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Mock CAT – 07 2018

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VARC

LRDI

QA

Sec 1

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

On the slope of a thickly forested Czech mountain, three men in hard hats and mud-spattered fluorescent vests dig for the metal that could power a new industrial revolution.

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But this electric-car future is still missing some pieces. Some crucial raw materials are scarce. There are not enough places to recharge. Battery-powered cars still cost thousands of dollars more than many gasoline vehicles.

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“Many people are nervous about how fast this is coming and how much they have to invest,” said Norbert Dressler, a senior partner at Roland Berger in Stuttgart, Germany, who advises the auto industry.

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Q.1
What were those three men actually searching for?

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1 ○ **Natural resources that would eventually start a new industrial revolution.**

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2 **Sources of oil in Chile and China**

3 **Sources of Lithium that would lead to the manufacture of electric cars.**

4 **To excavate the sources of raw metals in Chile and China**

Solution:
Correct Answer : 3
Option 1 is vague and does not say what they were searching for. Option 2 defies the stated facts in the passage. Like option 1, 4 is also a vague statement. Refer to- "The men are prospecting for new sources of lithium, a raw material now found primarily in China and Chile that could become as important to the auto industry as oil is now." This makes option 3, the correct answer.

Bookmark

Answer key/Solution

FeedBack

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Q.2
One particular aspect that has led to the falling of battery costs is:

1 **lower supply of lithium.**

2 **higher demand for electric cars over petrol runs cars.**

3 **rapid increase in production of batteries.**

4 **increased gap between supply and demand.**

Solution:
Correct Answer : 3
Refer to- “One reason battery costs are falling is that manufacturers are ramping up production. The greater the supply, the lower the price.” This makes option 3, the correct answer.

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Q.3

All of the following highlights the problem of electric cars in the near future, except:

1 **They are not cost effective.**

2 **They are yet to properly utilise raw materials.**

3 **There are not enough places to recharge.**

4 **This evolution will be hurting the present car makers.**

Solution:
Correct Answer : 2
All other options represent the problems that can occur in the near future as far as electric cars are concerned. There is no mention of option 2 in the given passage. Hence it is the correct option choice.

FeedBack

Bookmark

Answer key/Solution

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Q.4

Which of the following promotes an uncertainty that is linked with this project?

1 **Whether this project will have a geopolitical dimension or not**

2 **Whether cheaper raw products will be available or not**

3 **How it will affect the ecosystem.**

4 **How much one has to invest is still unknown**

Solution:
Correct Answer : 4
Refer to-“ “Many people are nervous about how fast this is coming and how much they have to invest,” said Norbert Dressler, a senior partner at Roland Berger in Stuttgart, Germany, who advises the auto industry.” This clearly makes option 4, the correct answer.

Bookmark

Answer key/Solution

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Q.5

The main idea of the passage is to:

1 undervalue the pros and cons of battery run cars.

2 portray the future aspect of electric cars.

3 portray the history of electric cars which in course will take over fuel run cars.

4 portray the response of the traditional car makers to the rising threat of electric cars.

Bookmark

Answer key/Solution

Solution:

Correct Answer : 2

The author here portrays the prospect of electric cars running on batteries. He showcases the problems it might face in the future and how to counter it. Hence, option 2 is the correct answer. Option 1 is incorrect. He is not trying to portray the history of electric cars as such. Though there is a mention of the traditional car makers in last line of the passage but that is not the main idea of the passage.

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Q.6

All of the following can be inferred from the given passage, except:

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1 ○ **Electric cars running on batteries will change the shape of the automobile industry.**

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2 ○ **More than half of the world’s reserves of lithium are in China and Chile.**

---

3 ○ **Electric cars will bring about economical and societal changes.**

---

4 ○ **Other than the battery, excavation of lithium and graphite is more important.**

Solution:
Correct Answer : 4
All options other than option 4 can be inferred from the given passage. Batteries are made up of lithium and graphite. Hence option 4 is incorrect logically.

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.

The conflicts arising from diversity can be mitigated if teams are effectively led. This is hardly surprising: leadership is a fundamental resource for groups and organizations. It is the psychological process that enables individuals to set aside their selfish agendas to cooperate with others for the common benefit of the team, articulating the natural tension between our desire to get ahead of others and our need to get along with others. All of this is particularly important when teams are diverse, for it will be harder for team members to see things from other members' perspectives, empathize with them, and suppress their own conscious and unconscious biases.

Most studies assume that the relationship between diversity and creativity is linear, but recent evidence suggests that a moderate degree of diversity is more beneficial than a higher dose. This finding is consistent with the too-much-of-a-good-thing paradigm in management science, which provides compelling evidence for the idea that even the most desirable qualities have a dark side if taken to the extreme. In other words, all things are good in moderation (except moderation).

Most discussions about diversity focus on demographic variables (e.g., gender, age, and race). However, the most interesting and influential aspects of diversity are psychological (e.g., personality, values, and abilities), also known as deep-level diversity. Indeed, there are several advantages to focusing on deep-level variables as opposed to demographic factors. First, whereas demographic variables perpetuate stereotypical and prejudiced characterizations, deep-level diversity focuses on the individual, allowing a much more granular understanding of human diversity. Regardless of whether you focus on bright- or dark-side personality characteristics, motives and values, or indeed creativity, group differences are trivial when compared with differences between individuals, even when the individuals are part of the same group.

No matter how diverse the workforce is, and regardless of what type of diversity we examine, diversity will not enhance creativity unless there is a culture of sharing knowledge. Studies mapping the social networks of organizations have found higher levels of creativity in groups that are more interconnected, particularly when creative and intrapreneurial individuals are a central node in those networks.

Unlike coaching, which tends to benefit those who need it the least (those who really need it are, alas, often uncoachable), diversity training is most effective with individuals who are skeptical of it. This is encouraging, though the challenge, of course, is to ensure that people who are cynical about diversity actually enroll in these training programs.

Other factors are much more salient. Although the question of whether diversity can foster creativity is both interesting and important, it is important to note that there are many other more influential drivers of creativity. As a seminal meta-analysis of 30 years of research showed, support for innovation, vision, task orientation, and external communication is the strongest determinant of creativity and innovation; most input variables, including team composition and structure, have much weaker effects. Likewise,

developing expertise, assigning people to tasks that are meaningful and interesting, and improving creative thinking skills will produce higher gains in both individual and team creativity than focusing on diversity will. It should also be noted that a better way to promote both creativity and diversity is to select employees on the basis of their creativity, as opposed to their cognitive ability or educational credentials, for that alone would enhance the typical diversity level of organizations. In that sense, creativity may lead to diversity more than vice versa.

In short, there are probably much better reasons for creating a diverse team and organization than boosting creativity. And if your actual goal is to enhance creativity, there are simpler, more effective solutions than boosting diversity.

Q.7

Which one of the following statements is not true about creativity, according to the passage?

1 **Knowledge sharing is important for creativity to flourish.**

2 **Higher levels of creativity have been observed in groups that are more interconnected.**

3 **Diversity is not the only way to boost creativity.**

4 **Diversity is bound to be a hindrance to creativity.**

Solution:
Correct Answer : 4
4 is the answer as according to paragraph #2 too much of diversity is problematic and it nowhere suggests that diversity is bound to be a hindrance for creativity. 1 and 2 are given in paragraph #4. 3 is given in the last paragraph.

FeedBack

Bookmark

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Q.8

The central idea of the passage is that:

1 **creativity is heavily dependent on diversity.**

2 **relationship between diversity and creativity is linear.**

3 **too much moderation in emphasising on the relationship between diversity and creativity leads to an undesirable consequence.**

4 **boosting creativity is just one of the reasons for creating diverse teams in organizations.**

Solution:
Correct Answer : 4
4 is the central idea which can be derived from the last passage. 1 is incorrect. 2 is true but not the central idea. 3 is incorrect.

FeedBack

Bookmark

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Most studies assume that the relationship between diversity and creativity is linear, but recent evidence suggests that a moderate degree of diversity is more beneficial than a higher dose. This finding is consistent with the too-much-of-a-good-thing paradigm in management science, which provides compelling evidence for the idea that even the most desirable qualities have a dark side if taken to the extreme. In other words, all things are good in moderation (except moderation).

Most discussions about diversity focus on demographic variables (e.g., gender, age, and race). However, the most interesting and influential aspects of diversity are psychological (e.g., personality, values, and abilities), also known as deep-level diversity. Indeed, there are several advantages to focusing on deep-level variables as opposed to demographic factors. First, whereas demographic variables perpetuate stereotypical and prejudiced characterizations, deep-level diversity focuses on the individual, allowing a much more granular understanding of human diversity. Regardless of whether you focus on bright- or dark-side personality characteristics, motives and values, or indeed creativity, group differences are trivial when compared with differences between individuals, even when the individuals are part of the same group.

No matter how diverse the workforce is, and regardless of what type of diversity we examine, diversity will not enhance creativity unless there is a culture of sharing knowledge. Studies mapping the social networks of organizations have found higher levels of creativity in groups that are more interconnected, particularly when creative and intrapreneurial individuals are a central node in those networks.

Unlike coaching, which tends to benefit those who need it the least (those who really need it are, alas, often uncoachable), diversity training is most effective with individuals who are skeptical of it. This is encouraging, though the challenge, of course, is to ensure that people who are cynical about diversity actually enroll in these training programs.

Other factors are much more salient. Although the question of whether diversity can foster creativity is both interesting and important, it is important to note that there are many other more influential drivers of creativity. As a seminal meta-analysis of 30 years of research showed, support for innovation, vision, task orientation, and external communication is the strongest determinant of creativity and innovation; most input variables, including team composition and structure, have much weaker effects. Likewise, developing expertise, assigning people to tasks that are meaningful and interesting, and improving creative thinking skills will produce higher gains in both individual and team creativity than focusing on diversity will. It should also be noted that a better way to promote both creativity and diversity is to select employees on the basis of their creativity, as opposed to their cognitive ability or educational credentials, for that alone would enhance the typical diversity level of organizations. In that sense, creativity may lead to diversity more than vice versa.

In short, there are probably much better reasons for creating a diverse team and organization than

boosting creativity. And if your actual goal is to enhance creativity, there are simpler, more effective solutions than boosting diversity.

Q.9

It will be harder for team members in a diverse team to do all of the following except:

1 **Agree with fellow team members.**

2 **Empathize with other team members.**

3 **See things from other members' perspectives.**

4 **Deal with their own biases**

Solution:
Correct Answer : 1
1 is the answer as all except 1 are mentioned in paragraph #1 of the passage.

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Answer key/Solution

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Q.10

What does the author suggest about selecting employees?

1 Employees should be selected on the basis of diversity of backgrounds.

2 Employees should be selected on the basis of their creativity.

3 Employees should be selected on the basis of their educational qualifications.

4 Employees should be selected on the basis of their cognitive ability.

Solution:

Correct Answer : 2

Only 2 is correct according to the sixth paragraph of the passage. 1 is nowhere mentioned. Also, 3 and 4 are not suggested by the author. According to the passage "It should also be noted that a better way to promote both creativity and diversity is to select employees on the basis of their creativity, as opposed to their cognitive ability or educational credentials".

Bookmark

Answer key/Solution

FeedBack

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Q.11

The most dominant aspects of diversity are by nature:

1 ○ **demographic.**

2 ○ **prejudiced.**

3 physiological.

4 psychological.

Solution:
Correct Answer : 4
According to paragraph #3, only 4 is correct. "The most interesting and influential aspects of diversity are psychological (e.g., personality, values, and abilities)"

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Answer key/Solution

FeedBack

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Q.12

Why does the author say "Those who really need it (coaching) are, alas, often uncoachable"?

1 **To show that people at times think too highly of themselves**

2 **To show that people generally do not make an effort to learn new things**

3 **To show that coaching benefits those who already have a base to start with**

4 **To show that there are people who just can't be coached because they are unskilled**

Solution:
Correct Answer : 3
According to paragraph #5, only 3 can be inferred. 1 and 2 are out of context. 4 is demeaning. The passage nowhere hints that people who can't be coached are unskilled.

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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.

Early forms of cartography were practiced on clay tablets and cave walls. As technology and exploration expanded maps were drawn on paper and depicted the areas that various explorers travelled. Today maps can show a plethora of information and the advent of technology such as Geographic Information Systems (GIS) allows maps to be made relatively easily with computers.

Some of the earliest known maps date back to 16,500 B.C.E. and show the night sky instead of the Earth. In addition ancient cave paintings and rock carvings depict landscape features like hills and mountains and archaeologists believe that these paintings were used to navigate the areas they showed and to portray the areas that the people visited.

Maps were also created in ancient Babylonia (mostly on clay tablets) and it is believed that they were drawn with very accurate surveying techniques. These maps showed topographical features like hills and valleys but also had labeled features. The Babylonian World Map is considered the earliest map of the world but it is unique because it is a symbolic representation of the Earth. It dates back to 600 B.C.E.

The earliest paper maps that were identified by cartographers as maps used for navigation and to depict certain areas of the Earth were those created by the early Greeks. The maps they drew came from explorer observations and mathematical calculations.

The Greek maps are important to cartography because they often showed Greece as being at the center of the world and surrounded by an ocean. Other early Greek maps show the world being divided into two continents – Asia and Europe. Many Greek philosophers considered the Earth to be spherical and this also influenced their cartography. Ptolemy for instance created maps by using a coordinate system with parallels of latitude and meridians of longitude to accurately show areas of the Earth as he knew it. This became the basis for today's maps and his atlas *Geographia* is an early example of modern cartography.

In addition to the ancient Greek maps, early examples of cartography also come out of China. These maps date to the 4th century B.C.E and were drawn on wooden blocks. Other early Chinese maps were produced on silk. Early Chinese maps from the Qin State show various territories with landscape features such as the Jialing River system as well as roads and are considered some of the world's oldest economic maps.

Like Greece and China (as well as other areas throughout the rest of the world) the development of cartography was significant in Europe as well. Early medieval maps were mainly symbolic like those that came out of Greece. Beginning in the 13th century the Majorcan Cartographic School was developed and consisted of a Jewish collaboration of cartographers, cosmographers and navigators/navigational instrument makers. The Majorcan Cartographic School invented the Normal Portolan Chart – a nautical mile chart that used gridded compass lines for navigation.

Modern cartography began as various technological advancements were made. The invention of tools like the compass, telescope, sextant, quadrant and printing press all allowed for maps to be made more easily and accurately. New technologies also led to the development of different map projections that more precisely showed the world.

Q.13

The unique feature exhibited by the earliest maps was:

1 ○ **showcasing a vivid artistic description of local areas.**

2 **the absence of topography.**

3 **its ability to depict Earth symbolically.**

4 **the use of complex mathematics to determine the geographical locations.**

Solution:
Correct Answer : 2
In the passage it is stated that, 'Some of the earliest known maps date back to 16,500 B.C.E. and show the night sky instead of the Earth'. 3 is incorrect as this feature comes later and is not present in the earliest forms. 1 and 4 go beyond the scope of the passage.

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Q.14

The accuracy of a map at the most basic level depends on:

1 ○ **the proper use of the coordinate systems.**

2 **identifying a proper centre.**

3 **assigning a particular shape to the Earth.**

4 **the accuracy of the science in use.**

Solution:
Correct Answer : 1
In the passage it is stated that, 'Ptolemy for instance created maps by using a coordinate system with parallels of latitude and meridians of longitude to accurately show areas of the Earth as he knew it. This became the basis for today's maps and his atlas *Geographia* is an early example of modern cartography.' The other options go beyond the scope of the passage.

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Answer key/Solution

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Q.15

Which of the following is true in the light of the given passage?

1 ○ **The evolution of map making is linked with human explorations.**

2 **China produced the oldest economic maps in the world.**

3 **In ancient times map making was considered an art form.**

4 **Grecian philosophers were the first to assign a shape to Earth.**

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Answer key/Solution

Solution:
Correct Answer : 1
In the passage it is stated that, 'As technology and exploration expanded maps were drawn on paper and depicted the areas that various explorers travelled.' 2 is incorrect as in the passage it is stated that some of the oldest economic maps were found in China and not the oldest. Similarly 4 is incorrect since the passage does not mention whether or not they were to first to assign a shape to Earth.

FeedBack

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Q.16

Modern map making can be viewed as a symbol of:

1 ○ **substance over style.**

2 **progress of human beings as a species.**

3 **how modernity has made all aspects of life better.**

4 **conquest of the past.**

Solution:
Correct Answer : 2
In the passage it is stated that, 'Today maps can show a plethora of information and the advent of technology such as Geographic Information Systems (GIS) allows maps to be made relatively easily with computers.' The advent of technology is a sign of progress for the species. The other options go beyond the scope of the passage.

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Answer key/Solution

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Q.17

Which of the following is a key benefit of cartography?

1 ○ **Aiding in economic growth**

2 **Showcasing the various talents of human beings**

3 **Understanding and knowing the world better**

4 **Helping settlers to move accurately**

Solution:
Correct Answer : 3
In the passage it is stated that, 'New technologies also led to the development of different map projections that more precisely showed the world.' With better precision our understanding becomes better. The other options go beyond the scope of the passage.

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Early forms of cartography were practiced on clay tablets and cave walls. As technology and exploration expanded maps were drawn on paper and depicted the areas that various explorers travelled. Today maps can show a plethora of information and the advent of technology such as Geographic Information Systems (GIS) allows maps to be made relatively easily with computers.

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Maps were also created in ancient Babylonia (mostly on clay tablets) and it is believed that they were drawn with very accurate surveying techniques. These maps showed topographical features like hills and valleys but also had labeled features. The Babylonian World Map is considered the earliest map of the world but it is unique because it is a symbolic representation of the Earth. It dates back to 600 B.C.E.

The earliest paper maps that were identified by cartographers as maps used for navigation and to depict certain areas of the Earth were those created by the early Greeks. The maps they drew came from explorer observations and mathematical calculations.

The Greek maps are important to cartography because they often showed Greece as being at the center of the world and surrounded by an ocean. Other early Greek maps show the world being divided into two continents – Asia and Europe. Many Greek philosophers considered the Earth to be spherical and this also influenced their cartography. Ptolemy for instance created maps by using a coordinate system with parallels of latitude and meridians of longitude to accurately show areas of the Earth as he knew it. This became the basis for today's maps and his atlas *Geographia* is an early example of modern cartography.

In addition to the ancient Greek maps, early examples of cartography also come out of China. These maps date to the 4th century B.C.E and were drawn on wooden blocks. Other early Chinese maps were produced on silk. Early Chinese maps from the Qin State show various territories with landscape features such as the Jialing River system as well as roads and are considered some of the world's oldest economic maps.

Like Greece and China (as well as other areas throughout the rest of the world) the development of cartography was significant in Europe as well. Early medieval maps were mainly symbolic like those that came out of Greece. Beginning in the 13th century the Majorcan Cartographic School was developed and consisted of a Jewish collaboration of cartographers, cosmographers and navigators/navigational instrument makers. The Majorcan Cartographic School invented the Normal Portolan Chart – a nautical mile chart that used gridded compass lines for navigation.

Modern cartography began as various technological advancements were made. The invention of tools like the compass, telescope, sextant, quadrant and printing press all allowed for maps to be made more easily and accurately. New technologies also led to the development of different map projections that more precisely showed the world.

Q.18

From the passage it can be inferred that:

1 ○ **Greek philosophers changed how we looked at the world.**

2 Ancient China had a proper transport system.

3 Ptolemy is the father of Geography.

4 Cave walls served as papers in pre-historic times.

Solution:
Correct Answer : 2
In the passage it is stated that, 'Other early Chinese maps were produced on silk. Early Chinese maps from the Qin State show various territories with landscape features such as the Jialing River system as well as roads and are considered some of the world's oldest economic maps.' The other options are vague and cannot be inferred from the data provided in the passage.

FeedBack

Bookmark

Answer key/Solution

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

Ever wondered what the World Cup is worth? When Italian sculptor Silvio Gazzaniga designed the current trophy in 1971, it was worth US$50,000. Now the trophy is estimated to be worth US$10m. The World Cup is, however, worth much more than two human figures cast in 18 carat gold.

The way nations battle to put on the tournament implies there is considerable worth to a country in hosting football's biggest competition. Commonly used estimates indicated the past three World Cups would generate a positive economic impact of US$9 billion (Japan and South Korea in 2002); US$12 billion (Germany in 2006) and US$5 billion (South Africa in 2010).

For this year's tournament in Brazil, various forecasters have identified the positive economic impact could range from US$3 billion to US$14 billion. While many will question the ethics and morality of such revenue growth, FIFA would no doubt counter by emphasising that in 2013, the organisation spent US$183m on development projects. In the run-up to the last tournament in South Africa, Adidas sold 6m football shirts, up from 3m during Germany 2006. Similarly, Visa's 2010 World Cup YouTube channel was viewed 7.5m times, 50% more than it was expecting.

Still, there is significant evidence that could lead one to question this rosy assessment. The positive impact estimates quoted above are generally produced by governments or their hired consultants, all with a vested interest in delivering good news. After all, no politician hires economists to tell them a tournament will be a waste of money.

The estimated cost of stadiums, for instance, has tripled to $3.68 billion. There are also indirect economic and social costs. During the Federations Cup in Brazil last summer, a World Cup warm-up tournament, there were massive and frequent protests across the country as people challenged anything from corruption to tax breaks given to FIFA to increased bus fares. Such protests add further costs to the budget; indeed, the Brazilian government is now believed to be spending around US$855m to beef up national security.

Q.19
Which of the following is true in the light of the given passage?

1 Benefits from organizing a world cup should not be viewed uncritically.

2 The world cup trophy is costlier than its current evaluation.

3 Big brands play an important role in promoting football world cups.

4 National security is the biggest winner when a country organizes a world cup.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
In the passage it is stated that, 'The positive impact estimates quoted above are generally produced by governments or their hired consultants, all with a vested interest in delivering good news. After all, no politician hires economists to tell them a tournament will be a waste of money.' 2 is incorrect as no such hint has been provided in the passage; 3 and 4 go beyond the scope of the passage.

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.

Ever wondered what the World Cup is worth? When Italian sculptor Silvio Gazzaniga designed the current trophy in 1971, it was worth US$50,000. Now the trophy is estimated to be worth US$10m. The World Cup is, however, worth much more than two human figures cast in 18 carat gold.

The way nations battle to put on the tournament implies there is considerable worth to a country in hosting football's biggest competition. Commonly used estimates indicated the past three World Cups would generate a positive economic impact of US$9 billion (Japan and South Korea in 2002); US$12 billion (Germany in 2006) and US$5 billion (South Africa in 2010).

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Q.20

The author mentions the issue of protests to highlight:

1 **the way sporting events are used to cover up major issues a host nation faces.**

2 **the problems associated with estimating the cost of a mega sporting event.**

3 **the impossibility of trying to please every member of a society.**

4 **the dangers associated with letting big brands meddle in national issues.**

Bookmark

Answer key/Solution

Solution:

Correct Answer : 2

The passage starts by providing an argument showing the positive aspects of hosting a mega sporting event like the football world cup. But this is just a foil in order to get to the main argument that if look at these events critically a lot of unwanted truths pop up. By mentioning the protests, the author consolidates how the benefits of organizing such events are mostly illusionary. The other options cannot be logically inferred from the given data.

FeedBack

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Q.21
The central point of the first paragraph is:

1 **to understand the fanaticism associated with football world cups.**

2 **to understand the human factors behind organizing a world cup.**

3 **to expose the truth behind the benefits from hosting a world cup.**

4 **to hint at the true cost of hosting a football world cup.**

Solution:
Correct Answer : 4
The first paragraph after discussing the valuation of the world cup trophy ends with the sentence, 'The World Cup is, however, worth much more than two human figures cast in 18 carat gold.' This hints that the author wants to explore what is the true price of the World Cup.

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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.

In his book Food and Flavour, Henry Theophilus Finck argued that the future of the US as a vital, productive, progressive nation depended on Americans taking flavour seriously.

Finck took up the cause of deliciousness at a time when the food that people ate and where it came from were changing rapidly. Industrialisation, urbanisation and new technologies such as cold storage, canning and hydrogenation were transforming how food was produced and consumed. More Americans were eating food prepared outside the home, including processed food made in factories by giant companies such as Heinz, Campbell's, and the National Biscuit Company (Nabisco). Finck fretted that these changes made for an increasingly 'ungastronomic America'. Everywhere flavour receded before increased profits or improved efficiency. 'Time was when a crisp slice of bacon would give zest to a whole breakfast,' Finck complained, 'but the bacon served now… has no more flavour than sawdust,' as chemical preservatives replaced time-honoured methods of smoking and curing. Machine-polished rice was white and 'pretty to look at' but, 'deprived of its nutritious outer parts', it was 'as tasteless as the paste that a paper-hanger brushes on his rolls of wallpaper'. The US frozen chicken was 'foul'; its sodden canned oysters insipid; its butter bland … 'the melancholy list of gastronomic misdeeds might be prolonged indefinitely,' he wrote. In comparison, Europe boasted crusty loaves, dazzling varieties of cured meats, savoury vegetable salads and redolent cheeses.

The problem was not that industrial modernity seemed to produce only diluted simulacra of remembered bacon, or that food technology had somehow made it impossible to find honestly smoked whitefish in New York City. The problem, Finck lamented, was that most Americans did not care. They consumed food insensibly, bolting down poorly prepared slop during rushed meals. They didn't know how to savour flavour.

Q.22
The purpose of this passage is:

1 **to discuss the key arguments of Finck's book Food and Flavour.**

2 **to argue how new technologies were incapable of replicating the flavour of naturally-cooked food.**

3 **to discuss Finck's argument that taking flavour seriously can contribute to a vital, productive, and progressive US.**

4 **to describe Finck's view that the Americans' indifference towards flavour resulted in its taking a backseat in times of change.**

Solution:
Correct Answer : 4
The passage primarily discusses only one argument- how flavour has taken a backseat in America owing to the indifference of Americans. In fact, it never goes on to completely discuss the argument mentioned in the very first line. So1 is eliminated. 2 is eliminated as the author states in the beginning of the last paragraph that the problem was not that "industrial modernity seemed to produce only diluted simulacra of remembered bacon". 3 is not discussed in the passage. 4 is the answer. It sums up the entire passage.

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.

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The problem was not that industrial modernity seemed to produce only diluted simulacra of remembered bacon, or that food technology had somehow made it impossible to find honestly smoked whitefish in New York City. The problem, Finck lamented, was that most Americans did not care. They consumed food insensibly, bolting down poorly prepared slop during rushed meals. They didn't know how to savour flavour.

Q.23

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

1 **Industrialisation, urbanisation, and new technologies were changing food production and consumption patterns.**

2 **Machine-polished rice, though tasty and attractive, lacked the nutrition of its outer parts.**

3 **Americans did not know how to savour flavour.**

4 **Cold storage, canning and hydrogenation are some of the food technologies mentioned in the passage.**

Solution:
Correct Answer : 2
2 is incorrect as the second paragraph calls the machine-polished rice 'as tasteless as the paste that a paper-hanger brushes on his rolls of wallpaper'. 3 is the last line of the passage. Though it is the opinion of the Finck and not a fact, it can still be called more true when compared to 2. So 3 is eliminated. 1 and 4 are mentioned in the second paragraph.

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Answer key/Solution

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Q.24

The author has used the example of machine-polished rice to primarily argue that:

1 **how new food technologies were depriving food of nutrition.**

2 **how the changes in food patterns gave preference to profits and efficiency over taste.**

3 **how chemical preservatives were depriving food of taste and nutrition.**

4 **how the changes in food patterns were focused on the 'look' of food to increase profits.**

Solution:
Correct Answer : 2
Both bacon and machine-polished rice have been mentioned as examples of flavour taking a backseat in America. The argument is not about nutrition. 1 is eliminated. Chemical preservatives have been mentioned in the context of Bacon. So 3 is eliminated. 4 focuses on the 'look' of food. Again, that is not the larger point the author is trying to make. 2 is clearly captured in the line, "Everywhere flavour receded before increased profits or improved efficiency."

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. When defining equality of outcome in education, "the goals should not be the liberal one of equality of access but equality of outcome for the median number of each identifiable non-educationally defined group, i.e. the average women, or proletarian or rural dweller should have the same level of educational attainment as the average male, white, suburbanite". The outcome and the benefits from equality from education from this notion of equality promotes that all should have the same outcomes and benefits regardless of race, gender, religion etc.

1. Some have felt that equality in education should be viewed as the removal of privilege based on identity.
2. Some have felt that equality in education can dislodge the hierarchical position held by Caucasian males.
3. Some have felt that equality in education should be confined by the access to education, irrespective of one's identity.
4. Some have felt that equality in education is defined by the attainment from education, irrespective of one's identity.

Solution:
Correct Answer : 4
The passage talks about how a particular definition of equality in education discards equality of access but looks at how much one attains from education. This attainment should be equal across all spectrums of identity. The other options do not summarise the given passage.

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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.

In science, good definitions are of vital importance. However, it is sometimes difficult to clearly describe the focal construct in a limited number of necessary or sufficient elements. When concepts have fuzzy boundaries, prototype analysis comes in handy. In contrast to traditional dictionary definitions that identify a set of boundary conditions for a construct, a prototype analysis does not assume that all elements that are important for a construct are present at all times. Instead, it identifies a set of features that people see as representative to that construct.

1. As against dictionary definitions, a prototype analysis can provide us many insights because it gives us important and crucial information about the construct under investigation.
2. As against dictionary definitions, a prototype analysis should be preferred, for it provides just the necessary characteristic features of the construct under investigation.
3. As against dictionary definitions, with prototype approach one can list those characteristics that are important to describe the construct under investigation.
4. As against dictionary definitions, with prototype approach one can fruitfully conceptualize many fuzzy concepts.

Solution:
Correct Answer : 3
Option 1 is incorrect since it uses vague terms. Its reference to 'many insights' and 'crucial information' cannot be identified with the given paragraph. Option 2 is a close option but is incorrect because it becomes a personal opinion with the presence of 'should be preferred'. it would have been correct if it mentioned- 'is preferred..' Option 4 is just paraphrasing a sentence from the given paragraph. 3 is the most appropriate option as it captures the essence of the entire paragraph.

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Answer key/Solution

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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.

To romance of the future may seem to be indulgence in ungoverned speculation for the sake of the marvelous. Yet controlled imagination in this sphere can be a very valuable exercise for minds bewildered about the present and its potentialities. Today we should welcome, and even study, every serious attempt to envisage the future of our race; not merely in order to grasp the very diverse and often tragic possibilities that confront us, but also that we may familiarize ourselves with the certainty that many of our most cherished ideals would seem puerile to more developed minds. To romance of the far future, then, is to attempt to see the human race in its cosmic setting, and to mould our hearts to entertain new values.

1. The imaginative construction of possible future events can be potent if our imagination is disciplined and if our mind accepts that our ideals may appear silly to the developed minds.
2. The imaginative construction of possible future events, if properly blockaded by our mind, is valuable for the present as it would help us not to go beyond the bounds of possibility.
3. The imaginative construction of possible future events is marvelous to those for whom prophecy is the most productive and fruitful as they know how to control the limits of their imagination.
4. The imaginative construction of possible future events becomes a futile practice for those who do not limit the strength of their imagination, but simply accept that their ideals are an object of mockery for the most developed minds.

Solution:
Correct Answer : 1
Option 2 is distorted and fails to capture the message latent in the paragraph. The imagination needs to be controlled and not completely blocked. Option 3 is incorrect as romanticizing of the future and calling it most productive for someone is not stated in the paragraph. Due to the same reason, 4 is incorrect. 1 is the most appropriate as it captures the essence of the paragraph as it states all the important things- controlling the imagination, and accepting that our ideals may be puerile for the developed minds.

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Answer key/Solution

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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. Mirrors and poetry, as well as myth and fairytales, refract reality in unexpected ways.
2. In performance, the audience hears the text, recorded in advance or recited in real time, in fragments, and sees components – such as movements, props, drawings and video – that may relate only indirectly to the text.
3. When I use a myth or a story or a literary text in my work, I often extract particular passages from a larger narrative that resonates with me.
4. I don't change the language, but rather I change the context, which opens up the text to different possibilities of meaning.
5. Mirrors can collapse or confuse the distance between performer and audience and disrupt visual frameworks.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 15324
The correct sequence is 15324. Statement 1 opens the paragraph as it introduces the topic- refraction of reality by poetry, mirrors and myths. 1 and 5 form a mandatory pair as 4 explains how mirrors refract. In sentence 3, the author becomes personal, which makes 3, 2 and 4 a mandatory sequence.
Having discussed 'mirrors' in 3, the author takes up the next topic-'myth', in 4. After 3 comes 2, as story of a 'literary text' in 3, is heard by the audience (see the use of the word 'text' in 2). In 4, the author explains what he does to his work.

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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. Alas, this completely misses the point.
2. Patrick Cosgrove argues that the answer to the Facebook data scandal is simple – stop using Facebook.
3. A few of us have never been a member of Facebook, but they still hold data about us, gathered from our friends and family who do have Facebook accounts.
4. The more they know, the more they can deduce and infer – and the more that information can be abused when it falls into the wrong hands.
5. Worse, given that Facebook also buys data about people from third-party brokers, the profile they have on us is probably far more detailed and complete than we might like to think.

Solution:
Correct Answer : 21354
The correct sequence is 21354. 2, 1 and 3 create a mandatory pair 2 states that the remark "stop using facebook" (from 1) misses the point. 3 further explains how and why it misses the point. 3, 5 and 4 are also a mandatory pair as 5 explains why facebook has data about those people who aren't on facebook. 4 is the concluding sentence.

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Answer key/Solution

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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. Some conscientious consumers are forsaking all plastics entirely out of health concerns.
2. But while it is true that exposure to certain chemicals found in some plastics has been linked to various human health problems, only a small percentage of plastics contain them.
3. Most Tupperware products are made of LDPE or PP, and as such are considered safe for repeated use storing food items and cycling through the dishwasher.
4. According to The Green Guide, a website and magazine devoted to greener living and owned by the National Geographic Society, the safest plastics for repeated use in storing food are made from high-density polyethylene, low-density polyethylene and polypropylene.
5. The recent hubbub over plastic containers leaching chemicals into food and drinks has cast a pall over all kinds of plastics that come into contact with what we ingest, whether deserved or not.

Solution:
Correct Answer : 51243
5 is the opening sentence as it introduces the topic- 'hubbub over plastic containers leaching chemicals'. 1 follows next as it states the consequences of the 'hubbub'. 1 and 2 are a mandatory pair as 2 is presents a contradiction and challenges the 'hubbub' created. 4 comes next as it explains the nature of 'safe plastics'. 3 is an extension of 4 as it provides 'Tupperware' as an example of safe plastic.

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Answer key/Solution

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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. Moreover, it encouraged the humblest citizen to be proud of his partnership in the great community.
2. Attention which elsewhere was absorbed in the massing or display of money was in Russia largely devoted either to spontaneous instinctive enjoyments or to cultural activity.
3. After the Bolshevic revolution a new element appeared in Russian culture, and one which had not been known before in any modern state.
4. Still more important, the native Russian disposition not to take material possessions very seriously co-operated with the political revolution, and brought about such a freedom from the snobbery of wealth as was quite foreign to the West.
5. The old regime was displaced by a real proletarian government, which, though an oligarchy, and sometimes bloody and fanatical, abolished the old tyranny of class.

Solution:
Correct Answer : 35142
The correct sequence is 35142. 3 is the opening sentence as it introduces the topic of discussion- Russian culture post the Bolshevic revolution. 5 follows next as it provides examples of the changes that have taken place post the revolution. 5, 1 and 4 form a logical sequence-with "moreover" and "still more important" being the hints.

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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. The community experienced drastic increase in numbers ever since it was made available to the public.
2. Sometimes disillusionment creeps in one small let-down at a time. 3. Hermes' blog, Naturopathic Diaries, has gained a huge following in the sceptic community.
4. But for Britt Marie Hermes, the transition from alternative medicine practitioner to sceptic occurred over the course of a weekend.
5. After an unsettling discovery at the Arizona clinic where she worked four years ago, Hermes turned her back on everything she had believed in and set out to expose what she describes as the dubious and unethical underbelly of her former profession.

Solution:
Correct Answer : 1
2453 can be arranged to form a meaningful paragraph which talks about how Hermes got disillusioned with her profession and started advocating against it. 1 does not fit in because it is a vague sentence. The community could be anything and the paragraph is not about increase in followers or any such thing.

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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. It has since emerged that he was known to French intelligence services, who were concerned he was at risk of Islamist radicalisation.
2. Lakdim himself was shot dead, but his motive for the attack shines a light on the continuing threat posed by another Islamist extremist, still being held behind bars.
3. Lakdim had demanded the release of Salah Abdeslam, the sole survivor from the group behind the 2015 Paris attacks that killed 130 people.
4. The 2015 Paris attack has been seen as an act which caused a major shift in global geopolitics.
5. Last Friday, 25-year-old Redouane Lakdim killed four people and injured 16 others after taking hostages in a supermarket in south-west France.

Solution:
Correct Answer : 4
5123 can be arranged into a meaningful paragraph which deals with the radicalisation and the crime committed by Lakdim. Although 3 briefly mentions the Paris attacks, the other sentences have nothing to do with the attack. 4 talks about the impact of the Paris attack a topic not covered in the other sentences at all. This makes 4 the odd sentence.

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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. No one denies that among those who initially supported “offshore processing” were many well-intentioned people.
2. For over four years, in desperate conditions, they have had to endure. 3. Equally true, however, is the fact that Australia’s treatment of these human beings and families has long been unwatchable.
4. Noble motivations might have been one reason why some, at first, turned away when confronted with a harsh and cruel reality.
5. Driven to desperation by the tragedy of global displacement and its consequences, most turned to this policy reluctantly.

Solution:
Correct Answer : 2
1543 form a meaningful paragraph which deals with what kind of treatment has been meted out to displaced Australian families. 2 is extremely vague and cannot be placed in the given context. Hence 2 is the odd sentence.

FeedBack

Bookmark

Answer key/Solution

Sec 2

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

Monica has a habit of organizing all her documents neatly. She has made three boxes, one of each - red, green and yellow colour. In each box she has kept five different folders - Finance, HR, Marketing, Operations and Supply chain - one of each type, placed one above the another from top to bottom, in any order. Except Operations, no folder is at the same position from bottom in any two folders e.g. if finance is at the top in any folder then it cannot be at the top in any other folder. It is also known that:
(i) In each box, there are at least two folders above the folder of Finance and there are at least two folders below the folder of HR. Operations is never at the top in any box.
(ii) In the green box, there are exactly two folders between Operations and Finance folders and the same is true for Supply chain and HR folders.
(iii) HR is not the 4th folder from the bottom in yellow box and Operations is just below the Marketing folder in the red box.

Q.35
Which folder is at the top in the yellow box?

1 **HR**

2 **Marketing**

3 **Supply chain**

4 **Operations**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let the positions from top to bottom are 5, 4, 3, 2 and 1 respectively. So, from statement (i), Finance folders are at 1, 2 and 3 positions in the three folders and HR folders are at 5, 4 and 3 positions in the three folders. From statement (ii), Operations and Finance folders must be at (4, 1). Similarly, Supply chain and HR folders must be at (2, 5). So, Marketing folder must be at position 3. HR and Finance must be the 3rd folder in Red and Yellow boxes. From statement (iii), HR must be the 3rd folder in yellow box and hence Finance must be the 3rd folder in red box. So, HR is the 4th folder in red box and Finance is the 2nd folder in yellow box. The final placement looks like:

Positions	Red Box	Green Box	Yellow box
Top (5)	Supply chain	HR	Marketing
4	HR	Operations	Supply chain/Operations
3	Finance	Marketing	HR
2	Marketing	Supply chain	Finance
Bottom (1)	Operations	Finance	Operations/Supply chain

FeedBack

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

Monica has a habit of organizing all her documents neatly. She has made three boxes, one of each - red, green and yellow colour. In each box she has kept five different folders - Finance, HR, Marketing, Operations and Supply chain - one of each type, placed one above the another from top to bottom, in any order. Except Operations, no folder is at the same position from bottom in any two folders e.g. if finance is at the top in any folder then it cannot be at the top in any other folder. It is also known that:
(i) In each box, there are at least two folders above the folder of Finance and there are at least two folders below the folder of HR. Operations is never at the top in any box.
(ii) In the green box, there are exactly two folders between Operations and Finance folders and the same is true for Supply chain and HR folders.
(iii) HR is not the 4th folder from the bottom in yellow box and Operations is just below the Marketing folder in the red box.

Q.36
Which box/boxes definitely has/have Operations folder at the bottom?

1 **Red**

2 **Green**

3 **Yellow**

4 **Red and Yellow**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Let the positions from top to bottom are 5, 4, 3, 2 and 1 respectively. So, from statement (i), Finance folders are at 1, 2 and 3 positions in the three folders and HR folders are at 5, 4 and 3 positions in the three folders. From statement (ii), Operations and Finance folders must be at (4, 1). Similarly, Supply chain and HR folders must be at (2, 5). So, Marketing folder must be at position 3. HR and Finance must be the 3rd folder in Red and Yellow boxes. From statement (iii), HR must be the 3rd folder in yellow box and hence Finance must be the 3rd folder in red box. So, HR is the 4th folder in red box and Finance is the 2nd folder in yellow box. The final placement looks like:

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Top (5)	Supply chain	HR	Marketing
4	HR	Operations	Supply chain/Operations
3	Finance	Marketing	HR
2	Marketing	Supply chain	Finance
Bottom (1)	Operations	Finance	Operations/Supply chain

FeedBack

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

Monica has a habit of organizing all her documents neatly. She has made three boxes, one of each - red, green and yellow colour. In each box she has kept five different folders - Finance, HR, Marketing, Operations and Supply chain - one of each type, placed one above the another from top to bottom, in any order. Except Operations, no folder is at the same position from bottom in any two folders e.g. if finance is at the top in any folder then it cannot be at the top in any other folder. It is also known that:
(i) In each box, there are at least two folders above the folder of Finance and there are at least two folders below the folder of HR. Operations is never at the top in any box.
(ii) In the green box, there are exactly two folders between Operations and Finance folders and the same is true for Supply chain and HR folders.
(iii) HR is not the 4th folder from the bottom in yellow box and Operations is just below the Marketing folder in the red box.

Q.37
Which two folders can never be adjacent to each other in any of the boxes?

1 **HR and Finance**

2 **Operations and Marketing**

3 **Operations and Finance**

4 **HR and Marketing**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let the positions from top to bottom are 5, 4, 3, 2 and 1 respectively. So, from statement (i), Finance folders are at 1, 2 and 3 positions in the three folders and HR folders are at 5, 4 and 3 positions in the three folders. From statement (ii), Operations and Finance folders must be at (4, 1). Similarly, Supply chain and HR folders must be at (2, 5). So, Marketing folder must be at position 3. HR and Finance must be the 3rd folder in Red and Yellow boxes. From statement (iii), HR must be the 3rd folder in yellow box and hence Finance must be the 3rd folder in red box. So, HR is the 4th folder in red box and Finance is the 2nd folder in yellow box. The final placement looks like:

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4	HR	Operations	Supply chain/Operations
3	Finance	Marketing	HR
2	Marketing	Supply chain	Finance
Bottom (1)	Operations	Finance	Operations/Supply chain

FeedBack

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

Monica has a habit of organizing all her documents neatly. She has made three boxes, one of each - red, green and yellow colour. In each box she has kept five different folders - Finance, HR, Marketing, Operations and Supply chain - one of each type, placed one above the another from top to bottom, in any order. Except Operations, no folder is at the same position from bottom in any two folders e.g. if finance is at the top in any folder then it cannot be at the top in any other folder. It is also known that:
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(ii) In the green box, there are exactly two folders between Operations and Finance folders and the same is true for Supply chain and HR folders.
(iii) HR is not the 4th folder from the bottom in yellow box and Operations is just below the Marketing folder in the red box.

Q.38
Operations folder is at the same position from bottom in which two folders?

1 **Red and Yellow**

2 **Red and Green**

3 **Green and Yellow**

4 **Cannot be determined**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let the positions from top to bottom are 5, 4, 3, 2 and 1 respectively. So, from statement (i), Finance folders are at 1, 2 and 3 positions in the three folders and HR folders are at 5, 4 and 3 positions in the three folders. From statement (ii), Operations and Finance folders must be at (4, 1). Similarly, Supply chain and HR folders must be at (2, 5). So, Marketing folder must be at position 3. HR and Finance must be the 3rd folder in Red and Yellow boxes. From statement (iii), HR must be the 3rd folder in yellow box and hence Finance must be the 3rd folder in red box. So, HR is the 4th folder in red box and Finance is the 2nd folder in yellow box. The final placement looks like:

Positions	Red Box	Green Box	Yellow box
Top (5)	Supply chain	HR	Marketing
4	HR	Operations	Supply chain/Operations
3	Finance	Marketing	HR
2	Marketing	Supply chain	Finance
Bottom (1)	Operations	Finance	Operations/Supply chain

FeedBack

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

The following table provides partial details about the number of test matches and one day internationals (ODIs), played by 4 players of the Indian Cricket team against each of the 4 nations - Pakistan, New Zealand, England and Sri Lanka. It is given that Indian team played only against these nations in the year 2017 and also they played no form of matches other than test matches and ODIs. India played 40% of its total matches against Pakistan, 30% against New Zealand, 20% against England and 10% against Sri Lanka in 2017.

Players	Pakistan		New Zealand		England		Sri Lanka	
	Tests	ODIs	Tests	ODIs	Tests	ODIs	Tests	ODIs
Virat	15			10	8	6	9	
Hardik		12		15	4	9	7	8
Rohit	16	14	10	10		12		11
Shikhar	7		15		6	14	8	10

Q.39

Find the minimum possible number of matches played by India in 2017.

Solution:

Correct Answer : 200

Bookmark

Answer key/Solution

As given India played 40% of total matches against Pakistan. So, if we assume total matches to be x.

Then, number of matches played against Pakistan $= \frac{40}{100} \times x = \frac{2}{5}x$

Number of matches played against New Zealand = 30% of x = $\frac{3}{10}x$

Number of matches played against England = 20% of x = $\frac{x}{5}$

and number of matches played against Sri Lanka = $\frac{x}{10}$

If we look at the denominators, i.e. 5, 10, x has to be a multiple of their LCM i.e. 10. Now, against Pakistan, minimum number of matches (Tests + ODIs) played by Rohit = 16 + 14 = 30

So, $\frac{2x}{5} \geq 30 \Rightarrow x \geq 75$ ...(1)

Similarly for New Zealand, $\frac{3x}{10} \geq 30$ (15 + 15, score of Hardik & Shikhar)

$\Rightarrow x \geq 100$ ...(2)

For England, $\frac{x}{5} \geq 22 \Rightarrow x \geq 110$ ...(3)

For Sri Lanka, $\frac{x}{10} \geq 20 \Rightarrow x \geq 200$ ...(4)

So, from (1), (2), (3) and (4)

$x \geq 200$

As x has to be a multiple of 10,

$x_{min} = 200$.

FeedBack

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

The following table provides partial details about the number of test matches and one day internationals (ODIs), played by 4 players of the Indian Cricket team against each of the 4 nations - Pakistan, New Zealand, England and Sri Lanka. It is given that Indian team played only against these nations in the year 2017 and also they played no form of matches other than test matches and ODIs. India played 40% of its total matches against Pakistan, 30% against New Zealand, 20% against England and 10% against Sri Lanka in 2017.

Players	Pakistan		New Zealand		England		Sri Lanka	
	Tests	ODIs	Tests	ODIs	Tests	ODIs	Tests	ODIs
Virat	15			10	8	6	9	
Hardik		12		15	4	9	7	8
Rohit	16	14	10	10		12		11
Shikhar	7		15		6	14	8	10

Q.40

Minimum number of matches not played by Shikhar against England is

1 **2**

2 **10**

3 **20**

4 **15**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

As given India played 40% of total matches against Pakistan. So, if we assume total matches to be x.

Then, number of matches played against Pakistan $= \frac{40}{100} \times x = \frac{2}{5}x$

Number of matches played against New Zealand = 30% of x = $\frac{3}{10}x$

Number of matches played against England = 20% of x = $\frac{x}{5}$

and number of matches played against Sri Lanka = $\frac{x}{10}$

If we look at the denominators, i.e. 5, 10, x has to be a multiple of their LCM i.e. 10. Now, against Pakistan, minimum number of matches (Tests + ODIs) played by Rohit = 16 + 14 = 30

So, $\frac{2x}{5} \geq 30 \Rightarrow x \geq 75$ ...(1)

Similarly for New Zealand, $\frac{3x}{10} \geq 30$ (15 + 15, score of Hardik & Shikhar)

$\Rightarrow x \geq 100$ ...(2)

For England, $\frac{x}{5} \geq 22 \Rightarrow x \geq 110$ ...(3)

For Sri Lanka, $\frac{x}{10} \geq 20 \Rightarrow x \geq 200$ ...(4)

So, from (1), (2), (3) and (4)

$x \geq 200$

Minimum number of matches played by India against England = $\frac{x_{min}}{5} = \frac{200}{5} = 40$

Out of these 40 matches shikhar played 6 tests and 14 ODIs i.e. 20 matches.
So, he did not play = 40 – 20 = 20 matches against England.

FeedBack

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

The following table provides partial details about the number of test matches and one day internationals (ODIs), played by 4 players of the Indian Cricket team against each of the 4 nations - Pakistan, New Zealand, England and Sri Lanka. It is given that Indian team played only against these nations in the year 2017 and also they played no form of matches other than test matches and ODIs. India played 40% of its total matches against Pakistan, 30% against New Zealand, 20% against England and 10% against Sri Lanka in 2017.

Players	Pakistan		New Zealand		England		Sri Lanka	
	Tests	ODIs	Tests	ODIs	Tests	ODIs	Tests	ODIs
Virat	15			10	8	6	9	
Hardik		12		15	4	9	7	8
Rohit	16	14	10	10		12		11
Shikhar	7		15		6	14	8	10

Q.41

If Rohit played in all the ODIs and tests that have been played against Sri Lanka, then the minimum number of test matches played by India against Sri Lanka is

1 **7**

2 **9**

3 **20**

4 **5**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As given India played 40% of total matches against Pakistan. So, if we assume total matches to be x.

Then, number of matches played against Pakistan $= \frac{40}{100} \times x = \frac{2}{5}x$

Number of matches played against New Zealand = 30% of x = $\frac{3}{10}x$

Number of matches played against England = 20% of x = $\frac{x}{5}$

and number of matches played against Sri Lanka = $\frac{x}{10}$

If we look at the denominators, i.e. 5, 10, x has to be a multiple of their LCM i.e. 10. Now, against Pakistan, minimum number of matches (Tests + ODIs) played by Rohit = 16 + 14 = 30

So, $\frac{2x}{5} \geq 30 \Rightarrow x \geq 75$ ...(1)

Similarly for New Zealand, $\frac{3x}{10} \geq 30$ (15 + 15, score of Hardik & Shikhar)

$\Rightarrow x \geq 100$ ...(2)

For England, $\frac{x}{5} \geq 22 \Rightarrow x \geq 110$ ...(3)

For Sri Lanka, $\frac{x}{10} \geq 20 \Rightarrow x \geq 200$ ...(4)

So, from (1), (2), (3) and (4)

$x \geq 200$

Since minimum number of matches played by India against Sri Lanka = $\frac{x_{min}}{10} = \frac{200}{10} = 20$

Now, Rohit played all ODIs and tests.
∴ Number of ODIs played by India against Sri Lanka = 11
∴ Number of Tests played by India against Sri Lanka = 20 – 11 = 9

FeedBack

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

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Players	Pakistan		New Zealand		England		Sri Lanka	
	Tests	ODIs	Tests	ODIs	Tests	ODIs	Tests	ODIs
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Hardik		12		15	4	9	7	8
Rohit	16	14	10	10		12		11
Shikhar	7		15		6	14	8	10

Q.42

If Rohit played in all the test matches against England and Sri Lanka, then the minimum possible number of matches played by Rohit through out the season is

1 **87**

2 **90**

3 **73**

4 **Cannot be determined**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As given India played 40% of total matches against Pakistan. So, if we assume total matches to be x.

Then, number of matches played against Pakistan $= \frac{40}{100} \times x = \frac{2}{5}x$

Number of matches played against New Zealand = 30% of x = $\frac{3}{10}x$

Number of matches played against England = 20% of x = $\frac{x}{5}$

and number of matches played against Sri Lanka = $\frac{x}{10}$

If we look at the denominators, i.e. 5, 10, x has to be a multiple of their LCM i.e. 10. Now, against Pakistan, minimum number of matches (Tests + ODIs) played by Rohit = 16 + 14 = 30

So, $\frac{2x}{5} \geq 30 \Rightarrow x \geq 75$ ...(1)

Similarly for New Zealand, $\frac{3x}{10} \geq 30$ (15 + 15, score of Hardik & Shikhar)

$\Rightarrow x \geq 100$ ...(2)

For England, $\frac{x}{5} \geq 22 \Rightarrow x \geq 110$ ...(3)

For Sri Lanka, $\frac{x}{10} \geq 20 \Rightarrow x \geq 200$ ...(4)

So, from (1), (2), (3) and (4)

$x \geq 200$

Minimum number of tests against England can not be less than 8, as this is the number of tests played by Virat against England. Similarly, for Sri Lanka, this number will be 9, for the same reason.
∴ Minimum number of matches played by Rohit = (16 + 14) + (10 + 10) + (8 + 12) + (9 + 11) = 90

FeedBack

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

The following table gives the data about the percentages of vitamin B12, caffeine, sugar and taurine present in each of the four energy drinks - D1, D2, D3 and D4.

Drink	Vitamin B12	Caffeine	Sugar	Taurine
D1	25	20	30	25
D2	15	35	20	30
D3	20	20	30	30
D4	45	30	15	10

The cost (in Rs./litre) of D1, D2, D3 and D4 is 10, 25, 20 and 15 respectively. Two drinks can be mixed in any ratio to produce a drink that contains the ingredients in the required ratio.

Q.43

If a drink is to be prepared containing at least 25% of caffeine and at the minimum cost, then the ratio in which any two drinks should be mixed to get the required drink is

1 **1 : 2**

2 **2 : 3**

3 **1 : 1**

4 **1 : 4**

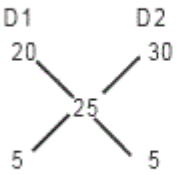
Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Drinks	B12	Caffeine	Sugar	Jaurine	Cost/liter
D1	25	20	30	25	10
D2	15	35	20	30	25
D3	20	20	30	30	20
D4	45	30	15	10	15

We need 25% caffeine in a drink and at minimum possible cost.
Since we have to settle for the one that gives minimum cost, that can be achieved by mixing D1 and D4 as they are the two cheapest drinks.
So,



i.e. 1 : 1
So, drink D1 and D4 should be mixed in ratio 1 : 1.

FeedBack

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

The following table gives the data about the percentages of vitamin B12, caffeine, sugar and taurine present in each of the four energy drinks - D1, D2, D3 and D4.

Drink	Vitamin B12	Caffeine	Sugar	Taurine
D1	25	20	30	25
D2	15	35	20	30
D3	20	20	30	30
D4	45	30	15	10

The cost (in Rs./litre) of D1, D2, D3 and D4 is 10, 25, 20 and 15 respectively. Two drinks can be mixed in any ratio to produce a drink that contains the ingredients in the required ratio.

Q.44

Which two drinks and in what ratio, should be mixed, to get 27% concentration of taurine at the minimum possible cost?

1 **D1 and D2 in 2 : 3**

2 **D1 and D3 in 3 : 2**

3 **D1 and D3 in 2 : 3**

4 **D2 and D3 in 1 : 1**

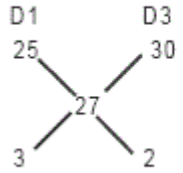
Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Drinks	B12	Caffeine	Sugar	Jaurine	Cost/liter
D1	25	20	30	25	10
D2	15	35	20	30	25
D3	20	20	30	30	20
D4	45	30	15	10	15

Here 27% concentration of taurine is required which can be obtained by mixing D1 and D2; D1 and D3. Since cost/ liter has to be minimum, D1 and D3 will serve the purpose.



So, the required ratio will be 3 : 2.

FeedBack

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

The following table gives the data about the percentages of vitamin B12, caffeine, sugar and taurine present in each of the four energy drinks - D1, D2, D3 and D4.

Drink	Vitamin B12	Caffeine	Sugar	Taurine
D1	25	20	30	25
D2	15	35	20	30
D3	20	20	30	30
D4	45	30	15	10

The cost (in Rs./litre) of D1, D2, D3 and D4 is 10, 25, 20 and 15 respectively. Two drinks can be mixed in any ratio to produce a drink that contains the ingredients in the required ratio.

Q.45

What would be the least possible cost (in Rs./liter) of a drink that contains at least 30% of vitamin B12?

1 **15**

2 **10**

3 **12.5**

4 **11.25**

Solution:

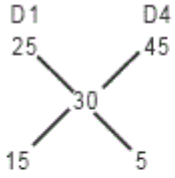
Correct Answer : 4

Bookmark

Answer key/Solution

Drinks	B12	Caffeine	Sugar	Jaurine	Cost/liter
D1	25	20	30	25	10
D2	15	35	20	30	25
D3	20	20	30	30	20
D4	45	30	15	10	15

We require 30% of B12, So we have to mix D1 and D4.



= 3 : 1

So, ratio = 3 : 1

∴ Cost of mixture would be the weighted average of costs of D1 and D4.

$\therefore$ Cost of mixture = $\frac{10\times 3+1\times 15}{4} = \frac{45}{4} = \text{Rs.}11.25$

FeedBack

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

The following table gives the data about the percentages of vitamin B12, caffeine, sugar and taurine present in each of the four energy drinks - D1, D2, D3 and D4.

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D1	25	20	30	25
D2	15	35	20	30
D3	20	20	30	30
D4	45	30	15	10

The cost (in Rs./litre) of D1, D2, D3 and D4 is 10, 25, 20 and 15 respectively. Two drinks can be mixed in any ratio to produce a drink that contains the ingredients in the required ratio.

Q.46

What is the least possible cost (in Rs. per liter) of a drink that contains at least 25% of each - vitamin B12 and caffeine?

1 **11.33**

2 **11.66**

3 **17.5**

4 **12.5**

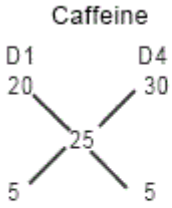
Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Drinks	B12	Caffeine	Sugar	Jaurine	Cost/liter
D1	25	20	30	25	10
D2	15	35	20	30	25
D3	20	20	30	30	20
D4	45	30	15	10	15

Drink 1 has 25% or more than 25% of other ingredients but caffeine.
So, we have to mix it with some other drink and that should be next cheapest drink if possible as, we have to keep cost minimum.
So, if we mix drink 1 and 4, the required percentage of ingredients can be obtained.



Ratio 1 : 1
Therefore, cost would be minimum if we mix D1 and D4 in 1 : 1.

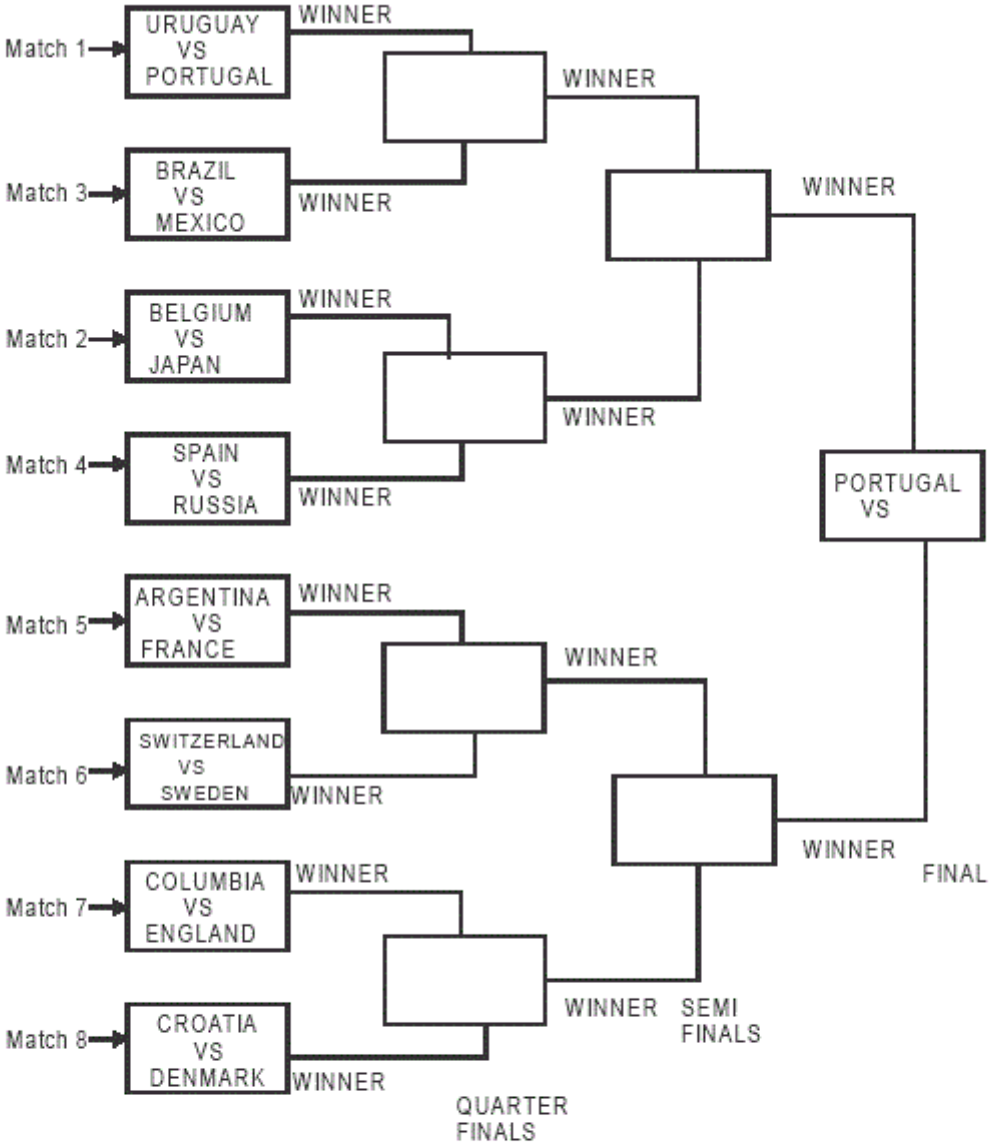
So, cost = $\frac{10\times1+15\times1}{1+1} = \frac{25}{2} = 12.5$

FeedBack

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

In a football tournament, organized by Fifa, a total of 32 teams took part. After the completion of 1st round, 16 teams were eliminated and the rest 16 teams were advanced to the next round. All the subsequent rounds, except the 1st round, were of knockout format. In no match, played after the completion of the 1st round, the two teams involved have scored the same number of goals. Also, no team scored more than 2 goals after 1st round.

Following chart gives partial information about the matches played after the 1st round:



Following is the information about the top 5 goals scorers of the tournament, after the tournament is over.

Rank	Players	Country	Goals Scored
1	Messi	Argentina	7
1	Ronaldo	Portugal	7
2	Modric	Croatia	6
3	Hazard	Belgium	5
4	Neymar	Brazil	4

It is further known that:
Each of the given top 5 scorers had scored only one goal in the 1st round.
Messi did not score any goal in the semi-finals.
Pepe, a player from Portugal team, scored a goal in semi-finals.

Q.47
Which of the following teams was not in the semi-finals?

---

1 **Argentina**

---

2 **Belgium**

---

3 **Brazil**

4 **Croatia**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Goals scored by the top 5 scores after the 1st round:
Messi (Argentina) → 6
Ronaldo (Portugal) → 6
Modric (Croatia) → 5
Hazard (Belgium) → 4
Neyman (Brazil) → 3

It is given that
(a) No team scored more than 2 goals in a match, after the 1st round.
(b) Messi did not score in semi-finals
(c) Pepe, (a Portugal player) scored a goal in semi-finals

That means
(i) For Messi to score 6 more goals without scoring more than 2 goals in any match, he needs to score 2 goals each in 2nd round, quarter-finals and finale.
(ii) For Ronaldo to score 6 more goals without scoring more than 2 goals in any match and while scoring at most 1 goal in semi-finals, he needs to score 2 goals each in 2nd round and quarter-finals, with 1 goal each in semi-finals and finals.

He cannot score 2 goals in finale since
(1) no match ends in a draw,
(2) Messi scored 2 goals in finale and
(3) No team scored more than 2 goals in any match, after the 1st round.
So, the 2 finalists are Argentina and Portugal with Argentina being the winner in the finale.
Similarly, for Modric the only possibility is

Match →	2nd round	Quarterfinals	Semifinals
Goals scored →	2	2	1

So, Croatia is one of the semi-finalist.
And, for Hazard, the possibilities are

Match →	2nd round	Quarterfinals	Semifinals
(a)	2	1	1
(b)	2	2	0
(c)	1	2	1

That makes, Belgium one of the semi-finalist

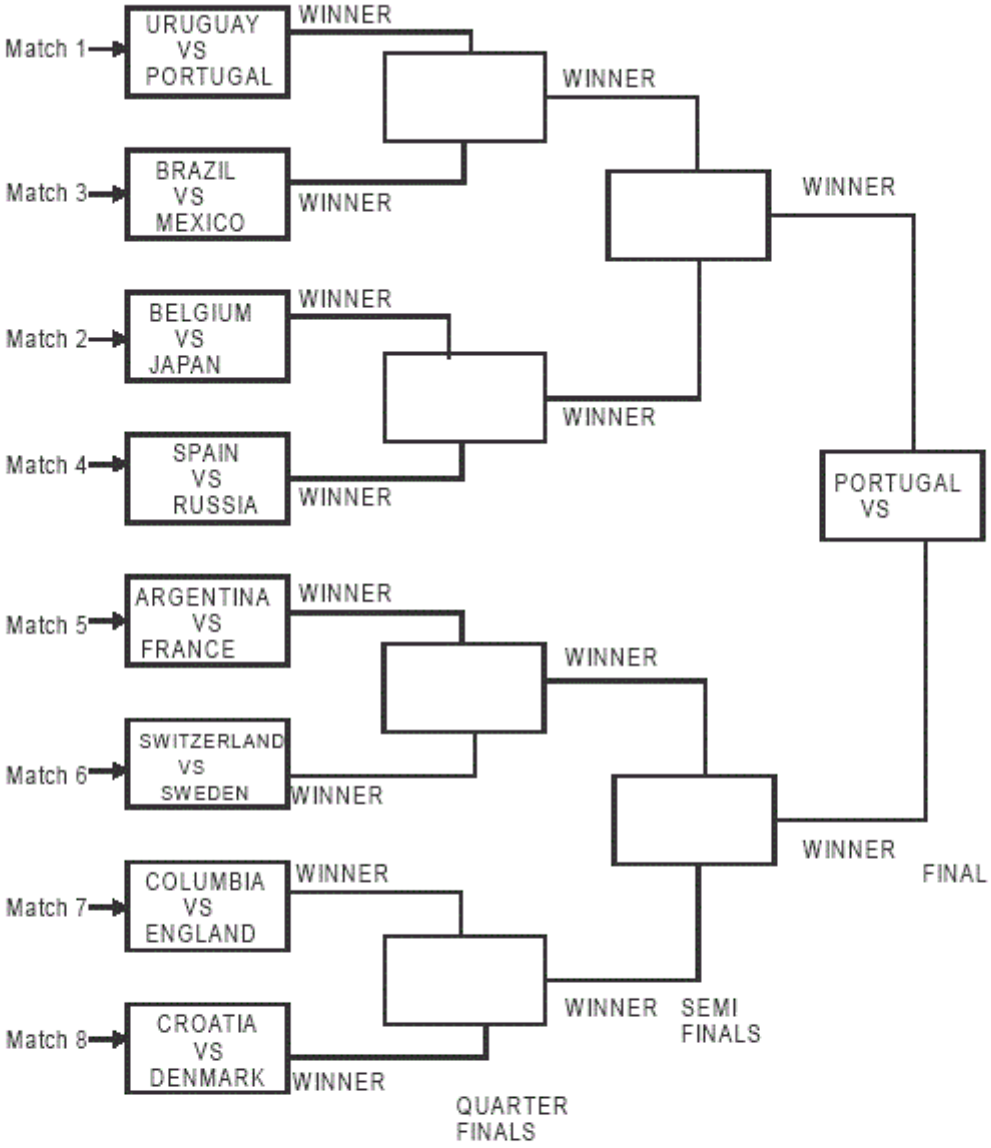
Scoreline of semi-finals is as:
1. Argentina(2) – Croatia(1)
2. Portugal(2) – Belgium(1)
or Portugal(2) –Belgium(0)
Hence the scoreline for finale was
Argentina(2) - Portugal(1)

FeedBack

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

In a football tournament, organized by Fifa, a total of 32 teams took part. After the completion of 1st round, 16 teams were eliminated and the rest 16 teams were advanced to the next round. All the subsequent rounds, except the 1st round, were of knockout format. In no match, played after the completion of the 1st round, the two teams involved have scored the same number of goals. Also, no team scored more than 2 goals after 1st round.

Following chart gives partial information about the matches played after the 1st round:



Following is the information about the top 5 goals scorers of the tournament, after the tournament is over.

Rank	Players	Country	Goals Scored
1	Messi	Argentina	7
1	Ronaldo	Portugal	7
2	Modric	Croatia	6
3	Hazard	Belgium	5
4	Neymar	Brazil	4

It is further known that:
Each of the given top 5 scorers had scored only one goal in the 1st round.
Messi did not score any goal in the semi-finals.
Pepe, a player from Portugal team, scored a goal in semi-finals.

Q.48

If in a match between A and B, A beats B by 2 goals to 1, then it is represented as A(2) – B(1).

Which of the following is not a possible scoreline of a quarter-finals match?

---

1 ○ **Portugal (2) – Brazil (1)**

2 **Argentina (2) – Sweden(0)**

3 **Belgium (1) – Spain(0)**

4 **Croatia (1) – Columbia(0)**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Goals scored by the top 5 scores after the 1st round:
Messi (Argentina) → 6
Ronaldo (Portugal) → 6
Modric (Croatia) → 5
Hazard (Belgium) → 4
Neyman (Brazil) → 3

It is given that
(a) No team scored more than 2 goals in a match, after the 1st round.
(b) Messi did not score in semi-finals
(c) Pepe, (a Portugal player) scored a goal in semi-finals

That means
(i) For Messi to score 6 more goals without scoring more than 2 goals in any match, he needs to score 2 goals each in 2nd round, quarter-finals and finale.
(ii) For Ronaldo to score 6 more goals without scoring more than 2 goals in any match and while scoring at most 1 goal in semi-finals, he needs to score 2 goals each in 2nd round and quarter-finals, with 1 goal each in semi-finals and finals.

He cannot score 2 goals in finale since
(1) no match ends in a draw,
(2) Messi scored 2 goals in finale and
(3) No team scored more than 2 goals in any match, after the 1st round.
So, the 2 finalists are Argentina and Portugal with Argentina being the winner in the finale.
Similarly, for Modric the only possibility is

Match →	2nd round	Quarterfinals	Semifinals
Goals scored →	2	2	1

So, Croatia is one of the semi-finalist.
And, for Hazard, the possibilities are

Match →	2nd round	Quarterfinals	Semifinals
(a)	2	1	1
(b)	2	2	0
(c)	1	2	1

That makes, Belgium one of the semi-finalist

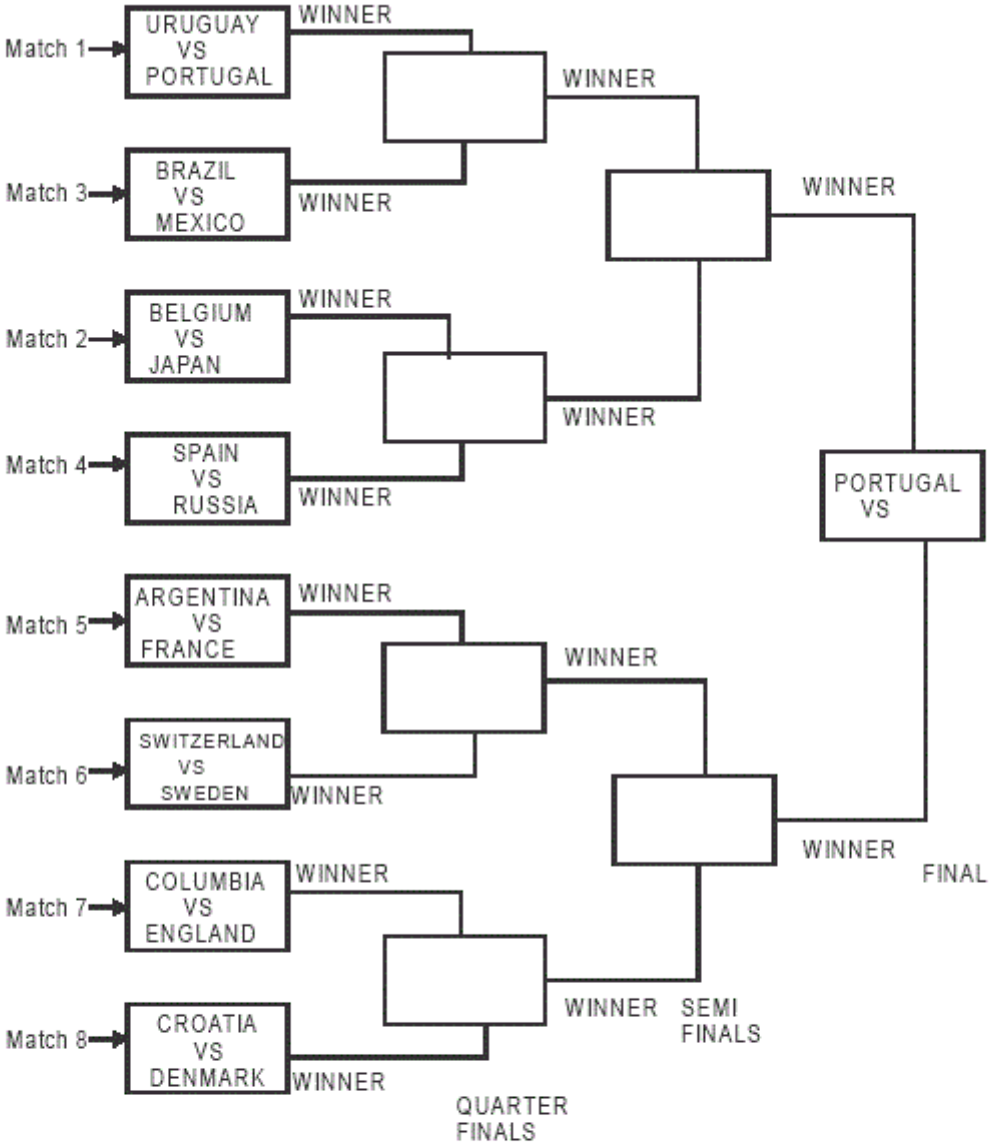
Scoreline of semi-finals is as:
1. Argentina(2) – Croatia(1)
2. Portugal(2) – Belgium(1)
or Portugal(2) –Belgium(0)
Hence the scoreline for finale was
Argentina(2) - Portugal(1)

FeedBack

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

In a football tournament, organized by Fifa, a total of 32 teams took part. After the completion of 1st round, 16 teams were eliminated and the rest 16 teams were advanced to the next round. All the subsequent rounds, except the 1st round, were of knockout format. In no match, played after the completion of the 1st round, the two teams involved have scored the same number of goals. Also, no team scored more than 2 goals after 1st round.

Following chart gives partial information about the matches played after the 1st round:



Following is the information about the top 5 goals scorers of the tournament, after the tournament is over.

Rank	Players	Country	Goals Scored
1	Messi	Argentina	7
1	Ronaldo	Portugal	7
2	Modric	Croatia	6
3	Hazard	Belgium	5
4	Neymar	Brazil	4

It is further known that:
Each of the given top 5 scorers had scored only one goal in the 1st round.
Messi did not score any goal in the semi-finals.
Pepe, a player from Portugal team, scored a goal in semi-finals.

Q.49
What were the results of the finale?

---

1 **Portugal beats Croatia by 2 goals to1**

---

2 **Argentina beats Portugal by 2 goals to 1**

---

3 **Portugal beats Argentina by 1 goal to nil**

4 **Croatia beats Portugal by 1 goal to nil**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Goals scored by the top 5 scores after the 1st round:
Messi (Argentina) → 6
Ronaldo (Portugal) → 6
Modric (Croatia) → 5
Hazard (Belgium) → 4
Neyman (Brazil) → 3

It is given that
(a) No team scored more than 2 goals in a match, after the 1st round.
(b) Messi did not score in semi-finals
(c) Pepe, (a Portugal player) scored a goal in semi-finals

That means
(i) For Messi to score 6 more goals without scoring more than 2 goals in any match, he needs to score 2 goals each in 2nd round, quarter-finals and finale.
(ii) For Ronaldo to score 6 more goals without scoring more than 2 goals in any match and while scoring at most 1 goal in semi-finals, he needs to score 2 goals each in 2nd round and quarter-finals, with 1 goal each in semi-finals and finals.

He cannot score 2 goals in finale since
(1) no match ends in a draw,
(2) Messi scored 2 goals in finale and
(3) No team scored more than 2 goals in any match, after the 1st round.
So, the 2 finalists are Argentina and Portugal with Argentina being the winner in the finale.
Similarly, for Modric the only possibility is

Match →	2nd round	Quarterfinals	Semifinals
Goals scored →	2	2	1

So, Croatia is one of the semi-finalist.
And, for Hazard, the possibilities are

Match →	2nd round	Quarterfinals	Semifinals
(a)	2	1	1
(b)	2	2	0
(c)	1	2	1

That makes, Belgium one of the semi-finalist

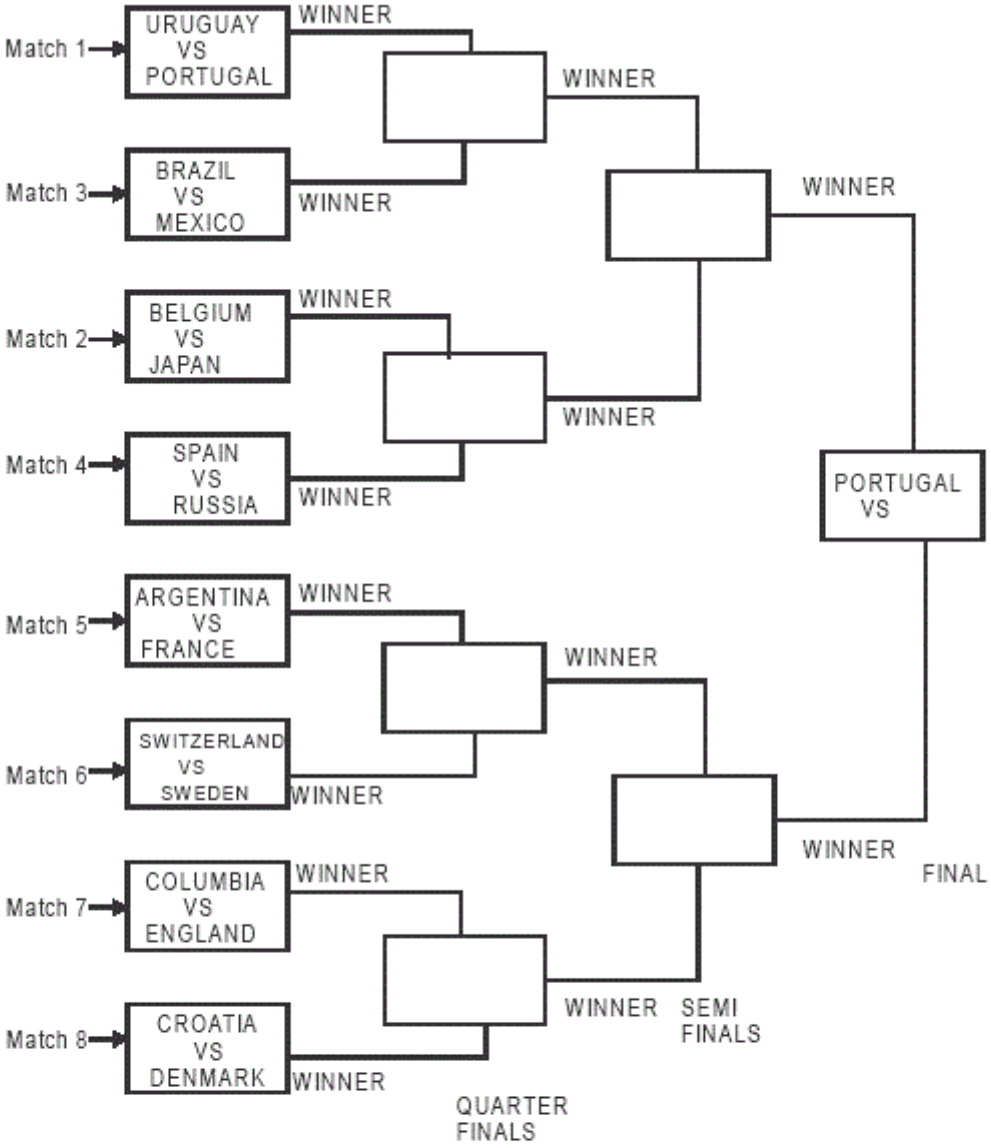
Scoreline of semi-finals is as:
1. Argentina(2) – Croatia(1)
2. Portugal(2) – Belgium(1)
or Portugal(2) –Belgium(0)
Hence the scoreline for finale was
Argentina(2) - Portugal(1)

FeedBack

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

In a football tournament, organized by Fifa, a total of 32 teams took part. After the completion of 1st round, 16 teams were eliminated and the rest 16 teams were advanced to the next round. All the subsequent rounds, except the 1st round, were of knockout format. In no match, played after the completion of the 1st round, the two teams involved have scored the same number of goals. Also, no team scored more than 2 goals after 1st round.

Following chart gives partial information about the matches played after the 1st round:



Following is the information about the top 5 goals scorers of the tournament, after the tournament is over.

Rank	Players	Country	Goals Scored
1	Messi	Argentina	7
1	Ronaldo	Portugal	7
2	Modric	Croatia	6
3	Hazard	Belgium	5
4	Neymar	Brazil	4

It is further known that:
Each of the given top 5 scorers had scored only one goal in the 1st round.
Messi did not score any goal in the semi-finals.
Pepe, a player from Portugal team, scored a goal in semi-finals.

Q.50
Which of the following is not a possible outcome of the semi-finals?

---

1 **Portugal beats Belgium by 2 goals to 1**

---

2 **Portugal beats Belgium by 2 goals to nil.**

---

3 **Argentina beats Croatia by 2 goals to nil**

4 **Argentina beats Croatia by 2 goals to 1**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Goals scored by the top 5 scores after the 1st round:
Messi (Argentina) → 6
Ronaldo (Portugal) → 6
Modric (Croatia) → 5
Hazard (Belgium) → 4
Neyman (Brazil) → 3

It is given that
(a) No team scored more than 2 goals in a match, after the 1st round.
(b) Messi did not score in semi-finals
(c) Pepe, (a Portugal player) scored a goal in semi-finals

That means
(i) For Messi to score 6 more goals without scoring more than 2 goals in any match, he needs to score 2 goals each in 2nd round, quarter-finals and finale.
(ii) For Ronaldo to score 6 more goals without scoring more than 2 goals in any match and while scoring at most 1 goal in semi-finals, he needs to score 2 goals each in 2nd round and quarter-finals, with 1 goal each in semi-finals and finals.

He cannot score 2 goals in finale since
(1) no match ends in a draw,
(2) Messi scored 2 goals in finale and
(3) No team scored more than 2 goals in any match, after the 1st round.
So, the 2 finalists are Argentina and Portugal with Argentina being the winner in the finale.
Similarly, for Modric the only possibility is

Match →	2nd round	Quarterfinals	Semifinals
Goals scored →	2	2	1

So, Croatia is one of the semi-finalist.
And, for Hazard, the possibilities are

Match →	2nd round	Quarterfinals	Semifinals
(a)	2	1	1
(b)	2	2	0
(c)	1	2	1

That makes, Belgium one of the semi-finalist

Scoreline of semi-finals is as:
1. Argentina(2) – Croatia(1)
2. Portugal(2) – Belgium(1)
or Portugal(2) –Belgium(0)

Hence the scoreline for finale was
Argentina(2) - Portugal(1)

FeedBack

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

A survey was done in a city by an independent body to check the popularity of the bikes - Hero, Honda, Bajaj, Suzuki, TVS and KTM. Total 6300 people participated in the survey. Each person likes at least one of the six bikes. Further, we know the following:

(i) The number of persons who likes exactly one bike to the number of persons who likes exactly two bikes to the number of persons who like exactly three bikes to the number of persons who likes exactly four bikes is in ratio 4 : 3 : 2 : 1 respectively.
(ii) The persons who like TVS, likes neither Hero nor Suzuki.
(iii) The persons who likes Honda, likes neither KTM nor TVS.
(iv) The persons who likes KTM, likes neither Hero nor TVS.
(v) The number of persons who likes only one bike is equal for each bike.
(vi) The number of persons who like exactly two bikes is equal for each possible combination of only two liked bikes. Similarly, the number of persons who like exactly three bikes is equal for each possible combination of only three liked bikes.

Q.51
How many persons like Suzuki but does not like Bajaj?

1 **1302**

2 **1360**

3 **1435**

4 **1365**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

By statement (i), 4x + 3x + 2x + x = 6300.
10x = 6300
∴ x = 630
2520 people like exactly one bike. 1890 people like exactly two bikes. 1260 and 630 people like exactly three bikes and exactly four bikes respectively.
By statement (ii), (iii) and (iv) together.

Hero	Honda	Bajaj	Suzuki	TVS	KTM
Suzuki Bajaj Honda	Suzuki Bajaj Hero	Hero Honda Suziki TVS KTM	KTM Bajaj Hero Honda	Bajaj	Bajaj Suzuki

By statement (v), equal number of people like exactly one bike.

$\Rightarrow \frac{2520}{6}$ = 420 like only Hero, only Honda, only Bajaj, only Suzuki, only TVS, only KTM.

By above table, 9 distinct pairs of people who like exactly two bikes are formed which are:
Hero + Suzuki ; Hero + Bajaj ; Hero + Honda ; Honda + Suzuki ; Honda + Bajaj ; Bajaj + Suzuki ; Bajaj + TVS ; Bajaj + KTM ; Suzuki + KTM ; $\Rightarrow \frac{1890}{9} = 210$ i.e., each group liked by 210 people.

By above table, 5 distinct pairs of people who like exactly three bikes will be formed which are:
Hero + Honda + Bajaj; Hero + Honda + Suzuki ; Honda + Bajaj + Suzuki ; Bajaj + Suzuki + KTM; Bajaj + Hero + Suzuki

$\Rightarrow \frac{1260}{5}$ = 252 people

and only 1 pair of people who likes exactly 4 bikes is formed i.e., Hero + Honda + Bajaj + Suzuki = 630 people.

People who like Suzuki but not Bajaj
⇒ 420 + 3 × 210 + 252 = 1302.

FeedBack

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

A survey was done in a city by an independent body to check the popularity of the bikes - Hero, Honda, Bajaj, Suzuki, TVS and KTM. Total 6300 people participated in the survey. Each person likes at least one of the six bikes. Further, we know the following:

(i) The number of persons who likes exactly one bike to the number of persons who likes exactly two bikes to the number of persons who like exactly three bikes to the number of persons who likes exactly four bikes is in ratio 4 : 3 : 2 : 1 respectively.
(ii) The persons who like TVS, likes neither Hero nor Suzuki.
(iii) The persons who likes Honda, likes neither KTM nor TVS.
(iv) The persons who likes KTM, likes neither Hero nor TVS.
(v) The number of persons who likes only one bike is equal for each bike.
(vi) The number of persons who like exactly two bikes is equal for each possible combination of only two liked bikes. Similarly, the number of persons who like exactly three bikes is equal for each possible combination of only three liked bikes.

Q.52

How many persons like only Hero and Bajaj together?

1 **189**

2 **378**

3 **210**

4 **Cannot be determined**

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

By statement (i), 4x + 3x + 2x + x = 6300.

10x = 6300

∴ x = 630

2520 people like exactly one bike. 1890 people like exactly two bikes. 1260 and 630 people like exactly three bikes and exactly four bikes respectively.

By statement (ii), (iii) and (iv) together.

Hero	Honda	Bajaj	Suzuki	TVS	KTM
Suzuki Bajaj Honda	Suzuki Bajaj Hero	Hero Honda Suziki TVS KTM	KTM Bajaj Hero Honda	Bajaj	Bajaj Suzuki

By statement (v), equal number of people like exactly one bike.

$\Rightarrow \frac{2520}{6}$ = 420 like only Hero, only Honda, only Bajaj, only Suzuki, only TVS, only KTM.

By above table, 9 distinct pairs of people who like exactly two bikes are formed which are:
Hero + Suzuki ; Hero + Bajaj ; Hero + Honda ; Honda + Suzuki ; Honda + Bajaj ; Bajaj + Suzuki ; Bajaj + TVS ; Bajaj + KTM ;

Suzuki + KTM ; $\Rightarrow \frac{1890}{9} = 210$ i.e., each group liked by 210 people.

By above table, 5 distinct pairs of people who like exactly three bikes will be formed which are:
Hero + Honda + Bajaj; Hero + Honda + Suzuki ; Honda + Bajaj + Suzuki ; Bajaj + Suzuki + KTM; Bajaj + Hero + Suzuki

$\Rightarrow \frac{1260}{5}$ = 252 people

and only 1 pair of people who likes exactly 4 bikes is formed i.e., Hero + Honda + Bajaj + Suzuki = 630 people.

People who like hero and Bajaj together is 210.

FeedBack

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

A survey was done in a city by an independent body to check the popularity of the bikes - Hero, Honda, Bajaj, Suzuki, TVS and KTM. Total 6300 people participated in the survey. Each person likes at least one of the six bikes. Further, we know the following:

(i) The number of persons who likes exactly one bike to the number of persons who likes exactly two bikes to the number of persons who like exactly three bikes to the number of persons who likes exactly four bikes is in ratio 4 : 3 : 2 : 1 respectively.
(ii) The persons who like TVS, likes neither Hero nor Suzuki.
(iii) The persons who likes Honda, likes neither KTM nor TVS.
(iv) The persons who likes KTM, likes neither Hero nor TVS.
(v) The number of persons who likes only one bike is equal for each bike.
(vi) The number of persons who like exactly two bikes is equal for each possible combination of only two liked bikes. Similarly, the number of persons who like exactly three bikes is equal for each possible combination of only three liked bikes.

Q.53
How many persons does not like KTM?

1 **1092**

2 **2342**

3 **4598**

4 **5208**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

By statement (i), 4x + 3x + 2x + x = 6300.
10x = 6300
∴ x = 630
2520 people like exactly one bike. 1890 people like exactly two bikes. 1260 and 630 people like exactly three bikes and exactly four bikes respectively.
By statement (ii), (iii) and (iv) together.

Hero	Honda	Bajaj	Suzuki	TVS	KTM
Suzuki Bajaj Honda	Suzuki Bajaj Hero	Hero Honda Suziki TVS KTM	KTM Bajaj Hero Honda	Bajaj	Bajaj Suzuki

By statement (v), equal number of people like exactly one bike.

$\Rightarrow \frac{2520}{6}$ = 420 like only Hero, only Honda, only Bajaj, only Suzuki, only TVS, only KTM.

By above table, 9 distinct pairs of people who like exactly two bikes are formed which are:
Hero + Suzuki ; Hero + Bajaj ; Hero + Honda ; Honda + Suzuki ; Honda + Bajaj ; Bajaj + Suzuki ; Bajaj + TVS ; Bajaj + KTM ; Suzuki + KTM ; $\Rightarrow \frac{1890}{9} = 210$ i.e., each group liked by 210 people.

By above table, 5 distinct pairs of people who like exactly three bikes will be formed which are:
Hero + Honda + Bajaj; Hero + Honda + Suzuki ; Honda + Bajaj + Suzuki ; Bajaj + Suzuki + KTM; Bajaj + Hero + Suzuki

$\Rightarrow \frac{1260}{5}$ = 252 people

and only 1 pair of people who likes exactly 4 bikes is formed i.e., Hero + Honda + Bajaj + Suzuki = 630 people.

People who do not like KTM
= 6300 – people who like KTM
= 6300 – [420 + 2 × 210 + 252] = 5208.

FeedBack

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

A survey was done in a city by an independent body to check the popularity of the bikes - Hero, Honda, Bajaj, Suzuki, TVS and KTM. Total 6300 people participated in the survey. Each person likes at least one of the six bikes. Further, we know the following:

(i) The number of persons who likes exactly one bike to the number of persons who likes exactly two bikes to the number of persons who like exactly three bikes to the number of persons who likes exactly four bikes is in ratio 4 : 3 : 2 : 1 respectively.
(ii) The persons who like TVS, likes neither Hero nor Suzuki.
(iii) The persons who likes Honda, likes neither KTM nor TVS.
(iv) The persons who likes KTM, likes neither Hero nor TVS.
(v) The number of persons who likes only one bike is equal for each bike.
(vi) The number of persons who like exactly two bikes is equal for each possible combination of only two liked bikes. Similarly, the number of persons who like exactly three bikes is equal for each possible combination of only three liked bikes.

Q.54

How many persons like exactly three bikes but do not like KTM?

1 **990**

2 **1008**

3 **1260**

4 **1386**

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

By statement (i), 4x + 3x + 2x + x = 6300.

10x = 6300

∴ x = 630

2520 people like exactly one bike. 1890 people like exactly two bikes. 1260 and 630 people like exactly three bikes and exactly four bikes respectively.

By statement (ii), (iii) and (iv) together.

Hero	Honda	Bajaj	Suzuki	TVS	KTM
Suzuki Bajaj Honda	Suzuki Bajaj Hero	Hero Honda Suziki TVS KTM	KTM Bajaj Hero Honda	Bajaj	Bajaj Suzuki

By statement (v), equal number of people like exactly one bike.

$\Rightarrow \frac{2520}{6}$ = 420 like only Hero, only Honda, only Bajaj, only Suzuki, only TVS, only KTM.

By above table, 9 distinct pairs of people who like exactly two bikes are formed which are:
Hero + Suzuki ; Hero + Bajaj ; Hero + Honda ; Honda + Suzuki ; Honda + Bajaj ; Bajaj + Suzuki ; Bajaj + TVS ; Bajaj + KTM ;

Suzuki + KTM ; $\Rightarrow \frac{1890}{9} = 210$ i.e., each group liked by 210 people.

By above table, 5 distinct pairs of people who like exactly three bikes will be formed which are:
Hero + Honda + Bajaj; Hero + Honda + Suzuki ; Honda + Bajaj + Suzuki ; Bajaj + Suzuki + KTM; Bajaj + Hero + Suzuki

$\Rightarrow \frac{1260}{5}$ = 252 people

and only 1 pair of people who likes exactly 4 bikes is formed i.e., Hero + Honda + Bajaj + Suzuki = 630 people.

Persons who like exactly three bikes but do not like KTM = 252 × 4 = 1008.

FeedBack

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

A survey was conducted to know the favourite subject of each student in a school. On 11th July 2018, when the survey was conducted for the first time, each student indicated one of the five subjects – Maths, Science, History, Hindi and English - as his/her favourite subject. When the survey was again conducted on 12th July 2018 some of the students changed their choices of favourite subject. On both the days all the students of the school participated in the survey and each student, on both days, indicated his/her favourite subject only once. The table given below shows the number of students, who changed their choice on 12th July 2018, as a percentage of total number of students who indicated that particular subject as their favourite subject on 11th July 2018.

For example, 20% of those who indicated Maths as their favourite subject on 11th July 2018 changed their choice of favourite subject to History on 12th July 2018 or 25% of those who indicated English as their favourite subject on 11th July 2018 did not change their choice of favorite subject on 12th July 2018.

On 11th July 2018	On 12th July 2018				
	Maths	Science	History	Hindi	English
Maths	$\frac{400}{9}\%$	$\frac{100}{9}\%$	20%	$\frac{100}{9}\%$	$\frac{40}{3}\%$
Science	25%	$\frac{100}{3}\%$	$\frac{200}{9}\%$	$\frac{175}{18}\%$	$\frac{175}{18}\%$
History	$\frac{65}{3}\%$	30%	$\frac{40}{3}\%$	10%	25%
Hindi	19%	23%	15%	16%	27%
English	$\frac{75}{7}\%$	$\frac{150}{7}\%$	$\frac{200}{21}\%$	$\frac{100}{3}\%$	25%

Q.55

At least how many students must have participated in the survey?

Solution:

Correct Answer : 361

Bookmark

Answer key/Solution

Following table shows the possible values:

On 11th July 2018	On 12th July 2018					
	Maths	Science	History	Hindi	English	Total
Maths	20a	5a	9a	5a	6a	45a
Science	18b	24b	16b	7b	7b	72b
History	13c	18c	8c	6c	15c	60c
Hindi	19d	23d	15d	16d	27d	100d
English	9e	18e	8e	28e	21e	84e
Total	45a +72b + 60c +100d + 84e					

Minimum number of students who participated in the survey = 45 + 72 + 60 + 100 + 84 = 361.
The correct answer is 361.

FeedBack

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

A survey was conducted to know the favourite subject of each student in a school. On 11th July 2018, when the survey was conducted for the first time, each student indicated one of the five subjects – Maths, Science, History, Hindi and English - as his/her favourite subject. When the survey was again conducted on 12th July 2018 some of the students changed their choices of favourite subject. On both the days all the students of the school participated in the survey and each student, on both days, indicated his/her favourite subject only once. The table given below shows the number of students, who changed their choice on 12th July 2018, as a percentage of total number of students who indicated that particular subject as their favourite subject on 11th July 2018.

For example, 20% of those who indicated Maths as their favourite subject on 11th July 2018 changed their choice of favourite subject to History on 12th July 2018 or 25% of those who indicated English as their favourite subject on 11th July 2018 did not change their choice of favorite subject on 12th July 2018.

On 11th July 2018	On 12th July 2018				
	Maths	Science	History	Hindi	English
Maths	$\frac{400}{9}\%$	$\frac{100}{9}\%$	20%	$\frac{100}{9}\%$	$\frac{40}{3}\%$
Science	25%	$\frac{100}{3}\%$	$\frac{200}{9}\%$	$\frac{175}{18}\%$	$\frac{175}{18}\%$
History	$\frac{65}{3}\%$	30%	$\frac{40}{3}\%$	10%	25%
Hindi	19%	23%	15%	16%	27%
English	$\frac{75}{7}\%$	$\frac{150}{7}\%$	$\frac{200}{21}\%$	$\frac{100}{3}\%$	25%

Q.56

If on 12th July 2018 a total of 56 students indicated History as their favourite subject, then how many students indicated Hindi as their favourite subject on 11th July 2018?

Solution:
Correct Answer : 100

Bookmark

Answer key/Solution

Following table shows the possible values:

On 11th July 2018	On 12th July 2018					
	Maths	Science	History	Hindi	English	Total
Maths	20a	5a	9a	5a	6a	45a
Science	18b	24b	16b	7b	7b	72b
History	13c	18c	8c	6c	15c	60c
Hindi	19d	23d	15d	16d	27d	100d
English	9e	18e	8e	28e	21e	84e
Total	45a +72b + 60c +100d + 84e					

Given that: 9a + 16b + 8c + 15d + 8e = 56 that is possible only when a = b = c = d = e = 1.
Required answer = 100 × 1 = 100.
Therefore, the correct answer is 100.

FeedBack

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

A survey was conducted to know the favourite subject of each student in a school. On 11th July 2018, when the survey was conducted for the first time, each student indicated one of the five subjects – Maths, Science, History, Hindi and English - as his/her favourite subject. When the survey was again conducted on 12th July 2018 some of the students changed their choices of favourite subject. On both the days all the students of the school participated in the survey and each student, on both days, indicated his/her favourite subject only once. The table given below shows the number of students, who changed their choice on 12th July 2018, as a percentage of total number of students who indicated that particular subject as their favourite subject on 11th July 2018.

For example, 20% of those who indicated Maths as their favourite subject on 11th July 2018 changed their choice of favourite subject to History on 12th July 2018 or 25% of those who indicated English as their favourite subject on 11th July 2018 did not change their choice of favorite subject on 12th July 2018.

On 11th July 2018	On 12th July 2018				
	Maths	Science	History	Hindi	English
Maths	$\frac{400}{9}\%$	$\frac{100}{9}\%$	20%	$\frac{100}{9}\%$	$\frac{40}{3}\%$
Science	25%	$\frac{100}{3}\%$	$\frac{200}{9}\%$	$\frac{175}{18}\%$	$\frac{175}{18}\%$
History	$\frac{65}{3}\%$	30%	$\frac{40}{3}\%$	10%	25%
Hindi	19%	23%	15%	16%	27%
English	$\frac{75}{7}\%$	$\frac{150}{7}\%$	$\frac{200}{21}\%$	$\frac{100}{3}\%$	25%

Q.57

If a total of 406 students participated in the survey, then how many students changed their choice of favourite subject during the given period?

Solution:

Correct Answer : 297

Bookmark

Answer key/Solution

Following table shows the possible values:

On 11th July 2018	On 12th July 2018					
	Maths	Science	History	Hindi	English	Total
Maths	20a	5a	9a	5a	6a	45a
Science	18b	24b	16b	7b	7b	72b
History	13c	18c	8c	6c	15c	60c
Hindi	19d	23d	15d	16d	27d	100d
English	9e	18e	8e	28e	21e	84e
Total	45a +72b + 60c +100d + 84e					

Given that: 45a + 72b + 60c + 100d + 84e = 406 that is possible only when a = 2 and b = c = d = e = 1.
Required answer = 406 – (20 x 2 + 24 x 1 + 8 x 1 + 16 x 1 + 21 x 1) = 297.
The correct answer is 297.

FeedBack

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

A survey was conducted to know the favourite subject of each student in a school. On 11th July 2018, when the survey was conducted for the first time, each student indicated one of the five subjects – Maths, Science, History, Hindi and English - as his/her favourite subject. When the survey was again conducted on 12th July 2018 some of the students changed their choices of favourite subject. On both the days all the students of the school participated in the survey and each student, on both days, indicated his/her favourite subject only once. The table given below shows the number of students, who changed their choice on 12th July 2018, as a percentage of total number of students who indicated that particular subject as their favourite subject on 11th July 2018.

For example, 20% of those who indicated Maths as their favourite subject on 11th July 2018 changed their choice of favourite subject to History on 12th July 2018 or 25% of those who indicated English as their favourite subject on 11th July 2018 did not change their choice of favorite subject on 12th July 2018.

On 11th July 2018	On 12th July 2018				
	Maths	Science	History	Hindi	English
Maths	$\frac{400}{9}\%$	$\frac{100}{9}\%$	20%	$\frac{100}{9}\%$	$\frac{40}{3}\%$
Science	25%	$\frac{100}{3}\%$	$\frac{200}{9}\%$	$\frac{175}{18}\%$	$\frac{175}{18}\%$
History	$\frac{65}{3}\%$	30%	$\frac{40}{3}\%$	10%	25%
Hindi	19%	23%	15%	16%	27%
English	$\frac{75}{7}\%$	$\frac{150}{7}\%$	$\frac{200}{21}\%$	$\frac{100}{3}\%$	25%

Q.58

If the number of students who participated in the survey was less than 500 but was closest to 500, then which of the following subjects was chosen as their favorite subject by maximum number of students on 12th July 2018?

1 **Maths**

2 **Science**

3 **History**

4 **English**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Following table shows the possible values:

On 11th July 2018	On 12th July 2018					
	Maths	Science	History	Hindi	English	Total
Maths	20a	5a	9a	5a	6a	45a
Science	18b	24b	16b	7b	7b	72b
History	13c	18c	8c	6c	15c	60c
Hindi	19d	23d	15d	16d	27d	100d
English	9e	18e	8e	28e	21e	84e
Total	45a +72b + 60c +100d + 84e					

Number of students who participated in the survey would be less than 500 but closest to 500 when a = 1, b = 2, c = 2, d = 1 and e = 1.
Total number of students = 493.
Maximum value = 24b = 48.

FeedBack

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

First 12 natural numbers are divided into three groups such that:

(i) Each group contains exactly 4 numbers.
(ii) No two numbers from any of the following sets belong to the same group – {1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}.
(iii) Sum of the 4 numbers in any of the groups is same.
(iv) If 4 numbers in one of the three groups are arranged in ascending order then the difference between any two consecutive numbers in the group will be same.

Q.59
If one number is picked from each of the three groups and put in a set then which of the following can be the set formed in that way?

1 **{1, 2, 4}**

2 **{6, 8, 10}**

3 **{3, 6, 9}**

4 **Either (1) or (2)**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The possible ways of making the groups are as given in the table below:

Group 1	Group 2	Group 3
2, 5, 8, 11	1, 4, 9, 12	3, 6, 7, 10
2, 5, 8, 11	1, 6, 9, 10	3, 4, 7, 12
2, 5, 8, 11	1, 6, 7, 12	3, 4, 9, 10

{1, 2, 4} and {6, 8, 10} both are possible.

FeedBack

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

First 12 natural numbers are divided into three groups such that:

(i) Each group contains exactly 4 numbers.
(ii) No two numbers from any of the following sets belong to the same group – {1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}.
(iii) Sum of the 4 numbers in any of the groups is same.
(iv) If 4 numbers in one of the three groups are arranged in ascending order then the difference between any two consecutive numbers in the group will be same.

Q.60
Which of the following statements is not necessarily false?

1 **One of the groups contains 4 prime numbers.**

2 **All the multiples of three belong to the same group.**

3 **One of the groups contains 3 odd numbers.**

4 **All the perfect squares belong to the same group.**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The possible ways of making the groups are as given in the table below:

Group 1	Group 2	Group 3
2, 5, 8, 11	1, 4, 9, 12	3, 6, 7, 10
2, 5, 8, 11	1, 6, 9, 10	3, 4, 7, 12
2, 5, 8, 11	1, 6, 7, 12	3, 4, 9, 10

Only perfect squares present in first 12 natural numbers are 1, 4 and 9. They all can be possible in a single group, as we can see in group 2 of case I.

FeedBack

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

First 12 natural numbers are divided into three groups such that:

(i) Each group contains exactly 4 numbers.
(ii) No two numbers from any of the following sets belong to the same group – {1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}.
(iii) Sum of the 4 numbers in any of the groups is same.
(iv) If 4 numbers in one of the three groups are arranged in ascending order then the difference between any two consecutive numbers in the group will be same.

Q.61
If two numbers are picked from any one group then what can be the maximum value of the difference of the two numbers?

Solution:
Correct Answer : 11

Bookmark

Answer key/Solution

The possible ways of making the groups are as given in the table below:

Group 1	Group 2	Group 3
2, 5, 8, 11	1, 4, 9, 12	3, 6, 7, 10
2, 5, 8, 11	1, 6, 9, 10	3, 4, 7, 12
2, 5, 8, 11	1, 6, 7, 12	3, 4, 9, 10

As 1 and 12 can belong to the same group in a case, so the correct answer is 11.

FeedBack

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

First 12 natural numbers are divided into three groups such that:

(i) Each group contains exactly 4 numbers.
(ii) No two numbers from any of the following sets belong to the same group – {1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}.
(iii) Sum of the 4 numbers in any of the groups is same.
(iv) If 4 numbers in one of the three groups are arranged in ascending order then the difference between any two consecutive numbers in the group will be same.

Q.62
If two numbers are picked from each of the three groups and luckily the sum of the two numbers picked from each group happens to be equal to 'n' then how many distinct values are possible for 'n'?

Solution:

Correct Answer : 5

The possible ways of making the groups are as given in the table below:

Group 1	Group 2	Group 3
2, 5, 8, 11	1, 4, 9, 12	3, 6, 7, 10
2, 5, 8, 11	1, 6, 9, 10	3, 4, 7, 12
2, 5, 8, 11	1, 6, 7, 12	3, 4, 9, 10

The value of 'n' can be 7, 10, 13, 16 or 19. The correct answer is 5.

FeedBack

Bookmark

Answer key/Solution

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

There are 12 friends - A, B, C, D, E, F, G, H, I, J, K and L - sitting in a grid arrangement having dimension 4 × 3 is as shown below:

	Column 1	Column 2	Column 3
Row 4	a_{41} F	a_{42}	a_{43}
Row 3	a_{31}	a_{32}	a_{33} B
Row 2	a_{21}	a_{22}	a_{23}
Row 1	a_{11} K	a_{12}	a_{13}

The position of three of the friends is already given in the grid. Every cell of the grid is labeled in the form of a_{ij}, where i denotes the row number and j denotes the column number of that cell. Two friends can be said neighbour to each other if one is sitting in a cell adjacent to the other's cell vertically or horizontally but not diagonally. If A is a neighbor of B then A can be in a_{43}, a_{32},or a_{23} only. Further, the following is also known

(i) A and B are not neighbors to each other but C is a neighbor of B.
(ii) L sits in a cell for which i > j.
(iii) E and I are sitting in the same row, and A and C are sitting in the same column.
(iv) G sits in the cell a_{ij} where i < j.
(v) J and D sits in the cell a_{ij} and a_{ji} respectively such that i < j, and the value of i and j are same for both.
(vi) D has more number of neighbors than E out of which 2 are common.

Q.63

How many common neighbors does H and L have?

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

By statement (v), J and D sit in one of the following combination: (a_{12}, a_{21}), (a_{13}, a_{31}) or (a_{23}, a_{32}).
By statement (vi), D has more number of neighbors than E out of which 2 are common which is possible only if D sits in the cell a_{32}. Therefore, J sits in a_{23}.
By statement (i), C is the neighbor of B, therefore only option that is left for C is cell a_{43}. By statement (iii), A sits in cell a_{13}.

	Column 1	Column 2	Column 3
Row 4	F		C
Row 3		D	B
Row 2			J
Row 1	K		A

Now E and I sits in the same row, also number of neighbors of E are less than D, therefore, E sits in cell a_{21} and I sits in a_{22}.
By statement (iv), G is left with the only option i.e., a_{12}. And by statement (ii), L sits in either a_{31} or a_{42} and same goes for H.
Final arrangement that we get is,

	Column1	Column2	Column3
Row 4	F	H/L	C
Row 3	L/H	D	B
Row 2	E	I	J
Row 1	K	G	A

H and L have 2 neighbors in common.

FeedBack

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

There are 12 friends - A, B, C, D, E, F, G, H, I, J, K and L - sitting in a grid arrangement having dimension 4 × 3 is as shown below:

	Column 1	Column 2	Column 3
Row 4	a_{41} **F**	a_{42}	a_{43}
Row 3	a_{31}	a_{32}	a_{33} **B**
Row 2	a_{21}	a_{22}	a_{23}
Row 1	a_{11} **K**	a_{12}	a_{13}

The position of three of the friends is already given in the grid. Every cell of the grid is labeled in the form of a_{ij}, where i denotes the row number and j denotes the column number of that cell. Two friends can be said neighbour to each other if one is sitting in a cell adjacent to the other's cell vertically or horizontally but not diagonally. If A is a neighbor of B then A can be in a_{43}, a_{32},or a_{23} only. Further, the following is also known

(i) A and B are not neighbors to each other but C is a neighbor of B.
(ii) L sits in a cell for which i > j.
(iii) E and I are sitting in the same row, and A and C are sitting in the same column.
(iv) G sits in the cell a_{ij} where i < j.
(v) J and D sits in the cell a_{ij} and a_{ji} respectively such that i < j, and the value of i and j are same for both.
(vi) D has more number of neighbors than E out of which 2 are common.

Q.64

Which of these combinations cannot follow the same pattern as the other options does?

1 ○ E – **K** –G

2 ○ D- **I** – J

3 ○ I- **G** –A

4 ○ F – **L** – C

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

By statement (v), J and D sit in one of the following combination: (a_{12}, a_{21}), (a_{13}, a_{31}) or (a_{23}, a_{32}).
By statement (vi), D has more number of neighbors than E out of which 2 are common which is possible only if D sits in the cell a_{32}. Therefore, J sits in a_{23}.
By statement (i), C is the neighbor of B, therefore only option that is left for C is cell a_{43}. By statement (iii), A sits in cell a_{13}.

	Column 1	Column 2	Column 3
Row 4	F		C
Row 3		D	B
Row 2			J
Row 1	K		A

Now E and I sits in the same row, also number of neighbors of E are less than D, therefore, E sits in cell a_{21} and I sits in a_{22}.
By statement (iv), G is left with the only option i.e., a_{12}. And by statement (ii), L sits in either a_{31} or a_{42} and same goes for H.
Final arrangement that we get is,

	Column1	Column2	Column3
Row 4	F	H/L	C
Row 3	L/H	D	B
Row 2	E	I	J
Row 1	K	G	A

F–L–C, because position of L is not fixed.

FeedBack

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

There are 12 friends - A, B, C, D, E, F, G, H, I, J, K and L - sitting in a grid arrangement having dimension 4 × 3 is as shown below:

	Column 1	Column 2	Column 3
Row 4	a_{41} F	a_{42}	a_{43}
Row 3	a_{31}	a_{32}	a_{33} B
Row 2	a_{21}	a_{22}	a_{23}
Row 1	a_{11} K	a_{12}	a_{13}

The position of three of the friends is already given in the grid. Every cell of the grid is labeled in the form of a_{ij}, where i denotes the row number and j denotes the column number of that cell. Two friends can be said neighbour to each other if one is sitting in a cell adjacent to the other's cell vertically or horizontally but not diagonally. If A is a neighbor of B then A can be in a_{43}, a_{32},or a_{23} only. Further, the following is also known

(i) A and B are not neighbors to each other but C is a neighbor of B.
(ii) L sits in a cell for which i > j.
(iii) E and I are sitting in the same row, and A and C are sitting in the same column.
(iv) G sits in the cell a_{ij} where i < j.
(v) J and D sits in the cell a_{ij} and a_{ji} respectively such that i < j, and the value of i and j are same for both.
(vi) D has more number of neighbors than E out of which 2 are common.

Q.65
Which of these can never be true?

1 **The cell numbers of E and C are a_{ij} and a_{pq} such that |i-j| = |p-q| = 1**

2 **H, D and B are sitting in a same row.**

3 **The cells a_{ij} of F, L, D and B are such that 'i' is greater than or equal to 'j' for all of them.**

4 **The sum of the row number and column number in which L sits is 5.**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

By statement (v), J and D sit in one of the following combination: (a_{12}, a_{21}), (a_{13}, a_{31}) or (a_{23}, a_{32}).
By statement (vi), D has more number of neighbors than E out of which 2 are common which is possible only if D sits in the cell a_{32}. Therefore, J sits in a_{23}.
By statement (i), C is the neighbor of B, therefore only option that is left for C is cell a_{43}. By statement (iii), A sits in cell a_{13}.

	Column 1	Column 2	Column 3
Row 4	F		C
Row 3		D	B
Row 2			J
Row 1	K		A

Now E and I sits in the same row, also number of neighbors of E are less than D, therefore, E sits in cell a_{21} and I sits in a_{22}.
By statement (iv), G is left with the only option i.e., a_{12}. And by statement (ii), L sits in either a_{31} or a_{42} and same goes for H.
Final arrangement that we get is,

	Column1	Column2	Column3
Row 4	F	H/L	C
Row 3	L/H	D	B
Row 2	E	I	J
Row 1	K	G	A

L sits in either a_{31} or a_{42} so i + j = 4 or 6 but never 5.

FeedBack

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

There are 12 friends - A, B, C, D, E, F, G, H, I, J, K and L - sitting in a grid arrangement having dimension 4 × 3 is as shown below:

	Column 1	Column 2	Column 3
Row 4	a_{41} F	a_{42}	a_{43}
Row 3	a_{31}	a_{32}	a_{33} B
Row 2	a_{21}	a_{22}	a_{23}
Row 1	a_{11} K	a_{12}	a_{13}

The position of three of the friends is already given in the grid. Every cell of the grid is labeled in the form of a_{ij}, where i denotes the row number and j denotes the column number of that cell. Two friends can be said neighbour to each other if one is sitting in a cell adjacent to the other's cell vertically or horizontally but not diagonally. If A is a neighbor of B then A can be in a_{43}, a_{32},or a_{23} only. Further, the following is also known

(i) A and B are not neighbors to each other but C is a neighbor of B.
(ii) L sits in a cell for which i > j.
(iii) E and I are sitting in the same row, and A and C are sitting in the same column.
(iv) G sits in the cell a_{ij} where i < j.
(v) J and D sits in the cell a_{ij} and a_{ji} respectively such that i < j, and the value of i and j are same for both.
(vi) D has more number of neighbors than E out of which 2 are common.

Q.66
What is the sum of the number of neighbors that D and A have?

Solution:
Correct Answer : 6

Bookmark

Answer key/Solution

By statement (v), J and D sit in one of the following combination: (a_{12}, a_{21}), (a_{13}, a_{31}) or (a_{23}, a_{32}).
By statement (vi), D has more number of neighbors than E out of which 2 are common which is possible only if D sits in the cell a_{32}. Therefore, J sits in a_{23}.
By statement (i), C is the neighbor of B, therefore only option that is left for C is cell a_{43}. By statement (iii), A sits in cell a_{13}.

	Column 1	Column 2	Column 3
Row 4	F		C
Row 3		D	B
Row 2			J
Row 1	K		A

Now E and I sits in the same row, also number of neighbors of E are less than D, therefore, E sits in cell a_{21} and I sits in a_{22}.
By statement (iv), G is left with the only option i.e., a_{12}. And by statement (ii), L sits in either a_{31} or a_{42} and same goes for H.
Final arrangement that we get is,

	Column1	Column2	Column3
Row 4	F	H/L	C
Row 3	L/H	D	B
Row 2	E	I	J
Row 1	K	G	A

Neighbors of (D + A) = 6.

FeedBack

Sec 3

Q.67

If $f(x) = (x^2 + 2x + 1)^{-y^2+6y+3}$, then find the maximum value of f(–2).

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

$f(x) = (x^2 + 2x + 1)^{-y^2+6y+3}$

$f(-2) = (4 - 4 + 1)^{-y^2+6y+3} = 1^{-y^2+6y+3}$

So, maximum value of f(–2) is 1.

FeedBack

Q.68

Number of sides of two regular polygons are in the ratio 1 : 2 and the difference between their exterior angles is 45°. Which of the following is the number of sides of one of these polygons?

1 **5**

2 **6**

3 **7**

4 **8**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let 'n' and '2n' be the number of sides of the two polygons.

$\Rightarrow \frac{360}{n}$ and $\frac{360}{2n}$ be the exterior angles of the two polygons.

As given in the question, $\frac{360}{n} - \frac{360}{2n} = 45 \Rightarrow n = 4$

So, number of sides of the two polygons are 4 and 8.

FeedBack

Q.69

A, B, C, D and E have some chocolates with them with their numbers in ratio 12 : 2 : 2 : 3 : 5. 'A' distributed some of his chocolates among B, C, D and E such that the new ratio of chocolates with each of them is 6 : 9 : 6 : 7 : 8. Find the ratio of chocolates distributed to B, C, D and E by A.

1 **12 : 6 : 5 : 1**

2 **2 : 3 : 4 : 5**

3 **7 : 4 : 4 : 3**

4 **Cannot be determined**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Let the number of chocolates with A, B, C, D and E are 12x, 2x, 2x, 3x and 5x respectively. After 'A' distributing some of his chocolates, the new ratio is 6y : 9y : 6y : 7y : 8y. As the total number of chocolates will remain the same, we can say that 24x = 36y
$\Rightarrow$ x : y is 3 : 2.
Therefore, initial chocolates with A, B, C, D and E can be 36, 6, 6, 9 and 15
and after A's distribution it becomes 12, 18, 12, 14 and 16.
So, the ratio of chocolates received by B, C, D and E are in ratio 12 : 6 : 5 : 1.

FeedBack

Q.70

Ratio of copper and iron in each of the three different alloys is 3 : 5, 3 : 7 and 12 : 5. If 8 kg of first alloy and 30 kg of 2nd alloy is taken, then how much quantity of 3rd alloy should be taken so that the ratio of copper and iron is 1 : 1 in the final mixture?

1 **51 kg**

2 **34 kg**

3 **68 kg**

4 **85 kg**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Quantity of Copper and Iron taken from 1st alloy is 3kg and 5 kg, while from 2nd alloy is 9 kg and 21 kg respectively. So after mixing both the alloys the quantity of Copper and Iron becomes 12 kg and 26 kg respectively. Let the quantity of 3rd alloy be 17a.

So, $\frac{12+12a}{26+5a}=\frac{1}{1}=\frac{\text{Copper in final mixture}}{\text{Iron in final mixture}} \Rightarrow 12 + 12a = 26 + 5a \Rightarrow 7a = 14 \Rightarrow a = 2$

So, the quantity added of 3rd alloy in final mixture is 34 kg.

FeedBack

Q.71

33.33% content of a bottle filled with Bacardi is replaced by soda. This operation is done for 4 times. Find the ratio of Bacardi to soda in the final solution.

1 **16 : 81**

2 **65 : 16**

3 **16 : 65**

4 **81 : 16**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Amount of Bacardi left = $\left(1-\frac{1}{3}\right)^4=\frac{16}{81}$

$\Rightarrow$ required ratio = 16 : (81 – 16) = 16 : 65

FeedBack

Q.72

If the roots of the equation (x + 1)(x + 9) + 8 = 0 are a and b, then the roots of the equation (x + a) (x + b) – 8 = 0 are

1 **1 and 9**

2 **–4 and –6**

3 **4 and 6**

4 **Cannot be determined**

Solution:

Correct Answer : 1

$(x + 1)(x + 9) + 8 = 0 \Rightarrow x^2 + 10x + 17 = 0$

So, sum of roots = a + b = –10

and product of roots = a × b = 17

$\therefore$ $(x + a)(x + b) - 8 = 0$

$\Rightarrow$ $x^2 + x(a + b) + ab - 8 = 0$

$\Rightarrow$ $x^2 - 10x + 9 = 0$

$\therefore$ Roots are x = 1 and x = 9

FeedBack

Bookmark

Answer key/Solution

Q.73

A shop has four types of flowers namely - Tulip, Rose, Marigold and Lily. A person came in to buy 10 flowers such that he has at least one flower of each type. In how many ways can he do so, if the shop has sufficient amount of flowers of each type?

1 **60**

2 **84**

3 **24**

4 **30**

Solution:

Correct Answer : 2

Tulip + Rose + Marigold + Lily = 10

We have to find its natural number solutions, which is equals to ${}^9C_3$ i.e. 84.

FeedBack

Bookmark

Answer key/Solution

Q.74

A, B and D can do a piece of work in 4, 10 and 12 days respectively. A and C together takes one-third of the time than the time taken by B and D together to finish the work. In how much days can C alone finish the work?

1 **10/3**

2 **10/7**

3 **20/3**

4 **20/7**

Solution:

Correct Answer : 1

Let the total amount of work needs to be done = LCM (4, 10, 12) = 60 units
So, A, B and D can do 15, 6 and 5 units/day respectively.

Hence, B and D together will finish the work in $\frac{60}{11}$ days

and A and C together will take $\frac{1}{3}\times\frac{60}{11}=\frac{20}{11}$ days

So, A and C will do $\frac{60}{\frac{20}{11}}=33$ units/day

$\Rightarrow$ C will do 18 units/day.

$\therefore$ Time taken by C alone to finish the work is $\frac{60}{18}=\frac{10}{3}$ days

FeedBack

Bookmark

Answer key/Solution

Q.75

A boat can row a certain distance in still water in 40 seconds. To cover the same distance upstreams it takes 30 seconds more than the time taken by it to cover the same distance downstreams. If the speed of boat in still water is 30 m/sec, then what is the speed (in m/sec) of the stream?

Solution:
Correct Answer : 10

Bookmark

Answer key/Solution

Distance covered = 40 × 30 = 1200 m
Let boat covers the distance of 1200 m downstream in t seconds, and speed of boat and streams be 'b' and'r' respectively.

$\Rightarrow \frac{1200}{t} = b + r$ ...(i)

$\frac{1200}{t+30} = b - r$ ...(ii)

Using (i) & (ii)

$\frac{1200}{t} + \frac{1200}{t+30} = 2b$

$\Rightarrow \frac{1200}{t} + \frac{1200}{t+30} = 2 \times 30$ (b = 30 m/sec)

$\Rightarrow \frac{20}{t} + \frac{20}{t+30} = 1$

$\frac{20t + 600 + 20t}{t(t+30)} = 1$

$\Rightarrow 600 + 40t = t^2 + 30t$

$\Rightarrow t^2 - 10t - 600 = 0$

$\Rightarrow (t - 30)(t + 20) = 0$

Only possible value of t is 30 secs.
So, using (i) we get

$\frac{1200}{30} = 30 + r$

$\Rightarrow$ r = 10m/sec

FeedBack

Q.76
Find the number of trailing zeroes in the product of first 30 multiples of 5.

Solution:
Correct Answer : 26
2 will occur 26 times in the product of first 30 multiples of 5, which is less than the number of 5's. So, the number of trailing zeroes in this product is 26.

Bookmark

Answer key/Solution

FeedBack

Q.77

Raju can finish a job in 20 days and Monu is half as efficient as Raju. Raju worked for 'x' days alone and then left the job. After that Monu started working on it. But after y days, Raju joined him and they together took 7 more days to finish the work. For maximum how many days did Monu work alone?(x, y are natural numbers)

Bookmark

Answer key/Solution

Solution:
Correct Answer : 17
Since Raju can finish in 20 days, Monu will take 40 days to finish the same work.
Let the amount of work be LCM (20, 40) = 40 units
Raju can do 2 units/day and Monu can do 1 unit/day.
So, $2x + y + 3 \times 7 = 40$
$\Rightarrow 2x + y = 19$
$\Rightarrow y = 19 - 2x$
$\Rightarrow$ maximum (y) = $19 - 2 \times 1 = 17$ (minimum (x) = 1, as x and y are natural numbers)

FeedBack

Q.78

How many 4-digit numbers can be formed, which are divisible by 4, using the first 8 whole numbers, if repetition of digits is not allowed?

1 250

2 370

3 120

4 None of these

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
As divisibility by 4 depends on the last two digits of the number, we make two cases where last two digit has a 0 or does not has a 0.
Case 1 : 04, 20, 40, 60 and
Case 2 : 12,16, 24, 32, 36, 52, 56, 64, 72, 76.
For the first case 120 numbers can be formed, and for the 2nd case 250 numbers.
So, total 370 numbers are possible.

FeedBack

Q.79

Find the value of $(1^2 - 2^2 + 3^2 - 4^2 \ldots\ldots\ldots\ldots 49^2 - 50^2)$.

1 1275

2 **–1275**

3 **–2125**

4 **–1375**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

$1^2 - 2^2 = (1 + 2)(1 - 2) = -1 - 2$
$3^2 - 4^2 = (3 - 4)(3 + 4) = -3 - 4$, and so on.

So, series = $-1 - 2 - 3 - 4 - 5 \ldots -49 - 50 = -\left(\frac{50 \times 51}{2}\right) = -1275$

FeedBack

Q.80
It takes 5 hrs to complete a journey, if 60 km is covered by bus and the rest by train. It takes 10 minutes more, if 90 km of journey is covered by bus and the rest by train. If the ratio of speed of bus to that of train is 2 : 3, then what is the total distance (in km) to be covered during the journey?

Solution:
Correct Answer : 420

Bookmark

Answer key/Solution

Bus travels 30 km more as compared to the first case due to which journey time increases by 10 minutes. Also, the ratio of speed of bus and train is 2 : 3, therefore time taken is 3 : 2. Difference in time is 10 minutes, so bus takes 30 minutes and train 20 minutes to cover a distance of 30 km. Therefore, speed of bus and train is 60 km/hr and 90 km/hr respectively. In total 5 hours travel, bus travels 60 km in 1 hr and for remaining 4 hours train travels a distance of 360 km. Hence, total distance covered during the journey is 420 km.

FeedBack

Q.81
If N = (873873873....) upto 100 digits, then what is the remainder when N is divided by 625?

1 **613**

2 **316**

3 **123**

4 **512**

Solution:
Correct Answer : 1
Division by 625 can be checked with the last 4-digits of the number.

$$\text{Remainder} = \left[\frac{\text{the number formed by last 4 digits}}{625}\right] = \frac{8738}{625} = \frac{13\times625+613}{625} = 613.$$

FeedBack

Bookmark

Answer key/Solution

Q.82
A number Q is obtained by adding 3 numbers, in which the first one is a constant, the second is directly proportional to square root of y, and third is directly proportional to cube root of y.
If some of the values for (y, Q) are (1, 90), (64, 450) and (729, 1270), then find the constant term.

1 **5**

2 **10**

3 **15**

4 **20**

Solution:
Correct Answer : 2

Let constant term be A.

$Q = A + B\sqrt{y} + C^3\sqrt{y}$ $\because$ (B, C proportionality constants)

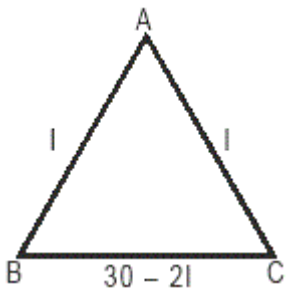
$\therefore 90 = A + B + C$ ...(1)
$450 = A + 8B + 4C$ ...(2)
$1270 = A + 27B + 9C$ ...(3)
Solving equations, we get A = 10

FeedBack

Bookmark

Answer key/Solution

Q.83
An iron wire of length 30 cm is bent to form an isosceles triangle, in which the two equal sides have length 'l' cm each. Find the range of l.



1 **6 < l < 20**

2 **8 < l < 30**

3 **10 < l < 15**

4 **7.5 < l < 15**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

AB + AC > BC (sum of two sides of a triangle > third side)

$\Rightarrow 2l > 30 - 2l$ i.e. $l > \frac{30}{4}$ i.e. 7.5

Also BC > 0, i.e. $30 - 2l > 0 \Rightarrow l < 15$

$\therefore 7.5 < l < 15$

FeedBack

Q.84

For $|x| < 1$, $g(x) = \log\left[\frac{1-x}{1+x}\right]$ and $h(x) = \frac{x^3+3x}{3x^2+1}$, then (goh)(x) is

1 **3g(x)**

2 **3h(x)**

3 **$(g(x))^3$**

4 **$(h(x))^3$**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

$$(goh)(x) = g[h(x)] = g\left[\frac{x^3+3x}{3x^2+1}\right] = \log\left[\frac{1-\frac{x^3+3x}{3x^2+1}}{1+\frac{x^3+3x}{3x^2+1}}\right] = \log\left[\frac{(1-x)^3}{(1+x)^3}\right] = 3\log\left[\frac{1-x}{1+x}\right] = 3g(x)$$

FeedBack

Q.85
Find the minimum value that should be added to the product of 171, 173, 175 and 177, so that it becomes a perfect square?

1 **1**

2 **4**

3 **9**

4 **16**

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

Lets take 171 = x
So, the four numbers be x, (x + 2), (x + 4) and (x + 6).
So, $x(x + 6)(x + 2)(x + 4) = (x^2 + 6x)(x^2 + 6x + 8)$
Now, let $x^2 + 6x = a$
$\Rightarrow a(a + 8) = a^2 + 8a$
So, by adding 16 we can make it a perfect square = $a^2 + 8a + 16$

FeedBack

Q.86

Ashok bought Tur Daal and marked up its price by 70%. He offered a discount of 58.88% on half of the daal, and no discount on the rest of the daal. Find his overall profit percentage.

1 **10%**

2 **20%**

3 **25%**

4 **16.66%**

Solution:

Correct Answer : 2

Bookmark

Answer key/Solution

Let the cost price of daal be Rs. 100 per 100 gram/
So, marked price = 100(1.7) = Rs.170 per 100 gram
Let he bought 200 gram of daal.
So, on half part he offers a discount of 58.88%.

$$\Rightarrow \text{Selling price} = 170\left(1-\frac{58.88}{100}\right) = 170\left(1-\frac{10}{17}\right) = 170\times\frac{7}{17} = 70$$

Revenue from first part is = 70
As the other half sold at marked price, so revenue = 170
Total Revenue is = 170 + 70 = 240
While total cost price = 200

$$\therefore \text{Profit} = \frac{40}{200}\times 100 = 20\%$$

FeedBack

Q.87

If xy + yz + zx = 48, where x, y, z are three positive real numbers, then find the maximum possible value of the product (xyz).

1 **32**

2 **64**

3 **4096**

4 **125**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

$xy + yz + zx = 48$
As AM ≥ GM,

$$\frac{xy+yz+zx}{3} \geq \sqrt[3]{(xyz)^2}$$

$$\Rightarrow \frac{48}{3} \geq \sqrt[3]{(xyz)^2} \quad = 16^3 \geq (xyz)^2$$

$$\Rightarrow 16^{\frac{3}{2}} \geq xyz$$

$\Rightarrow xyz = 64$ be the maximum possible value.

FeedBack

Q.88
If compound interest of the third year is 4900, when rate of interest charged is 14.28% compounded annually, then find the compound interest of the 5th year?

1 **5500**

2 **5600**

3 **6000**

4 **6400**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Required compound interest $= 4900 \times \frac{8}{7} \times \frac{8}{7} = 6400$

FeedBack

Q.89
If the roots of equation $x^2 + bx + 54 = 0$ are two consecutive multiples of 3, then which of the following could be the value of b?

1 **−21**

2 **15**

3 **–15**

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

Solution:
Correct Answer : 4

Let the roots be 3k & 3k + 3
∴ Sum of roots = 6k + 3 = –b ...(i)
Product of roots = 9k(k + 1) = 54 ...(ii)
⇒ k = 2 or -2
∴ 6k + 3 ⇒ b = 15 or b = –15.

FeedBack

Bookmark

Answer key/Solution

Q.90

If $x + \frac{1}{x} = -\sqrt{3}$, then the value of $(x^{42} + x^{48} + x^{54} + x^{60} + x^{66} + x^{72})$ is

Solution:
Correct Answer : 0

$x + \frac{1}{x} = -\sqrt{3}$,

squaring both sides

$\left(x + \frac{1}{x}\right)^2 = x^2 + \frac{1}{x^2} + 2$

$\Rightarrow 3 - 2 = x^2 + \frac{1}{x^2} = 1$ ...(i)

Also, $\left(x^2 + \frac{1}{x^2}\right)\left(x + \frac{1}{x}\right) = \left(-\sqrt{3}\right)$

$\Rightarrow x^3 + \frac{1}{x^3} + x + \frac{1}{x} = -\sqrt{3}$ ...(ii)

As $x + \frac{1}{x} = -\sqrt{3}$ ⇒ (ii) becomes $x^3 + \frac{1}{x^3} = 0$

⇒ $x^6 = -1$.
∴ $(x^6)^7 + (x^6)^8 + (x^6)^9 + (x^6)^{10} + (x^6)^{11} + (x^6)^{12} = 0$

FeedBack

Bookmark

Answer key/Solution

Q.91

What is the difference between the largest and the smallest possible integer satisfying the inequality

$\left|\frac{12}{x - 15}\right| > 5 : x \neq 15$?

Solution:

Correct Answer : 4

$$\left|\frac{1}{x-15}\right| > \frac{5}{12} \Rightarrow |x-15| < \frac{12}{5} \Rightarrow \frac{-12}{5} < x-15 < \frac{12}{5} \Rightarrow 12.6 < x < 17.4$$

$\therefore$ Minimum and maximum possible integers are 13 and 17 respectively.

$\therefore$ The required difference = 17 - 13 = 4

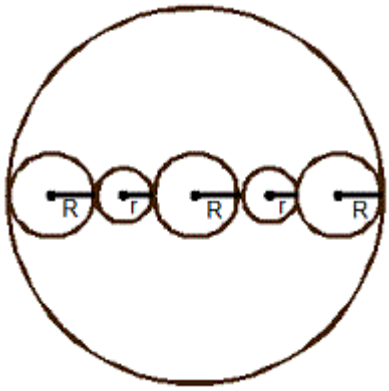
FeedBack

Bookmark

Answer key/Solution

Q.92

The area of the largest triangle that can be inscribed in the outer most circle, given in the figure below, is $4\sqrt{3}$. If the radii for the bigger and the smaller circles drawn inside the outermost circle are R and r respectively, then find the total circumference of all these 5 inner circles. (Given that the centres of all circles are collinear)



1 $\frac{8\pi}{\sqrt{3}}$

2 $\frac{16\pi}{\sqrt{3}}$

3 $20\sqrt{3}\pi$

4 $\frac{16}{\sqrt{3}}$

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Area of triangle is maximum possible when it is an equilateral triangle.

$\therefore \frac{\sqrt{3}}{4} \times (\text{side})^2 = 4\sqrt{3}$

$\Rightarrow$ side = 4

$\therefore$ radius of the biggest circle $= \frac{4}{\sqrt{3}}$

$\therefore 2(3R + 2r) = \frac{8}{\sqrt{3}}$

Total circumference $= 2\pi(3R + 2r) = \frac{8\pi}{\sqrt{3}}$

FeedBack

Q.93

Two oranges, three bananas and four apples together cost Rs. 15, while three oranges, two bananas and one apple together cost Rs. 10. I bought 3 oranges, 3 bananas and 3 apples. How much did I pay?

1 **Rs. 10**

2 **Rs. 8**

3 **Rs. 15**

4 **Cannot be determined**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let a, b and c be the cost of an orange, a banana and an apple respectively.
2a + 3b + 4c = 15.....(1)
3a + 2b + c = 10.....(2)
Adding (1) and (2), we get
5a + 5b + 5c = 25
$\Rightarrow$ 3a + 3b + 3c = 15

FeedBack

Q.94

A report consists of 20 sheets, each sheet having 55 lines and each such line consists of 65 characters. This report is retyped on sheets each having 65 lines such that each line consists of 70 characters. The percentage reduction in the number of sheets used for the retyped report is closest to

1 **20%**

2 **5%**

3 **30%**

4 **35%**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Number of characters in one line = 65
∴ Number of characters in one sheet = Number of lines × Number of characters per line = 55 × 65
⇒ Total number of characters in the report = Number of sheets × Number of characters in one sheet = 20 × 55 × 65 = 71500
Now, if the report is retyped on new sheets having 65 lines, with 70 characters per line,
Number of characters in one sheet = 65 × 70

∴ Number of pages required $\geq \frac{20 \times 55 \times 65}{65 \times 70}$
⇒ 16 pages will be required if report is retyped.
∴ reduction of (20 – 16) = 4 pages

and percentage reduction = $\left(\frac{4}{20}\right) \times 100 = 20\%$

FeedBack

Q.95

A square tin sheet of side 12 inches is converted into a box with open top in the following steps – The sheet is placed horizontally. Then equal side squares, each side is of x inches, are cut from the four corners of the sheet. Finally, the four resulting sides are bent vertically upwards in the shape of a box. If x is an integer, then what value of x will maximize the volume of the box?

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Since $V = (12 - 2x)^2 \times x = [2(6 - x)]^2 \times x = 4x(6 - x)^2$.
Substituting values of x from 1 to 5, we get V maximum when x = 2 (i.e. V = 128)
Any value of x greater than or equal to 6 is not valid, as sides cannot be negative or zero.

FeedBack

Q.96

There is a solid cylinder of height 24 cm and radius 7 cm. A solid cone of height 24 cm and radius 7 cm is cut out from the cylinder. What is the percentage increase in the combined surface area of the cone and the remaining part of cylinder as compared to the surface area of the original cylinder?

1 **92%**

2 **80.6%**

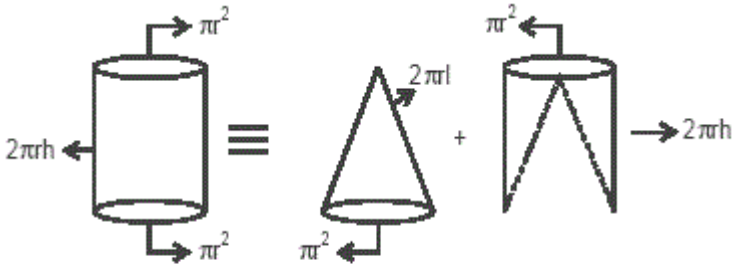
3 **71.1%**

4 **40%**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution



Increase in surface Area = 2 πrl

$\therefore$ percentage increase = $\frac{2\pi rl}{2\pi r(r+h)} \times 100 = \frac{25}{31} \times 100 = 80.64\%$

FeedBack

Q.97
The sum of first 17 terms of an A.P. is 2472 and the sum of first 34 terms of the same A.P. is 3944. Find the sum of the first 51 terms of that A.P.

Solution:
Correct Answer : 4416

Bookmark

Answer key/Solution

$S_{17} = 2472$
$S_{34} = 3944 = 2472 \underset{-1000}{+} 1472$

$S_{51} = 2472 \underset{-1000}{+} 1472 \underset{-1000}{+} 472 = 4416$

FeedBack

Q.98
There are P positive numbers and the average of each possible pair of these numbers is found. If the average of all these averages is Q, then what is the average of the P numbers?

1 $\frac{(P+Q)}{P}$

2 $\frac{(P+Q)}{Q}$

3 **(P + Q)**

4 **Q**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Take 3 numbers – 2, 4 and 6 (i.e. P = 3)
Average of each pair = 3, 5 and 4

Average of all the average = $\frac{3+5+4}{3} = 4$ = Q = average of 2, 4 and 6

FeedBack

Q.99

A dice is rolled twice. The probability of getting the two numbers on the dice such that their sum is divisible by 3 is

1 **1/2**

2 **1/9**

3 **1/4**

4 **1/3**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Total cases = 6 × 6 = 36
Number divisible by 3 are 3, 6, 9, 12 as maximum sum can be 12.
So 3 can come from (1, 2), (2, 1)
6 can come from (1, 5), (5, 1), (2, 4), (4, 2), (3, 3)
9 can come from (3, 6), (4, 5), (5, 4), (6, 3)
12 can come from (6, 6)

So, probability = $\frac{12}{36} = \frac{1}{3}$

FeedBack

Q.100

What comes in the place of question mark in the given expression: $\sqrt{4\frac{2}{3}}$? $4\sqrt{\frac{2}{3}}$

Mark 1, if your answer is ">"
Mark 2, if your answer is "<"
Mark 3, if your answer is "="
Mark 4, if your answer is "Cannot be compared"

Solution:

Correct Answer : 2

LHS = $\sqrt{4\frac{2}{3}} = 2\sqrt{\frac{2}{3}}$ and RHS = $4\sqrt{\frac{2}{3}}$

Therefore, LHS < RHS

FeedBack