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Mock CAT – 19 2018

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Sec 1

Directions for questions (1 to 3): The passage below is accompanied by a set of three questions. Choose the best answer to each question.

Among the plants for which Perlman, a rock-star botanist with the University of Hawaii's Plant Extinction Prevention Program, has repeatedly risked his life is Brighamia insignis, better known as cabbage-on-a-stick. One of the strangest-looking species in the Hawaiian flora, with a thick, swollen stem crowned by a rosette of fleshy leaves resembling a head of cabbage, it typically reaches 3 to 6 feet high but has been known to grow up to 16 feet tall. The plant once dotted seaside precipices on two Hawaiian islands, including the spectacular fluted cliffs of Kauai's Nā Pali coast. But feral goats, rats, and invasive weeds brought to the islands by Polynesians and, later, Europeans decimated the species. What's more, by the 1970s scientists had come to suspect that it had lost the large moth that they believe once fertilized its fragrant, creamy yellow, trumpet-shaped flowers. Without its pollinator, the plant was unable to produce seeds and its future in the wild was doomed. Had Perlman not come to the rescue, the plant would have faced almost certain extinction.

The fate of cabbage-on-a-stick is now in the hands of another group of emergency botanists. Jeremie Fant, the head of Chicago Botanic Garden's conservation genetics lab, and his colleagues are experimenting with procedures first developed at zoos to perform high-tech genetic rescue, including the development of a "studbook" that documents the pedigree of surviving individuals of the imperiled species in order to make last-ditch cross-breeding programs possible.

"When only a few members of a plant species remain," says Fant, "you need to make sure that every little bit of genetic diversity is preserved."

Scientists like Perlman and Fant work on the knife edge of last-ditch botany to save critically endangered plants like cabbage-on-a-stick because these species can't produce enough seeds on their own. Plant conservation relies heavily on seed banking. Ideally, seeds are strategically collected from wild populations to ensure that as much of a species' genetic diversity as possible has been captured. However, a considerable number of plants are so-called exceptional species that cannot be preserved in conventional seed banks. Some are so rare that they suffer from inbreeding and other genetic ailments that impede reproduction, and they don't produce enough seeds to be banked. Some produce "recalcitrant" seeds that cannot be stored in seed banks because they can't survive drying and freezing.

Q.1

All of the following are false except:

1 **conventional seed banks can accommodate any form of plants.**

2 **Cabbage-on-stick is not in any form of immediate danger.**

3 **there are instances where immigration has affected flora.**

4 **high-tech genetic rescue is solely a botanical phenomenon.**

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Solution:
Correct Answer : 3
Your Answer : 3
Genre: Botany
Word Count# 389

Bookmark

Answer key/Solution

Option 1 is incorrect since in the passage it is mentioned that, 'However, a considerable number of plants are so-called exceptional species that cannot be preserved in conventional seed banks'.
Option 2 is incorrect since it is mentioned that, 'The fate of cabbage-on-a-stick is now in the hands of another group of emergency botanists.' On top of this the passage starts with enumerating how critical the survival of cabbage-on-stick has become.
Option 4 is incorrect since it is mentioned that, 'with procedures first developed at zoos to perform high-tech genetic rescue'. It can be zoological too.
Option 3 is the correct answer since it is mentioned that, '. The plant once dotted seaside precipices on two Hawaiian islands, including the spectacular fluted cliffs of Kauai's Nā Pali coast. But feral goats, rats, and invasive weeds brought to the islands by Polynesians and, later, Europeans decimated the species'.

FeedBack

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Q.2

Which of the following shows how environmental integration is key to the survival of a lot of plants?

1 **Cabbage-on-stick was believed to face extinction for the alleged loss of its pollinators.**

2 **Genetic study can only be conducted on animals first before they can be used on plants.**

3 **Goats often help to keep in check the unnecessary growth of creepers which affect flowering plants.**

4 **Animals often prevent plants from inbreeding.**

Solution:
Correct Answer : 1
Genre: Botany
Word Count# 389

Bookmark

Answer key/Solution

Options 2 and 4 go beyond the scope of the passage. It is mentioned that certain genetic experiments were first used on animals that cannot be interpreted as the point provided in 2 which makes it an extreme option by using 'only'.
Option 3, in a certain way, contradicts the passage factually. Refer to the line: "But feral goats, rats, and invasive weeds brought to the islands by Polynesians and, later, Europeans decimated the species." So, we can't say that 'Goats...OFTEN...help..."
1 is the correct answer since, 'What's more, by the 1970s scientists had come to suspect that it had lost the large moth that they believe once fertilized its fragrant, creamy yellow, trumpet-shaped flowers. Without its pollinator, the plant was unable to produce seeds and its future in the wild was doomed.' Only option 1 shows how co-dependent plant life and animal life is on this planet.

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Q.3

Which of the following best captures the main message of the passage?

1 **A new generation of scientists is using cutting edge technology to successfully save lost species.**

2 **Plants with diminished reproductive abilities are being saved by botanists via unorthodox approaches.**

3 **It is no longer impossible to save critically endangered plants thanks to risk friendly scientists.**

4 **Botanists are becoming more active on the field, thereby reducing the chances of plants being wiped out.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Genre: Botany
Word Count# 389
Option 1 – 'To save lost species' is wrong as the passage focuses on 'saving species on the brink of extinction'. This is a close option.
Option 2 – It is better than option 1. The passage starts with stating how Perlman is a rock-star botanist. This epithet itself is unorthodox for a scientist. The last paragraph mentions how Perlman and Fant on work on the knife's edge and save 'species can't produce enough seeds on their own.' Thus option 2 is the correct answer.
Option 3 – It is a distorted option. 'Risk friendly scientists' is alien. Secondly, it sounds more like a far-fetched conclusion than the author's main intention.
Option 4 – The passage doesn't focus on botanists becoming more active 'on field'. It is a twisted option.

FeedBack

Directions for questions (4 to 9): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

Evidence that catastrophic geological events could have created evolutionary bottlenecks that changed the course of life on Earth may be buried within ancient rocks beneath our feet.

There is a 700-million year gap in Earth's history, and in that time one of the most transformative events happened: life appeared. This missing epoch could hold not just the secret of humanity's first ancestor, but could guide our search for life on other planets.

To this end a recent paper, published in the scientific journal Astrobiology, tries to bring the worlds of geology and chemistry together by laying out what Earth's ancient geology tells us about when life began on the planet, and how geological constraints – such as those caused by an asteroid impact or evolutionary bottlenecks – can be used to vet the different theories about the evolution of life.

"Geologists have only weakly constrained the time when the Earth became habitable and the later time when life actually existed to the long interval between about 4.5 billion years ago and 3.85 billion years ago," Norm Sleep, a geologist at Stanford University in the United States, writes in his paper.

However, this was a dangerous time to be in the vicinity of Earth. Although evidence for it has become increasingly disputed in recent years, many scientists still think that during this period asteroids pummelled the young Earth and its neighbouring planets in what has become known as the Late Heavy Bombardment.

An asteroid impact is one of the events that could have created what is called an evolutionary bottleneck, whereby a few species are able to dominate, often as the result of a sudden decrease in the number of other organisms, says Sleep.

If a big asteroid were to hit Earth, the planet's surface temperature would sky-rocket and the oceans would vaporize into the atmosphere. It would be catastrophic for the majority of life on Earth. But if an organism could survive that, it would be able to take over the planet – and possibly evolve over the course of billions of years to what would eventually become humans.

"If you wipe out most life geologically, the survivors are going to find a lot of vacant niches to occupy, and

there will be rapid evolution," Sleep tells Astrobiology Magazine. For example, thermophiles (which are heat-loving organisms) may have been able to survive temperatures that would have killed other organisms.

"This type of bottleneck, we know from the physics," Sleep says. "The inside of Earth would be cooler, thermal microbes would be comfortable. "

Unfortunately, ancient asteroid impacts are difficult to detect in Earth's geology, in part because of our planet's shifting tectonic plates. However, traces of sequestered carbon trapped in ancient rocks could offer a clue: post-catastrophic asteroid impact, the atmosphere would have contained abundant quantities of carbon dioxide, linked to the high temperatures and high atmospheric pressures that would have made it difficult for live to thrive on Earth. "The Earth did not become habitable until the bulk of this carbon dioxide was subducted into the mantle," Sleep writes in his paper. So far, scientists have not found reliable evidence of this sequestered carbon dioxide.

Another evolutionary bottleneck for life could have been innovation: an organism innovates a trait that makes it very fit for its environment, and it is able to outcompete other organisms. "It quickly takes over all suitable habitable places on Earth and it becomes very abundant very quickly," says Sleep.

An example would be an organism that evolves the ability to use iron or sulfur to photosynthesize. "The organism goes from being dependent on hydrogen to sunlight, and its biomass increases by an order of magnitude," he says.

Q.4

All of the following are not true according to the passage except:

1 the earth was formed around 4.5 billion years ago.

2 the planet's shifting tectonic plates make it difficult to detect Earth's geology.

3 the biomass of an organism increases as its ability to photosynthesize decreases.

4 Life on Earth evolves faster if there is vast expanse of space.

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Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Your Answer : 4
Genre: Geology
Word Count# 610
Option 1 is incorrect since the passage states that Earth became habitable around 4.5 billion years ago.
Option 2 is incorrect as it states that it is difficult to detect the asteroid impact due to shifting plates.
Option 3 is incorrect since in the passage it is mentioned that, 'An example would be an organism that evolves the ability to use iron or sulfur to photosynthesize. "The organism goes from being dependent on hydrogen to sunlight, and its biomass increases by an order of magnitude," he says.'
Option 4 is the correct answer since it is mentioned that, 'If you wipe out most life geologically, the survivors are going to find a lot of vacant niches to occupy, and there will be rapid evolution'.

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Q.5

As per the passage, which of the following will be an important outcome of learning about the lost history of Earth?

1 **It can help us search better for life on other planets.**

2 **It can help us understand why sometimes temperatures sky rocket.**

3 **It can help us why the organisms stopped needing hydrogen.**

4 **It can help us prepare better for catastrophes.**

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Solution:
Correct Answer : 1
Your Answer : 1
Genre: Geology
Word Count# 610

Bookmark

Answer key/Solution

In the given passage it is stated that, 'This missing epoch could hold not just the secret of humanity's first ancestor, but could guide our search for life on other planets.' So, option 1 is clearly true.
Options 2, 3, and 4 – These are not mentioned in the context of the question asked. In such fact based questions, we need to select the most direct answer.

FeedBack

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Q.6
Which of the following is, according to Sleep, one of the effects of an asteroid falling on Earth?

1 ○ **The creation of homo sapiens**

2 ○ **It facilitated evolution for the survivors.**

3 ○ **Microbes started becoming thermopile creatures.**

4 ○ **Generating a fresh history for Earth**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Your Answer : 2
Genre: Geology
Word Count# 610
Option 1 is incorrect since a far off result may be how human beings came to be but it cannot be directly attributed.
Option 3 is incorrect since it mentions that as a result of the asteroid thermopile microbes started thriving.
Option 4 goes beyond the scope of the passage.
Option 2 is the correct answer since in the passage it is stated that, 'If you wipe out most life geologically, the survivors are going to find a lot of vacant niches to occupy, and there will be rapid evolution'.

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Q.7

Which of the following events needed to take place before Earth became habitable?

1 Majority of unwanted gases seeping into lower layers of Earth

2 Earth overcoming obstacles of heating and making the core cooler

3 The asteroids bringing and the landmass accumulating important nutrients and minerals

4 Carbon Dioxide needing conversion and getting acclimatized

✔

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Your Answer : 1
Genre: Geology
Word Count# 610
In the passage it is stated that, 'The Earth did not become habitable until the bulk of this carbon dioxide was subducted into the mantle.' Hence, option 1 is the clear answer.
The other three options can be easily eliminated as they are not part of the context of the question.

FeedBack

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organism goes from being dependent on hydrogen to sunlight, and its biomass increases by an order of magnitude," he says.

Q.8

Which of the following is definitely true with respect to the passage?

1 **Thermal microbes perished when the asteroids started hitting Earth.**

2 **Photosynthesis helped organism use hydrogen properly.**

3 **Carbon gets trapped in rocks.**

4 **High atmospheric pressure reduces carbon dioxide.**

✔

Solution:
Correct Answer : 3
Your Answer : 3
Genre: Geology
Word Count# 610
Option 1 is incorrect since the passage mentions that thermal microbes will thrive with outside temperature of Earth heating up.
Option 2 is incorrect since the passage states that the ability to photosynthesize helped us move from hydrogen to sunlight.
Option 4 is incorrect since it is mentioned that carbon dioxide increased due to high pressure.
Option 3 is the correct answer since it is stated that, 'However, traces of sequestered carbon trapped in ancient rocks'.

Bookmark

Answer key/Solution

FeedBack

Directions for questions (4 to 9): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

Evidence that catastrophic geological events could have created evolutionary bottlenecks that changed the course of life on Earth may be buried within ancient rocks beneath our feet.

There is a 700-million year gap in Earth's history, and in that time one of the most transformative events happened: life appeared. This missing epoch could hold not just the secret of humanity's first ancestor, but could guide our search for life on other planets.

To this end a recent paper, published in the scientific journal Astrobiology, tries to bring the worlds of geology and chemistry together by laying out what Earth's ancient geology tells us about when life began on the planet, and how geological constraints – such as those caused by an asteroid impact or evolutionary bottlenecks – can be used to vet the different theories about the evolution of life.

"Geologists have only weakly constrained the time when the Earth became habitable and the later time when life actually existed to the long interval between about 4.5 billion years ago and 3.85 billion years ago," Norm Sleep, a geologist at Stanford University in the United States, writes in his paper.

However, this was a dangerous time to be in the vicinity of Earth. Although evidence for it has become increasingly disputed in recent years, many scientists still think that during this period asteroids pummelled the young Earth and its neighbouring planets in what has become known as the Late Heavy Bombardment.

An asteroid impact is one of the events that could have created what is called an evolutionary bottleneck, whereby a few species are able to dominate, often as the result of a sudden decrease in the number of other organisms, says Sleep.

If a big asteroid were to hit Earth, the planet's surface temperature would sky-rocket and the oceans would vaporize into the atmosphere. It would be catastrophic for the majority of life on Earth. But if an organism could survive that, it would be able to take over the planet – and possibly evolve over the course of billions of years to what would eventually become humans.

"If you wipe out most life geologically, the survivors are going to find a lot of vacant niches to occupy, and there will be rapid evolution," Sleep tells Astrobiology Magazine. For example, thermophiles (which are heat-loving organisms) may have been able to survive temperatures that would have killed other organisms.

"This type of bottleneck, we know from the physics," Sleep says. "The inside of Earth would be cooler, thermal microbes would be comfortable. "

Unfortunately, ancient asteroid impacts are difficult to detect in Earth's geology, in part because of our planet's shifting tectonic plates. However, traces of sequestered carbon trapped in ancient rocks could offer a clue: post-catastrophic asteroid impact, the atmosphere would have contained abundant quantities of carbon dioxide, linked to the high temperatures and high atmospheric pressures that would have made it difficult for live to thrive on Earth. "The Earth did not become habitable until the bulk of this carbon dioxide was subducted into the mantle," Sleep writes in his paper. So far, scientists have not found reliable evidence of this sequestered carbon dioxide.

Another evolutionary bottleneck for life could have been innovation: an organism innovates a trait that makes it very fit for its environment, and it is able to outcompete other organisms. "It quickly takes over all suitable habitable places on Earth and it becomes very abundant very quickly," says Sleep.

An example would be an organism that evolves the ability to use iron or sulfur to photosynthesize. "The organism goes from being dependent on hydrogen to sunlight, and its biomass increases by an order of magnitude," he says.

Q.9

The passage is trying to show that:

1 ○ **the temperature of Earth played a huge role in bringing life to Earth.**

2 ○ **the source of life may extend beyond the Earth.**

3 ○ **creation of life on Earth might have been possible through destruction.**

4 ○ **life on Earth started developing once photosynthesis was possible.**

✔

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Your Answer : 3
Genre: Geology
Word Count# 610
The passage describes how catastrophic asteroid collisions may have facilitated life on Earth as we understand it today. It mentions how a section of geologists believe that life on Earth took evolutionary jumps thanks to catastrophic geological events. So, option 3 is the clear answer.
Option 1 – This is too narrow.
Option 2 – This doesn't capture the essence of the paragraph. The search for alien lives is mentioned in just one sentence of the passage.
Option 4 – This is both twisted and narrow.

FeedBack

Directions for question 10: The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.10

Mayday, uttered three times, is the distress call "used to signal a life-threatening emergency primarily by aviators and mariners." Long before its adoption for that function however, and more traditionally, there did exist Labour (or Workers') Day, dedicated to the entitlement of workers to the value and dignity of their labour. The Nigerian constituency is left to determine which attribution – or both, or none – is deafeningly clamorous this May 1 of this year, 2018. No matter, one feels it a duty to call the attention to the painful convergence of both appropriations.

1 **Mayday and its duality have become the talking point in Nigeria this Labour Day.**

2 **Mayday has two meanings and both of these need to be evaluated with reference to Nigeria.**

3 **The Nigerian constituency needs to look at the distressing condition of its labour force this Labour day.**

4 **The Nigerian constituency has become dependent on the correct interpretation of the Mayday signal.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
The paragraph doesn't talk about 'the interpretation' of the Mayday signal. The example of the two attributions of 'Mayday' has been given in order to subtly raise the issue of labour distress in the Nigerian constituency. The meaning is not literal in the paragraph. So, we need to understand what the author is trying say albeit indirectly. Then, we need to eliminate the wrong options.
Option 1 – This is definitely irrelevant. 'Duality' is a different term which may or may not suggest a positive or neutral tone. Secondly, 'talking point' is not part of the discussion.
Option 2 – This option is twisted. What it means is that the meaning of 'Mayday' has to be interpreted with reference to Nigeria. This is wrong.
Option 3 – This is the correct answer as it captures the essence of the paragraph.
Option 4 – 'Correct interpretation' of 'Mayday' is irrelevant. The author has clearly stated that it has two historical origins and attributions.

FeedBack

Q.11
Directions for question 11: The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. The two parties left in the fray represent opposites in terms of their experience.
2. The results of Bhutan's general election will have significant repercussions for South Asia.
3. The first round held in September has already delivered a surprise verdict, with the ousting of the incumbent People's Democratic Party.
4. The Druk Nyamrup Tshogpa, that won the maximum number of votes in the first round this year, is a political neophyte.
5. The Druk Phuensum Tshogpa, on the other hand, won the first Bhutanese elections in 2008, and the first round of the election in 2013 before losing to the PDP.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 23145
Sentence 2 is the first sentence of the paragraph as it introduces the context of the paragraph i.e. Bhutan's general elections.
Sentence 3 is second providing preliminary information about the subject. It also creates a mandatory pair with 3 based on the theme. It explains 'significant repercussions'.
Sentence 1, 4 and 5 form a pair where sentence 1 gives information about the number of parties while 4 and 5 follow up with information about the subsequent parties. 5 follows 4 with 'on the other hand'.
Hence, 23145 is the correct sequence.

FeedBack

Q.12

Directions for question 12: The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. The team originally posted this idea to the preprint site arXiv in January, where it was met with skepticism.
2. In the 1970s Hawking showed that black holes emit radiation, later termed Hawking radiation, eventually causing the black hole to evaporate and disappear along with information it has consumed.
3. Mathematical work led by physicist Stephen Hawking proposes a solution to a theoretical mystery called the black hole information paradox.
4. After reworking some math, Hawking's team demonstrated even stronger evidence for the soft hairs' existence and published a peer-reviewed paper.
5. Now Hawking and two coauthors propose that quantum excitations called soft hairs surround the black hole and retain some of this information.

Solution:
Correct Answer : 32514
The best way to solve this question is by identifying at least two pairs. 5 and 1 is a pair. 'The team' of 1 is defined in 5.
1 and 4 is a pair. 4 presents a mild contradiction to 1. It shows the revised result whereas 1 talks about their original postulation.
So, 514 becomes a sequence.
Now, we need to find places for 2 and 3. These two are broad sentences. And chronologically, 2 has to come before 514. 3 introduces the 'information paradox'. So, 3 comes before 2.
Hence, 32514 is the correct sequence.

FeedBack

Bookmark

Answer key/Solution

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

Cancer is an uncontrolled growth and multiplication of cells in a given organ (for example, the lung or stomach), which are damaged due to inborn or external triggers such as smoking or high doses of radiation. While normal cells are programmed to multiply and grow to a certain size and stay so, cancer cells, whose DNA is mutated due to such damage, go on a rampant growth leading to tumors, weakening the body and ultimately even death. Treating and winning over cancer has been a great challenge, and the oncologist-writer Siddartha Mukherjee has rightly named cancer as "The Emperor of all Maladies."

There have been a variety of approaches to win over this emperor. Surgical removal of the tumor has been one option, but it does not guarantee total removal (even a few leftover cells might grow again), nor its recurrence if the original cause is not addressed. Radiation therapy using high power gamma rays has also been tried, again with limited success. Several anti-cancer drugs, such as cis-platin or carboplatin, 5-fluorouracil, doxyrubicin have been used. Many doctors have tried combining drugs along with shining the tumor using radiation such as gamma-rays for short periods of time. But the trouble is that they need to be used for sustained periods.

It is here that immunological approach has been tried for a variety of cancers. This uses the in-built defense mechanism in the body. The white blood cells play a main role here. The B-Cells therein recognize the shape of the surface protrusion (call it the biometric ID) on the invading cell (be it a microbe or a cancer cell), synthesizes proteins called immunoglobulins which fit into the surface of the invading cells and remove them. Importantly, this shape of the intruder's surface is "remembered" so that when a fresh attack by the same invader occurs, B cells are prepared. This too is the basis of childhood vaccines.

The surface geographic "tag" is termed the antigen and the proteins made by B-cells are called antibodies. Cancer cells also have biometric IDs, and these are termed neo-antigens. Anti-cancer vaccines are based on the principle of antibodies made against such neo-antigens. Antibodies such as bevacizumab and rituximab are some of the most popular drugs used against cancers.

A recent approach in the field is to for the oncologist to isolate a piece of cancer tissue from the patient, and collaborate with a group of molecular bio-analysts to identify the neo-antigen on the cancer cells. Next, the oncologist asks an immunologist collaborator to prepare the specific antibody molecule, which can be injected to the patient so as to stop recurrence of the tumor. This is thus a therapeutic vaccine (not a preventive vaccine such as the one against hepatitis or mumps). Some such cancer vaccines are already in the market, for example, HER-2 against breast cancer, Revenge against cancer and T-VEC against melanoma. It is here that this year's Nobelists have taken a different approach by concentrating not on the B-lymphocytes but their partners, the T-cells.

Q.13

All the statements given below are characteristics of Cancer except:

1 **it is both an inborn as well as an acquired disease.**

2 **the DNA of cancer cells are mutated.**

3 **it is primarily caused by external triggers damaging organs.**

4 **it leads to weakening of body and ultimately death.**

✔

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Your Answer : 3
Genre: Science and Technology
Word Count# 502
Option 3 is the correct answer as cancer is not an acquired disease but can also be inborn, hence smoking or high doses of radiation are not the 'primary' cause. Secondly, the cells are damaged and not the organs. The organs are damaged as a result of the cells being damaged. But the external triggers damage the cells.
Option 1 is incorrect as it has been stated in 1st paragraph that cancer is both inborn as well as an acquired disease.
Option 2 is incorrect as cancer occurs when the DNA of normal cells get mutated as mentioned in the passage.
Option 4 is incorrect cancer being a fatal disease is mentioned in the passage.

FeedBack

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

Cancer is an uncontrolled growth and multiplication of cells in a given organ (for example, the lung or stomach), which are damaged due to inborn or external triggers such as smoking or high doses of radiation. While normal cells are programmed to multiply and grow to a certain size and stay so, cancer cells, whose DNA is mutated due to such damage, go on a rampant growth leading to tumors, weakening the body and ultimately even death. Treating and winning over cancer has been a great challenge, and the oncologist-writer Siddartha Mukherjee has rightly named cancer as "The Emperor of all Maladies."

There have been a variety of approaches to win over this emperor. Surgical removal of the tumor has been one option, but it does not guarantee total removal (even a few leftover cells might grow again), nor its recurrence if the original cause is not addressed. Radiation therapy using high power gamma rays has also been tried, again with limited success. Several anti-cancer drugs, such as cis-platin or carboplatin, 5-fluorouracil, doxyrubicin have been used. Many doctors have tried combining drugs along with shining the tumor using radiation such as gamma-rays for short periods of time. But the trouble is that they need to be used for sustained periods.

It is here that immunological approach has been tried for a variety of cancers. This uses the in-built defense mechanism in the body. The white blood cells play a main role here. The B-Cells therein recognize the shape of the surface protrusion (call it the biometric ID) on the invading cell (be it a microbe or a cancer cell), synthesizes proteins called immunoglobulins which fit into the surface of the invading cells and remove them. Importantly, this shape of the intruder's surface is "remembered" so that when a fresh attack by the same invader occurs, B cells are prepared. This too is the basis of childhood vaccines.

The surface geographic "tag" is termed the antigen and the proteins made by B-cells are called antibodies. Cancer cells also have biometric IDs, and these are termed neo-antigens. Anti-cancer vaccines are based on the principle of antibodies made against such neo-antigens. Antibodies such as bevacizumab and rituximab are some of the most popular drugs used against cancers.

A recent approach in the field is to for the oncologist to isolate a piece of cancer tissue from the patient, and collaborate with a group of molecular bio-analysts to identify the neo-antigen on the cancer cells. Next, the oncologist asks an immunologist collaborator to prepare the specific antibody molecule, which can be injected to the patient so as to stop recurrence of the tumor. This is thus a therapeutic vaccine (not a preventive vaccine such as the one against hepatitis or mumps). Some such cancer vaccines are already in the market, for example, HER-2 against breast cancer, Revenge against cancer and T-VEC against melanoma. It is here that this year's Nobelists have taken a different approach by concentrating not on the B-lymphocytes but their partners, the T-cells.

Q.14

Which of the following best describes the immunological approach of treating cancer?

1 **To combine anti-cancer drugs, such as cis-platin or carboplatin, 5-fluorouracil, doxyrubicin**

2 **To shine the tumour using radiation such as gamma-rays for short periods of time**

3 **To surgically remove the tumour**

4 **To facilitate B-Cells to recognize the shape of the surface protrusion and remove the invading cells**

✔

Solution:
Correct Answer : 4
Your Answer : 4
Genre: Science and Technology
Word Count# 502

Option 4 is the correct answer as it explains the immunological approach of treating cancer by using the in-built defense mechanism in the body. Refer to, "It is here that immunological approach has been tried for a variety of cancers. This uses the in-built defense mechanism in the body. The white blood cells play a main role here. The B-Cells therein recognize the shape of the surface protrusion (call it the biometric ID) on the invading cell (be it a microbe or a cancer cell), synthesizes proteins called immunoglobulins which fit into the surface of the invading cells and remove them. Importantly, this shape of the intruder's surface is "remembered" so that when a fresh attack by the same invader occurs, B cells are prepared. This too is the basis of childhood vaccines."

Option 1, 2 and 3 are incorrect as they state the tradition approaches of curing cancer as stated in the second paragraph.

FeedBack

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

Cancer is an uncontrolled growth and multiplication of cells in a given organ (for example, the lung or stomach), which are damaged due to inborn or external triggers such as smoking or high doses of radiation. While normal cells are programmed to multiply and grow to a certain size and stay so, cancer cells, whose DNA is mutated due to such damage, go on a rampant growth leading to tumors, weakening the body and ultimately even death. Treating and winning over cancer has been a great challenge, and the oncologist-writer Siddartha Mukherjee has rightly named cancer as "The Emperor of all Maladies."

There have been a variety of approaches to win over this emperor. Surgical removal of the tumor has been one option, but it does not guarantee total removal (even a few leftover cells might grow again), nor its recurrence if the original cause is not addressed. Radiation therapy using high power gamma rays has also been tried, again with limited success. Several anti-cancer drugs, such as cis-platin or carboplatin, 5-fluorouracil, doxyrubicin have been used. Many doctors have tried combining drugs along with shining the tumor using radiation such as gamma-rays for short periods of time. But the trouble is that they need to be used for sustained periods.

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A recent approach in the field is to for the oncologist to isolate a piece of cancer tissue from the patient, and collaborate with a group of molecular bio-analysts to identify the neo-antigen on the cancer cells. Next, the oncologist asks an immunologist collaborator to prepare the specific antibody molecule, which can be injected to the patient so as to stop recurrence of the tumor. This is thus a therapeutic vaccine (not a preventive vaccine such as the one against hepatitis or mumps). Some such cancer vaccines are already in the market, for example, HER-2 against breast cancer, Revenge against cancer and T-VEC against melanoma. It is here that this year's Nobelists have taken a different approach by concentrating not on the B-lymphocytes but their partners, the T-cells.

Q.15

What are the biometric IDs of cancer cells known as?

1 **Antigen**

2 **Neo-antigens**

3 **Tags**

4 **Antibody**

✔

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Your Answer : 2
Genre: Science and Technology
Word Count# 502
Option 2 is correct as Neo-antigens are the biometric IDs of cancer cells as stated in the fourth paragraph. Refer to, “Cancer cells also have biometric IDs, and these are termed neo-antigens.”
Option 1 is incorrect as Antigens are surface geographic “tag”.
Option 3 is redundant as tag is a generic term.
Option 4 is incorrect as antibody is proteins made by B-cells.

FeedBack

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

Cancer is an uncontrolled growth and multiplication of cells in a given organ (for example, the lung or stomach), which are damaged due to inborn or external triggers such as smoking or high doses of radiation. While normal cells are programmed to multiply and grow to a certain size and stay so, cancer cells, whose DNA is mutated due to such damage, go on a rampant growth leading to tumors, weakening the body and ultimately even death. Treating and winning over cancer has been a great challenge, and the oncologist-writer Siddartha Mukherjee has rightly named cancer as "The Emperor of all Maladies."

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Q.16

Which of the following is the practice where a piece of cancer tissue is combined with a group of molecular bio-analysts to identify the neo-antigen in order to prepare an antibody?

1 ○ **The creation of therapeutic vaccine to prevent the initiation of cancerous tumours**

2 ○ **The creation of preventive vaccine to prevent the initiation of cancerous tumours**

3 ○ **The creation of preventive vaccine to prevent the recurrence of the tumour**

4 ○ **The creation of therapeutic vaccine to prevent the recurrence of the tumour**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Your Answer : 1
Genre: Science and Technology
Word Count# 502
Option 4 is the correct answer as the practice described in the question leads to the creation of therapeutic vaccine which prevent the recurrence of the tumor once the growth of cancerous cells has been curtailed.
Option 1 is incorrect as the practice described in the question does not lead to creation of vaccine to prevent cancer but to reduce its chances of reappearing.
Option 2 and 3 are incorrect as the practice described in the question does not lead to creation of preventive vaccine.

FeedBack

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

Cancer is an uncontrolled growth and multiplication of cells in a given organ (for example, the lung or stomach), which are damaged due to inborn or external triggers such as smoking or high doses of radiation. While normal cells are programmed to multiply and grow to a certain size and stay so, cancer cells, whose DNA is mutated due to such damage, go on a rampant growth leading to tumors, weakening the body and ultimately even death. Treating and winning over cancer has been a great challenge, and the oncologist-writer Siddartha Mukherjee has rightly named cancer as "The Emperor of all Maladies."

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Q.17

What difference can be inferred between the immunological approach of treating cancer and the creation of therapeutic vaccine to fight cancer?

1 **Immunological approach aims to cure the target cells while therapeutic vaccine aims to target the cause of cancer.**

2 **Immunological approach is focused on patients suffering from preliminary stage of cancer while therapeutic vaccine aims to cure advanced stages of cancer.**

3 **Immunological approach is focused on eliminating the existing cancerous tumours while therapeutic vaccine aims to prevent the reoccurrence of cancerous tumours.**

4 **Immunological approach is medicine driven while therapeutic approach is vaccine driven.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Genre: Science and Technology
Word Count# 502
Option 3 is the correct answer as the primary difference between the two as stated in paragraph 3 and 5 is that immunological treatment is destroying the existing tumors while therapeutic vaccine aims to prevent the reoccurrence of cancerous tumors.
Option 1, 2 and 4 are redundant as such differences are not mentioned in the passage.

FeedBack

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

Cancer is an uncontrolled growth and multiplication of cells in a given organ (for example, the lung or stomach), which are damaged due to inborn or external triggers such as smoking or high doses of radiation. While normal cells are programmed to multiply and grow to a certain size and stay so, cancer cells, whose DNA is mutated due to such damage, go on a rampant growth leading to tumors, weakening the body and ultimately even death. Treating and winning over cancer has been a great challenge, and the oncologist-writer Siddartha Mukherjee has rightly named cancer as "The Emperor of all Maladies."

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Q.18

What is the central idea of the passage?

1 **Cancer being the emperor of all diseases is still incurable despite various medical efforts.**

2 **The evolution of medical science towards finding the cure for cancer**

3 **The over dependence of medical science on traditional approaches to cure cancer**

4 **The bio-chemical changes resulting in the formation of cancerous cells**

✔

Solution:
Correct Answer : 2
Your Answer : 2
Genre: Science and Technology
Word Count# 502
Option 2 is the correct answer as the passage revolves around the developing medical approaches for combating cancer.
Option 1 and 3 are redundant as the passage is silent about the same.
Option 4 is incorrect as it forms a part of the passage rather than its essence.

FeedBack

Bookmark

Answer key/Solution

Q.19

Directions for question 19: 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. Sometimes it would be nice to have 24 hours available to finish the workload of the day.
2. The brain activity recordings also reveal variation in sleep intensity: “Males that slept the least had the deepest sleep”, says co-author Niels Rattenborg who conducts sleep research at Seewiesen.
3. This holds true both for humans and other animals.
4. Daily sleep is therefore thought to be essential for regenerating the brain and maintaining performance.
5. However, the drive for sleep inevitably compromises our performance or even causes us to fall asleep under dangerous situations, such as driving a car.

Solution:
Correct Answer : 2
The correct order is 1543. However, we don’t need to find the exact order of the other sentences. Sentence 2 is the odd one out as it doesn’t match the generic theme of the paragraph. The paragraph talks about sleep and its importance for both animals and humans.

Sentence 2 does talk about sleep but it refers to a specific experiment. It uses the word ‘also’ which doesn’t have an antecedent in the paragraph. It might be part of the passage but it will come in some other paragraph once the experiment and its significance is introduced.

FeedBack

Bookmark

Answer key/Solution

Directions for questions (20 to 22): The passage below is accompanied by a set of three questions. Choose the best answer to each question.

By the end of 1513, Machiavelli had completed the first version of what would become his masterwork: The Prince, a handbook for the power-hungry. The book offered tips to rising politicians for seizing power, and advice to incumbent princes for keeping it. Ironically, Machiavelli dedicated the book to the Medici, hoping it would bring him back into their good graces. It remains unclear whether it was ever read by its intended audience, and Machiavelli never got to see The Prince go viral. It was published in 1532, five years after its author's death.

One of The Prince's primary lessons was that leaders must always try to strike a balance between seeking the love of their subordinates and inspiring fear. If a leader is too soft or kind, the people may become unruly; too cruel, and they might rebel. Machiavelli had a clear preference. "Since love and fear can hardly exist together," he wrote, "if we must choose between them, it is far safer to be feared than loved." Machiavelli's political thesis became notorious because it focused almost entirely on helping rulers get what they want at whatever cost—in other words, the end always justified the means. Other political thinkers, while acknowledging Machiavelli's brilliance, were appalled by his mercenary take on statesmanship. In the 18th century, French essayist Denis Diderot described Machiavelli's work as "abhorrent" and summed up The Prince as "the art of tyranny."

Friedrich Schiller, a proponent of liberal democracy, referred to The Prince as an unwitting satire of the kind of monarchical rule it supposedly espouses ("a terrible satire against princes"). David Hume, the Scottish polymath and inveterate skeptic, called Machiavelli "a great genius" whose reasoning is "extremely defective." Wrote Hume, "There scarcely is any maxim in his Prince which subsequent experience has not entirely refuted." But 20th-century British philosopher Bertrand Russell disagreed, saying that Machiavelli was merely being honest on a subject that most preferred with a good sugarcoating. "Much of the conventional obloquy that attaches itself to his name, is due to the indignation of hypocrites," Russell wrote, "who hate the frank avowal of evil-doing."

Q.20

All of the following are true except:

1 **Machiavelli has been the centre of discussion ever since he became a professional and he is still passionately debated in contemporary times.**

2 **David Hume although praised Machiavelli's intellect but considered his work botched.**

3 **A lot of past philosophers were shocked by some of Machiavelli's honest assertions.**

4 **Machiavellian thought has been thought to be tyrannical by some commentators.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Genre: Political Theory
Word Count# 350
Option 2 is incorrect since it is mentioned in the passage, 'David Hume, the Scottish polymath and inveterate skeptic, called Machiavelli "a great genius" whose reasoning is "extremely defective."
Option 3 is incorrect since it is mentioned that, 'Other political thinkers, while acknowledging Machiavelli's brilliance, were appalled by his mercenary take on statesmanship.'
Option 4 is incorrect since it is mentioned that, 'In the 18th century, French essayist Denis Diderot described Machiavelli's work as "abhorrent" and summed up The Prince as "the art of tyranny."'
Option 1 is the correct answer since it is false that Machiavelli was heavily discussed during his lifetime. The passage mentions that the Prince was published 5 years after his death.

FeedBack

Directions for questions (20 to 22): The passage below is accompanied by a set of three questions. Choose the best answer to each question.

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Q.21
What does Russell mean by stating 'indignation of hypocrites'?

1 **The anger of philosophers who misjudged Machiavelli's work**

2 **People who fail to understand the genius of evil at work**

3 **People who are prone to evil doing get angry when it comes to open discussion of evil**

4 **People who shirk away from accepting or discussing the necessity of evil-doings**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Genre: Political Theory
Word Count# 350
In the passage it is stated that, 'But 20th-century British philosopher Bertrand Russell disagreed, saying that Machiavelli was merely being honest on a subject that most preferred with a good sugarcoating. "Much of the conventional obloquy that attaches itself to his name, is due to the indignation of hypocrites," Russell wrote, "who hate the frank avowal of evil-doing."' So, option 4 is the correct answer.
Options 1, 2, and 3 are all distorted.
Option 1 – Russell was not talking about 'all philosophers' or 'their anger'.
Option 2 – 'Evil genius' doesn't capture the meaning of the given phrase.
Option 3 – Russell was not talking about people who do evil deeds.

FeedBack

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By the end of 1513, Machiavelli had completed the first version of what would become his masterwork: The Prince, a handbook for the power-hungry. The book offered tips to rising politicians for seizing power, and advice to incumbent princes for keeping it. Ironically, Machiavelli dedicated the book to the Medici, hoping it would bring him back into their good graces. It remains unclear whether it was ever read by its intended audience, and Machiavelli never got to see The Prince go viral. It was published in 1532, five years after its author's death.

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Q.22

The most relevant use of Machiavelli lies in:

1 **family planning.**

2 **able leadership purposes.**

3 **imperial purposes.**

4 **establishing one's superiority over the rest.**

Solution:
Correct Answer : 2
Genre: Political Theory
Word Count# 350
Clearly, the answer to this question will be either option 2 or option 4.
Options 1 and 4 are irrelevant to the context of the passage.
Option 3 is incorrect since although the book was written for kings and princes, its contemporary use remains in the general dos and don'ts of a ruler/leader.
So, option 4 is a more appropriate answer. It is also closer to the main idea of the passage.

Q.23

Directions for question 23: The five sentences (labelled 1, 2, 3, 4, 5) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper order for the sentences and key in this sequence of five numbers as your answer.

1. The journalist was known for his columns in the Washington Post critical of Saudi Crown Prince Mohammed bin Salman.
2. The disappearance of Saudi Arabian journalist Jamal Khashoggi has triggered a diplomatic storm.
3. Countries including the U.S. and Turkey as well as international organisations like the UN have turned up the pressure on Riyadh to reveal the truth.
4. The Turkish authorities have released video footage of Mr. Khashoggi entering the consulate and said there is no footage of him leaving the building.
5. He has not been seen since he entered the Saudi consulate in Istanbul on October 2.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 23154
Sentence 2 is the first sentence of the paragraph as it introduces the context of the paragraph i.e. the disappearance of the journalist with sentence 3 as a follow up to the subject stated in sentence 2.
2 and 3 become a mandatory pair as 3 gives an explanation to the 'diplomatic storm' mentioned in 2. So, 3 has to follow 2.
Sentences 1, 5, and 4 form a sequence they give a chronological narrative of the incident.
So, the correct sequence is 23154.

FeedBack

Directions for question 24: The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Q.24

The term "Rule of Law" is derived from the French phrase 'La Principe de Legality' (the principle of legality) which refers to a government based on principles of law and not of men. In a broader sense Rule of Law means that Law is supreme and is above every individual. No individual whether if he is rich, poor, rulers or ruled etc are above law and they should obey it. In a narrower sense the rule of law implies that government authority may only be exercised in accordance with the written laws, which were adopted through an established procedure. The principle of Rule of Law is intended to be a safeguard against arbitrary actions of the government authorities.

1 **Rule of law establishes equality in the society between various classes of citizenry.**

2 **Rule of law proves that laws are made by men and can be altered and applied according to the convenience of society.**

3 **Rule of law states that only such laws should materialize which have been adopted by the society.**

4 **Rule of law dictates that government should exercise its authorities according to the written laws without any discrimination.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Your Answer : 1
Option 4 is the correct answer as it states the essence of the passage which aims to establish the functionality of rule of law that is government cannot take any arbitrary actions and has to conform to the written laws without any discrimination.
Option 1 is incorrect as rule of law as stated in the passage aims to establish equality with respect to government's actions.
Option 2 is incorrect as it is contrary to principles stated in the passage while defining rule of law.
Option 3 is incorrect as the conversion of social practices into legal practices is not the essence of the passage.

FeedBack

Directions for questions (25 to 30): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

While we often assume women entrepreneurs are discriminated against simply for being women, my research shows that they're actually penalised for exhibiting stereotypically feminine traits. In fact, men are also at a disadvantage when they display "feminine" behaviours in the pitch room, while women are not penalised if they project more "masculine" behaviours.

A study my colleagues and I recently published found that masculinity and femininity, rather than gender identification (whether someone is a man or a woman), affect how entrepreneurs are perceived by potential investors. In an elevator pitch competition, investors were less likely to select as finalists entrepreneurs who demonstrated stereotypically feminine behaviours like warmth and expressiveness, regardless of their gender.

What's unique about our study is that it looks at how gender roles and gender stereotypes, as distinct from sex, impact the pitching process. Our findings suggest that it's not women who have a harder time raising money from investors, it's anyone who fits certain feminine stereotypes. This is supported by the fact that, as a group, the women in our study were no less likely to receive investor interest than the men. It was behaviours, not gender, that mattered.

While this bias against feminine traits is certainly problematic, being clear on what plays well to investors is something women can use to their advantage. You can't change your gender, but you can control how you present yourself. Pitching a business is like any kind of performance — you need to know your audience. The pitch room is a unique environment with its own cultural norms and expectations about what kinds of behaviours are hallmarks of a successful entrepreneur. Just as someone wouldn't show up to a pitch without a slide deck or proper business attire, it's critical to take these behavioural norms and expectations into account as well.

That doesn't mean remaking your personality or the way you express your gender. It simply entails thinking carefully about what sides of yourself you want to emphasise when you pitch. We're all more or less aggressive, nurturing, assertive, or sensitive in various areas of our life, depending on the role we play in a given situation. Women should consider what might happen if they brought forward certain parts of their persona in the pitch room and left others outside.

Research shows that women in many fields face a catch-22 when navigating gender: They are discriminated against for being feminine (which conflicts with the norms of jobs and industries perceived as masculine) but also penalised if they try to act masculine (which contravenes the norms of their gender). Perhaps the most famous example of this phenomenon, known as gender role congruity theory, is when Hillary Clinton was criticised for being too ambitious, aggressive, and cold (all masculine traits) during her presidential runs. Though she was also critiqued as "weak" for exhibiting stereotypically feminine behaviours, people liked her more when she behaved in a manner consistent with her gender.

A number of studies have found that women face this particular bind in areas including politics, management, and corporate leadership. However, our research shows that this dynamic does not apply to entrepreneurs seeking funding. Women in our study were not punished for behaving in more masculine ways; instead, they benefitted by avoiding the penalty that comes with acting feminine. This finding suggests that women don't need to fear backlash when shifting toward a bolder, assertive approach in their pitch.

Q.25

The author, in the passage, aims to:

1 **show that anyone, regardless of one's gender, can face problems navigating the murky world of entrepreneurship and pitch rooms.**

2 **burst some myths regarding one's gender identification in determining one's chances of being a successful entrepreneur.**

3 **highlight the fact that women can easily succeed in gaining the trust of investors if they find a way to be more masculine in their approach.**

4 **describe the findings of a study with respect to the role of masculinity and femininity in the world of entrepreneurship.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Genre: Management / Entrepreneurship
Word Count# 567
The main idea of the passage is to show how women face problems while pitching for their business ventures. Then the author highlights the issue with reference to his/her study. But the author makes it clear that the problem is not with relation to their gender identity but rather with relation to their feminine traits.
Option 1 – 'Regardless of one's gender' is wrong. The main idea has to talk about masculinity and femininity. This is a reiteration of one sentence of the passage. So, it is also a bit narrow.
Option 2 – The author is not dealing with any 'myth' in the passage. Secondly, the passage focuses on 'being successful at pitching', not 'being a successful entrepreneur'.
Option 3 – 'Easily succeed' is extreme in its scope. Also, this option talks about the solution the author offers towards the end of the passage. So, it is a narrow option.
Option 4 – This is the only option that talks about 'the research or study'. So, this is the correct answer.

FeedBack

Directions for questions (25 to 30): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

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Research shows that women in many fields face a catch-22 when navigating gender: They are discriminated against for being feminine (which conflicts with the norms of jobs and industries perceived as masculine) but also penalised if they try to act masculine (which contravenes the norms of their gender). Perhaps the most famous example of this phenomenon, known as gender role congruity theory, is when Hillary Clinton was criticised for being too ambitious, aggressive, and cold (all masculine traits) during her presidential runs. Though she was also critiqued as "weak" for exhibiting stereotypically feminine behaviours, people liked her more when she behaved in a manner consistent with her gender.

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Q.26

With which of the following is the author most likely to agree?

1 **Women have a tougher time being themselves in the world of politics.**

2 **Women can succeed in pitching their ideas if they are adaptable to the expectations.**

3 **Women can succeed in the world of politics and management if they conform to societal norms.**

4 **Women need to remember that the only factor that affects how entrepreneurs are perceived by potential investors is masculinity and femininity.**

✔

Solution:
Correct Answer : 2
Your Answer : 2
Genre: Management / Entrepreneurship Word Count# 567
This can be answered by the process of elimination.
Option 1 – The author clearly says that "Our findings suggest that it's not women who have a harder time raising money from investors, it's anyone who fits certain feminine stereotypes. This is supported by the fact that, as a group, the women in our study were no less likely to receive investor interest than the men. It was behaviours, not gender, that mattered." So, this option is incorrect.
Option 2 – Refer to the last paragraph. So, the author will agree with this.
Option 3 – 'Societal norms' is too broad. The author says that women can succeed if they adhere to the expected gender traits. So, this is a vague option.
Option 4 – 'The only factor' makes it an extreme option. So, it is wrong.

FeedBack

Bookmark

Answer key/Solution

Directions for questions (25 to 30): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

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Research shows that women in many fields face a catch-22 when navigating gender: They are discriminated against for being feminine (which conflicts with the norms of jobs and industries perceived as masculine) but also penalised if they try to act masculine (which contravenes the norms of their gender). Perhaps the most famous example of this phenomenon, known as gender role congruity theory, is when Hillary Clinton was criticised for being too ambitious, aggressive, and cold (all masculine traits) during her presidential runs. Though she was also critiqued as "weak" for exhibiting stereotypically feminine behaviours, people liked her more when she behaved in a manner consistent with her gender.

A number of studies have found that women face this particular bind in areas including politics, management, and corporate leadership. However, our research shows that this dynamic does not apply to entrepreneurs seeking funding. Women in our study were not punished for behaving in more masculine ways; instead, they benefitted by avoiding the penalty that comes with acting feminine. This finding suggests that women don't need to fear backlash when shifting toward a bolder, assertive approach in their pitch.

Q.27

The author gives the example of Hillary Clinton in order to:

1 show the inherent catch-22 situation women face in life.

2 show how women can never truly stand up to the expectations of an inherently patriarchal society.

3 show how any ambitious woman will be criticized irrespective of the gender traits she displays.

4 show how women in many fields struggle with the idea and expectations of gender norms.

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Your Answer : 3
Genre: Management / Entrepreneurship
Word Count# 567
The author gives an example to support a particular idea. Mostly it is the main idea of the passage.
Option 1 – The author has not focused on 'women facing problems in life'. The author talks about women facing problem in the professional sphere. So, this is an incorrect option.
Option 2 – There is no reference to 'patriarchal society'. The author says that even men can face problems if they are perceived to be 'too feminine'. So, this is incorrect.
Option 3 – This is factually incorrect. First, the author doesn't talk about 'ambitious women' exclusively. Second, the author does suggest that women can succeed. So, the author's tone is not negative as the option interprets.
Option 4 – This is the main idea of the paragraph in which the author gives the example of Hillary Clinton. So, this is the correct answer.

FeedBack

Directions for questions (25 to 30): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

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Q.28

Which of the following is the least likely to be true about the researchers of the study mentioned in the passage?

1 **They are feminists.**

2 **They supported Hillary Clinton.**

3 **They work in the field of sociology.**

4 **They have interacted with entrepreneurs.**

✖

Solution:
Correct Answer : 2
Your Answer : 4
Genre: Management / Entrepreneurship
Word Count# 567

Bookmark

Answer key/Solution

This is a question that needs the process of elimination. Whichever option has the least amount of factual support by the passage will be the answer. So, either an incorrect option or an irrelevant option will be the answer.

Option 1 – It may be true. The authors are concerned about women gaining an equal footing in the business world. So, we can't outright eliminate it.

Option 2 – There is no data given in the passage regarding the author's political affiliation. 'Support' is also a vague term. It is not clear if the author supports Hillary Clinton, the politician or Hillary Clinton, the woman. So, this is a vague option. Between options 1 and 2, 2 is less likely to be true.

Option 3 – The passage deals with feminism. It is a part of the field of Sociology. So, this can be true too. Between options 2 and 3, 2 is still less likely to be true.

Option 4 – This has to be true. Without interacting with entrepreneurs, the author couldn't have conducted the study which forms the basis of the passage. So, option 2 is the least likely to be true.

FeedBack

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What's unique about our study is that it looks at how gender roles and gender stereotypes, as distinct from sex, impact the pitching process. Our findings suggest that it's not women who have a harder time raising money from investors, it's anyone who fits certain feminine stereotypes. This is supported by the fact that, as a group, the women in our study were no less likely to receive investor interest than the men. It was behaviours, not gender, that mattered.

While this bias against feminine traits is certainly problematic, being clear on what plays well to investors is something women can use to their advantage. You can't change your gender, but you can control how you present yourself. Pitching a business is like any kind of performance — you need to know your audience. The pitch room is a unique environment with its own cultural norms and expectations about what kinds of behaviours are hallmarks of a successful entrepreneur. Just as someone wouldn't show up to a pitch without a slide deck or proper business attire, it's critical to take these behavioural norms and expectations into account as well.

That doesn't mean remaking your personality or the way you express your gender. It simply entails thinking carefully about what sides of yourself you want to emphasise when you pitch. We're all more or less aggressive, nurturing, assertive, or sensitive in various areas of our life, depending on the role we play in a given situation. Women should consider what might happen if they brought forward certain parts of their persona in the pitch room and left others outside.

Research shows that women in many fields face a catch-22 when navigating gender: They are discriminated against for being feminine (which conflicts with the norms of jobs and industries perceived as masculine) but also penalised if they try to act masculine (which contravenes the norms of their gender). Perhaps the most famous example of this phenomenon, known as gender role congruity theory, is when Hillary Clinton was criticised for being too ambitious, aggressive, and cold (all masculine traits) during her presidential runs. Though she was also critiqued as "weak" for exhibiting stereotypically feminine behaviours, people liked her more when she behaved in a manner consistent with her gender.

A number of studies have found that women face this particular bind in areas including politics, management, and corporate leadership. However, our research shows that this dynamic does not apply to entrepreneurs seeking funding. Women in our study were not punished for behaving in more masculine ways; instead, they benefitted by avoiding the penalty that comes with acting feminine. This finding suggests that women don't need to fear backlash when shifting toward a bolder, assertive approach in their pitch.

Q.29

Which of the following is an inherent assumption made by the author in the final paragraph?

1 **Women need not adhere to their prescribed gender norms in society.**

2 **If women become more masculine, there won't be any repercussions.**

3 **Investors can't tell if a woman possesses masculine traits or simply pretends to do so while pitching.**

4 **Investors are only concerned with money, not with gender norms.**

Solution:
Correct Answer : 3
Genre: Management / Entrepreneurship
Word Count# 567
To decide the validity of an assumption, we must use the negation method.
The last paragraph concludes that if a woman can pretend to be more masculine, she will have no problem succeeding in the world of pitching. If we negate option 3, this conclusion becomes weak. The author assumes that the investor either doesn't care or can't differentiate between actual masculine traits and pretentious ones.
The other options don't affect the conclusion if negated. So, option 3 is a valid assumption.

FeedBack

Bookmark

Answer key/Solution

Directions for questions (25 to 30): The passage below is accompanied by a set of six questions. Choose the best answer to each question.

While we often assume women entrepreneurs are discriminated against simply for being women, my research shows that they're actually penalised for exhibiting stereotypically feminine traits. In fact, men are also at a disadvantage when they display "feminine" behaviours in the pitch room, while women are not penalised if they project more "masculine" behaviours.

A study my colleagues and I recently published found that masculinity and femininity, rather than gender identification (whether someone is a man or a woman), affect how entrepreneurs are perceived by potential investors. In an elevator pitch competition, investors were less likely to select as finalists entrepreneurs who demonstrated stereotypically feminine behaviours like warmth and expressiveness, regardless of their gender.

What's unique about our study is that it looks at how gender roles and gender stereotypes, as distinct from sex, impact the pitching process. Our findings suggest that it's not women who have a harder time raising money from investors, it's anyone who fits certain feminine stereotypes. This is supported by the fact that, as a group, the women in our study were no less likely to receive investor interest than the men. It was behaviours, not gender, that mattered.

While this bias against feminine traits is certainly problematic, being clear on what plays well to investors is something women can use to their advantage. You can't change your gender, but you can control how you present yourself. Pitching a business is like any kind of performance — you need to know your audience. The pitch room is a unique environment with its own cultural norms and expectations about what kinds of behaviours are hallmarks of a successful entrepreneur. Just as someone wouldn't show up to a pitch without a slide deck or proper business attire, it's critical to take these behavioural norms and expectations into account as well.

That doesn't mean remaking your personality or the way you express your gender. It simply entails thinking carefully about what sides of yourself you want to emphasise when you pitch. We're all more or less aggressive, nurturing, assertive, or sensitive in various areas of our life, depending on the role we play in a given situation. Women should consider what might happen if they brought forward certain parts of their persona in the pitch room and left others outside.

Research shows that women in many fields face a catch-22 when navigating gender: They are discriminated against for being feminine (which conflicts with the norms of jobs and industries perceived as masculine) but also penalised if they try to act masculine (which contravenes the norms of their gender). Perhaps the most famous example of this phenomenon, known as gender role congruity theory, is when Hillary Clinton was criticised for being too ambitious, aggressive, and cold (all masculine traits) during her presidential runs. Though she was also critiqued as "weak" for exhibiting stereotypically feminine behaviours, people liked her more when she behaved in a manner consistent with her gender.

A number of studies have found that women face this particular bind in areas including politics, management, and corporate leadership. However, our research shows that this dynamic does not apply to entrepreneurs seeking funding. Women in our study were not punished for behaving in more masculine ways; instead, they benefitted by avoiding the penalty that comes with acting feminine. This finding suggests that women don't need to fear backlash when shifting toward a bolder, assertive approach in their pitch.

Q.30

Which of the following is true according to the passage?

1 Women face a harder time raising money from investors.

2 One can control the gender traits one presents outwardly.

3 Women do not have to worry about being bold and assertive in the world of management.

4 Investors can be open-minded and inclusive if the candidate is adaptable.

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Your Answer : 1
Genre: Management / Entrepreneurship
Word Count# 567
Option 1 – It is clearly negated by the line, "Our findings suggest that it's not women who have a harder time raising money from investors..."
Option 2 – It is true as per the line, "That doesn't mean remaking your personality or the way you express your gender. It simply entails thinking carefully about what sides of yourself you want to emphasise when you pitch." So, the author agrees that one CAN control the personality traits one wants to show.
Option 3 – This goes against the idea of the passage. The author says that these qualities are required in the world of business. So, this is an incorrect option.
Option 4 – This is again wrong. The investors are shown to be biased in favour of certain gender traits. So, to call them 'inclusive' will go against the main idea of the passage.

FeedBack

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

Q.31

Granted, I have no problems with some of the things the index does track in order to adjust a city's liveability, such as crime rates, the efficiency of transportation networks, and quality of healthcare. All are important, and improve one's experience of a city. Lagos scored low in all these categories and as a Lagosian, I readily admit that we can do better in all these areas. But I'd certainly question how cities were ranked in some of the other areas that make up the index. In the culture and environment category, which includes recreational activities, Vienna scored 96.3 out of 100 and Lagos just 53.5. Now I've been to Vienna, and I've lived in Lagos, and there is no way Vienna is 43 points ahead of Lagos in culture and environment.

1 In case of the index to track a city's liveability, the western world has shown its inherent bias against Lagos by placing it behind other western cities.

2 Lagos has its flaws as a city, as highlighted by the index to track a city's liveability; but the index has certain parameters that look subjective and problematic.

3 A factor like culture is subjective and immeasurable and using it as an index will lead to biases.

4 Admittedly Lagos is behind Vienna in healthcare and transportation, but it can't be behind Vienna as the former is a place of great fun and culture.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
There are two main points in this paragraph.
1. The author agrees that Lagos needs to improve in certain aspects as per the index mentioned.
2. The author disputes the lead of Vienna in terms of certain subjective parameters of the study.
So, option 2 is the only comprehensive option.
Option 1 – 'The other western cities' is wrong. The paragraph doesn't focus on the bias of the western world.
Option 3 – It is a conclusion we can derive from the paragraph. It is not the summary.
Option 4 – It is factually incorrect as the passage doesn't talk about Vienna's ranking in terms of healthcare and transportation.
So, option 2 is the correct answer.

FeedBack

Q.32

Directions for question 32: 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. Aid agencies have repeatedly warned the conflict is driving Yemen to the brink of the worst famine in living memory.
2. The US defence secretary, James Mattis, said on 31 October that Saudi Arabia and its Emirati allies were ready for a deal.
3. The UN under-secretary general for humanitarian affairs, Mark Lowcook, said last week that if fighting continues, famine could engulf the country within three months, with 12 to 13 million people at risk of starvation.
4. "The talks between the Saudi-led coalition and the Houthi rebels were being arranged by the UN special envoy for Yemen, Martin Griffiths", he added.
5. It is feared that intensified fighting in Hodeidah would not only have a devastating impact on its population but also cut off food, fuel and medical imports to the rest of the country.

Solution:
Correct Answer : 51324
There are two topics discussed in this paragraph. Sentences 1, 3, and 5 talk about the worsening situation in Yemen. Sentences 2 and 4 talk about the statements made by the US defence secretary James Mattis regarding the negotiations to defuse the tension.
Clearly 2 and 4 create a pair with "James Mattis' and 'He'. But 2 can't be the opening sentence as we need to first introduce the problem that Mattis is talking about.
So, 5 is the opening sentence. 1 and 3 make a pair as 1 talks about 'aid agencies' and 3 gives the opinion of Lowcook who is a representative of UN, an aid agency.
Hence, 51324 is the correct sequence.

Bookmark

Answer key/Solution

FeedBack

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

1. Maybe the first task is to eradicate corruption from our social and political practice.
2. Trust, probity, the rule of law, freedom, justice and the eradication of poverty: these are basic things.
3. The first step in our renaissance has to be putting our house in order.
4. We all know that the terms of African independence were flawed at birth; Africa stepped on to the world stage with its hands tied, the contract of nations negotiated against its favour.
5. The roots of corruption are deep, but not so deep that one generation of stern prohibition of all corrupt practices can't stamp them out.

Solution:
Correct Answer : 4
The correct order is 3152. Sentence 4 introduces the topic of 'African independence'. It may or may not be the topic sentence of this paragraph. There is no transition sentence between 4 and 3 to show that the rest of the sentences actually talk about 'African independence'. So, even if the paragraph is about Africa, we will need some other sentences in between to make the context clear.
Sentence 3 talks about the need for a course of action. The 'first step' in sentence 3 is further explained by sentence 1 ('may be the first task'). Sentence 5 continues explaining 'corruption' which is mentioned in sentence 1. Sentence 2 follows with 'basic things' which add to the preceding three sentences. Hence, sentence 4, with its broad scope, is the odd one out.

Bookmark

Answer key/Solution

FeedBack

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. Dances vary, but there is a real thread of similarity which runs through folk dances the world over.
2. The Naga war dance and the Navajo war dance are identical in conception, almost identical in costumes.
3. The wealth of India's tribal heritage is boundless.
4. The dances of Himachal Pradesh are identical in rhythm and execution with those of certain fisherfolk in Portugal, though the costumes are very different.
5. The Manipuri dancers dressed like crows are not all that different from Hopis.

Solution:
Correct Answer : 3
This is an easy question. All the other sentences talk about 'tribal dance'. Sentence 3 talks about 'tribal heritage' which is quite broad. It can be a part of the discussion, but it can't fit the context of the given paragraph. The other sentences are in the right order.

FeedBack

Bookmark

Answer key/Solution

Sec 2

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

Ravi, inspired from Scrabble, wanted to create his own unique crossword game. After Ravi was done with his creation, he asked two of his friends to play that game as a trial basis. In this, some words were given to both of them and they were asked to place these words on a board having a grid with some rows and columns. Whosoever would be able to identify a position for all the words would be declared as the WINNER. But while identifying the positions some restrictions were there that one has to keep in mind. After a tough session, these 2 people had managed to find their positions based on the following clues:
• There were only 5 words in the entire crossword namely, EQUAL, FERVOUR, MORALE, GROTESQUE, ELITE.
• The game board is in the form of a grid of dimension 8 × 9, where rows were numbered from 1, 2,..., 8 from top to bottom and columns were numbered from 1, 2, ..., 9 from left to right.
• There was no row or column which remains completely empty i.e, at least one letter must be there in every row and column.
• In each row, the words were arranged from left to right and in column, from top to bottom only.
• Each word had at least one letter which shares its position with a letter from the word 'GROTESQUE'.

Q.35

How many blank cells were there in the grid after the arrangement of the five words?

Solution:
Correct Answer : 44

Bookmark

Answer key/Solution

- No. of letters in the word–
  EQUAL → 5 FERVOUR → 7 MORALE → 6 GROTESQUE → 9 ELITE → 5
- Since, it is given that since there is only one across word and no column remains empty, GROTESQUE must be the across word as there are only 9 columns and every other word must be connected to it.
- Now, the word FERVOUR, which contains 7 letters must be an up-down word and must start in row-2, as there is atleast 1 blank cell above F. Also it cannot start in row 3 or below.

Case 1:

- Now, we need to find out what can be the common letter to GROTESQUE and FERVOUR. We suppose that the common letter is R. Then there are 2 possibilities, GROTESQUE starts at R-4, C-1 (or) R-8, C-1 (Row 8, column 1). But it cannot start with R-8, C-1 as we need an eight letter word to occupy row 1.
- Therefore, MORALE must start from R-3, C-3, and to ensure that row 1 is not empty, ELITE must start at R-1, C-4. The position of EQUAL cannot be fixed. There are four possible positions for EQUAL.

Case 2:

- Next, we suppose that 'O' is common to GROTESQUE and FERVOUR. Then GROTESQUE must start at R-6, C-1. Therefore MORALE must start at the 1st row, as that is the only 6 letter word which ensures that Row 1 is not empty. But it cannot start at R-1, C-8 (or) R-1, C-9. Hence it must start at R-1, C-5.
- The only place EQUAL can start is at R-4, C-7. The position of ELITE cannot be fixed.

Case 3:

- Next we suppose that 'E' is common to GROTESQUE and FERVOUR. Then the last 'E' of GROTESQUE cannot be common as then F will not have atleast 1. blank cell on its right. Hence, GROTESQUE must start at R-3, C-1.
- Now if we start EQUAL at R-3, C-9, there is no place left for ELITE. Hence EQUAL must start at R-2, C-7. Therefore MORALE must start at R-1, C-2 and ELITE at R-3, C-9.

Note: There might be some other possible cases.

Case 1:

			E					
	F		L				E	
	E	M	I			E	Q	
G	R	O	T	E	S	Q	U	E
	V	R	E	Q		U	A	Q
	O	A		U		A	L	U
	U	L		A		L		A
	R	E		L				L

Case 2:

				M				
		F		O				E
		E	E	R				L
		R	L	A			E	I
		V	I	L			Q	T
G	R	O	T	E	S	Q	U	E
		U	E				A	
		R					L	

Case 3:

	M						E	
	O			F		E	Q	
G	R	O	T	E	S	Q	U	E
	A			R		U	A	L
	L			V		A	L	I
	E			O		L		T
				U				E
				R				

- Lastly 'U' can be common to GROTESQUE and FERVOUR, but that means GROTEQUE starts at row 7 and we need another 7 letter word to have atleast 1 letter in row 1. This case is ruled out.

Therefore, total cells = 9 × 8 = 72.
Total numbers of letters = 5 + 5 + 6 + 7 + 9 = 32.
Out of these 4 must be common.
Total blanks occupied = 32 – 4 = 28.
Total blanks un-occupied = 72 – 28 = 44.

FeedBack

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

Ravi, inspired from Scrabble, wanted to create his own unique crossword game. After Ravi was done with his creation, he asked two of his friends to play that game as a trial basis. In this, some words were given to both of them and they were asked to place these words on a board having a grid with some rows and columns. Whosoever would be able to identify a position for all the words would be declared as the WINNER. But while identifying the positions some restrictions were there that one has to keep in mind. After a tough session, these 2 people had managed to find their positions based on the following clues:
• There were only 5 words in the entire crossword namely, EQUAL, FERVOUR, MORALE, GROTESQUE, ELITE.
• The game board is in the form of a grid of dimension 8 × 9, where rows were numbered from 1, 2,..., 8 from top to bottom and columns were numbered from 1, 2, ..., 9 from left to right.
• There was no row or column which remains completely empty i.e, at least one letter must be there in every row and column.
• In each row, the words were arranged from left to right and in column, from top to bottom only.
• Each word had at least one letter which shares its position with a letter from the word 'GROTESQUE'.

Q.36
If a letter is written in row 2 and column 3, and is coded as '23' according to its row number and column number, then what is the code for the first letter of the word "GROTESQUE"?

1 **31**

2 **43**

3 **61**

4 **Cannot be determined**

✔

Solution:
Correct Answer : 4
Your Answer : 4

Bookmark

Answer key/Solution

- No. of letters in the word–
  EQUAL → 5 FERVOUR → 7 MORALE → 6 GROTESQUE → 9 ELITE → 5
- Since, it is given that since there is only one across word and no column remains empty, GROTESQUE must be the across word as there are only 9 columns and every other word must be connected to it.
- Now, the word FERVOUR, which contains 7 letters must be an up-down word and must start in row-2, as there is atleast 1 blank cell above F. Also it cannot start in row 3 or below.

Case 1:

- Now, we need to find out what can be the common letter to GROTESQUE and FERVOUR. We suppose that the common letter is R. Then there are 2 possibilities, GROTESQUE starts at R-4, C-1 (or) R-8, C-1 (Row 8, column 1). But it cannot start with R-8, C-1 as we need an eight letter word to occupy row 1.
- Therefore, MORALE must start from R-3, C-3, and to ensure that row 1 is not empty, ELITE must start at R-1, C-4. The position of EQUAL cannot be fixed. There are four possible positions for EQUAL.

Case 2:

- Next, we suppose that 'O' is common to GROTESQUE and FERVOUR. Then GROTESQUE must start at R-6, C-1. Therefore MORALE must start at the 1st row, as that is the only 6 letter word which ensures that Row 1 is not empty. But it cannot start at R-1, C-8 (or) R-1, C-9. Hence it must start at R-1, C-5.
- The only place EQUAL can start is at R-4, C-7. The position of ELITE cannot be fixed.

Case 3:

- Next we suppose that 'E' is common to GROTESQUE and FERVOUR. Then the last 'E' of GROTESQUE cannot be common as then F will not have atleast 1. blank cell on its right. Hence, GROTESQUE must start at R-3, C-1.
- Now if we start EQUAL at R-3, C-9, there is no place left for ELITE. Hence EQUAL must start at R-2, C-7. Therefore MORALE must start at R-1, C-2 and ELITE at R-3, C-9.

Note: There might be some other possible cases.

Case 1:

			E					
	F		L				E	
	E	M	I			E	Q	
G	R	O	T	E	S	Q	U	E
	V	R	E	Q		U	A	Q
	O	A		U		A	L	U
	U	L		A		L		A
	R	E		L				L

Case 2:

				M				
		F		O				E
		E	E	R				L
		R	L	A			E	I
		V	I	L			Q	T
G	R	O	T	E	S	Q	U	E
		U	E				A	
		R					L	

Case 3:

	M						E	
	O			F		E	Q	
G	R	O	T	E	S	Q	U	E
	A			R		U	A	L
	L			V		A	L	I
	E			O		L		T
				U				E
				R				

- Lastly 'U' can be common to GROTESQUE and FERVOUR, but that means GROTEQUE starts at row 7 and we need another 7 letter word to have atleast 1 letter in row 1. This case is ruled out.

Clearly from the above possible cases, position of first letter of word 'GROTESQUE' cannot be definitely said.

FeedBack

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

Ravi, inspired from Scrabble, wanted to create his own unique crossword game. After Ravi was done with his creation, he asked two of his friends to play that game as a trial basis. In this, some words were given to both of them and they were asked to place these words on a board having a grid with some rows and columns. Whosoever would be able to identify a position for all the words would be declared as the WINNER. But while identifying the positions some restrictions were there that one has to keep in mind. After a tough session, these 2 people had managed to find their positions based on the following clues:
• There were only 5 words in the entire crossword namely, EQUAL, FERVOUR, MORALE, GROTESQUE, ELITE.
• The game board is in the form of a grid of dimension 8 × 9, where rows were numbered from 1, 2,..., 8 from top to bottom and columns were numbered from 1, 2, ..., 9 from left to right.
• There was no row or column which remains completely empty i.e, at least one letter must be there in every row and column.
• In each row, the words were arranged from left to right and in column, from top to bottom only.
• Each word had at least one letter which shares its position with a letter from the word 'GROTESQUE'.

Q.37
The word 'MORALE' cannot get started from which position in the grid?

1 **Row - 1, Column - 2**

2 **Row - 3, Column - 3**

3 **Row - 1, Column - 4**

4 **All are possible**

Solution:
Correct Answer : 3
Your Answer : 3

Bookmark

Answer key/Solution

- No. of letters in the word–
  EQUAL → 5 FERVOUR → 7 MORALE → 6 GROTESQUE → 9 ELITE → 5
- Since, it is given that since there is only one across word and no column remains empty, GROTESQUE must be the across word as there are only 9 columns and every other word must be connected to it.
- Now, the word FERVOUR, which contains 7 letters must be an up-down word and must start in row-2, as there is atleast 1 blank cell above F. Also it cannot start in row 3 or below.

Case 1:

- Now, we need to find out what can be the common letter to GROTESQUE and FERVOUR. We suppose that the common letter is R. Then there are 2 possibilities, GROTESQUE starts at R-4, C-1 (or) R-8, C-1 (Row 8, column 1). But it cannot start with R-8, C-1 as we need an eight letter word to occupy row 1.
- Therefore, MORALE must start from R-3, C-3, and to ensure that row 1 is not empty, ELITE must start at R-1, C-4. The position of EQUAL cannot be fixed. There are four possible positions for EQUAL.

Case 2:

- Next, we suppose that 'O' is common to GROTESQUE and FERVOUR. Then GROTESQUE must start at R-6, C-1. Therefore MORALE must start at the 1st row, as that is the only 6 letter word which ensures that Row 1 is not empty. But it cannot start at R-1, C-8 (or) R-1, C-9. Hence it must start at R-1, C-5.
- The only place EQUAL can start is at R-4, C-7. The position of ELITE cannot be fixed.

Case 3:

- Next we suppose that 'E' is common to GROTESQUE and FERVOUR. Then the last 'E' of GROTESQUE cannot be common as then F will not have atleast 1. blank cell on its right. Hence, GROTESQUE must start at R-3, C-1.
- Now if we start EQUAL at R-3, C-9, there is no place left for ELITE. Hence EQUAL must start at R-2, C-7. Therefore MORALE must start at R-1, C-2 and ELITE at R-3, C-9.

Note: There might be some other possible cases.

Case 1:

			E					
	F		L				E	
	E	M	I			E	Q	
G	R	O	T	E	S	Q	U	E
	V	R	E	Q		U	A	Q
	O	A		U		A	L	U
	U	L		A		L		A
	R	E		L				L

Case 2:

				M				
		F		O				E
		E	E	R				L
		R	L	A			E	I
		V	I	L			Q	T
G	R	O	T	E	S	Q	U	E
		U	E				A	
		R					L	

Case 3:

	M						E	
	O			F		E	Q	
G	R	O	T	E	S	Q	U	E
	A			R		U	A	L
	L			V		A	L	I
	E			O		L		T
				U				E
				R				

- Lastly 'U' can be common to GROTESQUE and FERVOUR, but that means GROTEQUE starts at row 7 and we need another 7 letter word to have atleast 1 letter in row 1. This case is ruled out.

From the above possible cases, the word MORALE cannot get started from Row 1 – Column 4 as T will be there in that column and MORALE does not have letter T.

FeedBack

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

Ravi, inspired from Scrabble, wanted to create his own unique crossword game. After Ravi was done with his creation, he asked two of his friends to play that game as a trial basis. In this, some words were given to both of them and they were asked to place these words on a board having a grid with some rows and columns. Whosoever would be able to identify a position for all the words would be declared as the WINNER. But while identifying the positions some restrictions were there that one has to keep in mind. After a tough session, these 2 people had managed to find their positions based on the following clues:
• There were only 5 words in the entire crossword namely, EQUAL, FERVOUR, MORALE, GROTESQUE, ELITE.
• The game board is in the form of a grid of dimension 8 × 9, where rows were numbered from 1, 2,..., 8 from top to bottom and columns were numbered from 1, 2, ..., 9 from left to right.
• There was no row or column which remains completely empty i.e, at least one letter must be there in every row and column.
• In each row, the words were arranged from left to right and in column, from top to bottom only.
• Each word had at least one letter which shares its position with a letter from the word 'GROTESQUE'.

Q.38
The word 'ELITE' can start from which of the following row numbers?

1 **1**

2 **4**

3 **2**

4 **More than one of the above**

✔

Solution:
Correct Answer : 4
Your Answer : 4

Bookmark

Answer key/Solution

- No. of letters in the word–
  EQUAL → 5 FERVOUR → 7 MORALE → 6 GROTESQUE → 9 ELITE → 5
- Since, it is given that since there is only one across word and no column remains empty, GROTESQUE must be the across word as there are only 9 columns and every other word must be connected to it.
- Now, the word FERVOUR, which contains 7 letters must be an up-down word and must start in row-2, as there is atleast 1 blank cell above F. Also it cannot start in row 3 or below.

Case 1:

- Now, we need to find out what can be the common letter to GROTESQUE and FERVOUR. We suppose that the common letter is R. Then there are 2 possibilities, GROTESQUE starts at R-4, C-1 (or) R-8, C-1 (Row 8, column 1). But it cannot start with R-8, C-1 as we need an eight letter word to occupy row 1.
- Therefore, MORALE must start from R-3, C-3, and to ensure that row 1 is not empty, ELITE must start at R-1, C-4. The position of EQUAL cannot be fixed. There are four possible positions for EQUAL.

Case 2:

- Next, we suppose that 'O' is common to GROTESQUE and FERVOUR. Then GROTESQUE must start at R-6, C-1. Therefore MORALE must start at the 1st row, as that is the only 6 letter word which ensures that Row 1 is not empty. But it cannot start at R-1, C-8 (or) R-1, C-9. Hence it must start at R-1, C-5.
- The only place EQUAL can start is at R-4, C-7. The position of ELITE cannot be fixed.

Case 3:

- Next we suppose that 'E' is common to GROTESQUE and FERVOUR. Then the last 'E' of GROTESQUE cannot be common as then F will not have atleast 1. blank cell on its right. Hence, GROTESQUE must start at R-3, C-1.
- Now if we start EQUAL at R-3, C-9, there is no place left for ELITE. Hence EQUAL must start at R-2, C-7. Therefore MORALE must start at R-1, C-2 and ELITE at R-3, C-9.

Note: There might be some other possible cases.

Case 1:

			E					
	F		L				E	
	E	M	I			E	Q	
G	R	O	T	E	S	Q	U	E
	V	R	E	Q		U	A	Q
	O	A		U		A	L	U
	U	L		A		L		A
	R	E		L				L

Case 2:

				M				
		F		O				E
		E	E	R				L
		R	L	A			E	I
		V	I	L			Q	T
G	R	O	T	E	S	Q	U	E
		U	E				A	
		R					L	

Case 3:

	M						E	
	O			F		E	Q	
G	R	O	T	E	S	Q	U	E
	A			R		U	A	L
	L			V		A	L	I
	E			O		L		T
				U				E
				R				

- Lastly 'U' can be common to GROTESQUE and FERVOUR, but that means GROTEQUE starts at row 7 and we need another 7 letter word to have atleast 1 letter in row 1. This case is ruled out.

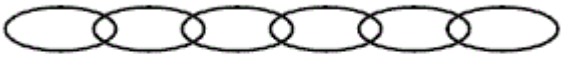
From the above possible cases, 'ELITE' can start in 1st, 2nd and 3rd row.

FeedBack

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

Ravi has a gold chain with N links, such that links are numbered from 1 to N. Ravi wants to cut the links into groups of one or more links, in such a way that he can pay salary to Ritika by paying any number of links she may ask for her work on contract basis. But since cutting a gold chain comes with the cost, he has to be very smart while cutting it. One cut means a link is cut at one place.

Original:



After one cut:

Q.39

If N = 865, then what is the minimum number of cuts that Ravi should make?

Solution:

Correct Answer : 6

Bookmark

Answer key/Solution

Let's first solve for 1 cut with one cut, he can get maximum of 3 pieces.
Let the largest number N that can be represented with 3 groups.
One of the links will definitely be 1 (the piece that is cut). Now, let's construct in such a way that all numbers can be attained.
As we already have 1, next number should be 2. Now, we can get 1, 2, 3 (1 + 2), hence the next number should be 4.
With 1, 2, 4 we can get a maximum of 7.
Now, let's analyze for 2 cuts with 2 cuts we get 5 groups out of which 2 groups will be 1 → 1, 1.
Since, we have two 1s, the next number should be 3.
As we can get numbers till 5, the next number should be 6.
Similarly, the next number should be 12. The maximum N = 23.
1, 1, 3, 6, 12
Now, let's analyze for 3 cuts.
With 3 cuts, we get 7 pieces out of which 3 groups are 1.
→ 1, 1, 1
Since we have three 1's the next number should be 4.
Similarly the other numbers can be calculated.
1, 1, 1, 4, 8, 16, 32
∴ N = 63.
We can see a pattern here → For 'n' cuts, there are 2n + 1 groups, out of which there are n 1s and the rest of them start with n + 1s and subsequent terms are twice the previous terms.
1, 1, ... n terms, (n + 1), 2(n + 1), 4(n + 1), ... $2^n(n + 1)$
Sum of these = N = n + (n + 1)[2^{n-1} – 1] = (n + 1) [2^{n+1}] – n.
Following table, gives the value of N, for different number of cuts:

Cuts	N
1	7
2	23
3	63
4	159
5	383
6	895
7	2047
8	4607

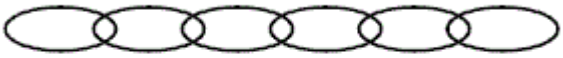
As per the above table.

FeedBack

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

Ravi has a gold chain with N links, such that links are numbered from 1 to N. Ravi wants to cut the links into groups of one or more links, in such a way that he can pay salary to Ritika by paying any number of links she may ask for her work on contract basis. But since cutting a gold chain comes with the cost, he has to be very smart while cutting it. One cut means a link is cut at one place.

Original:



After one cut:

Q.40

If Ravi made 8 cuts, then what is the maximum possible value of N?

Solution:

Correct Answer : 4607

Bookmark

Answer key/Solution

Let's first solve for 1 cut with one cut, he can get maximum of 3 pieces.
Let the largest number N that can be represented with 3 groups.
One of the links will definitely be 1 (the piece that is cut). Now, let's construct in such a way that all numbers can be attained.
As we already have 1, next number should be 2. Now, we can get 1, 2, 3 (1 + 2), hence the next number should be 4.
With 1, 2, 4 we can get a maximum of 7.
Now, let's analyze for 2 cuts with 2 cuts we get 5 groups out of which 2 groups will be 1 → 1, 1.
Since, we have two 1s, the next number should be 3.
As we can get numbers till 5, the next number should be 6.
Similarly, the next number should be 12. The maximum N = 23.
1, 1, 3, 6, 12
Now, let's analyze for 3 cuts.
With 3 cuts, we get 7 pieces out of which 3 groups are 1.
→ 1, 1, 1
Since we have three 1's the next number should be 4.
Similarly the other numbers can be calculated.
1, 1, 1, 4, 8, 16, 32
∴ N = 63.
We can see a pattern here → For 'n' cuts, there are 2n + 1 groups, out of which there are n 1s and the rest of them start with n + 1s and subsequent terms are twice the previous terms.
1, 1, ... n terms, (n + 1), 2(n + 1), 4(n + 1), ... $2^n(n + 1)$
Sum of these = N = n + (n + 1)[$2^{n-1} - 1$] = (n + 1) [2^{n+1}] – n.
Following table, gives the value of N, for different number of cuts:

Cuts	N
1	7
2	23
3	63
4	159
5	383
6	895
7	2047
8	4607

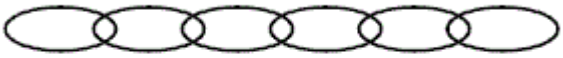
As per the above table.

FeedBack

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

Ravi has a gold chain with N links, such that links are numbered from 1 to N. Ravi wants to cut the links into groups of one or more links, in such a way that he can pay salary to Ritika by paying any number of links she may ask for her work on contract basis. But since cutting a gold chain comes with the cost, he has to be very smart while cutting it. One cut means a link is cut at one place.

Original:



After one cut:

Q.41

If N = 512, then what could be the maximum sum of the numbers written on the links of any piece of the chain after Ravi made cuts?

Solution:
Correct Answer : 98432

Bookmark

Answer key/Solution

Let's first solve for 1 cut with one cut, he can get maximum of 3 pieces.
Let the largest number N that can be represented with 3 groups.
One of the links will definitely be 1 (the piece that is cut). Now, let's construct in such a way that all numbers can be attained.
As we already have 1, next number should be 2. Now, we can get 1, 2, 3 (1 + 2), hence the next number should be 4.
With 1, 2, 4 we can get a maximum of 7.
Now, let's analyze for 2 cuts with 2 cuts we get 5 groups out of which 2 groups will be 1 → 1, 1.
Since, we have two 1s, the next number should be 3.
As we can get numbers till 5, the next number should be 6.
Similarly, the next number should be 12. The maximum N = 23.
1, 1, 3, 6, 12
Now, let's analyze for 3 cuts.
With 3 cuts, we get 7 pieces out of which 3 groups are 1.
→ 1, 1, 1
Since we have three 1's the next number should be 4.
Similarly the other numbers can be calculated.
1, 1, 1, 4, 8, 16, 32
∴ N = 63.
We can see a pattern here → For 'n' cuts, there are 2n + 1 groups, out of which there are n 1s and the rest of them start with n + 1s and subsequent terms are twice the previous terms.
1, 1, ... n terms, (n + 1), 2(n + 1), 4(n + 1), ... $2^n(n + 1)$
Sum of these = N = $n + (n + 1)[2^{n-1} - 1] = (n + 1)[2^{n+1}] - n$.
Following table, gives the value of N, for different number of cuts:

Cuts	N
1	7
2	23
3	63
4	159
5	383
6	895
7	2047
8	4607

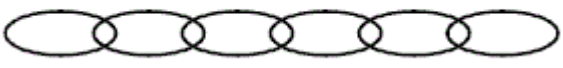
Now we need to maximize the sum of numbers in a single group. The number of links cannot be more than half the total number of links. The maximum links in a single group can be N/2.
The maximum number of links in a group, where N is 512 = 256.
Since, we need the maximum sum, that group should consists of higher numbers.
The numbers in this group will be 257 to 512.
∴ Sum = 257 + 258 + ... + 512
= 128(257 + 512) = 98432.

FeedBack

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

Ravi has a gold chain with N links, such that links are numbered from 1 to N. Ravi wants to cut the links into groups of one or more links, in such a way that he can pay salary to Ritika by paying any number of links she may ask for her work on contract basis. But since cutting a gold chain comes with the cost, he has to be very smart while cutting it. One cut means a link is cut at one place.

Original:



After one cut:

Q.42

If Ravi has to make more than 5 cuts but less then 7 cuts, then what is the number of possible values that N can take?

Solution:

Correct Answer : 512

Bookmark

Answer key/Solution

Let's first solve for 1 cut with one cut, he can get maximum of 3 pieces.
Let the largest number N that can be represented with 3 groups.
One of the links will definitely be 1 (the piece that is cut). Now, let's construct in such a way that all numbers can be attained.
As we already have 1, next number should be 2. Now, we can get 1, 2, 3 (1 + 2), hence the next number should be 4.
With 1, 2, 4 we can get a maximum of 7.
Now, let's analyze for 2 cuts with 2 cuts we get 5 groups out of which 2 groups will be 1 → 1, 1.
Since, we have two 1s, the next number should be 3.
As we can get numbers till 5, the next number should be 6.
Similarly, the next number should be 12. The maximum N = 23.
1, 1, 3, 6, 12
Now, let's analyze for 3 cuts.
With 3 cuts, we get 7 pieces out of which 3 groups are 1.
→ 1, 1, 1
Since we have three 1's the next number should be 4.
Similarly the other numbers can be calculated.
1, 1, 1, 4, 8, 16, 32
∴ N = 63.
We can see a pattern here → For 'n' cuts, there are 2n + 1 groups, out of which there are n 1s and the rest of them start with n + 1s and subsequent terms are twice the previous terms.
1, 1, ... n terms, (n + 1), 2(n + 1), 4(n + 1), ... $2^n(n + 1)$
Sum of these = N = n + (n + 1)$[2^{n-1} - 1]$ = (n + 1) $[2^{n+1}]$ – n.
Following table, gives the value of N, for different number of cuts:

Cuts	N
1	7
2	23
3	63
4	159
5	383
6	895
7	2047
8	4607

As per the above table, all the values from 383 to 895 i.e. 512 values.

FeedBack

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

125 similar cubes of dimension 1 × 1 × 1 are arranged to form a bigger cubical box of dimension 5 × 5 × 5. From one corner of the top layer of this block, a cuboid of dimension 2 × 2 × 1 is removed. From the opposite corner of the same top layer, a cuboid of dimension 1 × 2 × 1 is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions 1 × 3 × 1 and 4 × 1 × 1 are removed respectively. All exposed faces of the thus formed block are then coloured red. It is known that, while the dimensions are defined as l × b × h, l, b and h represents length, breadth and height of that cube or cuboid.

Q.43

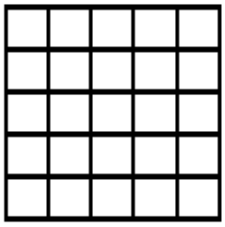
How many small cubes are left in the bigger block?

Solution:
Correct Answer : 112

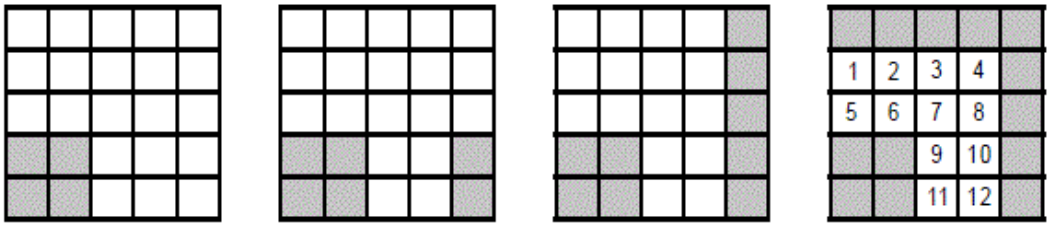
Bookmark

Answer key/Solution

Let the following diagram represents the top layer of the cube having dimension 5 × 5 × 5.



Now as the question says every time some smaller cube or cuboidal were removed from that top layer of the bigger block, we can see that the following steps represent the removing of these cuboids with the shaded cuboidals:



So, finally the top layer of the block left with the un-shaded cubes numbered from 1 to 12 only and the remaining four layers remain same as earlier and hence painted with red colour.

As the bigger block having dimension 5 × 5 × 5 has cubes of dimension 1 × 1 × 1 in it. So, total number of smaller cubes in the bigger block initially was 125. But now as we can see from the above figure, we have removed 13 smaller cubes. So, the remaining cubes in the bigger block = 125 - 13 = 112.

FeedBack

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

125 similar cubes of dimension 1 × 1 × 1 are arranged to form a bigger cubical box of dimension 5 × 5 × 5. From one corner of the top layer of this block, a cuboid of dimension 2 × 2 × 1 is removed. From the opposite corner of the same top layer, a cuboid of dimension 1 × 2 × 1 is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions 1 × 3 × 1 and 4 × 1 × 1 are removed respectively. All exposed faces of the thus formed block are then coloured red. It is known that, while the dimensions are defined as l × b × h, l, b and h represents length, breadth and height of that cube or cuboid.

Q.44
How many cubes do not have any face coloured in red?

1 **38**

2 **26**

3 **25**

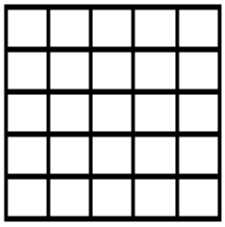
4 **27**

Solution:
Correct Answer : 2

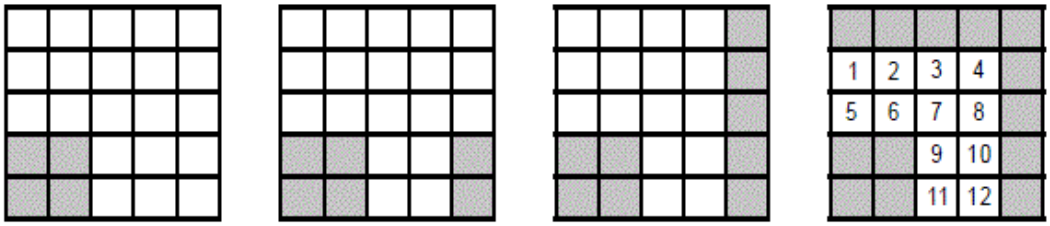
Bookmark

Answer key/Solution

Let the following diagram represents the top layer of the cube having dimension 5 × 5 × 5.



Now as the question says every time some smaller cube or cuboidal were removed from that top layer of the bigger block, we can see that the following steps represent the removing of these cuboids with the shaded cuboidals:



So, finally the top layer of the block left with the un-shaded cubes numbered from 1 to 12 only and the remaining four layers remain same as earlier and hence painted with red colour.

To find the cubes not having any coloured face, lets check in each layer starting from bottom most layer.
Bottom-most layer: at least one face of every cube is coloured.
Second layer from bottom: 9 cubes in the middle of the layer have no face coloured.
Third layer from bottom: 9 cubes in the middle, same as the layer below it.
Second layer from top : 8 cubes, which are exactly below cube numbered 2, 3, 4, 6, 7, 8, 9, 10, are only cubes having no face coloured.
Top layer: Has every cube with at least one coloured face.
So, the required number of cubes = 9 + 9 + 8 = 26.

FeedBack

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

125 similar cubes of dimension 1 × 1 × 1 are arranged to form a bigger cubical box of dimension 5 × 5 × 5. From one corner of the top layer of this block, a cuboid of dimension 2 × 2 × 1 is removed. From the opposite corner of the same top layer, a cuboid of dimension 1 × 2 × 1 is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions 1 × 3 × 1 and 4 × 1 × 1 are removed respectively. All exposed faces of the thus formed block are then coloured red. It is known that, while the dimensions are defined as l × b × h, l, b and h represents length, breadth and height of that cube or cuboid.

Q.45
How many cubes have only two red coloured faces?

1 **32**

2 **34**

3 **18**

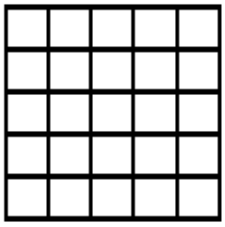
4 **29**

Solution:
Correct Answer : 2

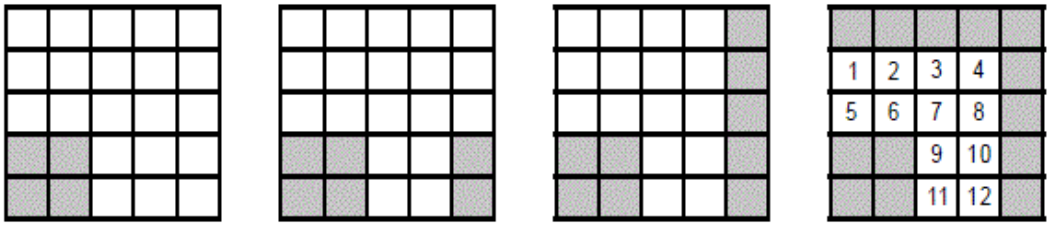
Bookmark

Answer key/Solution

Let the following diagram represents the top layer of the cube having dimension 5 × 5 × 5.



Now as the question says every time some smaller cube or cuboidal were removed from that top layer of the bigger block, we can see that the following steps represent the removing of these cuboids with the shaded cuboidals:



So, finally the top layer of the block left with the un-shaded cubes numbered from 1 to 12 only and the remaining four layers remain same as earlier and hence painted with red colour.

To find the cubes having exactly two red coloured faces:
Bottom-most layer : 12 cubes, 3 middle cubes on every edge, have two coloured faces.
Second layer from bottom: 4 cube has two coloured face, 4 corners of the layer.
Third layer from bottom: 4 cube having two coloured face.
Second layer from top: only 8 cubes having two coloured faces.
Top layer : 6 cubes, numbered as 2, 3, 6, 8, 9, 10, have two red coloured faces.
So, total required numbers = 12 + 4 + 4 + 8 + 6 = 34.

FeedBack

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

125 similar cubes of dimension 1 × 1 × 1 are arranged to form a bigger cubical box of dimension 5 × 5 × 5. From one corner of the top layer of this block, a cuboid of dimension 2 × 2 × 1 is removed. From the opposite corner of the same top layer, a cuboid of dimension 1 × 2 × 1 is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions 1 × 3 × 1 and 4 × 1 × 1 are removed respectively. All exposed faces of the thus formed block are then coloured red. It is known that, while the dimensions are defined as l × b × h, l, b and h represents length, breadth and height of that cube or cuboid.

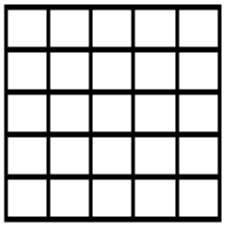
Q.46
How many smaller cubes, out of the cubes left in the top layer, have three red coloured faces?

Solution:
Correct Answer : 5

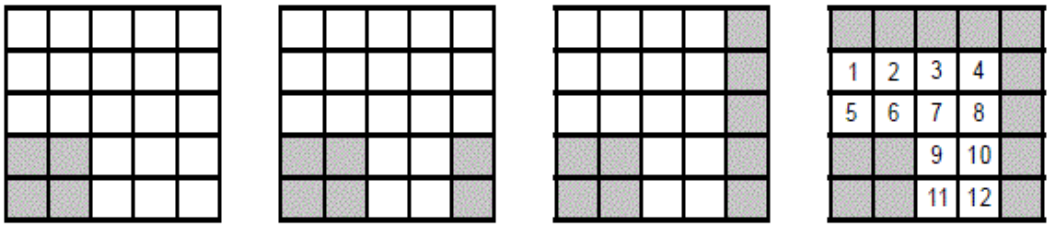
Bookmark

Answer key/Solution

Let the following diagram represents the top layer of the cube having dimension 5 × 5 × 5.



Now as the question says every time some smaller cube or cuboidal were removed from that top layer of the bigger block, we can see that the following steps represent the removing of these cuboids with the shaded cuboidals:



So, finally the top layer of the block left with the un-shaded cubes numbered from 1 to 12 only and the remaining four layers remain same as earlier and hence painted with red colour.

Three red coloured faces in top layer are those which have number 1, 4, 5, 11, 12. Hence, there are 5 such cubes in top layer.

FeedBack

Directions for questions 47 to 50: These questions are based on the following information.

Six persons – P, Q, R, S, T, and U - are standing in a row facing North. They all participated in the three rounds of a swimming competition viz. Round I, Round II and Round III. Each person finished the Round I with a different position from 1st to 6th (1st being higher than 2nd, which is higher than 3rd, and so on) and same is true for the remaining two rounds.
Some other information is also known to us.

(i) Only one person is standing between P and S, who finished Round II at 4th position.
(ii) S is standing to the immediate right of U.
(iii) P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II both at the 1st position.
(iv) Q is standing to the immediate right of the person who finished Round II in a position lower than S in Round II.
(v) Position of R is lower in Round III than his position in Round I and lower in Round I than Round II.
(vi) The position of the person standing to the immediate right of T is 4th in Round III.
(vii) R did not finish any Round at 4th or 6th position.
(viii) Neither P nor T finished at the 6th position in Round II.
(ix) Position of P was lower in Round III than Round II, which is lower than his position in Round I.
(x) S finished all three rounds at even positions.
(xi) Only two persons finished two different rounds with the same position.
(xii) No one finished all the three Rounds at the same position.
(xiii) The person who finished the Round III at 1st position is not standing 2nd to the right of S.

Q.47

How many persons finished in a better position than S in all the three rounds?

1 **1**

2 **2**

3 **3**

4 **0**

Solution:
Correct Answer : 4
Your Answer : 4

Bookmark

Answer key/Solution

P is standing at the end of the row. Only one person is standing between P and S, who finished Round II at 4th position. S is standing to the immediate right of T.
Case 1:

Position of persons	P	U	S			
Round I						
Round II			4			
Round III						

Case 2:

Position of persons			U	S		P
Round I						
Round II				4		
Round III						

P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II at 1st position.
Case 1:

Position of persons	P	U	S			
Round I		1				
Round II		1	4			
Round III						

Case 2:

Position of persons			U	S		P
Round I					1	
Round II				4	1	
Round III						

Q is standing to the immediate right of the person who finished Round II with position lower than S. We have: S finished position II at 4th position. Position of R is lower in Round III than Round I and lower in Round I than Round II. i.e. for R: Round III <Round I <Round II. So, R cannot be the person who finished Round II with position 5thor position 6th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				
Round II		1	4	5/6		
Round III						

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1				

Round II		1	4		5/6	
Round III						

Case 2:

Position of persons	T	Q	U	S	R	P
Round I					1	
Round II	5/6			4	1	
Round III						

For R: Round III<Round I <Round II
Therefore Case 2 is eliminated.
The position of the person standing to the immediate right of T is 4th in Round III. Position of R was lower in Round III than Round I and lower in Round I than Round II. I.e. for R: Round III <Round I <Round II. R never finished any Round with position 6th or 4th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				3
Round II		1	4	5/6		2
Round III					4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1		3		
Round II		1	4	2	5/6	
Round III				5		4

Neither P nor T finished Round II in the 6th position. So, Q must be the one who finished Round II in the 6th position. The position of P is lower in Round III than Round II and lower in Round II than Round I.
i.e. for P Round I > Round II > Round III.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1				3
Round II	3	1	4	5	6	2
Round III	6				4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1		3		
Round II	3	1	4	2	5	6
Round III	6			5		4

S finished his all Rounds with even positions but not with last position. Only 2 persons finished the two different Rounds with same position. So, T and Q finished the Round I with position 6thand 5th respectively. No one finished all three Rounds with same position. So, U finished Round II with position 3.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1	4	6	5	3
Round II	3	1	4	5	6	2
Round III	6	3	2	1	4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1	4	3	6	5
Round II	3	1	4	2	5	6
Round III	6	3	2	5	1	4

The person who finished the Round III at the 1st position is not standing 2nd to the right of S. So, case 1(2) can be eliminated.
Therefore case 1(1) is the final solution.

No one finished in a better rank in all the rounds combined.

FeedBack

Directions for questions 47 to 50: These questions are based on the following information.

Six persons – P, Q, R, S, T, and U - are standing in a row facing North. They all participated in the three rounds of a swimming competition viz. Round I, Round II and Round III. Each person finished the Round I with a different position from 1st to 6th (1st being higher than 2nd, which is higher than 3rd, and so on) and same is true for the remaining two rounds.
Some other information is also known to us.

(i) Only one person is standing between P and S, who finished Round II at 4th position.
(ii) S is standing to the immediate right of U.
(iii) P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II both at the 1st position.
(iv) Q is standing to the immediate right of the person who finished Round II in a position lower than S in Round II.
(v) Position of R is lower in Round III than his position in Round I and lower in Round I than Round II.
(vi) The position of the person standing to the immediate right of T is 4th in Round III.
(vii) R did not finish any Round at 4th or 6th position.
(viii) Neither P nor T finished at the 6th position in Round II.
(ix) Position of P was lower in Round III than Round II, which is lower than his position in Round I.
(x) S finished all three rounds at even positions.
(xi) Only two persons finished two different rounds with the same position.
(xii) No one finished all the three Rounds at the same position.
(xiii) The person who finished the Round III at 1st position is not standing 2nd to the right of S.

Q.48
Who did not finish any of the rounds at the last position?

1 **S**

2 **P**

3 **Q**

4 **T**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

P is standing at the end of the row. Only one person is standing between P and S, who finished Round II at 4th position. S is standing to the immediate right of T.
Case 1:

Position of persons	P	U	S			
Round I						
Round II			4			
Round III						

Case 2:

Position of persons			U	S		P

Round I						
Round II				4		
Round III						

P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II at 1st position.
Case 1:

Position of persons	P	U	S			
Round I		1				
Round II		1	4			
Round III						

Case 2:

Position of persons			U	S		P
Round I					1	
Round II				4	1	
Round III						

Q is standing to the immediate right of the person who finished Round II with position lower than S. We have: S finished position II at 4th position. Position of R is lower in Round III than Round I and lower in Round I than Round II. i.e. for R: Round III <Round I <Round II. So, R cannot be the person who finished Round II with position 5thor position 6th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				
Round II		1	4	5/6		
Round III						

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1				
Round II		1	4		5/6	
Round III						

Case 2:

Position of persons	T	Q	U	S	R	P
Round I					1	
Round II	5/6			4	1	
Round III						

For R: Round III<Round I <Round II
Therefore Case 2 is eliminated.
The position of the person standing to the immediate right of T is 4th in Round III. Position of R was lower in Round III than Round I and lower in Round I than Round II. I.e. for R: Round III <Round I <Round II. R never finished any Round with position 6th or 4th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				3
Round II		1	4	5/6		2
Round III					4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1		3		
Round II		1	4	2	5/6	
Round III				5		4

Neither P nor T finished Round II in the 6th position. So, Q must be the one who finished Round II in the 6th position. The position of P is lower in Round III than Round II and lower in Round II than Round I.
i.e. for P Round I > Round II > Round III.
Case 1(1) :

Position of persons	P	U	S	T	Q	R

Round I	2	1				3
Round II	3	1	4	5	6	2
Round III	6				4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1		3		
Round II	3	1	4	2	5	6
Round III	6			5		4

S finished his all Rounds with even positions but not with last position. Only 2 persons finished the two different Rounds with same position. So, T and Q finished the Round I with position 6thand 5th respectively. No one finished all three Rounds with same position. So, U finished Round II with position 3.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1	4	6	5	3
Round II	3	1	4	5	6	2
Round III	6	3	2	1	4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1	4	3	6	5
Round II	3	1	4	2	5	6
Round III	6	3	2	5	1	4

The person who finished the Round III at the 1st position is not standing 2nd to the right of S. So, case 1(2) can be eliminated. Therefore case 1(1) is the final solution.

S did not finish in the last position in any of the rounds.

FeedBack

Directions for questions 47 to 50: These questions are based on the following information.

Six persons – P, Q, R, S, T, and U - are standing in a row facing North. They all participated in the three rounds of a swimming competition viz. Round I, Round II and Round III. Each person finished the Round I with a different position from 1st to 6th (1st being higher than 2nd, which is higher than 3rd, and so on) and same is true for the remaining two rounds.
Some other information is also known to us.

(i) Only one person is standing between P and S, who finished Round II at 4th position.
(ii) S is standing to the immediate right of U.
(iii) P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II both at the 1st position.
(iv) Q is standing to the immediate right of the person who finished Round II in a position lower than S in Round II.
(v) Position of R is lower in Round III than his position in Round I and lower in Round I than Round II.
(vi) The position of the person standing to the immediate right of T is 4th in Round III.
(vii) R did not finish any Round at 4th or 6th position.
(viii) Neither P nor T finished at the 6th position in Round II.
(ix) Position of P was lower in Round III than Round II, which is lower than his position in Round I.
(x) S finished all three rounds at even positions.
(xi) Only two persons finished two different rounds with the same position.
(xii) No one finished all the three Rounds at the same position.
(xiii) The person who finished the Round III at 1st position is not standing 2nd to the right of S.

Q.49
Who finished in the 1st position in Round III?

1 **S**

2 **P**

3 **Q**

4 **T**

Solution:
Correct Answer : 4
Your Answer : 4

Bookmark

Answer key/Solution

P is standing at the end of the row. Only one person is standing between P and S, who finished Round II at 4th position. S is standing to the immediate right of T.
Case 1:

Position of persons	P	U	S			
Round I						
Round II			4			
Round III						

Case 2:

Position of persons			U	S		P
Round I						
Round II				4		

Round III						

P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II at 1st position.
Case 1:

Position of persons	P	U	S			
Round I		1				
Round II		1	4			
Round III						

Case 2:

Position of persons			U	S		P
Round I					1	
Round II				4	1	
Round III						

Q is standing to the immediate right of the person who finished Round II with position lower than S. We have: S finished position II at 4th position. Position of R is lower in Round III than Round I and lower in Round I than Round II. i.e. for R: Round III <Round I <Round II. So, R cannot be the person who finished Round II with position 5thor position 6th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				
Round II		1	4	5/6		
Round III						

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1				
Round II		1	4		5/6	
Round III						

Case 2:

Position of persons	T	Q	U	S	R	P
Round I					1	
Round II	5/6			4	1	
Round III						

For R: Round III<Round I <Round II
Therefore Case 2 is eliminated.
The position of the person standing to the immediate right of T is 4th in Round III. Position of R was lower in Round III than Round I and lower in Round I than Round II. I.e. for R: Round III <Round I <Round II. R never finished any Round with position 6th or 4th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				3
Round II		1	4	5/6		2
Round III					4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1		3		
Round II		1	4	2	5/6	
Round III				5		4

Neither P nor T finished Round II in the 6th position. So, Q must be the one who finished Round II in the 6th position. The position of P is lower in Round III than Round II and lower in Round II than Round I.
i.e. for P Round I > Round II > Round III.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1				3
Round II	3	1	4	5	6	2

Round III	6				4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1		3		
Round II	3	1	4	2	5	6
Round III	6			5		4

S finished his all Rounds with even positions but not with last position. Only 2 persons finished the two different Rounds with same position. So, T and Q finished the Round I with position 6thand 5th respectively. No one finished all three Rounds with same position. So, U finished Round II with position 3.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1	4	6	5	3
Round II	3	1	4	5	6	2
Round III	6	3	2	1	4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1	4	3	6	5
Round II	3	1	4	2	5	6
Round III	6	3	2	5	1	4

The person who finished the Round III at the 1st position is not standing 2nd to the right of S. So, case 1(2) can be eliminated. Therefore case 1(1) is the final solution.

T finished in the 1st position in Round III.

FeedBack

Directions for questions 47 to 50: These questions are based on the following information.

Six persons – P, Q, R, S, T, and U - are standing in a row facing North. They all participated in the three rounds of a swimming competition viz. Round I, Round II and Round III. Each person finished the Round I with a different position from 1st to 6th (1st being higher than 2nd, which is higher than 3rd, and so on) and same is true for the remaining two rounds.
Some other information is also known to us.

(i) Only one person is standing between P and S, who finished Round II at 4th position.
(ii) S is standing to the immediate right of U.
(iii) P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II both at the 1st position.
(iv) Q is standing to the immediate right of the person who finished Round II in a position lower than S in Round II.
(v) Position of R is lower in Round III than his position in Round I and lower in Round I than Round II.
(vi) The position of the person standing to the immediate right of T is 4th in Round III.
(vii) R did not finish any Round at 4th or 6th position.
(viii) Neither P nor T finished at the 6th position in Round II.
(ix) Position of P was lower in Round III than Round II, which is lower than his position in Round I.
(x) S finished all three rounds at even positions.
(xi) Only two persons finished two different rounds with the same position.
(xii) No one finished all the three Rounds at the same position.
(xiii) The person who finished the Round III at 1st position is not standing 2nd to the right of S.

Q.50

How many persons are standing between U and T?

1 **3**

2 **2**

3 **1**

4 **0**

✔

Solution:

Correct Answer : 3

Your Answer : 3

Bookmark

Answer key/Solution

P is standing at the end of the row. Only one person is standing between P and S, who finished Round II at 4th position. S is standing to the immediate right of T.

Case 1:

Position of persons	P	U	S			
Round I						
Round II			4			
Round III						

Case 2:

Position of persons			U	S		P
Round I						
Round II				4		
Round III						

P is standing at the end of the row and he is standing adjacent to the one who finished Round I and Round II at 1st position.

Case 1:

Position of persons	P	U	S			
Round I		1				
Round II		1	4			
Round III						

Case 2:

Position of persons			U	S		P
Round I					1	
Round II				4	1	
Round III						

Q is standing to the immediate right of the person who finished Round II with position lower than S. We have: S finished position II at 4th position. Position of R is lower in Round III than Round I and lower in Round I than Round II. i.e. for R: Round III <Round I <Round II. So, R cannot be the person who finished Round II with position 5thor position 6th.

Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				
Round II		1	4	5/6		
Round III						

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1				

Round II		1	4		5/6	
Round III						

Case 2:

Position of persons	T	Q	U	S	R	P
Round I					1	
Round II	5/6			4	1	
Round III						

For R: Round III<Round I <Round II
Therefore Case 2 is eliminated.
The position of the person standing to the immediate right of T is 4th in Round III. Position of R was lower in Round III than Round I and lower in Round I than Round II. I.e. for R: Round III <Round I <Round II. R never finished any Round with position 6th or 4th.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I		1				3
Round II		1	4	5/6		2
Round III					4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I		1		3		
Round II		1	4	2	5/6	
Round III				5		4

Neither P nor T finished Round II in the 6th position. So, Q must be the one who finished Round II in the 6th position. The position of P is lower in Round III than Round II and lower in Round II than Round I.
i.e. for P Round I > Round II > Round III.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1				3
Round II	3	1	4	5	6	2
Round III	6				4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1		3		
Round II	3	1	4	2	5	6
Round III	6			5		4

S finished his all Rounds with even positions but not with last position. Only 2 persons finished the two different Rounds with same position. So, T and Q finished the Round I with position 6thand 5th respectively. No one finished all three Rounds with same position. So, U finished Round II with position 3.
Case 1(1) :

Position of persons	P	U	S	T	Q	R
Round I	2	1	4	6	5	3
Round II	3	1	4	5	6	2
Round III	6	3	2	1	4	5

Case 1(2) :

Position of persons	P	U	S	R	T	Q
Round I	2	1	4	3	6	5
Round II	3	1	4	2	5	6
Round III	6	3	2	5	1	4

The person who finished the Round III at the 1st position is not standing 2nd to the right of S. So, case 1(2) can be eliminated.
Therefore case 1(1) is the final solution.

One person is standing between U and T.

FeedBack

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

IPL, an annual T-20 Cricket event, recently completed its 10th season, in which 8 teams participated. RCB, a star-studded, one of the participating team, played a total of 150 matches in all the 10 seasons taken together. The average runs scored per match for all the 150 matches played by RCB is 175, with no more than 225 runs and no less than 135 runs in any match. Following table gives information about the number of matches played and the number of sixes hit by 3 of their star players - Kohli, Gayle and ABD.

Player	No. of matches played	Total no. of sixes hit
Kohli	140	280
Gayle	120	490
ABD	130	350

The above 3 players, played for RCB in each of the 10 seasons.
Further, it is known that :
(A) In every match,
(i) In which Gayle played, he did hit at least 1 six but did not hit more than 7 sixes,
(ii) In which ABD played, he did hit at least 1 six but did not hit more than 6 sixes, and
(iii) In which Kohli played, he did hit at least 1 six but did not hit more than 4 sixes;

(B) In no match involving RCB, did more than 15 sixes were hit.
(C) In every match of RCB, at least one of these 3 players played the match.

Q.51
What can be the maximum number of matches played by RCB, in which the total number of sixes hit in the match, is less than 6?

1 **120**

2 **90**

3 **113**

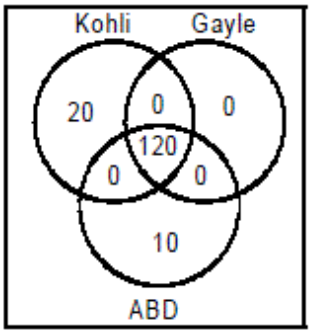
4 **101**

Solution:
Correct Answer : 3

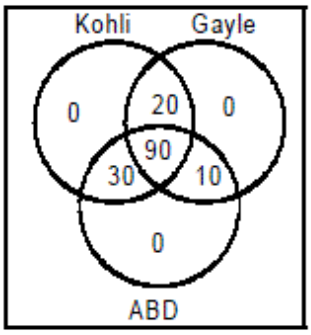
Bookmark

Answer key/Solution

Using the coin distribution method, we get
Case I: Maximum number of matches in which all 3 played



Case II: Minimum number of matches in which all 3 played



Since we have to maximum the number of matches in which less than 6 sixes were hit, we assume that other than these 3 players no player did hit a six.
Let number of matches in which 5 sixes were hit = x
$\Rightarrow$ Number of matches in which more than 5 sixes were hit = (150 – x)
In order to maximum 'x', maximize the number of sixes hit in the (150 – x) matches, which can be 15 (Refer pt. B)
$5x + 15(150 - x) = 1120 \Rightarrow x = 113$.

FeedBack

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

IPL, an annual T-20 Cricket event, recently completed its 10th season, in which 8 teams participated. RCB, a star-studded, one of the participating team, played a total of 150 matches in all the 10 seasons taken together. The average runs scored per match for all the 150 matches played by RCB is 175, with no more than 225 runs and no less than 135 runs in any match. Following table gives information about the number of matches played and the number of sixes hit by 3 of their star players - Kohli, Gayle and ABD.

Player	No. of matches played	Total no. of sixes hit
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ABD	130	350

The above 3 players, played for RCB in each of the 10 seasons.
Further, it is known that :
(A) In every match,
(i) In which Gayle played, he did hit at least 1 six but did not hit more than 7 sixes,
(ii) In which ABD played, he did hit at least 1 six but did not hit more than 6 sixes, and
(iii) In which Kohli played, he did hit at least 1 six but did not hit more than 4 sixes;

(B) In no match involving RCB, did more than 15 sixes were hit.
(C) In every match of RCB, at least one of these 3 players played the match.

Q.52
Out of the 150 matches played by RCB, what can be the maximum value of the total runs scored by RCB in the 100 matches taken together?

1 **22500**

2 **19500**

3 **17500**

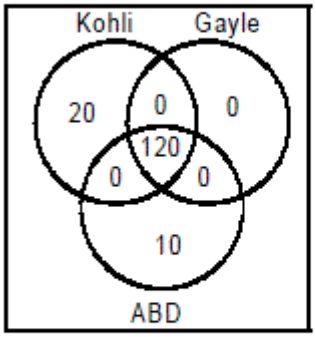
4 **21500**

Solution:
Correct Answer : 2

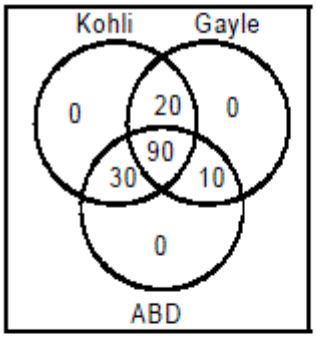
Bookmark

Answer key/Solution

Using the coin distribution method, we get
Case I: Maximum number of matches in which all 3 played



Case II: Minimum number of matches in which all 3 played



Let number of matches in which 225 runs were scored = x
And number of matches in which 135 runs were scored = (150 – x)
$\Rightarrow 225x + 135(150 - x) = 175 \times 150 = 26250$
$x = 66.6$
So, maximum value of x = 66
$\Rightarrow 225 \times 66 + 135 \times 84 = 26190$
↓ ↓
(150–66) 60 runs less than total runs, which is 26250.
There 60 runs can be given to any of the match in which 225 runs were not scored
So, maximum runs in 100 matches = $225 \times 66 + 135 \times 34 + 60 = 19500$.

FeedBack

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

IPL, an annual T-20 Cricket event, recently completed its 10th season, in which 8 teams participated. RCB, a star-studded, one of the participating team, played a total of 150 matches in all the 10 seasons taken together. The average runs scored per match for all the 150 matches played by RCB is 175, with no more than 225 runs and no less than 135 runs in any match. Following table gives information about the number of matches played and the number of sixes hit by 3 of their star players - Kohli, Gayle and ABD.

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ABD	130	350

The above 3 players, played for RCB in each of the 10 seasons.
Further, it is known that :
(A) In every match,
(i) In which Gayle played, he did hit at least 1 six but did not hit more than 7 sixes,
(ii) In which ABD played, he did hit at least 1 six but did not hit more than 6 sixes, and
(iii) In which Kohli played, he did hit at least 1 six but did not hit more than 4 sixes;

(B) In no match involving RCB, did more than 15 sixes were hit.
(C) In every match of RCB, at least one of these 3 players played the match.

Q.53
If the number of matches in which both Gayle and Kohli played is minimum possible, then what can be the maximum number of matches in which Kohli hit more sixes than Gayle ?(Consider only those matches in which both played.)

1 **70**

2 **90**

3 **120**

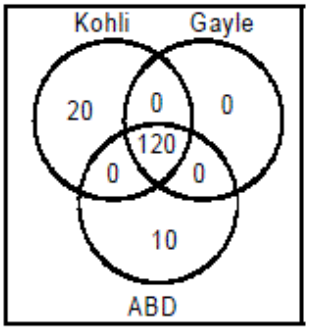
4 **110**

Solution:
Correct Answer : 1

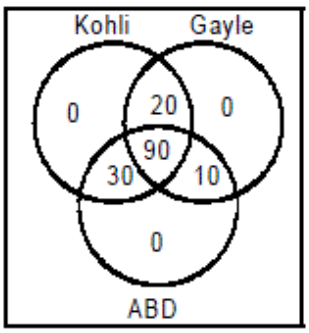
Bookmark

Answer key/Solution

Using the coin distribution method, we get
Case I: Maximum number of matches in which all 3 played



Case II: Minimum number of matches in which all 3 played



Refer case II
Let number of matches in which Gayle hit 7 sixes = y
So, in these matches we should assume that Kohli hit only 1 six per match.
So, in the remaining (110 – y) matches, if number of sixes hit by Gayles per match is z, then number of sixes hit by Kohli per match should be (z + 1). (To maximum such matches for Kohli)
$7y + z(110 - y) = 420$ ... (1)
$1y + (z + 1)(110 - y) = 250$ ... (2)
In the 10 matches, in which only Gayle and ABD played, we assumed that the number of sixes hit by Gayle per match is 7 and in the 30 matches, in which only Kohli and ABD played, we assumed that the number of sixes hit by Kohli per match is 1.
Solving (1) and (2) we get
$y = 40$ and hence $110 - y = 70$.

FeedBack

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

IPL, an annual T-20 Cricket event, recently completed its 10th season, in which 8 teams participated. RCB, a star-studded, one of the participating team, played a total of 150 matches in all the 10 seasons taken together. The average runs scored per match for all the 150 matches played by RCB is 175, with no more than 225 runs and no less than 135 runs in any match. Following table gives information about the number of matches played and the number of sixes hit by 3 of their star players - Kohli, Gayle and ABD.

Player	No. of matches played	Total no. of sixes hit
Kohli	140	280
Gayle	120	490
ABD	130	350

The above 3 players, played for RCB in each of the 10 seasons.
Further, it is known that :
(A) In every match,
(i) In which Gayle played, he did hit at least 1 six but did not hit more than 7 sixes,
(ii) In which ABD played, he did hit at least 1 six but did not hit more than 6 sixes, and
(iii) In which Kohli played, he did hit at least 1 six but did not hit more than 4 sixes;

(B) In no match involving RCB, did more than 15 sixes were hit.
(C) In every match of RCB, at least one of these 3 players played the match.

Q.54
If the number of matches in which all the 3 players played is maximum possible, then what can be the maximum value of the total number of sixes hit by the 3 batsmen in all such matches put together?

1 **990**

2 **1050**

3 **1090**

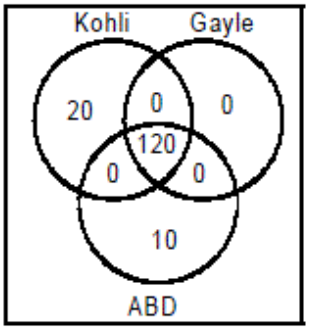
4 **Cannot be determined**

Solution:
Correct Answer : 3

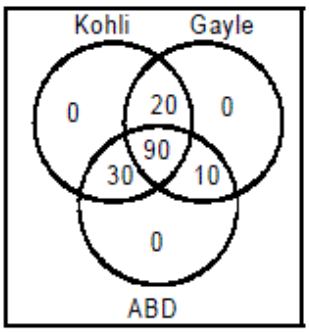
Bookmark

Answer key/Solution

Using the coin distribution method, we get
Case I: Maximum number of matches in which all 3 played



Case II: Minimum number of matches in which all 3 played



Refer case I
Total sixes that were hit = 490 + 280 + 350 = 1120.
Out of 1120 sixes that were hit, a min. of 20 sixes were hit in the 20 matches in which only Kohli played and a minimum of 10 sixes were hit in the 10 matches in which only ABD played.
Hence, maximum number of sixes that were hit in the matches in which all 3 played = 1120 – 30 = 1090.

FeedBack

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

4 children – A, B, C and D – have 4 types of toy cars – BMW, Audi, Jaguar and Mercedes – such that each child has at least 1 car and at most 6 cars of any type. They have a total of 11 BMWs, 13 AUDIs, 13 Jaguars and 14 Mercedes. The total number of cars with each child is different. No two children have the same number of cars of any type. No child has the same number of cars of any two types. Further, it is also known that:
• The number of Mercedes car with 'A' is 5.
• 'B' has a total of 16 cars.
• The difference between the number of Audi cars with 'B' and the number of Jaguar cars with 'A' is 2.
• The total number of cars with 'C' is not less that that of with A.
• Among the cars with 'C', the number of Jaguar cars is the least and the number of BMW cars is the highest.

Q.55
What is the total number of Jaguar cars with A and D taken together?

1 ○ **4**

2 ○ **5**

3 ○ **6**

4 ○ **7**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

⇒ As no child has the same number of cars of any two types, each child must have atleast a total of 10 cars (1 + 2 + 3 + 4).
⇒ Total number of cars = 11 + 13 + 13 + 14 = 51. Given, B has 16 cars.
⇒ Therefore, other children must have 51 – 16 = 35 cars. The other 3 children must have 10, 11, 14 cars or 10, 12, 13 cars.
⇒ 'A' has more than 10 cars, since he has 5 mercedes. And since C has more cars than A, so C has also more than 10 cars. ie. more than 11 cars.
∴ A has 11 cars or A has 12 cars.
C has 14 cars or C has 13 cars
⇒ D has exactly 10 cars.
⇒ As there are only 11 BMWs, a child has atmost 5 BMW cars.
∴ C has 5 BMWs, since he has more than 11 cars. If he has 14 cars, then the other cars must be 2, 3 or 4 in number.
If he has 13 cars, then the other cars must be 1, 3 and 4 in number.
In any case, he has 3, 4 and 5 cars of different types and 1 or 2 Jaguar cars.
∴ 'C' has 3 or 4 Mercedes cars.
Now, as the number of Mercedes is 14, no child has 6 Mercedes, since A and C together have atleast 8 Mercedes.
∴ No. of Mercedes with children are 2, 3, 4 and 5.
⇒ Since B has 16 cars; it must be 1, 4, 5, 6 or 2, 3, 5, 6. Also from the above results, B cannot have 5 or 6 cars of BMW or Mercedes.
∴ No. of AUDI and Jaguar with B are 5 and 6 in any order. If he has 5 Audi and 6 Jaguars, then A will have 3 Jaguars.
∴ B and A together have 9 Jaguars and the other 2 have a total of 4 Jaguars (1 + 3).
But neither of the remaining 2 children can have 3 Jaguars, as A has 3 Jaguars. So, this case is not possible.
∴ B has 6 Audi and 5 Jaguars.
⇒ From last condition in the question, A has 4 Jaguars.
∴ The other 2 children have a total of 13 – 5 – 4 = 4 Jaguars.
From 3rd condition in the question, C cannot have 3 Jaguars.
∴ 'C' has 1 Jaguar and 'D' has 3 Jaguars.
∴ 'C' has a total of 13 cars [1 + 3 + 4 + 5].
'A' has a total of 12 cars.
⇒ As 'B' has 6 AUDI, the other 3 children has 1, 2 and 4 AUDI.
∴ 'C' must have 4 AUDI [as he cannot have 3 BMW].
So, 'C' has 3 Mercedes.
⇒ As D cannot have 4 BMWs or 4 AUDIs, he must have 4 Mercedes.
So, B has 2 BMW.

Finally,

	A	B	C	D	Total
BMW	1/2	3	5	2/1	11
AUDI	2/1	6	4	1/2	13
Jaguar	4	5	1	3	13
Mercedes	5	2	3	4	14
Total	**12**	**16**	**13**	**10**	**51**

As per table,

7

FeedBack

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

4 children – A, B, C and D – have 4 types of toy cars – BMW, Audi, Jaguar and Mercedes – such that each child has at least 1 car and at most 6 cars of any type. They have a total of 11 BMWs, 13 AUDIs, 13 Jaguars and 14 Mercedes. The total number of cars with each child is different. No two children have the same number of cars of any type. No child has the same number of cars of any two types. Further, it is also known that:
• The number of Mercedes car with 'A' is 5.
• 'B' has a total of 16 cars.
• The difference between the number of Audi cars with 'B' and the number of Jaguar cars with 'A' is 2.
• The total number of cars with 'C' is not less that that of with A.
• Among the cars with 'C', the number of Jaguar cars is the least and the number of BMW cars is the highest.

Q.56
Which of the following can be the absolute difference between the number of BMW cars with A and C?

1 **0**

2 **1**

3 **2**

4 **4**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

⇒ As no child has the same number of cars of any two types, each child must have atleast a total of 10 cars (1 + 2 + 3 + 4).
⇒ Total number of cars = 11 + 13 + 13 + 14 = 51. Given, B has 16 cars.
⇒ Therefore, other children must have 51 – 16 = 35 cars. The other 3 children must have 10, 11, 14 cars or 10, 12, 13 cars.
⇒ 'A' has more than 10 cars, since he has 5 mercedes. And since C has more cars than A, so C has also more than 10 cars. ie. more than 11 cars.
∴ A has 11 cars or A has 12 cars.
C has 14 cars or C has 13 cars
⇒ D has exactly 10 cars.
⇒ As there are only 11 BMWs, a child has atmost 5 BMW cars.
∴ C has 5 BMWs, since he has more than 11 cars. If he has 14 cars, then the other cars must be 2, 3 or 4 in number.
If he has 13 cars, then the other cars must be 1, 3 and 4 in number.
In any case, he has 3, 4 and 5 cars of different types and 1 or 2 Jaguar cars.
∴ 'C' has 3 or 4 Mercedes cars.
Now, as the number of Mercedes is 14, no child has 6 Mercedes, since A and C together have atleast 8 Mercedes.
∴ No. of Mercedes with children are 2, 3, 4 and 5.
⇒ Since B has 16 cars; it must be 1, 4, 5, 6 or 2, 3, 5, 6. Also from the above results, B cannot have 5 or 6 cars of BMW or Mercedes.
∴ No. of AUDI and Jaguar with B are 5 and 6 in any order. If he has 5 Audi and 6 Jaguars, then A will have 3 Jaguars.
∴ B and A together have 9 Jaguars and the other 2 have a total of 4 Jaguars (1 + 3).
But neither of the remaining 2 children can have 3 Jaguars, as A has 3 Jaguars. So, this case is not possible.
∴ B has 6 Audi and 5 Jaguars.
⇒ From last condition in the question, A has 4 Jaguars.
∴ The other 2 children have a total of 13 – 5 – 4 = 4 Jaguars.
From 3rd condition in the question, C cannot have 3 Jaguars.
∴ 'C' has 1 Jaguar and 'D' has 3 Jaguars.
∴ 'C' has a total of 13 cars [1 + 3 + 4 + 5].
'A' has a total of 12 cars.
⇒ As 'B' has 6 AUDI, the other 3 children has 1, 2 and 4 AUDI.
∴ 'C' must have 4 AUDI [as he cannot have 3 BMW].
So, 'C' has 3 Mercedes.
⇒ As D cannot have 4 BMWs or 4 AUDIs, he must have 4 Mercedes.
So, B has 2 BMW.

Finally,

	A	B	C	D	Total
BMW	1/2	3	5	2/1	11
AUDI	2/1	6	4	1/2	13
Jaguar	4	5	1	3	13
Mercedes	5	2	3	4	14
Total	**12**	**16**	**13**	**10**	**51**

As per table,

4

FeedBack

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

4 children – A, B, C and D – have 4 types of toy cars – BMW, Audi, Jaguar and Mercedes – such that each child has at least 1 car and at most 6 cars of any type. They have a total of 11 BMWs, 13 AUDIs, 13 Jaguars and 14 Mercedes. The total number of cars with each child is different. No two children have the same number of cars of any type. No child has the same number of cars of any two types. Further, it is also known that:

• The number of Mercedes car with 'A' is 5.
• 'B' has a total of 16 cars.
• The difference between the number of Audi cars with 'B' and the number of Jaguar cars with 'A' is 2.
• The total number of cars with 'C' is not less that that of with A.
• Among the cars with 'C', the number of Jaguar cars is the least and the number of BMW cars is the highest.

Q.57

Who among the four children has 2 Mercedes cars?

1 **A**

2 **B**

3 **C**

4 **Cannot be determined**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

⇒ As no child has the same number of cars of any two types, each child must have atleast a total of 10 cars (1 + 2 + 3 + 4).
⇒ Total number of cars = 11 + 13 + 13 + 14 = 51. Given, B has 16 cars.
⇒ Therefore, other children must have 51 – 16 = 35 cars. The other 3 children must have 10, 11, 14 cars or 10, 12, 13 cars.
⇒ 'A' has more than 10 cars, since he has 5 mercedes. And since C has more cars than A, so C has also more than 10 cars. ie. more than 11 cars.
∴ A has 11 cars or A has 12 cars.
C has 14 cars or C has 13 cars
⇒ D has exactly 10 cars.
⇒ As there are only 11 BMWs, a child has atmost 5 BMW cars.
∴ C has 5 BMWs, since he has more than 11 cars. If he has 14 cars, then the other cars must be 2, 3 or 4 in number.
If he has 13 cars, then the other cars must be 1, 3 and 4 in number.
In any case, he has 3, 4 and 5 cars of different types and 1 or 2 Jaguar cars.
∴ 'C' has 3 or 4 Mercedes cars.
Now, as the number of Mercedes is 14, no child has 6 Mercedes, since A and C together have atleast 8 Mercedes.
∴ No. of Mercedes with children are 2, 3, 4 and 5.
⇒ Since B has 16 cars; it must be 1, 4, 5, 6 or 2, 3, 5, 6. Also from the above results, B cannot have 5 or 6 cars of BMW or Mercedes.
∴ No. of AUDI and Jaguar with B are 5 and 6 in any order. If he has 5 Audi and 6 Jaguars, then A will have 3 Jaguars.
∴ B and A together have 9 Jaguars and the other 2 have a total of 4 Jaguars (1 + 3).
But neither of the remaining 2 children can have 3 Jaguars, as A has 3 Jaguars. So, this case is not possible.
∴ B has 6 Audi and 5 Jaguars.
⇒ From last condition in the question, A has 4 Jaguars.
∴ The other 2 children have a total of 13 – 5 – 4 = 4 Jaguars.
From 3rd condition in the question, C cannot have 3 Jaguars.
∴ 'C' has 1 Jaguar and 'D' has 3 Jaguars.
∴ 'C' has a total of 13 cars [1 + 3 + 4 + 5].
'A' has a total of 12 cars.
⇒ As 'B' has 6 AUDI, the other 3 children has 1, 2 and 4 AUDI.
∴ 'C' must have 4 AUDI [as he cannot have 3 BMW].
So, 'C' has 3 Mercedes.
⇒ As D cannot have 4 BMWs or 4 AUDIs, he must have 4 Mercedes.
So, B has 2 BMW.

Finally,

	A	B	C	D	Total
BMW	1/2	3	5	2/1	11
AUDI	2/1	6	4	1/2	13
Jaguar	4	5	1	3	13
Mercedes	5	2	3	4	14
Total	**12**	**16**	**13**	**10**	**51**

As per table,

B

FeedBack

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

4 children – A, B, C and D – have 4 types of toy cars – BMW, Audi, Jaguar and Mercedes – such that each child has at least 1 car and at most 6 cars of any type. They have a total of 11 BMWs, 13 AUDIs, 13 Jaguars and 14 Mercedes. The total number of cars with each child is different. No two children have the same number of cars of any type. No child has the same number of cars of any two types. Further, it is also known that:
• The number of Mercedes car with 'A' is 5.
• 'B' has a total of 16 cars.
• The difference between the number of Audi cars with 'B' and the number of Jaguar cars with 'A' is 2.
• The total number of cars with 'C' is not less that that of with A.
• Among the cars with 'C', the number of Jaguar cars is the least and the number of BMW cars is the highest.

Q.58
What is the number of Mercedes cars with 'D'?

Solution:
Correct Answer : 4

⇒ As no child has the same number of cars of any two types, each child must have atleast a total of 10 cars (1 + 2 + 3 + 4).
⇒ Total number of cars = 11 + 13 + 13 + 14 = 51. Given, B has 16 cars.
⇒ Therefore, other children must have 51 – 16 = 35 cars. The other 3 children must have 10, 11, 14 cars or 10, 12, 13 cars.
⇒ 'A' has more than 10 cars, since he has 5 mercedes. And since C has more cars than A, so C has also more than 10 cars. ie. more than 11 cars.
∴ A has 11 cars or A has 12 cars.
C has 14 cars or C has 13 cars
⇒ D has exactly 10 cars.
⇒ As there are only 11 BMWs, a child has atmost 5 BMW cars.
∴ C has 5 BMWs, since he has more than 11 cars. If he has 14 cars, then the other cars must be 2, 3 or 4 in number.
If he has 13 cars, then the other cars must be 1, 3 and 4 in number.
In any case, he has 3, 4 and 5 cars of different types and 1 or 2 Jaguar cars.
∴ 'C' has 3 or 4 Mercedes cars.
Now, as the number of Mercedes is 14, no child has 6 Mercedes, since A and C together have atleast 8 Mercedes.
∴ No. of Mercedes with children are 2, 3, 4 and 5.
⇒ Since B has 16 cars; it must be 1, 4, 5, 6 or 2, 3, 5, 6. Also from the above results, B cannot have 5 or 6 cars of BMW or Mercedes.
∴ No. of AUDI and Jaguar with B are 5 and 6 in any order. If he has 5 Audi and 6 Jaguars, then A will have 3 Jaguars.
∴ B and A together have 9 Jaguars and the other 2 have a total of 4 Jaguars (1 + 3).
But neither of the remaining 2 children can have 3 Jaguars, as A has 3 Jaguars. So, this case is not possible.
∴ B has 6 Audi and 5 Jaguars.
⇒ From last condition in the question, A has 4 Jaguars.
∴ The other 2 children have a total of 13 – 5 – 4 = 4 Jaguars.
From 3rd condition in the question, C cannot have 3 Jaguars.
∴ 'C' has 1 Jaguar and 'D' has 3 Jaguars.
∴ 'C' has a total of 13 cars [1 + 3 + 4 + 5].
'A' has a total of 12 cars.
⇒ As 'B' has 6 AUDI, the other 3 children has 1, 2 and 4 AUDI.
∴ 'C' must have 4 AUDI [as he cannot have 3 BMW].
So, 'C' has 3 Mercedes.
⇒ As D cannot have 4 BMWs or 4 AUDIs, he must have 4 Mercedes.
So, B has 2 BMW.

Finally,

	A	B	C	D	Total
BMW	1/2	3	5	2/1	11
AUDI	2/1	6	4	1/2	13
Jaguar	4	5	1	3	13
Mercedes	5	2	3	4	14
Total	**12**	**16**	**13**	**10**	**51**

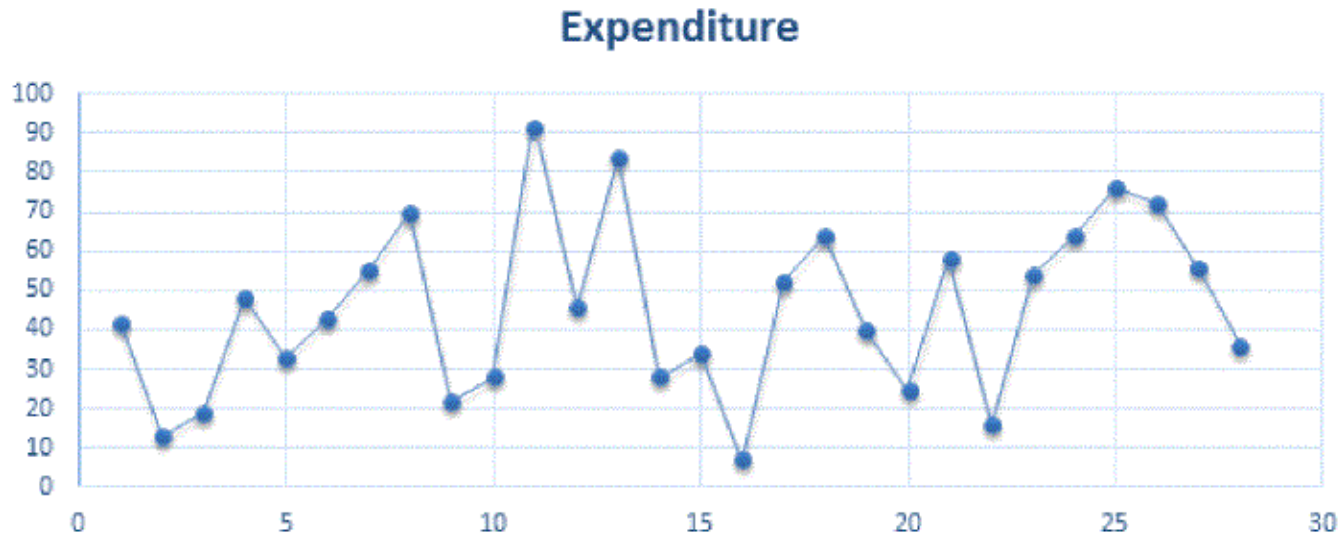
As per table,

The number of Mercedes cars with 'D' is 4.

FeedBack

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

Sumit used to go to super market on daily basis in the month of February 2018. On his every day visit to the super market, he bought one unit each of exactly two items out of milk, bread, jam, egg, cornflakes, curd, butter and oats. Cost (in Rs. per unit) of the mentioned items is 2, 5, 11, 17, 23, 31, 41 and 59, not necessarily in the same order.
Further, it is also known that:
1. The total price of butter and oats taken together is more than the total price of curd and bread taken together.
2. The price of butter is 18 more than the price of cornflakes.
3. The product of the price of curd and bread is Rs. 62.
4. The sum of price of cornflakes and egg is equal to the sum of price of milk and jam.
The following graph gives the expenditure (in Rs.) done by Sumit on 28 days in the month of February.



Q.59
Which of the following could be the item purchased by Sumit on 10th February by spending Rs. 28?

1 **Cornflakes**

2 **Bread**

3 **Curd**

4 **Oats**

✔

Bookmark

Answer key/Solution

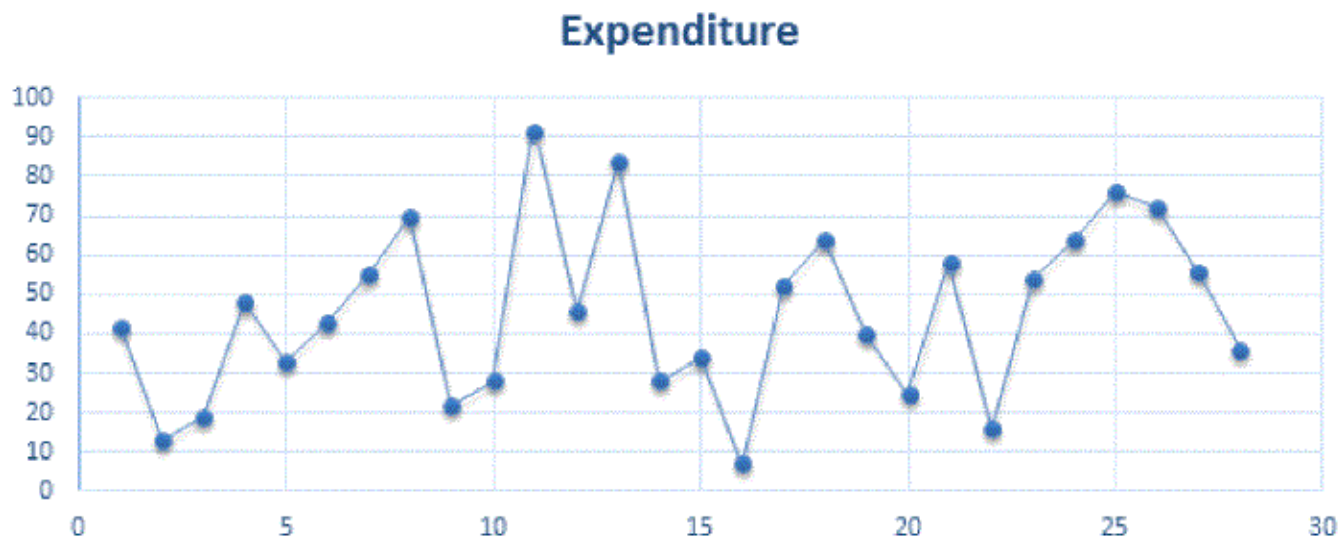
Solution:
Correct Answer : 1
Your Answer : 1
From statement 1 we can conclude that butter + oats > Curd + bread.
From statement 2 we can conclude that the price of butter is Rs. 41 and price of cornflakes is rs. 23 as we can also conclude from this the price of butter is 18 more than the price of cornflakes.
From statement three, we can conclude that the price of curd and bread is rs 2 and 31 not necessarily in order.
From statement 4 we can conclude that there should be two values which should have equal sum, so possible values are either 28 or 64. But as the corn flakes costs Rs. 23 so the price of egg has to be Rs. 5. Further we can conclude that price of milk and jam is 17 or 11.

The expenditure on 5^{th} is Rs. 28. So Sumit must have purchased either corn flakes and egg or Milk and jam. From the given options its (1) .

FeedBack

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

Sumit used to go to super market on daily basis in the month of February 2018. On his every day visit to the super market, he bought one unit each of exactly two items out of milk, bread, jam, egg, cornflakes, curd, butter and oats. Cost (in Rs. per unit) of the mentioned items is 2, 5, 11, 17, 23, 31, 41 and 59, not necessarily in the same order.
Further, it is also known that:
1. The total price of butter and oats taken together is more than the total price of curd and bread taken together.
2. The price of butter is 18 more than the price of cornflakes.
3. The product of the price of curd and bread is Rs. 62.
4. The sum of price of cornflakes and egg is equal to the sum of price of milk and jam.
The following graph gives the expenditure (in Rs.) done by Sumit on 28 days in the month of February.



Q.60
On which day of February could Sumit have bought oats and egg?

1 **24th**

2 **21st**

3 **18th**

4 **Both (1) and (3)**

Bookmark

Answer key/Solution

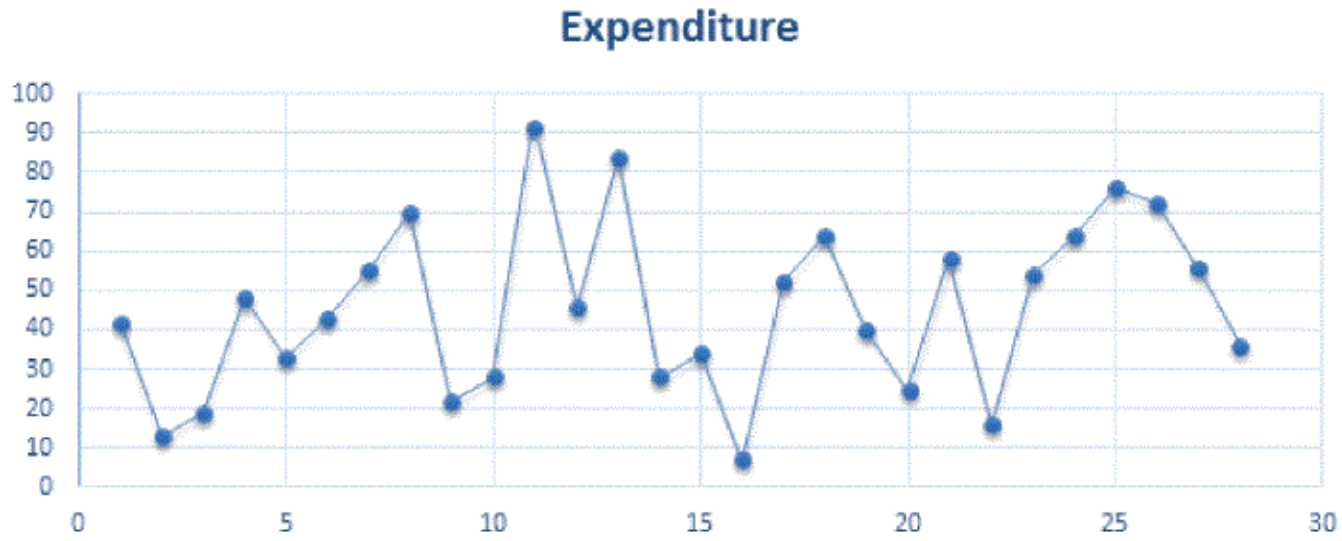
Solution:
Correct Answer : 4
From statement 1 we can conclude that butter + oats > Curd + bread.
From statement 2 we can conclude that the price of butter is Rs. 41 and price of cornflakes is rs. 23 as we can also conclude from this the price of butter is 18 more than the price of cornflakes.
From statement three, we can conclude that the price of curd and bread is rs 2 and 31 not necessarily in order.
From statement 4 we can conclude that there should be two values which should have equal sum, so possible values are either 28 or 64. But as the corn flakes costs Rs. 23 so the price of egg has to be Rs. 5. Further we can conclude that price of milk and jam is 17 or 11.

The amount spent on oats and egg is Rs. 58. So it can be checked from the graph.

FeedBack

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

Sumit used to go to super market on daily basis in the month of February 2018. On his every day visit to the super market, he bought one unit each of exactly two items out of milk, bread, jam, egg, cornflakes, curd, butter and oats. Cost (in Rs. per unit) of the mentioned items is 2, 5, 11, 17, 23, 31, 41 and 59, not necessarily in the same order.
Further, it is also known that:
1. The total price of butter and oats taken together is more than the total price of curd and bread taken together.
2. The price of butter is 18 more than the price of cornflakes.
3. The product of the price of curd and bread is Rs. 62.
4. The sum of price of cornflakes and egg is equal to the sum of price of milk and jam.
The following graph gives the expenditure (in Rs.) done by Sumit on 28 days in the month of February.



Q.61
Which of the following could be the price (in Rs.) of milk?

1 **17**

2 **31**

3 **23**

4 **2**

✖

Bookmark

Answer key/Solution

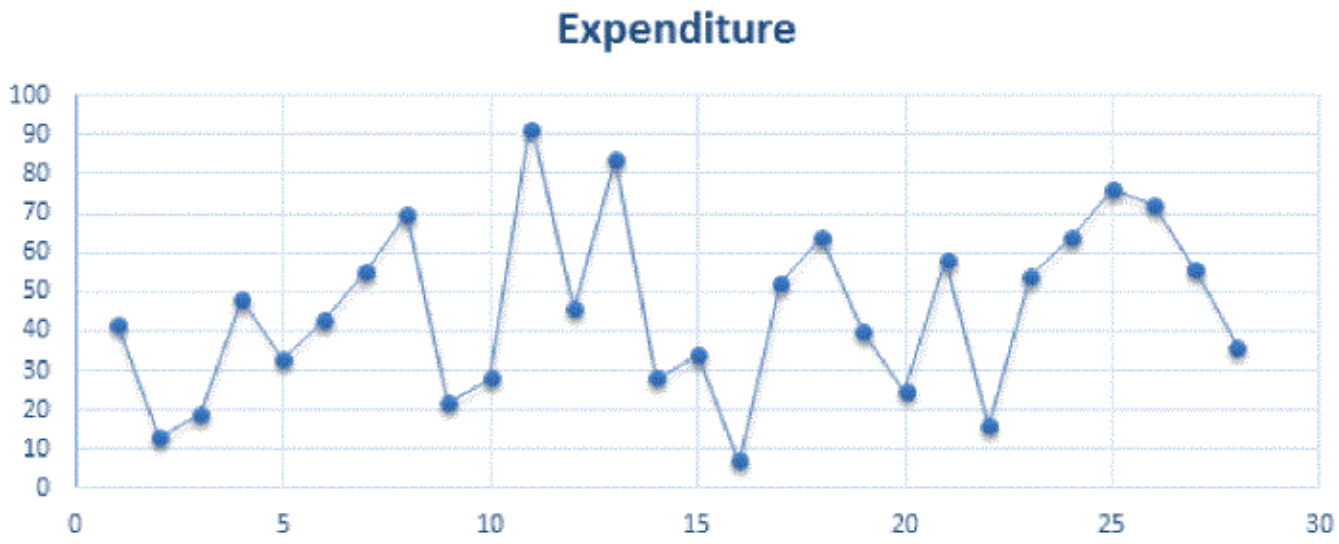
Solution:
Correct Answer : 1
Your Answer : 3
From statement 1 we can conclude that butter + oats > Curd + bread.
From statement 2 we can conclude that the price of butter is Rs. 41 and price of cornflakes is rs. 23 as we can also conclude from this the price of butter is 18 more than the price of cornflakes.
From statement three, we can conclude that the price of curd and bread is rs 2 and 31 not necessarily in order.
From statement 4 we can conclude that there should be two values which should have equal sum, so possible values are either 28 or 64. But as the corn flakes costs Rs. 23 so the price of egg has to be Rs. 5. Further we can conclude that price of milk and jam is 17 or 11.

The price of milk could be either 17 or 11. So 1st option.

FeedBack

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

Sumit used to go to super market on daily basis in the month of February 2018. On his every day visit to the super market, he bought one unit each of exactly two items out of milk, bread, jam, egg, cornflakes, curd, butter and oats. Cost (in Rs. per unit) of the mentioned items is 2, 5, 11, 17, 23, 31, 41 and 59, not necessarily in the same order.
Further, it is also known that:
1. The total price of butter and oats taken together is more than the total price of curd and bread taken together.
2. The price of butter is 18 more than the price of cornflakes.
3. The product of the price of curd and bread is Rs. 62.
4. The sum of price of cornflakes and egg is equal to the sum of price of milk and jam.
The following graph gives the expenditure (in Rs.) done by Sumit on 28 days in the month of February.



Q.62
What were the two items bought by Sumit on 13th February?

1 **Oats and Butter**

2 **Oats and Cornflakes**

3 **Cornflakes and Butter**

4 **Cannot be determined**

Solution:
Correct Answer : 2
From statement 1 we can conclude that butter + oats > Curd + bread.
From statement 2 we can conclude that the price of butter is Rs. 41 and price of cornflakes is rs. 23 as we can also conclude from this the price of butter is 18 more than the price of cornflakes.
From statement three, we can conclude that the price of curd and bread is rs 2 and 31 not necessarily in order.
From statement 4 we can conclude that there should be two values which should have equal sum, so possible values are either 28 or 64. But as the corn flakes costs Rs. 23 so the price of egg has to be Rs. 5. Further we can conclude that price of milk and jam is 17 or 11.

Bookmark

Answer key/Solution

FeedBack

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

5 friends - Hitesh, Devesh, Mihir, Shabbir and Aroop - have to cross a bridge, starting from point A to point B, urgently during midnight for some family emergency. While crossing the bridge, the lamp has to be used every time as there are dangerous gaps in the bridge. The capacity of the bridge is for maximum two people at a time and they have only one lamp with them which can last for only 30 seconds. Since they have only one lamp, any one friend from side B has to come back to point A with lamp to help others to cross the bridge.

The fastest time taken(in seconds) by each person to cross the bridge is 6, 12, 1, 8 and 3 for Hitesh, Mihir, Devesh, Aroop and Shabbir respectively. It is also known that the time considered to cross the bridge, while two of the friends crossing together, would be the higher one among the time taken by two of them i.e, if Hitesh and Devesh are crossing the bridge together then the time taken to cross the bridge will be considered as 6 seconds for both.

Q.63
For how many number of times does Devesh needs to cross the bridge for all of them to cross in time?

1 **5**

2 **4**

3 **3**

4 **1**

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
Your Answer : 2
Case I:
The bridge can be crossed as follows:
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds.
Total time taken = 3 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 4 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 16 seconds
Then,
Shabbir returns, it takes 3 seconds. Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
The Total time taken is 29 seconds.

Case II:
The bridge can also be crossed in the following manner
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds. Total time taken = 3 seconds
Then,
Shabbir returns. It takes 3 seconds. Total time taken = 6 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 18 seconds
Then,
Devesh returns, it takes 1 seconds .Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
Again the Total time taken is 29 seconds.

Devesh has to cross the bridge 5 times

FeedBack

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

5 friends - Hitesh, Devesh, Mihir, Shabbir and Aroop - have to cross a bridge, starting from point A to point B, urgently during midnight for some family emergency. While crossing the bridge, the lamp has to be used every time as there are dangerous gaps in the bridge. The capacity of the bridge is for maximum two people at a time and they have only one lamp with them which can last for only 30 seconds. Since they have only one lamp, any one friend from side B has to come back to point A with lamp to help others to cross the bridge.

The fastest time taken(in seconds) by each person to cross the bridge is 6, 12, 1, 8 and 3 for Hitesh, Mihir, Devesh, Aroop and Shabbir respectively. It is also known that the time considered to cross the bridge, while two of the friends crossing together, would be the higher one among the time taken by two of them i.e, if Hitesh and Devesh are crossing the bridge together then the time taken to cross the bridge will be considered as 6 seconds for both.

Q.64

All of them can cross the bridge with maximum how much time to spare in 30 seconds?

1 **Crossed the bridge with no time to spare**

2 **Crossed the bridge with 1 second to spare**

3 **Crossed the bridge with 2 seconds to spare**

4 **Cannot be determined**

✔

Bookmark

Answer key/Solution

Solution:
Correct Answer : 2
Your Answer : 2
Case I:
The bridge can be crossed as follows:
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds.
Total time taken = 3 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 4 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 16 seconds
Then,
Shabbir returns, it takes 3 seconds. Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
The Total time taken is 29 seconds.

Case II:
The bridge can also be crossed in the following manner
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds. Total time taken = 3 seconds
Then,
Shabbir returns. It takes 3 seconds. Total time taken = 6 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 18 seconds
Then,
Devesh returns, it takes 1 seconds .Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
Again the Total time taken is 29 seconds.

All of them cross the bridge with 1 second to spare.

FeedBack

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

5 friends - Hitesh, Devesh, Mihir, Shabbir and Aroop - have to cross a bridge, starting from point A to point B, urgently during midnight for some family emergency. While crossing the bridge, the lamp has to be used every time as there are dangerous gaps in the bridge. The capacity of the bridge is for maximum two people at a time and they have only one lamp with them which can last for only 30 seconds. Since they have only one lamp, any one friend from side B has to come back to point A with lamp to help others to cross the bridge.

The fastest time taken(in seconds) by each person to cross the bridge is 6, 12, 1, 8 and 3 for Hitesh, Mihir, Devesh, Aroop and Shabbir respectively. It is also known that the time considered to cross the bridge, while two of the friends crossing together, would be the higher one among the time taken by two of them i.e, if Hitesh and Devesh are crossing the bridge together then the time taken to cross the bridge will be considered as 6 seconds for both.

Q.65

Which friend will definitely cross the bridge with Mihir?

1 **Devesh**

2 **Hitesh**

3 **Shabbir**

4 **Aroop**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 4
Case I:
The bridge can be crossed as follows:
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds.
Total time taken = 3 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 4 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 16 seconds
Then,
Shabbir returns, it takes 3 seconds. Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
The Total time taken is 29 seconds.

Case II:
The bridge can also be crossed in the following manner
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds. Total time taken = 3 seconds
Then,
Shabbir returns. It takes 3 seconds. Total time taken = 6 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 18 seconds
Then,
Devesh returns, it takes 1 seconds .Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
Again the Total time taken is 29 seconds.

Aroop has to cross the bridge with Mihir.

FeedBack

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

5 friends - Hitesh, Devesh, Mihir, Shabbir and Aroop - have to cross a bridge, starting from point A to point B, urgently during midnight for some family emergency. While crossing the bridge, the lamp has to be used every time as there are dangerous gaps in the bridge. The capacity of the bridge is for maximum two people at a time and they have only one lamp with them which can last for only 30 seconds. Since they have only one lamp, any one friend from side B has to come back to point A with lamp to help others to cross the bridge.

The fastest time taken(in seconds) by each person to cross the bridge is 6, 12, 1, 8 and 3 for Hitesh, Mihir, Devesh, Aroop and Shabbir respectively. It is also known that the time considered to cross the bridge, while two of the friends crossing together, would be the higher one among the time taken by two of them i.e, if Hitesh and Devesh are crossing the bridge together then the time taken to cross the bridge will be considered as 6 seconds for both.

Q.66

Had another friend Akshay, who can cross the bridge in 1seconds, also needs to cross the bridge with all of them, then what is the minimum possible time taken by all of them to cross the bridge?

1 **27 seconds**

2 **30 seconds**

3 **25 seconds**

4 **Not possible to cross the bridge within 30 seconds.**

✖

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Your Answer : 2
Case I:
The bridge can be crossed as follows:
First Devesh and Shabbir cross the bridge with lamp. They take 3seconds.
Total time taken = 3 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 4 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 16 seconds
Then,
Shabbir returns, it takes 3 seconds. Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
The Total time taken is 29 seconds.

Case II:
The bridge can also be crossed in the following manner

First Devesh and Shabbir cross the bridge with lamp. They take 3seconds. Total time taken = 3 seconds
Then,
Shabbir returns. It takes 3 seconds. Total time taken = 6 seconds
Then,
Mihir and Aroop go to the other side. It takes 12 Seconds. Total time taken = 18 seconds
Then,
Devesh returns, it takes 1 seconds .Total time taken = 19 seconds
Then,
Devesh and Hitesh go to the other side. It takes 6 Seconds. Total time taken = 25 seconds
Then,
Devesh returns. It takes 1 second. Total time taken = 26 seconds
Then Devesh and Shabbir cross the bridge. It takes 3 seconds. Total time taken = 29 seconds
Again the Total time taken is 29 seconds.

With Akshay the bridge can be crossed in the following manner.
Devesh and Akshay go to the other side. It takes 1 second. Total time taken = 1 sec
Then,
Devesh returns. It takes 1 second. Total time taken = 2 sec
Then,
Aroop and Mihir go to the other side. It takes 12 seconds. Total time taken = 14 sec
Then,
Akshay returns. It takes 1 second. Total time taken = 15 sec
Then,
Devesh and Akshay go to the other side. It takes 1 second. Total time taken = 16 sec
Then, Devesh returns. It takes 1 second. Total time taken = 17 sec
Then,
Hitesh and Shabbir go to the other side. It takes 6 seconds. Total time taken = 23 sec
Then,
Akshay returns. It takes 1 second. Total time taken = 24 sec
Then,
Devesh and Akshay go to the other side. It takes 1 second. Total time taken = 25 sec
Hence all of them cross the bridge with 5 seconds to spare.

FeedBack

Sec 3

Q.67
A man bought 20 toffees in a rupee. How many should he sell in a rupee to earn a loss of 16.66%?

1 **18**

2 **24**

3 **25**

4 **30**

✔

Solution:
Correct Answer : 2
Your Answer : 2

Bookmark

Answer key/Solution

Cost of 20 toffees is Re 1

$\therefore$ Cost of 1 toffee is Rs. $\frac{1}{20}$

Loss = 16.66% = $\frac{1}{6}$

$\therefore$ S.P. of 1 toffee = $\frac{1}{20} \times \frac{5}{6} = \text{Rs.}\frac{1}{24}$

$\therefore$ In a rupee, he should sell 24 toffees.

FeedBack

Q.68

A man was carrying Rs. 'x' and 'y' paise. He spent Rs. 9 and 30 paise on some candies and was left with Rs. '3y' and '2x' paise. Find the value of x.

Solution:
Correct Answer : 40

Bookmark

Answer key/Solution

Initial rupees with the man was x and after spending Rs. 9, he was left with Rs. 3y. Therefore $x > 3y \Rightarrow 2x > y$.
Now, initial paise with him was y and after spending paise 30, he was left with paise 2x, which is more than the initial paise. This is only possible if Rs. 1 is converted into paise while spending paise 30. So framing separate equations for rupees and paise, we get
$(x - 1) - 9 = 3y$ & $(y + 100) - 30 = 2x$
Solving we get $x = 40$ and $y = 10$.

FeedBack

Q.69

If a square is selected from an 8 × 8 chessboard, then find the probability that the selected square is of size 4 × 4.

1 **25/204**

2 **15/102**

3 **7/102**

4 **2/51**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

On chess board these are 204 square of all sizes and the number of 4 × 4 square are 25

$\therefore$ Required probability = $\frac{25}{204}$

FeedBack

Q.70

There are some students in two rooms - A and B. If 10 students are sent from room A to room B, the number of students in each room becomes equal. While if 20 students are sent from room B to room A, the number of students in room A becomes double the number of students in room B. Find the number of students in room A and room B respectively.

1 **80, 60**

2 **100, 80**

3 **70, 35**

4 **60, 40**

Solution:
Correct Answer : 2

Let there are x students in room A and y students in room B

$x - 10 = y + 10$ ... (i)

$x + 20 = 2(y - 20)$ ... (ii)

On solving (i) and (ii), we get x = 100 and y = 80.

Bookmark

Answer key/Solution

FeedBack

Q.71

The monthly telephone bills of a company has a fixed tariff of Rs. 250 for up to 50 outgoing calls, above which charge of Rs. 1.25 per call needs to be paid. If the ratio of the monthly bills paid by A and B is 2 : 3 and the number of outgoing calls by A is 90, then what is the total number of outgoing calls made by B in that month?

Solution:
Correct Answer : 210

Bookmark

Answer key/Solution

⇒ Bill of A = 250 + (90 – 50) 1.25 = 300
Ratio of Bills A : B
300 : x = 2 : 3
B = 450

∴ No of calls made by B = $50 + \frac{(450-250)}{1.25} = 210.$

FeedBack

Q.72

The number of votes not cast for the PNC Party increased by 25% in the National General Election (NGE) as compared to the previous Assembly Polls, and as a result the PNC Party lost in the NGE by a majority of twice as many votes by which it had won the Assembly Polls. If the total of 2,60,000 people voted each time, then how many of them voted for the PNC Party in the previous Assembly Polls?

1 **1,10,000**

2 **1,50,000**

3 **1,40,000**

4 **1,20,000**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Total Votes = 2,60,000
Let x voters voted against the party in the Assembly Poll.
Then votes in favour = 260000 – x
Therefore, majority of votes by which party won in previous poll = 260000– x – x = $260000 - 2x$
Next year votes against the PNC party increased by 25%
So, votes against the party in general election = 1.25 x
And votes polled in favour of the party = Total votes – votes against = 260000 – 1.25x
Therefore, majority of votes by which party lost in general election = $1.25x - (260000 - 1.25x) = 2.5x - 260000$
It is given that, PNC Party lost by a majority twice as large as that by which it had won the Assembly Polls, Therefore
$2.5x - 260000 = 520000 - 4x$
⇒ $6.5x = 780000$
⇒ x = 1,20,000
Therefore, votes polled by the voters for the party in Assembly Polls for previous year
= (2,60,000 – x) = (2,60,000 – 1,20,000) = 1,40,000.

FeedBack

Q.73

Find the number of common roots of the following cubic equations:
$7x^3 + 9x^2 + 11x + 13 = 0$ and $7x^3 + 8x^2 + 16x + 7 = 0$

Solution:
Correct Answer : 0

Bookmark

Answer key/Solution

$7x^3 + 9x^2 + 11x + 13 = 0$
It can be written as,
$7x^3 + 8x^2 + 16x + 7 + x^2 - 5x + 6 = 0$
$\Rightarrow 0 + x^2 - 5x + 6 = 0$ $\{\because 7x^3 + 8x^2 + 16x + 7 = 0\}$
$\Rightarrow x^2 - 5x + 6 = 0$
$\therefore x = 2, 3$
Since none of these values satisfy the above equations so there are no common roots.

FeedBack

Q.74
A sum of money becomes 8 times in 27 years at r% compound interest. Had the same amount was invested at r% simple interest for 27 years, then how many times would the amount have become after 27 years?

1 **greater than 4 times**

2 **greater than 3 times but less than 4 times**

3 **greater than 2 times but less than 3 times**

4 **greater than 6 times**

Solution:
Correct Answer : 2
If it becomes 8 times in 27 years, this means it becomes 2 times in 9 years.
Using SI, in 9 years, it would not even become 2 times.
If it becomes, it will become 100 to 200 in 9 years and 200 to 300 in another 9 years. So, in 27 years, it will become less than 400 i.e. greater than 3 times but less than 4 times in 27 years.

Bookmark

Answer key/Solution

FeedBack

Q.75
If A = {91, 92, 93, ..., 180} and B is a subset of A such that the sum of no two elements of B is a multiple of 9, then what can be the maximum number of elements in B?

1 **24**

2 **50**

3 **41**

4 **45**

Solution:
Correct Answer : 3
91 = 9K + 1
92 = 9K + 2
93 = 9K + 3
94 = 9K + 4
95 = 9K + 5
96 + 9k + 6
97 = 9K + 7
98 = 9K + 8
99 = 9K + 9
If we take 1 number of the form (9K + 1) then we can not have numbers of the form (9K + 8); similarly

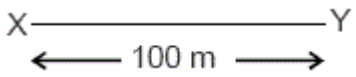
9K + 1 or 9K + 8
9K + 2 or 9K + 7
9K + 3 or 9K + 6
9K + 4 or 9K + 5
And, one of 9K + 9
where K = 10, 11, ..., 19;
Ans.: 41.

Bookmark

Answer key/Solution

FeedBack

Q.76
A and B start running simultaneously towards each other from the two ends of a track XY and the ratio of their speeds is 3 : 4. Every time they meet, they interchange their speeds and also reverse their directions. At how many distinct points on the track do they meet each other, if they run continuously between 2 ends of the tracks? (Track XY is shown below)



Solution:
Correct Answer : 7
It is similar to the case of circular motion where 2 runners are running in opposite direction. Hence number of meeting points is (3 + 4) = 7.

Bookmark

Answer key/Solution

FeedBack

Q.77
Pipes P and Q are inlet pipes while R is an outlet pipe. Pipe P supplies water at the rate of 30 liters per hour, pipe Q fills the tank in 6 hours while R empties it in 24 hours. The empty tank gets filled in 2 hours when all the three pipes are opened. Find the capacity of the tank.

1 **40 liters**

2 **60 liters**

3 **80 liters**

4 **90 liters**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

The fraction of tank filled by Q in 2 hours is = $\frac{2}{6}=\frac{1}{3}$

Fraction of tank emptied by R in 2 hours = $\frac{2}{24}=\frac{1}{12}$

$\therefore$ Fraction filled by Q and R = $\frac{1}{3}-\frac{1}{12}=\frac{1}{4}$

$\therefore$ $\frac{3}{4}$th is filled by P alone is 2 hours

$\therefore$ Water supplied by P in 2 hours = 2 × 30 = 60 liter = $\frac{3}{4}$th of the tank

$\therefore$ Capacity of tank = $\frac{4}{3}\times 60$ = 80 liter.

FeedBack

Q.78
There are 3 vessels of equal volume, filled with mixtures of water and milk in the ratio of 1 : 2, 2 : 3 and 3 : 4 respectively. They all are poured in a large vessel. What proportion of the liquid must be removed from that vessel and replaced with water of equal quantity so that the resulting mixture in the vessel contains 50% milk?

1 **71/244**

2 **71/386**

3 **71/325**

4 **71/193**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let volume of each of the three vessels is 105 litres

∴	Water	:	Milk
Vessel I –	35	:	70
Vessel II –	42	:	63
Vessel III –	45	:	60

So, when they all are poused into a large vessel, the amount of water to milk in it become 122 and 193 respectively.
Let x litres is removed

So, removed water = $\frac{122}{315}x$

And removed milk = $\frac{193}{315}x$

And same amount i.e. x litres of water is added and ratio of milk to water becomes 1 : 1.

So, $\frac{\text{Water}}{\text{Milk}} = \frac{122 - \frac{122}{315}x + x}{193 - \frac{193}{315}x} = \frac{1}{1} \Rightarrow x = \frac{71}{386} \times 315$

$\therefore$ $\frac{71}{386}$ part of liquid is removed and replaced.

FeedBack

Q.79

Find the sum of the following series upto 10 terms:

$1 + \frac{1^3 + 2^3}{1+3} + \frac{1^3 + 2^3 + 3^3}{1+3+5} + \frac{1^3 + 2^3 + 3^3 + 4^3}{1+3+5+7} + ...$

1 **402**

2 **505/8**

3 **505/2**

4 **505/4**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

The n^{th} term is

$$t_n = \frac{1^3+2^3+3^3+.....n^3}{1+3+5+.....(2n-1)} = \frac{\left[\frac{n(n+1)}{2}\right]^2}{n^2} = \frac{(n+1)^2}{4}$$

$$t_n = \frac{n^2+2n+1}{4}$$

$$S_n = \Sigma\frac{1}{4}\left[\Sigma n^2 + 2\Sigma n + \Sigma 1\right]$$

$$S_n = \frac{1}{4}\left[\frac{n(n+1)(2n+1)}{6} + \frac{2n(n+1)}{2} + n\right]$$

$$S_{10} = \frac{1}{4}[385 + 110 + 10] = \frac{505}{4} = 126.25$$

FeedBack

Q.80

The average age of a family of 5 members is 20 years. If the age of the youngest member is 10 years, what was the approximate average age of the family just a day before the birth of the youngest member?

1 **13.5**

2 **14**

3 **15**

4 **12.5**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

At present the total age of the family = 5 × 20 = 100
The total age of the family at the time of the birth of the youngest member = [100 – 10 – (10 × 4)] = 50

Therefore, average age of the family just a day before the birth of the youngest member = $\frac{50 - \frac{4}{365}}{4} = 12.49 \approx 12.50.$

FeedBack

Q.81

A trader buys goods at a 19% discount on the label price. If he wants to make a profit of 20% after allowing a discount of 10%, then by what percentage should his marked price be greater than the original label price?

1 **8%**

2 **3.8%**

3 **33.33%**

4 **None of these**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Let the label price be = Rs.100. The trader buys at a discount of 19%.
Hence, his cost = 100 – 19 = 81.
He wants to make a profit of 20%. Hence his selling price = 1.2 (81) = 97.2
However, he wants to get this Rs.97.2 after providing for a discount of 10%. i.e. he will be selling at 90% of his marked price.Hence, his marked price M = $\frac{97.2}{0.9}$ = 108 which is 8% more than the original label price.

FeedBack

Q.82

How many 3-digit numbers leave a remainder of 4 when divided by 21 and a remainder of 8 when divided by 13?

1 **2**

2 **3**

3 **4**

4 **5**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

N can be written as
21x + 4 or 13y + 8
∴ 21x + 4 = 13y + 8
⇒ 21x – 13y = 4
Therefore, by solving the above equation we get 151 as the first 3 digit number for x = 7 and y = 11.
∴ N = LCM (21, 13)k + 151 = 273k + 151
∴ we get 4 such numbers.

FeedBack

Q.83

Two cars A and B start simultaneously from two points P and Q respectively, located at a distance of 200 metres and 800 metres respectively from the point of intersection of two perpendicular roads L_1 and L_2. Car A is moving along the road L_1 and is going away from the point of intersection of the two roads while car B is moving along the road L_2 and is moving towards the point of intersection of the roads. If after 2 minutes and again after 6 minutes from the start, the two cars are at equal distance from the point of intersection of the roads, then find the ratio of the speeds of the two cars.

1 **1 : 1**

2 **1 : 4**

3 **2 : 7**

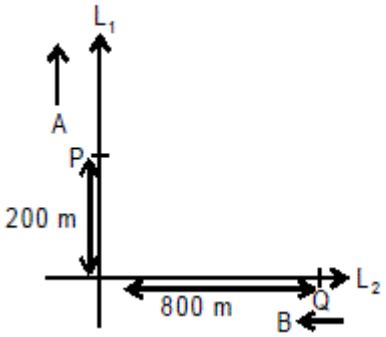
4 **2 : 5**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let speeds of car A and car B be S_A and S_B respectively.



Now, after 2 minutes distance (A) = distance (B) i.e. $200 + S_A(2) = 800 - S_B(2)$
$\Rightarrow S_A + S_B = 300.$
Again, after 6 minutes
$200 + S_A(6) = S_B(6) - 800$
$\Rightarrow S_B - S_A = \frac{500}{3}$

$\therefore$ Solving two equations we get $S_B = \frac{700}{3}$ and $S_A = \frac{200}{3}$.

So, required ratio = $\frac{200}{3} : \frac{700}{3} = 2 : 7.$

FeedBack

Q.84

ABC is a triangle having area of 350 cm^2. D is a point on side BC, such that AD is the angle bisector of $\angle CAB$. If AB : AC = 3 : 4, then what is the area (in cm^2) of triangle ADC?

1 **150**

2 **60**

3 **200**

4 **175**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

In ΔABC AD is the angle bisector of $\angle CAB$.

By angle bisector theorem $\frac{|BD|}{|DC|} = \frac{|AB|}{|AC|} = \frac{3}{4}$

$\Rightarrow$ Area of ΔABD : Area of $\Delta ADC = 3 : 4$

$\Rightarrow$ Area of $\Delta ADC = \frac{4}{7} \times 350 = 200\ cm^2$

FeedBack

Q.85

In a company, an engineer plans to do a certain work with the help of machines in 8 days. He finds that only 30% of the work is done with machines in the first three days, running 5 hours a day. If he wants to complete the work in time, then for how many hours per day will he work now?

1 **4**

2 **5**

3 **6**

4 **7**

Solution:

Correct Answer : 4

30% work is done in 3 days = 3 × 5 = 15 hours

$\therefore$ Remaining work = $\frac{70 \times 15}{30}$ = 35 hours.

And this has to be done in (8 – 3) = 5 days

$\therefore$ Machine has to work in $\frac{35}{5}$ = 7 hours

Alternative method:

We know that $\left(\frac{\text{days} \times \text{hours}}{\text{work}}\right)$ remains constant.

Hence, $\frac{3 \times 5}{30\% \text{ of } w} = \frac{(8-3) \times h}{70\% \text{ of } w} \Rightarrow h = 7$ hours.

FeedBack

Bookmark

Answer key/Solution

Q.86

The score of a team in a one-day match is 300. If the scores scored by the team in the next 3 matches were 40%, $33\frac{1}{3}\%$ and 15% more than the scores in just preceding matches respectively, find the average score scored by the team in these 4 matches.

1 **460**

2 **470**

3 **476**

4 **481**

Solution:
Correct Answer : 4
Your Answer : 4

Bookmark

Answer key/Solution

The score of the team in its second match

$= 300 + \frac{40(300)}{100} = 420$

in 3rd match = $420 + \frac{33\frac{1}{3}}{100}(420) = 560$

in 4th match = $560 + \frac{15}{100} \times 560 = 644.$

$\therefore$ average = $\frac{420 + 560 + 644 + 300}{4} = 481$

FeedBack

Q.87

If $\frac{\log_p q}{s} = \frac{\log_q r}{t} = \frac{\log_r p}{st} = 1$, then which of the following can be the possible value of st?

1 **1**

2 **−1**

3 **2**

4 **Both (1) and (2)**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

$\frac{\log_p q}{s} = \frac{\log_q r}{t} = 1$

$\Rightarrow \log_p q \times \log_q r = st$

$\Rightarrow \log_p r = st$ ... (i)

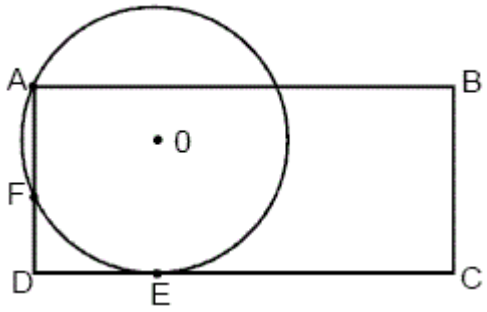
Also $\frac{\log_r p}{st} = 1 \Rightarrow \log_r p = st$ ... (ii)

Combining (i) and (ii), we get $\Rightarrow (st)^2 = 1 \Rightarrow st = \pm 1.$

FeedBack

Q.88

In the figure given below, a circle with the centre at O and a rectangle ABCD are drawn. The circle touches side CD at E and passes through the points A and F. If AO = 3 cm, DF = 1 cm and DC = 8 cm, then the area (in cm^2) of rectangle ABCD is



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Solution:
Correct Answer : 40
Your Answer : 32

Draw a straight line TE passing through O.
Draw FN parallel to DE
OF = OA = OE = Radius = 3 cm
FN = AT = DE; FD = NE = 1 cm.
ON = OE – NE = 2 cm.

$\therefore$ FN = $\sqrt{3^2 - 2^2} = \sqrt{5}$ cm

$\therefore$ TO = $\sqrt{(3)^2 - (\sqrt{5})^2} = 2$cm

$\therefore$ Area of the rectangle ABCD = (2 + 3) × 8 = 40 cm^2.

FeedBack

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Answer key/Solution

Q.89

If |x + 1| + |x| + |x – 1| + |x – 1| + |x – 2| + |x – 3| ≤ 30, then for how many integral values of x does this hold true?

1 **9**

2 **11**

3 **12**

4 **15**

Solution:
Correct Answer : 2
$|x + 1| + |x| + |x - 1| + |x - 1| + |x - 2| + |x - 3| \leq 30$
This is true for integers lying between $-4 \leq x \leq 6$
Hence, there are 11 integral values of x which satisfy this inequality.

FeedBack

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Answer key/Solution

Q.90

How many integral values of (x, y) satisfy the equation $x^2 - y^2 = 220$?

1 **4**

2 **6**

3 **8**

4 **12**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

$x^2 - y^2 = 220 \Rightarrow (x+y)(x-y) = 220$
Although 220 can be written as the product of two factors in many possible ways, the only pairs of factors which give integral values of x and y are $(\pm 110, \pm 2)$ and $(\pm 22, \pm 10)$.
Let us take the first case:

$x + y = 110$
$x - y = 2$
$\Rightarrow x = 56, y = 58$

Similarly for x + y = 2 and x – y = 110
Also for x + y = –110 and x – y = –2
and x + y = –2 and x – y = –110
Let us take the next case:

$x + y = 22$
$x - y = 10$
$\Rightarrow x = 16, y = 6$

Similarly for x + y = 10 and x – y = 22
Also for x + y = –22 and x – y = –10
and x + y = –10 and x – y = –22
Hence we get 8 pairs of values of x and y.

FeedBack

Q.91

A 3-digit natural number is 297 more than the number formed by reversing the order of its digit. If the digit at the tens place of the original number is more than the digit at its units place, then how many such numbers are possible?

Solution:

Correct Answer : 42

Bookmark

Answer key/Solution

Let the 3-digit number be abc = 100a + 10b + c
(100a + 10b + c) – (100c + 10b + a) = 297
99(a – c) = 297

$$a - c = 3 = \frac{297}{99}$$

Further, it is given b > c
So if a = 9, c = 6
b = 7/8/9

a	b	c	
9	7	6	3 numbers
9	8	6	
9	9	6	

Similarly for other cases also
we get 42 such numbers
(1) a = 9 c = 6, b = 7/8/9
(2) a = 8 c = 5, b = 6/7/8/9
(3) a = 7 c = 4, b = 5/6/7/8/9
(4) a = 6 c = 3, b = 4/5/6/7/8/9
(5) a = 5 c = 2, b = 3/4/5/6/7/8/9
(6) a = 4 c = 1, b = 2/3/4/5/6/7/8/9
(7) a = 3 c = 0, b = 1/2/3/4/5/6/7/8/9
Ans: (2) 42

FeedBack

Q.92

If N is a natural number such that the number of factors of N^5 is 36, then what can be the maximum number of factors of N^4?

Solution:

Correct Answer : 29

Bookmark

Answer key/Solution

Since N is a natural number such that the number of factors of N^5 is 36, therefore, possible cases are:

1. $N = p^7 \Rightarrow N^5 = (p^7)^5 = p^{35}$

Then factors are 35 + 1 = 36.

Here $N^4 = (p^7)^4 = p^{28}$

Then factors are 28+ 1 = 29.

2. $N = pq \Rightarrow N^5 = (p^5q^5)$

Then factors are (5 + 1) × (5 + 1) = 36

Here $N^4 = (p^4q^4)$ then number of factors are 25.

∴ 29 is the maximum number of factors.

FeedBack

Q.93

Two concentric circles, having their center at O, are cut by a line such that the line forms a chord for both the circles. The length of the chord for the smaller circle and the bigger circle is 8m and 16m respectively. What is the absolute difference between the squares of the radii (in cm^2) of the two circles?

1 **120**

2 **48**

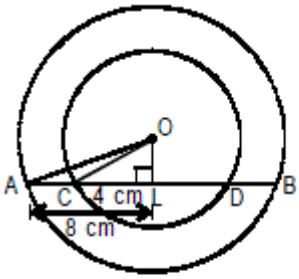
3 **60**

4 **None of these**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

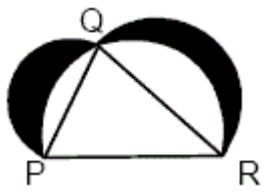


$OA^2 = 8^2 + OL^2$ ... (i)
and $OC^2 = 4^2 + OL^2$ ... (ii)
Subtracting (ii) from (i), we get
$OA^2 - OC^2 = 8^2 - 4^2 = 64 - 16 = 48\ cm^2$.

FeedBack

Q.94

In the given figure, 3 semicircles are drawn on three sides of triangle PQR. PQ = 21 cm, QR = 28 cm and PR = 35 cm. What is the area (in cm^2) of the shaded part?



1 **294**

2 **324**

3 **588**

4 **286**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

The area of the shaded part

$$=\frac{\pi}{2}\times\left(\frac{21}{2}\right)^2+\frac{\pi}{2}\times\left(\frac{28}{2}\right)^2-\frac{\pi}{2}\times\left(\frac{35}{2}\right)^2+\frac{1}{2}\times21\times28$$

$$=\frac{\pi}{8}(21^2+28^2-35^2)+21\times14$$

$$=\frac{\pi}{8}(35^2-35^2)+294 \ = 294 \text{ cm}^2.$$

FeedBack

Q.95

In how many ways can four couples be seated around a circular table so that the same gender does not get to sit together and exactly one of the four couples sit adjacent to each other?

1 **48**

2 **36**

3 **24**

4 **96**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Out of 4 couples one couple is set to sit adjacent i.e. $^4C_1$ = 4 ways
Let this couple be m, w, so remaining 3 men sit in 3! = 6 ways
w_1 can be seated on either side $\rightarrow$ 2 ways
Hence, total number of ways = 4 × 6 × 2 = 48.

FeedBack

Q.96

By which of the following numbers does the number 177177177... (177 repeated 99 times) is not divisible?

1 **3**

2 **9**

3 **59**

4 **None of these**

Solution:
Correct Answer : 4

Sum of digits = (1 + 7 + 7) + (1 + 7 + 7) + ... + 99 term = 15 × 99
∴ Given number is divisible by 3 and 9 both.
177 = 3 × 59
Hence, the given number is also divisible by 59.

FeedBack

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Answer key/Solution

Q.97

The sum of the first 10 terms of an Arithmetic Progression is 50 and the sum of the next 10 terms is 250. Find the thirteenth term of the AP.

✔

Solution:
Correct Answer : 20
Your Answer : 20

Sum of first 10 terms = $(a + a + 9d) \times \frac{10}{2} = 50$

$\Rightarrow 10a + 45d = 50$ ... (i)

Sum of next 10 terms = $(a + 10d + a + 19d) \times \frac{10}{2} = 250$

$\Rightarrow 10a + 145d = 250$ ... (ii)
From (i) and (ii), we get d = 2, a = −4
Hence, 13th term = −4 + 2 × 12 = 20.

FeedBack

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Answer key/Solution

Q.98

If $(5^{23} + 5^{23} + 5^{23} + 5^{23} + 5^{23})(2^{23} + 2^{23}) = 10^{x+2}$, then find the value of x.

Solution:
Correct Answer : 22

$(5^{23} + 5^{23} + 5^{23} + 5^{23} + 5^{23})(2^{23} + 2^{23}) = 10^{x+2}$
$\Rightarrow 5^{23} \times 2^{23} \times 5 \times 2 = 10^{x+2}$
$\Rightarrow 10^{22+2} = 10^{x+2}$
∴ x = 22.

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Answer key/Solution

Q.99

If f(x + y, x − y) = x × y, then find the expression for f(x, y).

1 $\frac{x^2 + y^2}{4}$

2 $\frac{x^2 - y^2}{4}$

3 $\frac{x - y}{2}$

4 **None of these**

Solution:
Correct Answer : 2

Let x + y = A and x – y = B, then $x = \frac{A+B}{2}$ and $y = \frac{A-B}{2}$

$\therefore f(A, B) = \left(\frac{A+B}{2}\right)\left(\frac{A-B}{2}\right) = \frac{A^2 - B^2}{4}$

Replacing x by $\frac{x+y}{2}$ and y by $\frac{x-y}{2}$

$\therefore f(x, y) = \left(\frac{x+y}{2}\right)\left(\frac{x-y}{2}\right) = \frac{x^2 - y^2}{4}.$

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Answer key/Solution

Q.100
Find the perpendicular distance between the two lines given by the equations, 5x + 12y = 9 and 5x + 12y = 16.

1 **1/2**

2 **7**

3 **6/13**

4 **7/13**

Solution:
Correct Answer : 4

The given lines 5x + 12y = 9 and 5x + 12y = 16 are parallel.

Hence, perpendicular distance between these two lines = $\frac{|9 - 16|}{\sqrt{5^2 + 12^2}} = \frac{7}{13}.$

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Answer key/Solution