

Master series Mock CAT - 8 2018

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VRC

DILR

QA

Sec 1

Directions for questions 1-6: The following passage consists of a set of six questions. Read the passage and answer the questions that follow.

The principle of Darwinian evolution now is not just an explanatory theory, but also a debunker of theism. As such, it has been elevated to a status of unquestionable truth to the extent that biologists who may have doubts on its fireproof status would not admit so in public in case they become pariahs in their community. The other downside of holding such an absolutist position is that any proposal that may hint at

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There is no doubt that the theory of evolution is handsomely supported by the fossil records and has considerable explanatory powers. However there are two areas where I find the current version of evolution theory unconvincing. The first is the assertion that evolution is the sole mechanism that drives matter towards biological development. The second is its incapacity to explain the emergence of mentality.

Physicists tell us that following the big bang the only element in existence was hydrogen, the simplest in the periodic table. It was from these humble beginnings that the remaining ninety odd increasingly complex elements and their vastly more numerous and complex combinations were gradually synthesised as eons passed. This points to the existence of a natural law which is embedded in the nature of atomic physics and provides the potential of “evolution” of more complex elements from simpler ones. One could argue that it is this law of striving complexity that drove matter towards the emergence of increasingly complex molecules out of the basic elements followed by the emergence of the building blocks necessary for the appearance of a first self-replicating entity.

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Q.1

According to the passage, which of the following can be inferred about “the evolution of the gaps”?

-
- 1 ☐ It is the rational and scientific counterpart of the concept of “God of the gaps.”
-

2 ☐ It is an unscientific explanation which scientists use to hide any scientific loopholes in a theory.

3 ☐ It is the proof that the Darwinian theory of competition can't be utilized to understand the process of evolution.

4 ☐ It is insufficient to provide an explanation for the missing link in the process of evolution.

Solution:

Correct Answer : 4

Genre: Science / Biology /Scientific Theory

Refer to the lines, "The assumption is therefore made that "mindless and blind" unguided processes have spontaneously resulted in a self-replicating entity that encodes information, the precursor of the information carrying DNA. This process has been described by some as "evolution of the gaps" to rhyme with "God of the gaps"... It is at this stage that another explanation may help."

So, the author clearly states that this evolution of the gaps is not enough. We need another theory. Words like "mindless and blind" suggest that the author's tone is not positive. The other options are either extreme or unsupported by the passage.

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 **Answer key/Solution**

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Q.2

According to the passage, the existence of a natural law:

- 1 ☐ makes it difficult for the author to accept the findings of Darwin.
- 2 ☐ proves that the findings of Darwin are not practically applicable.
- 3 ☐ adds to the author's dilemma in accepting the theory of evolution.
- 4 ☐ was the main reason of the evolution of complex elements from humble beginnings.

Solution:

Correct Answer : 3

Genre: Science / Biology /Scientific Theory

Refer to the line “The first is the assertion that evolution is the sole mechanism that drives matter towards biological development.” So, the author has a problem with this belief and not with the existence of a natural law. In fact, the possibility of the existence of a natural law strengthens the author's scepticism about evolution being the sole mechanism as this law would have played a vital role in the process too. Hence, option 3 is a better answer than option 1.

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🔍 Answer key/Solution

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Q.3

According to the passage, which of the following is not a reason for the author to find the current version of evolution theory unconvincing?

- 1 ☐ The existence of fossil records
- 2 ☐ The presumption of the absence of mentality in simple matter
- 3 ☐ The elevated status of the principle of Darwinian evolution
- 4 ☐ The possible existence of a natural law

Solution:

Correct Answer : 1

Genre: Science / Biology /Scientific Theory

Refer to the first line of the second paragraph. The author mentions fossil records as a reason to support the theory. Hence, this is the correct answer.

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 Answer key/Solution

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Q.4

In the context of this passage, which of the following is the best example of an “unscientific attitude”?

-
- 1 ☐ An renowned critic refusing to accept that he was wrong in his evaluation of a movie
-
- 2 ☐ A renowned batsman refusing to follow the suggestion of the new coach regarding his batting technique
-
- 3 ☐ A scholar of Theology rejecting the findings of an eminent but atheist scientist
-
- 4 ☐ A group of researchers refusing to consider data presented by a new scholar
-

Solution:

Correct Answer : 4

Genre: Science / Biology /Scientific Theory

Refer to the second half of the first paragraph. The line “Its most enthusiastic adherents assert that the theory of evolution has no room for other mechanisms ... with the corollary that all theories should be taken to be provisional and incomplete...this unscientific attitude burdens the Darwinian...” So, according to the author, refusal to consider any new possibility is unscientific.

Option 1 – The movie critic might be right in refusing to accept any wrong judgement. The option is vague regarding the validity of the accusation.

Option 2 – The batsman might be right in his stance. The coach might be wrong.

Option 3 – The scholar of Theology might be right in not accepting the findings. The scientist might not have done a good research work.

Option 4 – This is correct. Refusing to even consider any data is unscientific. The researcher may reject it after evaluation. But not considering it in the first place is, as per the passage, unscientific.

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Q.5

Why does the author write the line “This complementary leverage of mind-over-matter and matter-over-mind is an extraordinary fact”?

- 1 ☐ To marvel at the inherent complexity and incomprehensibility of the process of evolution
- 2 ☐ To highlight a loophole in the current theory of evolution accepted by many
- 3 ☐ To drive home the point that the Darwinian theory of evolution cannot explain the emergence of mentality
- 4 ☐ To question the spontaneous appearance of mentality in the evolution process

Solution:

Correct Answer : 2

Genre: Science / Biology /Scientific Theory

Options 1 and 4 are too generic. The author is not questioning the entire process of evolution. Option 3 is irrelevant as the line in question is mentioned in a different context. Option 2 is the correct answer as the author writes this line to start a process of discussion.

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🔍 Answer key/Solution

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Q.6

Which of the following is the primary focus of the author in this passage?

-
- 1 ☐ The existence of logical problems in the explanation of theory of evolution
-

2 ☐ The unscientific attitude demonstrated by many scientists when it comes to the reputation of Darwin

3 ☐ The God-like status of Darwin in the field of evolutionary biology

4 ☐ The lack of explanation regarding the emergence of mentality in the process of evolution

Solution:

Correct Answer : 1

Genre: Science / Biology /Scientific Theory

Option 1 - This is the correct answer. The author mentions two problems and tries to analyse those.

Option 2 - This is too narrow and also distorted."Many scientists" and the line is written in only one paragraph.

Option 3 - It doesn't match the tone or intention of the author.

Option 4 - It is too narrow. It is mentioned only towards the end of the passage.

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🔍 Answer key/Solution

Directions for questions 7 and 8: Each of the following questions consists of a set of five sentences. These sentences need to be arranged in a coherent manner to create a meaningful paragraph. Type in the correct order of the sentences in the space provided below the question.

Q.7

1. Christopher Nolan, director of Memento, The Prestige, Inception, Interstellar and the Dark Knight Trilogy is using some of his considerable industry clout to promote a programme of newly scrubbed-up 35mm short films by stop-motion animators the Brothers Quay.

2. This is a session with a man, usually hammered by fanboy-ish questions, getting a chance to do a little geeking out.

3. This men-behind-the-curtain peek is directed, shot, edited and scored by Nolan, and is essentially the movie version of a fan winning Wonka's golden ticket and poking around the factory.

4. This is no ordinary Q&A.

5. In addition to In Absentia (2000), The Comb (1991) and Street of Crocodiles (1986), the collection includes Quay, an eight-minute mini-documentary of the brothers in their cramped, magical London studio filled with decaying doll parts, screws, wigs chewed by bugs and old cameras.

Solution:

Correct Answer : 42153

Sentence 2 introduces Nolan (a man). Sentence 1 comes up with the identity of this man. Hence, 21 create a mandatory pair. Sentences 5 and 3 further talk about Nolan's style. Hence, 2153 is a mandatory sequence. Sentence 4 can't fit anywhere but the beginning of the paragraph. It, indirectly, introduces the session under discussion. Hence, 42153 is the correct sequence.

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🔍 Answer key/Solution

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Q.8

1. Nonetheless, she says: "I've gotten really fortunate that Feminist Frequency now has staff, and there are people who will look at it."
2. Sarkeesian is the founder of Feminist Frequency, a not-for-profit educational organisation "that analyses modern media's relationship to societal issues such as gender, race and sexuality".
3. But it's a double-edged sword: not having to regularly process horrific abuse means Sarkeesian finds it more difficult when she does see it.
4. She suffered under Gamergate, the campaign conducted under the guise of representing those concerned about ethics in game journalism, but which was, in reality, a hashtagged rallying cry for those wanting to harass women in the games industry.
5. As Feminist Frequency tweeted in June of this year, "Gamergate still exists, still harasses marginalised voices and still affects our daily lives. The abuse has never stopped."

Solution:

Correct Answer : 24513

Sentence 2 opens the discussion. It also gives the name of the person in focus. 4 talks about her experience. Hence, 24 become a mandatory pair. 51 will also become a mandatory pair (nonetheless...it counters the idea mentioned in 5). Sentence 3 comes at the end as it gives a conclusion / opinion on the issue.

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Answer key/Solution

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But recognizing the roles these "grandfathers" of the movement played does not take us back quite far enough. While the theoretical underpinnings of Skinners' behaviorism are well-known among psychologists and can be traced back to the famous experiments of Pavlov, the philosophical underpinnings of Ellis and Beck are less commonly recognized. Donald Robertson explores this philosophical backdrop in his book, *The Philosophy of Cognitive Behavioral Therapy*. He points out that both Stoicism and CBT assume that thoughts are effective enough to determine emotions and both see changing our thoughts as the greatest way to change our emotions. In both Stoicism and CBT, cognitions are central to both the *cause* and the *cure* of emotional disturbance.

Or put more simply, “Ellis’ own approach was based on the ancient Stoic philosophy...[which] stated that facts do not upset people, but rather people upset themselves with the view that they take of those facts.” This is the assumption that is at the core of Cognitive Behavioral Therapy. 2,300 years after the first Stoics and 20 years after Ellis and Beck, David Burns, who popularized CBT (selling over 4 million copies of his landmark bestseller), summarized CBT in a way that is undeniably Stoic in nature: You can learn to change the way you think about things, and you can also change your basic values and beliefs. And when you do, you will often experience profound and lasting changes in your mood, outlook, and productivity. That, in a nutshell, is what cognitive therapy is all about.

Michelle Craske agrees with Burns and says: “The primary assumption of cognitive therapy is that dysfunctional thinking can be changed and, in turn, lead to symptomatic relief and improvement in functioning.” In short, Cognitive Behavioral Therapy is the application of behavioral and cognitive interventions to address an undesirable psychological problem.

Behavioral interventions are developed reactively from classical conditioning or proactively from instrumental conditioning. *Classical conditioning* observes that there are certain innate, involuntary responses that follow certain stimuli. But it also recognizes that these involuntary responses can be changed.

Instrumental conditioning, on the other hand, is not aimed at reacting to involuntary responses but at eliciting certain desirable responses by means of reinforcement or punishment. Simply put, behavior can be altered through a systematic and consistent application of positive and negative reinforcements that encourage adaptive behavior and discourage maladaptive behavior.

Cognitive interventions differ from behavioral interventions in that they are consciously aimed at the more complex cognitive process of how life is interpreted and discerned. Whereas a behaviorist would simply observe that a certain event produces a certain behavior or emotion, the cognitive therapist observes that, in fact, a certain event produces *a certain cognition*, which in turn produces a certain behavior or emotion. When these “cognitions” are maladaptive or problematic they are sometimes called “negative automatic thoughts.” But these automatic thoughts don’t spring from thin air. If they did, they might be easier to change. However, cognitive therapists observe that these negative automatic thoughts are the natural byproduct of dysfunctional assumptions and that these dysfunctional assumptions stem from problematic core beliefs.

Q.9

According to the passage, CBT:

-
- 1 ☐ is one of the most empirically supported treatments available for a wide variety of psychological disorders.
-
- 2 ☐ is premised on the fact that thought patterns and beliefs, emotional state, and behavior are all interconnected.
-
- 3 ☐ focuses on the development of personal coping strategies that target solving problems and changing unhelpful patterns in cognitions, behaviors, and emotional regulation.
-
- 4 ☐ is different from historical approaches to psychotherapy, such as the psychoanalytic approach where the therapist looks for the unconscious meaning behind behaviors and then formulates a diagnosis.
-

Solution:

Correct Answer : 3

Genre - Psychology

Option (1) is ruled since the passage is silent on treatment of a variety of psychological disorders by CBT.

Option (2) is ruled out since the passage does not talk about any such premise.

Option (4) is ruled out as the passage does not talk about psychoanalytic approach and what is done in the approach.

Option (3) is the most appropriate as it can be found in paragraph 3. The passage talks about CBT regulating the beliefs, attitudes and thoughts (all of which are covered under cognitions). Moreover, emotional regulation is stated in terms of changing mood. CBT's focus on the development of personal coping strategies can be found in the following- "In both Stoicism and CBT, cognitions are central to both the cause and the cure of emotional disturbance."

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🔍 Answer key/Solution

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Q.10

Which of the following is a valid inference based on the above passage?

- 1 ☐ No other form of therapy has the scientific validation and popular support currently enjoyed by CBT.
- 2 ☐ CBT has the power of treating chronic pain, insomnia, depression, OCD, opioid abuse, suicidal thoughts, and even memory loss from chemotherapy.
- 3 ☐ Stoicism is a philosophical precursor to Skinner’s theory of behaviorism.
- 4 ☐ CBT is essentially about altering the way one perceives things.

Solution:

Correct Answer : 4

Genre - Psychology

Option (1) is incorrect since the passage does not have any facts to prove the popularity of CBT. Option (2) is ruled out since the passage does not give examples to show if CBT is treating all the given ailments. Option (3) is ruled out because only similarities between CBT and Stoicism are given in the passage. Option (4) is correct as it is stated that- “CBT recognizes that, just as thoughts must be addressed in order to change behavior, changing behavior inevitably helps in the process of changing thoughts.”; “....summarized CBT in a way that is undeniably Stoic in nature: You can learn to change the way you think about things, and you can also change your basic values and beliefs.”

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Q.11

According to the last paragraph, how do cognitive interventions help people?

-
- 1 ☐ They create mental representations that surface to consciousness when we perceive, reason, or form mental images
-
- 2 ☐ They work on the principle that people acquire knowledge through their observations of the world around them.
-
- 3 ☐ They facilitate the identification of problematic core beliefs and their replacement with more healthy beliefs.
-
- 4 ☐ They inherently address psychological problems at the level of unconscious mind, through the activation and analysis of thoughts, experiences, memories, and senses.
-

Solution:

Correct Answer : 3

Genre - Psychology

Options (1) and (2) are ruled out as they are too generic. (1) does not explain how do these mental representations help people. (2) does not fulfill the requirement of the question. The question is not about the working of cognitive interventions. Option (4) is ruled out because the last paragraph clearly states that cognitive interventions address problems at the level of conscious mind, which a cognitive therapist does to produce a certain behavior. Option (3) is the most appropriate as it details how cognitive interventions help people by instilling in them positive beliefs and removing all negative thoughts.

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Q.12

Which of the following best traces the relationship between CBT and Stoicism?

-
- 1 ☐ Both CBT and Stoicism tell us that beliefs and ideas are powerful and they can therefore alter the way we feel in a particular situation or towards a particular thing.
-
- 2 ☐ CBT targets underlying value judgments, while Stoicism might be described as more philosophical as it tends to concern the very nature of the good itself.
-
- 3 ☐ Both CBT and Stoicism tell us that our emotions are connected to our thoughts, and the importance and value we assign to things.
-

4 ● There are different tenets of Stoicism that have formed the framework for CBT.

Solution:

Correct Answer : 1

Genre - Psychology

Option (2) is easily ruled out as the passage traces similarities between the two and not distinctions. Option (3) is a close answer but is incorrect because the second half cannot be traced from the passage. Option (4) is ruled out as there is no mention about any such tenets. Option (1) is the correct answer since it is stated in paragraph 3- "both Stoicism and CBT assume that thoughts are effective enough to determine emotions and both see changing our thoughts as the greatest way to change our emotions."

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Q.13

Which of the following does not explain the difference between classical conditioning and instrumental conditioning?

- 1 ☐ Classical conditioning occurs when one learns to associate two different stimuli while *instrumental* conditioning involves changing voluntary behaviors.
- 2 ☐ *Instrumental* conditioning is based on involuntary behavior, while classical conditioning involves voluntary reflexive behavior.
- 3 ☐ *Instrumental* conditioning focuses on using two binaries to increase or decrease the intensity of behavior, while classical conditioning is a process that involves creating an association between a naturally existing stimulus and a response to it.
- 4 ☐ A basic feature of *instrumental* conditioning is using reinforcement or punishment, while classical conditioning relies more on association between stimuli and responses.

Solution:

Correct Answer : 2

Genre - Psychology

According to the information provided in the passage- Classical conditioning is about involuntary association between two responses, or two stimuli or one response and one stimuli. Instrumental conditioning is a voluntary response that uses reinforcement or punishment. On the basis of this, option (2) is the correct answer as it incorrectly describes the two types of conditioning.

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change. However, cognitive therapists observe that these negative automatic thoughts are the natural byproduct of dysfunctional assumptions and that these dysfunctional assumptions stem from problematic core beliefs.

Q.14

Which of the following is an example of *classical conditioning*?

-
- 1 ☐ A nurse walked into the room making the kid anxious because he associated her with getting needles. Later, he repeatedly imagined a nurse into the room *without* giving him a needle.
-
- 2 ☐ Initially, a little girl did not fear a lizard. The lizard was paired or associated with scary noises but the girl didn't become fearful of the lizard.
-
- 3 ☐ A man eats fish as a meal but later becomes extremely sick. Later, the taste of the fish does not cause the person to feel nauseous because he does not associate it with an illness.
-
- 4 ☐ When Roy was a kid he had seen a friend being bitten by a dog but that did not make him fear dogs. Now that Roy is a grown up, he has three dogs at home.
-

Solution:

Correct Answer : 1

Genre - Psychology

"Classical conditioning observes that there are certain innate, involuntary responses that follow certain stimuli. But it also recognizes that these involuntary responses can be changed." Option (2) is not an example of the same because- (i) scary noises ought to make one scared, (ii) there is no change in the response even when the lizard is associated with noises. Option (3) is not an example of the same because something that makes you sick after you have eaten it makes you avoid it as you tend to connect it with sickness again. Option (4) is not an example of the same because if you see someone being bitten by a dog, the innate reaction is that of being scared of a dog. However, here it is not the same. Option (1) is the correct answer because the innate reaction of a kid seeing a needle is getting scared. His imagining a nurse without needles, changed his fear to being calm. Hence (1) is an example of classical conditioning.

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Directions for question 15: The following question consists of a paragraph followed by four summaries. Choose the option that best captures the essence of the paragraph. Type in the option number in the space provided below the question.

Q.15

Post-structuralist' is a non- or even anti-name ...the name pins the writer down, makes it possible to speak species, and offers a bootstrap by which talk about the new theory can raise itself above the old. But this name also begs the question of another, previous name: ...'structuralism' ... Post-structuralism offered structuralism its last chance to make a science out of theorizing literature. It is as though the post structuralists represented the culmination and the grand finale of all previous attempts to produce a scientific theory of literature; in this case, no 'new structuralism' was possible. Perhaps post-structuralism more usefully describes what happened next; it hints, among other things, at both the dangerously over-productive parent and the contentiously illegitimate offspring. But even this seems too closely to confine, or even to exclude its subject. In the event we have the equally graphic 'post-structuralism', a term that seems not to name what we do in the present at all, but rather to re-name structuralism itself, as what we used to do in the past. It provides a post to which structuralism is then hitched, confining it by means of the shortest tether the language has to offer".

1. The concepts 'structuralism' and 'post-structuralism' take on a relationship in which the outmoded 'structuralism' has been redrafted by the improved 'post-structuralism'.
2. 'Post-structuralism' is a body of work that followed structuralism, and sought to comprehend a world irrevocably dissected into several small parts, just like in deconstruction.
3. The terms 'structuralist' and 'post-structuralist' are labels imposed for a heterogeneous array of often conflicting or divergent theoretical positions.
4. 'Post-structuralism', unlike 'structuralism', destabilizes traditional unities of the text and the subject.

Solution:

Correct Answer : 1

The entire paragraph discusses that structuralism is outdated, it has culminated and has reached its grand finale. And it is post structuralism that presents this end of structuralism by rewriting it. Post structuralism is just a re-naming of structuralism. This is aptly summarized in option (1). Options (2) and (4) are incorrect because they only focus on what post structuralism is and what it does. Option (3) is ruled out because it calls the two theories as divergent and conflicting, which is not stated in the paragraph.

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Q.16

Which of the following, if true, would explain the reason behind Godard's habit of ugly insinuations?

-
- 1 ☐ Godard's daughter recently married a Jewish man which made Godard revisit his political ideologies.
-
- 2 ☐ Godard's chief inspiration behind choosing a career in film making was to reinforce his political ideology.
-
- 3 ☐ After the uproar over his Oscar win, Godard became even more self-exiled.
-
- 4 ☐ During his early film making days, Godard suffered many flops which added to his anger against Hollywood studio bosses.
-

Solution:

Correct Answer : 2

Genre: Film Studies / Cultural Studies / Art and Entertainment

The clue to this question is "Godard's usual habit" of insinuating the anti-Jewish attitude which is the central focus of the passage. It is not a recent habit. Hence, option 1 can be eliminated. Options 3 and 4 don't answer this question logically as "Jews" are not part of the options. Option 2 is the best answer.

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Q.17

As per the passage, which of the following is true regarding Godard's art?

- 1 ☐ Godard's cinematic ideologies are chiefly inspired by the inflammatory logic of writers like Daudet.
- 2 ☐ At least one of Godard's movies is unintentionally paradoxical.
- 3 ☐ Godard's films have always resulted in a lively discussion regarding his attitude towards Jews.
- 4 ☐ Godard sometimes uses metaphorical distortions to drive home his artistic point.

Solution:

Correct Answer : 4

Film Studies / Cultural Studies / Art and Entertainment

Option 1 - It is wrong because "chiefly" can't be factually supported by the passage.

Option 2 - "Unintentionally" is wrong and the film is not paradoxical. Its consequence or reception is. "He makes his most humane film." It's an opinion.

Option 3 - "Always resulted" makes it wrong.

Option 4 - "Sometimes" is logically correct. "Metaphorical distortions" are clearly mentioned in the passage.

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Q.18

Which of the following can be inferred about the author's narrative style from the first sentence of the passage?

-
- 1 ☐ The author is mildly sarcastic about the efficacy of Godard's latest film.
-
- 2 ☐ The author is optimistic about the discussion on Jews surrounding the latest film by Godard.
-
- 3 ☐ The author is mildly critical of Godard's portrayal of Jews in his latest film.
-
- 4 ☐ The author is suspicious of the effects of Godard's latest film on the discussion on anti-Semitic.
-

Solution:

Correct Answer : 3

Film Studies / Cultural Studies / Art and Entertainment

Option 1 - The author is very direct. He is not sarcastic.

Option 2 - The tone is negative. This is a positive option.

Option 3 - The author is critical but not extreme in his approach. This is the correct option.

Option 4 - The author is very sure. He is not suspicious or sceptical.

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Q.19

Which of the following is a suitable title for the given passage?

- 1 ☐ An analysis of Godard’s exiled genius
- 2 ☐ Godard’s artistic vision – An analysis
- 3 ☐ An analysis of Godard’s artistic techniques
- 4 ☐ Godard – A study in contrast

Solution:

Correct Answer : 2

Film Studies / Cultural Studies / Art and Entertainment

The author's tone is analytical. The focus of the passage is Godard's art. Hence, option 2 is the best answer. Option 1 makes the author a fan of Godard. It is a twisted option.

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Q.20

According to the passage, which of the following can't be true regarding "Film Socialisme"?

-
- 1 ☐ The film contains certain ironic references to historical images.
-
- 2 ☐ The film contains some reference to a Biblical metaphor.
-
- 3 ☐ The film is a continuation of Godard's narration of Jews in his art.
-
- 4 ☐ The film caters to a homogeneous audience.
-

Solution:

Correct Answer : 4

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All the other options are supported by the passage. This film caters to a variety of audience. Refer to the last sentence of the first paragraph. Hence, option 4 is the correct answer.

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Q.21

Which of the following is not true according to the passage?

- 1 ☐ The theme of “Film Socialisme” highlights the influence of the creator over his creation.
- 2 ☐ Godard has made more than one movies which portray Jews in a poor light.
- 3 ☐ Godard discusses a myriad, wide-ranging, and sometimes shocking cinematography in “Film Socialisme”.
- 4 ☐ Godard is hostile towards Semitism in “Film Socialisme”.

Solution:

Correct Answer : 3

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The passage doesn't mention "cinematography". The other options can be located in the passage.

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Directions for questions 22-24: The following passage consists of a set of three questions. Read the passage and answer the questions that follow.

And here is another fact to which attention should be drawn. You would hardly appreciate the comic if you felt yourself isolated from others. Laughter appears to stand in need of an echo, listen to it carefully: it is not an articulate, clear, well-defined sound; it is something which would fain be prolonged by reverberating from one to another, something beginning with a crash, to continue in successive rumblings, like thunder in a mountain. Still, this reverberation cannot go on forever. It can travel within as wide a circle as you please: the circle remains, none the less, a closed one. Our laughter is always the laughter of a group. It may, perchance, have happened to you, when seated in a railway carriage, to hear travellers relating to one another stories which must have been comic to them, for they laughed heartily. Had you been one of their company, you would have laughed like them; but, as you were not, you had no desire whatever to do so. A man who was once asked why he did not weep at a sermon, when everybody else was shedding tears, replied: "I don't belong to the parish!" What that man thought of tears would be still truer of laughter. However spontaneous it seems, laughter always implies a kind of secret freemasonry, or even complicity, with other laughers, real or imaginary.

How often has it been said that the fuller the theatre, the more uncontrolled the laughter of the audience! On the other hand, how often has the remark been made that many comic effects are incapable of translation from one language to another, because they refer to the customs and ideas of a particular social group! It is through not understanding the importance of this double fact that the comic has been looked upon as a mere curiosity in which the mind finds amusement, and laughter itself as a strange, isolated phenomenon, without any bearing on the rest of human activity. Hence those definitions which tend to make the comic into an abstract relation between ideas: "an intellectual contrast," "a palpable absurdity," etc.,—definitions which, even were they really suitable to every form of the comic, would not in the least explain why the comic makes us laugh. How, indeed, should it come about that this particular logical relation, as soon as it is perceived, contracts, expands and shakes our limbs, whilst all other relations leave the body unaffected? It is not from this point of view that we shall approach the problem. To understand laughter, we must put it back into its natural environment, which is society, and above all must we determine the utility of its function, which is a social one. Such, let us say at once, will be the leading idea of all our investigations. Laughter must answer to certain requirements of life in common. It must have a social significance.

Q.22

What do you understand by the phrase- "laughter always implies a kind of secret freemasonry"?

-
- 1 ☐ Laughter comes on its own, without one having to bear any cost.
-
- 2 ☐ Origin of laughter is a secret, unknown to any.
-
- 3 ☐ Laughter is accidental and unintentional.
-
- 4 ☐ Laughter develops a premeditated fellow feeling with modes that are identical.
-

Solution:

Correct Answer : 4

Genre: Abstract / Sociology / Humour

Option 4 is the correct answer. Options 1, 2, and 3 cannot be inferred from the passage. The word 'freemasonry' means instinctive sympathy between things with something in common. Moreover, the first half of the given sentence states that laughter only seems to be spontaneous. This means that it is in real premeditated.

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🔍 Answer key/Solution

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Q.23

How can one comprehend laughter?

1 ☐ By looking at the different definitions given to this term

2 ☐ By trying to fathom that it has a purpose for humankind

3 ☐ By understanding the different examples provided in the text

4 ☐ By accepting the inherent futility of such a venture

Solution:

Correct Answer : 2

Genre: Abstract / Sociology / Humour

Option 2 is the correct answer. Option 1 is incorrect as it has been stated in the passage that- "Hence those definitions which tend to make the comic into an abstract relation.....would not in the least explain why the comic makes us laugh." Options 3 and 4 are incorrect as they are beyond the scope of the text. Option 2 is most appropriate as towards the end of the passage it is stated that- "To understand laughter, we must put it back into its natural environment, which is society, and above all must we determine the utility of its function, which is a social one."

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 **Answer key/Solution**

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And here is another fact to which attention should be drawn. You would hardly appreciate the comic if you felt yourself isolated from others. Laughter appears to stand in need of an echo, listen to it carefully: it is not an articulate, clear, well-defined sound; it is something which would fain be prolonged by reverberating from one to another, something beginning with a crash, to continue in successive rumblings, like thunder in a mountain. Still, this reverberation cannot go on forever. It can travel within as wide a circle as you please: the circle remains, none the less, a closed one. Our laughter is always the laughter of a group. It may, perchance, have happened to you, when seated in a railway carriage, to hear travellers relating to one another stories which must have been comic to them, for they laughed heartily. Had you been one of their company, you would have laughed like them; but, as you were not, you had no desire whatever to do so. A man who was once asked why he did not weep at a sermon, when everybody else was shedding tears, replied: "I don't belong to the parish!" What that man thought of tears would be still truer of laughter. However spontaneous it seems, laughter always implies a kind of secret freemasonry, or even complicity, with other laughers, real or imaginary.

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Q.24

Which of the following can be inferred from the passage?

- 1 ☐ Laughter does not exist outside the pale of what is strictly human.
 - 2 ☐ Laughter is not inherently impulsive.
 - 3 ☐ One may find something as beautiful or something as ugly, but it will never be laughable.
 - 4 ☐ Indifference is laughter's natural environment, for laughter has no greater foe than emotion.
-

Solution:

Correct Answer : 2

Genre: Abstract / Sociology / Humour

Option 2 is the correct answer. Options 1, 3 and 4 cannot be inferred from the passage. Option 2 is the most appropriate as it has been stated- "However spontaneous it seems, laughter always implies a kind of secret freemasonry, or even complicity, with other laughers, real or imaginary". This means that laughter only appears to be spontaneous but actually it is not.

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🔍 Answer key/Solution

Directions for questions 25 and 26: Each of the following questions consists of a set of five sentences. These sentences need to be arranged in a coherent manner to create a meaningful paragraph. Type in the correct order of the sentences in the space provided below the question.

Q.25

1. While the market is forecast to quadruple within six years to more than \$26 billion, according to a 2017 study by consultant Wohlers Associates, it's still mostly confined to small projects and customized businesses rather than mass manufacturing
2. Already, the company is working on using additive manufacturing to reduce vehicle weight.
3. The executive's pitch highlights the hurdles faced by proponents of industrial 3-D printing.
4. "There's still a lot of work to do to make sure we can make additive manufacturing work," said Alexander Susanek, head of BMW's Plant
5. They say deep-seated reluctance to try the production method is holding back wider acceptance of the technology on factory floors.

Solution:

Correct Answer : 35142

35 is a mandatory pair (reduce vehicle weight - method is holding back).
Sentences 1, 4, and 2 make a sequence. Company's name - a person's opinion
- the company.

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🔍 Answer key/Solution

Directions for questions 25 and 26: Each of the following questions consists of a set of five sentences. These sentences need to be arranged in a coherent manner to create a meaningful paragraph. Type in the correct order of the sentences in the space provided below the question.

Q.26

1. They are, thus, immersed in widespread inequitable gender norms and attitudes, with almost half of adolescents agreeing that wife-beating is justified in some situations.
2. Moreover, many adolescents are unaware and unprepared to protect themselves from sexually transmitted infections and unwanted pregnancies.
3. Many adolescents are poorly informed about the changes taking place in their bodies and minds at puberty, and unprepared to deal with them.
4. We know that this is not happening; studies from around the world show that children are not getting the information and education they need.
5. Or they lack the skills to refuse unwanted advances from peers or adults who use coercive physical or emotional pressure.


Solution:

Correct Answer : 43251

25 is a mandatory pair. (Moreover...or they..). 2 adds to the discussion of 4 and 3 (moreover). 1 is the concluding sentence (thus).

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 **Answer key/Solution**

Directions for questions 27-29: The following passage consists of a set of three questions. Read the passage and answer the questions that follow.

Whether anyone likes it or not, classrooms in India are set to become more diverse. The always heated debate over affirmative action in India has entered a new chapter with the recent Supreme Court decision to uphold the controversial Right to Education Act. This requires private, non-minority schools that don't receive government support to reserve 25% of their seats for underprivileged kids. Conceivably, the son or daughter of an investment banker might be sat at a school desk next to the son or daughter of their domestic help.

This new frontier of affirmative action in India will help underprivileged kids if they are quickly integrated and socialized into the mainstream culture of the classroom. It crucially depends on whether they see themselves as "insiders" rather than "outsiders," a point forcefully made by economists George Akerlof and Rachel Kranton in their award winning book "Identity Economics." Research from the U.S. strongly suggests that kids' educational performance is closely correlated to how they perceive themselves in relation to the educational aspirations of those around them.

An important piece of experimental research by economists Karla Hoff and Priyanka Pandey using Indian data found that kids from historically disadvantaged castes performed just as well as upper caste kids in aptitude tests such as solving puzzles and mazes. Vitally, this equal performance happened only when caste identity was not revealed to their peers in the experiment. In a mixed group, when the researchers revealed everyone's caste identity, the disadvantaged kids performed fully 20% worse than their peers.

An underprivileged child's background might plausibly be kept hidden in a laboratory experiment, but it's almost impossible to believe this could be replicated in the real world. Underprivileged kids will almost certainly be dressed differently, have less fancy accoutrements, and will probably lack the self-confidence that accompanies wealth and privilege in India, as in most other places. This is likely to reinforce what psychologists call the "stereotype threat," whereby being reminded of belonging to an underprivileged group creates cognitive challenges and worsens performance. In fact, this is exactly the mechanism that was at work in the Hoff-Pandey study.

While the Right to Education Act is too recent to have spawned any scientific research, there is new evidence on how affirmative action can help undo stereotypes in another important arena, namely gender.

In 1993, a law in India created reservation for women in leadership positions in village councils. A study by few economists in the prestigious journal *Science* looked at the effects of this law. In many states, at every election one third of village councils were picked randomly to have their top spot reserved for a woman. The researchers sent out survey teams to almost 500 villages in 2006 and 2007, covering those that had the top spot in the local council reserved for women as well as those without reservation. Compared to villages that had never had reservation, the gender gap in aspirations — as measured by household surveys — narrowed by 25% for parents and 32% for adolescents in those villages with reservation for two successive election cycles. The gain was so great that it wiped out the gender gap in aspiration among adolescents: young women now had the same aspirations as young men in terms of future education and job market plans.

Q.27

What can be inferred from the research done by economists Karla Hoff and Priyanka Pandey?

1 ☐ The performance of disadvantaged children depends on whether they're able to manage the psychological challenges of interacting at close quarters in an unfamiliar and potentially hostile environment.

-
- 2 ☐ The reactions of peers strongly severely affects the performance of disadvantaged children as the latter are always trying to acclimatize themselves within the group.
-
- 3 ☐ While the Right to Education Act is too recent to have spawned any scientific research, there is new evidence on how affirmative action can help undo stereotypes in another important arena, namely gender.
-
- 4 ☐ Negative images about disadvantaged children that main-stream most private schools are inevitably practiced by upper caste kids through their attitudes and hence misconceptions color everyone's personal socialization experience.
-

Solution:

Correct Answer : 1

Genre: Education / Sociology

Option (2) is ruled out as the passage is silent on whether the disadvantaged children try to adapt themselves with other children or not. Option (3) is a distorted option. The given option is mentioned in the paragraph in another context. Option (4) is ruled out since what is practiced by upper caste kids is not the point of concern. The point is to bring out that performance of disadvantaged children is closely related to their surrounding environment and how they are able to deal with the pressures of that world. Moreover, the statement preceeding the research done by economists Karla Hoff and Priyanka Pandey states- "educational performance is closely correlated to how they perceive themselves in relation to the educational aspirations of those around them." This clearly makes option (1) correct.

 **Bookmark**

 **Answer key/Solution**

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Q.28

Following the 1993 law made in India for the reservation of women, why do you think were surveys conducted in the year 2006 and 2007?

1 ☐ To show the positive impact on women themselves being able to turn to others in positions of power at the local level

-
- 2 ☐ To figure out if the presence of women leaders in the community shaped the aspirations of people in villages
-
- 3 ☐ To show that village councils led by women are more responsive to women's needs
-
- 4 ☐ To overturn centuries of ingrained gender stereotypes that had held women back and denied them leadership positions in the community
-

Solution:

Correct Answer : 2

Genre: Education / Sociology

The answer can be traced from the last paragraph of the given passage.

Option (1) is ruled out since there is no example to prove the same. It is a farfetched statement. Option (3) is ruled out since there is no example to validate the same. Option (4) is ruled out since a survey can't overturn an "ingrained gender stereotype". Rather, it is the performance by women themselves that can challenge an existing stereotype against them. Option (2) is the correct answer as it is stated that the survey saw aspirations of women had now changed and were similar to men. "Compared to villages that had never had reservation, the gender gap in aspirations — as measured by household surveys — narrowed by 25% for parents and 32% for adolescents in those villages with reservation for two successive election cycles. The gain was so great that it wiped out the gender gap in aspiration among adolescents: young women now had the same aspirations as young men in terms of future education and job market plans."

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 **Answer key/Solution**

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Q.29

What do you understand by the term "stereotype threat" used in the passage?

1 ☐ It is a situation that potentially contributes to long-standing gender and racial gaps in academic performance.

2 ☐ It is a situation that refurbishes the performance of individuals who belong to negatively stereotyped groups.

3 ☐ It is a situational predicament in which people feel themselves to be at risk of conforming to an idea that is held as a standard about their social group and hence affects their quality of work.

4 ☐ It is a situational predicament that arises from a particular situation, rather than from a person's personality traits or characteristics.

Solution:

Correct Answer : 3

Genre: Education / Sociology

According to paragraph 4, stereotype threat is- "belonging to an underprivileged group creates cognitive challenges and worsens performance." It does not contribute to any kind of performance. Hence (1) is ruled out. For the same reason option (2) is ruled out. The use of the term "refurbishes" completely twists the meaning. Option (4) is ambiguous. There is no basis to make such a claim. Option (3) is the most appropriate as it talks about- "affecting quality of work" (performance); "feel themselves to be at risk" (cognitive challenges) etc. Moreover, option (3) very aptly summarizes paragraph 4, which talks about stereotype threat.

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 **Answer key/Solution**

Directions for questions 30 and 31: The following questions consist of a paragraph each followed by four summaries. Choose the option that best captures the essence of the paragraph. Type in the option number in the space provided below the question.

Q.30

Plato and Aristotle get a bad rap these days for their rejection of democracy. But the substance of their objections were spot-on, and not just because they saw that majority opinion is not the same as wisdom. For Aristotle, democracy's fatal problem is that it divides society by pitting the majority – however slender – against the minority. We're seeing this playing out in America, where the divide between Republican and Democrat has never been wider, but in elections the winner takes all. We're also seeing this in Britain, where cosmopolitan liberal cities and conservative communitarian towns and villages view each other with incomprehension.

1. The modern day political reality of America and Britain prove Aristotle and Plato's objection to democracy correct.
2. The widening divisiveness of the politics in America and Britain reinforce the validity of Aristotle's criticism of democracy.
3. Plato and Aristotle were right in rejecting the synonymous treatment of majority opinion with wisdom.
4. People are wrong in criticizing Plato and Aristotle as the two were spot on in their rejection of the inherent divisiveness of democracy.

Solution:

Correct Answer : 2

Option 1 is wrong - Plato's criticism is not part of the discussion on Britain and America.

Option 2 - It mentions the central focus of the paragraph.

Option 3 - It is a conclusion, not a summary.

Option 4 - Again, it is a conclusion, a farfetched one too.

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🔑 Answer key/Solution

Directions for questions 30 and 31: The following questions consist of a paragraph each followed by four summaries. Choose the option that best captures the essence of the paragraph. Type in the option number in the space provided below the question.

Q.31

A key 'negative principle' of twentieth-century conservatism has been opposition to socialism with its progressive and rationalist approach, and to the totalitarian excesses of communism. The threats posed by radical creeds reinforce the conservative conviction that traditional social institutions like private property and the family must be upheld. Conservatives do not harbour any utopian expectation that human beings can become perfect, and so their hope for a well-ordered society is based on the control of the darker side of human nature and damage limitation through strong legal controls and a non-permissive moral culture.

- 1. Conservatives are inherently sceptical of the ability of humans to be perfect.**
- 2. Conservatives believe in social institutions and, hence, they try to protect these by not harbouring any utopian expectation of human perfection.**
- 3. Conservatives, in the 20th century, try to protect their belief from radical threats by legal controls and a strict moral code.**
- 4. Conservatives oppose the inherent violence of socialism and take the help of legal controls and a strict moral code to protect their interest.**

Solution:

Correct Answer : 3

The paragraph talks about "conservatism in the 20th century". Every other option talks about conservatism in the general sense. Only option 3 mentions the key point of 20th century. Hence, it is the correct option.

Option 1 – Too narrow.

Option 2 – A wrong causal relation. Their disbelief in the utopian system is not a defence mechanism.

Option 4 – Twists the tone by talking about "their interest". It should be "their belief"

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🔑 Answer key/Solution

Directions for questions 32-34: In each of the following questions, five sentences are given. Of these, four sentences can be logically sequenced to make a coherent paragraph. One of the sentences does not belong to the paragraph. Type in the sentence number that doesn't fit into the paragraph.

Q.32

1. Omnipotence and foreknowledge of God utterly destroy the doctrine of 'free will'.
2. It naturally follows by irrefutable logic that we were not made by ourselves, nor live by ourselves, nor do anything by ourselves, by his omnipotence.
3. It is this that has been such a stumbling block to so many great men down through the ages.
4. It gives the greatest possible offense to common sense or natural reason, that God, Who is proclaimed as being full of mercy and goodness, should of His own will- abandon, harden and damn men.
5. It seems an iniquitous, cruel, and intolerable thought to think of God.

Solution:

Correct Answer : 2

The correct sequence is 1354. The paragraph is about the omnipotence and foreknowledge of God, which is hard on men and destroys them. 2 is not a part of this paragraph as the entire paragraph is a third person narrative, however, 2 is in first person, and is hence ruled out.

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🔍 Answer key/Solution

Directions for questions 32-34: In each of the following questions, five sentences are given. Of these, four sentences can be logically sequenced to make a coherent paragraph. One of the sentences does not belong to the paragraph. Type in the sentence number that doesn't fit into the paragraph.

Q.33

1. The 23-times grand slam winner writes that black women have to work eight months longer to earn the same as their male counterparts do in one year.
2. Black women, moreover, earn 17% less than their white female counterparts.
3. In the essay published by Fortune, Serena Williams says that for every dollar earned by men in the United States, black women earn just 63 cents.
4. Williams is lucky to pick up a tennis racquet and breakthrough, else she would have been like the other 24 million women facing wage disparities in the US.
5. Serena Williams has issued a stirring call for black women to demand equal pay using a personal essay to highlight the financial disparity they suffer.

Solution:

Correct Answer : 4

The correct sequence is 5312. The paragraph is about Serene Williams' essay on equal pay for black women. 4 is thematically part of the discussion. But it is not a part of this paragraph. 5312 make a mandatory sequence. Sentence 4 talks about "women" and not "black women". Hence, it is the odd one out.

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🔍 Answer key/Solution

Directions for questions 32-34: In each of the following questions, five sentences are given. Of these, four sentences can be logically sequenced to make a coherent paragraph. One of the sentences does not belong to the paragraph. Type in the sentence number that doesn't fit into the paragraph.

Q.34

1. He said, 'language is a system of signs' that has a form, known as the signifier, and an associated idea or concept, known as the signified.
2. In 20th century, Swiss linguist Ferdinand de Saussure pioneered work in semiotics.
3. Saussure and other constructionists saw the relationship between signs and meaning as arbitrary.
4. Together the signifier and the signified produce meaning.
5. He and his counterparts acknowledge the importance of individual social context.

Solution:

Correct Answer : 5

The correct sequence is 2143. The paragraph is about Saussure's work in semiotics. It talks about signifier and signified and their relation to signs and meaning. 5 is not a part of this paragraph as it goes on a different tangent and talks about the 'individual social context'. This is not related to the logical sequence of the paragraph

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🔍 Answer key/Solution

Sec 2

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

A leading e-commerce company had a huge order rush during the Diwali week and was struggling to deliver the orders that it had received. For all the orders that were not delivered as per the customer's requested category, the customer was given a credit voucher of Rs. 50 for each day delay. For example, if a customer had requested same day delivery but the product is being delivered to him after 2 days, he will get a credit voucher worth Rs. 100. Ordinary delivery represents delivery in 3 days but in case of delay, credit voucher is not given to the customer.

The table given below represents the number of orders received on each day from October 2, 2017, which was Monday, to October 8, 2017, which was Sunday, and the number of orders delivered from October 2, 2017 to October 11, 2017.

Orders received

Category	Details	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
I	Same day delivery	176	254	325	298	457	897	1078
II	Next day delivery	258	436	543	476	865	1564	1843
III	2 day delivery	654	743	450	651	1265	2032	2430
IV	Ordinary delivery	1250	1876	1265	1564	2024	4320	5405

Orders Delivered

	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
Same day delivery order	150	280	300	300	475	900	1050	10	20	0
Next day delivery order	0	225	400	600	475	865	1500	1900	10	10
2 day delivery order	0	0	600	750	450	650	1300	2000	2450	25
Ordinary delivery order	0	0	0	1200	1900	1250	1600	2000	4200	5554

If there are two orders, one is delayed by x days and the other by more than x days, the company would always deliver the order which is delayed by more than x days before the order that is delayed by x days. The company also tried to ensure that order should be delivered as per the schedule.

Q.35

What was the number of orders that were delivered late over all the categories?

Solution:

Correct Answer : 509

Bookmark

Answer key/Solution

Same day Delivery

	Same day delivery Order	Same day delivery Delivered	Orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	176	150	26		26							1300
Tuesday	254	280	0	26								0
Wednesday	325	300	25		2	18	3		2			2850
Thursday	298	300	0	2								0
Friday	457	475	0	18								0
Saturday	897	900	0	3								0
Sunday	1078	1050	28		8	20						2400
		10		10								0

		20		20								U
		79		79	36	38	3	0	2	0	0	6550

Next day Delivery

	Next day delivery Order	Next day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of Gift Voucher
					1	2	3	4	5	6	7	
Monday	258	0										
Tuesday	436	225	33			33						3300
Wednesday	543	400	36		24				12			4200
Thursday	476	600		57								0
Friday	865	475	1				1					150
Saturday	1564	865	0									0
Sunday	1843	1500	64		44	10	10					4700
		1900		57								0
		10		10								0
		10		10								0
	5985	5985	134	134	68	43	11	0	12	0	0	12350

Two day Delivery

	Two day delivery Order	Two day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	654	0										0
Tuesday	743	0										0
Wednesday	450	600	54		7			35		12		10950
Thursday	651	750		7								2700
Friday	1265	450										0
Saturday	2032	650	1				1					150
Sunday	2430	1300		35								0
		2000	32		7	25						2850
		2450		20								0
		25		25								0
	8225	8225	87	87	14	25	1	35	0	12	0	13950

Ordinary delivery

	Ordinary Delivery Order	Ordinary Delivery order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	1250	0										0
Tuesday	1876	0										0
Wednesday	1265	0										0
Thursday	1564	1200	50		24		26					0
Friday	2024	1900		24								0
Saturday	4320	1250	15		10			5				0
Sunday	5405	1600		36								0
		2000	24			24						0
		4200	120									0
		5554		149	120							0

Number of orders that were delivered late = 79 + 134 + 87 + 209 = 509.

Feedback

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

A leading e-commerce company had a huge order rush during the Diwali week and was struggling to deliver the orders that it had received. For all the orders that were not delivered as per the customer's requested category, the customer was given a credit voucher of Rs. 50 for each day delay. For example, if a customer had requested same day delivery but the product is being delivered to him after 2 days, he will get a credit voucher worth Rs. 100. Ordinary delivery represents delivery in 3 days but in case of delay, credit voucher is not given to the customer.

The table given below represents the number of orders received on each day from October 2, 2017, which was Monday, to October 8, 2017, which was Sunday, and the number of orders delivered from October 2, 2017 to October 11, 2017.

Orders received

Category	Details	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
I	Same day delivery	176	254	325	298	457	897	1078
II	Next day delivery	258	436	543	476	865	1564	1843
III	2 day delivery	654	743	450	651	1265	2032	2430
IV	Ordinary delivery	1250	1876	1265	1564	2024	4320	5405

Orders Delivered

	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
Same day delivery order	150	280	300	300	475	900	1050	10	20	0
Next day delivery order	0	225	400	600	475	865	1500	1900	10	10
2 day delivery order	0	0	600	750	450	650	1300	2000	2450	25
Ordinary delivery order	0	0	0	1200	1900	1250	1600	2000	4200	5554

If there are two orders, one is delayed by x days and the other by more than x days, the company would always deliver the order which is delayed by more than x days before the order that is delayed by x days. The company also tried to ensure that order should be delivered as per the schedule.

Q.36

What was the amount of credit vouchers issued by the company?

Solution:

Correct Answer : 32850

Bookmark

Answer key/Solution

Same day Delivery

	Same day delivery Order	Same day delivery Delivered	Orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	176	150	26		26							1300
Tuesday	254	280	0	26								0
Wednesday	325	300	25		2	18	3		2			2850
Thursday	298	300	0	2								0
Friday	457	475	0	18								0
Saturday	897	900	0	3								0
Sunday	1078	1050	28		8	20						2400
		10		10								0

		20		20								U
			79	79	36	38	3	0	2	0	0	6550

Next day Delivery

	Next day delivery Order	Next day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of Gift Voucher
					1	2	3	4	5	6	7	
Monday	258	0										
Tuesday	436	225	33			33						3300
Wednesday	543	400	36		24				12			4200
Thursday	476	600		57								0
Friday	865	475	1				1					150
Saturday	1564	865	0									0
Sunday	1843	1500	64		44	10	10					4700
		1900		57								0
		10		10								0
		10		10								0
	5985	5985	134	134	68	43	11	0	12	0	0	12350

Two day Delivery

	Two day delivery Order	Two day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	654	0										0
Tuesday	743	0										0
Wednesday	450	600	54		7			35		12		10950
Thursday	651	750		7								2700
Friday	1265	450										0
Saturday	2032	650	1				1					150
Sunday	2430	1300		35								0
		2000	32		7	25						2850
		2450		20								0
		25		25								0
	8225	8225	87	87	14	25	1	35	0	12	0	13950

Ordinary delivery

	Ordinary Delivery Order	Ordinary Delivery order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	1250	0										0
Tuesday	1876	0										0
Wednesday	1265	0										0
Thursday	1564	1200	50		24		26					0
Friday	2024	1900		24								0
Saturday	4320	1250	15		10			5				0
Sunday	5405	1600		36								0
		2000	24			24						0
		4200	120									0
		5554		149	120							0

Amount of credit voucher issued by the company = 6550 + 12350 + 13950 = 32850.

Feedback

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

A leading e-commerce company had a huge order rush during the Diwali week and was struggling to deliver the orders that it had received. For all the orders that were not delivered as per the customer's requested category, the customer was given a credit voucher of Rs. 50 for each day delay. For example, if a customer had requested same day delivery but the product is being delivered to him after 2 days, he will get a credit voucher worth Rs. 100. Ordinary delivery represents delivery in 3 days but in case of delay, credit voucher is not given to the customer.

The table given below represents the number of orders received on each day from October 2, 2017, which was Monday, to October 8, 2017, which was Sunday, and the number of orders delivered from October 2, 2017 to October 11, 2017.

Orders received

Category	Details	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
I	Same day delivery	176	254	325	298	457	897	1078
II	Next day delivery	258	436	543	476	865	1564	1843
III	2 day delivery	654	743	450	651	1265	2032	2430
IV	Ordinary delivery	1250	1876	1265	1564	2024	4320	5405

Orders Delivered

	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
Same day delivery order	150	280	300	300	475	900	1050	10	20	0
Next day delivery order	0	225	400	600	475	865	1500	1900	10	10
2 day delivery order	0	0	600	750	450	650	1300	2000	2450	25
Ordinary delivery order	0	0	0	1200	1900	1250	1600	2000	4200	5554

If there are two orders, one is delayed by x days and the other by more than x days, the company would always deliver the order which is delayed by more than x days before the order that is delayed by x days. The company also tried to ensure that order should be delivered as per the schedule.

Q.37

How many orders were delivered late in the category of 2 day delivery order?

Solution:

Correct Answer : 87

Bookmark

Answer key/Solution

Same day Delivery

	Same day delivery Order	Same day delivery Delivered	Orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	176	150	26		26							1300
Tuesday	254	280	0	26								0
Wednesday	325	300	25		2	18	3		2			2850
Thursday	298	300	0	2								0
Friday	457	475	0	18								0
Saturday	897	900	0	3								0
Sunday	1078	1050	28		8	20						2400
		10		10								0

		20		20								U
		79		79	36	38	3	0	2	0	0	6550

Next day Delivery

	Next day delivery Order	Next day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of Gift Voucher
					1	2	3	4	5	6	7	
Monday	258	0										
Tuesday	436	225	33			33						3300
Wednesday	543	400	36		24				12			4200
Thursday	476	600		57								0
Friday	865	475	1				1					150
Saturday	1564	865	0									0
Sunday	1843	1500	64		44	10	10					4700
		1900		57								0
		10		10								0
		10		10								0
	5985	5985	134	134	68	43	11	0	12	0	0	12350

Two day Delivery

	Two day delivery Order	Two day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	654	0										0
Tuesday	743	0										0
Wednesday	450	600	54		7			35		12		10950
Thursday	651	750		7								2700
Friday	1265	450										0
Saturday	2032	650	1				1					150
Sunday	2430	1300		35								0
		2000	32		7	25						2850
		2450		20								0
		25		25								0
	8225	8225	87	87	14	25	1	35	0	12	0	13950

Ordinary delivery

	Ordinary Delivery Order	Ordinary Delivery order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	1250	0										0
Tuesday	1876	0										0
Wednesday	1265	0										0
Thursday	1564	1200	50		24		26					0
Friday	2024	1900		24								0
Saturday	4320	1250	15		10			5				0
Sunday	5405	1600		36								0
		2000	24			24						0
		4200	120									0
		5554		149	120							0

Number of orders that were delivered late in the category of two day delivery orders is 87.

Feedback

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

A leading e-commerce company had a huge order rush during the Diwali week and was struggling to deliver the orders that it had received. For all the orders that were not delivered as per the customer's requested category, the customer was given a credit voucher of Rs. 50 for each day delay. For example, if a customer had requested same day delivery but the product is being delivered to him after 2 days, he will get a credit voucher worth Rs. 100. Ordinary delivery represents delivery in 3 days but in case of delay, credit voucher is not given to the customer.

The table given below represents the number of orders received on each day from October 2, 2017, which was Monday, to October 8, 2017, which was Sunday, and the number of orders delivered from October 2, 2017 to October 11, 2017.

Orders received

Category	Details	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
I	Same day delivery	176	254	325	298	457	897	1078
II	Next day delivery	258	436	543	476	865	1564	1843
III	2 day delivery	654	743	450	651	1265	2032	2430
IV	Ordinary delivery	1250	1876	1265	1564	2024	4320	5405

Orders Delivered

	Mon	Tue	Wed	Thur	Fri	Sat	Sun	Mon	Tue	Wed
Same day delivery order	150	280	300	300	475	900	1050	10	20	0
Next day delivery order	0	225	400	600	475	865	1500	1900	10	10
2 day delivery order	0	0	600	750	450	650	1300	2000	2450	25
Ordinary delivery order	0	0	0	1200	1900	1250	1600	2000	4200	5554

If there are two orders, one is delayed by x days and the other by more than x days, the company would always deliver the order which is delayed by more than x days before the order that is delayed by x days. The company also tried to ensure that order should be delivered as per the schedule.

Q.38

If the number of next day delivery orders got delayed by two or more days is x, what is the value of (x-10) ?

Solution:

Correct Answer : 56

Bookmark

Answer key/Solution

Same day Delivery

	Same day delivery Order	Same day delivery Delivered	Orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	176	150	26		26							1300
Tuesday	254	280	0	26								0
Wednesday	325	300	25		2	18	3		2			2850
Thursday	298	300	0	2								0
Friday	457	475	0	18								0
Saturday	897	900	0	3								0
Sunday	1078	1050	28		8	20						2400
		10		10								0

		20		20								U
		79		79	36	38	3	0	2	0	0	6550

Next day Delivery

	Next day delivery Order	Next day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of Gift Voucher
					1	2	3	4	5	6	7	
Monday	258	0										
Tuesday	436	225	33			33						3300
Wednesday	543	400	36		24				12			4200
Thursday	476	600		57								0
Friday	865	475	1				1					150
Saturday	1564	865	0									0
Sunday	1843	1500	64		44	10	10					4700
		1900		57								0
		10		10								0
		10		10								0
	5985	5985	134	134	68	43	11	0	12	0	0	12350

Two day Delivery

	Two day delivery Order	Two day order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	654	0										0
Tuesday	743	0										0
Wednesday	450	600	54		7			35		12		10950
Thursday	651	750		7								2700
Friday	1265	450										0
Saturday	2032	650	1				1					150
Sunday	2430	1300		35								0
		2000	32		7	25						2850
		2450		20								0
		25		25								0
	8225	8225	87	87	14	25	1	35	0	12	0	13950

Ordinary delivery

	Ordinary Delivery Order	Ordinary Delivery order Delivered	orders delayed	delayed orders delivered	Delay (Days)							Value of gift voucher
					1	2	3	4	5	6	7	
Monday	1250	0										0
Tuesday	1876	0										0
Wednesday	1265	0										0
Thursday	1564	1200	50		24		26					0
Friday	2024	1900		24								0
Saturday	4320	1250	15		10			5				0
Sunday	5405	1600		36								0
		2000	24			24						0
		4200	120									0
		5554		149	120							0

$$x = 33 + 10 + 1 + 12 + 10 = 66.$$

$$\therefore x - 10 = 56$$

FeedBack

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

A public poll was conducted to find the most popular sportsman in the year 2016. The public poll was conducted in five rounds namely Round I, Round II, Round III, Round IV and Round V in that particular order. The same group of 200 people voted in each of the five rounds. The nominees for the most popular sportsman award were P, Q, R, S, T and U. The following table provides information about the number of votes received by each of these six nominees in the given rounds. One person could vote for only one nominee in each of the given rounds.

	I	II	III	IV	V
P	34	39	43	29	34
Q	26	39	31	35	29
R	52	32	43	36	41
S	21	34	28	29	28
T	43	43	36	35	44
U	24	13	19	36	24

Additional Information:

1. People who voted for P in any round voted for either S or T in the following round.
2. Only those people who voted for Q or U in any round can vote for P in the following round.
3. People who voted for T in any round voted for either R or U in the following round.
4. People who voted for S in round I voted for S in each of the next three rounds.

Q.39

Magic number for a nominee is defined as the number of nominees who have got less number of votes than him/her in the same round for exactly two rounds. Find the aggregate sum of the magic numbers for all the nominees.

1 ☐ 0

2 ☐ 1

3 ☐ 2

4 ☐ 3

Solution:

Correct Answer : 3

Magic number for P, Q, R, S is 0 and magic number for T and U is 1. Therefore, required sum is 2.

FeedBack

🔖 Bookmark

🔍 Answer key/Solution

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

A public poll was conducted to find the most popular sportsman in the year 2016. The public poll was conducted in five rounds namely Round I, Round II, Round III, Round IV and Round V in that particular order. The same group of 200 people voted in each of the five rounds. The nominees for the most popular sportsman award were P, Q, R, S, T and U. The following table provides information about the number of votes received by each of these six nominees in the given rounds. One person could vote for only one nominee in each of the given rounds.

	I	II	III	IV	V
P	34	39	43	29	34
Q	26	39	31	35	29
R	52	32	43	36	41
S	21	34	28	29	28
T	43	43	36	35	44
U	24	13	19	36	24

Additional Information:

1. People who voted for P in any round voted for either S or T in the following round.
2. Only those people who voted for Q or U in any round can vote for P in the following round.
3. People who voted for T in any round voted for either R or U in the following round.
4. People who voted for S in round I voted for S in each of the next three rounds.

Q.40

Out of the number of people who voted for P in any round, the number of people who voted for S in the next round is at least

1 ☐ 10

2 ☐ 11

3 ☐ 9

4 ☐ 8

Solution:

Correct Answer : 2

Since out of the number of persons who voted for P in any round, the number of persons who voted for S should be least when the number of persons who voted for P and then voted for T in the next round were maximum.

🔖 Bookmark

🔍 Answer key/Solution

Now, out of all the 34 persons who voted for P in round I, all of them could have voted for T in round II. Out of the 39 persons who voted for P in round II, maximum 36 could have voted for T in round III and hence remaining 3 must have voted for S in round III. Out of the 43 persons who voted for P in round III, maximum 35 could have voted for T in round IV and only 8 could vote for S in round IV as out of the 29 persons who voted for S in round IV, 21 have to be those who voted for S in round I, using additional information IV. Out of the 29 persons who voted for P in round IV, each could have voted for T in round V. Therefore, out of the persons who voted for P in any round, the number of persons who voted for S is at least $3 + 8 = 11$.

FeedBack

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

A public poll was conducted to find the most popular sportsman in the year 2016. The public poll was conducted in five rounds namely Round I, Round II, Round III, Round IV and Round V in that particular order. The same group of 200 people voted in each of the five rounds. The nominees for the most popular sportsman award were P, Q, R, S, T and U. The following table provides information about the number of votes received by each of these six nominees in the given rounds. One person could vote for only one nominee in each of the given rounds.

	I	II	III	IV	V
P	34	39	43	29	34
Q	26	39	31	35	29
R	52	32	43	36	41
S	21	34	28	29	28
T	43	43	36	35	44
U	24	13	19	36	24

Additional Information:

1. People who voted for P in any round voted for either S or T in the following round.
2. Only those people who voted for Q or U in any round can vote for P in the following round.
3. People who voted for T in any round voted for either R or U in the following round.
4. People who voted for S in round I voted for S in each of the next three rounds.

Q.41

The number of people who voted for the same nominee across all the five rounds is at most

1 ☐ 36

2 ☐ 31

3 ☐ 35

Solution:

Correct Answer : 4

Number of persons who voted for Q in every round is at most = 9 (In round II number of persons voting for Q and U is 39 and 13 respectively and the number of persons voting for P in round III is 43.) This is possible when the persons who voted for U in any round always voted for P in the next round.

Number of persons who voted for R in every round is at most = 2 (Number of persons who voted for T in every round is at most the sum total of persons who voted for R and U in round II is 45).

Therefore, the number of persons who voted for the same nominee in every round is at most $9 + 2 + 21(S) = 32$. Note: 21(S) means votes for S.

FeedBack

🔖 Bookmark

🔍 Answer key/Solution

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

A public poll was conducted to find the most popular sportsman in the year 2016. The public poll was conducted in five rounds namely Round I, Round II, Round III, Round IV and Round V in that particular order. The same group of 200 people voted in each of the five rounds. The nominees for the most popular sportsman award were P, Q, R, S, T and U. The following table provides information about the number of votes received by each of these six nominees in the given rounds. One person could vote for only one nominee in each of the given rounds.

	I	II	III	IV	V
P	34	39	43	29	34
Q	26	39	31	35	29
R	52	32	43	36	41
S	21	34	28	29	28
T	43	43	36	35	44
U	24	13	19	36	24

Additional Information:

1. People who voted for P in any round voted for either S or T in the following round.
2. Only those people who voted for Q or U in any round can vote for P in the following round.
3. People who voted for T in any round voted for either R or U in the following round.
4. People who voted for S in round I voted for S in each of the next three rounds.

Q.42

Unlucky number for a nominee is defined as the number of nominees who have got more number of votes than him/her in the same round for exactly three rounds. How many nominees has zero as there unlucky number?

1 ● 1

2 ● 2

3 ● 0

Solution:

Correct Answer : 2

Only R and S has 0 as there unlucky number.

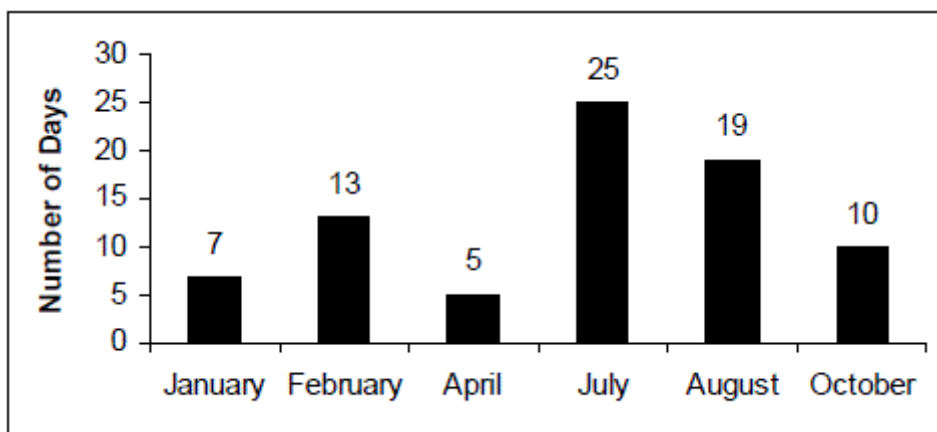
Feedback

Bookmark

Answer key/Solution

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

The following bar - graph provides information about the number of days on which it rained in India in each of the six months viz. January, February, April, July, August and October of the year 2016.



The following table provides information about the number of days on which it rained in five states in India in each of the six mentioned months of the year 2016. Punjab and Haryana are in Northern India; Kerala and Karnataka are in Southern India; and Maharashtra is in Western India. Assume that it rained only in the five given states in the year 2016.

	Punjab	Kerala	Karnataka	Maharashtra	Haryana
January	2	6	4	3	1
February	7	9	11	10	8
April	0	1	4	2	2
July	17	21	19	18	14
August	7	11	9	14	15
October	5	8	4	7	6

Additional Information

The maximum possible number of days on which it rained in 2016 in exactly one state in southern India in January, February, April, July, August and October are denoted by A, B, C, D, E and F respectively.

The minimum possible number of days on which it rained in 2016 in both Western India and in Southern India in January, February, April, July, August and October are denoted by P, Q, R, S, T and U respectively.

Q.43

What is the value of D?

1 8

2 9

3 ● 10

4 ● 11

Solution:

Correct Answer : 3

To find the maximum possible number of days on which it rained in exactly one state in Southern India we need to minimize the number of days on which it rained in both the states in Southern India.

The minimum possible number of days it rained in both Kerala and Karnataka in January as $(6 + 4) - 7 = 3$.

Therefore maximum value for A is $7 - 3 = 4$.

Similarly it can be calculated for other months.

No. of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
only in Kerala	3	2	1	6	10	6
In both Kerala and Karnataka	3	7	0	15	1	2
only in Karnataka	1	4	4	4	8	2

Therefore the value of A, B, C, D, E and F are 4, 6, 5, 10, 18 and 8 respectively.

The minimum possible number of days on which it rained in both Western India and in Southern India in January = $6 + 3 - 7 = 2$. Similarly the value of other variables can be calculated

No of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
In both Western and Southern India	2	8	1	14	6	5

Therefore the value of P, Q, R, S, T and U are 2, 8, 1, 14, 6 and 5 respectively.

The value of D is 10.

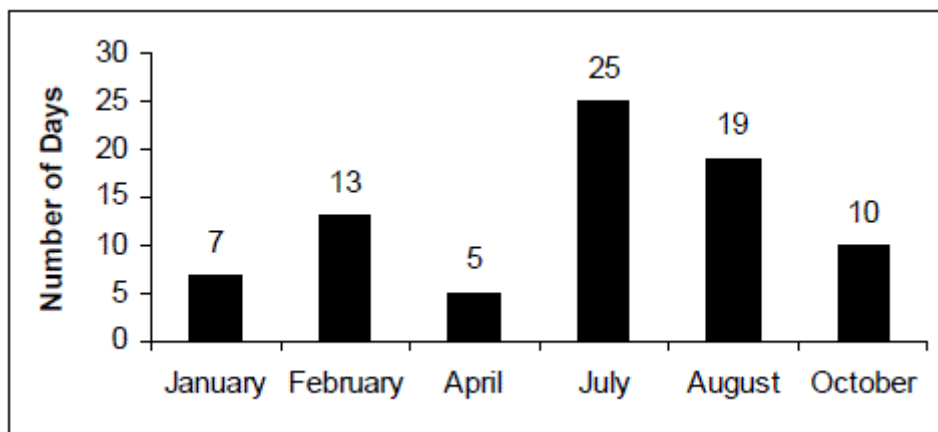
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The minimum possible number of days on which it rained in 2016 in both Western India and in Southern India in January, February, April, July, August and October are denoted by P, Q, R, S, T and U respectively.

Q.44

Out of A, B, C, D, E and F, which letter has the maximum value?

1 ☐ B

2 ☐ F

3 ☐ D

4 ☐ E

Solution:

Correct Answer : 4

To find the maximum possible number of days on which it rained in exactly one state in Southern India we need to minimize the number of days on which it rained in both the states in Southern India.

The minimum possible number of days it rained in both Kerala and Karnataka in January as $(6 + 4) - 7 = 3$.

Therefore maximum value for A is $7 - 3 = 4$.

Similarly it can be calculated for other months.

No. of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
only in Kerala	3	2	1	6	10	6
In both Kerala and Karnataka	3	7	0	15	1	2
only in Karnataka	1	4	4	4	8	2

Therefore the value of A, B, C, D, E and F are 4, 6, 5, 10, 18 and 8 respectively.

The minimum possible number of days on which it rained in both Western India and in Southern India in January = $6 + 3 - 7 = 2$. Similarly the value of other variables can be calculated

No of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
In both Western and Southern India	2	8	1	14	6	5

Therefore the value of P, Q, R, S, T and U are 2, 8, 1, 14, 6 and 5 respectively.

Out of the six mentioned letters, E has the maximum value.

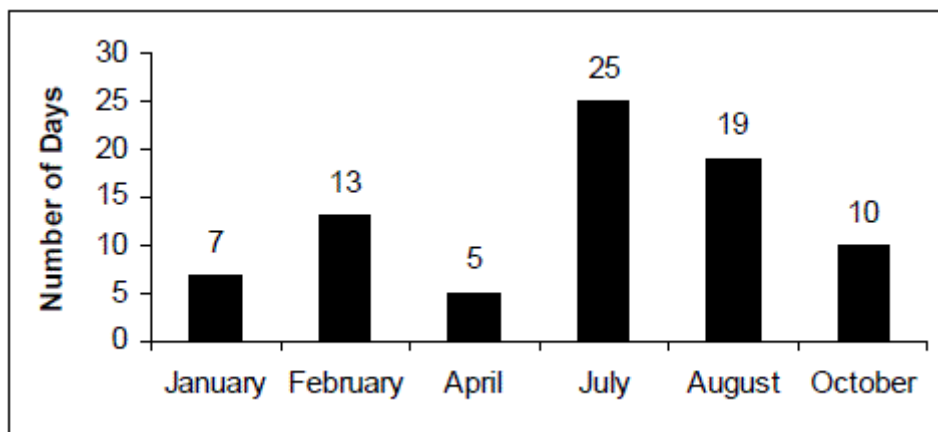
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The following bar - graph provides information about the number of days on which it rained in India in each of the six months viz. January, February, April, July, August and October of the year 2016.



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July	17	21	19	18	14
August	7	11	9	14	15
October	5	8	4	7	6

Additional Information

The maximum possible number of days on which it rained in 2016 in exactly one state in southern India in January, February, April, July, August and October are denoted by A, B, C, D, E and F respectively.

The minimum possible number of days on which it rained in 2016 in both Western India and in Southern India in January, February, April, July, August and October are denoted by P, Q, R, S, T and U respectively.

Q.45

What is the value of S?

1 ☐ 14

2 ☐ 15

3 ☐ 16

4 ☐ 17

Solution:

Correct Answer : 1

To find the maximum possible number of days on which it rained in exactly one state in Southern India we need to minimize the number of days on which it rained in both the states in Southern India.

The minimum possible number of days it rained in both Kerala and Karnataka in January as $(6 + 4) - 7 = 3$.

Therefore maximum value for A is $7 - 3 = 4$.

Similarly it can be calculated for other months.

No. of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
only in Kerala	3	2	1	6	10	6
In both Kerala and Karnataka	3	7	0	15	1	2
only in Karnataka	1	4	4	4	8	2

Therefore the value of A, B, C, D, E and F are 4, 6, 5, 10, 18 and 8 respectively.

The minimum possible number of days on which it rained in both Western India and in Southern India in January = $6 + 3 - 7 = 2$. Similarly the value of other variables can be calculated

No of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
In both Western and Southern India	2	8	1	14	6	5

Therefore the value of P, Q, R, S, T and U are 2, 8, 1, 14, 6 and 5 respectively.

The number of days in July on which it rained in both Western and Southern India that is the value of S is 14.

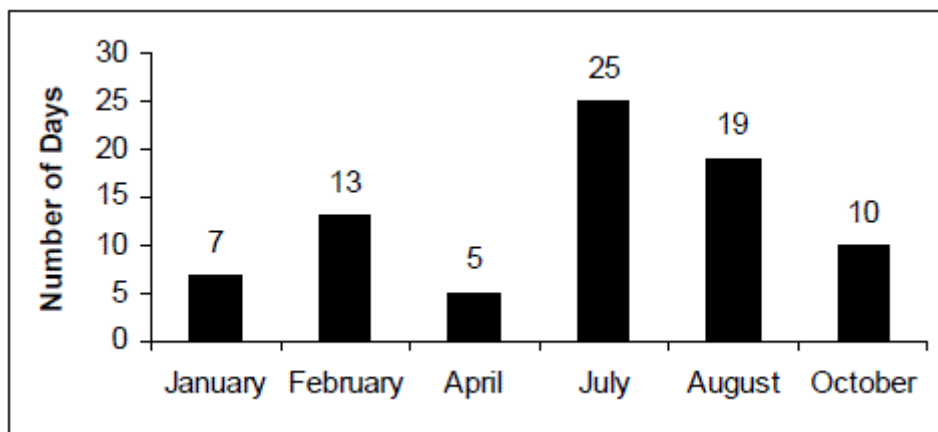
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 **Answer key/Solution**

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July	17	21	19	18	14
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October	5	8	4	7	6

Additional Information

The maximum possible number of days on which it rained in 2016 in exactly one state in southern India in January, February, April, July, August and October are denoted by A, B, C, D, E and F respectively.

The minimum possible number of days on which it rained in 2016 in both Western India and in Southern India in January, February, April, July, August and October are denoted by P, Q, R, S, T and U respectively.

Q.46

Out of P, Q, R, S, T and U, the value of how many of the letters is zero?

1 ☐ Four

2 ☐ Zero

3 ☐ Two

4 ☐ One

Solution:

Correct Answer : 2

To find the maximum possible number of days on which it rained in exactly one state in Southern India we need to minimize the number of days on which it rained in both the states in Southern India.

The minimum possible number of days it rained in both Kerala and Karnataka in January as $(6 + 4) - 7 = 3$.

Therefore maximum value for A is $7 - 3 = 4$.

Similarly it can be calculated for other months.

No. of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
only in Kerala	3	2	1	6	10	6
In both Kerala and Karnataka	3	7	0	15	1	2
only in Karnataka	1	4	4	4	8	2

Therefore the value of A, B, C, D, E and F are 4, 6, 5, 10, 18 and 8 respectively.

The minimum possible number of days on which it rained in both Western India and in Southern India in January = $6 + 3 - 7 = 2$. Similarly the value of other variables can be calculated

No of days it rained	Jan	Feb	Apr	Jul	Aug	Oct
In both Western and Southern India	2	8	1	14	6	5

Therefore the value of P, Q, R, S, T and U are 2, 8, 1, 14, 6 and 5 respectively.

From the table given above, we can conclude that there is no such month in which the number of days on which it rained in both Western and Southern India is 0.

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Answer key/Solution

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

Six persons—Arjun, Jesse, Chris, Martin, Peter and Ram – took a skill test which judged each of them on three different skills viz. Flexible skill, Organizational skill and Team skill. On the basis of the scores obtained by the persons in each of these three skills, a final score called the 'Skill Score' is calculated for each of the six persons. The following table provides information about the scores obtained by the six people in each of the three skills. It is also known that the 'Skill Score' of Ram is not less than that of Jesse.

Skill Score = $(p \times \text{flexible score} + q \times \text{organisational score} + r \times \text{team score})$, where $p + q + r = 1$ and p, q and r are non negative real numbers.

	Arjun	Jesse	Chris	Martin	Peter	Ram
Flexible	4	8	5	2	4	6
Organizational	6	2	3	4	4	5
Team	2	4	3	7	4	2

Q.47

The 'Skill Score' for how many of the persons must be integer?

1 ☐ 0

2 ☐ 1

3 ☐ 2

4 ☐ more than 2

Solution:

Correct Answer : 2

$p + q + r = 1$, where the contribution to the scores obtained in 'Flexible' and 'Organizational' skills in the 'Skill Score' be 'p' and 'q' respectively.

So, the relative contribution of the scores obtained in 'Team' skills in the 'Skill Score' will be $r = 1 - p - q$.

The following table lists down the 'Skill Score' of each of the six persons.

	Flexible	Organizational	Team	Skill Score
Arjun	4	6	2	$2p + 4q + 2$
Jesse	8	2	4	$4p - 2q + 4$
Chris	5	3	3	$2p + 3$
Martin	2	4	7	$7 - 5p - 3q$
Peter	4	4	4	4
Ram	6	5	2	$4p + 3q + 2$

Given that the 'Skill Score' of Ram is not less than that of Jesse.

$$\Rightarrow 4p + 3q + 2 \geq 4p - 2q + 4$$

$$\therefore q \geq \frac{2}{5}$$

The skill score of Peter must be integer.

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 Answer key/Solution

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

Six persons—Arjun, Jesse, Chris, Martin, Peter and Ram – took a skill test which judged each of them on three different skills viz. Flexible skill , Organizational skill and Team skill . On the basis of the scores obtained by the persons in each of these three skills, a final score called the 'Skill Score' is calculated for each of the six persons. The following table provides information about the scores obtained by the six people in each of the three skills. It is also known that the 'Skill Score' of Ram is not less than that of Jesse.

Skill Score = $(p \times \text{flexible score} + q \times \text{organisational score} + r \times \text{team score})$, where $p + q + r = 1$ and p, q and r are non negative real numbers.

	Arjun	Jesse	Chris	Martin	Peter	Ram
Flexible	4	8	5	2	4	6
Organizational	6	2	3	4	4	5
Team	2	4	3	7	4	2

Q.48

If the 'Skill Score' of Chris is denoted by C , then which of the following is necessarily true?

1 ☐ $3 \leq C \leq 4.2$

2 ☐ $2.8 \leq C \leq 4$

3 ☐ $3 \leq C \leq 4.3$

4 ☐ $2.8 \leq C \leq 4.5$

Solution:

Correct Answer : 1

$p + q + r = 1$, where the contribution to the scores obtained in 'Flexible' and 'Organizational' skills in the 'Skill Score' be 'p' and 'q' respectively.

So, the relative contribution of the scores obtained in 'Team' skills in the 'Skill Score' will be $r = 1 - p - q$.

The following table lists down the 'Skill Score' of each of the six persons.

	Flexible	Organizational	Team	Skill Score
Arjun	4	6	2	$2p + 4q + 2$
Jesse	8	2	4	$4p - 2q + 4$
Chris	5	3	3	$2p + 3$
Martin	2	4	7	$7 - 5p - 3q$
Peter	4	4	4	4
Ram	6	5	2	$4p + 3q + 2$

Given that the 'Skill Score' of Ram is not less than that of Jesse.

$$\Rightarrow 4p + 3q + 2 \geq 4p - 2q + 4$$

$$\therefore q \geq \frac{2}{5}$$

It is obvious that the minimum value of 'C' will be 3, when the value of 'p' is 0.

Also, the value of 'p' will be maximum when the value of 'q' will be minimum

So, the maximum possible value of 'p' will be $1 - 0.4 = 0.6$

So, the maximum possible value of 'C' becomes $1.2 + 3 = 4.2$

$$\therefore 3 \leq C \leq 4.2$$

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🔑 Answer key/Solution

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

Six persons—Arjun, Jesse, Chris, Martin, Peter and Ram – took a skill test which judged each of them on three different skills viz. Flexible skill, Organizational skill and Team skill. On the basis of the scores obtained by the persons in each of these three skills, a final score called the 'Skill Score' is calculated for each of the six persons. The following table provides information about the scores obtained by the six people in each of the three skills. It is also known that the 'Skill Score' of Ram is not less than that of Jesse.

Skill Score = $(p \times \text{flexible score} + q \times \text{organisational score} + r \times \text{team score})$, where $p + q + r = 1$ and p, q and r are non negative real numbers.

	Arjun	Jesse	Chris	Martin	Peter	Ram
Flexible	4	8	5	2	4	6
Organizational	6	2	3	4	4	5
Team	2	4	3	7	4	2

Q.49

If the the value of p and q are equal and the 'Skill Scores' of Martin and Ram are denoted by M and R respectively, then which of the following statements is/are true?

I. $3 \leq M \leq 3.8$

II. $4.8 \leq R \leq 5.5$

1 ☐ Only I

2 ☐ Only II

3 ☐ Both I and II

4 ☐ Neither I nor II

Solution:

Correct Answer : 3

$p + q + r = 1$, where the contribution to the scores obtained in 'Flexible' and 'Organizational' skills in the 'Skill Score' be ' p ' and ' q ' respectively.

So, the relative contribution of the scores obtained in 'Team' skills in the 'Skill Score' will be $r = 1 - p - q$.

The following table lists down the 'Skill Score' of each of the six persons.

	Flexible	Organizational	Team	Skill Score
Arjun	4	6	2	$2p + 4q + 2$
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Chris	5	3	3	$2p + 3$
Martin	2	4	7	$7 - 5p - 3q$
Peter	4	4	4	4
Ram	6	5	2	$4p + 3q + 2$

Given that the 'Skill Score' of Ram is not less than that of Jesse.

$$\Rightarrow 4p + 3q + 2 \geq 4p - 2q + 4$$

$$\therefore q \geq \frac{2}{5}$$

Let $p = q = k$, then k must be greater than or equals to 0.4 and less than or equals to 0.5. Using the values of k the skill score is tabulated as

	Skill Score	Maximum Skill Score	Minimum Skill Score
Martin	$7-8k$	3.8	3
Ram	$7k+2$	5.5	4.8

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 Answer key/Solution

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Skill Score = $(p \times \text{flexible score} + q \times \text{organisational score} + r \times \text{team score})$, where $p + q + r = 1$ and p, q and r are non negative real numbers.

	Arjun	Jesse	Chris	Martin	Peter	Ram
Flexible	4	8	5	2	4	6
Organizational	6	2	3	4	4	5
Team	2	4	3	7	4	2

Q.50

When the score obtained by Arjun in 'Team' skill was increased by 4, the 'Skill Score' of Arjun became one and a half times the 'Skill Score' of Chris. Find the value of $100r$.

1 ☐ 15

2 ☐ 40

3 ☐ 25

4 ☐ Cannot be determined

Solution:

Correct Answer : 4

$p + q + r = 1$, where the contribution to the scores obtained in 'Flexible' and 'Organizational' skills in the 'Skill Score' be 'p' and 'q' respectively.

So, the relative contribution of the scores obtained in 'Team' skills in the 'Skill Score' will be $r = 1 - p - q$.

The following table lists down the 'Skill Score' of each of the six persons.

	Flexible	Organizational	Team	Skill Score
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Martin	2	4	7	$7 - 5p - 3q$
Peter	4	4	4	4
Ram	6	5	2	$4p + 3q + 2$

Given that the 'Skill Score' of Ram is not less than that of Jesse.

$$\Rightarrow 4p + 3q + 2 \geq 4p - 2q + 4$$

$$\therefore q \geq \frac{2}{5}$$

When the score obtained by Arjun in Team skills was increased by 4, the 'Skill Score' of Arjun became one and a half times the 'Skill Score' of Chris.

$$\text{New 'Skill Score' of Arjun} = 6 - 2p = 1.5(2p + 3)$$

Therefore, 'p' = 0.3

But, since the value of 'q' is not fixed, therefore the value of ' $1 - p - q$ ' cannot be determined.

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Answer key/Solution

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

Four wholesalers – Ramlal, Shyamlal, Jaadulal, Chunnilal – purchased 4 different brands of sugar at Rs 24/kg, Rs 48/kg, Rs 84/kg and Rs 108/kg, not necessarily in the same order. Each of them bought a different quantity (in kg) of sugar from among 36 kg, 60 kg, 96 kg and 120 kg in any order. It is also known that:

- (i) Had Shyamlal bought at Ramlal's price, the expenditure would have been less by Rs 5760.
- (ii) Had Jaadulal bought the sugar at Chunnilal's price, he would have spent Rs 3600 more.
- (iii) The total expenses of each of the 4 persons were different.

Q.51

If the minimum expense incurred by a wholeseller was Rs 1440, then which wholeseller incurred the maximum expense?

1 ☐ Ramlal

2 ☐ Shyamlal

3 ☐ Jaadulal

4 ☐ Chunnilal

Solution:

Correct Answer : 2

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🔍 **Answer key/Solution**

	Price	× Consumption	= Expenditure
Ramlal	p_1	p_2	$p_1 p_2$
Shyamlal	q_1	q_2	$q_1 q_2$

where, $p_1 = \text{Rs } 24 \text{ or } \text{Rs } 48 \text{ or } \text{Rs } 84 \text{ or } \text{Rs } 108$

$q_1 = \text{Rs } 24 \text{ or } \text{Rs } 48 \text{ or } \text{Rs } 84 \text{ or } \text{Rs } 108$

and $p_2 = 36 \text{ kg or } 60 \text{ kg or } 96 \text{ kg or } 120 \text{ kg}$

$q_2 = 36 \text{ kg or } 60 \text{ kg or } 96 \text{ kg or } 120 \text{ kg}$

Given, $q_1 q_2 - p_1 q_2 = \text{Rs } 5760$

or $q_2 (q_1 - p_1) = \text{Rs } 5760$

- If $q_2 = 36 \text{ kg}$, $q_1 - p_1 = \frac{\text{Rs. } 5760}{36} = \text{Rs } 160$, which is not possible by any of the combinations.
- If $q_2 = 60 \text{ kg}$, $q_1 - p_1 = \frac{\text{Rs. } 5760}{60} = \text{Rs } 96$, which is again not possible.
- If $q_2 = 96 \text{ kg}$, $q_1 - p_1 = \frac{\text{Rs. } 5760}{96} = \text{Rs } 60$, which is possible for $\text{Rs } 84 - \text{Rs } 24$ as well as $\text{Rs } 108 - \text{Rs } 48$.
- If $q_2 = 120 \text{ kg}$, $q_1 - p_1 = \frac{\text{Rs. } 5760}{120} = \text{Rs } 48$, which is again not possible.
Hence only value of $q_2 = 96 \text{ kg}$. Therefore $q_1 = \text{Rs } 84$ and $p_1 = \text{Rs } 24$ or $q_1 = \text{Rs } 108$ and $p_1 = \text{Rs } 48$

From statement (ii):

	Price	Consumption	Expenditure
Jaadulal	x_1	x_2	$x_1 x_2$
Chunnilal	y_1	y_2	$y_1 y_2$

Again $x_1 \& y_1 = \text{Rs } 24 \text{ or } \text{Rs } 48 \text{ or } \text{Rs } 84 \text{ or } \text{Rs } 108$

$x_2 \& y_2 = 36 \text{ kg or } 60 \text{ kg or } 120 \text{ kg}$. ($\because q_2 = 96 \text{ kg}$)

Now, $x_2 y_1 - x_1 x_2 = \text{Rs } 3600$

$x_2 (y_1 - x_1) = \text{Rs } 3600$

- If $x_2 = 36 \text{ kg}$, $y_1 - x_1 = \text{Rs } 1000$, which is not possible.
- If $x_2 = 120 \text{ kg}$, $y_1 - x_1 = \text{Rs } 30$, again not possible.
- If $x_2 = 60 \text{ kg}$, $y_1 - x_1 = 60$, which is possible.

So, we can make the following conclusions.

There will be 2 cases.

Case I:

Name	Price (in Rs/kg)	Quantity Purchased (in kg)	Expenditure (in Rs)
Ramlal	24	36	864
Shyamlal	84	96	8064
Jaadulal	48	60	2880
Chunnilal	108	120	12960

- In this case (Case I), quantity purchased by Ramlal cannot be 120 kg, as in that case expenditure of Ramlal and Jaadulal would be same.

Case II:

Name	Price (in Rs/kg)	Quantity Purchased (kg)	Expenditure (in Rs)
Ramlal	48	36/120	1728/5760
Shyamlal	108	96	10368
Jaadulal	24	60	1440
Chunnilal	84	120/36	10080/3024

This is about case II and in case II, Shyamlal's expenditure is maximum.

FeedBack

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

Four wholesalers – Ramlal, Shyamlal, Jaadulal, Chunnilal – purchased 4 different brands of sugar at Rs 24/kg, Rs 48/kg, Rs 84/kg and Rs 108/kg, not necessarily in the same order. Each of them bought a different quantity (in kg) of sugar from among 36 kg, 60 kg, 96 kg and 120 kg in any order. It is also known that:

- (i) Had Shyamlal bought at Ramlal's price, the expenditure would have been less by Rs 5760.
- (ii) Had Jaadulal bought the sugar at Chunnilal's price, he would have spent Rs 3600 more.
- (iii) The total expenses of each of the 4 persons were different.

Q.52

If Chunnilal bought 36 kg sugar, then find the difference (in Rs) of expenditure between Ramlal and Shyamlal.

1 ☐ Rs 4812

2 ☐ Rs 4808

3 ☐ Rs 4608

4 ☐ Rs 5612

Solution:

Correct Answer : 3

	Price	×	Consumption	=	Expenditure
Ramlal	p_1		q_2		$p_1 q_2$
Shyamlal	q_1		p_2		$q_1 q_2$

where, p_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

q_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

and p_2 = 36 kg or 60 kg or 96 kg or 120 kg

q_2 = 36 kg or 60 kg or 96 kg or 120 kg

Given, $q_1 q_2 - p_1 q_2$ = Rs 5760

or $q_2(q_1 - p_1)$ = Rs 5760

- If $q_2 = 36$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{36} = \text{Rs } 160$, which is not possible by any of the combinations.
- If $q_2 = 60$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{60} = \text{Rs } 96$, which is again not possible.
- If $q_2 = 96$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{96} = \text{Rs } 60$, which is possible for Rs 84 – Rs 24 as well as Rs 108 – Rs 48.
- If $q_2 = 120$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{120} = \text{Rs } 48$, which is again not possible.
Hence only value of $q_2 = 96$ kg. Therefore $q_1 = \text{Rs } 84$ and $p_1 = \text{Rs } 24$ or $q_1 = \text{Rs } 108$ and $p_1 = \text{Rs } 48$

From statement (ii):

🔖 Bookmark

🔍 Answer key/Solution

	Price	Consumption	Expenditure
Jaadulal	x_1	x_2	x_1x_2
Chunnilal	y_1	y_2	y_1y_2

Again x_1 & $y_1 = \text{Rs } 24 \text{ or Rs } 48 \text{ or Rs } 84 \text{ or Rs } 108$
 x_2 & $y_2 = 36 \text{ kg or } 60 \text{ kg or } 120 \text{ kg. } (\because q_2 = 96 \text{ kg})$
 Now, $x_2y_1 - x_1x_2 = \text{Rs } 3600$
 $x_2(y_1 - x_1) = \text{Rs } 3600$

- If $x_2 = 36 \text{ kg}$, $y_1 - x_1 = \text{Rs } 1000$, which is not possible.
- If $x_2 = 120 \text{ kg}$, $y_1 - x_1 = \text{Rs } 30$, again not possible.
- If $x_2 = 60 \text{ kg}$, $y_1 - x_1 = 60$, which is possible.

So, we can make the following conclusions.
 There will be 2 cases.

Case I:

Name	Price (in Rs/kg)	Quantity Purchased (in kg)	Expenditure (in Rs)
Ramlal	24	36	864
Shyamlal	84	96	8064
Jaadulal	48	60	2880
Chunnilal	108	120	12960

- In this case (Case I), quantity purchased by Ramlal cannot be 120 kg, as in that case expenditure of Ramlal and Jaadulal would be same.

Case II:

Name	Price (in Rs/kg)	Quantity Purchased (kg)	Expenditure (in Rs)
Ramlal	48	36/120	1728/5760
Shyamlal	108	96	10368
Jaadulal	24	60	1440
Chunnilal	84	120/36	10080/3024

This is about case II. So, if Chunnilal bought 36 kg sugar, Ramlal would have bought 120 kg sugar.
 Hence, expenditure of Ramlal = Rs 5760
 Expenditure of Shyamlal = Rs 10368
 Hence, required difference = $10368 - 5760 = \text{Rs } 4608$

FeedBack

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

Four wholesalers – Ramlal, Shyamlal, Jaadulal, Chunnilal – purchased 4 different brands of sugar at Rs 24/kg, Rs 48/kg, Rs 84/kg and Rs 108/kg, not necessarily in the same order. Each of them bought a different quantity (in kg) of sugar from among 36 kg, 60 kg, 96 kg and 120 kg in any order. It is also known that:

- Had Shyamlal bought at Ramlal's price, the expenditure would have been less by Rs 5760.
- Had Jaadulal bought the sugar at Chunnilal's price, he would have spent Rs 3600 more.
- The total expenses of each of the 4 persons were different.

Q.53

If Ramlal bought sugar at Rs 24/kg, then find the difference between expenditures of Jaadulal and Chunnilal.

1 ☐ Rs 9060

2 ☐ Rs 12060

3 ☐ Rs 11080

4 ☐ Rs 10080

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

	Price	×	Consumption	=	Expenditure
Ramlal	p_1		p_2		$p_1 p_2$
Shyamlal	q_1		q_2		$q_1 q_2$

where, p_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

q_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

and p_2 = 36 kg or 60 kg or 96 kg or 120 kg

q_2 = 36 kg or 60 kg or 96 kg or 120 kg

Given, $q_1 q_2 - p_1 q_2$ = Rs 5760

or $q_2(q_1 - p_1)$ = Rs 5760

- If $q_2 = 36$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{36} = \text{Rs } 160$, which is not possible by any of the combinations.
- If $q_2 = 60$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{60} = \text{Rs } 96$, which is again not possible.
- If $q_2 = 96$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{96} = \text{Rs } 60$, which is possible for Rs 84 – Rs 24 as well as Rs 108 – Rs 48.
- If $q_2 = 120$ kg, $q_1 - p_1 = \frac{\text{Rs. } 5760}{120} = \text{Rs } 48$, which is again not possible.
Hence only value of $q_2 = 96$ kg. Therefore $q_1 = \text{Rs } 84$ and $p_1 = \text{Rs } 24$ or $q_1 = \text{Rs } 108$ and $p_1 = \text{Rs } 48$

From statement (ii):

	Price	Consumption	Expenditure
Jaadulal	x_1	x_2	$x_1 x_2$
Chunnilal	y_1	y_2	$y_1 y_2$

Again x_1 & y_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

x_2 & y_2 = 36 kg or 60 kg or 120 kg. ($\because q_2 = 96$ kg)

Now, $x_2 y_1 - x_1 x_2$ = Rs 3600

$x_2(y_1 - x_1)$ = Rs 3600

- If $x_2 = 36$ kg, $y_1 - x_1 = \text{Rs } 1000$, which is not possible.
- If $x_2 = 120$ kg, $y_1 - x_1 = \text{Rs } 30$, again not possible.
- If $x_2 = 60$ kg, $y_1 - x_1 = 60$, which is possible.

So, we can make the following conclusions.

There will be 2 cases.

Case I:

Name	Price (In Rs/kg)	Quantity Purchased (In kg)	Expenditure (In Rs)
Ramlal	24	36	864
Shyamlal	84	96	8064
Jaadulal	48	60	2880
Chunnilal	108	120	12960

- In this case (Case I), quantity purchased by Ramlal

cannot be 120 kg, as in that case expenditure of Ramlal and Jaadulal would be same.

Case II:

Name	Price (in Rs/kg)	Quantity Purchased (kg)	Expenditure (in Rs)
Ramlal	48	36/120	1728/5760
Shyamlal	108	96	10368
Jaadulal	24	60	1440
Chunnilal	84	120/36	10080/3024

This is about case I.

Expenditure of Jaadulal = Rs 2880

Expenditure of Chunnilal = 12960

∴ Required difference = 12960 – 2880 = Rs 10080

FeedBack

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

Four wholesalers – Ramlal, Shyamlal, Jaadulal, Chunnilal – purchased 4 different brands of sugar at Rs 24/kg, Rs 48/kg, Rs 84/kg and Rs 108/kg, not necessarily in the same order. Each of them bought a different quantity (in kg) of sugar from among 36 kg, 60 kg, 96 kg and 120 kg in any order. It is also known that:

- (i) Had Shyamlal bought at Ramlal's price, the expenditure would have been less by Rs 5760.
- (ii) Had Jaadulal bought the sugar at Chunnilal's price, he would have spent Rs 3600 more.
- (iii) The total expenses of each of the 4 persons were different.

Q.54

Which of the following statements are definitely false?

- I. Ramlal bought sugar which is Rs 60/kg less as compared to that bought by Shyamlal.
- II. Shyamlal bought 36 kg less sugar than what Jaadulal bought.
- III. Chunnilal spent Rs 1584 more than what Jaadulal spent.
- IV. Expenditure of Ramlal could be either Rs 10368 or Rs 10080.

1 ☐ All are definitely false

2 ☐ II and IV

3 ☐ I, II and IV

4 ☐ III and IV

Solution:

Correct Answer : 2

	Price	×	Consumption	=	Expenditure
Ramlal	p_1		p_2		$p_1 p_2$
Shyamlal	q_1		q_2		$q_1 q_2$

where, p_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

q_1 = Rs 24 or Rs 48 or Rs 84 or Rs 108

and p_2 = 36 kg or 60 kg or 96 kg or 120 kg

q_2 = 36 kg or 60 kg or 96 kg or 120 kg

Given, $q_1 q_2 - p_1 q_2$ = Rs 5760

or $q_2 (q_1 - p_1)$ = Rs 5760

Rs 5760

Bookmark

Answer key/Solution

- If $q_2 = 36$ kg, $q_1 - p_1 = \frac{Rs. 5760}{36} = Rs 160$, which is not possible by any of the combinations.
- If $q_2 = 60$ kg, $q_1 - p_1 = \frac{Rs. 5760}{60} = Rs 96$, which is again not possible.
- If $q_2 = 96$ kg, $q_1 - p_1 = \frac{Rs. 5760}{96} = Rs 60$, which is possible for Rs 84 – Rs 24 as well as Rs 108 – Rs 48.
- If $q_2 = 120$ kg, $q_1 - p_1 = \frac{Rs. 5760}{120} = Rs 48$, which is again not possible.
Hence only value of $q_2 = 96$ kg. Therefore $q_1 = Rs 84$ and $p_1 = Rs 24$ or $q_1 = Rs 108$ and $p_1 = Rs 48$

From statement (ii):

	Price	Consumption	Expenditure
Jaadulal	x_1	x_2	$x_1 x_2$
Chunnilal	y_1	y_2	$y_1 y_2$

Again x_1 & $y_1 = Rs 24$ or $Rs 48$ or $Rs 84$ or $Rs 108$
 x_2 & $y_2 = 36$ kg or 60 kg or 120 kg. ($\because q_2 = 96$ kg)

Now, $x_2 y_1 - x_1 x_2 = Rs 3600$
 $x_2 (y_1 - x_1) = Rs 3600$

- If $x_2 = 36$ kg, $y_1 - x_1 = Rs 1000$, which is not possible.
- If $x_2 = 120$ kg, $y_1 - x_1 = Rs 30$, again not possible.
- If $x_2 = 60$ kg, $y_1 - x_1 = 60$, which is possible.

So, we can make the following conclusions.
 There will be 2 cases.

Case I:

Name	Price (in Rs/kg)	Quantity Purchased (in kg)	Expenditure (in Rs)
Ramlal	24	36	864
Shyamilal	84	96	8064
Jaadulal	48	60	2880
Chunnilal	108	120	12960

- In this case (Case I), quantity purchased by Ramlal cannot be 120 kg, as in that case expenditure of Ramlal and Jaadulal would be same.

Case II:

Name	Price (in Rs/kg)	Quantity Purchased (kg)	Expenditure (in Rs)
Ramlal	48	36/120	1728/5760
Shyamilal	108	96	10368
Jaadulal	24	60	1440
Chunnilal	84	120/36	10080/3024

- This is true in case I.
 - This is false in both the cases.
 - This could be true in case II.
 - This is false in both the cases.
- Hence II and IV are definitely false. Hence, option (2).

FeedBack

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

Five brothers—Yudhistir, Bheem, Arjun, Nakul and Sahdev – played a game of dice with 18 of their kingdoms and some gold jewelry at stake. The value of each Kingdom was the same. At the end of the game, it was found that each brother won at least 2 kingdoms and each of them won an even number of kingdoms. The value of the jewelry won by each brother was positive integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem was equal to the value of 2 kingdoms. The value of the jewelry won by Bheem was the highest. Sahdev won maximum number of kingdoms and the number of kingdoms won by Yudhistir was equal to the sum of the number of kingdoms won by Bheem and Arjun. The value of jewelry won by Bheem was double that of won by Nakul, but the value of the total assets (values of kingdoms and jewelry put together) won by Nakul was Rs. 40 billion more than that won by Bheem. The value of the jewelry won by Arjun was more than that won by Yudhistir but less than that won by Sahdev.

Q.55

What was the value of the total assets that was at stake in the game of dice?

1 ☐ Rs.960 billion

2 ☐ Rs. 900 billion

3 ☐ Rs. 800 billion

4 ☐ Rs. 720 billion

Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

Number of kingdoms:

Total number of kingdoms at stake is equal to 18.

Each brother has won at least 2 kingdoms and each one of them has an even number of kingdoms.

Sahdev has won maximum number of kingdoms. The number of kingdoms won by Yudhistir is equal to the sum of the number of kingdoms won by Bheem and Arjun together.

This means there can be two possibilities:

Case 1: Bheem 2, Arjun 2, Yudhistir 4, Nakul 2, Sahdev 8

Case 2: Bheem 2, Arjun 2, Yudhistir 4, Nakul 4, Sahdev 6

Value of gold jewelry:

The value of the jewelry won by each brother is an integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem is just enough to trade 2 kingdoms against it. The value of the jewelry won by all the other brothers is less than that won by Bheem.

The value of the jewelry won by Arjun is more than that won by Yudhistir but less than that won by Sahdev.

The value of jewelry won by Bheem is double that won by Nakul. Value of total assets (kingdom + jewelry):

Total assets won by Bheem = 2 kingdoms + jewelry worth 2 kingdoms = value of 4 kingdoms

The value of jewelry won by Nakul = half the value of jewelry won by Bheem = value of 1 kingdom

So, total assets with Nakul can be either: 2 kingdoms + jewelry worth 1 kingdom = value of 3 kingdoms (case 1)

or 4 kingdoms + jewelry worth 1 kingdom = value of 5 kingdoms (case 2).

The value of the total assets won by Nakul is Rs. 40 billion more than that won by Bheem. But, in case 1, value of the total assets won by Nakul (3 kingdoms) which is less than that won by Bheem (4 kingdoms).

Hence, this cannot be the correct possibility.

The correct possibility is Case 2:

Total assets won by Nakul = value of 5 kingdoms.

Total assets won by Bheem = value of 4 kingdoms.

Difference = value of 1 kingdom = Rs.40 billion.

Now, in terms of the value of jewelry won: Yudhistir < Arjun < Sahdev < Bheem (i.e. Rs. 80 billion)

Hence, Value of jewelry won by Sahdev = Rs. 60 billion, Arjun = Rs. 40 billion and Yudhistir = Rs. 20 billion

Hence total assets won by each of the brothers:

Bheem: Kingdoms = 2 (Rs.80 billion), Jewelry = worth 2 kingdoms (Rs.80 billion)

Nakul: Kingdoms = 4 (Rs.160 billion), Jewelry = worth 1 kingdom (Rs.40 billion)

Yudhistir: Kingdoms = 4 (Rs.160 billion), Jewelry = (Rs.20 billion) Arjun: Kingdoms = 2 (Rs.80 billion), Jewelry = (Rs.40 billion)

Sahdev: Kingdoms = 6 (Rs.240 billion), Jewelry = (Rs.60 billion)

As we can see, the value of the total assets at stake

= $80 + 80 + 160 + 40 + 160 + 20 + 80 + 40 + 240 + 60$

= Rs. 960 billion

FeedBack

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

Five brothers—Yudhistir, Bheem, Arjun, Nakul and Sahdev – played a game of dice with 18 of their kingdoms and some gold jewelry at stake. The value of each Kingdom was the same. At the end of the game, it was found that each brother won at least 2 kingdoms and each of them won an even number of kingdoms. The value of the jewelry won by each brother was positive integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem was equal to the value of 2 kingdoms. The value of the jewelry won by Bheem was the highest. Sahdev won maximum number of kingdoms and the number of kingdoms won by Yudhistir was equal to the sum of the number of kingdoms won by Bheem and Arjun. The value of jewelry won by Bheem was double that of won by Nakul, but the value of the total assets (values of kingdoms and jewelry put together) won by Nakul was Rs. 40 billion more than that won by Bheem. The value of the jewelry won by Arjun was more than that won by Yudhistir but less than that won by Sahdev.

Q.56

Who won the highest value worth of total assets at the end of the game?

1 ☐ Yudhistir

2 ☐ Bheem

3 ☐ Nakul

4 ☐ Sahdev

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

Number of kingdoms:

Total number of kingdoms at stake is equal to 18.

Each brother has won at least 2 kingdoms and each one of them has an even number of kingdoms.

Sahdev has won maximum number of kingdoms. The number of kingdoms won by Yudhistir is equal to the sum of the number of kingdoms won by Bheem and Arjun together.

This means there can be two possibilities:

Case 1: Bheem 2, Arjun 2, Yudhistir 4, Nakul 2, Sahdev 8

Case 2: Bheem 2, Arjun 2, Yudhistir 4, Nakul 4, Sahdev 6

Value of gold jewelry:

The value of the jewelry won by each brother is an integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem is just enough to trade 2 kingdoms against it. The value of the jewelry won by all the other brothers is less than that won by Bheem.

The value of the jewelry won by Arjun is more than that won by Yudhistir but less than that won by Sahdev.

The value of jewelry won by Bheem is double that won by Nakul. Value of total assets (kingdom + jewelry):

Total assets won by Bheem = 2 kingdoms + jewelry worth 2 kingdoms = value of 4 kingdoms

The value of jewelry won by Nakul = half the value of jewelry won by Bheem = value of 1 kingdom

So, total assets with Nakul can be either: 2 kingdoms + jewelry worth 1 kingdom = value of 3 kingdoms (case 1)

or 4 kingdoms + jewelry worth 1 kingdom = value of 5 kingdoms (case 2).

The value of the total assets won by Nakul is Rs. 40 billion more than that won by Bheem. But, in case 1, value of the total assets won by Nakul (3 kingdoms) which is less than that won by Bheem (4 kingdoms).

Hence, this cannot be the correct possibility.

The correct possibility is Case 2:

Total assets won by Nakul = value of 5 kingdoms.

Total assets won by Bheem = value of 4 kingdoms.

Difference = value of 1 kingdom = Rs.40 billion.

Now, in terms of the value of jewelry won: Yudhistir < Arjun < Sahdev < Bheem (i.e. Rs. 80 billion)

Hence, Value of jewelry won by Sahdev = Rs. 60 billion, Arjun = Rs. 40 billion and Yudhistir = Rs. 20 billion

Hence total assets won by each of the brothers:

Bheem: Kingdoms = 2 (Rs.80 billion), Jewelry = worth 2 kingdoms (Rs.80 billion)

Nakul: Kingdoms = 4 (Rs.160 billion), Jewelry = worth 1 kingdom (Rs.40 billion)

Yudhistir: Kingdoms = 4 (Rs.160 billion), Jewelry = (Rs.20 billion) Arjun: Kingdoms = 2 (Rs.80 billion), Jewelry = (Rs.40 billion)

Sahdev: Kingdoms = 6 (Rs.240 billion), Jewelry = (Rs.60 billion)

As we can see, it is Sahdev who won the highest value of total assets i.e. Rs.300 billion

FeedBack

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

Five brothers—Yudhistir, Bheem, Arjun, Nakul and Sahdev – played a game of dice with 18 of their kingdoms and some gold jewelry at stake. The value of each Kingdom was the same. At the end of the game, it was found that each brother won at least 2 kingdoms and each of them won an even number of kingdoms. The value of the jewelry won by each brother was positive integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem was equal to the value of 2 kingdoms. The value of the jewelry won by Bheem was the highest. Sahdev won maximum number of kingdoms and the number of kingdoms won by Yudhistir was equal to the sum of the number of kingdoms won by Bheem and Arjun. The value of jewelry won by Bheem was double that of won by Nakul, but the value of the total assets (values of kingdoms and jewelry put together) won by Nakul was Rs. 40 billion more than that won by Bheem. The value of the jewelry won by Arjun was more than that won by Yudhistir but less than that won by Sahdev.

Q.57

Which of the following statements is/are true?

- I. The value of jewelry won by Yudhistir was equal to the value of 1 kingdom.
- II. The value of jewelry won by Yudhistir and Sahdev together was equal to the value of jewelry won by Bheem.
- III. The difference in the number of kingdoms won by Sahdev and Bheem is equal to 4
- IV. The total number of kingdoms won by Nakul and Yudhistir together was equal to the number of kingdoms won by Sahdev.

1 ☐ I and II only

2 ☐ III and IV only

3 ☐ II and III only

4 ☐ I and IV only

Solution:

Correct Answer : 3

 Bookmark

 Answer key/Solution

Number of kingdoms:

Total number of kingdoms at stake is equal to 18.

Each brother has won at least 2 kingdoms and each one of them has an even number of kingdoms.

Sahdev has won maximum number of kingdoms. The number of kingdoms won by Yudhistir is equal to the sum of the number of kingdoms won by Bheem and Arjun together.

This means there can be two possibilities:

Case 1: Bheem 2, Arjun 2, Yudhistir 4, Nakul 2, Sahdev 8

Case 2: Bheem 2, Arjun 2, Yudhistir 4, Nakul 4, Sahdev 6

Value of gold jewelry:

The value of the jewelry won by each brother is an integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem is just enough to trade 2 kingdoms against it. The value of the jewelry won by all the other brothers is less than that won by Bheem.

The value of the jewelry won by Arjun is more than that won by Yudhistir but less than that won by Sahdev.

The value of jewelry won by Bheem is double that won by Nakul. Value of total assets (kingdom + jewelry):

Total assets won by Bheem = 2 kingdoms + jewelry worth 2 kingdoms = value of 4 kingdoms

The value of jewelry won by Nakul = half the value of jewelry won by Bheem = value of 1 kingdom

So, total assets with Nakul can be either: 2 kingdoms + jewelry worth 1 kingdom = value of 3 kingdoms (case 1)

or 4 kingdoms + jewelry worth 1 kingdom = value of 5 kingdoms (case 2).

The value of the total assets won by Nakul is Rs. 40 billion more than that won by Bheem. But, in case 1, value of the total assets won by Nakul (3 kingdoms) which is less than that won by Bheem (4 kingdoms).

Hence, this cannot be the correct possibility.

The correct possibility is Case 2:

Total assets won by Nakul = value of 5 kingdoms.

Total assets won by Bheem = value of 4 kingdoms.

Difference = value of 1 kingdom = Rs.40 billion.

Now, in terms of the value of jewelry won: Yudhistir < Arjun < Sahdev < Bheem (i.e. Rs. 80 billion)

Hence, Value of jewelry won by Sahdev = Rs. 60 billion, Arjun = Rs. 40 billion and Yudhistir = Rs. 20 billion

Hence total assets won by each of the brothers:

Bheem: Kingdoms = 2 (Rs.80 billion), Jewelry = worth 2 kingdoms (Rs.80 billion)

Nakul: Kingdoms = 4 (Rs.160 billion), Jewelry = worth 1 kingdom (Rs.40 billion)

Yudhistir: Kingdoms = 4 (Rs.160 billion), Jewelry = (Rs.20 billion) Arjun: Kingdoms = 2 (Rs.80 billion), Jewelry = (Rs.40 billion)

Sahdev: Kingdoms = 6 (Rs.240 billion), Jewelry = (Rs.60 billion)

- I. The value of the jewelry won by Yudhistir (Rs. 20 billion) is half of 1 kingdom (Rs. 40 billion) against it. Thus this statement is false.
- II. The value of the jewelry won by Yudhistir (Rs. 20 billion) and Sahdev (Rs. 60 billion) together is equal to the value of the jewelry won by Bheem (Rs. 80 billion) TRUE.
- III. The difference in the number of kingdoms won by Sahdev (6) and Bheem (2) is equal to 4 TRUE
- IV. The total number of kingdoms won by Nakul (4) and Yudhistir (4) together is not equal to the number of kingdoms won by Sahdev (6). Thus this statement is false.

FeedBack

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

Five brothers—Yudhistir, Bheem, Arjun, Nakul and Sahdev – played a game of dice with 18 of their kingdoms and some gold jewelry at stake. The value of each Kingdom was the same. At the end of the game, it was found that each brother won at least 2 kingdoms and each of them won an even number of kingdoms. The value of the jewelry won by each brother was positive integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem was equal to the value of 2 kingdoms. The value of the jewelry won by Bheem was the highest. Sahdev won maximum number of kingdoms and the number of kingdoms won by Yudhistir was equal to the sum of the number of kingdoms won by Bheem and Arjun. The value of jewelry won by Bheem was double that of won by Nakul, but the value of the total assets (values of kingdoms and jewelry put together) won by Nakul was Rs. 40 billion more than that won by Bheem. The value of the jewelry won by Arjun was more than that won by Yudhistir but less than that won by Sahdev.

Q.58

The brother whose assets value is the second highest decides to distribute the assets among remaining four brothers in the following way: He will divide his kingdoms equally in all the brothers and divide the jewelry in the ratio of existing jewelry with all four brothers. Find the ratio of the total assets held by Bheem to that by Sahadev after redistribution.

1 ☐ 22 : 39

2 ☐ 27 : 44

3 ☐ 3 : 5

4 ☐ 17 : 44

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

Number of kingdoms:

Total number of kingdoms at stake is equal to 18.

Each brother has won at least 2 kingdoms and each one of them has an even number of kingdoms.

Sahdev has won maximum number of kingdoms. The number of kingdoms won by Yudhistir is equal to the sum of the number of kingdoms won by Bheem and Arjun together.

This means there can be two possibilities:

Case 1: Bheem 2, Arjun 2, Yudhistir 4, Nakul 2, Sahdev 8

Case 2: Bheem 2, Arjun 2, Yudhistir 4, Nakul 4, Sahdev 6

Value of gold jewelry:

The value of the jewelry won by each brother is an integral multiple of Rs. 20 billion. The value of the jewelry won by Bheem is just enough to trade 2 kingdoms against it. The value of the jewelry won by all the other brothers is less than that won by Bheem.

The value of the jewelry won by Arjun is more than that won by Yudhistir but less than that won by Sahdev.

The value of jewelry won by Bheem is double that won by Nakul. Value of total assets (kingdom + jewelry):

Total assets won by Bheem = 2 kingdoms + jewelry worth 2 kingdoms = value of 4 kingdoms

The value of jewelry won by Nakul = half the value of jewelry won by Bheem = value of 1 kingdom

So, total assets with Nakul can be either: 2 kingdoms + jewelry worth 1 kingdom = value of 3 kingdoms (case 1)

or 4 kingdoms + jewelry worth 1 kingdom = value of 5 kingdoms (case 2).

The value of the total assets won by Nakul is Rs. 40 billion more than that won by Bheem. But, in case 1, value of the total assets won by Nakul (3 kingdoms) which is less than that won by Bheem (4 kingdoms).

Hence, this cannot be the correct possibility.

The correct possibility is Case 2:

Total assets won by Nakul = value of 5 kingdoms.

Total assets won by Bheem = value of 4 kingdoms.

Difference = value of 1 kingdom = Rs.40 billion.

Now, in terms of the value of jewelry won: Yudhistir < Arjun < Sahdev < Bheem (i.e. Rs. 80 billion)

Hence, Value of jewelry won by Sahdev = Rs. 60 billion, Arjun = Rs. 40 billion and Yudhistir = Rs. 20 billion

Hence total assets won by each of the brothers:

Bheem: Kingdoms = 2 (Rs.80 billion), Jewelry = worth 2 kingdoms (Rs.80 billion)

Nakul: Kingdoms = 4 (Rs.160 billion), Jewelry = worth 1 kingdom (Rs.40 billion)

Yudhistir: Kingdoms = 4 (Rs.160 billion), Jewelry = (Rs.20 billion) Arjun: Kingdoms = 2 (Rs.80 billion), Jewelry = (Rs.40 billion)

Sahdev: Kingdoms = 6 (Rs.240 billion), Jewelry = (Rs.60 billion)

As second highest total assets will be possessed by Nakul, he will distribute his wealth among all other brothers. He has 4 kingdoms which will be distributed to all the brothers equally - each will get one. The ratio of the jewellery held by B : Y : A : S = 80 : 20 : 40 : 60 = 4 : 1 : 2 : 3. Since Nakul has jewellery worth Rs 40 billion, Bheem will get additional Rs 16 billion in jewellery and Sahadev will get additional Rs 12 billion in jewellery. Total asset with Bheem = Kingdoms + Jewellery = $3 \times 40 + 96 = \text{Rs } 216 \text{ billion}$. Total assets with Sahadev = Kingdoms + Jewellery = $7 \times 40 + 72 = \text{Rs } 352 \text{ billion}$
Required ratio = $216 : 352 = 27 : 44$

Feedback

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

Twelve software professionals are sitting in a row at an 'IT summit'. The seats are numbered from 1 to 12, with seat number 1 being the leftmost and 12 being the rightmost. Out of these twelve professionals, four are from TCS, two are from Infosys, three are from Cognizant and the remaining are from Wipro. All the four professionals from TCS are sitting on the seats which are consecutively numbered and the same is true for all the professionals from Wipro. The professionals at the end of the row are either from TCS or Infosys but not necessarily from the same company.

Q.59

If it is known that the professionals from Infosys are at each end of the row and no professional from Cognizant is next to a professional from TCS, then for which of the following seat numbers, the employer of professional sitting on it can definitely be identified?

1 ☐ 10

2 ☐ 8

3 ☐ 6

4 ☐ 2

Solution:

Correct Answer : 3

Possibility 1:

1	2	3	4	5	6	7	8	9	10	11	12
I	T	T	T	T	W	W	W	C	C	C	I

Probability 2:

1	2	3	4	5	6	7	8	9	10	11	12
I	C	C	C	W	W	W	T	T	T	T	I

As you can see in each of the above cases, professionals sitting at seat numbers 6 and 7 are from Wipro.

FeedBack

 **Bookmark**

 **Answer key/Solution**

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

Twelve software professionals are sitting in a row at an 'IT summit'. The seats are numbered from 1 to 12, with seat number 1 being the leftmost and 12 being the rightmost. Out of these twelve professionals, four are from TCS, two are from Infosys, three are from Cognizant and the remaining are from Wipro. All the four professionals from TCS are sitting on the seats which are consecutively numbered and the same is true for all the professionals from Wipro. The professionals at the end of the row are either from TCS or Infosys but not necessarily from the same company.

Q.60

If the professional sitting in seat number 1 is from TCS, the Cognizant professionals are next to each other and the professional sitting on seat number 11 is from Wipro, then professional sitting on which of the following seat numbers can be from Infosys?

1 ☐ 8

2 ☐ 5

3 ☐ 6

4 ☐ either (1) or (2)

Solution:

Correct Answer : 4

Possibility 1:

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	C	C	C	I	W	W	W	I

Possibility 2:

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	I	C	C	C	W	W	W	I

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🔍 Answer key/Solution

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

Twelve software professionals are sitting in a row at an 'IT summit'. The seats are numbered from 1 to 12, with seat number 1 being the leftmost and 12 being the rightmost. Out of these twelve professionals, four are from TCS, two are from Infosys, three are from Cognizant and the remaining are from Wipro. All the four professionals from TCS are sitting on the seats which are consecutively numbered and the same is true for all the professionals from Wipro. The professionals at the end of the row are either from TCS or Infosys but not necessarily from the same company.

Q.61

If the professional sitting on seat number 3 is from TCS and each professional from Infosys is next to a professional from Wipro, then professional sitting at which of the following seat number must be from Infosys?

1 ☐ 5

2 ☐ 6

3 ☐ 8

4 ☐ 9

Solution:

Correct Answer : 3

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	C	C	C	I	W	W	W	I

FeedBack

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🔍 Answer key/Solution

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

Twelve software professionals are sitting in a row at an 'IT summit'. The seats are numbered from 1 to 12, with seat number 1 being the leftmost and 12 being the rightmost. Out of these twelve professionals, four are from TCS, two are from Infosys, three are from Cognizant and the remaining are from Wipro. All the four professionals from TCS are sitting on the seats which are consecutively numbered and the same is true for all the professionals from Wipro. The professionals at the end of the row are either from TCS or Infosys but not necessarily from the same company.

Q.62

If professional from TCS is sitting on seat number 1 and professional from Cognizant is sitting on seat number 6, then professional from Infosys can take which of the following position apart from 12th position?

1 ☐ 5th

2 ☐ 11th

3 ☐ 7th

4 ☐ more than one

Solution:

Correct Answer : 4

Possibility 1:

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	C	C	C	W	W	W	I	I

11th position

Possibility 2:

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	C	C	I	W	W	W	C	I

7th Position

Possibility 3:

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	I	C	W	W	W	C	C	I

5th Position

Possibility 4:

1	2	3	4	5	6	7	8	9	10	11	12
T	T	T	T	C	C	W	W	W	I	C	I

10th Position

And there can be few other solutions also possible.
Hence more than one values are possible.

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 **Bookmark**

 **Answer key/Solution**

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

National Institute of Fashion Designing (NIFD) has decided to host a fashion show on October 28, 2017. NIFD has decided to invite fashion designers from across the country for the event. There are a total of 10 fashion designers who are being considered to be invited. These fashion designers are Manish Malhotra, Rohit Bal, Sabyasachi, Masaba Gupta, Tarun Tahiliani, JJ Valaya, Mandira Wirk, Suneet Varma, Gaurav Gupta, and Mahesh Tripathi. It is also known that:

- (i) Only one of Tarun Tahiliani, Mandira Wirk and Suneet Varma is to be called because last time, when all these fashion designers came for the same fashion show then there were fights between these designers and NIFD does not want these things to repeat this time.
- (ii) Only one of Sabyasachi and JJ Valaya should be invited as there are certain conflicts between the two designers.
- (iii) If Manish Malhotra is to be invited then Rohit Bal must be invited as well.
- (iv) Suneet Varma, Gaurav Gupta and Mahesh Tripathi share good rapport among themselves and thus all of the three should be invited together or neither of the three should be invited.
- (v) Rohit Bal and Masaba Gupta cannot be called together as they do not share a good rapport.
- (vi) Rohit Bal and Gaurav Gupta do not want to compete with each other as they have their ego issues and they created many problems in other events that happened this year.
- (vii) The number of fashion designers to be invited is not fixed and is tentative, but the fashion show should be conducted peacefully.

Q.63

If Manish Malhotra is to be invited, then what can be the maximum number of fashion designers that can be invited?

Solution:

Correct Answer : 4

- Out of Tarun Tahiliani, Mandira Wirk, Suneet Varma only 1 to be called.
- Out of Sabyasachi, JJ Valaya only 1 to be called. Manish Malhotra can be called together with Rohit Bal only.
- Suneet Varma, Gaurav Gupta, Mahesh Tripathi all will be called together.
- Out of Rohit Bal, Masaba Gupta only 1 to be called.
- Rohit Bal, Gaurav Gupta only 1 of them is to be called.

 Bookmark

 Answer key/Solution

If Manish Malhotra is to be invited then Rohit Bal will be invited definitely and hence, we cannot invite Masaba Gupta and Gaurav Gupta and since Gaurav Gupta is not invited, we cannot invite Suneet Varma and Mahesh Tripathi.

Therefore, fashion designers invited will be - Manish Malhotra, Rohit Bal, (one out of Tarun Tahiliani or Mandira Wirk) and (one out of Sabyasachi and JJ Valaya)

∴ Number of fashion designers = 4.

Feedback

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

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- (vii) The number of fashion designers to be invited is not fixed and is tentative, but the fashion show should be conducted peacefully.

Q.64

If Masaba Gupta is invited then in how many ways, either 3 or 5 fashion designers can be invited?

Solution:

Correct Answer : 6

- Out of Tarun Tahiliani, Mandira Wirk, Suneet Varma only 1 to be called.
- Out of Sabyasachi, JJ Valaya only 1 to be called. Manish Malhotra can be called together with Rohit Bal only.
- Suneet Varma, Gaurav Gupta, Mahesh Tripathi all will be called together.
- Out of Rohit Bal, Masaba Gupta only 1 to be called.
- Rohit Bal, Gaurav Gupta only 1 of them is to be called.

Bookmark

Answer key/Solution

Masaba Gupta is invited for sure as per the question. Hence, fashion designers that cannot be invited - Rohit Bal and therefore Manish Malhotra also.

Fashion designers Invited - (one out of Tarun Tahiliani, Mandira Wirk or Suneet Varma) + (one out of Sabyasachi and JJ Valaya) + (Suneet Varma, Gaurav Gupta, Mahesh Tripathi all together, depending on whether Suneet Varma is invited or not).

∴ Combinations possible

- 1) Tarun Tahiliani, Sabyasachi, Masaba Gupta.
- 2) Tarun Tahiliani, JJ Valaya, Masaba Gupta.
- 3) Mandira Wirk, Sabyasachi, Masaba Gupta.
- 4) Mandira Wirk, JJ Valaya, Masaba Gupta.
- 5) Suneet Varma, Sabyasachi, Gaurav Gupta, Mahesh Tripathi, Masaba Gupta
- 6) Suneet Varma, JJ Valaya, Gaurav Gupta, Mahesh Tripathi, Masaba Gupta Therefore, Number of ways = 6.

FeedBack

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

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- (vii) The number of fashion designers to be invited is not fixed and is tentative, but the fashion show should be conducted peacefully.

Q.65

What can be the largest number of fashion designers that can be invited for the fashion show?

Solution:

Correct Answer : 5

- Out of Tarun Tahiliani, Mandira Wirk, Suneet Varma only 1 to be called.
- Out of Sabyasachi, JJ Valaya only 1 to be called. Manish Malhotra can be called together with Rohit Bal only.
- Suneet Varma, Gaurav Gupta, Mahesh Tripathi all will be called together.
- Out of Rohit Bal, Masaba Gupta only 1 to be called.
- Rohit Bal, Gaurav Gupta only 1 of them is to be called.

🔖 Bookmark

🔍 Answer key/Solution

For Largest number of participating fashion designers, as we have the biggest cartel among the condition between Suneet Varma, Gaurav Gupta and Mahesh Tripathi, we can't afford to miss any of the three to have maximum number of fashion designers participating, so these three are coming for sure.

Since Gaurav Gupta is coming, we can't invite Rohit Bal, Manish Malhotra, Tarun Tahiliani and Mandira Wirk as well, but we can invite Masaba Gupta and one out of Sabyasachi or JJ Valaya.

So maximum number of fashion designers that can participate is 5 at a time.

∴ Invited fashion designers - Suneet Varma, Gaurav Gupta, Mahesh Tripathi, Masaba Gupta, Sabyasachi/JJ Valaya

Therefore, total number of participants = 5.

Feedback

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- (vii) The number of fashion designers to be invited is not fixed and is tentative, but the fashion show should be conducted peacefully.

Q.66

If Suneet Varma is invited, then the minimum how many persons among, Manish Malhotra, JJ Valaya, Gaurav Gupta and Rohit Bal must be invited?

Solution:

Correct Answer : 1

- Out of Tarun Tahiliani, Mandira Wirk, Suneet Varma only 1 to be called.
- Out of Sabyasachi, JJ Valaya only 1 to be called. Manish Malhotra can be called together with Rohit Bal only.
- Suneet Varma, Gaurav Gupta, Mahesh Tripathi all will be called together.
- Out of Rohit Bal, Masaba Gupta only 1 to be called.
- Rohit Bal, Gaurav Gupta only 1 of them is to be called.

🔖 Bookmark

🔑 Answer key/Solution

Since Suneet Varma is to be invited for annual day, Gaurav Gupta and Mahesh Tripathi will also be invited. When Gaurav Gupta is called, Rohit Bal cannot be called. Since Rohit Bal is not called, Manish Malhotra also cannot be called. And also from among JJ Valaya and Sabyasachi any one can be invited. So minimum 1 person among the given must be invited.

FeedBack

Sec 3

Q.67

X is the set of the first 100 natural numbers. How many elements are there in X such that when they are divided by 7 and 8 give different quotients?

2 71

3 72

4 73

Solution:

Correct Answer : 4

Let us find the elements which give the same quotient when they are divided by 8 and when they are divided by 7. First six natural numbers give quotient 0 when they are divided by 8 and when they are divided by 7.

Similarly the numbers 8, 9, 10, 11, 12 and 13 give quotient 1 when they are divided by 8 and by 7.

16, 17, 18, 19 and 20 give quotient 2; 24, 25, 26, 27 give quotient 3; 32, 33, 34 give quotient 4; 40, 41 give quotient 5 and 48 give quotient 6.

Therefore the total number of elements in the set X which give the same quotient when they are divided by 8 and 7 = $6 + 6 + 5 + 4 + 3 + 2 + 1 = 27$

Therefore, required number of elements = $100 - 27 = 73$.

FeedBack

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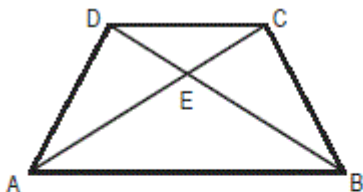
Answer key/Solution

Q.68

In a trapezium ABCD, the diagonals AC and BD intersect at the point E. If the areas of $\triangle EAB$ and $\triangle ECD$ are 25 sq. units and 16 sq. units respectively, then find the area (in sq. units) of the trapezium.

Solution:

Correct Answer : 81



In trapezium ABCD,
 $\text{area}(\triangle ABD) = \text{area}(\triangle ABC)$
 $\Rightarrow \text{area } \triangle ADE = \text{area } \triangle BEC = x \text{ (say)}$
Now, $\text{area}(\triangle ADE) \times \text{area}(\triangle BEC)$
 $= \text{area}(\triangle DEC) \times \text{area}(\triangle AEB)$
 $x \times x = 25 \times 16$
 $\Rightarrow x = 20$
 $\therefore \text{Area of ABCD} = 25 + 16 + 20 + 20 = 81$

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Answer key/Solution

Q.69

Areas of two adjacent faces of a box in the shape of cuboid are 36 cm^2 and 45 cm^2 respectively. The measures (in cm) of length, breadth and height of the box are natural numbers. Find the ratio of the smallest possible volume of the box to the largest possible volume.

1 ☐ 1 : 9

2 ☐ 5 : 9

3 ☐ 1 : 3

4 ☐ 5 : 6

Solution:

Correct Answer : 1

Two adjacent faces would share an edge. Let's say that this common edge is 'a' and other two edges are 'b' and 'c'. The product of areas of two faces is (ab)(ac) = 36 × 45. Or we can rewrite the same equation

as $(abc) = 36 \times \frac{45}{a}$ = volume of box. So for volume to

be maximum, 'a' should be minimum and for volume to be minimum, 'a' should be maximum. Since a has to be a factor of 36 and 45, the maximum and minimum values of a are 9 and 1 respectively.

Hence the ratio of minimum volume to maximum volume is 1 : 9.

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 **Bookmark**

 **Answer key/Solution**

Q.70

A, B, and C start running simultaneously along a circular track, having a length of 1.2 km from the same point, with speeds 6 km/hr, 8 km/hr and 9 km/hr respectively. A and B run in the same direction but C runs in the opposite direction. How many times will A and C meet anywhere on the track by the time A and B meet for the first time anywhere on the track?

Solution:

Correct Answer : 7

Time taken by A and B to meet for first time anywhere

on the track = $\left(\frac{\text{Distance}}{\text{Relative speed}} \right)$

= $\frac{1.2}{(8-6)} = 0.6$ hours = 36 minutes.

Time taken by A and C to meet anywhere on the track

= $\left(\frac{\text{Distance}}{\text{Relative speed}} \right) = \frac{1.2}{(9+6)} = \frac{1.2}{15}$ hours

= 4.8 minutes

The number of times A and C meet anywhere on the track by the time A and B meet each other for the first

time = $\left[\frac{36}{4.8} \right] = 7$ i.e. 7 times, where [.] denotes the

greatest integer function.

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 **Bookmark**

 **Answer key/Solution**

Q.71

Rahul while counting the number of his friends in a certain base system observed that he had a total of 100 friends out of which 24 were boys and 43 girls. Which base system did Rahul use?

1 ☐ 9

2 ☐ 7

3 ☐ 4

4 ☐ 5

Solution:

Correct Answer : 2

Let the required number system be n . Then

$$(100)_n = (24)_n + (43)_n$$

$$\Rightarrow n^2 = 2n + 4 + 4n + 3$$

$$\Rightarrow n^2 - 6n - 7 = 0$$

$$(n + 1)(n - 7) = 0$$

$$n = -1 \text{ or } n = 7$$

As -1 is not possible, $n = 7$.

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 **Bookmark**

 **Answer key/Solution**

Q.72

In triangle ABC, a line is drawn parallel to BC such that it intersects AB and AC at point D and E respectively. If DE = 6 units, EC = 4 units and BD = 2 units, then which of following can be length of BC?

1 ☐ 14 units

2 ☐ 13 units

3 ☐ 12 units

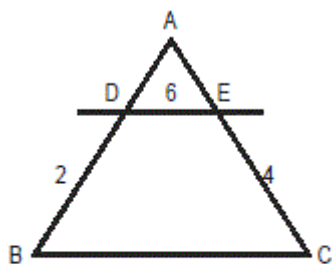
4 ☐ 11 units

Solution:

Correct Answer : 4

🔖 Bookmark

🔍 Answer key/Solution



By BPT,

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\frac{AD}{AE} = \frac{1}{2}$$

Let $AD = x$

$\Rightarrow AE = 2x$

In $\triangle ADE$,

$$x + 2x > 6$$

$$\Rightarrow x > 2.$$

In $\triangle ABC$,

$$AB + AC = 6 + 3x$$

Since $x > 2$, $AB + AC > 12$

Therefore $BC < AB + AC$

$$\Rightarrow BC < 12.$$

FeedBack

Q.73

The quadratic equations $2014x^2 + 2015x + 1 = 0$ and $x^2 + 2015x + 2014 = 0$ have exactly one root in common. Then the product of the roots that are not common is

1 ☐ 1

2 ☐ - 2

3 ☐ - 1

4 ☐ 0

Solution:

Correct Answer : 1

$$\begin{aligned}2014x^2 + 2015x + 1 &= 0 \\ \Rightarrow 2014x^2 + 2014x + x + 1 &= 0 \\ \Rightarrow 2014x(x + 1) + (x + 1) &= 0 \\ \Rightarrow (x + 1)(2014x + 1) &= 0\end{aligned}$$

$$\therefore x = -1 \text{ or } x = \frac{-1}{2014}$$

Now, $x = -1$ satisfies both the quadratic equations.
Hence it is the common root. If α, β are the roots of 1st

$$\text{equation then } \alpha\beta = \frac{1}{2014}$$

$$(-1)\beta = \frac{1}{2014}$$

$$\Rightarrow \beta = \frac{-1}{2014}$$

If α, δ are the roots of 2nd equation then

$$\alpha\delta = 2014$$

$$\Rightarrow (-1)\delta = 2014$$

$$\delta = -2014$$

\therefore product of uncommon roots is 1.

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🔖 Bookmark

🔍 Answer key/Solution

Q.74

A bucket is filled up to the brim with alcohol. We empty half of its contents and then add a litre of alcohol. After doing this operation five consecutive times, we are left with 4 litres of alcohol in the container. How many litres of alcohol was in the bucket at the beginning?

Solution:

Correct Answer : 66

Let x be the volume (in litres) of the container.
Let x^n be the volume of alcohol left at stage n .

If we empty half, we are left with $\frac{x}{2}$, and adding a litre

alcohol give $\frac{x}{2} + 1$

so that $x^1 = \frac{x}{2} + 1 = \frac{x+2}{2}$.

Repeating this process, we see that

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

$$x^3 = \frac{1}{2} \frac{(x+2+2^2)}{2^2} + 1 = \frac{x+2+2^2+2^3}{2^3}$$

In general,

$$x^n = \frac{x+2+2^2+\dots+2^n}{2^n}$$

After repeating these operations $n = 5$ times, we have

that the container contains $x^5 = \frac{x}{32} + \frac{31}{16}$ liters of water,

which is equal to 4. Solving, we get $x = 66$.

Hence the initial amount of water in the container is 66 liters.

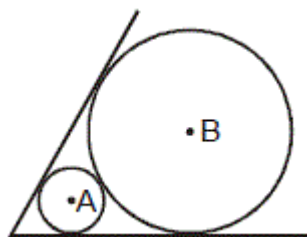
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Answer key/Solution

Q.75

In the figure given below, two circles with centres A and B respectively touch each other. Angle between the two direct common tangents to the two circles is 60° . Find the ratio of area of the larger circle to that of the smaller circle.



1 ☐ 4 : 1

2 ☐ 9 : 1

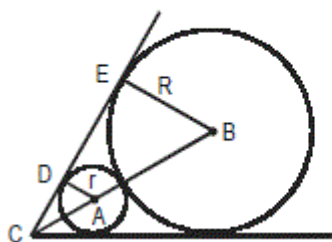
3 ☐ 19 : 2

4 ☐ 21 : 2

Solution:

Correct Answer : 2

Let 'r' denotes the radius of smaller circle and 'R' denotes the radius of larger circle.



In $\triangle ACD$,

$$AC = 2r$$

Also, $\triangle ACD \sim \triangle BCE$

$$\Rightarrow \frac{AC}{BC} = \frac{r}{R}$$

$$\Rightarrow \frac{2r}{3r+R} = \frac{r}{R}$$

$$\Rightarrow R = 3r$$

Area of larger circle: Area of smaller circle
 $= R^2 : r^2 = 9 : 1$.

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Answer key/Solution

Q.76

Two cities Y and Z are 300 km apart. Motorist A starts from city Y towards Z at 10 AM and Motorist B starts from city Z towards Y at the same time. Motorist A travels the first one-third of the distance at a speed of 20 kmph, the second one-third at 25 kmph and the third one-third at 30 kmph. Motorist B travels the first one-third of the total time taken by him at a speed of 20 kmph, the second one-third at 25 kmph and the third one-third at 30 kmph. When will the two Motorists cross each other?

1 ☐ 3 : 45 PM

2 ☐ 4 : 54 PM

3 ☐ 4 : 40 PM

4 ☐ 6 : 00 PM

Solution:

Correct Answer : 2

Motorist A travels 100 km @ 20 kmph the next 100 km @ 25 kmph and the final 100 km @ 30 kmph.

So, Motorist A will be at a distance of 100 km from city Y after 5 hours, and at a distance of 200 km after 9 hours, and reaches 'Z' after 12 hours and 20 mins. Motorist B travels at an overall average speed of 25 kmph so will take 12 hours for the entire trip So, Motorist B will travel 80 kms in the first 4 hours, next 100 kms in the next 4 hours and remaining 120 in the final 4 hours So, both Motorists cross each other when they are in their middle legs.

After 5 hours, Motorist A will be at a position 100 kms from city Y. At the same time, Motorist B will be at a distance 105 kms from city Z ($4 \times 20 + 25$). The distance between them will be 95 kms ($300 - 100 - 105$). Relative speed = Sum of the two speeds = $25 + 25 = 50$ kmph.

Time taken = $\frac{95}{50} = 1.9$ hours = 1 hour and 54 minutes.

Both the Motorists started at 10:00 AM.

So, the two Motorists will meet after 6 hours and 54 minutes.

\therefore Motorists A and B will cross each other at 4 : 54 PM.

FeedBack

🔖 Bookmark

🔍 Answer key/Solution

Q.77

In a right angled triangle ABC right angle at C, it is given that BC = 8 cm and CA = 6 cm. A line dividing the triangle ABC into two regions of equal area is perpendicular to AB at the point X. Then length (in cm) of BX is

1 ☐ $\sqrt{210}$

2 ☐ $\sqrt{45}$

3 ☐ $\sqrt{32}$

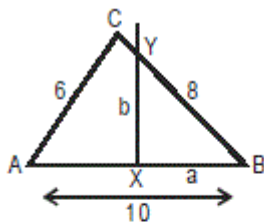
4 ☐ $\sqrt{53}$

Solution:

Correct Answer : 3

🔖 Bookmark

🔍 Answer key/Solution



Let XB be 'a',
Let XY be 'b'
As XY divide the area in half,

$$\frac{2 \times a \times b}{2} = \frac{8 \times 6}{2}$$

$$\text{Also, } \tan B = \frac{b}{a}$$

$$a^2 \tan B = 24$$

$$a^2 \times \frac{6}{8} = 24$$

$$a = \sqrt{32}.$$

Feedback

Q.78

In a parking lot, the number of Maruti cars is $2a\%$ of the total number of cars in parking lot, where 'a' is a natural number. If 20 more Maruti cars enter into the parking lot, then the number of Maruti cars becomes $(2a + 6)\%$ of the total number of cars in parking lot. Which of the following can be the total number of cars in the parking lot initially?

1 ☐ 225

2 ☐ 230

3 ☐ 220

4 ☐ 235

Solution:

Correct Answer : 3

🔖 Bookmark

🔍 Answer key/Solution

Let the initial number of cars in the parking lot be 'N'

$$\text{Number of Maruti cars} = \left(\frac{2a}{100}\right) \times N$$

After the addition, total number of cars in the parking lot = 'N + 20'

$$\Rightarrow 20 = (2a + 6) \times \frac{(N + 20)}{100} - \left(\frac{2a}{100}\right) \times N$$

$$\Rightarrow 20 = \frac{(40a + 6N + 120)}{100} = \frac{(20a + 3N + 60)}{50}$$

$$\Rightarrow 20a + 3N = 940$$

$$\Rightarrow N = \frac{(940 - 20a)}{3}$$

The possible values of 'a' could be 2, 5, 8, 11, 14, 17...44. For a = 14, the value of N = 220.

Feedback

Q.79

Consider the circles, $x^2 + y^2 = 25$ and $x^2 + y^2 = 9$. From the point A (0, 5) two lines are drawn touching the inner circle at the points B and C, while intersecting the outer circle at the points D and E respectively. If 'O' is the centre of both the circles, then the length of the segment OF, which is perpendicular to DE, is

1 ☐ 7/5 units

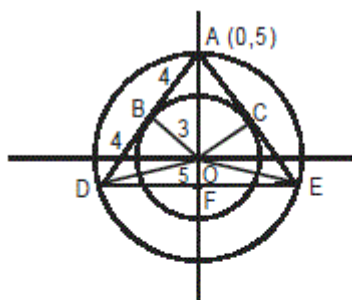
2 ☐ 7/2 units

3 ☐ 5/2 units

4 ☐ 3 units

Correct Answer : 1

Q Answer key/Solution


$$AB^2 = (5^2 - 3^2)$$

$$\Rightarrow AB = 4$$

Similarly,

$BD = 4$

$$\therefore \text{In } \triangle ADF, 8^2 = (5 + OF)^2 + DF^2 \quad \dots (i)$$

In $\triangle ODF$, $5^2 = OF^2 + DF^2$... (ii)

Solving (i) and (ii), we get

$$OF = \frac{7}{5}.$$

FeedBack

Q.80

If $ar + ar^2 + ar^3 + \dots + ar^{10} = 14$ and $\frac{1}{ar} + \frac{1}{ar^2} + \frac{1}{ar^3} + \dots + \frac{1}{ar^{10}} = 7$

and $P = (ar)(ar^2)(ar^3)\dots(ar^{10})$, find the value of P .

Correct Answer : 32

Q Answer key/Solution

Given $\ar \frac{(r^{10} - 1)}{(r - 1)} = 14 \quad \dots(i)$

$$\text{Also, } \frac{\frac{1}{ar}\left(1 - \frac{1}{r^{10}}\right)}{1 - \frac{1}{r}} = 7 \quad \dots(ii)$$

From (i) and (ii), we get

$$\therefore \frac{14}{a^{2+11}} = 7$$

$$\Rightarrow a^2 r^{11} = 2$$

Now, $P = a^{10}r^{55} = (a^2r^{11})^5 = 2^5 = 32$.

FeedBack

Q.81

If roots of the equation $x^3 + px^2 + qx + r$ represents the length of the sides of a ΔABC , then the product of inradius and circumradius of the triangle is:

2 ☐ $2pr + p^2 - q^2$

3 ☐ $2p/r$

4 ☐ $r/2p$

Solution:

Correct Answer : 4

Let a, b, c be the roots of the equation.

Hence, sides of the $\triangle ABC$ are a, b and c .

Let I and J be the inradius and circumradius of the triangle respectively.

Hence, $I = \Delta/s$, where Δ and s are the area and semiperimeter of the triangle respectively.

$$\text{and, } J = \frac{abc}{4\Delta}$$

$$\therefore \text{ product of } I \text{ and } J = \frac{abc}{(a+b+c)^2}$$

As a, b and c are roots of the equation $x^3 + px^2 + qx + r$,
 $a + b + c = -p$, and $abc = -r$

$$\text{Hence, } IJ = \frac{r}{2p}.$$

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.82

Akshay, Manoj and Harshit are employees of a firm named XYZ. Akshay while working alone takes 3 hours more than twice the time taken by all three working together to complete a piece of work. To complete the same piece of work, Manoj alone takes five times the time taken by all three working together and Harshit alone takes 9 hours less than four times the time taken by all three. How long (in hours) will it take for Akshay and Harshit together to complete the work?

1 ☐ 8

2 ☐ 7.5

3 ☐ 8.5

4 ☐ 9

Solution:

Correct Answer : 2

Let Akshay takes 'a' hours, Manoj takes 'm' hours and Harshit takes 'h' hours to finish the work independently. If together they take 'x' hours to finish the work, we have

$$a = 2x + 3, m = 5x, h = 4x - 9$$

Work done by Akshay, Manoj and Harshit together in 1 hour:

$$\frac{1}{x} = \frac{1}{a} + \frac{1}{m} + \frac{1}{h}$$

$$\Rightarrow \frac{1}{x} = \frac{1}{(2x+3)} + \frac{1}{5x} + \frac{1}{(4x-9)}$$

$$\frac{4}{5x} = \frac{1}{(2x+3)} + \frac{1}{(4x-9)}$$

$$x^2 + 3x - 54 = 0$$

$$x = -9 \text{ or } 6$$

$\Rightarrow x = 6$ (\because Number of hours cannot be negative.)

Hence, $a = 15$ hours, $h = 15$ hours

Akshay and Harshit together take 7.5 hours to finish the work.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.83

If $x = 2^{100}$, $y = 3^{75}$ and $z = 5^{50}$, then which of the following relations is correct?

1 ☐ $y > x > z$

2 ☐ $x > y > z$

3 ☐ $y > z > x$

4 ☐ $z > y > x$

Solution:

Correct Answer : 3

$$x = 2^{100} = 4^{50} < 5^{50}$$

Hence, $x < z$

$$y = 3^{75} = 27^{25} > 25^{25} = 5^{50}$$

Hence, $y > z$

Hence, $y > z > x$.

FeedBack

 **Bookmark**

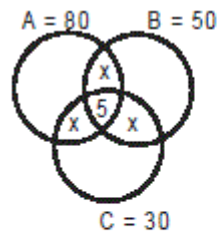
 **Answer key/Solution**

Q.84

One hundred people living in a society who use at least one of the three mobile handsets among Samsung, Motorola and Apple, are surveyed for marketing purpose. It is found that 80 people use Samsung, 50 Motorola and 30 Apple. Five of them are using all the three handsets. How many of them are using exactly two handsets?

Solution:

Correct Answer : 50



Let those who use exactly two phones out of the three be x .

$$\therefore 100 = 80 + 50 + 30 - x - 2 \times 5$$

$$100 = 150 - x$$

$$\Rightarrow x = 50.$$

FeedBack

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🔍 Answer key/Solution

Q.85

Mansa devi temple Management wants to make a committee of 5 senior citizens to be chosen from a group of 9 senior citizens who can manage finances. Number of ways in which it can be formed if two particular persons either serve together or not at all and two other particular persons refuse to serve with each other, is

1 ☐ 41

2 ☐ 25

3 ☐ 30

4 ☐ 45

Solution:

Correct Answer : 1

- When A and B together are selected:
Among the 7 persons, we have to choose 5 (in which C and D both are not together)
Case I: When both C and D are not selected
Number of ways = ${}^5C_3 = 10$
Case II: When one (only C or only D) selected
Number of way = ${}^5C_2 \times 2 = 20$.
- When A and B both are not selected:
Case I: When only one of C or D is selected
Number of way = ${}^5C_4 \times 2 = 10$
Case II: When both C and D are not selected
Number of ways = ${}^5C_5 = 1$
Hence, the total number of ways
= $10 + 20 + 10 + 1 = 41$.

FeedBack

🔖 Bookmark

🔍 Answer key/Solution

Q.86

The curved surface area of a right circular cone is 160% more than area of its base. If the total surface area of the cone is 13860 sq. cm, what is the height (in cm) of the cone?

1 ☐ 81

2 ☐ 95

3 ☐ 98

4 ☐ 84

Solution:

Correct Answer : 4

Total surface area = 13860 sq. m.

Lateral surface area : Base area = 260 : 100 = 13 : 5

Hence, lateral surface area = $\left(\frac{13}{18}\right) \times 13860 = 10010$

sq. cm. and base area = $\left(\frac{5}{18}\right) \times 13860$ sq. cm. = 3850

sq. cm.

As we know, the base area of a cone is the area of circle. Let the radius of the base be 'r'.

Thus, $\pi r^2 = 3850$ or $r = 35$ cm

Lateral Surface Area of a cone = $10010 = (\pi r) \times l$

= $110 \times (l) = 10010$

Hence, $l = 91$

$$\Rightarrow h = \sqrt{l^2 - r^2} = \sqrt{(91)^2 - (35)^2}$$

$\therefore h = 84$ cm.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.87

Find the product of those factors of 126000 that are odd but not multiples of 3.

1 ☐ 875

2 ☐ $(875)^2$

3 ☐ $(875)^4$

4 ☐ $(875)^8$

Solution:

Correct Answer : 3

126000 can be prime factorized as $2^4 \times 3^2 \times 5^3 \times 7$
The factors that are odd but not multiples of 3 would include combination of (2^0) , (3^0) , $(5^0, 5^1, 5^2, 5^3)$ and $(7^0, 7^1)$ i.e. $1 \times 1 \times 4 \times 2 = 8$ factors.

These 8 factors are $(5^0 \times 7^0)$, $(5^0 \times 7^1)$, $(5^1 \times 7^0)$, $(5^1 \times 7^1)$, $(5^2 \times 7^0)$, $(5^2 \times 7^1)$, $(5^3 \times 7^0)$ and $(5^3 \times 7^1)$.

The product of these 8 factors
 $= (5^0 \times 5^1 \times 5^2 \times 5^3)^2 \times (7^0 \times 7^1)^4$
 $= (5^6)^2 \times (7)^4 = (5)^{12} \times (7)^4 = (5^3 \times 7)^4 = (875)^4$.

FeedBack

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🔑 Answer key/Solution

Q.88

If p, q, r are the sides of a triangle, which of the following can be the value of $\left(\frac{p^2 + q^2}{r^2}\right)$?

1 ☐ 0.25

2 ☐ 0.3

3 ☐ 0.6

4 ☐ 0.2

Solution:

Correct Answer : 3

Since Arithmetic Mean \geq Geometric Mean,

$$\therefore p^2 + q^2 \geq 2pq$$

$$\therefore p^2 + q^2 + p^2 + q^2 \geq p^2 + q^2 + 2pq$$

$$\therefore 2(p^2 + q^2) \geq p^2 + q^2 + 2pq \quad \dots(i)$$

Since, in a triangle sum of any two sides is always greater than the third side,

$$p + q > r$$

$$\therefore (p + q)^2 > r^2$$

$$\therefore p^2 + q^2 + 2pq > r^2 \quad \dots(ii)$$

From (i) and (ii), we get,

$$2(p^2 + q^2) \geq p^2 + q^2 + 2pq > r^2$$

$$\therefore 2(p^2 + q^2) > r^2$$

$$\Rightarrow \frac{p^2 + q^2}{r^2} > \frac{1}{2}$$

Thus, the possible value of $\left(\frac{p^2 + q^2}{r^2}\right)$ is 0.6.

FeedBack

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🔑 Answer key/Solution

Q.89

A farmer has decided to build a wire fence along one straight side of his property. For this, he planned to place several fence posts at an interval of 6 m, with posts fixed at both ends of the side. After he bought the posts and wire, he found that the number of posts he had bought was five less than required. However, he discovered that the number of posts he had bought would be just sufficient if he spaced them 8 m apart. What is the length (in m) of the side of his property and how many posts did he buy?

1 ☐ 100, 15

2 ☐ 100, 16

3 ☐ 120, 15

4 ☐ 120, 16

Solution:

Correct Answer : 4

Let the number of posts bought be N .

$$\therefore 6(N - 1) + 30 = 8(N - 1)$$

(Since the distance is calculated using the 1st post it is not included.)

$$\Rightarrow 6N - 6 + 30 = 8N - 8$$

$$\Rightarrow 2N = 32, \text{ i.e., } N = 16.$$

$$\therefore \text{Length of property} = 6(15) + 30 = 120.$$

Feedback

 **Bookmark**

 **Answer key/Solution**

Q.90

Find the digit at thousand place in 99^{204} ?

Solution:

Correct Answer : 9

$$99^2 = 9801$$

$$99^{204} = (9800 + 1)^{102}$$

In this expansion, except last 2 terms every other term will end in 4 zeroes.

$$\text{The last four terms are } 102 \times 9800 + 1 = 9601$$

$$\therefore \text{Digit at thousand place} = 9.$$

Feedback

 **Bookmark**

 **Answer key/Solution**

Q.91

A and B started a business in partnership with capital contributions of Rs.20,000 and Rs.50,000 respectively. At the end of the year, A receives a salary which is 14.2857% of the profit that remained after payment of the salary. The remaining profits are shared in the ratio of their capitals. If A receives a total income, which is the sum of his profit and salary, of Rs.6,000 for the year what is the total profit made by the partnership firm in that year?

1 ☐ 2000

2 ☐ 16000

3 ☐ 18000

4 ☐ 12000

Solution:

Correct Answer : 2

Let the profit remaining to be shared after payment of salary be = $7k$.

Hence the salary to be paid will be = k

Total profit = $8k$

A's share of profit = $\frac{2}{7}(7k) = 2k$

Total income of A = $3k$

$3k = 6000$

$k = 2000$

\therefore Total Profit = $8k = 16000$.

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 Answer key/Solution

Q.92

If $3\sin A + 4\cos B = 6$, $4\sin B + 3\cos A = 1$, where A, B and C represent angles of a triangle. What is the value of angle C if it is acute?

1 ☐ 60°

2 ☐ 25°

3 ☐ 30°

4 ☐ 45°

Solution:

Correct Answer : 3

$3\sin A + 4\cos B = 6$

Squaring,

$9\sin^2 A + 16\cos^2 B + 24\sin A \times \cos B = 36 \dots (1)$

$4\sin B + 3\cos A = 1$

Squaring,

$16\sin^2 B + 9\cos^2 A + 24\sin B \times \cos A = 1 \dots (2)$

Adding (1) and (2),

$9[\sin^2 A + \cos^2 A] + 16[\sin^2 B + \cos^2 B] + 24[\sin A \times \cos B + \sin B \times \cos A] = 37$

$9 + 16 + 24[\sin(A + B)] = 37$

$\sin(A + B) = \frac{1}{2}$

$C = 180 - A - B$

$\sin C = \sin(180 - A - B) = \sin(A + B) = \frac{1}{2}$

$C = 30$, as C is an acute angle.

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 Answer key/Solution

Q.93

What is the remainder when $10^{43} + 12^{43}$ is divided by 121?

Solution:

Correct Answer : 99

$$10^{43} + 12^{43} = [11 - 1]^{43} + [11 + 1]^{43}$$

In the expansion of both the terms except the last two terms, all other terms are divisible by 121.

Last two terms of $[11 - 1]^{43} = \dots + (43 \times 11) - (1)$

Last two terms of $[11 + 1]^{43} = \dots + (43 \times 11) + 1$

Last two terms of $[11 - 1]^{43} + [11 + 1]^{43}$

$$= \dots + 2 \times 43 \times 11 = 946$$

Remainder when $[11 - 1]^{43} + [11 + 1]^{43}$ is divided by 121

is same as the remainder when 946 is divided by 121.

\therefore Remainder is 99.

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Answer key/Solution

Q.94

Cost of chemical A is Rs.250 per 10 gm and that of chemical B is Rs.330 per 10 gm. Smita prepares a mixture by mixing chemical A and B in the ratio 3 : 5. If Smita sold the mixture at 25% profit, then what is the selling price (in Rs.) of 10 gm mixture?

1 ☐ 250

2 ☐ 425

3 ☐ 375

4 ☐ None of these

Solution:

Correct Answer : 3

Since chemicals are in the ratio 3 : 5,

A : B = 3 : 5

Hence, mixture contain 37.5% chemical A and 62.5% chemical B.

Hence, 10 kg mixture contain 3.75 kg chemical A and 6.25 kgs chemical B.

Hence, cost of mixture

$$= \left(\frac{3750}{10} \times 250 + \frac{6250}{10} \times 330 \right) \times 1.25$$

= Rs. 3,75,000 per 10 kg.

Hence, cost of 10 gm mixture = Rs. 375.

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Answer key/Solution

Q.95

In Mrs. White's kitchen, Mr. White accidentally spilled some milk into a jar of honey. In order to compensate for the spilling, he decided to replace 100 ml of the mixture by 100 ml of pure honey such that the ratio of milk to honey in the mixture becomes 5 : 19. If the jar initially had 450 ml of pure honey, then how much milk was spilled into the jar?

- 1 ☐ 25 ml
- 2 ☐ 150 ml
- 3 ☐ 50 ml
- 4 ☐ None of the above

Solution:

Correct Answer : 2

Let the amount of milk that spilled into the jar be x ml.
Then the total volume of the mixture = $(450 + x)$ ml.
Total volume of honey in the jar after 100 ml of mixture was taken out from the jar

$$= 450 - \frac{450}{450 + x} \times 100$$

Now, total volume of honey in the jar after 100 ml of honey was poured into the jar

$$= \left(450 - \frac{450}{450 + x} \times 100 \right) + 100$$

Also, total volume of milk is the jar in the final mixture

$$= x - \frac{x}{(450 + x)} \times 100$$

$$\therefore \text{Ratio} = \frac{x - \frac{x}{(450 + x)} \times 100}{450 - \frac{450}{450 + x} \times 100 + 100} = \frac{5}{19}$$

Solving this we get, $x = 150$.

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.96

The ratio of the average of cubes of the first n natural numbers to the average of squares of the first n natural numbers is $\frac{5050}{67}$. What is the average of the first n odd numbers?

- 1 ☐ 50
- 2 ☐ 100
- 3 ☐ 75
- 4 ☐ 25

Solution:

Correct Answer : 2

Sum of cubes of first n natural numbers = $\left[\frac{n(n+1)}{2}\right]^2$

and sum of squares of first n natural numbers

$$= \frac{n(n+1)(2n+1)}{6}$$

$\therefore \frac{\text{Average of cubes of first } n \text{ natural numbers}}{\text{Average of squares of first } n \text{ natural numbers}}$

$$= \frac{n^2 \times (n+1)^2}{4 \times n} \times \frac{6n}{n(n+1)(2n+1)}$$

$$= \frac{3n(n+1)}{2(2n+1)} = \frac{5050}{67}$$

$$\Rightarrow \frac{n(n+1)}{(2n+1)} = \frac{10100}{201} = \frac{100 \times 101}{(2 \times 100 + 1)} \Rightarrow n = 100$$

As average of first n odd numbers = n

\therefore Required number = 100.

FeedBack

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🔑 Answer key/Solution

Q.97

In a particular week the average number of people who visited in Trade Fair from Monday to Friday was 1.6 million and the numbers of people visited on Saturday and Sunday was same. If the average number of people who visited in the Trade Fair for the entire week is 1.4 million then find the number of people (in millions) who visited in Trade Fair on Saturday?

1 ☐ 0.9

2 ☐ 1

3 ☐ 1.5

4 ☐ 1.3

Solution:

Correct Answer : 1

Total number of visitors from Monday to Friday
= $1.6 \times 5 = 8$ million

Total number of visitors for the whole week
= $1.4 \times 7 = 9.8$ million

Therefore, number of visitors on Saturday and Sunday
= $9.8 - 8 = 1.8$ million

Since the number of visitors on Saturday and Sunday are same, the number of visitors on Saturday only

$$= \frac{1.8}{2} = 0.9 \text{ million.}$$

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🔑 Answer key/Solution

Q.98

If $A = \frac{1}{\log_{bc} a}$, $B = \frac{1}{\log_{ca} b}$ and $C = \frac{1}{\log_{ab} c}$, the value of $\frac{1}{A+1} + \frac{1}{B+1} + \frac{1}{C+1}$ is

1 ☐ 1

2 ☐ 3

3 ☐ 2

4 ☐ 0

Solution:

Correct Answer : 1

$$A = \frac{1}{\log_{bc} a} \Rightarrow A = \log_a bc$$

$$\therefore A + 1 = \log_a bc + 1 = \log_a bc + \log_a a = \log_a abc$$

$$B = \frac{1}{\log_{ca} b} \Rightarrow B = \log_b ca$$

$$\therefore B + 1 = \log_b ca + 1 = \log_b ca + \log_b b = \log_b abc$$

$$C = \frac{1}{\log_{ab} c} \Rightarrow C = \log_c ab$$

$$\therefore C + 1 = \log_c ab + 1 = \log_c ab + \log_c c = \log_c abc$$

$$\text{Hence, } \frac{1}{A+1} + \frac{1}{B+1} + \frac{1}{C+1}$$


$$= \frac{1}{\log_a abc} + \frac{1}{\log_b abc} + \frac{1}{\log_c abc}$$

$$= \log_{abc} a + \log_{abc} b + \log_{abc} c$$

$$\Rightarrow \frac{1}{A+1} + \frac{1}{B+1} + \frac{1}{C+1} = \log_{abc} abc = 1.$$

FeedBack

 **Bookmark**

 **Answer key/Solution**

Q.99

A lays a road in 7 days and B in 8 days. When they work together, their efficiency comes down and they together lay 1/2 km less per day as compare what they were supposed to lay. If the road is laid in 4 days, what is the length (in km) of the road laid?

1 ☐ 56

2 ☐ 28

3 ☐ 35

4 ☐ 21

Solution:

Correct Answer : 2

Let the combined output of A and B per day be x kms.
Actual output of A and B per day be $(x - 0.5)$ kms

$$\text{Out put per day} = \frac{1}{7} + \frac{1}{8} = \frac{15}{56}$$

$$\text{Work units} = x \times \frac{56}{15} \quad \dots (i)$$

$$\text{Actual out put per day} = (x - 0.5)$$

$$\text{Work units} = 4(x - 0.5) \quad \dots (ii)$$

$$x \times \frac{56}{15} = 4(x - 0.5)$$

$$x = 7.5 \text{ kms}$$

$$\text{Work} = 4(7.5 - 0.5) = 28 \text{ kms.}$$

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🔍 Answer key/Solution

Q.100

The total number of chocolates with Ram and Lakhan is more than 85 but less than 95. If Lakhan gives a particular number of chocolates to Ram, then Ram will have eight times the number of chocolates left with Lakhan. If Ram gives the same number of chocolates to Lakhan, then Lakhan will have double the number of chocolates left with Ram. How many chocolates does Ram have?

Solution:

Correct Answer : 55

Let the number of chocolates with Ram be r , the number of chocolates with Lakhan be l and the number of chocolates that has been exchanged be x .

Therefore, as per the conditions given,

$$r + x = 8(l - x)$$

$$8l - r = 9x \quad \dots (i)$$

$$\text{and } l + x = 2(r - x)$$

$$2r - l = 3x \quad \dots (ii)$$

On comparing (i) and ((ii) $\times 3$)

$$\text{We get, } 8l - r = 6r - 3l$$

$$11l = 7r$$

$$\text{Thus, } l : r = 7 : 11$$

Therefore the total number of chocolate has to be 90

Hence,

Hence, Ram has 55 chocolates with him.

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🔍 Answer key/Solution