



Mock CAT – 10 2018

Scorecard (procreview.jsp?sid=aaa5BycB_LJvH-TdBuPHwSun Jan 20 07:16:22 UTC 2019&qsetId=E0xLtiOQ20g=&qsetName=Mock CAT – 10 2018)

Accuracy (AccSelectGraph.jsp?sid=aaa5BycB_LJvH-TdBuPHwSun Jan 20 07:16:22 UTC 2019&qsetId=E0xLtiOQ20g=&qsetName=Mock CAT – 10 2018)

Qs Analysis (QsAnalysis.jsp?sid=aaa5BycB_LJvH-TdBuPHwSun Jan 20 07:16:22 UTC 2019&qsetId=E0xLtiOQ20g=&qsetName=Mock CAT – 10 2018)

Video Attempt (VideoAnalysis.jsp?sid=aaa5BycB_LJvH-TdBuPHwSun Jan 20 07:16:22 UTC 2019&qsetId=E0xLtiOQ20g=&qsetName=Mock CAT – 10 2018)

Solutions (Solution.jsp?sid=aaa5BycB_LJvH-TdBuPHwSun Jan 20 07:16:22 UTC 2019&qsetId=E0xLtiOQ20g=&qsetName=Mock CAT – 10 2018)

Bookmarks (Bookmarks.jsp?sid=aaa5BycB_LJvH-TdBuPHwSun Jan 20 07:16:22 UTC 2019&qsetId=E0xLtiOQ20g=&qsetName=Mock CAT – 10 2018)

VARC

LRDI

QA

Sec 1

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

Thermostats are the ubiquitous overlord of humanity's day-to-day comfort. Think about it - there is hardly an American citizen who does not own and operate a thermostat in their own home. And yet, few people think about this little piece of technology past the annoyance of the Office Manager stubbornly locking the A/C at a crisp 64 degrees.

Thermostat Recycling Corporation is here to help you out. No, not with your Office Manager, sorry! We deal with thermostats every single day, so we are here to discuss the history of our favourite little piece of technology.

Once upon a time, people had a much harder time regulating their home temperature. In the early 20th century the majority of homes had manually operated furnaces. These furnaces, usually located in the basement, required frequent coal-stoking and physical adjustments of valves, draft, or dampers. As someone who dreads even placing bare feet on cold wooden floors, basement coal-stoking every brisk winter morning sounds like a first world nightmare.

It is safe to say the market was ripe for a simpler means of regulating temperature, and in this spirit several men invented different types of thermostats in a short amount of time. Let's meet them, shall we? Andrew Ure was a Scottish chemist who patented the bi-metallic thermostat in 1830. Ure had worked with textile mills throughout his career and identified the product's need for a consistent temperature. Ure's bi-metallic thermostat would bend as a result of increased room temperature, cutting off the energy supply. While this was one of the first recorded thermostat inventions, it saw little use. It took more than forty years for inventors in America to re-imagine and popularize the thermostat. We still give Ure props anyway.

Warren Johnson was a mustachioed professor in Wisconsin who was annoyed that his classroom was never at the temperature he wanted. We feel your pain even in this century, Warren.

Oh, and Warren Johnson was also an inventor.

The building in which Johnson taught his students was heated by a basement furnace requiring manual adjustments by the janitor to change temperature. Johnson would have to physically seek out the janitor every time he felt a little chilly. Perhaps to fix this mutual annoyance, Johnson invented the first electric thermostat in 1883. It included a bell that would ring as a signal for the janitor to adjust the furnace damper. Johnson Electric Service Company was created in 1885 to manufacture, install and service Johnson's product. This company still exists today as Johnson Controls.

Q.1

Which of the following is most likely to be the source of the passage?

- 1 A historical account of science and technology
 - 2 The writings of a representative of a corporation
 - 3 The writings of a researcher in the field of electronics
 - 4 A comparative market analysis of a particular product
-

Solution:

Correct Answer : 2

GENRE: Science and Technology

It is a further application question. Such questions can be tricky. One needs to pay close attention to the author's language and style.

The passage is a humorous attempt to trace the beginning of a common appliance – the thermostat. At the same time, a quick glance at the second paragraph tells us that the author is speaking on behalf of a corporation- Thermostat Recycling Corporation. This points to option 2 and nullifies all the other answer options.

Option 1 – Too broad to capture the theme of the passage

Option 3 – The language of the passage doesn't match that of research writing.

Option 4 – The language is a problem. An analytical passage uses a more factual tone.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

Thermostats are the ubiquitous overlord of humanity's day-to-day comfort. Think about it - there is hardly an American citizen who does not own and operate a thermostat in their own home. And yet, few people think about this little piece of technology past the annoyance of the Office Manager stubbornly locking the A/C at a crisp 64 degrees.

Thermostat Recycling Corporation is here to help you out. No, not with your Office Manager, sorry! We deal with thermostats every single day, so we are here to discuss the history of our favourite little piece of technology.

Once upon a time, people had a much harder time regulating their home temperature. In the early 20th century the majority of homes had manually operated furnaces. These furnaces, usually located in the basement, required frequent coal-stoking and physical adjustments of valves, draft, or dampers. As someone who dreads even placing bare feet on cold wooden floors, basement coal-stoking every brisk winter morning sounds like a first world nightmare.

It is safe to say the market was ripe for a simpler means of regulating temperature, and in this spirit several men invented different types of thermostats in a short amount of time. Let's meet them, shall we? Andrew Ure was a Scottish chemist who patented the bi-metallic thermostat in 1830. Ure had worked with textile mills throughout his career and identified the product's need for a consistent temperature. Ure's bi-metallic thermostat would bend as a result of increased room temperature, cutting off the energy supply. While this was one of the first recorded thermostat inventions, it saw little use. It took more than forty years for inventors in America to re-imagine and popularize the thermostat. We still give Ure props anyway.

Warren Johnson was a mustachioed professor in Wisconsin who was annoyed that his classroom was never at the temperature he wanted. We feel your pain even in this century, Warren.

Oh, and Warren Johnson was also an inventor.

The building in which Johnson taught his students was heated by a basement furnace requiring manual adjustments by the janitor to change temperature. Johnson would have to physically seek out the janitor every time he felt a little chilly. Perhaps to fix this mutual annoyance, Johnson invented the first electric thermostat in 1883. It included a bell that would ring as a signal for the janitor to adjust the furnace damper. Johnson Electric Service Company was created in 1885 to manufacture, install and service Johnson's product. This company still exists today as Johnson Controls.

Q.2

Which of the following best articulates the author's opinion of Andrew Ure and his contribution?

- 1 One of regard - for inventing an appliance that was not-so-popular but had great potential.
 - 2 One of grudging acceptance - despite being against the method employed by Ure.
 - 3 One of mild appreciation- for Johnson was one of the pioneers in that field notwithstanding that the appliance had a drawback.
 - 4 One of criticism – for creating an appliance that had little use.
-

Solution:

Correct Answer : 3

GENRE: Science and Technology

This is slightly inferential in nature. In the fourth paragraph, the author talks about Ure and his contribution. Ure's invention was one of the earliest on record. But his appliance used to bend and, therefore, cut off the energy supply. His appliance saw little use. At the same time, the author gives Ure his due share of honour. The word 'props' means honour /credit/respect. This makes 3 the answer.

Option 1 goes against the facts in the passage. It would be wrong to say that Ure's appliance had great potential.

There is also a problem in option 2. Nowhere in the passage does the author support or go against the method employed by Ure.

Option 4 – Too negative to match the author's tone

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

Thermostats are the ubiquitous overlord of humanity's day-to-day comfort. Think about it - there is hardly an American citizen who does not own and operate a thermostat in their own home. And yet, few people think about this little piece of technology past the annoyance of the Office Manager stubbornly locking the A/C at a crisp 64 degrees.

Thermostat Recycling Corporation is here to help you out. No, not with your Office Manager, sorry! We deal with thermostats every single day, so we are here to discuss the history of our favourite little piece of technology.

Once upon a time, people had a much harder time regulating their home temperature. In the early 20th century the majority of homes had manually operated furnaces. These furnaces, usually located in the basement, required frequent coal-stoking and physical adjustments of valves, draft, or dampers. As someone who dreads even placing bare feet on cold wooden floors, basement coal-stoking every brisk winter morning sounds like a first world nightmare.

It is safe to say the market was ripe for a simpler means of regulating temperature, and in this spirit several men invented different types of thermostats in a short amount of time. Let's meet them, shall we? Andrew Ure was a Scottish chemist who patented the bi-metallic thermostat in 1830. Ure had worked with textile mills throughout his career and identified the product's need for a consistent temperature. Ure's bi-metallic thermostat would bend as a result of increased room temperature, cutting off the energy supply. While this was one of the first recorded thermostat inventions, it saw little use. It took more than forty years for inventors in America to re-imagine and popularize the thermostat. We still give Ure props anyway.

Warren Johnson was a mustachioed professor in Wisconsin who was annoyed that his classroom was never at the temperature he wanted. We feel your pain even in this century, Warren.

Oh, and Warren Johnson was also an inventor.

The building in which Johnson taught his students was heated by a basement furnace requiring manual adjustments by the janitor to change temperature. Johnson would have to physically seek out the janitor every time he felt a little chilly. Perhaps to fix this mutual annoyance, Johnson invented the first electric thermostat in 1883. It included a bell that would ring as a signal for the janitor to adjust the furnace damper. Johnson Electric Service Company was created in 1885 to manufacture, install and service Johnson's product. This company still exists today as Johnson Controls.

Q.3

Which of the following impelled Johnson to invent the first electric thermostat?

- 1 The building that he taught in would sometimes become a bit cold and his work would be disturbed.
 - 2 The heating furnace was located in the basement and required the physical presence of a person to operate; thereby causing a lot of inconvenience.
 - 3 To adjust the temperature, the heating apparatus, which was in the basement, required to be manually adjusted; thereby causing encumbrance.
 - 4 It was uncomfortable to teach in a basement that became too chilly at times.
-

Solution:

Correct Answer : 3

GENRE: Science and Technology

This is a pretty straight forward fact based question. Let's take a look at the facts of the passage.

Johnson used to teach in a building. The heating system was located in the basement. To make changes in the temperature, someone had to manually adjust the machine. Whenever it felt cold, Johnson had to seek the assistance of the janitor. The whole thing caused annoyance to both Johnson and the janitor. This makes option 3 the best answer.

Option 1 is not appropriate as the cause of the annoyance was not the temperature but the inconvenient requirement of manual adjustment.

Option 2 is inaccurate as we only know that manual adjustment is required to adjust temperature and not to operate the entire apparatus.

Option 4 is factually incorrect. Johnson didn't teach in the basement.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

Thermostats are the ubiquitous overlord of humanity's day-to-day comfort. Think about it - there is hardly an American citizen who does not own and operate a thermostat in their own home. And yet, few people think about this little piece of technology past the annoyance of the Office Manager stubbornly locking the A/C at a crisp 64 degrees.

Thermostat Recycling Corporation is here to help you out. No, not with your Office Manager, sorry! We deal with thermostats every single day, so we are here to discuss the history of our favourite little piece of technology.

Once upon a time, people had a much harder time regulating their home temperature. In the early 20th century the majority of homes had manually operated furnaces. These furnaces, usually located in the basement, required frequent coal-stoking and physical adjustments of valves, draft, or dampers. As someone who dreads even placing bare feet on cold wooden floors, basement coal-stoking every brisk winter morning sounds like a first world nightmare.

It is safe to say the market was ripe for a simpler means of regulating temperature, and in this spirit several men invented different types of thermostats in a short amount of time. Let's meet them, shall we? Andrew Ure was a Scottish chemist who patented the bi-metallic thermostat in 1830. Ure had worked with textile mills throughout his career and identified the product's need for a consistent temperature. Ure's bi-metallic thermostat would bend as a result of increased room temperature, cutting off the energy supply. While this was one of the first recorded thermostat inventions, it saw little use. It took more than forty years for inventors in America to re-imagine and popularize the thermostat. We still give Ure props anyway.

Warren Johnson was a mustachioed professor in Wisconsin who was annoyed that his classroom was never at the temperature he wanted. We feel your pain even in this century, Warren.

Oh, and Warren Johnson was also an inventor.

The building in which Johnson taught his students was heated by a basement furnace requiring manual adjustments by the janitor to change temperature. Johnson would have to physically seek out the janitor every time he felt a little chilly. Perhaps to fix this mutual annoyance, Johnson invented the first electric thermostat in 1883. It included a bell that would ring as a signal for the janitor to adjust the furnace damper. Johnson Electric Service Company was created in 1885 to manufacture, install and service Johnson's product. This company still exists today as Johnson Controls.

Q.4

What is intention of the author when he says, "Oh, and Warren Johnson was also an inventor."?

- 1 To indicate his derision for Johnson and his so-called invention, which was nothing but a bell to summon the janitor
 - 2 To enhance the humorous effect of his piece of writing
 - 3 To ensure that we do not forget Johnson's profession
 - 4 To point out how Johnson juggled two equally demanding professions
-

Solution:

Correct Answer : 2

GENRE: Science and Technology

Such questions require a combination of factual attention and inferential analysis of the passage. Normally, a focus on the main idea would help identify the correct option.

The passage has been written in a light-hearted tone. Right in the first paragraph, the author mentions the instance of how only when the office manager sets the temperature at an uncomfortable degree are we reminded of a thermostat. Even in the second paragraph, the remark that we cannot help you with office managers is nothing but humour. The line right above the sentence in question is also a humorous remark. All these point to option 2.

Option 1 might look close but it is factually inaccurate. The passage says that Johnson's invention "included a bell". This does not mean that his invention consisted of only a bell.

Options 3 and 4 – Irrelevant

 **Bookmark**

 **Answer key/Solution**

 FeedBack

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

Thermostats are the ubiquitous overlord of humanity's day-to-day comfort. Think about it - there is hardly an American citizen who does not own and operate a thermostat in their own home. And yet, few people think about this little piece of technology past the annoyance of the Office Manager stubbornly locking the A/C at a crisp 64 degrees.

Thermostat Recycling Corporation is here to help you out. No, not with your Office Manager, sorry! We deal with thermostats every single day, so we are here to discuss the history of our favourite little piece of technology.

Once upon a time, people had a much harder time regulating their home temperature. In the early 20th century the majority of homes had manually operated furnaces. These furnaces, usually located in the basement, required frequent coal-stoking and physical adjustments of valves, draft, or dampers. As someone who dreads even placing bare feet on cold wooden floors, basement coal-stoking every brisk winter morning sounds like a first world nightmare.

It is safe to say the market was ripe for a simpler means of regulating temperature, and in this spirit several men invented different types of thermostats in a short amount of time. Let's meet them, shall we? Andrew Ure was a Scottish chemist who patented the bi-metallic thermostat in 1830. Ure had worked with textile mills throughout his career and identified the product's need for a consistent temperature. Ure's bi-metallic thermostat would bend as a result of increased room temperature, cutting off the energy supply. While this was one of the first recorded thermostat inventions, it saw little use. It took more than forty years for inventors in America to re-imagine and popularize the thermostat. We still give Ure props anyway.

Warren Johnson was a mustachioed professor in Wisconsin who was annoyed that his classroom was never at the temperature he wanted. We feel your pain even in this century, Warren.

Oh, and Warren Johnson was also an inventor.

The building in which Johnson taught his students was heated by a basement furnace requiring manual adjustments by the janitor to change temperature. Johnson would have to physically seek out the janitor every time he felt a little chilly. Perhaps to fix this mutual annoyance, Johnson invented the first electric thermostat in 1883. It included a bell that would ring as a signal for the janitor to adjust the furnace damper. Johnson Electric Service Company was created in 1885 to manufacture, install and service Johnson's product. This company still exists today as Johnson Controls.

Q.5

Which of the following statement is/are can be inferred from the passage?

- I. Ure's thermostat was earlier than that of Johnson's.
- II. Johnson's thermostat was the first one of its kind.

1 Only I

2 Only II

3 Both I and II

4 Neither I nor II

Solution:

Correct Answer : 3

GENRE: Science and Technology

It is a very easy question, though the dreaded word ‘inferential’ is there.

Both the statements can be inferred from the passage. Ure's invention was

made in 1830 while Johnson's was in 1883. The passage also states that

Johnson invented the first electric thermostat. This makes both the statements correct.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

Thermostats are the ubiquitous overlord of humanity's day-to-day comfort. Think about it - there is hardly an American citizen who does not own and operate a thermostat in their own home. And yet, few people think about this little piece of technology past the annoyance of the Office Manager stubbornly locking the A/C at a crisp 64 degrees.

Thermostat Recycling Corporation is here to help you out. No, not with your Office Manager, sorry! We deal with thermostats every single day, so we are here to discuss the history of our favourite little piece of technology.

Once upon a time, people had a much harder time regulating their home temperature. In the early 20th century the majority of homes had manually operated furnaces. These furnaces, usually located in the basement, required frequent coal-stoking and physical adjustments of valves, draft, or dampers. As someone who dreads even placing bare feet on cold wooden floors, basement coal-stoking every brisk winter morning sounds like a first world nightmare.

It is safe to say the market was ripe for a simpler means of regulating temperature, and in this spirit several men invented different types of thermostats in a short amount of time. Let's meet them, shall we? Andrew Ure was a Scottish chemist who patented the bi-metallic thermostat in 1830. Ure had worked with textile mills throughout his career and identified the product's need for a consistent temperature. Ure's bi-metallic thermostat would bend as a result of increased room temperature, cutting off the energy supply. While this was one of the first recorded thermostat inventions, it saw little use. It took more than forty years for inventors in America to re-imagine and popularize the thermostat. We still give Ure props anyway.

Warren Johnson was a mustachioed professor in Wisconsin who was annoyed that his classroom was never at the temperature he wanted. We feel your pain even in this century, Warren.

Oh, and Warren Johnson was also an inventor.

The building in which Johnson taught his students was heated by a basement furnace requiring manual adjustments by the janitor to change temperature. Johnson would have to physically seek out the janitor every time he felt a little chilly. Perhaps to fix this mutual annoyance, Johnson invented the first electric thermostat in 1883. It included a bell that would ring as a signal for the janitor to adjust the furnace damper. Johnson Electric Service Company was created in 1885 to manufacture, install and service Johnson's product. This company still exists today as Johnson Controls.

Q.6

Which of the following best sums up the kind of relation that Johnson would have had with the Janitor of the building that he worked in?

- 1 One of mutual admiration for the kind of work that the other did.
 - 2 One of mutual annoyance as Johnson always required the janitor to be stationed in the basement.
 - 3 One of aloofness as they never saw eye-to-eye with each other.
 - 4 None of the above.
-

Solution:

Correct Answer : 4

GENRE: Science and Technology

This is a tricky inferential question. One needs to use the process of elimination in such type of questions.

The mutual annoyance that the two had for each other stems from the fact that Johnson had to physically seek out the Janitor each time the room felt chilly. This was because the heating apparatus had to be manually adjusted. This does not mean that Johnson required the janitor to be present in the basement at all times. Moreover, we cannot extrapolate from this and say that they would never see eye-to-eye or would be always annoyed with each other. In fact, we cannot infer what their relation would be in general. This makes option 4 the answer.

Options 1, 2, and 3 – Can't be inferred due to insufficient data

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

In the brackish waters lapping the shores of the Red Sea lies an unsung hero: the mangrove.

Mangroves are trees and shrubs that have evolved to thrive in harsh saltwater environments. The ecosystems in which they are found are among the most important and productive in the world. But despite their significance, mangroves are one of the world's most threatened ecosystems. A 2010 study by the UN's Food and Agricultural Organization found 20 percent of all mangroves have been lost since 1980.

The importance of these unique trees cannot be overstated. They are a vital component and link in marine ecosystems, supporting an impressive web of life and numerous other ecological services. They also hold significant economic and cultural value to humans, providing us with a host of direct and indirect benefits. Mangroves are found along the tropical and subtropical coasts of Africa, Asia, Australia and the Americas.

Amgad al-Shaffai, a marine environment specialist, says of the 95 mangrove species found globally, two are found in Egypt – the grey mangrove and the red mangrove. The red mangrove is considerably less common, only found in areas south of Shalateen.

In Egypt, mangroves often grow in sheltered locations at the mouths of wadi systems. Although the wadis run dry most of the year, the mangroves benefit from the sporadic outflows of freshwater. "While mangroves tolerate very salty environments, they need freshwater sources to function and receive a boost from wadi flash floods," says Sara al-Sayed, a biomimicry specialist.

Various adaptations allow mangroves to flourish where other plants cannot survive. A filtration system in their roots prevents most salt from being taken up by the trees, and that which is absorbed is later excreted through the leaves and branches. The dense, tangled root system provides stability to the trees in a shallow environment constantly changing with the coming and going of the tide.

Shaffai notes the important role mangroves play in shoreline protection, acting as a natural shield by breaking up incoming wave energy, minimizing the damage caused by extreme weather conditions such as storm surges, rising sea levels, cyclones and tsunamis, in addition to preventing erosion of the coastline.

Mahmoud Hanafy, chief scientist at the Hurghada Environmental Protection and Conservation Association, describes the important role of mangrove ecosystems in providing habitat for spawning, nursery and feeding grounds to a diverse array of species including fish, shrimp, crabs, and crustaceans. In the Red Sea, Hanafy notes, mangroves are relied on for food or as a nursery ground by 35 species of fish and also provide a wildlife sanctuary out of the water to numerous insects and birds.

Sayed says 75 percent of the world's tropical commercial fish spend a portion of their lives in mangroves. "Mangroves are incredibly important and contribute to a holistic ecosystem, creating a condition conducive to life in an area that normally wouldn't support as much life," she adds.

Shaffai notes, "Another very important function of mangroves is their capacity to store carbon, reducing the amount of carbon dioxide in the air and increasing oxygen levels." Mangroves act as carbon "sinks," sequestering harmful carbon dioxide from the air, storing the carbon in the wood and further mitigating the impacts of climate change. When the trees die, the carbon becomes confined to the waterlogged soil of their surroundings.

Q.7

Which of the following statements can be inferred about the Mangroves?

-
- 1 Their efficient root filtration system does not absorb any salt from the water.
- 2 Mangroves can survive only in salty water.
- 3 Mangroves are slowly becoming extinct.
- 4 Branches of the Mangrove help in removal of excess salt.
-

Solution:

Correct Answer : 4

GENRE: Environmental Studies

This is an overall easy to read passage. Majority of the questions are easy.

This is a very easy inferential question.

Option1 – It is wrong as the root filters help to prevent excess absorption.

Wadi system also has freshwater coming in sporadic outflows and mangroves actually benefit from it.

Option 2 – ‘Only’ makes it an extreme inference.

Option 3 - The data is only from 1980 to 2010 so we cannot infer that mangroves are slowly or speedily becoming extinct or rare. Data insufficiency is the reason why this option is wrong.

Option 4 – It is correct as the entire passage talks about the benefits of mangroves. Refer to the first paragraph.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

In the brackish waters lapping the shores of the Red Sea lies an unsung hero: the mangrove.

Mangroves are trees and shrubs that have evolved to thrive in harsh saltwater environments. The ecosystems in which they are found are among the most important and productive in the world. But despite their significance, mangroves are one of the world's most threatened ecosystems. A 2010 study by the UN's Food and Agricultural Organization found 20 percent of all mangroves have been lost since 1980.

The importance of these unique trees cannot be overstated. They are a vital component and link in marine ecosystems, supporting an impressive web of life and numerous other ecological services. They also hold significant economic and cultural value to humans, providing us with a host of direct and indirect benefits. Mangroves are found along the tropical and subtropical coasts of Africa, Asia, Australia and the Americas.

Amgad al-Shaffai, a marine environment specialist, says of the 95 mangrove species found globally, two are found in Egypt – the grey mangrove and the red mangrove. The red mangrove is considerably less common, only found in areas south of Shalateen.

In Egypt, mangroves often grow in sheltered locations at the mouths of wadi systems. Although the wadis run dry most of the year, the mangroves benefit from the sporadic outflows of freshwater. "While mangroves tolerate very salty environments, they need freshwater sources to function and receive a boost from wadi flash floods," says Sara al-Sayed, a biomimicry specialist.

Various adaptations allow mangroves to flourish where other plants cannot survive. A filtration system in their roots prevents most salt from being taken up by the trees, and that which is absorbed is later excreted through the leaves and branches. The dense, tangled root system provides stability to the trees in a shallow environment constantly changing with the coming and going of the tide.

Shaffai notes the important role mangroves play in shoreline protection, acting as a natural shield by breaking up incoming wave energy, minimizing the damage caused by extreme weather conditions such as storm surges, rising sea levels, cyclones and tsunamis, in addition to preventing erosion of the coastline.

Mahmoud Hanafy, chief scientist at the Hurghada Environmental Protection and Conservation Association, describes the important role of mangrove ecosystems in providing habitat for spawning, nursery and feeding grounds to a diverse array of species including fish, shrimp, crabs, and crustaceans. In the Red Sea, Hanafy notes, mangroves are relied on for food or as a nursery ground by 35 species of fish and also provide a wildlife sanctuary out of the water to numerous insects and birds.

Sayed says 75 percent of the world's tropical commercial fish spend a portion of their lives in mangroves. "Mangroves are incredibly important and contribute to a holistic ecosystem, creating a condition conducive to life in an area that normally wouldn't support as much life," she adds.

Shaffai notes, "Another very important function of mangroves is their capacity to store carbon, reducing the amount of carbon dioxide in the air and increasing oxygen levels." Mangroves act as carbon "sinks," sequestering harmful carbon dioxide from the air, storing the carbon in the wood and further mitigating the impacts of climate change. When the trees die, the carbon becomes confined to the waterlogged soil of their surroundings.

Q.8

Which one of the following is not an adaptation that allows Mangroves to survive in salty water?

-
- 1 An efficient salt filter in the roots
 - 2 Excretion through leaves as well as branches
 - 3 Thick and intricate root system
 - 4 Capacity to store carbon and act as “carbon sinks”
-

Solution:

Correct Answer : 4

GENRE: Environmental Studies

It is an extremely easy factual question.

Refer to the lines - “It is not an adaptation that helps Mangroves to survive rather it’s a contribution they make towards the environment.” Option 4 is the clear answer.

FeedBack

 **Bookmark**

 **Answer key/Solution**

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

In the brackish waters lapping the shores of the Red Sea lies an unsung hero: the mangrove.

Mangroves are trees and shrubs that have evolved to thrive in harsh saltwater environments. The ecosystems in which they are found are among the most important and productive in the world. But despite their significance, mangroves are one of the world's most threatened ecosystems. A 2010 study by the UN's Food and Agricultural Organization found 20 percent of all mangroves have been lost since 1980.

The importance of these unique trees cannot be overstated. They are a vital component and link in marine ecosystems, supporting an impressive web of life and numerous other ecological services. They also hold significant economic and cultural value to humans, providing us with a host of direct and indirect benefits. Mangroves are found along the tropical and subtropical coasts of Africa, Asia, Australia and the Americas.

Amgad al-Shaffai, a marine environment specialist, says of the 95 mangrove species found globally, two are found in Egypt – the grey mangrove and the red mangrove. The red mangrove is considerably less common, only found in areas south of Shalateen.

In Egypt, mangroves often grow in sheltered locations at the mouths of wadi systems. Although the wadis run dry most of the year, the mangroves benefit from the sporadic outflows of freshwater. "While mangroves tolerate very salty environments, they need freshwater sources to function and receive a boost from wadi flash floods," says Sara al-Sayed, a biomimicry specialist.

Various adaptations allow mangroves to flourish where other plants cannot survive. A filtration system in their roots prevents most salt from being taken up by the trees, and that which is absorbed is later excreted through the leaves and branches. The dense, tangled root system provides stability to the trees in a shallow environment constantly changing with the coming and going of the tide.

Shaffai notes the important role mangroves play in shoreline protection, acting as a natural shield by breaking up incoming wave energy, minimizing the damage caused by extreme weather conditions such as storm surges, rising sea levels, cyclones and tsunamis, in addition to preventing erosion of the coastline.

Mahmoud Hanafy, chief scientist at the Hurghada Environmental Protection and Conservation Association, describes the important role of mangrove ecosystems in providing habitat for spawning, nursery and feeding grounds to a diverse array of species including fish, shrimp, crabs, and crustaceans. In the Red Sea, Hanafy notes, mangroves are relied on for food or as a nursery ground by 35 species of fish and also provide a wildlife sanctuary out of the water to numerous insects and birds.

Sayed says 75 percent of the world's tropical commercial fish spend a portion of their lives in mangroves. "Mangroves are incredibly important and contribute to a holistic ecosystem, creating a condition conducive to life in an area that normally wouldn't support as much life," she adds.

Shaffai notes, "Another very important function of mangroves is their capacity to store carbon, reducing the amount of carbon dioxide in the air and increasing oxygen levels." Mangroves act as carbon "sinks," sequestering harmful carbon dioxide from the air, storing the carbon in the wood and further mitigating the impacts of climate change. When the trees die, the carbon becomes confined to the waterlogged soil of their surroundings.

Q.9

The author introduces the Mangrove as an 'unsung hero' as:

-
- 1 they have evolved to thrive in harsh saltwater environment.
- 2 they are a part of the most productive yet threatened ecosystem in the world.
- 3 we have already lost 20% of all Mangroves since 1980.
- 4 they are a vital link in marine ecosystems and hold significant economic and cultural values to humans.

Solution:

Correct Answer : 2

GENRE: Environmental Studies

It is another easy factual question. However, we need to eliminate the incorrect options.

Refer to the line “But despite their significance, mangroves are one of the world’s most threatened ecosystems.” The author clearly wants to highlight the importance of mangroves and the lack of concern shown for those by humanity. Hence, option 2 is the correct answer.

Option 1 – Irrelevant

Option 3 – Tone doesn’t match. This can’t be a reason for praising mangroves.

Option 4 – Out of context and alien

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

In the brackish waters lapping the shores of the Red Sea lies an unsung hero: the mangrove.

Mangroves are trees and shrubs that have evolved to thrive in harsh saltwater environments. The ecosystems in which they are found are among the most important and productive in the world. But despite their significance, mangroves are one of the world's most threatened ecosystems. A 2010 study by the UN's Food and Agricultural Organization found 20 percent of all mangroves have been lost since 1980.

The importance of these unique trees cannot be overstated. They are a vital component and link in marine ecosystems, supporting an impressive web of life and numerous other ecological services. They also hold significant economic and cultural value to humans, providing us with a host of direct and indirect benefits. Mangroves are found along the tropical and subtropical coasts of Africa, Asia, Australia and the Americas.

Amgad al-Shaffai, a marine environment specialist, says of the 95 mangrove species found globally, two are found in Egypt – the grey mangrove and the red mangrove. The red mangrove is considerably less common, only found in areas south of Shalateen.

In Egypt, mangroves often grow in sheltered locations at the mouths of wadi systems. Although the wadis run dry most of the year, the mangroves benefit from the sporadic outflows of freshwater. "While mangroves tolerate very salty environments, they need freshwater sources to function and receive a boost from wadi flash floods," says Sara al-Sayed, a biomimicry specialist.

Various adaptations allow mangroves to flourish where other plants cannot survive. A filtration system in their roots prevents most salt from being taken up by the trees, and that which is absorbed is later excreted through the leaves and branches. The dense, tangled root system provides stability to the trees in a shallow environment constantly changing with the coming and going of the tide.

Shaffai notes the important role mangroves play in shoreline protection, acting as a natural shield by breaking up incoming wave energy, minimizing the damage caused by extreme weather conditions such as storm surges, rising sea levels, cyclones and tsunamis, in addition to preventing erosion of the coastline.

Mahmoud Hanafy, chief scientist at the Hurghada Environmental Protection and Conservation Association, describes the important role of mangrove ecosystems in providing habitat for spawning, nursery and feeding grounds to a diverse array of species including fish, shrimp, crabs, and crustaceans. In the Red Sea, Hanafy notes, mangroves are relied on for food or as a nursery ground by 35 species of fish and also provide a wildlife sanctuary out of the water to numerous insects and birds.

Sayed says 75 percent of the world's tropical commercial fish spend a portion of their lives in mangroves. "Mangroves are incredibly important and contribute to a holistic ecosystem, creating a condition conducive to life in an area that normally wouldn't support as much life," she adds.

Shaffai notes, "Another very important function of mangroves is their capacity to store carbon, reducing the amount of carbon dioxide in the air and increasing oxygen levels." Mangroves act as carbon "sinks," sequestering harmful carbon dioxide from the air, storing the carbon in the wood and further mitigating the impacts of climate change. When the trees die, the carbon becomes confined to the waterlogged soil of their surroundings.

Q.10

Which of the following is not a role played by Mangroves?

1 Promoting oxygen in the environment

2 Providing habitat to various fish and other aquatic creatures

3 Keeping the freshwater supply of Wadi in tact

4 Combating the impacts of climate change

Solution:

Correct Answer : 3

GENRE: Environmental Studies

It is a very easy fact based question.

Option 1 – Can be located in the last paragraph.

Option 2 – Can be located in the last two paragraphs.

Option 3 – It is incorrect. It is a distorted version of what the author mentions in the passage.

Option 4 – It is there in the last two paragraphs.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

In the brackish waters lapping the shores of the Red Sea lies an unsung hero: the mangrove.

Mangroves are trees and shrubs that have evolved to thrive in harsh saltwater environments. The ecosystems in which they are found are among the most important and productive in the world. But despite their significance, mangroves are one of the world's most threatened ecosystems. A 2010 study by the UN's Food and Agricultural Organization found 20 percent of all mangroves have been lost since 1980.

The importance of these unique trees cannot be overstated. They are a vital component and link in marine ecosystems, supporting an impressive web of life and numerous other ecological services. They also hold significant economic and cultural value to humans, providing us with a host of direct and indirect benefits. Mangroves are found along the tropical and subtropical coasts of Africa, Asia, Australia and the Americas.

Amgad al-Shaffai, a marine environment specialist, says of the 95 mangrove species found globally, two are found in Egypt – the grey mangrove and the red mangrove. The red mangrove is considerably less common, only found in areas south of Shalateen.

In Egypt, mangroves often grow in sheltered locations at the mouths of wadi systems. Although the wadis run dry most of the year, the mangroves benefit from the sporadic outflows of freshwater. "While mangroves tolerate very salty environments, they need freshwater sources to function and receive a boost from wadi flash floods," says Sara al-Sayed, a biomimicry specialist.

Various adaptations allow mangroves to flourish where other plants cannot survive. A filtration system in their roots prevents most salt from being taken up by the trees, and that which is absorbed is later excreted through the leaves and branches. The dense, tangled root system provides stability to the trees in a shallow environment constantly changing with the coming and going of the tide.

Shaffai notes the important role mangroves play in shoreline protection, acting as a natural shield by breaking up incoming wave energy, minimizing the damage caused by extreme weather conditions such as storm surges, rising sea levels, cyclones and tsunamis, in addition to preventing erosion of the coastline.

Mahmoud Hanafy, chief scientist at the Hurghada Environmental Protection and Conservation Association, describes the important role of mangrove ecosystems in providing habitat for spawning, nursery and feeding grounds to a diverse array of species including fish, shrimp, crabs, and crustaceans. In the Red Sea, Hanafy notes, mangroves are relied on for food or as a nursery ground by 35 species of fish and also provide a wildlife sanctuary out of the water to numerous insects and birds.

Sayed says 75 percent of the world's tropical commercial fish spend a portion of their lives in mangroves. "Mangroves are incredibly important and contribute to a holistic ecosystem, creating a condition conducive to life in an area that normally wouldn't support as much life," she adds.

Shaffai notes, "Another very important function of mangroves is their capacity to store carbon, reducing the amount of carbon dioxide in the air and increasing oxygen levels." Mangroves act as carbon "sinks," sequestering harmful carbon dioxide from the air, storing the carbon in the wood and further mitigating the impacts of climate change. When the trees die, the carbon becomes confined to the waterlogged soil of their surroundings.

Q.11

How do the Mangroves help in shoreline protection?

-
- 1 They help to reduce the effect of sea-storms and rising sea levels.
- 2 They generate counter waves to tackle incoming wave energy.
- 3 They prevent damage caused to the shoreline by Tsunami and cyclones.
- 4 They act as feeding ground and habitat for 35 varieties of fish.
-

Solution:

Correct Answer : 1

GENRE: Environmental Studies

It is an easy fact based question.

Mangroves do not "generate" counter waves. So option 2 is wrong.

4 is factually correct but not a reason for shoreline protection.

Option 3 is wrong as they do not "prevent" damage rather they help minimise the effects.

So option 1 is correct.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

In the brackish waters lapping the shores of the Red Sea lies an unsung hero: the mangrove.

Mangroves are trees and shrubs that have evolved to thrive in harsh saltwater environments. The ecosystems in which they are found are among the most important and productive in the world. But despite their significance, mangroves are one of the world's most threatened ecosystems. A 2010 study by the UN's Food and Agricultural Organization found 20 percent of all mangroves have been lost since 1980.

The importance of these unique trees cannot be overstated. They are a vital component and link in marine ecosystems, supporting an impressive web of life and numerous other ecological services. They also hold significant economic and cultural value to humans, providing us with a host of direct and indirect benefits. Mangroves are found along the tropical and subtropical coasts of Africa, Asia, Australia and the Americas.

Amgad al-Shaffai, a marine environment specialist, says of the 95 mangrove species found globally, two are found in Egypt – the grey mangrove and the red mangrove. The red mangrove is considerably less common, only found in areas south of Shalateen.

In Egypt, mangroves often grow in sheltered locations at the mouths of wadi systems. Although the wadis run dry most of the year, the mangroves benefit from the sporadic outflows of freshwater. "While mangroves tolerate very salty environments, they need freshwater sources to function and receive a boost from wadi flash floods," says Sara al-Sayed, a biomimicry specialist.

Various adaptations allow mangroves to flourish where other plants cannot survive. A filtration system in their roots prevents most salt from being taken up by the trees, and that which is absorbed is later excreted through the leaves and branches. The dense, tangled root system provides stability to the trees in a shallow environment constantly changing with the coming and going of the tide.

Shaffai notes the important role mangroves play in shoreline protection, acting as a natural shield by breaking up incoming wave energy, minimizing the damage caused by extreme weather conditions such as storm surges, rising sea levels, cyclones and tsunamis, in addition to preventing erosion of the coastline.

Mahmoud Hanafy, chief scientist at the Hurghada Environmental Protection and Conservation Association, describes the important role of mangrove ecosystems in providing habitat for spawning, nursery and feeding grounds to a diverse array of species including fish, shrimp, crabs, and crustaceans. In the Red Sea, Hanafy notes, mangroves are relied on for food or as a nursery ground by 35 species of fish and also provide a wildlife sanctuary out of the water to numerous insects and birds.

Sayed says 75 percent of the world's tropical commercial fish spend a portion of their lives in mangroves. "Mangroves are incredibly important and contribute to a holistic ecosystem, creating a condition conducive to life in an area that normally wouldn't support as much life," she adds.

Shaffai notes, "Another very important function of mangroves is their capacity to store carbon, reducing the amount of carbon dioxide in the air and increasing oxygen levels." Mangroves act as carbon "sinks," sequestering harmful carbon dioxide from the air, storing the carbon in the wood and further mitigating the impacts of climate change. When the trees die, the carbon becomes confined to the waterlogged soil of their surroundings.

Q.12

Which of the following is true about the Mangroves?

1 75% of world's fish benefit from Mangroves.

2 Mangroves help to control the impacts of climate change.

3 There are 35 species of fish in the Red Sea.

4 Mangroves only grow in sheltered locations at the mouth of the Wadi systems.

Solution:

Correct Answer : 2

GENRE: Environmental Studies

It is a factual question which can be located in the last paragraph.

1 is wrong as it's not 75% of world's fish it is 75% of world's tropical commercial fish.

3 is wrong as it says 35 species in all but we just know that 35 species benefit, total no. is not given.

4 is wrong at it is mentioned only about the Mangroves in Egypt and not all the Mangroves. 'Only grow' is distorted.

So, 2 is the correct answer.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

Popper's early work attempts to solve the problem of demarcation and offer a clear criterion that distinguishes scientific theories from metaphysical or mythological claims. Popper's methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favor of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to, he holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific. Among other things, Popper argues that his falsificationist proposal allows for a solution of the problem of induction, since inductive reasoning plays no role in his account of theory choice.

While Popper shares the belief that there is a qualitative difference between science and philosophical metaphysics, he rejects the verifiability criterion for several reasons. First, it counts existential statements (like "unicorns exist") as scientific, even though there is no way of definitively showing that they are false. After all, the mere fact that one has failed to see a unicorn in a particular place does not establish that unicorns could not be observed in some other place. Second, it inappropriately counts universal statements (like "all swans are white") as meaningless simply because they can never be conclusively verified. These sorts of universal claims, though, are common within science, and certain observations (like the observation of a black swan) can clearly show them to be false. Finally, the verifiability criterion is by its own light not meaningful, since it cannot be verified.

Popper, however, argues that verification and confirmation played no role in formulating a satisfactory criterion of demarcation. Instead, Popper proposes that scientific theories are characterized by being bold in two related ways. First, scientific theories regularly disagree with accepted views of the world based on common sense or previous theoretical commitments. To an uneducated observer, for example, it may seem obvious that Earth is stationary, while the sun moves rapidly around it. However, Copernicus posited that Earth in fact revolved around the sun. In a similar way, it does not seem as though a tree and a human share a common ancestor, but this is what Darwin's theory of evolution by natural selection claims. As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality. For example, the accounts of world creation provided by various religions would count as bold in this sense, but this does not mean that they thereby count as scientific theories.

With this in mind, he goes on to argue that scientific theories are distinguished from non-scientific theories by a second sort of boldness: they make testable claims that future observations might reveal to be false. This boldness thus amounts to a willingness to take a risk of being wrong.

Q.13

With which of the following statements would the author most likely agree?

-
- 1 A theory ceases to be non-scientific when the ad hoc hypothesis becomes testable.
 - 2 A truly scientific theory would not try to immunize itself from counter attacks.
-

3 ⚡ Popper rejects the verifiability criterion for its inability to reconcile the problems of universal statements with existential statements.

4 ⚡ The kind of maverick attitude shown by scientists like Darwin and Copernicus helps in clarifying the problem of demarcation.

Solution:

Correct Answer : 2

GENRE: Philosophy

This is a tricky to read passage. One needs to pay close attention to the main idea of the passage to be able to answer the questions.

The author in the passage doesn't present his/her own views. Mostly, the author comments on the views of Popper with a neutral perspective.

This is a tricky inferential question. We need to eliminate the incorrect options.

Option 1 – This is a wrong version of deductive logic. Popper says that some scientists believe in a non-testable hypothesis. The reverse may or may not be true.

Option 2 – This is at the heart of Popper's views. The main spirit of scientific inquiry is that it allows for future counterattack. So, the author would surely agree with this.

Option 3 – 'Reconciling the two types of statements' is not mentioned in the passage. Popper simply talks about the two types of statements. There is no cause-effect relationship given in the passage.

Option 4 – This kind of trap option is called an out of context juxtaposition. The author talks about Darwin and Copernicus in a different context. They neither help nor support in clarifying the demarcation principle.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

Popper's early work attempts to solve the problem of demarcation and offer a clear criterion that distinguishes scientific theories from metaphysical or mythological claims. Popper's methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favor of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to, he holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific. Among other things, Popper argues that his falsificationist proposal allows for a solution of the problem of induction, since inductive reasoning plays no role in his account of theory choice.

While Popper shares the belief that there is a qualitative difference between science and philosophical metaphysics, he rejects the verifiability criterion for several reasons. First, it counts existential statements (like "unicorns exist") as scientific, even though there is no way of definitively showing that they are false. After all, the mere fact that one has failed to see a unicorn in a particular place does not establish that unicorns could not be observed in some other place. Second, it inappropriately counts universal statements (like "all swans are white") as meaningless simply because they can never be conclusively verified. These sorts of universal claims, though, are common within science, and certain observations (like the observation of a black swan) can clearly show them to be false. Finally, the verifiability criterion is by its own light not meaningful, since it cannot be verified.

Popper, however, argues that verification and confirmation played no role in formulating a satisfactory criterion of demarcation. Instead, Popper proposes that scientific theories are characterized by being bold in two related ways. First, scientific theories regularly disagree with accepted views of the world based on common sense or previous theoretical commitments. To an uneducated observer, for example, it may seem obvious that Earth is stationary, while the sun moves rapidly around it. However, Copernicus posited that Earth in fact revolved around the sun. In a similar way, it does not seem as though a tree and a human share a common ancestor, but this is what Darwin's theory of evolution by natural selection claims. As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality. For example, the accounts of world creation provided by various religions would count as bold in this sense, but this does not mean that they thereby count as scientific theories.

With this in mind, he goes on to argue that scientific theories are distinguished from non-scientific theories by a second sort of boldness: they make testable claims that future observations might reveal to be false. This boldness thus amounts to a willingness to take a risk of being wrong.

Q.14

Popper calls religious theories unscientific because:

- 1 they make bold and counterintuitive claims.
 - 2 they simply copy Darwin and Copernicus without any scientific basis.
 - 3 they defy the demarcation criterion as they can neither be verified nor be confirmed by theorists.
-

-
- 4 they may not necessarily be verified or open to examination of falsifiability.

Solution:

Correct Answer : 4

GENRE: Philosophy

This is a factual question but the options make it mildly inferential in nature.

Refer to the line – “As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality.” We need to read the entire argument of Popper in this context. The main aim of Popper is to talk about or introduce the second kind of boldness – the boldness to be able to receive future counter questioning. It is also the main idea of the passage. This makes option 4 the correct choice.

Option 1 – Factually not mentioned anywhere! ‘Baseless’ is an alien term.

Option 2 – ‘Copy’ is an alien term.

Option 3 – The author mentions the demarcation criterion in a different context. This is a distorted and out of context option.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

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

Popper's early work attempts to solve the problem of demarcation and offer a clear criterion that distinguishes scientific theories from metaphysical or mythological claims. Popper's methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favor of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to, he holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific. Among other things, Popper argues that his falsificationist proposal allows for a solution of the problem of induction, since inductive reasoning plays no role in his account of theory choice.

While Popper shares the belief that there is a qualitative difference between science and philosophical metaphysics, he rejects the verifiability criterion for several reasons. First, it counts existential statements (like "unicorns exist") as scientific, even though there is no way of definitively showing that they are false. After all, the mere fact that one has failed to see a unicorn in a particular place does not establish that unicorns could not be observed in some other place. Second, it inappropriately counts universal statements (like "all swans are white") as meaningless simply because they can never be conclusively verified. These sorts of universal claims, though, are common within science, and certain observations (like the observation of a black swan) can clearly show them to be false. Finally, the verifiability criterion is by its own light not meaningful, since it cannot be verified.

Popper, however, argues that verification and confirmation played no role in formulating a satisfactory criterion of demarcation. Instead, Popper proposes that scientific theories are characterized by being bold in two related ways. First, scientific theories regularly disagree with accepted views of the world based on common sense or previous theoretical commitments. To an uneducated observer, for example, it may seem obvious that Earth is stationary, while the sun moves rapidly around it. However, Copernicus posited that Earth in fact revolved around the sun. In a similar way, it does not seem as though a tree and a human share a common ancestor, but this is what Darwin's theory of evolution by natural selection claims. As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality. For example, the accounts of world creation provided by various religions would count as bold in this sense, but this does not mean that they thereby count as scientific theories.

With this in mind, he goes on to argue that scientific theories are distinguished from non-scientific theories by a second sort of boldness: they make testable claims that future observations might reveal to be false. This boldness thus amounts to a willingness to take a risk of being wrong.

Q.15

As per the author, science progresses by:

- 1 revising or adhering to a better rival theory.
 - 2 falsification, induction, and hypothesis testing.
 - 3 untestable ad hoc hypotheses and empirical verification.
-

4 ● deductive logic and verification of falsification.

Solution:

Correct Answer : 2

GENRE: Philosophy

This is an easy fact based question. The answer lies in the first paragraph.

The main idea of the author in the first paragraph is to talk about Popper's views on what is scientific theory or what is the essential scientific spirit. So, option 2 best captures the essence of the first paragraph.

Option 1 – It goes against the tone. Science never confirms. There is no guarantee that there will always be a better rival theory.

Option 3 – Too narrow and it, in fact, goes against the vein of the author's argument.

Option 4 – 'Deductive logic' is an alien term. Secondly, the option is incomplete. It doesn't talk about the scientific spirit of future revision.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

Popper's early work attempts to solve the problem of demarcation and offer a clear criterion that distinguishes scientific theories from metaphysical or mythological claims. Popper's methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favor of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to, he holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific. Among other things, Popper argues that his falsificationist proposal allows for a solution of the problem of induction, since inductive reasoning plays no role in his account of theory choice.

While Popper shares the belief that there is a qualitative difference between science and philosophical metaphysics, he rejects the verifiability criterion for several reasons. First, it counts existential statements (like "unicorns exist") as scientific, even though there is no way of definitively showing that they are false. After all, the mere fact that one has failed to see a unicorn in a particular place does not establish that unicorns could not be observed in some other place. Second, it inappropriately counts universal statements (like "all swans are white") as meaningless simply because they can never be conclusively verified. These sorts of universal claims, though, are common within science, and certain observations (like the observation of a black swan) can clearly show them to be false. Finally, the verifiability criterion is by its own light not meaningful, since it cannot be verified.

Popper, however, argues that verification and confirmation played no role in formulating a satisfactory criterion of demarcation. Instead, Popper proposes that scientific theories are characterized by being bold in two related ways. First, scientific theories regularly disagree with accepted views of the world based on common sense or previous theoretical commitments. To an uneducated observer, for example, it may seem obvious that Earth is stationary, while the sun moves rapidly around it. However, Copernicus posited that Earth in fact revolved around the sun. In a similar way, it does not seem as though a tree and a human share a common ancestor, but this is what Darwin's theory of evolution by natural selection claims. As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality. For example, the accounts of world creation provided by various religions would count as bold in this sense, but this does not mean that they thereby count as scientific theories.

With this in mind, he goes on to argue that scientific theories are distinguished from non-scientific theories by a second sort of boldness: they make testable claims that future observations might reveal to be false. This boldness thus amounts to a willingness to take a risk of being wrong.

Q.16

Which of the following can be inferred from the passage?

- 1 The demarcation criterion between scientific and non-scientific theories is problematic.
 - 2 Popper rejects the differences between science and metaphysics because of the verifiability demarcation.
-

3 If scientists can show a prediction to be false, it must have been unscientific to begin with.

4 A scientific theory, which future scientists can't challenge, is not bold.

Solution:

Correct Answer : 1

GENRE: Philosophy

It is a moderate level question. The answer can be found if one keeps in mind the central idea of the passage.

 **Bookmark**

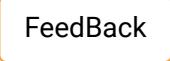
 **Answer key/Solution**

Option 1 – The entire penultimate paragraph talks about this issue. It is safe to conclude that the relationship is 'not very smooth or problematic' as there is an overlap of certain kind of boldness in the two types of theories.

Option 2 – Popper never rejects any difference. The option unnecessarily creates a cause-effect relationship which is not factually supported by the passage.

Option 3 – The falsifiability of a prediction is one of the main criteria of calling a theory scientific. So, this is a factually incorrect option.

Option 4 – An extremely irrelevant option!

 **FeedBack**

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

Popper's early work attempts to solve the problem of demarcation and offer a clear criterion that distinguishes scientific theories from metaphysical or mythological claims. Popper's methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favor of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to, he holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific. Among other things, Popper argues that his falsificationist proposal allows for a solution of the problem of induction, since inductive reasoning plays no role in his account of theory choice.

While Popper shares the belief that there is a qualitative difference between science and philosophical metaphysics, he rejects the verifiability criterion for several reasons. First, it counts existential statements (like "unicorns exist") as scientific, even though there is no way of definitively showing that they are false. After all, the mere fact that one has failed to see a unicorn in a particular place does not establish that unicorns could not be observed in some other place. Second, it inappropriately counts universal statements (like "all swans are white") as meaningless simply because they can never be conclusively verified. These sorts of universal claims, though, are common within science, and certain observations (like the observation of a black swan) can clearly show them to be false. Finally, the verifiability criterion is by its own light not meaningful, since it cannot be verified.

Popper, however, argues that verification and confirmation played no role in formulating a satisfactory criterion of demarcation. Instead, Popper proposes that scientific theories are characterized by being bold in two related ways. First, scientific theories regularly disagree with accepted views of the world based on common sense or previous theoretical commitments. To an uneducated observer, for example, it may seem obvious that Earth is stationary, while the sun moves rapidly around it. However, Copernicus posited that Earth in fact revolved around the sun. In a similar way, it does not seem as though a tree and a human share a common ancestor, but this is what Darwin's theory of evolution by natural selection claims. As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality. For example, the accounts of world creation provided by various religions would count as bold in this sense, but this does not mean that they thereby count as scientific theories.

With this in mind, he goes on to argue that scientific theories are distinguished from non-scientific theories by a second sort of boldness: they make testable claims that future observations might reveal to be false. This boldness thus amounts to a willingness to take a risk of being wrong.

Q.17

Which of the following statements would not be deemed scientific by Popper?

- 1 All the crows in the world are black
 - 2 God is undoubtedly the creator of the Universe.
 - 3 Dragons don't exist.
-

4  Inductive reasoning has flaws.

Solution:

Correct Answer : 2

GENRE: Philosophy

This is a further application question.

Refer to the lines where the author talks about existential statements. In that context, the author says that if a statement can't be challenged, it will be unscientific.

Options 1, 3, and 4 – These don't state that the statement is assumed to be true or can't be challenged. So, these may or may not be scientific. It can't be ascertained.

Option 2 – 'Undoubtedly' makes this a very sure statement which can't be challenged. So, this has to be the correct answer.

[FeedBack](#)

 [Bookmark](#)

 [Answer key/Solution](#)

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

Popper's early work attempts to solve the problem of demarcation and offer a clear criterion that distinguishes scientific theories from metaphysical or mythological claims. Popper's methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favor of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to, he holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific. Among other things, Popper argues that his falsificationist proposal allows for a solution of the problem of induction, since inductive reasoning plays no role in his account of theory choice.

While Popper shares the belief that there is a qualitative difference between science and philosophical metaphysics, he rejects the verifiability criterion for several reasons. First, it counts existential statements (like "unicorns exist") as scientific, even though there is no way of definitively showing that they are false. After all, the mere fact that one has failed to see a unicorn in a particular place does not establish that unicorns could not be observed in some other place. Second, it inappropriately counts universal statements (like "all swans are white") as meaningless simply because they can never be conclusively verified. These sorts of universal claims, though, are common within science, and certain observations (like the observation of a black swan) can clearly show them to be false. Finally, the verifiability criterion is by its own light not meaningful, since it cannot be verified.

Popper, however, argues that verification and confirmation played no role in formulating a satisfactory criterion of demarcation. Instead, Popper proposes that scientific theories are characterized by being bold in two related ways. First, scientific theories regularly disagree with accepted views of the world based on common sense or previous theoretical commitments. To an uneducated observer, for example, it may seem obvious that Earth is stationary, while the sun moves rapidly around it. However, Copernicus posited that Earth in fact revolved around the sun. In a similar way, it does not seem as though a tree and a human share a common ancestor, but this is what Darwin's theory of evolution by natural selection claims. As Popper notes, however, this sort of boldness is not unique to scientific theories, since most mythological and metaphysical theories also make bold, counterintuitive claims about the nature of reality. For example, the accounts of world creation provided by various religions would count as bold in this sense, but this does not mean that they thereby count as scientific theories.

With this in mind, he goes on to argue that scientific theories are distinguished from non-scientific theories by a second sort of boldness: they make testable claims that future observations might reveal to be false. This boldness thus amounts to a willingness to take a risk of being wrong.

Q.18

Popper, according to the author, seems to be a proponent of:

- 1 the theory of logical deduction.
 - 2 the theory of deductive reasoning.
 - 3 the theory of falsifiability and its demarcation.
-

4 the theory of scientific verifiability.

Solution:

Correct Answer : 4

GENRE: Philosophy

The profession or the exact background of Popper can't be ascertained from the passage. The only thing we can do is to look at the main idea and eliminate the unlikely or illogical options.

Option 1 – Popper is more focused on ascertaining the nature of scientific inquiry. It is a very narrow option.

Option 2 – Irrelevant!

Option 3 – Irrelevant! Popper challenges the theory of demarcation. He can't be a proponent of it.

Option 4 – It is closest to the main idea. So, it is the correct answer.

 Bookmark

 Answer key/Solution

FeedBack

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

As a steamboat commander in Congo, Joseph Conrad experienced the extent of the European–Belgian in this particular case—imperialism over the region and its consequences over the colonized peoples. The Belgian influence over Congo started with Leopold II in 1870 as a way “to ensure (Belgium's) prosperity” by means of the establishment and exploitation of colonies in the region, which had a “considerable economic potential” (“Congo”). Similarly, other European Empires, that found in Africa a source of wealth and workforce, embarked on a colonizing enterprise into the “Dark Continent.” The military and economic power of the European Empires gave them the power to invade, colonize, and appropriate other territories they found profitable arguing a responsibility for the protection, enlightenment and civilization of the so-called primitive people in the world.

Colonialism is defined as “a political-economic phenomenon whereby various European nations explored, conquered, settled, and exploited large areas of the world” (“Colonialism” emphasis added). The word “exploited” is emphasized since the Empires’ true agenda lies in the exploitation of the human and natural resources of the colonized territory. However, the colonized peoples are not the only ones who suffer from the Empire’s mistreatment. Echoing Caryl Churchill, “An Outpost of Progress” presents the Empire as a discordant group of people with totally different cultures, ideals, backgrounds, and realities, in which not only the colonized but also some colonizers are alienated from the ideal of the European subject and considered secondclass citizens with no value for the kingdom rather than as work force. It criticizes the ideals of civilization and progress that the European empires imposed upon their colonies. Although the story presents two white, European men that are in charge of the outpost, it reverses the positions of power by giving Makola, a civilized African, the tools to manipulate Kayerts and Carlier, two foolish colonizers, from a subordinated position denouncing the Empire’s unequal use of its subjects as mere objects of civilization replaceable at any moment.

Q.19

In this passage, the author attempts:

1 to showcase the role of power politics.

2 to show the futility of colonizers in an empire.

3 to showcase the concept of colonization as being problematic

4 to showcase the overall effect of colonization.

Solution:

Correct Answer : 4

GENRE: History / Politics / Cultural Studies

It is an easy main idea question. Let's eliminate the wrong options.

Option 1 – It is too broad an option.

Option 2 – '...futility of colonizers' doesn't match the tone of the passage.

Option 3 – It is too narrow. The author talks about the definition in only a few lines.

Option 4 – It best captures the main aim of the author. The author is evaluating the impact of colonization on both the colonizers and the colonized. This is the best option.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Directions for questions (19 to 21): The passage below is accompanied by a set of three questions.

Choose the best answer to each question.

As a steamboat commander in Congo, Joseph Conrad experienced the extent of the European–Belgian in this particular case—imperialism over the region and its consequences over the colonized peoples. The Belgian influence over Congo started with Leopold II in 1870 as a way “to ensure (Belgium’s) prosperity” by means of the establishment and exploitation of colonies in the region, which had a “considerable economic potential” (“Congo”). Similarly, other European Empires, that found in Africa a source of wealth and workforce, embarked on a colonizing enterprise into the “Dark Continent.” The military and economic power of the European Empires gave them the power to invade, colonize, and appropriate other territories they found profitable arguing a responsibility for the protection, enlightenment and civilization of the so-called primitive people in the world.

Colonialism is defined as “a political-economic phenomenon whereby various European nations explored, conquered, settled, and exploited large areas of the world” (“Colonialism” emphasis added). The word “exploited” is emphasized since the Empires’ true agenda lies in the exploitation of the human and natural resources of the colonized territory. However, the colonized peoples are not the only ones who suffer from the Empire’s mistreatment. Echoing Caryl Churchill, “An Outpost of Progress” presents the Empire as a discordant group of people with totally different cultures, ideals, backgrounds, and realities, in which not only the colonized but also some colonizers are alienated from the ideal of the European subject and considered secondclass citizens with no value for the kingdom rather than as work force. It criticizes the ideals of civilization and progress that the European empires imposed upon their colonies. Although the story presents two white, European men that are in charge of the outpost, it reverses the positions of power by giving Makola, a civilized African, the tools to manipulate Kayerts and Carlier, two foolish colonizers, from a subordinated position denouncing the Empire’s unequal use of its subjects as mere objects of civilization replaceable at any moment.

Q.20

Which of the following is definitely true according to the passage?

1 The underlying aim of colonization was exploiting the territory for personal gain.

2 Civilized Africans had to the tools to counter the forces of colonization.

3 Europeans colonizers treated their subjects as secondclass citizens.

4 In a colonized society, the colonized people suffer as much as the subjects of the colonizers.

Solution:

Correct Answer : 1

GENRE: History / Politics / Cultural Studies

It is a slightly tricky factual question.

 **Bookmark**

 **Answer key/Solution**

Option 1 – It is definitely true. Refer to the line where the author defines the concept of colonization.

Option 2 – "...had the tools" can't be determined as the passage talks about only one African who could manipulate the colonizers. It is a generalized option.

Option 3 – It is a distorted option. They didn't treat all subjects as seconclass citizens but some. Only 'some' is mentioned in the passage.

Option 4 – There is no comparison between the sufferings of the two classes as per the passage. So, it is wrong because of insufficient data.

FeedBack

Directions for questions (19 to 21): The passage below is accompanied by a set of three questions.

Choose the best answer to each question.

As a steamboat commander in Congo, Joseph Conrad experienced the extent of the European–Belgian in this particular case—imperialism over the region and its consequences over the colonized peoples. The Belgian influence over Congo started with Leopold II in 1870 as a way “to ensure (Belgium's) prosperity” by means of the establishment and exploitation of colonies in the region, which had a “considerable economic potential” (“Congo”). Similarly, other European Empires, that found in Africa a source of wealth and workforce, embarked on a colonizing enterprise into the “Dark Continent.” The military and economic power of the European Empires gave them the power to invade, colonize, and appropriate other territories they found profitable arguing a responsibility for the protection, enlightenment and civilization of the so-called primitive people in the world.

Colonialism is defined as “a political-economic phenomenon whereby various European nations explored, conquered, settled, and exploited large areas of the world” (“Colonialism” emphasis added). The word “exploited” is emphasized since the Empires’ true agenda lies in the exploitation of the human and natural resources of the colonized territory. However, the colonized peoples are not the only ones who suffer from the Empire’s mistreatment. Echoing Caryl Churchill, “An Outpost of Progress” presents the Empire as a discordant group of people with totally different cultures, ideals, backgrounds, and realities, in which not only the colonized but also some colonizers are alienated from the ideal of the European subject and considered secondclass citizens with no value for the kingdom rather than as work force. It criticizes the ideals of civilization and progress that the European empires imposed upon their colonies. Although the story presents two white, European men that are in charge of the outpost, it reverses the positions of power by giving Makola, a civilized African, the tools to manipulate Kayerts and Carlier, two foolish colonizers, from a subordinated position denouncing the Empire’s unequal use of its subjects as mere objects of civilization replaceable at any moment.

Q.21

Imperialists colonized the “Dark Continent” because of:

1 the affluence of the colonized country.

2 **maximizing wealth.**

3 **their aim of liberating the native people.**

4 **their aim of protecting the poor locals from the exploitation by the wealthy locals.**

Solution:

Correct Answer : 1

GENRE: History / Politics / Cultural Studies

It is a fact based question. Refer to lines around the sentence where the phrase is mentioned.

Option 1 – Correct answer! It is given in the line ‘Similarly, other European Empires, that found in Africa a source of wealth and workforce, embarked on a colonizing enterprise into the “Dark Continent.”’

Option 2 – It is a vague option. There is no mention of ‘maximizing’ here.

Options 3 and 4 – These don’t match the tone of the passage. The author mentions that these reasons were just pretexts. The underlying cause was acquiring wealth and exploiting the people.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

Trump's habit of echoing the racist far right is now well-known, but back then, everyone was unsure of what was even happening, let alone what to call it. Two years later — after Richard Spencer, after Charlottesville — the public has heard a lot about white supremacist culture. But I'd argue that we haven't quite heard enough. To understand their ideologies and why they support this president so strongly, we need to examine their literature.

The books act as a kind of binding agent, a Bible-like codification of basic principles that underpin the various denominations. And yet, for understandable reasons, they remain largely unknown. Journalists are inclined to avoid name-checking the books publicly, for fear of inadvertently promoting them. This is no longer a winning strategy. Heidi Beirich, who tracks far-right hate groups for the Southern Poverty Law Center, agrees. "We needed to have been talking about these books for decades," she asserts. "They're very influential, they're reaching the highest levels of power, they're having an impact on terrorism, on policy, and so on. Not talking about them is just wrong." So, let's talk.

Most of the books are self-published. Others are distributed by small, activist imprints or the publishing arms of white nationalist organizations. They are sold online, at gun shows or person to person. This scattershot distribution system makes it hard to track sales, but the more popular titles are estimated to have sold hundreds of thousands of copies. I acquired some out-of-print titles from rare book dealers. They are dog-eared, annotated and often inscribed.

The genre ranges broadly in tone and topic, from dark, foreboding dramas to broad, slapstick comedies; from neo-Confederate romances to futuristic dystopian nightmares. They're dangerous and disgusting, for sure, but they're also absurdly stupid and, on the whole, very badly written. As a playwright who specializes in edgy humor, I find them endlessly fascinating. Their vocabulary of broad stereotypes, paranoid fantasies and preposterous global-takeover schemes is the stuff comedy is made of.

I have a particular affinity for the sci-fi books. One of the most popular is Ward Kendall's 2001 "Hold Back This Day," which imagines a future in which the evil all-powerful "World Gov" has forcibly united the population of Earth under one religion and, by way of enforced race-mixing, one uniformly brown-skinned population. Jeff Huxton is a "skoolplex" administrator and one of the world's few remaining white people. He slowly learns to cherish his white skin, becomes radicalized and joins a terrorist group called "Nayra" ("Aryan" spelled backwards!). They hijack a spaceship and travel to Avalon, a secret all-white colony on Mars, which has been transformed into a paradisiacal homeland.

Q.22

Which of the following is the primary purpose of the passage?

- 1 To find answers to why white-supremacists support Trump
 - 2 To examine the rising popularity of far-right ideology and its impact on the political scenario in the country
 - 3 To study the role of a genre of literature in enhancing the popularity of far-right ideology and Trump
 - 4 To trace the origin of racism in history
-

Solution:

Correct Answer : 3

GENRE: International Politics / Cultural Studies

The author highlights the surprising prevalence of the far-right ideology and the support for Trump. He is of the opinion that we are all aware of it but there is a lot more to know. To achieve this aim, he picks up the role that a certain type of literature plays in the dissemination of this ideology. This can be gauged from a reading of the first paragraph. The rest of the passage describes books of this genre-how they are distributed, what techniques and devices are employed in them etc. This makes option 3 the best answer.

Both options 1 and 2 would be too broad as they cover more than this idea.

[FeedBack](#)

 [Bookmark](#)

 [Answer key/Solution](#)

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

Trump's habit of echoing the racist far right is now well-known, but back then, everyone was unsure of what was even happening, let alone what to call it. Two years later — after Richard Spencer, after Charlottesville — the public has heard a lot about white supremacist culture. But I'd argue that we haven't quite heard enough. To understand their ideologies and why they support this president so strongly, we need to examine their literature.

The books act as a kind of binding agent, a Bible-like codification of basic principles that underpin the various denominations. And yet, for understandable reasons, they remain largely unknown. Journalists are inclined to avoid name-checking the books publicly, for fear of inadvertently promoting them. This is no longer a winning strategy. Heidi Beirich, who tracks far-right hate groups for the Southern Poverty Law Center, agrees. "We needed to have been talking about these books for decades," she asserts. "They're very influential, they're reaching the highest levels of power, they're having an impact on terrorism, on policy, and so on. Not talking about them is just wrong." So, let's talk.

Most of the books are self-published. Others are distributed by small, activist imprints or the publishing arms of white nationalist organizations. They are sold online, at gun shows or person to person. This scattershot distribution system makes it hard to track sales, but the more popular titles are estimated to have sold hundreds of thousands of copies. I acquired some out-of-print titles from rare book dealers. They are dog-eared, annotated and often inscribed.

The genre ranges broadly in tone and topic, from dark, foreboding dramas to broad, slapstick comedies; from neo-Confederate romances to futuristic dystopian nightmares. They're dangerous and disgusting, for sure, but they're also absurdly stupid and, on the whole, very badly written. As a playwright who specializes in edgy humor, I find them endlessly fascinating. Their vocabulary of broad stereotypes, paranoid fantasies and preposterous global-takeover schemes is the stuff comedy is made of.

I have a particular affinity for the sci-fi books. One of the most popular is Ward Kendall's 2001 "Hold Back This Day," which imagines a future in which the evil all-powerful "World Gov" has forcibly united the population of Earth under one religion and, by way of enforced race-mixing, one uniformly brown-skinned population. Jeff Huxton is a "skoolplex" administrator and one of the world's few remaining white people. He slowly learns to cherish his white skin, becomes radicalized and joins a terrorist group called "Nayra" ("Aryan" spelled backwards!). They hijack a spaceship and travel to Avalon, a secret all-white colony on Mars, which has been transformed into a paradisiacal homeland.

Q.23

Which of the following statements about the kind of books mentioned in the passage is the least likely to be true?

- 1 The author of the passage finds them interesting and fascinating.
 - 2 They reach their target-audience in a random, haphazard manner.
 - 3 They cover a wide range of tones and topics.
 - 4 They have far-reaching effects in the field of politics.
-

Solution:

Correct Answer : 1

GENRE: International Politics / Cultural Studies

When the author says in the 4th paragraph , "As a playwright who specializes

in edgy humour, I find them endlessly fascinating", he is just being sarcastic.

In the same para , he also says they are stupid , badly-written and are the stuff comedy is made of.

 **Bookmark**

 **Answer key/Solution**

Option 2 can be inferred from these lines from the 3rd para , "They are sold online, at gun shows or person to person. This scattershot distribution system...."

Option 3 is directly mentioned in the first sentence of the 4th para.

Option 4 can also be inferred from these lines of the second para – "They're very influential, they're reaching the highest levels of power, they're having an impact on terrorism, on policy, and so on. Not talking about them is just wrong." Here the author is quoting another person but this has been done to buttress her opinions.

FeedBack

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

Trump's habit of echoing the racist far right is now well-known, but back then, everyone was unsure of what was even happening, let alone what to call it. Two years later — after Richard Spencer, after Charlottesville — the public has heard a lot about white supremacist culture. But I'd argue that we haven't quite heard enough. To understand their ideologies and why they support this president so strongly, we need to examine their literature.

The books act as a kind of binding agent, a Bible-like codification of basic principles that underpin the various denominations. And yet, for understandable reasons, they remain largely unknown. Journalists are inclined to avoid name-checking the books publicly, for fear of inadvertently promoting them. This is no longer a winning strategy. Heidi Beirich, who tracks far-right hate groups for the Southern Poverty Law Center, agrees. "We needed to have been talking about these books for decades," she asserts. "They're very influential, they're reaching the highest levels of power, they're having an impact on terrorism, on policy, and so on. Not talking about them is just wrong." So, let's talk.

Most of the books are self-published. Others are distributed by small, activist imprints or the publishing arms of white nationalist organizations. They are sold online, at gun shows or person to person. This scattershot distribution system makes it hard to track sales, but the more popular titles are estimated to have sold hundreds of thousands of copies. I acquired some out-of-print titles from rare book dealers. They are dog-eared, annotated and often inscribed.

The genre ranges broadly in tone and topic, from dark, foreboding dramas to broad, slapstick comedies; from neo-Confederate romances to futuristic dystopian nightmares. They're dangerous and disgusting, for sure, but they're also absurdly stupid and, on the whole, very badly written. As a playwright who specializes in edgy humor, I find them endlessly fascinating. Their vocabulary of broad stereotypes, paranoid fantasies and preposterous global-takeover schemes is the stuff comedy is made of.

I have a particular affinity for the sci-fi books. One of the most popular is Ward Kendall's 2001 "Hold Back This Day," which imagines a future in which the evil all-powerful "World Gov" has forcibly united the population of Earth under one religion and, by way of enforced race-mixing, one uniformly brown-skinned population. Jeff Huxton is a "skoolplex" administrator and one of the world's few remaining white people. He slowly learns to cherish his white skin, becomes radicalized and joins a terrorist group called "Nayra" ("Aryan" spelled backwards!). They hijack a spaceship and travel to Avalon, a secret all-white colony on Mars, which has been transformed into a paradisiacal homeland.

Q.24

Which of the following can be inferred to be the reason behind Beirich's opinion that not talking about these books is wrong?

- 1 Journalists were afraid that mentioning these books would lead to their being promoted, though inadvertently.
 - 2 It would make for interesting discussions as these books are hilarious.
 - 3 These books are already influential and should not be neglected anymore.
 - 4 Playwrights would learn a lot from the literary devices and techniques they employ.
-

Solution:

Correct Answer : 3

GENRE: International Politics / Cultural Studies

In the second paragraph, the author mentions that these books serve as a binding agent for various denominations of the ideology. Yet they remain largely unknown. Earlier people used to avoid mentioning them out of the apprehension of inadvertently promoting them. This strategy no longer seems to be working. Now they are rising in their range of influence. This makes 3 the answer. Option 1 is mentioned in the passage but is not the answer to the question posed.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.25

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

The Human waste is full of disease-causing bacteria contaminating the air, food and water. When open defecation is done, it remains untreated, and interacts with the food chain through soil, water and crops. The open defecation is linked with the spread of polio and is considered to be one of the important challenges that the sanitation and health sector is facing. The lack of government attention when coupled with poor education and awareness level makes the situation more complicated; the communities sometimes do recognize the importance of toilets but the absence of proper forum where they could find some support is halting their progress.

1. The sanitation sector faces a threat in the form of open defecation which must be urgently recognized.
2. Open defecation, a source of multiple diseases, is not handled properly due to multiple factors.
3. The lack of public awareness and government support has exacerbated the problem of open defecation.
4. Communities that strive to tackle the problem of open defecation often are discouraged due to lack of support.

Solution:

Correct Answer : 2

This is an easy summary question. The options can be easily eliminated. The main idea of the paragraph is that open defecation is a problem. Then the author points out some reasons for this problem.

Option 1 – The paragraph doesn't state that this problem has not been recognized. In fact, the author states that people are aware of this problem. This is a twisted summary.

Option 2 – It is the correct answer.

Option 3 – It is partially complete.

Option 4 – It just reiterates the last two lines of the paragraph.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.26

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

Hundreds of thousands of bowel cancer patients stand to benefit from new research which found the recommended duration of chemotherapy treatment could be halved, sparing them possible nerve damage without harming their long-term survival. A global clinical trial involving nearly 13,000 patients in hospitals across the US, Europe and Asia has, in part, overturned existing standards which have recommended patients have six months of chemotherapy. In patients with stage three colon cancer, where the disease had spread from the initial tumour to the lymph nodes, a three month regimen appeared to be just as effective for many patients.

1. According to a research, a change in the duration of cancer chemotherapy could save hundreds of thousands from nerve damage.
2. According to a research, changes in the standard cancer chemotherapy would save many, without a harm.
3. According to a research, shortening the duration of the colon cancer chemotherapy could save several people from nerve damage.
4. According to a research, the duration of cancer chemotherapy could be reduced and prevent nerve damage in several patients.

Solution:

Correct Answer : 3

Option 1 and 2 are incorrect since they are not specific. They state "change in the duration", while the passage states "reduction in the duration".

3 and 4 are close options.

4 is incorrect because it mentions "cancer", while the passage specifies the type of cancer. This is properly mentioned in 3.

 **Bookmark**

 **Answer key/Solution**

 **FeedBack**

Q.27

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

Carrying to term a pregnancy against one's will is punishment enough- in fact, it can amount to torture, according to the United Nations Human Rights Council. But the Ohio bill would not only cut off access to the procedure, it would also open the door to criminal charges against both abortion providers and women seeking the procedure. One of the Republican co-sponsors of the legislation, State Representative Ron Hood, said it would be up to prosecutors to decide whether to charge a woman or a doctor, and what those charges would be. But they could be severe. Under the bill, an "unborn human" would be considered a person under state criminal homicide statutes. Thus, a prosecutor could decide to charge a woman who ended a pregnancy with murder. In Ohio, murder is punishable by life in prison or the death penalty.

- 1. Considering the death of an unborn child as a murder, a law in Ohio bans the procedure of abortion by criminalizing it.**
- 2. Considering the death of an unborn child as homicide, a law in Ohio has banned the procedure of abortion, advocating severe punishment for the doctor and the woman.**
- 3. Considering the death of an unborn child as murder, the Ohio bill will ban the procedure of abortion, with a severe punishment for the doctor and the woman.**
- 4. Considering the death of an unborn child as murder, the bill in Ohio will criminalize the act of abortion.**

Solution:

Correct Answer : 4

Options 1 and 2 are incorrect because they use the wrong tense. The bill hasn't been accepted yet. So we can't call it a law.



[Answer key/Solution](#)

Option 3 is incorrect because it states that the punishment will be for both woman and the doctor, however the case is that it will be for either of the two.

The word 'severe' makes it further incorrect.

4 is the only option that properly summarizes the paragraph.

[FeedBack](#)

Q.28

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

- 1. Matter sucked into them would emit blasts of radiation, a mechanism that would explain quasars' energetic emissions.**
- 2. Therefore, it was realised that only objects of incredible energy could be responsible for their output - and that suggested the involvement of black holes.**
- 3. Quasars were discovered in the Sixties, when they were assumed to be nearby stars because their radiation was so bright and intense.**
- 4. Black holes are super-heavy, collapsed giant stars whose gravity is so powerful not even light can escape their surfaces.**
- 5. Subsequent observations revealed, however, that they were the most distant objects known to mankind, and lay at the other end of the universe.**

Solution:

Correct Answer : 35241

Subjective parajumble questions are always tricky. The correct approach is to identify the opening sentence and a few pairs.

1, 2, or 5 can't open the paragraph as each of them has a linking word (them, therefore, subsequent).

So, the opening sentence is either 3 or 4.

'Blackholes' are introduced in sentence 2. So, the opening sentence is 3. 3-5 is a pair : 'Subsequent'

5 -2 is a pair 'Therefore' hints at 'who is responsible for the output of quasars'.

4 and 1 will follow 2 as all of them talk about blackholes. 'Them' in 1 refers to 4.

So, 35241 is the right answer.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.29

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

1. But this phrase is obsolete in medical circles.

2. Experts say the procedure laid down by the court for withdrawing life support is unduly complicated.

3. The judgment restricts itself to the withdrawal or withholding of life-support, which it refers to as "passive euthanasia".

4. A 2018 document from the Indian Council of Medical Research says 'passive euthanasia' is an inappropriate term because it suggests that the doctor is actively shortening the patient's life with lethal drugs.

5. In a judgment on March 9, the Supreme Court said people suffering from a terminal illness had a right to a dignified death, as part of the right to life enshrined in Article 21 of the Constitution.

Solution:

Correct Answer : 53142

The given paragraph if arranged logically discusses the argument regarding "passive euthanasia".

It opens with sentence 5 which initiates the discussion-the passing of the judgment by the Supreme Court.

It is followed by 3 which defines the phrase "passive euthanasia". 'The judgement' refers to 5.

It is followed by 1 which states that it is obsolete in medical terms. The clue word is 'but' which shows a change in the tone of the author.

4 adds to 1 by explaining how it is an obsolete or inappropriate term.

4 and 2 form a mandatory pair ('experts' in 2 refers to the idea mentioned in 4). Both these sentences will follow 3 as they justify the fact mentioned in 3.

So, 53142 is the correct sequence.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.30

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

1. The Thorntons try to fix him up with right-on sugar-boycotting babe Barbara Spooner, but he's trapped under the weight of his cares and doesn't have the energy to flirt.
2. The screenplay is overwhelmed by exposition.
3. In real life, however, Wilberforce disapproved of the popular campaign to refuse sugar.
4. After a series of failed abolition bills, Wilberforce is hooked on laudanum and hallucinates context-less images of African children in chains.
5. "Your last bill was defeated because four of your loyal supporters took free tickets to a comic opera rather than stay to vote," Henry Thornton tells Wilberforce, who, one would imagine, had already noticed that.

Solution:

Correct Answer : 25413



[Answer key/Solution](#)

It is a tricky question. The opening sentence is abrupt which means that this paragraph is a continuation of some original lengthier paragraph. The clue is to identify mandatory pairs.

3 has to be the closing sentence due to 'however' which introduces a contrast.

This is the strongest clue.

5 will come before 4 and 1 as 5 contains the full name 'Henry Thornton'. 4 follows 5 as both talk about a 'bill'.

Keeping the narrative structure intact, 1 will follow 5 and 4 as all these talk about the three characters.

2 has to be the opening sentence. It can't fit anywhere. It will also set the tone for the contrast mentioned in the last sentence. There was a difference between the on-screen portrayal of the character and the off screen one.

So, the correct sequence is 25413.

[FeedBack](#)

Q.31

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

1. Why my wife and I never bought a video camera, I don't know (laziness? expense?).
2. The results have been pasted in albums and dated, and every so often I get them out to see what we got up to. These, too, make me tearful.
3. But she at least has been diligent down the years, with box cameras, Polaroids, disposables and (most recently) a digital Canon.
4. My father's childhood was heavily documented by comparison, and he was scrupulous about documenting his children's, first in tiny black-and-white prints, then with colour transparencies, which were looked at through a viewfinder or on a white screen.
5. He also had a cine camera, and I sometimes feel guilty that my own children, unlike me, have no moving images of themselves to look back on.

Solution:

Correct Answer : 45132

It is actually an easy question. The entire paragraph is in a narrative pattern. So, chronological clue words help a lot.

4 and 5 are in the past tense and both talk about the author's father. So, 4 and 5 should open the paragraph.

1 brings the narrative to the present times. So, 1 will follows 4 and 5. 'She' in 3 refers to the 'author's wife' in 1.

So, the correct sequence is 45132.

[FeedBack](#)

[Bookmark](#)

[Answer key/Solution](#)

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. In the capital of the world's largest Muslim-majority nation, the incumbent Jakarta governor Basuki Purnama Tjahaja, better known as Ahok, is battling to retain his seat.
2. Millions of Jakarta residents will go to the polls on Wednesday in a vote that is being seen as a "litmus test" of Indonesian Islam.
3. Mass protests by religious hardliners and the legal proceedings that followed have led some observers to view Wednesday's election as a test of Indonesia's much-touted commitment to pluralism.
4. Ahok was the favourite to win the vote until he became embroiled in a blasphemy scandal.
5. One reason the Jakarta governorship is so hotly contested is the potential bearing it is perceived to have on the presidency.

Solution:

Correct Answer : 5

2143 can be arranged into a meaningful paragraph which mentions how Indonesia is at the cusp of an important vote. 5 talks about importance of holding the governorship in Indonesia and has no bearing with the paragraph.

[FeedBack](#)

[Bookmark](#)

[Answer key/Solution](#)

Q.33

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

1. However it all went pear-shaped in sleepy old Christchurch, on the field.
2. Being in Christchurch now reminds me of another time when cricket found its way to the front pages, at least those of the Mail On Sunday and the Daily Express.
3. The first Test in Wellington had been a high-scoring draw in which Martin Crowe and Jeremy Coney batted for hour after hour to save the match.
4. In fact I have a few clear memories of the tour, which include the warm relationships between the two sides.
5. Cricket seldom makes the front pages with a good news story.

Solution:

Correct Answer : 4

5213 can be arranged into a meaningful paragraph which talks about a cricket match being printed in the front page of newspapers.

4 is vague and cannot be fit into this context. There is no mention of any particular 'tour' in the other four sentences. The theme is also a mismatch as the question of 'relationship between the two sides' is not mentioned.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.34

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

1. Writing in the journal Nature Communications, Zhan describes how the cockroach has an expanded set of genes that helps it sense the smells that waft off food, in particular the fermented foods it favours most.
2. Together they make the cockroaches more resilient in the face of the filth they live in.
3. Another group of genes comprise the insect's internal detoxification system, which protects the cockroach should it eat anything toxic.
4. The American cockroach spread around the world after it was introduced to the US from Africa in the early 16th century.
5. The cockroach has more than 20,000 genes, making its genetic code as large as a human's.

Solution:

Correct Answer : 4

The correct sequence is 5132. Though 4 looks like the opening sentence as it mentions 'American cockroach'. It fails to create pair with any of the given sentences. Though 2 looks like the odd sentence out, it is not as it mentions 'together they', which refers to the 2 set of genes mentioned in 1 and 3. Hence, 1, 3 and 2 create a mandatory pair. 5 is the opening sentence as it introduces the topic of genes.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Sec 2

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

Grand slam tournaments are the most prestigious individual competitions in tennis. Each grand slam is a knock-out tournament, where the losing team in each match is eliminated from the tournament and the winning team is advanced to the next round.

The following table provides the information about the performances of 5 Tennis Players in the 5 different grand slams, held in 2018. The table mentions the last match won by these five respective players in respective grand slams, in which QF means Quarter Finals, SF means Semifinals and F means Finale.

Players	Federer	Nadal	Djokovic	Wamrinka	Murray
Grand Slams					
Australian Open	F	SF	-	-	-
French Open	-	F	2nd round	3rd round	-
Wimbledon	F	-	-	QF	QF
US Open	-	QF	F	-	-
Canadian Open	QF	3rd Round	SF	F	-

There were exactly 128 players in the first round of each grand slam tournament. Hence, there were 64 matches played in 1st round of each tournament. Then 32 matches played in 2nd round of each tournament, then 16 matches in 3rd round and so on. So, 7th round is the finale for each tournament. Also there were no ties in any round of any tournament.

Further, it is also known that,

1. Finale of each of the above mentioned 5 grand slams were played between the 2 players from the set of these 5 mentioned players only.
2. No two finale were played between the same set of 2 players.
3. In any grand slam, in each round, each match is of at most 5 sets, where each set is of at most 11 games. So, to win a match, a player needs to win 3 sets i.e more than 50% of the sets played and to win a set, he needs to win 6 games i.e more than 50% of total games played. No game ends in a tie/draw.
4. The moment any player win 6 games of a set, no further games will be played in that set. Similarly, the moment a player wins 3 sets in a match, no further sets will be played in that match.

Q.35

Considering the best possible performances for all the 5 players, which player could have made the most number of semi-finals appearances?

1 Federer

2 Djokovic

3 Federer and Djokovic

4 Murray and Federer

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

As the given table provides us the information about the last match won by the player in each grand slam, we can make the following conclusions:

1. In Australian open:

- As Federer won the final match and Nadal won the semi-final, it means they both played the finals and two different matches of semi-finals because only then they should have reached to the final together.

Finals	Semi Finals
Federer* Vs Nadal	Federer* Vs — Nadal* Vs —

- Now nothing is given about the remaining three players, so any two of them would have played in semi-finals, or none of them would have played in semi final is also a possibility.

2. In French open:

- Nadal has won the final, which means he must have played the finals with either Federer or Murray. (Because Djokovic and Wamrinka had not played in this tournament after losing in its 3rd and 4th round respectively).
- As it is given that no two finals were played by same set of players and Federer and Nadal were finalist in Australian open, Murray must be the second finalist in French open. And also Murray and Nadal should have played Semi-finals with two different teams.

Finals	Semi Finals
Nadal* Vs Murray	Nadal* Vs — Murray* Vs —

- Also, Federer can be the semi finalist against any of the two finalist.

Following the same pattern and using the given data, we can infer the finalists for the three remaining grand slams also.

3. In Wimbledon:

Finals	Semi Finals
Federer* Vs Djokovic	Federer * Vs Wamrinka / Murray Djokovic * Vs Murray / Wamrinka

- Murray and Wamrinka won Quarter finals, hence definitely played in Semi-finals.

4. In US open:

Finals	Semi Finals
Djokovic* Vs Murray	Djokovic* Vs Nadal/ — Murray* Vs — /Nadal

- Any of the players, Wamrinka or Federer, can be the other semifinalist.

5. In Canadian open:

Finals	Semi Finals
Wamrinka* Vs Djokovic	Wamrinka* Vs Federer / Murray Djokovic* Vs Murray / Federer

Hence, possible performances to maximise the number of semifinal appearances using the above conclusions can be as follows

Players	Australian Open	French Open	Wimbledon	US Open	Candian Open
Federer	Winner	SF*	Winner	SF*	SF
Nadal	Finalist	Winner	QF*	SF	Played in 4th round
Djokovic	SF*	Played in 3rd round	Finalist	winner	Finalist
Wawrinka	SF*	Played in 4th round	SF	SF*	winner
Murray	SF*	Finalist	SP*	Finalist	SF*

with * → possible performance in that grand slam

For Federer and Murray both, SF appearances can be 5 i.e. most by any player.

[Feedback](#)

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

Grand slam tournaments are the most prestigious individual competitions in tennis. Each grand slam is a knock-out tournament, where the losing team in each match is eliminated from the tournament and the winning team is advanced to the next round.

The following table provides the information about the performances of 5 Tennis Players in the 5 different grand slams, held in 2018. The table mentions the last match won by these five respective players in respective grand slams, in which QF means Quarter Finals, SF means Semifinals and F means Finale.

Players	Federer	Nadal	Djokovic	Wamrinka	Murray
Grand Slams					
Australian Open	F	SF	-	-	-
French Open	-	F	2nd round	3rd round	-
Wimbledon	F	-	-	QF	QF
US Open	-	QF	F	-	-
Canadian Open	QF	3rd Round	SF	F	-

There were exactly 128 players in the first round of each grand slam tournament. Hence, there were 64 matches played in 1st round of each tournament. Then 32 matches played in 2nd round of each tournament, then 16 matches in 3rd round and so on. So, 7th round is the finale for each tournament. Also there were no ties in any round of any tournament.

Further, it is also known that,

1. Finale of each of the above mentioned 5 grand slams were played between the 2 players from the set of these 5 mentioned players only.
2. No two finale were played between the same set of 2 players.
3. In any grand slam, in each round, each match is of at most 5 sets, where each set is of at most 11 games. So, to win a match, a player needs to win 3 sets i.e more than 50% of the sets played and to win a set, he needs to win 6 games i.e more than 50% of total games played. No game ends in a tie/draw.
4. The moment any player win 6 games of a set, no further games will be played in that set. Similarly, the moment a player wins 3 sets in a match, no further sets will be played in that match.

Q.36

What can be the maximum number of games won by Federer in the 5 grand slams taken together?

Solution:

Correct Answer : 893

 **Bookmark**

 **Answer key/Solution**

As the given table provides us the information about the last match won by the player in each grand slam, we can make the following conclusions:

1. In Australian open:

- As Federer won the final match and Nadal won the semi-final, it means they both played the finals and two different matches of semi-finals because only then they should have reached to the final together.

Finals	Semi Finals
Federer* Vs Nadal	Federer* Vs — Nadal* Vs —

- Now nothing is given about the remaining three players, so any two of them would have played in semi-finals, or none of them would have played in semi final is also a possibility.

2. In French open:

- Nadal has won the final, which means he must have played the finals with either Federer or Murray. (Because Djokovic and Wamrinka had not played in this tournament after losing in its 3rd and 4th round respectively).
- As it is given that no two finals were played by same set of players and Federer and Nadal were finalist in Australian open, Murray must be the second finalist in French open. And also Murray and Nadal should have played Semi-finals with two different teams.

Finals	Semi Finals
Nadal* Vs Murray	Nadal* Vs — Murray* Vs —

- Also, Federer can be the semi finalist against any of the two finalist.

Following the same pattern and using the given data, we can infer the finalists for the three remaining grand slams also.

3. In Wimbledon:

Finals	Semi Finals
Federer* Vs Djokovic	Federer * Vs Wamrinka / Murray Djokovic * Vs Murray / Wamrinka

- Murray and Wamrinka won Quarter finals, hence definitely played in Semi-finals.

4. In US open:

Finals	Semi Finals
Djokovic* Vs Murray	Djokovic* Vs Nadal / — Murray* Vs — / Nadal

- Any of the players, Wamrinka or Federer, can be the other semifinalist.

5. In Canadian open:

Finals	Semi Finals
Wamrinka* Vs Djokovic	Wamrinka* Vs Federer / Murray Djokovic* Vs Murray / Federer

To maximise the number of games won in a match, five sets should have played in each match and the player winning should win 3 sets and loss the remaining 2 sets. Also should lose each set by 5 games to 6.

Now, for winner, maximum possible games won in a match = $6 \times 3 + 5 \times 2 = 28$

For loser, maximum games won in a match = $6 \times 2 + 5 \times 3 = 27$

- There are 7 round each in all grand slam and in each round player can play maximum one match.
- So, the winner and the other finalist will play 7 matches in all rounds taken together, and the other 2 semifinalists play 6 matches each.
- Since federer is winner in 2 grand slams and we have to maximize the number of games won by him, considering the best possible scenario we can assume him to be the semi finalist in all the other 3 grand slams;

\therefore Maximum number of games won by him

$$= \frac{2 \times 7 \times 28}{\text{winning 2 grand slams}} + \frac{3 \times 5 \times 28}{\text{winning all the 5 matches before S.F. in 3 Grand slams}} + \frac{3 \times 1 \times 27}{\text{losing 1 match in S.F. in 3 grand slams}}$$

= 893

Feedback

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

Grand slam tournaments are the most prestigious individual competitions in tennis. Each grand slam is a knock-out tournament, where the losing team in each match is eliminated from the tournament and the winning team is advanced to the next round.

The following table provides the information about the performances of 5 Tennis Players in the 5 different grand slams, held in 2018. The table mentions the last match won by these five respective players in respective grand slams, in which QF means Quarter Finals, SF means Semifinals and F means Finale.

Players	Federer	Nadal	Djokovic	Wamrinka	Murray
Grand Slams					
Australian Open	F	SF	-	-	-
French Open	-	F	2nd round	3rd round	-
Wimbledon	F	-	-	QF	QF
US Open	-	QF	F	-	-
Canadian Open	QF	3rd Round	SF	F	-

There were exactly 128 players in the first round of each grand slam tournament. Hence, there were 64 matches played in 1st round of each tournament. Then 32 matches played in 2nd round of each tournament, then 16 matches in 3rd round and so on. So, 7th round is the finale for each tournament. Also there were no ties in any round of any tournament.

Further, it is also known that,

1. Finale of each of the above mentioned 5 grand slams were played between the 2 players from the set of these 5 mentioned players only.
2. No two finale were played between the same set of 2 players.
3. In any grand slam, in each round, each match is of at most 5 sets, where each set is of at most 11 games. So, to win a match, a player needs to win 3 sets i.e more than 50% of the sets played and to win a set, he needs to win 6 games i.e more than 50% of total games played. No game ends in a tie/draw.
4. The moment any player wins 6 games of a set, no further games will be played in that set. Similarly, the moment a player wins 3 sets in a match, no further sets will be played in that match.

Q.37

Who is the other finalist against Djokovic in US Open?

1 Federer

2 Murray

3 Wamrinka

4 Cannot be determined

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

As the given table provides us the information about the last match won by the player in each grand slam, we can make the following conclusions:

1. In Australian open:

- As Federer won the final match and Nadal won the semi-final, it means they both played the finals and two different matches of semi-finals because only then they should have reached to the final together.

Finals	Semi Finals
Federer* Vs Nadal	Federer* Vs — Nadal* Vs —

- Now nothing is given about the remaining three players, so any two of them would have played in semi-finals, or none of them would have played in semi final is also a possibility.

2. In French open:

- Nadal has won the final, which means he must have played the finals with either Federer or Murray. (Because Djokovic and Wamrinka had not played in this tournament after losing in its 3rd and 4th round respectively).
- As it is given that no two finals were played by same set of players and Federer and Nadal were finalist in Australian open, Murray must be the second finalist in French open. And also Murray and Nadal should have played Semi-finals with two different teams.

Finals	Semi Finals
Nadal* Vs Murray	Nadal* Vs — Murray* Vs —

- Also, Federer can be the semi finalist against any of the two finalist.

Following the same pattern and using the given data, we can infer the finalists for the three remaining grand slams also.

3. In Wimbledon:

Finals	Semi Finals
Federer* Vs Djokovic	Federer * Vs Wamrinka / Murray Djokovic * Vs Murray / Wamrinka

- Murray and Wamrinka won Quarter finals, hence definitely played in Semi-finals.

4. In US open:

Finals	Semi Finals
Djokovic* Vs Murray	Djokovic* Vs Nadal/ — Murray* Vs — /Nadal

- Any of the players, Wamrinka or Federer, can be the other semifinalist.

5. In Canadian open:

Finals	Semi Finals
Wamrinka* Vs Djokovic	Wamrinka* Vs Federer / Murray Djokovic* Vs Murray / Federer

Murray is the other finalist

Feedback

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

Grand slam tournaments are the most prestigious individual competitions in tennis. Each grand slam is a knock-out tournament, where the losing team in each match is eliminated from the tournament and the winning team is advanced to the next round.

The following table provides the information about the performances of 5 Tennis Players in the 5 different grand slams, held in 2018. The table mentions the last match won by these five respective players in respective grand slams, in which QF means Quarter Finals, SF means Semifinals and F means Finale.

Players	Federer	Nadal	Djokovic	Wamrinka	Murray
Grand Slams					
Australian Open	F	SF	-	-	-
French Open	-	F	2nd round	3rd round	-
Wimbledon	F	-	-	QF	QF
US Open	-	QF	F	-	-
Canadian Open	QF	3rd Round	SF	F	-

There were exactly 128 players in the first round of each grand slam tournament. Hence, there were 64 matches played in 1st round of each tournament. Then 32 matches played in 2nd round of each tournament, then 16 matches in 3rd round and so on. So, 7th round is the finale for each tournament. Also there were no ties in any round of any tournament.

Further, it is also known that,

1. Finale of each of the above mentioned 5 grand slams were played between the 2 players from the set of these 5 mentioned players only.
2. No two finale were played between the same set of 2 players.
3. In any grand slam, in each round, each match is of at most 5 sets, where each set is of at most 11 games. So, to win a match, a player needs to win 3 sets i.e more than 50% of the sets played and to win a set, he needs to win 6 games i.e more than 50% of total games played. No game ends in a tie/draw.
4. The moment any player wins 6 games of a set, no further games will be played in that set. Similarly, the moment a player wins 3 sets in a match, no further sets will be played in that match.

Q.38

What can be the last possible round played by Nadal in Wimbledon?(Considering the best possible performances for all the 5 players)

1 4th round

2 3rd round

3 6th round

4 5th round

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

As the given table provides us the information about the last match won by the player in each grand slam, we can make the following conclusions:

1. In Australian open:

- As Federer won the final match and Nadal won the semi-final, it means they both played the finals and two different matches of semi-finals because only then they should have reached to the final together.

Finals	Semi Finals
Federer* Vs Nadal	Federer* Vs —
Nadal* Vs —	

- Now nothing is given about the remaining three players, so any two of them would have played in semi-finals, or none of them would have played in semi-final is also a possibility.

2. In French open:

- Nadal has won the final, which means he must have played the finals with either Federer or Murray. (Because Djokovic and Wamrinka had not played in this tournament after losing in its 3rd and 4th round respectively).
- As it is given that no two finals were played by same set of players and Federer and Nadal were finalist in Australian open, Murray must be the second finalist in French open. And also Murray and Nadal should have played Semi-finals with two different teams.

Finals	Semi Finals
Nadal* Vs Murray	Nadal* Vs —
Murray* Vs —	

- Also, Federer can be the semi finalist against any of the two finalist.

Following the same pattern and using the given data, we can infer the finalists for the three remaining grand slams also.

3. In Wimbledon:

Finals	Semi Finals
Federer* Vs Djokovic	Federer * Vs Wamrinka / Murray
Djokovic * Vs Murray / Wamrinka	

- Murray and Wamrinka won Quarter finals, hence definitely played in Semi-finals.

4. In US open:

Finals	Semi Finals
Djokovic* Vs Murray	Djokovic* Vs Nadal/ —
Murray* Vs — /Nadal	

- Any of the players, Wamrinka or Federer, can be the other semifinalist.

5. In Canadian open:

Finals	Semi Finals
Wamrinka* Vs Djokovic	Wamrinka* Vs Federer / Murray
Djokovic* Vs Murray / Federer	

Nadal can best possibly perform in Quarter Finals i.e. 5th round.

Feedback

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

Six companies - EY, KPMG, Deloitte, PwC, Gartner and BCG - went to 8 different colleges - A1, A2, ..., A8 - to hire the students. The number of students hired from a college is different for every company. The table shown below comprised the number of students hired from the colleges by the 6 companies. However, some cells in the table are left blank intentionally. But it is known that these values were either 0, 1 or 3.

	EY	KPMG	Deloitte	PwC	Gartner	BCG
A1	35		12			15
A2		20	9		23	
A3	24		22	35	9	7
A4	21	24		15		26
A5		25		17		27
A6	38		13		37	
A7	10	18	17			
A8		10	25			16

- Only EY and KPMG hired different number of students from each college.
- The total number of students hired by all these companies from college A3 was 13 more than that from college A4.
- Deloitte hired at least one student from each of these eight colleges.
- Deloitte hired more students than what BCG hired but less students than what KPMG hired.
- Sum of the number of students hired by PwC from A1, A4 and A8 is equal to the number of students hired by Deloitte from A7 alone.
- Total number of students hired from the college A5 by all the six companies was 1 more than the total number of students hired by PwC from all the eight colleges. Similarly, the total number of students hired from the college A3 was 3 more than the total number of students hired by BCG from all the 8 colleges.

Q.39

If PwC hired same number of students from colleges A6 and A7, then how many students did BCG hire from college A2?

Solution:

Correct Answer : 0

Bookmark

Answer key/Solution

- The number of students hired from a college is different for every college that means, all six companies- EY, KPMG, Deloitte, PwC, Gartner and BCG- hired a different number of students from college A1 and so on. Since missing numbers will be 0, 1 or 3 and it will be different for every missing cell in a row, Therefore, the students hired from college A1 will definitely be 66.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66

Similarly, this sum can be calculated for the colleges A2, A5, A6, A7, and A8.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56
A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73

A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55

2. By statement 1, only EY and KPMG hired a different number of students from each college.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56
A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55
	132	101					

3. By statement 3, the total number of students hired by all the companies from A3 College was 13 more than that from A4 College.

Sum of values present in the row of A3: $(24 + x + 22 + 35 + 9 + 7) = 97 + x$

Sum of values present in the row of A4: $(21 + 24 + a + 15 + b + 26) = 86 + a + b$, where a and b are distinct.

Given, $97 + x = 86 + a + b + 13$

$x = a + b + 2$, which is possible only if $x = 3$ and $(a, b) = (0, 1)$ or $(1, 0)$ and $(a, b) = (0, 1)$ is not possible by statement 3, as Deloitte hired at least one student from each college.

4. By statement 5, students PwC hired from A1, A4 and A8 is p, 15 and q respectively is equal to the number of students hired by Deloitte from A7 which is 17.

Therefore, $p + 15 + q = 17$, implies, $p + q = 2$, which is possible only when $(p, q) = (1, 1)$.

5. By statement 4, Deloitte hired fewer students than what KPMG hired.

Since a missing cell of the students hired by Deloitte could be 1 or 3, therefore total students hired by Deloitte could be either 102, which is not possible, or 100 which is possible.

Some missing values are now found and the tables look like:

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49
A8	0/3	10	25	1	3/0	16	55
	132	101	100				

6. By statement 6, students hired from the college A5, which is 73, is one more than the total number of students PwC hired, which means PwC hired 72 students.

Sum of students PwC hired from different colleges: $1 + d + 35 + 15 + 17 + e + f + 1 = 72$, which implies $d + e + f = 3$, the possible combinations are: $(0, 1, 3)$.

Similarly, students hired from the college A3, which is 100, is 3 more than the total number of students BCG hired, which means BCG hired 97 students.

Sum of students BCG hired from different colleges: $15 + r + 7 + 26 + 27 + s + t + 16 = 97$, which implies $r + s + t = 6$, the possible combination is: $(0, 3, 3)$.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92

A7	10	18	17				49
A8	0\3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

Sum of students Gartner hired from different colleges: $3 + 23 + 9 + 0 + g + 37 + h + i = 76$, which implies, $g + h + i = 4$, the possible combination is: $(g, h, i) = (3, 1, 0)$ or $(0, 1, 3)$.

So, the final table looks like:

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17	0/3	1	3/0	49
A8	0\3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

BCG hired 0 students from A2 College.

FeedBack

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

Six companies - EY, KPMG, Deloitte, PwC, Gartner and BCG - went to 8 different colleges - A1, A2, ..., A8 - to hire the students. The number of students hired from a college is different for every company. The table shown below comprised the number of students hired from the colleges by the 6 companies. However, some cells in the table are left blank intentionally. But it is known that these values were either 0,1 or 3.

	EY	KPMG	Deloitte	PwC	Gartner	BCG
A1	35		12			15
A2		20	9		23	
A3	24		22	35	9	7
A4	21	24		15		26
A5		25		17		27
A6	38		13		37	
A7	10	18	17			
A8		10	25			16

- Only EY and KPMG hired different number of students from each college.
- The total number of students hired by all these companies from college A3 was 13 more than that from college A4.
- Deloitte hired at least one student from each of these eight colleges.
- Deloitte hired more students than what BCG hired but less students than what KPMG hired.
- Sum of the number of students hired by PwC from A1, A4 and A8 is equal to the number of students hired by Deloitte from A7 alone.
- Total number of students hired from the college A5 by all the six companies was 1 more than the total number of students hired by PwC from all the eight colleges. Similarly, the total number of students hired from the college A3 was 3 more than the total number of students hired by BCG from all the 8 colleges.

Q.40

What is the total number of students hired by all the companies taken together?

Solution:

Correct Answer : 578

[Bookmark](#)

[Answer key/Solution](#)

- The number of students hired from a college is different for every college that means, all six companies- EY, KPMG, Deloitte, PwC, Gartner and BCG- hired a different number of students from college A1 and so on. Since missing numbers will be 0, 1 or 3 and it will be different for every missing cell in a row, Therefore, the students hired from college A1 will definitely be 66.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66

Similarly, this sum can be calculated for the colleges A2, A5, A6, A7, and A8.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56
A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92

A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55

2. By statement 1, only EY and KPMG hired a different number of students from each college.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56
A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55
	132	101					

3. By statement 3, the total number of students hired by all the companies from A3 College was 13 more than that from A4 College.

Sum of values present in the row of A3: $(24 + x + 22 + 35 + 9 + 7) = 97 + x$

Sum of values present in the row of A4: $(21 + 24 + a + 15 + b + 26) = 86 + a + b$, where a and b are distinct.

Given, $97 + x = 86 + a + b + 13$

$x = a + b + 2$, which is possible only if $x = 3$ and $(a, b) = (0, 1)$ or $(1, 0)$ and $(a, b) = (0, 1)$ is not possible by statement 3, as Deloitte hired at least one student from each college.

4. By statement 5, students PwC hired from A1, A4 and A8 is p, 15 and q respectively is equal to the number of students hired by Deloitte from A7 which is 17.

Therefore, $p + 15 + q = 17$, implies, $p + q = 2$, which is possible only when $(p, q) = (1, 1)$.

5. By statement 4, Deloitte hired fewer students than what KPMG hired.

Since a missing cell of the students hired by Deloitte could be 1 or 3, therefore total students hired by Deloitte could be either 102, which is not possible, or 100 which is possible.

Some missing values are now found and the tables look like:

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49
A8	0/3	10	25	1	3/0	16	55
	132	101	100				

6. By statement 6, students hired from the college A5, which is 73, is one more than the total number of students PwC hired, which means PwC hired 72 students.

Sum of students PwC hired from different colleges: $1 + d + 35 + 15 + 17 + e + f + 1 = 72$, which implies $d + e + f = 3$, the possible combinations are: $(0, 1, 3)$.

Similarly, students hired from the college A3, which is 100, is 3 more than the total number of students BCG hired, which means BCG hired 97 students.

Sum of students BCG hired from different colleges: $15 + r + 7 + 26 + 27 + s + t + 16 = 97$, which implies $r + s + t = 6$, the possible combination is: $(0, 3, 3)$.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49

A8	0\3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

Sum of students Gartner hired from different colleges: $3 + 23 + 9 + 0 + g + 37 + h + i = 76$, which implies, $g + h + i = 4$, the possible combination is: $(g, h, i) = (3, 1, 0)$ or $(0, 1, 3)$.

So, the final table looks like:

	EY	KPMG	Deloitte	PwC	Gartner	BOG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17	0/3	1	3/0	49
A8	0\3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

The total number of students hired by all the companies taken together is 578.

[FeedBack](#)

A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55

2. By statement 1, only EY and KPMG hired a different number of students from each college.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56
A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55
	132	101					

3. By statement 3, the total number of students hired by all the companies from A3 College was 13 more than that from A4 College.

Sum of values present in the row of A3: $(24 + x + 22 + 35 + 9 + 7) = 97 + x$

Sum of values present in the row of A4: $(21 + 24 + a + 15 + b + 26) = 86 + a + b$, where a and b are distinct.

Given, $97 + x = 86 + a + b + 13$

$x = a + b + 2$, which is possible only if $x = 3$ and $(a, b) = (0, 1)$ or $(1, 0)$ and $(a, b) = (0, 1)$ is not possible by statement 3, as Deloitte hired at least one student from each college.

4. By statement 5, students PwC hired from A1, A4 and A8 is p, 15 and q respectively is equal to the number of students hired by Deloitte from A7 which is 17.

Therefore, $p + 15 + q = 17$, implies, $p + q = 2$, which is possible only when $(p, q) = (1, 1)$.

5. By statement 4, Deloitte hired fewer students than what KPMG hired.

Since a missing cell of the students hired by Deloitte could be 1 or 3, therefore total students hired by Deloitte could be either 102, which is not possible, or 100 which is possible.

Some missing values are now found and the tables look like:

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49
A8	0/3	10	25	1	3/0	16	55
	132	101	100				

6. By statement 6, students hired from the college A5, which is 73, is one more than the total number of students PwC hired, which means PwC hired 72 students.

Sum of students PwC hired from different colleges: $1 + d + 35 + 15 + 17 + e + f + 1 = 72$, which implies $d + e + f = 3$, the possible combinations are: $(0, 1, 3)$.

Similarly, students hired from the college A3, which is 100, is 3 more than the total number of students BCG hired, which means BCG hired 97 students.

Sum of students BCG hired from different colleges: $15 + r + 7 + 26 + 27 + s + t + 16 = 97$, which implies $r + s + t = 6$, the possible combination is: $(0, 3, 3)$.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73

A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49
A8	0/3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

Sum of students Gartner hired from different colleges: $3 + 23 + 9 + 0 + g + 37 + h + i = 76$, which implies, $g + h + i = 4$, the possible combination is: $(g, h, i) = (3, 1, 0)$ or $(0, 1, 3)$.

So, the final table looks like:

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17	0/3	1	3/0	49
A8	0/3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

Let the students who switched to EY are 'x', then the students who switched to KPMG are '17 - x'.

Given: the new ratio of a total number of students in EY and KPMG is 27 : 23.

Therefore,

$$\Rightarrow \frac{132+x}{101+(17-x)} = \frac{27}{23}$$

$$\Rightarrow 23(132+x) = 27(118-x)$$

$$\Rightarrow x = 3$$

Hence, the number of students switched to EY is 11 less than those who switched to KPMG.

FeedBack

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

Six companies - EY, KPMG, Deloitte, PwC, Gartner and BCG - went to 8 different colleges - A1, A2, ..., A8 - to hire the students. The number of students hired from a college is different for every company. The table shown below comprised the number of students hired from the colleges by the 6 companies. However, some cells in the table are left blank intentionally. But it is known that these values were either 0,1 or 3.

	EY	KPMG	Deloitte	PwC	Gartner	BCG
A1	35		12			15
A2		20	9		23	
A3	24		22	35	9	7
A4	21	24		15		26
A5		25		17		27
A6	38		13		37	
A7	10	18	17			
A8		10	25			16

- Only EY and KPMG hired different number of students from each college.
- The total number of students hired by all these companies from college A3 was 13 more than that from college A4.
- Deloitte hired at least one student from each of these eight colleges.
- Deloitte hired more students than what BCG hired but less students than what KPMG hired.
- Sum of the number of students hired by PwC from A1, A4 and A8 is equal to the number of students hired by Deloitte from A7 alone.
- Total number of students hired from the college A5 by all the six companies was 1 more than the total number of students hired by PwC from all the eight colleges. Similarly, the total number of students hired from the college A3 was 3 more than the total number of students hired by BCG from all the 8 colleges.

Q.42

After a year, when progress reports of all these companies came, it was observed that Deloitte earned the maximum profit. Inspired by which PwC observed Deloitte's recruitment pattern to increase its own profit.

Now PwC also wants its employees numbers in such a way that there will be different number of students recruited from each college and also wants at least one student from each college. What is the minimum number of students PwC needs to hire more to fulfill this criteria?

Solution:

Correct Answer : 10

Bookmark

Answer key/Solution

- The number of students hired from a college is different for every college that means, all six companies- EY, KPMG, Deloitte, PwC, Gartner and BCG- hired a different number of students from college A1 and so on. Since missing numbers will be 0, 1 or 3 and it will be different for every missing cell in a row, Therefore, the students hired from college A1 will definitely be 66.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66

Similarly, this sum can be calculated for the colleges A2, A5, A6, A7, and A8.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56

A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55

2. By statement 1, only EY and KPMG hired a different number of students from each college.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0/1/3	12	0/1/3	0/1/3	15	66
A2	0/1/3	20	9	0/1/3	23	0/1/3	56
A3	24		22	35	9	7	
A4	21	24		15		26	
A5	0/1/3	25	0/1/3	17	0/1/3	27	73
A6	38	0/1/3	13	0/1/3	37	0/1/3	92
A7	10	18	17	0/1/3	0/1/3	0/1/3	49
A8	0/1/3	10	25	0/1/3	0/1/3	16	55
	132	101					

3. By statement 3, the total number of students hired by all the companies from A3 College was 13 more than that from A4 College.

Sum of values present in the row of A3: $(24 + x + 22 + 35 + 9 + 7) = 97 + x$

Sum of values present in the row of A4: $(21 + 24 + a + 15 + b + 26) = 86 + a + b$, where a and b are distinct.

Given, $97 + x = 86 + a + b + 13$

$x = a + b + 2$, which is possible only if $x = 3$ and $(a, b) = (0, 1)$ or $(1, 0)$ and $(a, b) = (0, 1)$ is not possible by statement 3, as Deloitte hired at least one student from each college.

4. By statement 5, students PwC hired from A1, A4 and A8 is p, 15 and q respectively is equal to the number of students hired by Deloitte from A7 which is 17.

Therefore, $p + 15 + q = 17$, implies, $p + q = 2$, which is possible only when $(p, q) = (1, 1)$.

5. By statement 4, Deloitte hired fewer students than what KPMG hired.

Since a missing cell of the students hired by Deloitte could be 1 or 3, therefore total students hired by Deloitte could be either 102, which is not possible, or 100 which is possible.

Some missing values are now found and the tables look like:

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49
A8	0/3	10	25	1	3/0	16	55
	132	101	100				

6. By statement 6, students hired from the college A5, which is 73, is one more than the total number of students PwC hired, which means PwC hired 72 students.

Sum of students PwC hired from different colleges: $1 + d + 35 + 15 + 17 + e + f + 1 = 72$, which implies $d + e + f = 3$, the possible combinations are: $(0, 1, 3)$.

Similarly, students hired from the college A3, which is 100, is 3 more than the total number of students BCG hired, which means BCG hired 97 students.

Sum of students BCG hired from different colleges: $15 + r + 7 + 26 + 27 + s + t + 16 = 97$, which implies $r + s + t = 6$, the possible combination is: $(0, 3, 3)$.

	EY	KPMG	Deloitte	PwC	Gartner	BCG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100

A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17				49
A8	0/3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

Sum of students Gartner hired from different colleges: $3 + 23 + 9 + 0 + g + 37 + h + i = 76$, which implies, $g + h + i = 4$, the possible combination is: $(g, h, i) = (3, 1, 0)$ or $(0, 1, 3)$.

So, the final table looks like:

	EY	KPMG	Deloitte	PwC	Gartner	BOG	
A1	35	0	12	1	3	15	66
A2	1	20	9	0/3	23	3/0	56
A3	24	3	22	35	9	7	100
A4	21	24	1	15	0	26	87
A5	3/0	25	1	17	0/3	27	73
A6	38	1	13	0/3	37	3/0	92
A7	10	18	17	0/3	1	3/0	49
A8	0/3	10	25	1	3/0	16	55
	132	101	100	72	76	97	

	PwC
A1	1
A2	0/3
A3	35
A4	15
A5	17
A6	0/3
A7	0/3
A8	1
	72

The indefinite values be either $(0, 0, 3)$, $(0, 3, 0)$ or $(3, 0, 0)$. We need to add the number of employees such that every cell has a distinct number.

Let us take a particular scenario:

	PwC
A1	1
A2	0
A3	35
A4	15
A5	17
A6	0
A7	3
A8	1



	PwC
A1	1+1
A2	0+4
A3	35
A4	15
A5	17
A6	0+5
A7	3
A8	1

So, the minimum number of students PwC need to hire more is $(1 + 4 + 5) = 10$.

Feedback

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

Three friends – Leonardo, Pablo and Michael decide to draw a large painting in the following manner:

They divide the large painting into 5 parts named as A, B, C, D and E. They decide that they will finish the parts one by one in the following order – A, B, C, D and E. They also decide that on each part they will work in the following order – first Leonardo will finish his work on that part, then Pablo will finish his work on that part and then Michael will finish his work on that part, considering one cannot start working on the next part without finishing his part of work on the previous part. They also decide that one person can work on exactly any one part at a time and exactly one person can work on any part at a time. They also decide that they will minimize the idle time as much as possible i.e. a person will sit idle only when another person is working on the part on which he has to work next. They draw the following table which indicates the time (in number of days) that each one of them will take to finish his work on each of the five parts.

	Leonardo	Pablo	Michael
Part A	5	7	8
Part B	9	3	2
Part C	3	6	7
Part D	4	8	2
Part E	4	5	9

Q.43

If Leonardo starts working on Part A on 1st January 2018 then they will finish working on the painting, at the earliest, on which of the following days? (Assume they all start working on the same day)

-
- 1 12th February 2018
-
- 2 13th February 2018
-
- 3 14th February 2018
-
- 4 15th February 2018
-

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

See the following table which shows the entire process:

To minimize the number of days to complete the work on painting, all three of them try to start working on a part as soon as it is available for him to work on.

As they all will follow, the given order such that first Leonardo will work on part A, at that time Pablo and Michael will sit idle, they cannot start next part. After that, Pablo will start working on it and finish it in 7 days, during this period Michael will sit idle. After that Michael will start working on Part A. Similarly, the process will go on for other parts. So, we can form the following table about the days on which each of them working.

Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.
Day1	A	Idle	Idle	Day16	C	B	A	Day31	Idle	D	Idle
Day2	A	Idle	Idle	Day17	C	B	A	Day32	Idle	E	D
Day3	A	Idle	Idle	Day18	D	C	A	Day33	Idle	E	D
Day4	A	Idle	Idle	Day19	D	C	A	Day34	Idle	E	Idle
Day5	A	Idle	Idle	Day20	D	C	A	Day35	Idle	E	Idle
Day6	B	A	Idle	Day21	D	C	B	Day36	Idle	E	Idle
Day7	B	A	Idle	Day22	E	C	B	Day37	Idle	Idle	E
Day8	B	A	Idle	Day23	E	C	Idle	Day38	Idle	Idle	E
Day9	B	A	Idle	Day24	E	D	C	Day39	Idle	Idle	E
Day10	B	A	Idle	Day25	E	D	C	Day40	Idle	Idle	E
Day11	B	A	Idle	Day26	Idle	D	C	Day41	Idle	Idle	E
Day12	B	A	Idle	Day27	Idle	D	C	Day42	Idle	Idle	E
Day13	B	Idle	A	Day28	Idle	D	C	Day43	Idle	Idle	E
Day14	B	Idle	A	Day29	Idle	D	C	Day44	Idle	Idle	E
Day15	C	B	A	Day30	Idle	D	C	Day45	Idle	Idle	E

A minimum of total 45 days will be required to finish working on the entire painting.

If Leonardo starts working on 1st January, then at earliest they can finish it in 45 days i.e., on 14th February 2018.

FeedBack

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

Three friends – Leonardo, Pablo and Michael decide to draw a large painting in the following manner:

They divide the large painting into 5 parts named as A, B, C, D and E. They decide that they will finish the parts one by one in the following order – A, B, C, D and E. They also decide that on each part they will work in the following order – first Leonardo will finish his work on that part, then Pablo will finish his work on that part and then Michael will finish his work on that part, considering one cannot start working on the next part without finishing his part of work on the previous part. They also decide that one person can work on exactly any one part at a time and exactly one person can work on any part at a time. They also decide that they will minimize the idle time as much as possible i.e. a person will sit idle only when another person is working on the part on which he has to work next. They draw the following table which indicates the time (in number of days) that each one of them will take to finish his work on each of the five parts.

	Leonardo	Pablo	Michael
Part A	5	7	8
Part B	9	3	2
Part C	3	6	7
Part D	4	8	2
Part E	4	5	9

Q.44

If they finish working on the painting in the minimum possible number of days, then for how many days (from the first day till the last day) Michael will have to sit idle? (Assume they all start working on the same day)

Solution:

Correct Answer : 17

 **Bookmark**

 **Answer key/Solution**

See the following table which shows the entire process:

To minimize the number of days to complete the work on painting, all three of them try to start working on a part as soon as it is available for him to work on.

As they all will follow, the given order such that first Leonardo will work on part A, at that time Pablo and Michael will sit idle, they cannot start next part. After that, Pablo will start working on it and finish it in 7 days, during this period Michael will sit idle. After that Michael will start working on Part A. Similarly, the process will go on for other parts. So, we can form the following table about the days on which each of them working.

Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.
Day1	A	Idle	Idle	Day16	C	B	A	Day31	Idle	D	Idle
Day2	A	Idle	Idle	Day17	C	B	A	Day32	Idle	E	D
Day3	A	Idle	Idle	Day18	D	C	A	Day33	Idle	E	D
Day4	A	Idle	Idle	Day19	D	C	A	Day34	Idle	E	Idle
Day5	A	Idle	Idle	Day20	D	C	A	Day35	Idle	E	Idle
Day6	B	A	Idle	Day21	D	C	B	Day36	Idle	E	Idle
Day7	B	A	Idle	Day22	E	C	B	Day37	Idle	Idle	E
Day8	B	A	Idle	Day23	E	C	Idle	Day38	Idle	Idle	E
Day9	B	A	Idle	Day24	E	D	C	Day39	Idle	Idle	E
Day10	B	A	Idle	Day25	E	D	C	Day40	Idle	Idle	E
Day11	B	A	Idle	Day26	Idle	D	C	Day41	Idle	Idle	E
Day12	B	A	Idle	Day27	Idle	D	C	Day42	Idle	Idle	E
Day13	B	Idle	A	Day28	Idle	D	C	Day43	Idle	Idle	E
Day14	B	Idle	A	Day29	Idle	D	C	Day44	Idle	Idle	E
Day15	C	B	A	Day30	Idle	D	C	Day45	Idle	Idle	E

A minimum of total 45 days will be required to finish working on the entire painting.

From the above table we can count that Michael sit idle for 17 days.

FeedBack

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

Three friends – Leonardo, Pablo and Michael decide to draw a large painting in the following manner:

They divide the large painting into 5 parts named as A, B, C, D and E. They decide that they will finish the parts one by one in the following order – A, B, C, D and E. They also decide that on each part they will work in the following order – first Leonardo will finish his work on that part, then Pablo will finish his work on that part and then Michael will finish his work on that part, considering one cannot start working on the next part without finishing his part of work on the previous part. They also decide that one person can work on exactly any one part at a time and exactly one person can work on any part at a time. They also decide that they will minimize the idle time as much as possible i.e. a person will sit idle only when another person is working on the part on which he has to work next. They draw the following table which indicates the time (in number of days) that each one of them will take to finish his work on each of the five parts.

	Leonardo	Pablo	Michael
Part A	5	7	8
Part B	9	3	2
Part C	3	6	7
Part D	4	8	2
Part E	4	5	9

Q.45

If they finish working on the painting in the minimum possible number of days and Michael started working on Part C on 3rd March 2018, then on which day Pablo started working on Part E?(Assume they all start working on the same day)

1 11th March 2018

2 12th March 2018

3 13th March 2018

4 None of these

Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

See the following table which shows the entire process:

To minimize the number of days to complete the work on painting, all three of them try to start working on a part as soon as it is available for him to work on.

As they all will follow, the given order such that first Leonardo will work on part A, at that time Pablo and Michael will sit idle, they cannot start next part. After that, Pablo will start working on it and finish it in 7 days, during this period Michael will sit idle. After that Michael will start working on Part A. Similarly, the process will go on for other parts. So, we can form the following table about the days on which each of them working.

Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.
Day1	A	Idle	Idle	Day16	C	B	A	Day31	Idle	D	Idle
Day2	A	Idle	Idle	Day17	C	B	A	Day32	Idle	E	D
Day3	A	Idle	Idle	Day18	D	C	A	Day33	Idle	E	D
Day4	A	Idle	Idle	Day19	D	C	A	Day34	Idle	E	Idle
Day5	A	Idle	Idle	Day20	D	C	A	Day35	Idle	E	Idle
Day6	B	A	Idle	Day21	D	C	B	Day36	Idle	E	Idle
Day7	B	A	Idle	Day22	E	C	B	Day37	Idle	Idle	E
Day8	B	A	Idle	Day23	E	C	Idle	Day38	Idle	Idle	E
Day9	B	A	Idle	Day24	E	D	C	Day39	Idle	Idle	E
Day10	B	A	Idle	Day25	E	D	C	Day40	Idle	Idle	E
Day11	B	A	Idle	Day26	Idle	D	C	Day41	Idle	Idle	E
Day12	B	A	Idle	Day27	Idle	D	C	Day42	Idle	Idle	E
Day13	B	Idle	A	Day28	Idle	D	C	Day43	Idle	Idle	E
Day14	B	Idle	A	Day29	Idle	D	C	Day44	Idle	Idle	E
Day15	C	B	A	Day30	Idle	D	C	Day45	Idle	Idle	E

A minimum of total 45 days will be required to finish working on the entire painting.

The question is that if Day 24 was 3rd March 2018, then which day it was on Day 32. So, Day 32 has to be 11th March 2018.

FeedBack

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

Three friends – Leonardo, Pablo and Michael decide to draw a large painting in the following manner:

They divide the large painting into 5 parts named as A, B, C, D and E. They decide that they will finish the parts one by one in the following order – A, B, C, D and E. They also decide that on each part they will work in the following order – first Leonardo will finish his work on that part, then Pablo will finish his work on that part and then Michael will finish his work on that part, considering one cannot start working on the next part without finishing his part of work on the previous part. They also decide that one person can work on exactly any one part at a time and exactly one person can work on any part at a time. They also decide that they will minimize the idle time as much as possible i.e. a person will sit idle only when another person is working on the part on which he has to work next. They draw the following table which indicates the time (in number of days) that each one of them will take to finish his work on each of the five parts.

	Leonardo	Pablo	Michael
Part A	5	7	8
Part B	9	3	2
Part C	3	6	7
Part D	4	8	2
Part E	4	5	9

Q.46

If they finish working on the painting in the minimum possible number of days, then on how many days (from the first day till the last day) no one of them was sitting idle? (Assume they all start working on the same day)

Solution:

Correct Answer : 10

 **Bookmark**

 **Answer key/Solution**

See the following table which shows the entire process:

To minimize the number of days to complete the work on painting, all three of them try to start working on a part as soon as it is available for him to work on.

As they all will follow, the given order such that first Leonardo will work on part A, at that time Pablo and Michael will sit idle, they cannot start next part. After that, Pablo will start working on it and finish it in 7 days, during this period Michael will sit idle. After that Michael will start working on Part A. Similarly, the process will go on for other parts. So, we can form the following table about the days on which each of them working.

Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.	Day	Leo.	Pablo	Mich.
Day1	A	Idle	Idle	Day16	C	B	A	Day31	Idle	D	Idle
Day2	A	Idle	Idle	Day17	C	B	A	Day32	Idle	E	D
Day3	A	Idle	Idle	Day18	D	C	A	Day33	Idle	E	D
Day4	A	Idle	Idle	Day19	D	C	A	Day34	Idle	E	Idle
Day5	A	Idle	Idle	Day20	D	C	A	Day35	Idle	E	Idle
Day6	B	A	Idle	Day21	D	C	B	Day36	Idle	E	Idle
Day7	B	A	Idle	Day22	E	C	B	Day37	Idle	Idle	E
Day8	B	A	Idle	Day23	E	C	Idle	Day38	Idle	Idle	E
Day9	B	A	Idle	Day24	E	D	C	Day39	Idle	Idle	E
Day10	B	A	Idle	Day25	E	D	C	Day40	Idle	Idle	E
Day11	B	A	Idle	Day26	Idle	D	C	Day41	Idle	Idle	E
Day12	B	A	Idle	Day27	Idle	D	C	Day42	Idle	Idle	E
Day13	B	Idle	A	Day28	Idle	D	C	Day43	Idle	Idle	E
Day14	B	Idle	A	Day29	Idle	D	C	Day44	Idle	Idle	E
Day15	C	B	A	Day30	Idle	D	C	Day45	Idle	Idle	E

A minimum of total 45 days will be required to finish working on the entire painting.

The correct answer is 10 days.

FeedBack

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

Four friends - Jony, Mony, Tony and Sony - have 12 vocabulary cards with them. Each vocabulary card has a number printed on it, from 1 to 12, which is known as the 'value' of that card. No two cards has same number printed on it.

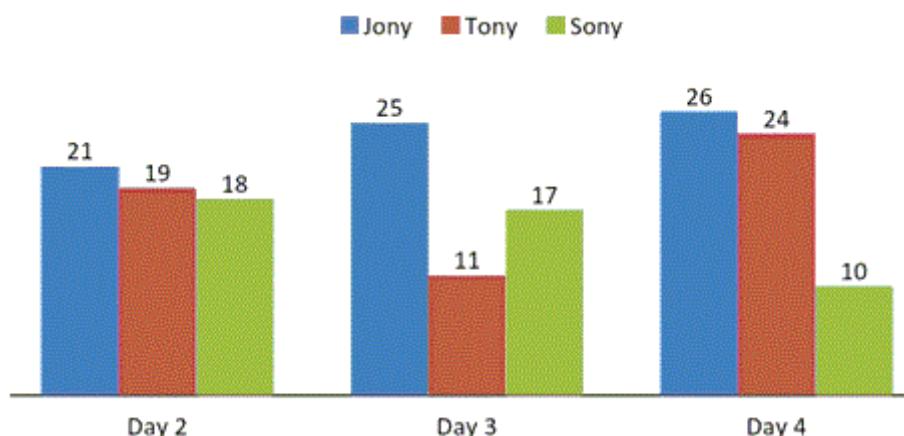
On Day 1, the four friends distribute these 12 cards equally among themselves i.e, each friend has 3 cards with himself.

In the beginning of Day 2 each of them gives exactly one card to each of the other three friends and they repeat the same process in the beginning of Day 3 as well.

In the beginning of Day 4, they re-shuffle the cards among themselves in such a way that each one of them gets a set of three different cards from the ones they had in past three days.

No friend gets any of the cards having same value for two or more times in the span of these four days.

The diagram shown below gives the sum of the values of the cards with each of Jony, Tony and Sony at the end of Day 2, Day 3 and Day 4.



Q.47

What is the sum of the values of all the cards with Mony on Day 1?

Solution:

Correct Answer : 15

Bookmark

Answer key/Solution

We can draw the following conclusions:

- (i) Each friend will get exactly 3 cards on each of the four days.
- (ii) Each friend will get all the 12 cards in these four days.
- (iii) No two friends will get the same card on any day out of these four days.
- (iv) Sum of the values of all the cards obtained by any friend in these four days will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

And it is given that the sum of the values of all the cards with Jony in Day 2, Day 3 and Day 4 are 21, 25 and 26 respectively

\Rightarrow The sum of the value of cards with Jony in Day 1 is $78 - (21 + 25 + 26) = 6$.

Similarly for Tony, the sum of the value of all cards in Day 1 is $= 78 - (19 + 11 + 24) = 24$.

For Sony, sum is $= 78 - (18 + 17 + 10) = 33$ in Day 1

- (v) Sum of the values of all the cards obtained by all the four friends on any day will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

(\therefore The sum of the value of cards with Mony, on Day 2 is $78 - (21 + 19 + 18) = 20$)

On Day 3 $= 78 - (25 + 11 + 17) = 25$

On Day 4 $= 78 - (26 + 24 + 10) = 18$

So, on Day 1, it is $= 78 - (20 + 25 + 18) = 15$

\therefore The cards which all four friends will have on Day 1:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
Day 1	Cards	(1 2 3)	(4 5 6)	(7 8 9)	(10 11 12)

Now, in the beginning of Day 2, each of them gives exactly one card to each of the other three friends such that the sum of the value of all cards with Jony, Tony, Sony and Mony are 21, 19, 18 and 20 respectively.
The only possibility that Jony has received one card from each of the other friends is:

	Tony	Sony	Mony	
Cards which Jony receives from	7	10	4	Sum = 21

Now, the possibilities that Tony can receive one card from each of the other friends are-

	Jony	Sony	Mony		
Card which Tony receives from	1st	3	11	5	Sum = 19
	2nd	2	11	6	Sum = 19
	3rd	1	12	6	Sum = 19
	4th	2	12	5	Sum = 19

Only the last 4th case will satisfy the given condition while the first three cases will not.

First consider the 1st case that Tony has got (3, 11, 5) cards, then,

	Jony	Tony	Mony
Cards which Sony receives from	1	✓	✗
	2	8	✗
	3	9	6

So, out of these remaining cards, no case will give the sum 18.

Similarly 2nd and 3rd case will not satisfy.

Now, consider the last case.

Tony receives 2, 12, 5 cards from Jony, Sony and Mony respectively.

	Jony	Tony	Mony	
Cards which Sony receives from	1st	1	✓	✗
	2nd	✗	8	✗
	3rd	3	9	6

So, the only possibility from the above table that Sony can get one card from each other friends such that the sum of the value of all cards with him should be 18 is (3, 9, 6), i.e. the third case.

The remaining cards which Mony would have got are (1, 8, 11)

So, the table till now is

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)

Now, they all repeat the same process in the beginning of Day 3, as well such that the sum of the value of the cards with Jony, Tony, Sony and Mony will be 25, 11, 17 and 25 respectively.

The only possibility that Jony will receive one card from each of the other three friends is (5, 9, 11) from Tony, Sony, and Mony respectively.

Now after that, the possibilities that Tony has got the cards such that the sum of value of cards will be 11 is (4, 6, 1) and (7, 3, 1)

The second one will not satisfy.

	Jony	Tony	Mony
Cards which Sony receives from	4	2	✗
	✗	✗	8
	10	12	11

From above table, we can say that the one card from each, Jony, Tony and Mony will give the sum not equal to 17 hence not possible. So, the only possible case is (4, 6, 1).

	Jony	Tony	Mony
Cards which Sony gets from	✗	2	✗
	7	✗	8
	10	12	11

The possible case from above table such that the sum of the value of three cards with Sony will be 17 is (7, 2, 8). This implies that Jony will have (5, 9, 11), Tony will have (4, 6, 1) and Mony will have (7, 3, 1). Only remaining cards

This implies that Jony will have (5, 9, 11), Tony will have (4, 6, 1) and Sony will have (7, 2, 8). Only remaining cards are (10, 12, 3) i.e. sum = 25 which will be received by Mony.
So, the table till now is:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)

In the beginning of Day 4, they reshuffle the cards such that each one of them gets a set of three different cards from the ones they had in past three days.

So,

		Jony	Mony	Tony	Sony
Day 4	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

So, the final table is :

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)
Day 4	Sum	26	18	24	10
	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

FeedBack

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

Four friends - Jony, Mony, Tony and Sony - have 12 vocabulary cards with them. Each vocabulary card has a number printed on it, from 1 to 12, which is known as the 'value' of that card. No two cards has same number printed on it.

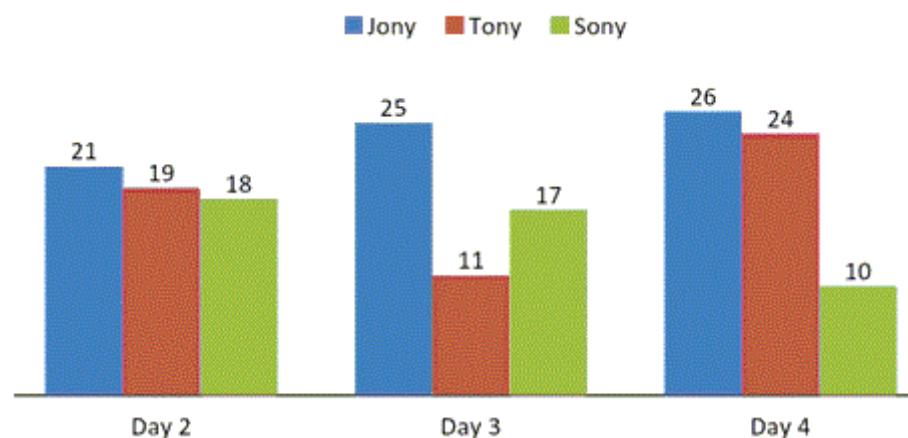
On Day 1, the four friends distribute these 12 cards equally among themselves i.e, each friend has 3 cards with himself.

In the beginning of Day 2 each of them gives exactly one card to each of the other three friends and they repeat the same process in the beginning of Day 3 as well.

In the beginning of Day 4, they re-shuffle the cards among themselves in such a way that each one of them gets a set of three different cards from the ones they had in past three days.

No friend gets any of the cards having same value for two or more times in the span of these four days.

The diagram shown below gives the sum of the values of the cards with each of Jony, Tony and Sony at the end of Day 2, Day 3 and Day 4.



Q.48

If, out of all the cards that were there with Tony at the end of Day 3, exactly 'n' cards were obtained by Mony at the end of Day 4, then what is the value of 'n'?

1 0

2 1

3 2

4 3

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

We can draw the following conclusions:

- (i) Each friend will get exactly 3 cards on each of the four days.
- (ii) Each friend will get all the 12 cards in these four days.
- (iii) No two friends will get the same card on any day out of these four days.
- (iv) Sum of the values of all the cards obtained by any friend in these four days will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

And it is given that the sum of the values of all the cards with Jony in Day 2, Day 3 and Day 4 are 21, 25 and 26 respectively

⇒ The sum of the value of cards with Jony in Day 1 is $78 - (21 + 25 + 26) = 6$.

Similarly for Tony, the sum of the value of all cards in Day 1 is $= 78 - (19 + 11 + 24) = 24$.

For Sony, sum is $= 78 - (18 + 17 + 10) = 33$ in Day 1

Sum of the values of all the cards obtained by all the four friends on any day will be equal to the sum of all the numbers

(v)

(v) Sum of the values of all the cards obtained by all the four friends on any day will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

(\therefore The sum of the value of cards with Mony, on Day 2 is $78 - (21 + 19 + 18) = 20$

On Day 3 = $78 - (25 + 11 + 17) = 25$

On Day 4 = $78 - (26 + 24 + 10) = 18$

So, on Day 1, it is = $78 - (20 + 25 + 18) = 15$

\therefore The cards which all four friends will have on Day 1:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)

Now, in the beginning of Day 2, each of them gives exactly one card to each of the other three friends such that the sum of the value of all cards with Jony, Tony, Sony and Mony are 21, 19, 18 and 20 respectively.

The only possibility that Jony has received one card from each of the other friends is:

	Tony	Sony	Mony	
Cards which Jony receives from	7	10	4	Sum = 21

Now, the possibilities that Tony can receive one card from each of the other friends are-

		Jony	Sony	Mony	
Card which Tony receives from	1st	3	11	5	Sum = 19
	2nd	2	11	6	Sum = 19
	3rd	1	12	6	Sum = 19
	4th	2	12	5	Sum = 19

Only the last 4th case will satisfy the given condition while the first three cases will not.

First consider the 1st case that Tony has got (3, 11, 5) cards, then,

	Jony	Tony	Mony	
Cards which Sony receives from	1	7	4	
	2	8	5	
	3	9	6	

So, out of these remaining cards, no case will give the sum 18.

Similarly 2nd and 3rd case will not satisfy.

Now, consider the last case.

Tony receives 2, 12, 5 cards from Jony, Sony and Mony respectively.

		Jony	Tony	Mony	
Cards which Sony receives from	1st	1	7	4	
	2nd	2	8	5	
	3rd	3	9	6	

So, the only possibility from the above table that Sony can get one card from each other friends such that the sum of the value of all cards with him should be 18 is (3, 9, 6), i.e. the third case.

The remaining cards which Mony would have got are (1, 8, 11)

So, the table till now is

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)

Now, they all repeat the same process in the beginning of Day 3, as well such that the sum of the value of the cards with Jony, Tony, Sony and Mony will be 25, 11, 17 and 25 respectively.

The only possibility that Jony will receive one card from each of the other three friends is (5, 9, 11) from Tony, Sony, and Mony respectively.

Now after that, the possibilities that Tony has got the cards such that the sum of value of cards will be 11 is (4, 6, 1) and (7, 3, 1)

The second one will not satisfy.

	Jony	Tony	Mony
Cards which	4	2	1

Sony receives	7	8	8
from	10	12	11

From above table, we can say that the one card from each, Jony, Tony and Mony will give the sum not equal to 17 hence not possible. So, the only possible case is (4, 6, 1).

	Jony	Tony	Mony
Cards which Sony gets from	4	2	1
	7	8	8
	10	12	11

The possible case from above table such that the sum of the value of three cards with Sony will be 17 is (7, 2, 8). This implies that Jony will have (5, 9, 11), Tony will have (4, 6, 1) and Sony will have (7, 2, 8). Only remaining cards are (10, 12, 3) i.e. sum = 25 which will be received by Mony.

So, the table till now is:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)

In the beginning of Day 4, they reshuffle the cards such that each one of them gets a set of three different cards from the ones they had in past three days.

So,

		Jony	Mony	Tony	Sony
Day 4	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

So, the final table is :

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)
Day 4	Sum	26	18	24	10
	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

FeedBack

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

Four friends - Jony, Mony, Tony and Sony - have 12 vocabulary cards with them. Each vocabulary card has a number printed on it, from 1 to 12, which is known as the 'value' of that card. No two cards has same number printed on it.

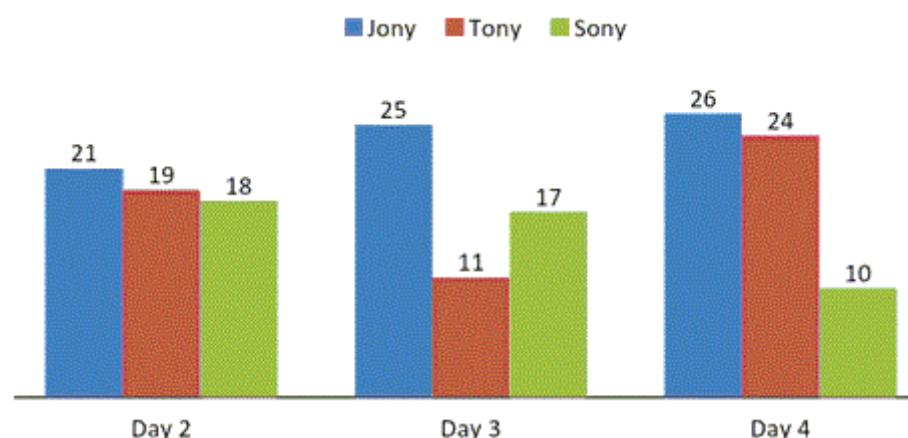
On Day 1, the four friends distribute these 12 cards equally among themselves i.e, each friend has 3 cards with himself.

In the beginning of Day 2 each of them gives exactly one card to each of the other three friends and they repeat the same process in the beginning of Day 3 as well.

In the beginning of Day 4, they re-shuffle the cards among themselves in such a way that each one of them gets a set of three different cards from the ones they had in past three days.

No friend gets any of the cards having same value for two or more times in the span of these four days.

The diagram shown below gives the sum of the values of the cards with each of Jony, Tony and Sony at the end of Day 2, Day 3 and Day 4.



Q.49

Who among the following obtained the card valued as 12 on Day 4?

- 1 Jony
- 2 Mony
- 3 Tony
- 4 Sony

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

We can draw the following conclusions:

- (i) Each friend will get exactly 3 cards on each of the four days.
- (ii) Each friend will get all the 12 cards in these four days.
- (iii) No two friends will get the same card on any day out of these four days.
- (iv) Sum of the values of all the cards obtained by any friend in these four days will be equal to the sum of all the numbers from 1 to 12 i.e. 78.
And it is given that the sum of the values of all the cards with Jony in Day 2, Day 3 and Day 4 are 21, 25 and 26 respectively
⇒ The sum of the value of cards with Jony in Day 1 is $78 - (21 + 25 + 26) = 6$.
Similarly for Tony, the sum of the value of all cards in Day 1 is $= 78 - (19 + 11 + 24) = 24$.
For Sony, sum is $= 78 - (18 + 17 + 10) = 33$ in Day 1
- (v) Sum of the values of all the cards obtained by all the four friends on any day will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

(\therefore The sum of the value of cards with Mony, on Day 2 is $78 - (21 + 19 + 18) = 20$
 On Day 3 = $78 - (25 + 11 + 17) = 25$
 On Day 4 = $78 - (26 + 24 + 10) = 18$
 So, on Day 1, it is = $78 - (20 + 25 + 18) = 15$

\therefore The cards which all four friends will have on Day 1:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)

Now, in the beginning of Day 2, each of them gives exactly one card to each of the other three friends such that the sum of the value of all cards with Jony, Tony, Sony and Mony are 21, 19, 18 and 20 respectively.
 The only possibility that Jony has received one card from each of the other friends is:

	Tony	Sony	Mony	
Cards which Jony receives from	7	10	4	Sum = 21

Now, the possibilities that Tony can receive one card from each of the other friends are-

		Jony	Sony	Mony	
Card which Tony receives from	1st	3	11	5	Sum = 19
	2nd	2	11	6	Sum = 19
	3rd	1	12	6	Sum = 19
	4th	2	12	5	Sum = 19

Only the last 4th case will satisfy the given condition while the first three cases will not.
 First consider the 1st case that Tony has got (3, 11, 5) cards, then,

	Jony	Tony	Mony
Cards which Sony receives from	1	7	4
	2	8	8
	8	9	6

So, out of these remaining cards, no case will give the sum 18.

Similarly 2nd and 3rd case will not satisfy.

Now, consider the last case.

Tony receives 2, 12, 5 cards from Jony, Sony and Mony respectively.

		Jony	Tony	Mony
Cards which Sony receives from	1st	1	7	4
	2nd	2	8	8
	3rd	3	9	6

So, the only possibility from the above table that Sony can get one card from each other friends such that the sum of the value of all cards with him should be 18 is (3, 9, 6), i.e. the third case.

The remaining cards which Mony would have got are (1, 8, 11)

So, the table till now is

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)

Now, they all repeat the same process in the beginning of Day 3, as well such that the sum of the value of the cards with Jony, Tony, Sony and Mony will be 25, 11, 17 and 25 respectively.

The only possibility that Jony will receive one card from each of the other three friends is (5, 9, 11) from Tony, Sony, and Mony respectively.

Now after that, the possibilities that Tony has got the cards such that the sum of value of cards will be 11 is (4, 6, 1) and (7, 3, 1)

The second one will not satisfy.

	Jony	Tony	Mony
Cards which Sony receives from	4	2	1

from	10	12	11
------	----	----	----

From above table, we can say that the one card from each, Jony, Tony and Mony will give the sum not equal to 17 hence not possible. So, the only possible case is (4, 6, 1).

	Jony	Tony	Mony
Cards which Sony gets from	4	2	1
	7	8	8
	10	12	11

The possible case from above table such that the sum of the value of three cards with Sony will be 17 is (7, 2, 8). This implies that Jony will have (5, 9, 11), Tony will have (4, 6, 1) and Sony will have (7, 2, 8). Only remaining cards are (10, 12, 3) i.e. sum = 25 which will be received by Mony.

So, the table till now is:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)

In the beginning of Day 4, they reshuffle the cards such that each one of them gets a set of three different cards from the ones they had in past three days.

So,

		Jony	Mony	Tony	Sony
Day 4	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

So, the final table is :

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)
Day 4	Sum	26	18	24	10
	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

FeedBack

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

Four friends - Jony, Mony, Tony and Sony - have 12 vocabulary cards with them. Each vocabulary card has a number printed on it, from 1 to 12, which is known as the 'value' of that card. No two cards has same number printed on it.

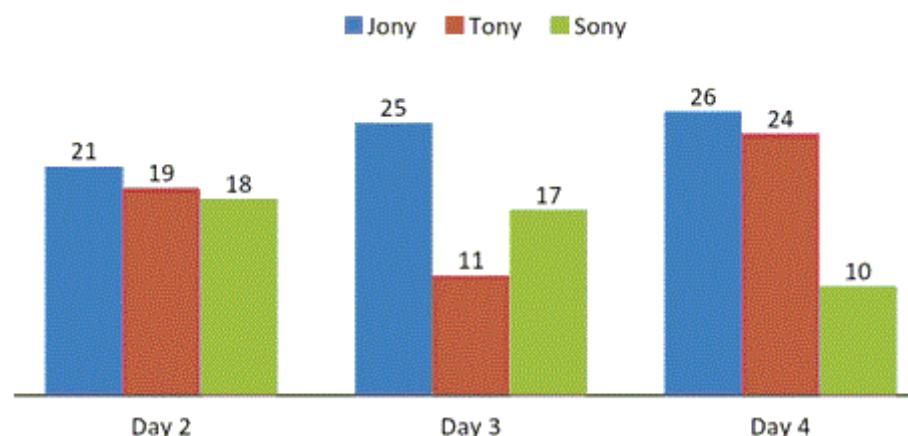
On Day 1, the four friends distribute these 12 cards equally among themselves i.e, each friend has 3 cards with himself.

In the beginning of Day 2 each of them gives exactly one card to each of the other three friends and they repeat the same process in the beginning of Day 3 as well.

In the beginning of Day 4, they re-shuffle the cards among themselves in such a way that each one of them gets a set of three different cards from the ones they had in past three days.

No friend gets any of the cards having same value for two or more times in the span of these four days.

The diagram shown below gives the sum of the values of the cards with each of Jony, Tony and Sony at the end of Day 2, Day 3 and Day 4.



Q.50

What was the maximum difference between the values of any two cards, out of all the cards that were there with Jony, on Day 2?

1 3

2 6

3 1

4 10

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

We can draw the following conclusions:

- (i) Each friend will get exactly 3 cards on each of the four days.
- (ii) Each friend will get all the 12 cards in these four days.
- (iii) No two friends will get the same card on any day out of these four days.
- (iv) Sum of the values of all the cards obtained by any friend in these four days will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

And it is given that the sum of the values of all the cards with Jony in Day 2, Day 3 and Day 4 are 21, 25 and 26 respectively

⇒ The sum of the value of cards with Jony in Day 1 is $78 - (21 + 25 + 26) = 6$.

Similarly for Tony, the sum of the value of all cards in Day 1 is $= 78 - (19 + 11 + 24) = 24$.

For Sony, sum is $= 78 - (18 + 17 + 10) = 33$ in Day 1

(v) Sum of the values of all the cards obtained by all the four friends on any day will be equal to the sum of all the numbers

(v) Sum of the values of all the cards obtained by all the four friends on any day will be equal to the sum of all the numbers from 1 to 12 i.e. 78.

(\therefore The sum of the value of cards with Mony, on Day 2 is $78 - (21 + 19 + 18) = 20$

On Day 3 = $78 - (25 + 11 + 17) = 25$

On Day 4 = $78 - (26 + 24 + 10) = 18$

So, on Day 1, it is = $78 - (20 + 25 + 18) = 15$

\therefore The cards which all four friends will have on Day 1:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)

Now, in the beginning of Day 2, each of them gives exactly one card to each of the other three friends such that the sum of the value of all cards with Jony, Tony, Sony and Mony are 21, 19, 18 and 20 respectively.

The only possibility that Jony has received one card from each of the other friends is:

	Tony	Sony	Mony	
Cards which Jony receives from	7	10	4	Sum = 21

Now, the possibilities that Tony can receive one card from each of the other friends are-

		Jony	Sony	Mony	
Card which Tony receives from	1st	3	11	5	Sum = 19
	2nd	2	11	6	Sum = 19
	3rd	1	12	6	Sum = 19
	4th	2	12	5	Sum = 19

Only the last 4th case will satisfy the given condition while the first three cases will not.

First consider the 1st case that Tony has got (3, 11, 5) cards, then,

	Jony	Tony	Mony	
Cards which Sony receives from	1	7	4	
	2	8	5	
	3	9	6	

So, out of these remaining cards, no case will give the sum 18.

Similarly 2nd and 3rd case will not satisfy.

Now, consider the last case.

Tony receives 2, 12, 5 cards from Jony, Sony and Mony respectively.

		Jony	Tony	Mony	
Cards which Sony receives from	1st	1	7	4	
	2nd	2	8	5	
	3rd	3	9	6	

So, the only possibility from the above table that Sony can get one card from each other friends such that the sum of the value of all cards with him should be 18 is (3, 9, 6), i.e. the third case.

The remaining cards which Mony would have got are (1, 8, 11)

So, the table till now is

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)

Now, they all repeat the same process in the beginning of Day 3, as well such that the sum of the value of the cards with Jony, Tony, Sony and Mony will be 25, 11, 17 and 25 respectively.

The only possibility that Jony will receive one card from each of the other three friends is (5, 9, 11) from Tony, Sony, and Mony respectively.

Now after that, the possibilities that Tony has got the cards such that the sum of value of cards will be 11 is (4, 6, 1) and (7, 3, 1)

The second one will not satisfy.

	Jony	Tony	Mony
Cards which	4	2	1

Sony receives	7	8	8
from	10	12	11

From above table, we can say that the one card from each, Jony, Tony and Mony will give the sum not equal to 17 hence not possible. So, the only possible case is (4, 6, 1).

	Jony	Tony	Mony
Cards which Sony gets from	4	2	1
	7	8	8
	10	12	11

The possible case from above table such that the sum of the value of three cards with Sony will be 17 is (7, 2, 8). This implies that Jony will have (5, 9, 11), Tony will have (4, 6, 1) and Sony will have (7, 2, 8). Only remaining cards are (10, 12, 3) i.e. sum = 25 which will be received by Mony.

So, the table till now is:

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)

In the beginning of Day 4, they reshuffle the cards such that each one of them gets a set of three different cards from the ones they had in past three days.

So,

		Jony	Mony	Tony	Sony
Day 4	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

So, the final table is :

		Jony	Mony	Tony	Sony
Day 1	Sum	6	15	24	33
	Cards	(1, 2, 3)	(4, 5, 6)	(7, 8, 9)	(10, 11, 12)
Day 2	Sum	21	20	19	18
	Cards	(4, 7, 10)	(1, 8, 11)	(2, 5, 12)	(3, 6, 9)
Day 3	Sum	25	25	11	17
	Cards	(5, 9, 11)	(3, 10, 12)	(1, 4, 6)	(2, 7, 8)
Day 4	Sum	26	18	24	10
	Cards	(6, 8, 12)	(2, 7, 9)	(3, 10, 11)	(1, 4, 5)

FeedBack

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

A group of 250 students appeared for tests conducted in 4 different areas – QA, VA, LR and DI. For every 2 students who passed in all the 4 tests, there is 1 student in each combination of exactly 3 passed tests by students, and for every 2 students who passed in (QA, VA and LR) only, there is 1 student in each of the possibilities of exactly 1 passed test by students. The number of students who passed in (VA and DI) is twice the number of students who passed in (QA and LR), and the number of students who passed in (QA and DI) is twice the number of students who passed in (VA and LR). The number of students who passed in only (QA and VA) is equal to the number of students who passed in only (LR and DI), which is 50.

The total number of students who passed in QA is 100 and the number of students who passed in only QA is an even number. The number of students who passed in QA is more than the number of students who passed in VA.

Q.51

Find the minimum number of students who passed in none of the four mentioned tests.

1 50

2 65

3 0

4 60

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

As for every 2 students who passed in all 4 tests, there is 1 student in each combination of exactly 3 passed tests, let '4x' and '2x' be the two numbers. So, as (QA, VA and LR) only have 2x students, there must be x students each in only QA, only VA, only LR and only DI. Also, we can assign variables to other regions also using the given information.

QA	VA		
x	50	x	
z	2x	y	x
2x	4x	2x	50
8x + 2y	2x	8x + 2y	x

LR
DI

$$QA \rightarrow 100 = x + 50 + z + 2x + 2x + 4x + 2x + (8x + 2y)$$

$$\Rightarrow 100 = 19x + 2y + z + 50$$

$$2y + z + 19x = 50$$

If $x = 2$ since only QA is given to be an even number
then $2y + z = 12$... (i)

If we put $x = 4$ or greater, then $(2y + z)$ would become negative which is not possible;

Given: number of students passed in QA > number of students passed in VA

$$i.e., 19x + 2y + z + 50 > 19x + 2z + y + 50$$

$$i.e. y > z \dots (ii)$$

Using (ii) and solving (i)

$$2y + z = 12$$

Two possible solutions are possible.

First is: $y = 5, z = 2$ then $x = 2$

Second is: $y = 6, z = 0$ then $x = 2$

Students passed in at least 1 test

$$= 32x + 3y + 3z + 100$$

Case I: (putting $x = 2, y = 5$ & $z = 2$, we get)

$$= 32 \times 2 + 3 \times 5 + 3 \times 2 + 100 = 185$$

So students passed in none of the 4 tests = $250 - 185 = 65$

Case II: Putting $x = 2, y = 6$ & $z = 0$ we get

$$= 32 \times 2 + 3 \times 6 + 3 \times 0 + 100 = 182$$

\therefore Students passed in none of the 4 tests = $250 - 182 = 68$

\therefore Minimum number of students who passed in none of the four tests is 65.

FeedBack

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

A group of 250 students appeared for tests conducted in 4 different areas – QA, VA, LR and DI. For every 2 students who passed in all the 4 tests, there is 1 student in each combination of exactly 3 passed tests by students, and for every 2 students who passed in (QA, VA and LR) only, there is 1 student in each of the possibilities of exactly 1 passed test by students. The number of students who passed in (VA and DI) is twice the number of students who passed in (QA and LR), and the number of students who passed in (QA and DI) is twice the number of students who passed in (VA and LR). The number of students who passed in only (QA and VA) is equal to the number of students who passed in only (LR and DI), which is 50.

The total number of students who passed in QA is 100 and the number of students who passed in only QA is an even number. The number of students who passed in QA is more than the number of students who passed in VA.

Q.52

How many students failed in at most 1 test?

1 65

2 24

3 12

4 Cannot be determined

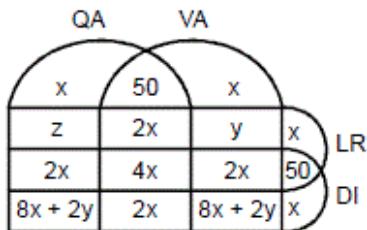
Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

As for every 2 students who passed in all 4 tests, there is 1 student in each combination of exactly 3 passed tests, let '4x' and '2x' be the two numbers. So, as (QA, VA and LR) only have 2x students, there must be x students each in only QA, only VA, only LR and only DI. Also, we can assign variables to other regions also using the given information.



$$QA \rightarrow 100 = x + 50 + z + 2x + 2x + 4x + 2x + (8x + 2y)$$

$$\Rightarrow 100 = 19x + 2y + z + 50$$

$$2y + z + 19x = 50$$

If $x = 2$ since only QA is given to be an even number

$$\text{then } 2y + z = 12 \quad \dots \text{(i)}$$

If we put $x = 4$ or greater, then $(2y + z)$ would become negative which is not possible;

Given: number of students passed in QA > number of students passed in VA

$$\text{i.e., } 19x + 2y + z + 50 > 19x + 2z + y + 50$$

$$\text{i.e. } y > z \quad \dots \text{(ii)}$$

Using (ii) and solving (i)

$$2y + z = 12$$

Two possible solutions are possible.

First is: $y = 5$, $z = 2$ then $x = 2$

Second is: $y = 6$, $z = 0$ then $x = 2$

Failed in at most 1 = failed in 1 + failed in 0

$$\downarrow \qquad \downarrow$$

passed in 3 + passed in 4

$$(2x + 2x + 2x + 2x = 8x) \quad (4x)$$

$$\text{i.e. } 8x + 4x = 12x$$

On putting $x = 2$,

$$\Rightarrow 12x = 24.$$

Feedback

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

A group of 250 students appeared for tests conducted in 4 different areas – QA, VA, LR and DI. For every 2 students who passed in all the 4 tests, there is 1 student in each combination of exactly 3 passed tests by students, and for every 2 students who passed in (QA, VA and LR) only, there is 1 student in each of the possibilities of exactly 1 passed test by students. The number of students who passed in (VA and DI) is twice the number of students who passed in (QA and LR), and the number of students who passed in (QA and DI) is twice the number of students who passed in (VA and LR). The number of students who passed in only (QA and VA) is equal to the number of students who passed in only (LR and DI), which is 50.

The total number of students who passed in QA is 100 and the number of students who passed in only QA is an even number. The number of students who passed in QA is more than the number of students who passed in VA.

Q.53

How many students passed in (LR and DI)?

1 66

2 58

3 50

4 Cannot be determined

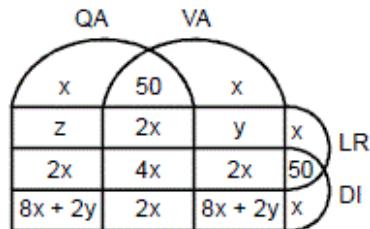
Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

As for every 2 students who passed in all 4 tests, there is 1 student in each combination of exactly 3 passed tests, let '4x' and '2x' be the two numbers. So, as (QA, VA and LR) only have 2x students, there must be x students each in only QA, only VA, only LR and only DI. Also, we can assign variables to other regions also using the given information.



$$QA \rightarrow 100 = x + 50 + z + 2x + 2x + 4x + 2x + (8x + 2y)$$

$$\Rightarrow 100 = 19x + 2y + z + 50$$

$$2y + z + 19x = 50$$

If $x = 2$ since only QA is given to be an even number
then $2y + z = 12$... (i)

If we put $x = 4$ or greater, then $(2y + z)$ would become negative which is not possible;

Given: number of students passed in QA > number of students passed in VA

i.e., $19x + 2y + z + 50 > 19x + 2z + y + 50$

i.e. $y > z$... (ii)

Using (ii) and solving (i)

$$2y + z = 12$$

Two possible solutions are possible.

First is: $y = 5$, $z = 2$ then $x = 2$

Second is: $y = 6$, $z = 0$ then $x = 2$

$$\text{Passed in (LR & DI)} = 8x + 50 = 66$$

FeedBack

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

A group of 250 students appeared for tests conducted in 4 different areas – QA, VA, LR and DI. For every 2 students who passed in all the 4 tests, there is 1 student in each combination of exactly 3 passed tests by students, and for every 2 students who passed in (QA, VA and LR) only, there is 1 student in each of the possibilities of exactly 1 passed test by students. The number of students who passed in (VA and DI) is twice the number of students who passed in (QA and LR), and the number of students who passed in (QA and DI) is twice the number of students who passed in (VA and LR). The number of students who passed in only (QA and VA) is equal to the number of students who passed in only (LR and DI), which is 50.

The total number of students who passed in QA is 100 and the number of students who passed in only QA is an even number. The number of students who passed in QA is more than the number of students who passed in VA.

Q.54

In which test did the maximum number of students pass?

1 QA

2 LR

3 DI

4 VA

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

As for every 2 students who passed in all 4 tests, there is 1 student in each combination of exactly 3 passed tests, let '4x' and '2x' be the two numbers. So, as (QA, VA and LR) only have 2x students, there must be x students each in only QA, only VA, only LR and only DI. Also, we can assign variables to other regions also using the given information.

QA	VA		
x	50	x	
z	2x	y	x
2x	4x	2x	50
$8x + 2y$	2x	$8x + 2y$	x

LR
DI

$$QA \rightarrow 100 = x + 50 + z + 2x + 2x + 4x + 2x + (8x + 2y)$$

$$\Rightarrow 100 = 19x + 2y + z + 50$$

$$2y + z + 19x = 50$$

If $x = 2$ since only QA is given to be an even number
then $2y + z = 12$... (i)

If we put $x = 4$ or greater, then $(2y + z)$ would become negative which is not possible;

Given: number of students passed in QA > number of students passed in VA

$$\text{i.e., } 19x + 2y + z + 50 > 19x + 2z + y + 50$$

$$\text{i.e., } y > z \quad \dots \text{(ii)}$$

Using (ii) and solving (i)

$$2y + z = 12$$

Two possible solutions are possible.

First is: $y = 5, z = 2$ then $x = 2$

Second is: $y = 6, z = 0$ then $x = 2$

$$\text{Passed in DI} = 27x + 2y + 2z + 50$$

$$\text{Passed in LR} = 11x + y + z + 50$$

$$\text{Passed in QA} = 19x + 2y + z + 50 = 100$$

Also, Passed in QA > Passed in VA (given)

$$\text{When } x = 2, y = 6, z = 0$$

$$\text{When } x = 2, y = 5, z = 2$$

$$\text{Passed in DI} = 116$$

$$\text{Passed in DI} = 118$$

$$\text{Passed in LR} = 78$$

$$\text{Passed in LR} = 79$$

$$\text{Passed in QA} = 100 \text{ and QA} > \text{VA}$$

$$\text{Passed in QA} = 100$$

So, clearly it is DI.

FeedBack

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

A builder wanted to divide a rectangular ground in smaller areas, which are in shape of rectangles, for one of his clients. For this, he has drawn some parallel vertical lines so that the rectangle gets divided into 5 columns. And also draws some parallel horizontal lines which divide the rectangle into 4 rows and this whole procedure divides the ground in 4×5 smaller rectangular areas. These vertical and horizontal parallel lines need not be equidistant from each other and hence the areas of the smaller rectangular regions need not be same for every region.

Based on this division and the distances between parallel lines, he calculated the areas of the so formed rectangular regions and prepared a blueprint for the same in the form of a rectangular grid. While presenting this blueprint to his client, he found out that he forgot to write some of the data and had the following grid with him:

Column Row	1	2	3	4	5
1	2	4	D	12	J
2	A	6	12	G	K
3	9	C	E	H	27
4	B	10	F	I	L

The rectangle represents the ground with smaller rectangles being the one made by those parallel lines. Quantity written inside any rectangle represents the area (in sq. unit) of that rectangle. Also, this quantity is denoted by C_{ij} , where i represents the row number and j represents the column number of that cell.

Q.55

Values for how many alphabets, written in the blueprint, cannot be found?

1 0

2 1

3 2

4 12

Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

Let a , b , c and d be the distance between two rows and e , f , g , h and i be the distances between two columns as shown below:

	1	2	3	4	5
1	2	4	D	12	J
2	A	6	12	G	K
3	9	C	E	H	27
4	B	10	F	I	L

Diagram showing the distances between rows and columns. Vertical double-headed arrows on the right indicate distances a , b , c , and d between consecutive horizontal lines. Horizontal double-headed arrows at the bottom indicate distances e , f , g , h , and i between consecutive vertical lines.

e f g h i

In 1st row

$$\frac{e}{f} = \frac{2}{J} \leftarrow \begin{bmatrix} a \times e = 2 \\ a \times f = 4 \end{bmatrix} \Rightarrow \frac{e}{f} = \frac{1}{2} \dots(i)$$

$$\frac{e}{f} = \frac{2}{J} \leftarrow \begin{bmatrix} a \times g = D \\ a \times h = 12 \end{bmatrix} \Rightarrow \frac{g}{h} = \frac{D}{12}$$

$$a \times i = J$$

Now in 2nd row,
 $b \times e = A$ & $b \times f = 6$

$$\Rightarrow \frac{e}{f} = \frac{A}{6}$$

Also from (1)

$$\frac{e}{f} = \frac{1}{2} = \frac{A}{6} \Rightarrow [A=3]$$

In 3rd row,
 $c \times e = 9$ & $c \times f = C$

$$\Rightarrow \frac{e}{f} = \frac{9}{C} = \frac{1}{2} \Rightarrow [C=18]$$

In 4th row,
 $d \times e = B$ and $d \times f = 10$

$$\Rightarrow \frac{e}{f} = \frac{B}{10} = \frac{1}{2} \Rightarrow [B=5]$$

In 2nd column,

$$\frac{b}{c} = \frac{1}{3} \leftarrow \begin{bmatrix} a \times f = 4 \\ b \times f = 6 \\ c \times f = 18 \\ d \times f = 10 \end{bmatrix} \Rightarrow \begin{array}{l} \frac{a}{b} = \frac{2}{3} \dots(ii) \\ \frac{c}{d} = \frac{9}{5} \end{array}$$

Now in 3rd column,
 $a \times g = D$ and $b \times g = 12$

$$\Rightarrow \frac{a}{b} = \frac{D}{12}$$

Also from (ii)

$$\frac{a}{b} = \frac{2}{3} = \frac{D}{12} \Rightarrow [D=8]$$

Also, $b \times g = 12$ and $c \times g = E$

$$\Rightarrow \frac{b}{c} = \frac{12}{E} = \frac{1}{3} \Rightarrow [E=36]$$

$c \times g = E = 36$ and $d \times g = F$

$$\Rightarrow \frac{c}{d} = \frac{36}{F} = \frac{9}{5} \Rightarrow [F=20]$$

If we follow the same pattern, we can calculate the other values also or if we look at these result calculations, we can observe that their areas are in same ratio to the area of other given rectangles.

e.g. $\frac{C_{11}}{C_{21}} = \frac{C_{12}}{C_{22}} = \frac{C_{13}}{C_{23}} = \frac{C_{14}}{C_{24}} = \frac{C_{15}}{C_{25}}$

Similarly for other row, columns also.

So, area for the remaining cells can be found in similar manner, and hence the final areas of all the cells are follows:

2	4	8	12	6
3	6	12	18	9
9	18	36	54	27
5	10	20	30	15

So it is possible to find all these values

[FeedBack](#)

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

A builder wanted to divide a rectangular ground in smaller areas, which are in shape of rectangles, for one of his clients. For this, he has drawn some parallel vertical lines so that the rectangle gets divided into 5 columns. And also draws some parallel horizontal lines which divide the rectangle into 4 rows and this whole procedure divides the ground in 4×5 smaller rectangular areas. These vertical and horizontal parallel lines need not be equidistant from each other and hence the areas of the smaller rectangular regions need not be same for every region.

Based on this division and the distances between parallel lines, he calculated the areas of the so formed rectangular regions and prepared a blueprint for the same in the form of a rectangular grid. While presenting this blueprint to his client, he found out that he forgot to write some of the data and had the following grid with him:

Column Row	1	2	3	4	5
1	2	4	D	12	J
2	A	6	12	G	K
3	9	C	E	H	27
4	B	10	F	I	L

The rectangle represents the ground with smaller rectangles being the one made by those parallel lines. Quantity written inside any rectangle represents the area (in sq. unit) of that rectangle. Also, this quantity is denoted by C_{ij} , where i represents the row number and j represents the column number of that cell.

Q.56

Find the value of $(C_{23} + C_{41} - C_{43})$.

1 -3

2 5

3 0

4 Cannot be determined

Solution:

Correct Answer : 1

[Bookmark](#)

[Answer key/Solution](#)

Let a, b, c and d be the distance between two rows and e, f, g, h and i be the distances between two columns as shown below:

1	2	3	4	5	
1	2	4	D	12	J
					a

2	A	6	12	G	K	b
3	9	C	E	H	27	c
4	B	10	F	I	L	d

e f g h i

In 1st row

$$\begin{aligned} & \left[\begin{array}{l} a \times e = 2 \\ a \times f = 4 \end{array} \right] \Rightarrow \frac{e}{f} = \frac{1}{2} \dots (i) \\ & \left[\begin{array}{l} a \times g = D \\ a \times h = 12 \end{array} \right] \Rightarrow \frac{g}{h} = \frac{D}{12} \\ & \frac{e}{f} = \frac{2}{J} \Leftarrow \left[\begin{array}{l} a \times i = J \end{array} \right] \end{aligned}$$

Now in 2nd row,
 $b \times e = A$ & $b \times f = 6$

$$\Rightarrow \frac{e}{f} = \frac{A}{6}$$

Also from (1)

$$\frac{e}{f} = \frac{1}{2} = \frac{A}{6} \Rightarrow [A=3]$$

In 3rd row,
 $c \times e = 9$ & $c \times f = C$

$$\Rightarrow \frac{e}{f} = \frac{9}{C} = \frac{1}{2} \Rightarrow [C=18]$$

In 4th row,
 $d \times e = B$ and $d \times f = 10$

$$\Rightarrow \frac{e}{f} = \frac{B}{10} = \frac{1}{2} \Rightarrow [B=5]$$

In 2nd column,

$$\begin{aligned} & \left[\begin{array}{l} a \times f = 4 \\ b \times f = 6 \end{array} \right] \Rightarrow \frac{a}{b} = \frac{2}{3} \dots (ii) \\ & \frac{b}{c} = \frac{1}{3} \Leftarrow \left[\begin{array}{l} c \times f = 18 \\ d \times f = 10 \end{array} \right] \Rightarrow \frac{c}{d} = \frac{9}{5} \end{aligned}$$

Now in 3rd column,
 $a \times g = D$ and $b \times g = 12$

$$\Rightarrow \frac{a}{b} = \frac{D}{12}$$

Also from (ii)

$$\frac{a}{b} = \frac{2}{3} = \frac{D}{12} \Rightarrow [D=8]$$

Also, $b \times g = 12$ and $c \times g = E$

$$\Rightarrow \frac{b}{c} = \frac{12}{E} = \frac{1}{3} \Rightarrow [E=36]$$

$c \times g = E = 36$ and $d \times g = F$

$$\Rightarrow \frac{c}{d} = \frac{36}{F} = \frac{9}{5} \Rightarrow [F=20]$$

If we follow the same pattern, we can calculate the other values also or if we look at these result calculations, we can observe that their areas are in same ratio to the area of other given rectangles.

$$\text{e.g. } \frac{C_{11}}{C_{21}} = \frac{C_{12}}{C_{22}} = \frac{C_{13}}{C_{23}} = \frac{C_{14}}{C_{24}} = \frac{C_{15}}{C_{25}}$$

Similarly for other rows, columns also.

So, area for the remaining cells can be found in similar manner, and hence the final areas of all the cells are follows:

2	4	8	12	6
---	---	---	----	---

3	6	12	18	9
9	18	36	54	27
5	10	20	30	15

$$C_{23}^{23} = 12, C_{41} = 5, C_{43} = 20 \\ \therefore C_{23} + C_{41} - C_{43} = -3$$

FeedBack

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

A builder wanted to divide a rectangular ground in smaller areas, which are in shape of rectangles, for one of his clients. For this, he has drawn some parallel vertical lines so that the rectangle gets divided into 5 columns. And also draws some parallel horizontal lines which divide the rectangle into 4 rows and this whole procedure divides the ground in 4×5 smaller rectangular areas. These vertical and horizontal parallel lines need not be equidistant from each other and hence the areas of the smaller rectangular regions need not be same for every region.

Based on this division and the distances between parallel lines, he calculated the areas of the so formed rectangular regions and prepared a blueprint for the same in the form of a rectangular grid. While presenting this blueprint to his client, he found out that he forgot to write some of the data and had the following grid with him:

Column Row	1	2	3	4	5
1	2	4	D	12	J
2	A	6	12	G	K
3	9	C	E	H	27
4	B	10	F	I	L

The rectangle represents the ground with smaller rectangles being the one made by those parallel lines. Quantity written inside any rectangle represents the area (in sq. unit) of that rectangle. Also, this quantity is denoted by C_{ij} , where i represents the row number and j represents the column number of that cell.

Q.57

If 24 is written instead of 12 in C_{14} and C_{23} , then value of how many alphabets will be impacted?

1 0

2 6

3 9

4 Cannot be determined

Solution:

Correct Answer : 2

 Bookmark

Let a, b, c and d be the distance between two rows and e, f, g, h and i be the distances between two columns as shown below:

	1	2	3	4	5	
1	2	4	D	12	J	a
2	A	6	12	G	K	b
3	9	C	E	H	27	c
4	B	10	F	I	L	d
	e	f	g	h	i	

In 1st row

$$\begin{aligned} \frac{e}{f} &= \frac{a \times e = 2}{a \times f = 4} \Rightarrow \frac{e}{f} = \frac{1}{2} \dots(i) \\ \frac{e}{J} &= \frac{2}{J} \Leftarrow \begin{cases} a \times g = D \\ a \times h = 12 \end{cases} \Rightarrow \frac{g}{h} = \frac{D}{12} \\ &\quad a \times i = J \end{aligned}$$

Now in 2nd row,
 $b \times e = A$ & $b \times f = 6$

$$\Rightarrow \frac{e}{f} = \frac{A}{6}$$

Also from (1)

$$\frac{e}{f} = \frac{1}{2} = \frac{A}{6} \Rightarrow [A = 3]$$

In 3rd row,
 $c \times e = 9$ & $c \times f = C$

$$\Rightarrow \frac{e}{f} = \frac{9}{C} = \frac{1}{2} \Rightarrow [C = 18]$$

In 4th row,
 $d \times e = B$ and $d \times f = 10$

$$\Rightarrow \frac{e}{f} = \frac{B}{10} = \frac{1}{2} \Rightarrow [B = 5]$$

In 2nd column,

$$\begin{aligned} \frac{b}{c} &= \frac{1}{3} \Leftarrow \begin{cases} a \times f = 4 \\ b \times f = 6 \\ c \times f = 18 \\ d \times f = 10 \end{cases} \Rightarrow \begin{cases} \frac{a}{b} = \frac{2}{3} \dots(ii) \\ \frac{c}{d} = \frac{9}{5} \end{cases} \end{aligned}$$

Now in 3rd column,
 $a \times g = D$ and $b \times g = 12$

$$\Rightarrow \frac{a}{b} = \frac{D}{12}$$

Also from (ii)

$$\frac{a}{b} = \frac{2}{3} = \frac{D}{12} \Rightarrow [D = 8]$$

Also, $b \times g = 12$ and $c \times g = E$

$$\Rightarrow \frac{b}{c} = \frac{12}{E} = \frac{1}{3} \Rightarrow [E = 36]$$

$c \times g = E = 36$ and $d \times g = F$

$$\Rightarrow \frac{c}{d} = \frac{36}{F} = \frac{9}{5} \Rightarrow [F = 20]$$

If we follow the same pattern, we can calculate the other values also or if we look at these result calculations, we can observe that their areas are in same ratio to the area of other given rectangles.

$$\text{e.g. } \frac{C_{11}}{C_{21}} = \frac{C_{12}}{C_{22}} = \frac{C_{13}}{C_{23}} = \frac{C_{14}}{C_{24}} = \frac{C_{15}}{C_{25}}$$

Similarly for other row, columns also.

So, area for the remaining cells can be found in similar manner, and hence the final areas of all the cells are follows:

2	4	8	12	6
3	6	12	18	9
9	18	36	54	27
5	10	20	30	15

Instead of 12 if 24 is written, impacted values will be D, E, F, G, H, I as the ratio changes for the two columns.

FeedBack

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

A builder wanted to divide a rectangular ground in smaller areas, which are in shape of rectangles, for one of his clients. For this, he has drawn some parallel vertical lines so that the rectangle gets divided into 5 columns. And also draws some parallel horizontal lines which divide the rectangle into 4 rows and this whole procedure divides the ground in 4×5 smaller rectangular areas. These vertical and horizontal parallel lines need not be equidistant from each other and hence the areas of the smaller rectangular regions need not be same for every region.

Based on this division and the distances between parallel lines, he calculated the areas of the so formed rectangular regions and prepared a blueprint for the same in the form of a rectangular grid. While presenting this blueprint to his client, he found out that he forgot to write some of the data and had the following grid with him:

Column Row	1	2	3	4	5
1	2	4	D	12	J
2	A	6	12	G	K
3	9	C	E	H	27
4	B	10	F	I	L

The rectangle represents the ground with smaller rectangles being the one made by those parallel lines. Quantity written inside any rectangle represents the area (in sq. unit) of that rectangle. Also, this quantity is denoted by C_{ij} , where i represents the row number and j represents the column number of that cell.

Q.58

What is the number of factors of the total area (in sq. unit) of the rectangular ground?

1 12

2 4

3 10

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

Let a , b , c and d be the distance between two rows and e , f , g , h and i be the distances between two columns as shown below:

	1	2	3	4	5	
1	2	4	D	12	J	a
2	A	6	12	G	K	
3	9	C	E	H	27	
4	B	10	F	I	L	
	e	f	g	h	i	

In 1st row

$$\frac{e}{f} = \frac{2}{6} \Leftrightarrow \begin{cases} a \times e = 2 \\ a \times f = 4 \end{cases} \Rightarrow \frac{e}{f} = \frac{1}{2} \dots(i)$$

$$\frac{e}{f} = \frac{2}{J} \Leftrightarrow \begin{cases} a \times g = D \\ a \times h = 12 \end{cases} \Rightarrow \frac{g}{h} = \frac{D}{12}$$

$$\frac{e}{f} = \frac{2}{J} \Leftrightarrow a \times i = J$$

Now in 2nd row,
 $b \times e = A$ & $b \times f = 6$

$$\Rightarrow \frac{e}{f} = \frac{A}{6}$$

Also from (1)

$$\frac{e}{f} = \frac{1}{2} = \frac{A}{6} \Rightarrow A = 3$$

In 3rd row,
 $c \times e = 9$ & $c \times f = C$

$$\Rightarrow \frac{e}{f} = \frac{9}{C} = \frac{1}{2} \Rightarrow C = 18$$

In 4th row,
 $d \times e = B$ and $d \times f = 10$

$$\Rightarrow \frac{e}{f} = \frac{B}{10} = \frac{1}{2} \Rightarrow B = 5$$

In 2nd column,

$$\frac{b}{c} = \frac{1}{3} \Leftrightarrow \begin{cases} a \times f = 4 \\ b \times f = 6 \\ c \times f = 18 \\ d \times f = 10 \end{cases} \Rightarrow \begin{cases} \frac{a}{b} = \frac{2}{3} \\ \frac{c}{d} = \frac{9}{5} \end{cases} \dots(ii)$$

Now in 3rd column,
 $a \times g = D$ and $b \times g = 12$

$$\Rightarrow \frac{a}{b} = \frac{D}{12}$$

Also from (ii)

$$\frac{a}{b} = \frac{2}{3} = \frac{D}{12} \Rightarrow D = 8$$

Also, $b \times g = 12$ and $c \times g = E$

$$\Rightarrow \frac{b}{c} = \frac{12}{E} = \frac{1}{3} \Rightarrow E = 36$$

$c \times g = E = 36$ and $d \times g = F$

$$\Rightarrow \frac{c}{d} = \frac{36}{F} = \frac{9}{5} \Rightarrow F = 20$$

If we follow the same pattern, we can calculate the other values also or if we look at these result calculations, we can observe that their areas are in same ratio to the area of other given rectangles.

e.g. $\frac{C_{11}}{C_{21}} = \frac{C_{12}}{C_{22}} = \frac{C_{13}}{C_{23}} = \frac{C_{14}}{C_{24}} = \frac{C_{15}}{C_{25}}$

Similarly for other row, columns also.

So, area for the remaining cells can be found in similar manner, and hence the final areas of all the cells are follows:

2	4	8	12	6
3	6	12	18	9
9	18	36	54	27
5	10	20	30	15

Total area of rectangle = $304 = 2^4 \times 19^1$

Total factors = $5 \times 2 = 10$

FeedBack

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

There are five temples situated on the five islands in a sea in East - West direction in a row. Each temple can be visited by boats only, as there is no other means available to connect the islands on which these temples are situated. A lane connects two consecutive temples, situated in the row. Boats have to follow a certain water lane to reach from one temple to the other and same for return journey also. Deepak, after having a hectic schedule at work on a Friday, decided to visit these five temples on his religious trip. He started his journey from Eastern most islands, as it is the nearest one to his office , and moves towards the West, visiting the other four temples in turn from 1st to 5th. And thereafter decided to stay near the Western most temple on weekend.

Further, some additional information about his visit to these temples is known.

- After visiting the temple on Agni island, Deepak immediately used the Bhakti lane to reach the island on which Shiv temple is situated.
- Deepak used Kripa lane to reach the next island from Divya island.
- While going directly from the temple on Naag island to the Laxman temple, he used the Satya lane.
- Daya lane took Deepak directly from Hari temple to the temple on Prithvi island.
- Ram temple is neither on Prithvi island nor on Naag island.
- One of the temples visited by Deepak is Sita temple and one of the five islands is Tejas island.

Q.59

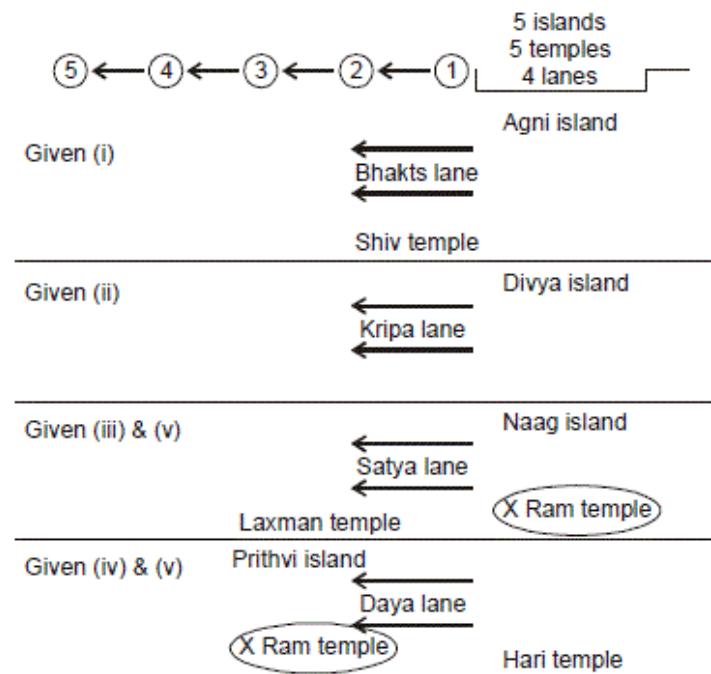
On which island Shiv temple is situated?

1 Tejas

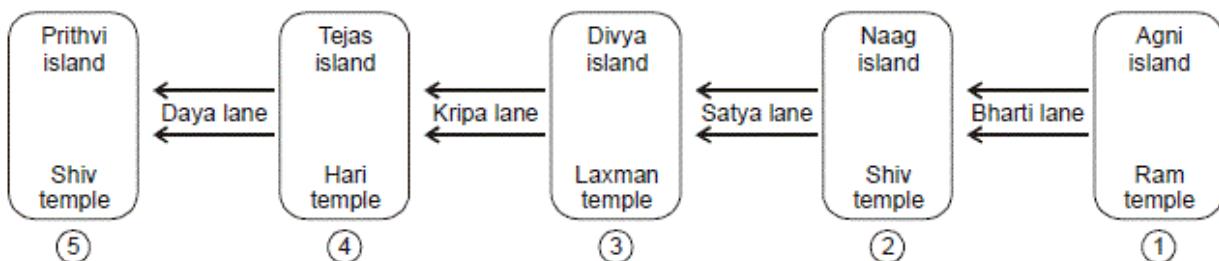
2 Naag

3 Divya

4 Prithvi

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

1. Since we are given all different lanes, we can observe the last island has to be Prithvi island ISLAND 5
So, Prithvi island does not have Hari temple, Laxman, Ram & Shiv temple
⇒ Prithvi island can only have Sita temple.
2. We can observe Hari temple is on Tejas island. (Since all other islands now have a different lane to their West than Daya lane) – ISLAND 4
3. Naag island now cannot have Ram, Laxman, Hari or Sita temple
⇒ Naag island has Shiv temple.
⇒ Naag island is to the immediate West of Agni island
4. Agni island can now have only Ram temple.
5. So, Divya island has only one option left, i.e. Laxman temple.
So, correct order is:

**FeedBack**

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

There are five temples situated on the five islands in a sea in East - West direction in a row. Each temple can be visited by boats only, as there is no other means available to connect the islands on which these temples are situated. A lane connects two consecutive temples, situated in the row. Boats have to follow a certain water lane to reach from one temple to the other and same for return journey also. Deepak, after having a hectic schedule at work on a Friday, decided to visit these five temples on his religious trip. He started his journey from Eastern most islands, as it is the nearest one to his office , and moves towards the West, visiting the other four temples in turn from 1st to 5th. And thereafter decided to stay near the Western most temple on weekend.

Further, some additional information about his visit to these temples is known.

- After visiting the temple on Agni island, Deepak immediately used the Bhakti lane to reach the island on which Shiv temple is situated.
- Deepak used Kripa lane to reach the next island from Divya island.
- While going directly from the temple on Naag island to the Laxman temple, he used the Satya lane.
- Daya lane took Deepak directly from Hari temple to the temple on Prithvi island.
- Ram temple is neither on Prithvi island nor on Naag island.
- One of the temples visited by Deepak is Sita temple and one of the five islands is Tejas island.

Q.60

Which of the following two islands are connected by Satya lane?

1 Naag-Agni

2 Naag-Tejas

3 Naag-Prithvi

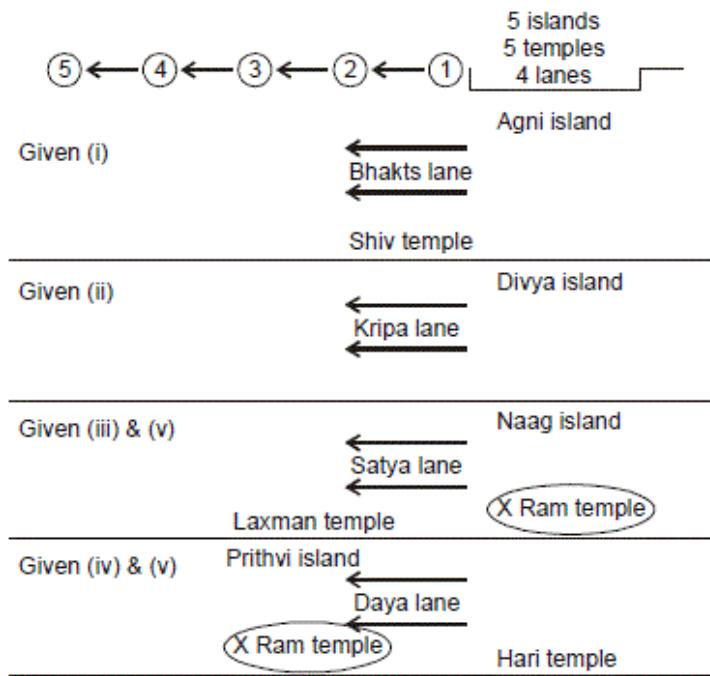
4 Naag-Divya

Solution:

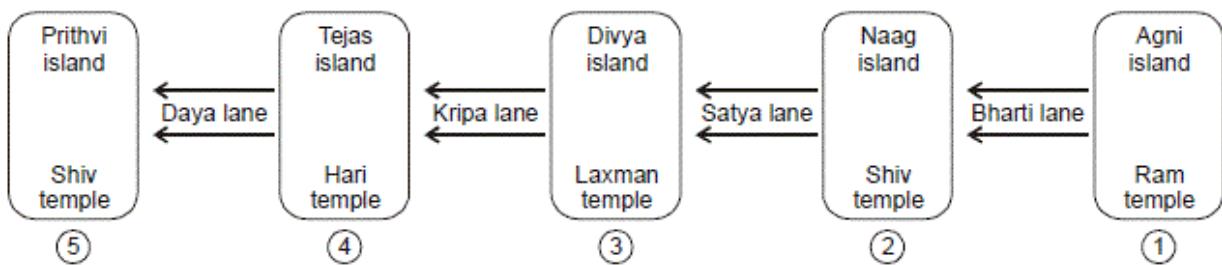
Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**



- Since we are given all different lanes, we can observe the last island has to be Prithvi island ISLAND 5
So, Prithvi island does not have Hari temple, Laxman, Ram & Shiv temple
⇒ Prithvi island can only have Sita temple.
- We can observe Hari temple is on Tejas island. (Since all other islands now have a different lane to their West than Daya lane) – ISLAND 4
- Naag island now cannot have Ram, Laxman, Hari or Sita temple
⇒ Naag island has Shiv temple.
⇒ Naag island is to the immediate West of Agni island
- Agni island can now have only Ram temple.
- So, Divya island has only one option left, i.e. Laxman temple.
So, correct order is:



FeedBack

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

There are five temples situated on the five islands in a sea in East - West direction in a row. Each temple can be visited by boats only, as there is no other means available to connect the islands on which these temples are situated. A lane connects two consecutive temples, situated in the row. Boats have to follow a certain water lane to reach from one temple to the other and same for return journey also. Deepak, after having a hectic schedule at work on a Friday, decided to visit these five temples on his religious trip. He started his journey from Eastern most islands, as it is the nearest one to his office , and moves towards the West, visiting the other four temples in turn from 1st to 5th. And thereafter decided to stay near the Western most temple on weekend.

Further, some additional information about his visit to these temples is known.

- After visiting the temple on Agni island, Deepak immediately used the Bhakti lane to reach the island on which Shiv temple is situated.
- Deepak used Kripa lane to reach the next island from Divya island.
- While going directly from the temple on Naag island to the Laxman temple, he used the Satya lane.
- Daya lane took Deepak directly from Hari temple to the temple on Prithvi island.
- Ram temple is neither on Prithvi island nor on Naag island.
- One of the temples visited by Deepak is Sita temple and one of the five islands is Tejas island.

Q.61

Which temple is situated on Tejas island?

1 Ram

2 Laxman

3 Hari

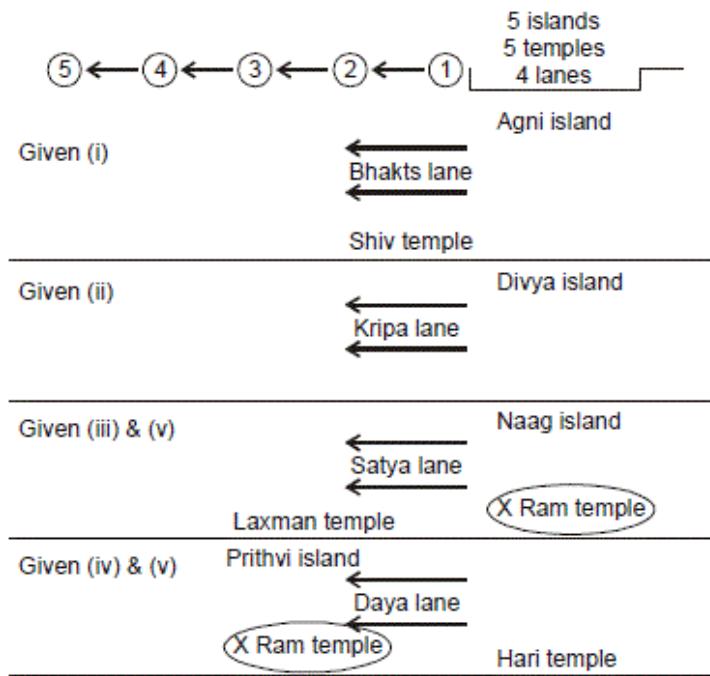
4 Sita

Solution:

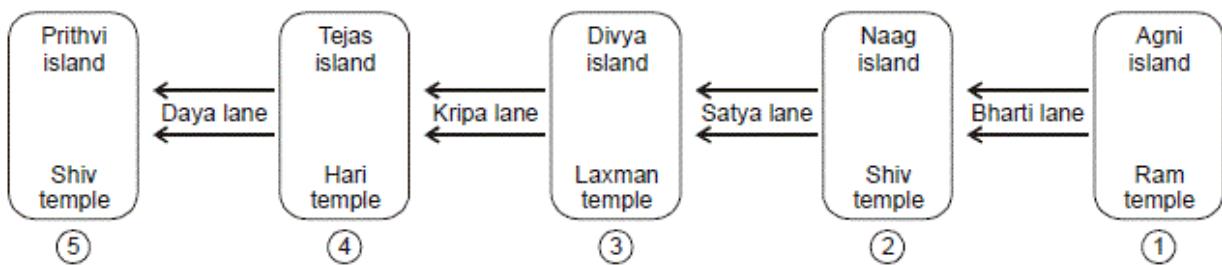
Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**



1. Since we are given all different lanes, we can observe the last island has to be Prithvi island ISLAND 5
So, Prithvi island does not have Hari temple, Laxman, Ram & Shiv temple
⇒ Prithvi island can only have Sita temple.
2. We can observe Hari temple is on Tejas island. (Since all other islands now have a different lane to their West than Daya lane) – ISLAND 4
3. Naag island now cannot have Ram, Laxman, Hari or Sita temple
⇒ Naag island has Shiv temple.
⇒ Naag island is to the immediate West of Agni island
4. Agni island can now have only Ram temple.
5. So, Divya island has only one option left, i.e. Laxman temple.
So, correct order is:



FeedBack

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

There are five temples situated on the five islands in a sea in East - West direction in a row. Each temple can be visited by boats only, as there is no other means available to connect the islands on which these temples are situated. A lane connects two consecutive temples, situated in the row. Boats have to follow a certain water lane to reach from one temple to the other and same for return journey also. Deepak, after having a hectic schedule at work on a Friday, decided to visit these five temples on his religious trip. He started his journey from Eastern most islands, as it is the nearest one to his office , and moves towards the West, visiting the other four temples in turn from 1st to 5th. And thereafter decided to stay near the Western most temple on weekend.

Further, some additional information about his visit to these temples is known.

- After visiting the temple on Agni island, Deepak immediately used the Bhakti lane to reach the island on which Shiv temple is situated.
- Deepak used Kripa lane to reach the next island from Divya island.
- While going directly from the temple on Naag island to the Laxman temple, he used the Satya lane.
- Daya lane took Deepak directly from Hari temple to the temple on Prithvi island.
- Ram temple is neither on Prithvi island nor on Naag island.
- One of the temples visited by Deepak is Sita temple and one of the five islands is Tejas island.

Q.62

If moving towards Naag island from Ram temple, then which of the following lane must be used?

1 Bhakti

2 Satya

3 Kripa

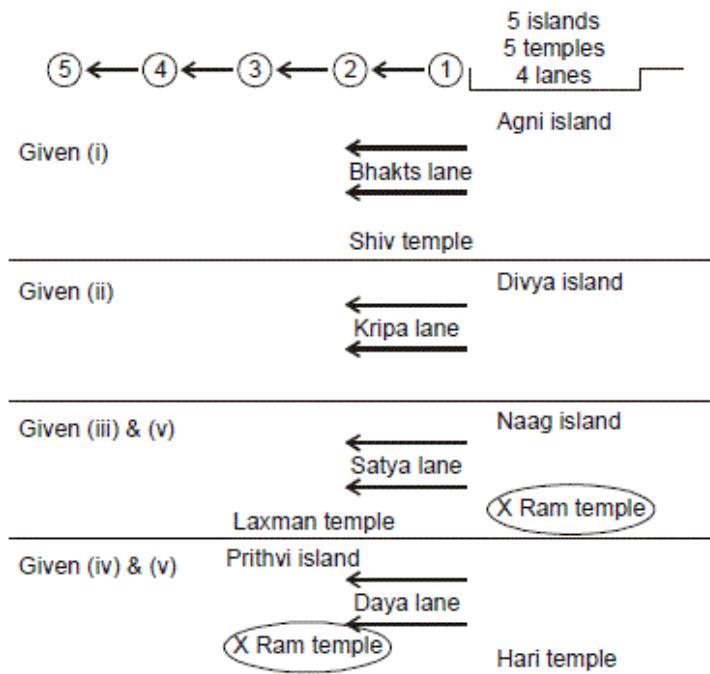
4 Daya

Solution:

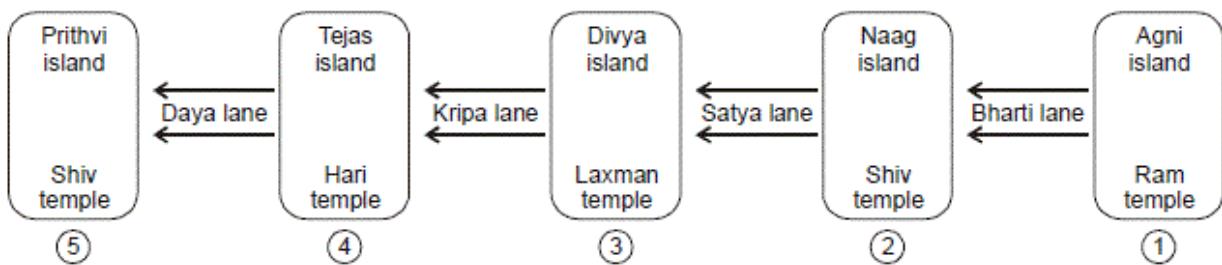
Correct Answer : 1

 [Bookmark](#)

 [Answer key/Solution](#)



1. Since we are given all different lanes, we can observe the last island has to be Prithvi island ISLAND 5
So, Prithvi island does not have Hari temple, Laxman, Ram & Shiv temple
⇒ Prithvi island can only have Sita temple.
2. We can observe Hari temple is on Tejas island. (Since all other islands now have a different lane to their West than Daya lane) – ISLAND 4
3. Naag island now cannot have Ram, Laxman, Hari or Sita temple
⇒ Naag island has Shiv temple.
⇒ Naag island is to the immediate West of Agni island
4. Agni island can now have only Ram temple.
5. So, Divya island has only one option left, i.e. Laxman temple.
So, correct order is:



FeedBack

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

In IPL 2017, there were eight teams namely, Daredevils, Kings XI, Super Kings, Challengers, Royals, Indians, Knights and Chargers. Each of these 8 teams was allotted a state venue which remains same till the end of the tournament. No two teams had same state as their venue. Each team was supposed to play two matches with each of the other teams, one at their own venue and second at the other team's venue.

For every win a team was awarded two points whereas for every lose no points were awarded. Both the teams were awarded one point each, if the match played between them ended in a draw.

After all the matches were played, a rank was assigned to each team based on their scores i.e team with highest total score was given rank 1, then team with second highest score was given rank 2 and so on till the team with the lowest score was assigned with rank 8. No two teams got the same rank. In case two teams had equal total points, the team having better NRR (Net Run Rate) was given a higher rank, where NRR was calculated for each team. Rank 1 being the highest rank and rank 8 being the lowest. Teams with top 4 ranks were qualified to play semi-finals. After all these matches, Mr. Mody, the incharge of IPL, wanted to announce the top four teams qualified for the semi-finals at a press conference but his secretary lost some important data of the final score board due to computer mal-functioning. With no choice left and being a Math savvy himself, Mr. Mody decided to interpret the qualifiers based on the remaining data he had with himself. Following is the data available to Mr. Mody:

Team	Win	Lose	Draw	Points	NRR
Challengers	8				-0.191
Kings XI		7			-0.483
Super Kings	7				+0.951
Knights	4				-0.389
Indians		6			+0.297
Royals		7			-0.352
Chargers	7				+0.311
Daredevils		5			+0.203

Apart from the above table, some more results Mr. Mody remembered about the matches played till then were as follows:

1. Knights and Indians were the only teams which got odd number of total points.
2. Each of Kings XI, Super Kings and Royals had at least one match ended in a draw.
3. Out of all these played matches, only 4 matches ended in a draw.

Q.63

Which team failed to qualify for the semi-finals just by one position?

1 Royals

2 Chargers

3 Indians

4 Kings XI

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

- As each team was supposed to play two matches with each of the other teams, this implies each team will play 14 matches.
- For every win, 2 points will be awarded and for every draw, 1 points will be awarded.
- As only 4 matches ended in a draw, the total points in column named draw should be 8.
- Also Knight Riders and Indians should have played odd number of matches ended in a draw as their scores have to be odd.
- Kings XI, Super Kings and Royals should have played even number of matches ended in a draw in order to satisfy condition (2) and hence to have an even score.

So, the only possibilities for matches ended in draw is as follows:

Team	Number of draw matches
Kings XI	2
Super Kings	2
Knight Riders	1
Indians	1
Royals	2

For rest of the teams, there is zero draw matches.

Now using the given table and the data we have concluded above, we can fill the table completely as shown below

Team	Matches played	Win	Lose	Draw	Points	NRR
Challengers	14	8	6	0	16	-0.191
Kings XI	14	5	7	2	12	-0.483
Super Kings	14	7	5	2	16	+0.951
Knight Riders	14	4	9	1	9	-0.389
Indians	14	7	6	1	15	+0.297
Royals	14	5	7	2	12	-0.352
Chargers	14	7	7	0	14	+0.203
Daredevils	14	9	5	0	18	+0.311

Chargers stood at the fifth position with 14 points. Hence they missed the semi finals by just one position.

FeedBack

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

In IPL 2017, there were eight teams namely, Daredevils, Kings XI, Super Kings, Challengers, Royals, Indians, Knights and Chargers. Each of these 8 teams was allotted a state venue which remains same till the end of the tournament. No two teams had same state as their venue. Each team was supposed to play two matches with each of the other teams, one at their own venue and second at the other team's venue.

For every win a team was awarded two points whereas for every lose no points were awarded. Both the teams were awarded one point each, if the match played between them ended in a draw.

After all the matches were played, a rank was assigned to each team based on their scores i.e team with highest total score was given rank 1, then team with second highest score was given rank 2 and so on till the team with the lowest score was assigned with rank 8. No two teams got the same rank. In case two teams had equal total points, the team having better NRR (Net Run Rate) was given a higher rank, where NRR was calculated for each team. Rank 1 being the highest rank and rank 8 being the lowest. Teams with top 4 ranks were qualified to play semi-finals. After all these matches, Mr. Mody, the incharge of IPL, wanted to announce the top four teams qualified for the semi-finals at a press conference but his secretary lost some important data of the final score board due to computer mal-functioning. With no choice left and being a Math savvy himself, Mr. Mody decided to interpret the qualifiers based on the remaining data he had with himself. Following is the data available to Mr. Mody:

Team	Win	Lose	Draw	Points	NRR
Challengers	8				-0.191
Kings XI		7			-0.483
Super Kings	7				+0.951
Knights	4				-0.389
Indians		6			+0.297
Royals		7			-0.352
Chargers	7				+0.311
Daredevils		5			+0.203

Apart from the above table, some more results Mr. Mody remembered about the matches played till then were as follows:

1. Knights and Indians were the only teams which got odd number of total points.
2. Each of Kings XI, Super Kings and Royals had at least one match ended in a draw.
3. Out of all these played matches, only 4 matches ended in a draw.

Q.64

What is the average of the total points scored by the team having lowest NRR and the team having highest NRR?

1 13.5

2 14

3 12

4 10.5

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

- As each team was supposed to play two matches with each of the other teams, this implies each team will play 14 matches.
- For every win, 2 points will be awarded and for every draw, 1 points will be awarded.
- As only 4 matches ended in a draw, the total points in column named draw should be 8.
- Also Knight Riders and Indians should have played odd number of matches ended in a draw as their scores have to be odd.
- Kings XI, Super Kings and Royals should have played even number of matches ended in a draw in order to satisfy condition (2) and hence to have an even score.

So, the only possibilities for matches ended in draw is as follows:

Team	Number of draw matches
Kings XI	2
Super Kings	2
Knight Riders	1
Indians	1
Royals	2

For rest of the teams, there is zero draw matches.

Now using the given table and the data we have concluded above, we can fill the table completely as shown below

Team	Matches played	Win	Lose	Draw	Points	NRR
Challengers	14	8	6	0	16	-0.191
Kings XI	14	5	7	2	12	-0.483
Super Kings	14	7	5	2	16	+0.951
Knight Riders	14	4	9	1	9	-0.389
Indians	14	7	6	1	15	+0.297
Royals	14	5	7	2	12	-0.352
Chargers	14	7	7	0	14	+0.203
Daredevils	14	9	5	0	18	+0.311

Super Kings is the team with the highest NRR and Kings XI is the team with the lowest NRR.

So, required average = $(16 + 12) / 2 = 28 / 2 = 14$.

FeedBack

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

In IPL 2017, there were eight teams namely, Daredevils, Kings XI, Super Kings, Challengers, Royals, Indians, Knights and Chargers. Each of these 8 teams was allotted a state venue which remains same till the end of the tournament. No two teams had same state as their venue. Each team was supposed to play two matches with each of the other teams, one at their own venue and second at the other team's venue.

For every win a team was awarded two points whereas for every lose no points were awarded. Both the teams were awarded one point each, if the match played between them ended in a draw.

After all the matches were played, a rank was assigned to each team based on their scores i.e team with highest total score was given rank 1, then team with second highest score was given rank 2 and so on till the team with the lowest score was assigned with rank 8. No two teams got the same rank. In case two teams had equal total points, the team having better NRR (Net Run Rate) was given a higher rank, where NRR was calculated for each team. Rank 1 being the highest rank and rank 8 being the lowest. Teams with top 4 ranks were qualified to play semi-finals. After all these matches, Mr. Mody, the incharge of IPL, wanted to announce the top four teams qualified for the semi-finals at a press conference but his secretary lost some important data of the final score board due to computer mal-functioning. With no choice left and being a Math savvy himself, Mr. Mody decided to interpret the qualifiers based on the remaining data he had with himself. Following is the data available to Mr. Mody:

Team	Win	Lose	Draw	Points	NRR
Challengers	8				-0.191
Kings XI		7			-0.483
Super Kings	7				+0.951
Knights	4				-0.389
Indians		6			+0.297
Royals		7			-0.352
Chargers	7				+0.311
Daredevils		5			+0.203

Apart from the above table, some more results Mr. Mody remembered about the matches played till then were as follows:

1. Knights and Indians were the only teams which got odd number of total points.
2. Each of Kings XI, Super Kings and Royals had at least one match ended in a draw.
3. Out of all these played matches, only 4 matches ended in a draw.

Q.65

In the tournament, how many teams were there such that even with a lower NRR it scored more points than a team with a higher NRR than its?

1 2

2 3

3 4

4 0

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

- As each team was supposed to play two matches with each of the other teams, this implies each team will play 14 matches.
- For every win, 2 points will be awarded and for every draw, 1 points will be awarded.
- As only 4 matches ended in a draw, the total points in column named draw should be 8.
- Also Knight Riders and Indians should have played odd number of matches ended in a draw as their scores have to be odd.
- Kings XI, Super Kings and Royals should have played even number of matches ended in a draw in order to satisfy condition (2) and hence to have an even score.

So, the only possibilities for matches ended in draw is as follows:

Team	Number of draw matches
Kings XI	2
Super Kings	2
Knight Riders	1
Indians	1
Royals	2

For rest of the teams, there is zero draw matches.

Now using the given table and the data we have concluded above, we can fill the table completely as shown below

Team	Matches played	Win	Lose	Draw	Points	NRR
Challengers	14	8	6	0	16	-0.191
Kings XI	14	5	7	2	12	-0.483
Super Kings	14	7	5	2	16	+0.951
Knight Riders	14	4	9	1	9	-0.389
Indians	14	7	6	1	15	+0.297
Royals	14	5	7	2	12	-0.352
Chargers	14	7	7	0	14	+0.203
Daredevils	14	9	5	0	18	+0.311

Daredevils, Challengers, Indians and Kings XI are the teams that have lower NRR but score more points than the teams with a higher NRR.

So Daredevils, played with Indians and Daredevils having lower NRR will win. Similarly, Challengers played with Super Kings and Challengers having lower NRR will win. Now in finals, Challengers played with Daredevils and won the match due to having lower NRR of -0.191.

FeedBack

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

In IPL 2017, there were eight teams namely, Daredevils, Kings XI, Super Kings, Challengers, Royals, Indians, Knights and Chargers. Each of these 8 teams was allotted a state venue which remains same till the end of the tournament. No two teams had same state as their venue. Each team was supposed to play two matches with each of the other teams, one at their own venue and second at the other team's venue.

For every win a team was awarded two points whereas for every lose no points were awarded. Both the teams were awarded one point each, if the match played between them ended in a draw.

After all the matches were played, a rank was assigned to each team based on their scores i.e team with highest total score was given rank 1, then team with second highest score was given rank 2 and so on till the team with the lowest score was assigned with rank 8. No two teams got the same rank. In case two teams had equal total points, the team having better NRR (Net Run Rate) was given a higher rank, where NRR was calculated for each team. Rank 1 being the highest rank and rank 8 being the lowest. Teams with top 4 ranks were qualified to play semi-finals. After all these matches, Mr. Mody, the incharge of IPL, wanted to announce the top four teams qualified for the semi-finals at a press conference but his secretary lost some important data of the final score board due to computer mal-functioning. With no choice left and being a Math savvy himself, Mr. Mody decided to interpret the qualifiers based on the remaining data he had with himself. Following is the data available to Mr. Mody:

Team	Win	Lose	Draw	Points	NRR
Challengers	8				-0.191
Kings XI		7			-0.483
Super Kings	7				+0.951
Knights	4				-0.389
Indians		6			+0.297
Royals		7			-0.352
Chargers	7				+0.311
Daredevils		5			+0.203

Apart from the above table, some more results Mr. Mody remembered about the matches played till then were as follows:

1. Knights and Indians were the only teams which got odd number of total points.
2. Each of Kings XI, Super Kings and Royals had at least one match ended in a draw.
3. Out of all these played matches, only 4 matches ended in a draw.

Q.66

If in the semi-finals, one match was played between teams with rank 1 and rank 4 and the other match was played between teams with rank 2 and rank 3, and also in semi finals and finals each match was won by the team having lower NRR amongst the two teams, then which team would have won the tournament? (Finale was played between the two winners of semi-finals)

1 Royals

2 Indians

3 Super Kings

4 Challengers

Solution:

Correct Answer : 4

 [Bookmark](#)

 [Answer key/Solution](#)

- As each team was supposed to play two matches with each of the other teams, this implies each team will play 14 matches.
- For every win, 2 points will be awarded and for every draw, 1 points will be awarded.
- As only 4 matches ended in a draw, the total points in column named draw should be 8.
- Also Knight Riders and Indians should have played odd number of matches ended in a draw as their scores have to be odd.
- Kings XI, Super Kings and Royals should have played even number of matches ended in a draw in order to satisfy condition (2) and hence to have an even score.

So, the only possibilities for matches ended in draw is as follows:

Team	Number of draw matches
Kings XI	2
Super Kings	2
Knight Riders	1
Indians	1
Royals	2

For rest of the teams, there is zero draw matches.

Now using the given table and the data we have concluded above, we can fill the table completely as shown below

Team	Matches played	Win	Lose	Draw	Points	NRR
Challengers	14	8	6	0	16	-0.191
Kings XI	14	5	7	2	12	-0.483
Super Kings	14	7	5	2	16	+0.951
Knight Riders	14	4	9	1	9	-0.389
Indians	14	7	6	1	15	+0.297
Royals	14	5	7	2	12	-0.352
Chargers	14	7	7	0	14	+0.203
Daredevils	14	9	5	0	18	+0.311

The four teams that make it to the Semi-finals are Daredevils, Super Kings, Challengers and Indians. The team who will ultimately win the tournament is the team with the lowest NRR among them, i.e. Challengers, with an NRR of -0.191.

[FeedBack](#)

Sec 3

Q.67

A shopkeeper marks up the price of an article by 100% and then offers three successive discounts of a%, b% and c%, where a, b and c are positive integers. If $a + b + c = 30$, then find the maximum profit that he can earn.

1  40%

2 **45.8%**

3 **70%**

4 **56.4%**

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

Let the CP = 50

$$\text{then, MP} = 50 \left[1 + \frac{100}{100} \right] = 100$$

So, to gain the maximum profit he should offer 10% + 10% + 10% discount, since $a + b + c = 30$.

$$\text{So, SP} = 100 \times 0.9 \times 0.9 \times 0.9 = 72.9$$

$$\text{Profit\%} = \frac{22.9}{50} \times 100 = 45.8\%$$

FeedBack

Q.68

If $|\log_{(2x-1)}(x-1)| = 1$, then how many values can x take?

1 **0**

2 **1**

3 **2**

4 **3**

Solution:

Correct Answer : 2

$$\left| \log_{(2x-1)}^{(x-1)} \right| = 1$$

$$\Rightarrow x - 1 > 0 \text{ and } (2x - 1) \neq 1$$

[$\because \log_a b$ is defined only when $a \neq 1$ and $b > 1$]

$$\Rightarrow x > 1$$

Also, $\log_a b = y$

$$\Rightarrow b = a^y$$

$$\text{Now, } \log_{(2x-1)}^{(x-1)} = 1$$

$$\text{or } \log_{(2x-1)}^{(x-1)} = -1$$

$$\text{Case I: } \log_{(2x-1)}^{(x-1)} = 1 \Rightarrow x - 1 = 2x - 1$$

$$\Rightarrow x = 0$$

Not possible, as $x - 1 > 0$.

$$\text{Case II: } \log_{(2x-1)}^{(x-1)} = -1 \Rightarrow x - 1 = (2x - 1)^{-1} = \frac{1}{2x - 1}$$

$$\Rightarrow (x - 1)(2x - 1) = 1 \Rightarrow 2x^2 - 3x = 0$$

$$\Rightarrow x = 0 \text{ or } \frac{3}{2}$$

So, only acceptable value of x is $\frac{3}{2}$.

[Feedback](#)

[Bookmark](#)

[Answer key/Solution](#)

Q.69

The L.C.M of two numbers is 252 . If these numbers are in the ratio 4 : 7, then find the larger number.

Solution:

Correct Answer : 63

Let numbers be $4x$ and $7x$.

As x is common to both the numbers,

LCM for these numbers will become $4 \times 7 \times x$.

i.e. $28x$

So, $28x = 252$

$$\Rightarrow x = 9$$

and numbers be 36, 63.

[Bookmark](#)

[Answer key/Solution](#)

[Feedback](#)

Q.70

Laksh sold two horses, one at a profit of 20% and the other at a loss of 10%, and earned an overall profit of Rs. 5600. Had he sold the first one at a profit of 40% and the other at a loss of 30%, he would not have earned anything. Find the difference between the cost price (in Rs.) of the two horses.

1 20000

2 15000

3 8000

4 28000

Solution:

Correct Answer : 4

Let the cost price of the 1st horse be Rs. x
and the cost price of the 2nd horse be Rs. y
 $40\% \text{ of } x = 30\% \text{ of } y$
(as the second scenario is no profit no loss situation)

$$\Rightarrow \frac{x}{y} = \frac{3}{4} \text{ or } \frac{3a}{4a}$$

Profit on 1st horse – loss on 2nd horse = Total profit

$$\text{i.e. } \frac{20}{100} \times 3a - \frac{10}{100} \times 4a = 5600$$

$$\frac{20a}{100} = 5600$$

$$a = 28000$$

Now, difference between the two cost prices
 $= y - x = 4a - 3a = a = \text{Rs.} 28000$

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.71

The sum of a fraction and four times of its reciprocal is $\frac{533}{77}$. What is the sum of the reciprocal of the fraction and four times of the fraction, if that fraction is greater than 1?

1 $\frac{317}{77}$

2 $\frac{7793}{308}$

3 $\frac{7693}{308}$

4 Either (1) or (2)

Solution:

Correct Answer : 2

Let the fraction be x.

$$\text{then, } x + \frac{4}{x} = \frac{533}{77}$$

$$\Rightarrow 77x^2 - 533x + 4(77) = 0$$

Solving this quadratic equation, we get

$$x = \frac{7}{11} \text{ or } \frac{44}{7}$$

As $x > 1$,

$$\therefore 4x + \frac{1}{x} = \frac{176}{7} + \frac{7}{44} = \frac{7793}{308}$$

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.72

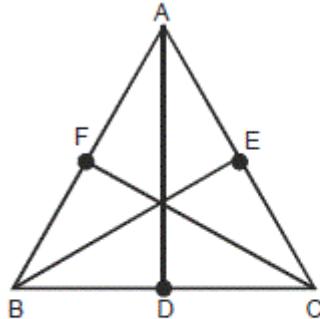
If the sum of the square of medians of a triangle ABC is 42 cm^2 , then what is the sum (in cm^2) of the square of its sides?

Solution:

Correct Answer : 56

Bookmark

Answer key/Solution



By Apollonius's Theorem

$$AB^2 + AC^2 = 2(AD^2 + BD^2) \quad \dots(1)$$

$$\text{or } AB^2 + AC^2 = 2AD^2 + \frac{1}{2}BC^2$$

$$(\because BD = \frac{1}{2}BC \text{ and hence } BD^2 = \frac{1}{4}BC^2)$$

$$\text{Similarly, } BC^2 + AC^2 = 2CF^2 + \frac{AB^2}{2} \quad \dots(2)$$

$$AB^2 + BC^2 = 2BE^2 + \frac{AC^2}{2} \quad \dots(3)$$

Adding the three equations, we get

$$\Rightarrow 2[AB^2 + BC^2 + AC^2] = 2(AD^2 + BE^2 + CF^2) + \frac{1}{2}(AB^2 + BC^2 + AC^2)$$

$$\Rightarrow 3(AB^2 + BC^2 + CA^2) = 4(AD^2 + BE^2 + CE^2)$$

$$\therefore \text{Required Sum} = \frac{4}{3}(42) = 56$$

FeedBack

Q.73

There are ' m ' ways of going directly from A to B, ' $m + 3$ ' ways of going directly from B to C and ' $m + 8$ ' ways of going directly from C to D. If number of ways of going from A to D via B and C is 336, then find the number of ways of going from A to C via B.

1 **56**

2 **48**

3 **28**

4 **84**

Solution:
Correct Answer : 3

[Bookmark](#)

[Answer key/Solution](#)

The number of ways of going from A to B (via. B and C) is equal to the product of number of ways going from A to B, B to C and C to D.

$$\text{i.e. } m(m + 3)(m + 8) = 336 = 3(7)(16)$$

$$\Rightarrow m = 4$$

$$\therefore \text{Ways to go from A to C} = m(m + 3) = 4(7) = 28$$

[FeedBack](#)

Q.74

Find the number of integral solutions of $4x + 8y = 33$.

1 **12**

2 **0**

3 **2**

4 **4**

Solution:
Correct Answer : 2

[Bookmark](#)

[Answer key/Solution](#)

$$4x + 8y = 33$$

Since $4x$ and $8y$ will be even for any integral value of x and y , therefore, their sum will also be even, and hence it can never be equal to 33.

[FeedBack](#)

Q.75

A sum of money gets double in 5 years when kept under simple interest. In how many years will it become 6 times of itself?

1 **25**

2 **15**

3 **12**

4 **20**

Solution:**Correct Answer : 1**

Let P be the principal and I be the interest for 1 year at $r\%$ rate of simple interest.

$$\therefore P + 5 \times I = 2P$$

$$\Rightarrow \frac{5 \times P \times r \times 1}{100} = P$$

$$\Rightarrow r = 20\%$$

$$\therefore \text{Required value} = 6P = P + x \times I$$

$$\Rightarrow 5P = \frac{x \times P \times 20 \times 1}{100}$$

$$\Rightarrow x = 25 \text{ years}$$

[Bookmark](#)
[Answer key/Solution](#)
Q.76

Find the LCM of $(45)_8$ and $(17)_8$, where $(N)_a$ represents 'N' is a number written in base a.

1 $(122)_{16}$

2 $(22B)_{16}$

3 $(B22)_{16}$

4 $(22D)_{16}$

Solution:**Correct Answer : 2**

Let us first convert the two given numbers into decimal system and find their LCM.

Now,

$$(45)_8 = 4 \times 8^1 + 5 \times 8^0 = 37$$

$$\text{and } (17)_8 = 1 \times 8^1 + 7 \times 8^0 = 15$$

$$\text{LCM}(37, 15) = (555)_{10}$$

Now for converting the number into base 16.

[Bookmark](#)
[Answer key/Solution](#)

16	555
16	34 - 11
	2 - 2

$$\therefore (555)_{10} = 2211$$

As in base 16, numbers are written as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F.

So, in base 16, 11 is represented by B,

$$\text{So } (555)_{10} = (22B)_{16}$$

Q.77

If x , y and z be three real numbers such that $x^3 + y^3 + z^3 = 13$, $xy + yz + zx = -3$ and $xyz = 1$, then which of the following is the value of $x + y + z$?

1 -2

2 -1

3 2

4 1

Solution:

Correct Answer : 4

We know that

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$$

We have the value of $x^3 + y^3 + z^3 = 13$, $xyz = 1$ and $xy + yz + zx = -3$.

$$\text{Further, } x^2 + y^2 + z^2 = (x + y + z)^2 - 2xy - 2yz - 2zx$$

On substituting the values

$$\Rightarrow 13 - 3 = (x + y + z)[(x + y + z)^2 - 3(xy + yz + zx)]$$

$$\Rightarrow 10 = (x + y + z)[(x + y + z)^2 + 9]$$

Only possible case is when $x + y + z = 1$.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.78

In a small town, males comprised 64% of the total population. After a year the population of males and females were increased by 30% and 40% respectively. Find the ratio of males to females in the town after increment.

1 104 : 63

2 64 : 30

3 14 : 13

4 15 : 12

Solution:

Correct Answer : 1

Let the total population be 100,000

then males = 64,000

and females = 36,000

Now, population of males after one year = $64,000 \times 1.3$

and population of females after one year = $36,000 \times 1.4$

 **Bookmark**

 **Answer key/Solution**

$$\therefore \text{Required ratio} = \frac{64,000 \times 1.3}{36,000 \times 1.4} = \frac{104}{63}$$

FeedBack

Q.79

ABCD is a parallelogram, in which bisector of angle ABC meets AD at E. If BE = EC = 8 units and ED = 7.8 units, then find the length of BC.

1 14 units

2 12.8 units

3 4 units

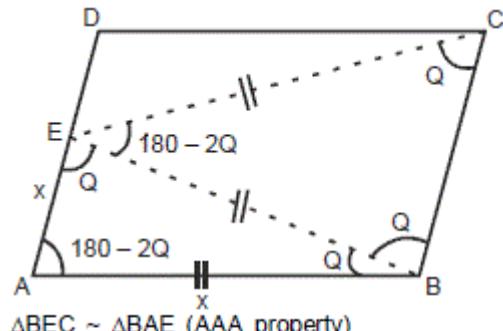
4 15 units

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**



$\triangle BEC \sim \triangle BAE$ (AAA property)

$$\text{So, } \frac{BE}{AB} = \frac{BC}{BE}$$

$$\Rightarrow \frac{8}{x} = \frac{x+7.8}{8}$$

$$\Rightarrow x = 5 \text{ and } BC = AD = x + ED = 5 + 7.8 = 12.8 \text{ units}$$

FeedBack

Q.80

A man sells a mixture of milk and water at the price of pure milk and earns 25% profit. If he used 60 litres of milk in the mixture, then find the quantity (in litres) of water he added to it.

 **Bookmark**

 **Answer key/Solution**

Let the cost of 100 litres of milk = Rs. 100

Since, profit is 25%, then mixture must be sold at Rs.125, which means 25 litre of water is added, which has cost Rs. 0. So, ratio of milk to water is 4 : 1.

\therefore When milk used is 60 litres then water used must be 15 litres.

FeedBack

Q.81

A person goes to a stationary shop to buy pens and pencils. A pen costs Rs.3 and a pencil costs Rs. 2. If he has an amount of Rs. 32 to spend completely on pens and pencils, then how many different combinations of number of pens and pencils he can buy?

1 5

2 8

3 6

4 7

Solution:

Correct Answer : 3

 **Bookmark**

 **Answer key/Solution**

Let x and y be the number of pens and pencils respectively, then we have to find its possible number of non-negative integral solutions of $3x + 2y = 32$

Values of x	Values of y
10	1
8	4
6	7
4	10
2	13
0	16

So, total 6 possible combinations are there.

FeedBack

Q.82

What is the least possible natural number such that when $2^9 \times 3^8 \times 5^7$ is divided by that number the quotient obtained is a perfect cube and remainder 0?

Solution:

Correct Answer : 45

$$2^9 \times 3^8 \times 5^7$$

$$\Rightarrow (2^3)^3 \times 3^6 \times 3^2 \times 5^6 \times 5^1$$

So, if we divide it by $3^2 \times 5^1$, the remaining is a perfect cube.

\therefore It should be divided by $3^2 \times 5^1$ i.e. 45.

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.83

An unbiased die is thrown. Let A be the event that the number obtained is greater than 3 and B be the event that the number obtained is less than 5. Then Probability of (AUB) is

1 2/5

2 1

3 0

4 3/5

Solution:

Correct Answer : 2

$$A = \{4, 5, 6\} = \{\text{numbers greater than } 3\}$$

$$B = \{1, 2, 3, 4\} = \{\text{numbers less than } 5\}$$

$$\therefore A \cap B = \{4\}$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$\Rightarrow P(A \cup B) = \frac{3}{6} + \frac{4}{6} - \frac{1}{6} = 1$$

FeedBack

Bookmark

Answer key/Solution

Q.84

The average weight of students in a class is 60 kg. When two new students having weight 90 kg and 98 kg join the class and one student of weight 42 kg leaves the class, the new average of the class becomes 62 kg. How many students were there in the class initially?

Solution:

Correct Answer : 42

Let N be the number of students present in class initially.

$$\therefore \text{Total weight} = 60N$$

$$\text{New weight} = 60N + 90 + 98 - 42$$

$$\text{and hence average} = \frac{60N + 90 + 56}{(N-1)+2} = 62$$

Solving it, we get $N = 42$

FeedBack

Bookmark

Answer key/Solution

Q.85

Air Bus 380 flight left for London from Delhi. When it was 18 miles away from the airport, it realized that it requires refueling. A fighter plane, having its speed 10 times the speed of the Air Bus 380, was sent for refueling. How far from the airport did the fighter plane catch up with the Air Bus 380?

1 24 miles

2 25 miles

3 22 miles

4 20 miles

Solution:**Correct Answer : 4**

Distance between them initially = 18 miles

Let speed of Air Bus 380 be s miles/hour

Then speed of fighter plane = $10s$ miles/hour

$$\text{Time taken by fighter plane to catch the flight} = \frac{18}{9s} = \frac{2}{s}$$

\therefore Fighter plane has covered $10s \times \frac{2}{s}$ distance i.e. 20 miles to catch up the plane.

[FeedBack](#)
 [Bookmark](#)
 [Answer key/Solution](#)
Q.86

There is an Arithmetic Progression series of 430 terms. The 98th and the 347th terms of the progression are $123\frac{3}{37}$ and $277\frac{33}{37}$ respectively. Pradeep added 14 terms after the series in such a way that the entire series is still in an AP with total 444 terms. Find the sum of the entire series of 444 terms.

1 89016

2 178032

3 44508

4 133524

Solution:**Correct Answer : 1**
 [Bookmark](#)
 [Answer key/Solution](#)

As after adding 14 more terms to the series, the terms given becomes equidistant terms from the extreme i.e. 347th term is 98th term from the last, so their average is equivalent to the average of the whole series. [Because it is an AP]

$$\therefore \text{Sum of the series} = \frac{444}{2} \left[123\frac{3}{37} + 277\frac{33}{37} \right] = \frac{3293592}{37} = 89016.$$

[FeedBack](#)
Q.87

In a list of seven positive integers, one integer is unknown and denoted by x . The other six known integers are 20, 4, 10, 4, 8 and 4. If the mean, median and mode of these 7 integers are arranged in increasing order, they form an Arithmetic Progression. Find the minimum integral value of x ?

Solution:

Correct Answer : 6

Bookmark

Answer key/Solution

Arranging the given six integers in increasing order:

4, 4, 4, 8, 10, 20

Irrespective of the value of x , the number of occurrences of 4 being three, 4 is definitely the mode.

Mode = 4; Mean = $(4 + 4 + 4 + 8 + 10 + 20 + x) / 7 = (50 + x) / 7$

Now median will be a value somewhere between $4 \leq x \leq 8$. Only possibility such that they can be arranged in an AP is when $x = 6$, because then mode = 4, median = 6 and mean = 8.

FeedBack

Q.88

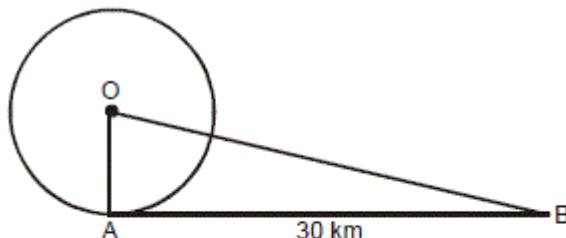
There is a point lying outside a circle 30 km away from a point on the circular boundary, in such a way that the line joining these two points is tangent to the circle. If the circumference of the circle is 32π km, then what can be the minimum possible time taken (in minutes) from the center of the circle to reach that point outside the circle at the speed of 17 km/hr?

Solution:

Correct Answer : 120

Bookmark

Answer key/Solution



Suppose, there is a circle having radius OA and the point outside the circle is point B and that on the circular boundary is A.

∴ Minimum distance from B to O for minimum time taken is OB.

Also, $2\pi(OA) = 32\pi$ [$\because 32\pi$ is circumference]

$$\Rightarrow OA = 16 \text{ km}$$

$$\therefore (OB)^2 = (16)^2 + (30)^2$$

$$\Rightarrow OB = 34 \text{ km}$$

$$\therefore \text{Minimum time taken} = \frac{34}{17} = 2 \text{ hours i.e. } 120 \text{ minutes.}$$

FeedBack

Q.89

Mr. X sells 12 oranges for a rupee and suffers a loss of 30%. How many oranges should he sell for a rupee to make a profit of 5%?

2 9

3 8

4 6

Solution:

Correct Answer : 3

SP of 12 oranges = Re. 1

$$\Rightarrow \text{SP of 1 orange} = \text{Rs. } \frac{1}{12}$$

He suffers a loss of 30%

$$\Rightarrow \text{CP of 1 orange} = \frac{5}{42}$$

$$\text{To earn a profit of 5\%, SP of 1 orange} = \frac{5}{42} \times \frac{21}{20} = \frac{1}{8}$$

∴ 8 orange should be sold in Re.1

 **Bookmark**

 **Answer key/Solution**

FeedBack

Q.90

If a series S defined as, $S = \frac{1}{2.5.8} + \frac{1}{5.8.11} + \frac{1}{8.11.14} + \frac{1}{11.14.17} + \dots$, then find the sum of its first 20 terms.

1 87/2840

2 67/4030

3 59/720

4 None of these

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

$$S = \frac{1}{2.5.8} + \frac{1}{5.8.11} + \frac{1}{8.11.14} + \dots$$

Underlined terms form an A.P, so 20th term (T_{20}) will be $\frac{1}{59.62.65}$ [i.e. $t_{20} = 2 + 3(19) = 59$]

As last two numbers of 1st term is first two numbers of next term, it can be calculated that, $\frac{1}{2.5.8} = \frac{1}{6} \left[\frac{1}{2.5} - \frac{1}{5.8} \right]$

$$\text{Sum of 20 terms} = \frac{1}{6} \left[\left(\frac{1}{2.5} - \frac{1}{5.8} \right) + \left(\frac{1}{5.8} - \frac{1}{8.11} \right) + \dots + \left(\frac{1}{59.62} - \frac{1}{62.65} \right) \right]$$

$$= \frac{1}{6} \left[\frac{1}{2.5} - \frac{1}{62.65} \right] = \frac{1}{6} \left(\frac{403 - 1}{62.65} \right) = \frac{1}{6} \times \frac{402}{62 \times 65} = \frac{67}{4030}$$

FeedBack

Q.91

Find the number of digits in the product of 621734512 and 612.

1 12

2 10

3 13

4 11

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

When we multiply two numbers having M and N digits, then the number of digits in their product. is $M + N - 1$ or $M + N$. On multiplying left most digits of both the numbers, if we get a number ≥ 10 , then product will definitely have $M + N$ digits else $M + N - 1$ digits.

Here $6 \times 6 = 36 > 10$

So, number of digits in the above product is $M + N = 9 + 3 = 12$.

FeedBack

Q.92

A man can row 8 km downstream in 4/5th of an hour and 7 km upstream in 7/6th of an hour. How many hours will the man take to row 16 km in still water?

Solution:

Correct Answer : 2

Let b and r be the speed of boat in still water & speed of the stream.

$$\text{then } 8 = (b+r) \frac{4}{5} \Rightarrow b+r = 10$$

$$\text{and } 7 = (b-r) \frac{7}{6} \Rightarrow b-r = 6$$

Solving both the equations, we get $b = 8$, $r = 2$

$$\therefore \text{Time taken to row in still water} = \frac{16}{8} = 2 \text{ hours.}$$

[FeedBack](#)

[Bookmark](#)

[Answer key/Solution](#)

Q.93

P, Q and R takes 12, 15 and 20 days respectively to do a work. All 3 started working on it together, and P and Q left after working for somedays and hence the remaining work was done by R alone. If P and Q left the work 4 days and 1 day before its completion respectively, then what is the total number of days taken by them to do the work?

Solution:

Correct Answer : 7

[Bookmark](#)

[Answer key/Solution](#)

Let work to be done be LCM (12, 15, 20) = 60 units

\Rightarrow Efficiencies of the three are as P \rightarrow 5 units/day; Q \rightarrow 4 units/day and R \rightarrow 3 units/day

If R worked for ' x ' number of days, then P and Q worked for $(x - 4)$ & $(x - 1)$ number of days respectively. And together they did 60 units of work.

$$\Rightarrow 5(x - 4) + 4(x - 1) + 3x = 60$$

$$\Rightarrow 12x = 84 \Rightarrow x = 7$$

[FeedBack](#)

Q.94

Let $f(x) = a_{12}x^{12} + a_{10}x^{10} + a_8x^8 + \dots + a_2x^2 + a_0$, where a_0, a_2, \dots, a_{12} are all real. If there are 3 sign changes in $f(x)$ and $f(x)$ has exactly 4 non-real roots, then which of the following is definitely true?

1 $a_0 = 0$

2 $a_{10} > 0$

3 $a_{10} < 0$

4 $a_{10} = 0$

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

As $f(x)$ has only even degree terms, $f(-x)$ should be identical to $f(x)$.

\therefore Number of sign change in each $f(x)$ and $f(-x)$ is 3.

As Descartes' rule state, the number of positive real zeroes in a polynomial function $f(x)$ is the same or less than by an even numbers as the number of changes in the sign of the coefficients. The number of negative real zeroes of the $f(x)$ is the same as the number of changes in sign of the coefficients of the terms of $f(-x)$ or less than this by an even number.

So, the number of +ve real roots is 3 or 1, number of -ve roots is 3 or 1, Also there are 4 non-real roots.

This accounts for $1 + 1 + 4$ or $1 + 3 + 4$ or $3 + 3 + 4$ roots i.e. 6 or 8 or 10 roots. Now remaining two have to be 0 i.e. multiplicity of root 0 is at least 2 i.e. $a_0 = 0$

FeedBack

Q.95

When a natural number is divided by 143, it leaves 45 as remainder. If the same number is divided by 113, it leaves 211 as the quotient and some remainder 'x'. Find the value of 'x'.

1 83

2 57

3 79

4 49

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

$$N = 143(a) + 45 = 113(211) + x$$

$$\text{i.e } x = 143(a) + 45 - 113(211)$$

The number has to be greater than or equal to 113×211 i.e. 23843 and when we divide it by 143 remainder is 45.

So, $x = 143(a) - 23798$

We try to look for such a with which we get least value of x which is possible when a is 167.

So the number will be $143 \times 167 + 45 = 23926$ and when we divide it by 113 remainder is 83.

Alternative method:

By putting option (1) i.e. when remainder is 83, the number becomes $N = 113 \times 211 + 83 = 23926$.

When this number is divided by 143 we get 45 as the remainder.

FeedBack

Q.96

Find the shortest distance of the point $(6, -9)$ from the curve $y = x^2 - 12x + 32$.

1 6

2 4

3 3

4 5

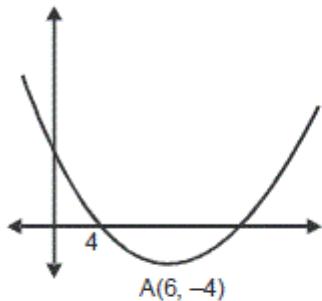
Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

$$\begin{aligned}y &= x^2 - 12x + 32 \\&= x^2 - 12x + 36 - 4 \\&= (x - 6)^2 - 4\end{aligned}$$



So, minimum value of equation is -4 at $x = 6$

The shortest distance from the curve $x^2 - 12x + 32$ to point $(6, -9)$ is equal to the distance between $(6, -4)$ and $(6, -9)$

\therefore Required distance = 5.

FeedBack

Q.97

Find maximum value of $6x - x^2 + 7$ if $|x - 4| \geq 2$

1 15

2 14

3 16

4 17

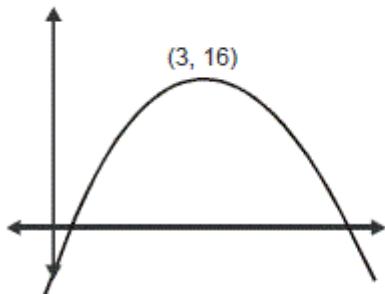
Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

$$\begin{aligned} \text{Let } f(x) &= 6x - x^2 + 7 \\ &= -(x^2 - 6x - 7) = -(x^2 - 6x + 9) + 16 \\ &= -(x - 3)^2 + 16 \end{aligned}$$



Maximum value of $f(x)$ is 16 but occurs when $x = 3$

As $|x - 4| \geq 2$, $x \leq 2$ or $x \geq 6$, the farther away x moves from 3, the smaller is value of $f(x)$ at $x = 2$, therefore,

$$\Rightarrow f(2) = -(2 - 3)^2 + 16 = 15 \text{ and,}$$

$$\text{at } x = 6, f(6) = -(6 - 3)^2 + 16 = 7$$

\therefore Maximum value is 15 at $x = 2$.

FeedBack

Q.98

There are 6 cake making glass moulds, 3 are of cylindrical shapes and another three are of cuboidal shapes. The cost of all cylindrical shaped moulds taken together is Rs.700 and their radii are in ratio 2 : 3 : 4 and height of each of the three is equal to the radius of the smallest mould. Also the cost of all cuboidal shaped moulds taken together is Rs.800 and their volumes are in ratio 4 : 8 : 16. If the volumes of the medium size boxes, in both the cases, are same, then which of the following deal is a better deal per unit price (i.e more volume per unit price)?

1 Both are same

2 Cylindrical one is better

3 Cuboidal one is better

4 Data insufficient

Solution:

Correct Answer : 2

Let radius of three cylinders be $2k$, $3k$ and $4k$ and hence height of each cylinder is $2k$.
As volume of a cylinder is given by $\pi r^2 h$,

volume of Cylindrical boxes will be in the ratio $4 : 9 : 16$ and their cost is Rs.700.

Volume of Cuboidal boxes is in the ratio $4 : 8 : 16$ and their cost is Rs.800.

Volume of middle boxes are equal.

So, the ratio of the volume of the cylindrical boxes becomes $32 : 72 : 128 \Rightarrow 232$
and the ratio of volume of the cuboidal boxes becomes $36 : 72 : 144 \Rightarrow 252$

$$\text{Now, cylindrical volume per unit cost} = \frac{232}{700} = \frac{\frac{8}{7} \times 232}{700} = \frac{8 \times 33.14}{800} = \frac{265.2}{800}$$

$$\text{Cuboidal volume per unit cost} = \frac{252}{800}$$

So, cylindrical one is a better deal.

FeedBack

Bookmark

Answer key/Solution

Q.99

Four inlet pipes, with circular cross-section of radius r , together take 9 hours to fill a cistern. If the speed of water is thrice that of the earlier speed, then how many pipes of half the radius ' r ' are required to fill it in 6 hours?

1 4

2 8

3 16

4 32

Solution:

Correct Answer : 2

Let radius = r , speed = v

Number of pipes = 4

Total time = 9 hours

Total vol = $(\pi r^2) \times 9 \times v \times 4$

Now, new radius = $r/2$, speed = $3v$

Number of pipes = x , time = 6 hours

Bookmark

Answer key/Solution

$$\text{So, } (\pi r^2) \times 9 \times 4 = \pi \left(\frac{r}{2}\right)^2 \times 6 \times 3v \times x \Rightarrow x = 8.$$

FeedBack

Q.100

A square ABCD is inscribed inside a circle of radius 4 cm. Two semicircles are drawn inside the square taking AB and BC as their diameters respectively. Find the area (in sq cm) of the region common to both the semicircles.

1 **$2\pi - 4$**

2 **$4\pi - 8$**

3 **2π**

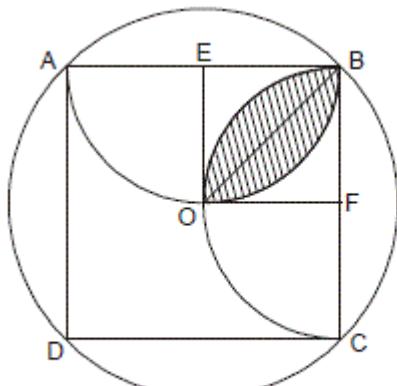
4 **5π**

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**



Since, radius of circle = 4 cm

$$\therefore \text{Side of the square} \Rightarrow \sqrt{2}a = 8 \Rightarrow a = \frac{8}{\sqrt{2}}$$

$$\text{Also, the radius of the two semicircles drawn inside the square} = \frac{1}{2} \times \frac{8}{\sqrt{2}} = \frac{21}{\sqrt{2}} = 2\sqrt{2}$$

$$\therefore EO = EB = OF = BF = 2\sqrt{2}$$

$$\text{Now area of semicircle with diameter AB} = \frac{\pi(2\sqrt{2})^2}{2} = 4\pi = \text{area of semicircle with diameter BC.}$$

$$\therefore (\text{half the area of semicircle}) - (\text{area of triangle BEO}) = \text{half of the shaded area}$$

$$\Rightarrow \frac{4\pi}{2} - \frac{1}{2} \times 2\sqrt{2} \times 2\sqrt{2} = 2\pi - 4$$

$$\therefore \text{area of shaded region} = 2(2\pi - 4) = 4\pi - 8.$$

FeedBack