2 \times 3^b \times 5^c \times \ldots \times n^m = 4(3^b \times 5^c \times \ldots \times n^m)$
As N is a multiple of 4, gives remainder zero when divided by 4.

FeedBack

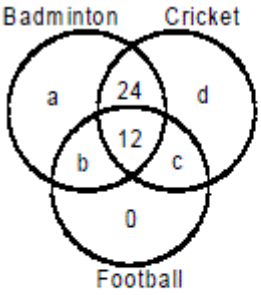
Q.87

In a group, each of 88 players plays at least one of the three games – badminton, cricket and football. Twelve players play all the three games, while twenty four players play badminton and cricket, but not football. Every player who plays football also plays badminton or cricket or both. If the number of players playing badminton equals that playing cricket, then find the number of players playing cricket.

Solution:
Correct Answer : 62

Bookmark

Answer key/Solution



Number of players playing badminton equals that playing cricket ⇒ a + b + 24 + 12 = c + d + 36
⇒ a + b = c + d
Now, a + b + c + d + 12 + 24 = 88
⇒ a + b = 26 = c + d
Hence, number of players playing cricket = c + d + 36 = 26 + 36 = 62.

FeedBack

Q.88

In a test match in cricket, the scores of Rohit and Virat in the first innings are in the ratio of 13 : 16. In the second innings as compared to the first innings, their scores increase by the same number of runs and their scores are in the ratio of 53 : 62 in the second innings. What is the ratio of Virat's second innings score and his first innings score?

1 **5 : 4**

2 **31 : 24**

3 **30 : 23**

4 **31 : 25**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let scores in second innings be 53 and 62 respectively.
The scores in first innings are in the ratio of 13 : 16 and their difference is 3.
Therefore, the scores in first innings have to be 39 and 48 so that the difference becomes 9 and equal to the scores in second innings.
Hence, required ratio for Virat = 62 : 48 = 31 : 24.

Alternate Method:
Let the scores increased by x.

Then, $\frac{13+x}{16+x}=\frac{53}{62} \Rightarrow 806 + 62x = 848 + 53x \Rightarrow 9x = 42 \Rightarrow x = \frac{42}{9}$ or $\frac{14}{3}$

Hence, required ratio for Virat = $\frac{16+\frac{14}{3}}{16}=\frac{31}{24}$.

FeedBack

Q.89

If a, b and c are positive real numbers such that $a+b+c<\frac{1}{a}+\frac{1}{b}+\frac{1}{c}$ and abc = 1, then which of the following is definitely true?

1 **Exactly one a, b, and c is greater than 1.**

2 **Exactly two of a, b and c are less than 1.**

3 **Exactly two of a, b and c are greater than 1.**

4 **At least two of a, b and c are less than 1.**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

$a+b+c<\frac{1}{a}+\frac{1}{b}+\frac{1}{c}$ $\left(\because abc=1\Rightarrow\frac{1}{a}=bc\right)$

$\Rightarrow a + b + c - ab - bc - ac < 0$
$\Rightarrow abc - 1 + a + b + c - ab - bc - ac < 0$
$\Rightarrow (a - 1)(b - 1)(c - 1) < 0$
$\Rightarrow$ Either all of the factors are negative or exactly one of them is negatively.
Now if all of them are negative, then $a < 1$, $b < 1$ and $c < 1$
$\therefore abc \neq 1$
Thus exactly one of the factors is negative, which implies exactly one of a, b, c is less than 1 and exactly two of them are greater than 1.

FeedBack

Q.90

In a pentagon, each of the interior angles is a distinct integer. What is the largest possible value of an interior angle of the pentagon?

1 **179°**

2 **359°**

3 **360°**

4 **530°**

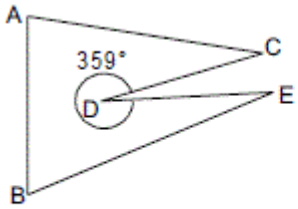
Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

We know that the sum of interior angles of a polygon with n sides is (n – 2) × 180°.
Thus, for a pentagon, the sum of the interior angles = (5 – 2) × 180° = 540°.
Since the angles are distinct integers, and we need to maximize any one angle, we choose the other four angles to be the least possible values, i.e., 1°, 2°, 3° and 4°.
Thus, the maximum possible measure of any interior angle should have been
= 540° – (1° + 2° + 3° + 4°) = 530°
However, any angle can never be greater than 360°.
Thus, the maximum possible measure of any interior angle = 359° (the largest integer value less than 360°).

Note: Such an angle is a reflex angle and a possible diagram of such a pentagon is given below:



However, if it were mentioned that the pentagon is convex, i.e., each interior angle must be less than ∠180°, the answer would then have been 179° (the largest integer value less than 180°).

FeedBack

Q.91

A fruit seller mixes three types of fruits – fresh fruits, over ripen fruits and almost rotten fruits – costing Rs. 60/kg, Rs. 50/kg and Rs. 40/kg respectively. Now he sells these mixed fruits for Rs. 45/kg at a loss of $\frac{250}{43}\%$. How many kg of almost rotten fruits were mixed if 7 kgs of each fresh fruits and over ripen fruits were there in the mixture?

1 **16 kg**

2 **13 kg**

3 **10 kg**

4 **15 kg**

Solution:

Correct Answer : 2

Let x kg of almost rotten fruits were mixed.
∴ Cost price of the mixture = 7 × 60 + 7 × 50 + 40x = 420 + 350 + 40x = 770 + 40x.
∴ Selling price of the mixture = (7 + 7 + x) × 45 = (14 + x) × 45
According to the question,

$$(14+x)45=\frac{81}{86}(770+40x)$$

$$\Rightarrow (14+x)5=\frac{9}{86}(770+40x)$$

⇒ 6020 + 430x = 6930 + 360x
⇒ 70x = 910
⇒ x = 13 kg.

FeedBack

Bookmark

Answer key/Solution

Q.92

If the first four terms of an arithmetic progression are p, p + 2q, 3p + q, and 30, then find the value of the 2016th term of the progression.

Solution:

Correct Answer : 16126

It is given that p, p + 2q, 3p + q, and 30 are in A.P.
∴ p + (3p + q) = 2(p + 2q)
⇒ 2p = 3q

Therefore the terms (in terms of q) are $\frac{3q}{2}, \frac{7q}{2}, \frac{11q}{2}$ and $\frac{15q}{2}$

But $\frac{15q}{2}$ i.e., the fourth term = 30 (given)

⇒ q = 4 and p = 6 i.e., 1st term = 6 and common difference = 2p = 8
Thus the 2016th term = 6 + (2016 – 1)8 = 16126.

FeedBack

Bookmark

Answer key/Solution

Q.93

While updating the birthday status of his family members on Facebook, Abdul observed that the birthdays of all his sisters followed a specific pattern, such that three times the date (of the month) of birth when added to five times the month of birth gives a total of 100. If no two sisters of Abdul were born on the same day of the month, then what is the maximum number of sisters that Abdul can have?

1 **3**

2 **5**

3 **7**

4 **8**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Denoting the date and month of birth of his sisters by D and M respectively, we get 3D + 5M = 100
Substituting M = 1, we get 3D = 95 (not possible as m is natural number)
Next substituting M = 2, we get D = 30
We know that consecutive values of M will change as per coefficient of D and that of D will change as per the coefficient of M.
Using this we get four possible values of D and M,

M:	2	5	8	11
D:	30	25	20	15

However, since February does not have 30 days, the number of sisters of Abdul can be at most 3.

FeedBack

Q.94

From a large cone, a frustum of the cone is cut away and removed to obtain a smaller cone. If the percentage reduction in the radius of the cone is 20%, find the percentage reduction in the volume of the cone.

1 **79.2%**

2 **80%**

3 **64%**

4 **48.8%**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The radius of the smaller cone will be (100 – 20)% = 80% of that of the larger cone.

Since the smaller cone is similar in shape to the larger cone, the volume of smaller cone will simply be $\left(\frac{80}{100}\right)^3 \left(\text{i.e.,} \left(\frac{8}{10}\right)^3\right)$ times that of the larger cone.

i.e., $\frac{512}{1000}$ times of the larger cone.

Therefore, the fraction (percentage) of reduction $= \left(\frac{488}{1000}\right) \times 100 = 48.8\%$.

FeedBack

Q.95

If the value of a two-digit number is six times the difference between the number and the number formed by reversing its digits, then find the sum of the digits of that numbers.

Solution:

Correct Answer : 9

Let the two digit number be denoted by ab.
It is given that,
10a + b = 6(ab – ba) or 10a + b = 6(ba – ab)
⇒ 10a + b = 6[9(a – b)] or 10a + b = 6[9(b – a)]
⇒ 10a + b = 54a – 54b or 10a + b = 54b – 54a
⇒ 55b = 44a or 64a = 53b

$\Rightarrow \frac{b}{a}=\frac{4}{5}$ or $\frac{a}{b}=\frac{53}{64}$ (not possible)

Therefore, the number is ab i.e., 54 and the sum of its digits is 9.

FeedBack

Bookmark

Answer key/Solution

Q.96

Three friends - Samar, Samir and Samira ran a race of 500 m. The time taken by Samar to complete the race was recorded by a correct watch whereas the watch in which the time taken by Samir and Samira was recorded, gains time uniformly at the same rate due to its faultiness. If Samar beats Samir by 50 m and the time recorded for Samar, Samir and Samira in their respective watches to complete the race were 50 seconds, 70 seconds and 40 seconds respectively, then the speed of Samira during the race was

1 **15.75 m/s**

2 $11\frac{1}{9}$ m/s

3 $16\frac{2}{3}$

4 **17.50 m/s**

Solution:

Correct Answer : 1

If Samar runs 500m, then Samir runs 450m = (500 – 50) in the same time

Speed of Samar = $\frac{500}{50}$ = 10 m/sec.

Speed of Samir = $\frac{450}{50}$ = 9 m/sec.

Time taken by Samir to complete the race = $\frac{500}{9}$ sec.

Faulty clock shows 70 sec. for $\frac{500}{9}$ sec.

∴ Actual time taken by Samira = $\frac{500}{9\times 70}\times 40=\frac{2000}{63}$ sec.

∴ Speed of Samira = $\frac{500}{2000/63}=\frac{63}{4}=15.75$ m/s.

FeedBack

Bookmark

Answer key/Solution

Q.97

Find the value of $(a^2 + b^2 + c)$ such that a, b, c are in G.P and the difference between the third term and the first term is a perfect square.

Given that $2\log_9\sqrt{13.5a}+\log_9(0.09b^2)+\log_9\left(\frac{9c}{5b}\right)=5$, where $(a, b, c>0)$ and a, b, c are integers.

1 **2016**

2 **1086**

3 **1008**

4 **2076**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

a, b, c are in GP.
$\therefore b^2 = ac$ ... (i)

Given that $2\log_9\sqrt{13.5a} + \log_9(0.09b^2) + \log_9\left(\frac{9c}{5b}\right) = 5$

$\Rightarrow \log_9(13.5a) + \log_9(0.09b^2) + \log_9\left(\frac{9c}{5b}\right) = 5$

$\Rightarrow \log_9\left[(13.5a)(0.09b^2)\left(\frac{9c}{5b}\right)\right] = 5$

$\Rightarrow \frac{2187}{1000}abc = (9)^5$

$\Rightarrow$ abc = 27000
From (i), putting $ac = b^2$
$\therefore b^3 = 27000$
$\Rightarrow b = 30$
Since a, b, c are in GP.
So, a and c must be 6 and 150 respectively
$\therefore$ Required value i.e., $(a^2 + b^2 + c) = 1086$.

FeedBack

Q.98

A contractor takes up a project and employs 100 equally efficient workers (x1, x2,.....x100) with the aim of completing the work in 51 days. They begin the work on schedule but because of a dengue outbreak in the area, the workers fall ill and on every second day, two workers leave the job site i.e., x1 and x2 leave after the 2nd day, x3 and x4 leave after the 4th day and so on. How many days does the contractor require to complete the work?

Solution:
Correct Answer : 100

Bookmark

Answer key/Solution

According to the question,
Let each worker do 1 unit of work every day.
As per schedule the total work to be completed in 51 days was 5100 units.
After the dengue outbreak,
x1 and x2 work for 2 days, x3 and x4 work for 4 days and so on such that x99 and x100 work for 100 days.
Work completed in 100 days by the workers (x1, x2,.....x100) $= 2 \times (100 + 98 + 96 + ... + 4 + 2) = 5100$ units.
Time taken to complete the work = 100 days.

FeedBack

Q.99

The number of ways in which 8 identical iPhones can be kept in three identical bags is

Solution:
Correct Answer : 10

Bookmark

Answer key/Solution

Since the bags and iPhones are identical, the following distribution is possible:
8 + 0 + 0
7 + 1 + 0
6 + 1 + 1
6 + 2 + 0
5 + 2 + 1
5 + 3 + 0
4 + 2 + 2
4 + 3 + 1
4 + 4 + 0
3 + 3 + 2
So, the total number of ways to distribute 8 identical iPhones in 3 bags is 10.

FeedBack

Q.100

M is a point which is at a distance of 8 units from the point N = (1 , 2). If P is another point with coordinates (–3, 5), then the maximum distance (in units) between M and P is

1 **3**

2 **7**

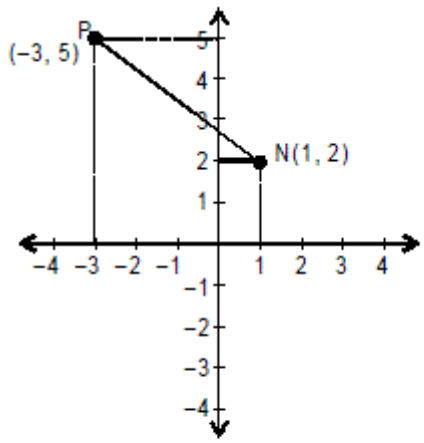
3 **9**

4 **13**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution



The distance between P (–3, 5) and N (1, 2) is $\sqrt{(-3-1)^2+(5-2)^2}$ = 5 units

The distance between M and P will be the maximum when M lies on the joining N and P, with N lying between M and P.
The maximum distance is = 8 + 5 = 13 units.

FeedBack