



## Mock CAT – 19 2018

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VARC

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QA

## Sec 1

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

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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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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.

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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.

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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.

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"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. "

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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.

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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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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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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 thermophile creatures.
- 4 ☐ Generating a fresh history for Earth

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Answer key/Solution

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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

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Answer key/Solution

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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.

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Answer key/Solution

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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.
- 

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

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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.
- 

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🔍 Answer key/Solution

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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.

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**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.**

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 **Answer key/Solution**

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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 Siddhartha 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.

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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.
-



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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

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3 ☐ To surgically remove the tumour

---

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

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Q.15

What are the biometric IDs of cancer cells known as?

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1 ☐ Antigen

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2 ☐ Neo-antigens

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3 ☐ Tags

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4 ☐ Antibody

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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

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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

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4 ☐ The creation of therapeutic vaccine to prevent the recurrence of the tumour

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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.
-

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

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**Q.18**

**What is the central idea of the passage?**

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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

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

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

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#### 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.
- 

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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.

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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

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Answer key/Solution

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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.

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**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.

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

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**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.

FeedBack

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🔍 Answer key/Solution

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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.

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Q.25

The author, in the passage, aims to:

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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.

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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.

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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.**
- 

FeedBack

 **Bookmark**

 **Answer key/Solution**



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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.

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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.**
- 

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🔍 **Answer key/Solution**

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**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.**

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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.**
- 

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 **Answer key/Solution**

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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.

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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.**
- 

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🔍 **Answer key/Solution**

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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.
- 

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🔍 Answer key/Solution

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

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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.
- 

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🔍 Answer key/Solution



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**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 Lowcock, 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.

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**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.

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🔍 Answer key/Solution

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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.

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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  $8 \times 9$ , 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?

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Answer key/Solution

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

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- 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

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 Answer key/Solution

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

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- 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

---

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 Answer key/Solution

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

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- The game board is in the form of a grid of dimension  $8 \times 9$ , 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

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Answer key/Solution

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?

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Answer key/Solution

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  $N$ ?

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Answer key/Solution

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?

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Answer key/Solution

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 than 7 cuts, then what is the number of possible values that  $N$  can take?

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Answer key/Solution

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

125 similar cubes of dimension  $1 \times 1 \times 1$  are arranged to form a bigger cubical box of dimension  $5 \times 5 \times 5$ . From one corner of the top layer of this block, a cuboid of dimension  $2 \times 2 \times 1$  is removed. From the opposite corner of the same top layer, a cuboid of dimension  $1 \times 2 \times 1$  is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions  $1 \times 3 \times 1$  and  $4 \times 1 \times 1$  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  $l \times b \times h$ ,  $l$ ,  $b$  and  $h$  represents length, breadth and height of that cube or cuboid.

Q.43

How many small cubes are left in the bigger block?

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

125 similar cubes of dimension  $1 \times 1 \times 1$  are arranged to form a bigger cubical box of dimension  $5 \times 5 \times 5$ . From one corner of the top layer of this block, a cuboid of dimension  $2 \times 2 \times 1$  is removed. From the opposite corner of the same top layer, a cuboid of dimension  $1 \times 2 \times 1$  is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions  $1 \times 3 \times 1$  and  $4 \times 1 \times 1$  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  $l \times b \times h$ ,  $l$ ,  $b$  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

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

125 similar cubes of dimension  $1 \times 1 \times 1$  are arranged to form a bigger cubical box of dimension  $5 \times 5 \times 5$ . From one corner of the top layer of this block, a cuboid of dimension  $2 \times 2 \times 1$  is removed. From the opposite corner of the same top layer, a cuboid of dimension  $1 \times 2 \times 1$  is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions  $1 \times 3 \times 1$  and  $4 \times 1 \times 1$  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  $l \times b \times h$ ,  $l$ ,  $b$  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



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3 ☐ 18

---

4 ☐ 29

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🔍 Answer key/Solution

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

125 similar cubes of dimension  $1 \times 1 \times 1$  are arranged to form a bigger cubical box of dimension  $5 \times 5 \times 5$ . From one corner of the top layer of this block, a cuboid of dimension  $2 \times 2 \times 1$  is removed. From the opposite corner of the same top layer, a cuboid of dimension  $1 \times 2 \times 1$  is removed. Then similarly, from the third and the fourth corners of that layer, cuboids having dimensions  $1 \times 3 \times 1$  and  $4 \times 1 \times 1$  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  $l \times b \times h$ ,  $l$ ,  $b$  and  $h$  represents length, breadth and height of that cube or cuboid.

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**Q.46**

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

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🔍 Answer key/Solution

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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.

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**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

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🔑 Answer key/Solution

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

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 Answer key/Solution

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

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 Answer key/Solution

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.

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- (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.
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- (ix) Position of P was lower in Round III than Round II, which is lower than his position in Round I.
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- (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

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 Answer key/Solution

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

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 Answer key/Solution

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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(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

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 Answer key/Solution

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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(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

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 Answer key/Solution



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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(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

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 Answer key/Solution

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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 than 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.

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Q.55

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

1 ☐ 4

2 ☐ 5

3 ☐ 6

4 ☐ 7

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 Answer key/Solution

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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:

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- '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 than 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

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2 ☐ 1

---

3 ☐ 2

---

4 ☐ 4

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🔍 Answer key/Solution

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**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:**

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- 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 than 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

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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:

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- The total number of cars with 'C' is not less than 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.

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**Q.58**

What is the number of Mercedes cars with 'D'?

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 **Answer key/Solution**

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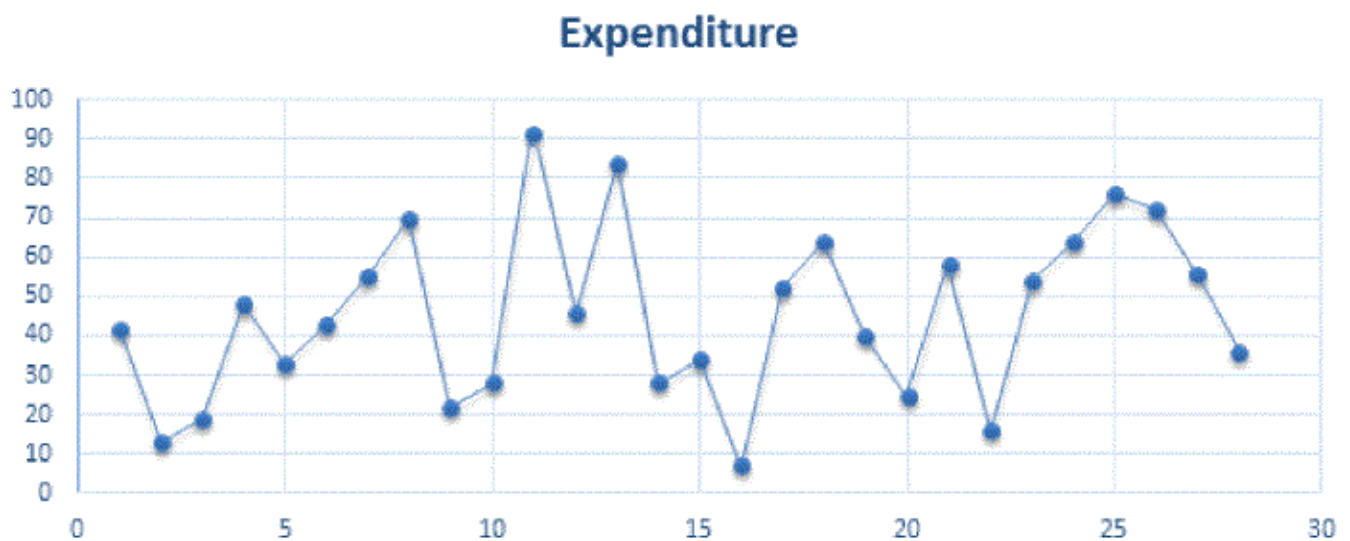
Directions for question 59 to 62: Answer the questions on the basis of the information given below.

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

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Answer key/Solution

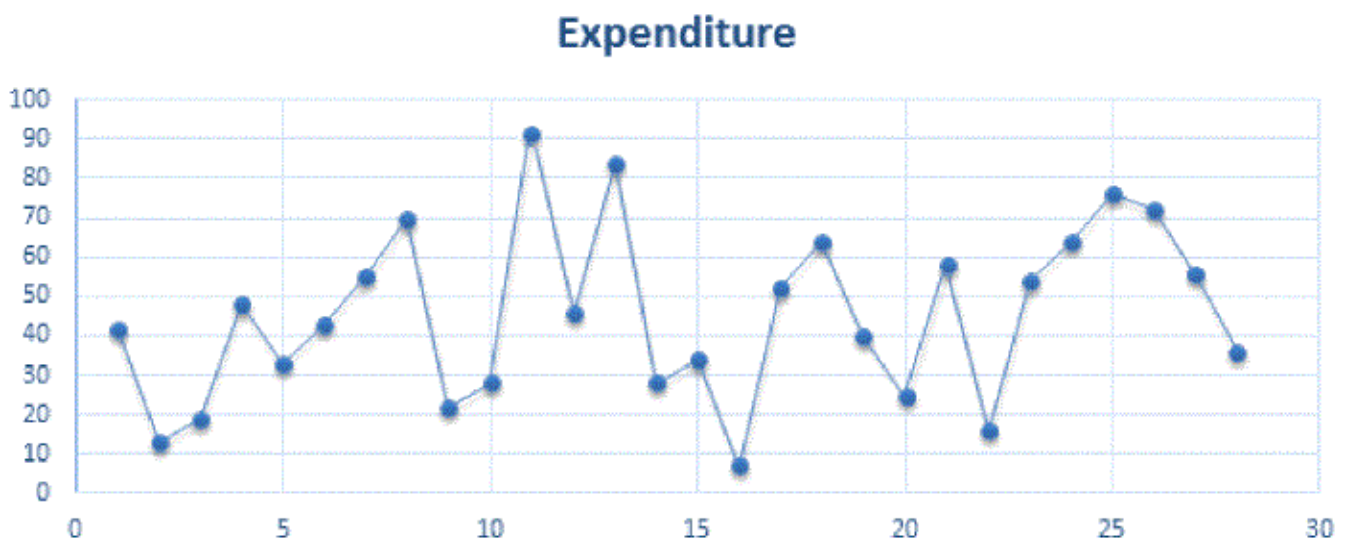
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1. The total price of butter and oats taken together is more than the total price of curd and bread taken together.
2. The price of butter is 18 more than the price of cornflakes.
3. The product of the price of curd and bread is Rs. 62.
4. The sum 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)

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Answer key/Solution

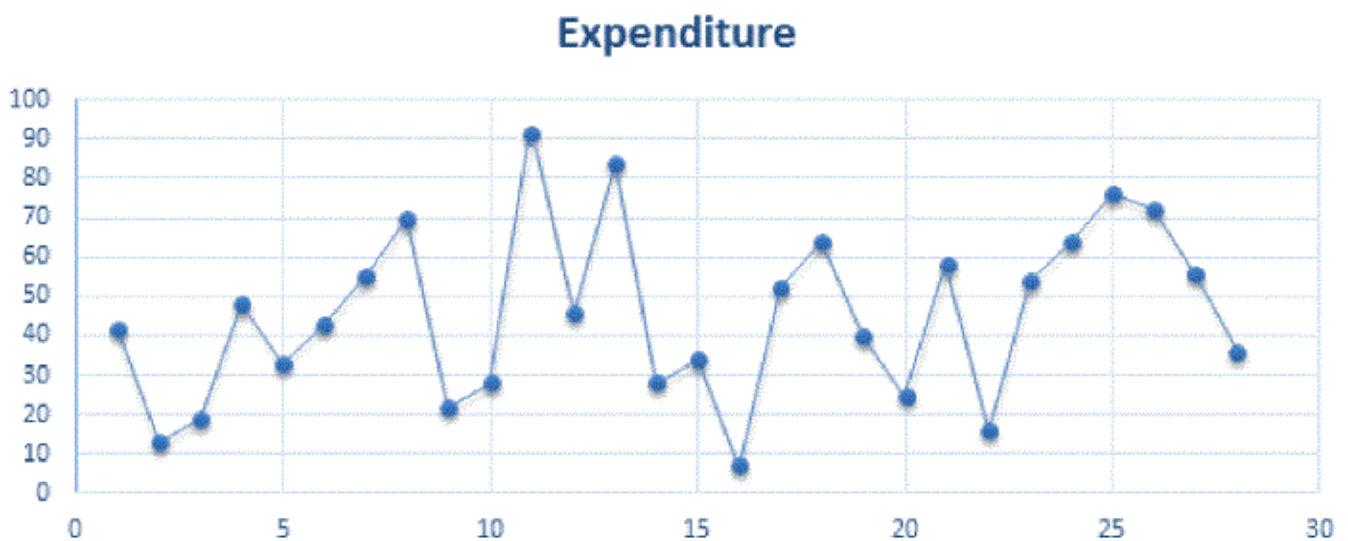
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Sumit used to go to super market on daily basis in the month of February 2018. On his every day visit to the super market, he bought one unit each of exactly two items out of milk, bread, jam, egg, cornflakes, curd, butter and oats. Cost (in Rs. per 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

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Answer key/Solution

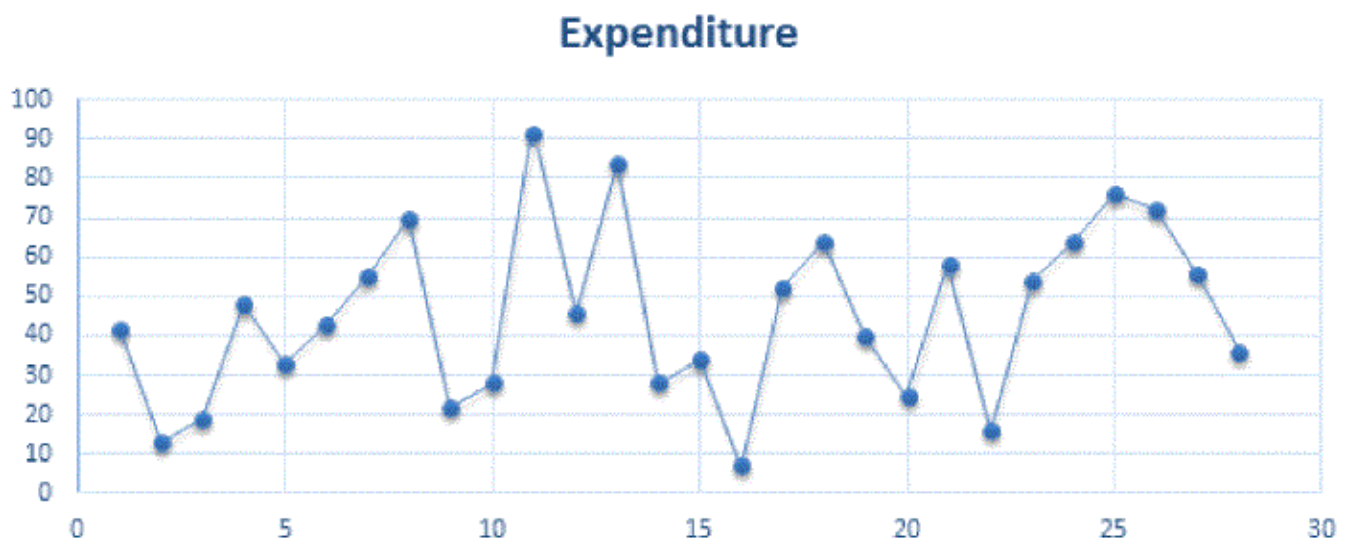
Directions for question 59 to 62: Answer the questions on the basis of the information given below.

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.

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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

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Answer key/Solution



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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

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 Answer key/Solution

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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.

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---

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
- 

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🔍 Answer key/Solution

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**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.

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---

**Q.65**

**Which friend will definitely cross the bridge with Mihir?**

- 
- 1 ☐ Devesh
- 
- 2 ☐ Hitesh
- 
- 3 ☐ Shabbir
- 
- 4 ☐ Aroop
- 

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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.

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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.
- 

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🔍 Answer key/Solution

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## Sec 3

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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
-

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**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.

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**Q.69**

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

1 ☐ 25/204

2 ☐ 15/102

3 ☐ 7/102

4 ☐ 2/51

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🔍 Answer key/Solution

**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

---

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 Answer key/Solution

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**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?

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 Answer key/Solution

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**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

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 Answer key/Solution

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Q.73

Find the number of common roots of the following cubic equations:

$$7x^3 + 9x^2 + 11x + 13 = 0 \text{ and } 7x^3 + 8x^2 + 16x + 7 = 0$$

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 Answer key/Solution

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

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 Answer key/Solution

Q.75

If  $A = \{91, 92, 93, \dots, 180\}$  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

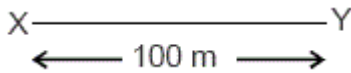
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 Answer key/Solution

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)



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Answer key/Solution

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

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Answer key/Solution

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

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 Answer key/Solution

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**Q.79**

Find the sum of the following series upto 10 terms:

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

---

1 ☐ 402

---

2 ☐ 505/8

---

3 ☐ 505/2

---

4 ☐ 505/4

---

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 Answer key/Solution

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**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

---



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**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

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**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

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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

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 Answer key/Solution

Q.84

ABC is a triangle having area of  $350 \text{ cm}^2$ . 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  $\text{cm}^2$ ) of triangle ADC?

1 ☐ 150

2 ☐ 60

3 ☐ 200

4 ☐ 175

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 Answer key/Solution

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

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**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

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**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

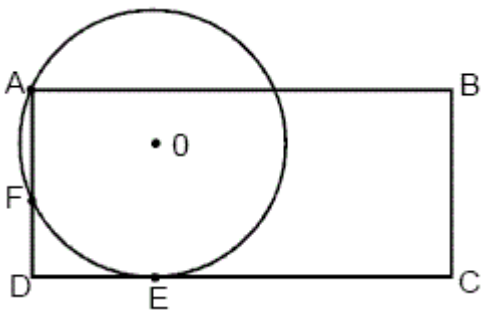
2 ☐ -1

3 ☐ 2

4 ☐ Both (1) and (2)

[FeedBack](#)[Bookmark](#)[Answer key/Solution](#)**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  $\text{cm}^2$ ) of rectangle ABCD is

[FeedBack](#)[Bookmark](#)[Answer key/Solution](#)**Q.89**

If  $|x + 1| + |x| + |x - 1| + |x - 1| + |x - 2| + |x - 3| \leq 30$ , then for how many integral values of  $x$  does this hold true?

1 ☐ 92 ☐ 113 ☐ 124 ☐ 15[FeedBack](#)[Bookmark](#)[Answer key/Solution](#)

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**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

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 Answer key/Solution

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**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?

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**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  $N^4$ ?

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**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  $\text{cm}^2$ ) of the two circles?

---

1 ☐ 120

2 ☐ 48

3 ☐ 60

4 ☐ None of these

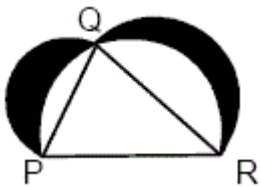
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Q.94

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  $\text{cm}^2$ ) of the shaded part?



1 ☐ 294

2 ☐ 324

3 ☐ 588

4 ☐ 286

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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

---

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 Answer key/Solution

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**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

---

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**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.

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 Answer key/Solution

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**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.

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**Q.99**

If  $f(x + y, x - y) = x \times y$ , 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

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**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 ☐  $7/13$

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