



## CAT 2019 Slot 2

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# Verbal Ability

## Instructions

### Comprehension:

For two years, I tracked down dozens of . . . Chinese in Upper Egypt [who were] selling lingerie. In a deeply conservative region, where Egyptian families rarely allow women to work or own businesses, the Chinese flourished because of their status as outsiders. They didn't gossip, and they kept their opinions to themselves. In a New Yorker article entitled "Learning to Speak Lingerie," I described the Chinese use of Arabic as another non-threatening characteristic. I wrote, "Unlike Mandarin, Arabic is inflected for gender, and Chinese dealers, who learn the language strictly by ear, often pick up speech patterns from female customers. I've come to think of it as the lingerie dialect, and there's something disarming about these Chinese men speaking in the feminine voice." . . .

When I wrote about the Chinese in the New Yorker, most readers seemed to appreciate the unusual perspective. But as I often find with topics that involve the Middle East, some people had trouble getting past the black-and-white quality of a byline. "This piece is so orientalist I don't know what to do," Aisha Gani, a reporter who worked at The Guardian, tweeted. Another colleague at the British paper, Iman Amrani, agreed: "I wouldn't have minded an article on the subject written by an Egyptian woman—probably would have had better insight." . . .

As an MOL (man of language), I also take issue with this kind of essentialism. Empathy and understanding are not inherited traits, and they are not strictly tied to gender and race. An individual who wrestles with a difficult language can learn to be more sympathetic to outsiders and open to different experiences of the world. This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative. In Upper Egypt, the Chinese experience of struggling to learn Arabic and local culture had made them much more thoughtful. In the same way, I was interested in their lives not because of some kind of voyeurism, but because I had also experienced Egypt and Arabic as an outsider. And both the Chinese and the Egyptians welcomed me because I spoke their languages. My identity as a white male was far less important than my ability to communicate.

And that easily lobbed word—"Orientalist"—hardly captures the complexity of our interactions. What exactly is the dynamic when a man from Missouri observes a Zhejiang native selling lingerie to an Upper Egyptian woman? . . . If all of us now stand beside the same river, speaking in ways we all understand, who's looking east and who's looking west? Which way is Oriental?

For all of our current interest in identity politics, there's no corresponding sense of identity linguistics. You are what you speak—the words that run throughout your mind are at least as fundamental to your selfhood as is your ethnicity or your gender. And sometimes it's healthy to consider human characteristics that are not inborn, rigid, and outwardly defined. After all, you can always learn another language and change who you are.

### Question 1

According to the passage, which of the following is not responsible for language's ability to change us?

- A The ups and downs involved in the course of learning a language.
- B Language's ability to mediate the impact of identity markers one is born with.
- C The twists and turns in the evolution of language over time.
- D Language's intrinsic connection to our notions of self and identity.

Answer: C

### Explanation:

"This learning process—the embarrassments, the frustrations, the gradual sense of understanding and connection—is invariably transformative." From this sentence, the option A can be inferred. Hence it is incorrect.

"After all, you can always learn another language and change who you are." From this line, option B can be inferred. Hence it is incorrect.

"You are what you speak—the words that run throughout your mind are at least as fundamental to your selfhood as is your ethnicity or your gender" From this option D can be inferred. Hence it is incorrect.

The author makes no mention about the inherent ability of language to evolve over time to change a person. Hence, it is not responsible for language's ability to change us. Option C is the correct answer.

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### Question 2

A French ethnographer decides to study the culture of a Nigerian tribe. Which of the following is most likely to be the view of the author of the passage?

- A The author would discourage the ethnographer from conducting the study as Nigerian ethnographers can better understand the tribe.
- B The author would encourage the ethnographer, but ask him/her to first learn the language of the Nigerian tribe s/he wishes to study.
- C The author would encourage the ethnographer, but ask him/her to be mindful of his/her racial and gender identity in the process.
- D The author would encourage the ethnographer and recommend him/her to hire a good translator for the purpose of holding interviews.

**Answer: B**

**Explanation:**

The author is of the opinion that learning the language of local cultures would help bridge cultural barriers.

Option D is against the author's point of view. Hence it is definitely incorrect.

Option A is incorrect. The author is of the opinion that the ability to communicate is far more important than the racial divide between two people. Hence it is unlikely to be the view of the author.

Option C is incorrect as the author, in the passage is much more concerned about the ability to communicate that racial and gender identity of the person.

Option B falls in line with the viewpoint of the author. Hence it is the correct answer.

**Question 3**

**Which of the following can be inferred from the author's claim, "Which way is Oriental?"**

- A Globalisation has mitigated cultural hierarchies and barriers.
- B Orientalism is a discourse of the past, from colonial times, rarely visible today.
- C Goodwill alone mitigates cultural hierarchies and barriers.
- D Learning another language can mitigate cultural hierarchies and barriers.

**Answer: D**

**Explanation:**

"And that easily lobbed word—"Orientalist"—hardly captures the complexity of our interactions. What exactly is the dynamic when a man from Missouri observes a Zhejiang native selling lingerie to an Upper Egyptian woman? . . . If all of us now stand beside the same river, speaking in ways we all understand, who's looking east and who's looking west? Which way is Oriental?"

From the above passage, it is clear that the author consider the word Orientalist an easily lobbed word that does not capture the complex nature of interactions between people of different cultures. The author is of the opinion that if people in different parts of the world all speak in tongues that all of them understand, then the east west divide would be broken.

The author is of the opinion that learning new languages would help bridge the east west divide. There is no information provided in the passage that globalization has enabled people learn more languages and thereby mitigated cultural hierarchies and barriers. Hence, option A is incorrect.

Option B is incorrect. The author never makes the claim that Orientalism has disappeared for the most part.

The author makes no claim about goodwill. Hence option C is incorrect.

Option D correctly encapsulates the arguments made by the author. Hence it is the correct answer.

**Question 4**

**The author's critics would argue that:**

- A Language is insufficient to bridge cultural barriers.
- B Empathy can overcome identity politics.
- C Linguistic politics can be erased.
- D Orientalism cannot be practiced by Egyptians.

Answer: A

**Explanation:**

The major idea put forth by the author is that cultural barriers can be broken down and an outsider can ingrain himself with the local culture by learning the language of the culture.

The author himself says that an individual who wrestles with a difficult language would learn to be more sympathetic to outsiders. He also says that empathy is not tied to gender and race, and therefore a individual who learns languages is usually empathetic to different races in the world. Thus option B can be inferred from the passage and is incorrect.

The passage makes no mention of linguistic politics. Also he is of the opinion that a person's characteristics can be changed for the good by learning another language. Hence option C can be inferred from the author's argument and is incorrect.

The word orientalism itself means looking down upon middle eastern countries by the US and European countries. Hence, option D does not make sense.

Option A is directly in conflict with the author's main point and that would be the major criticism by the author's critics. Hence it is the correct answer.

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**Instructions**

**Comprehension:**

British colonial policy . . . went through two policy phases, or at least there were two strategies between which its policies actually oscillated, sometimes to its great advantage. At first, the new colonial apparatus exercised caution and occupied India by a mix of military power and subtle diplomacy, the high ground in the middle of the circle of circles. This, however, pushed them into contradictions. For, whatever their sense of the strangeness of the country and the thinness of colonial presence, the British colonial state represented the great conquering discourse of Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance. As inheritors and representatives of this discourse, which carried everything before it, this colonial state could hardly adopt for long such a self-denying attitude. It had restructured everything in Europe—the productive system, the political regimes, the moral and cognitive orders—and would do the same in India, particularly as some empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian or other theoretical experiments. Consequently, the colonial state could not settle simply for eminence at the cost of its marginality; it began to take initiatives to introduce the logic of modernity into Indian society. But this modernity did not enter a passive society. Sometimes, its initiatives were resisted by pre-existing structural forms. At times, there was a more direct form of collective resistance. Therefore the map of continuity and discontinuity that this state left behind at the time of independence was rather complex and has to be traced with care.

Most significantly, of course, initiatives for modernity came to assume an external character. The acceptance of modernity came to be connected, ineradicably, with subjection. This again points to two different problems, one theoretical, the other political. Theoretically, because modernity was externally introduced, it is explanatorily unhelpful to apply the logical format of the 'transition process' to this pattern of change. Such a logical format would be wrong on two counts. First, however subtly, it would imply that what was proposed to be built was something like European capitalism. (And, in any case, historians have forcefully argued that what it was to replace was not like feudalism, with or without modificatory adjectives.) But, more fundamentally, the logical structure of endogenous change does not apply here. Here transformation agendas attack as an external force. This externality is not something that can be casually mentioned and forgotten. It is inscribed on every move, every object, every proposal, every legislative act, each line of causality. It comes to be marked on the epoch itself. This repetitive emphasis on externality should not be seen as a nationalist initiative that is so well-rehearsed in Indian social science. . . .

Quite apart from the externality of the entire historical proposal of modernity, some of its contents were remarkable. . . . Economic reforms, or rather alterations . . . did not foreshadow the construction of a classical capitalist economy, with its necessary emphasis on extractive and transport sectors. What happened was the creation of a degenerate version of capitalism —what early dependency theorists called the 'development of underdevelopment'.

**Question 5**

**"Consequently, the colonial state could not settle simply for eminence at the cost of its marginality; it began to take initiatives to introduce the logic of modernity into Indian society." Which of the following best captures the sense of this statement?**

- A The cost of the colonial state's eminence was not settled; therefore, it took the initiative of introducing modernity into Indian society.
- B The colonial enterprise was a costly one; so to justify the cost it began to take initiatives to introduce the logic of modernity into Indian society.

- C The colonial state's eminence was unsettled by its marginal position; therefore, it developed Indian society by modernising it.
- D The colonial state felt marginalised from Indian society because of its own modernity; therefore, it sought to address that marginalisation by bringing its modernity to change Indian society.

**Answer: D**

**Explanation:**

From the passage it can be inferred that though the British enjoyed political eminence in India, they felt that they were still marginalised from Indian society, and hence, to bring the Indian state to the same footing, they sought to introduce modernity, which they felt was the next logical step into Indian society.

It cannot be inferred from the passage that the British introduced modernity because they believed that the cost of their eminence was not settled. Hence, option A is incorrect.

The colonial enterprise tried to introduce the logic of modernity because it felt marginalized, rather than to justify the cost of colonization. Hence option B is incorrect.

Option C states that the introduction of modernity developed Indian society. However, the last paragraph states that the exercise proved counterproductive, and there was a development of underdevelopment. Option C is incorrect.

Option D best explains the reason for the author introducing the statement mentioned in the question. Hence, option D is the correct answer.

**Question 6**

**All of the following statements, if true, could be seen as supporting the arguments in the passage, EXCEPT:**

- A throughout the history of colonial conquest, natives have often been experimented on by the colonisers.
- B modernity was imposed upon India by the British and, therefore, led to underdevelopment.
- C the change in British colonial policy was induced by resistance to modernity in Indian society.
- D the introduction of capitalism in India was not through the transformation of feudalism, as happened in Europe.

**Answer: C**

**Explanation:**

".....empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian or other theoretical experiments." From the aforementioned lines, option A can be inferred.

"What happened was the creation of a degenerate version of capitalism —what early dependency theorists called the 'development of underdevelopment'." From these lines it can be inferred that, because modernity was imposed upon India by the British, it led to the development of underdevelopment. Option B can be inferred.

From the passage, it can be understood that feudalism underwent a transformative process into capitalism, unlike the Indian transition which happened inorganically through external factors. Hence, option D can be inferred as well.

The change in British colonial policy was not induced by resistance to modernity in Indian society, but due to the perception that the British were marginalised in the context of the Indian society. Hence, option C, which cannot be inferred is the correct answer.

**Question 7**

**All of the following statements about British colonialism can be inferred from the first paragraph, EXCEPT that it:**

- A allowed some to consider the colonies as experimental sites.
- B faced resistance from existing structural forms of Indian modernity.
- C was at least partly an outcome of Enlightenment rationalism.
- D was at least partly shaped by the project of European modernity.

**Answer: B**

**Explanation:**

".....empirically inclined theorists of that generation considered the colonies a massive laboratory of utilitarian

or other theoretical experiments" From these lines option A can be inferred.

Consider the lines, "The British colonial state represented the great conquering discourse of Enlightenment rationalism, entering India precisely at the moment of its greatest unchecked arrogance. . As inheritors and representatives of this discourse, which carried everything before it, this colonial state could hardly adopt for long such a self-denying attitude." Option C can be inferred from it.

Consider the lines, "It had restructured everything in Europe—the productive system, the political regimes, the moral and cognitive orders—and would do the same in India," Option D can be inferred from these lines.

It is nowhere mentioned in the passage, that British colonialism faces resistance from the existing structural forms of Indian modernity. Hence, option B is the correct answer.

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### Question 8

Which one of the following 5-word sequences best captures the flow of the arguments in the passage?

- A Colonial policy—Enlightenment—external modernity—subjection—underdevelopment.
- B Military power—colonialism—restructuring—feudalism—capitalism.
- C Military power—arrogance—laboratory—modernity—capitalism.
- D Colonial policy—arrogant rationality—resistance—independence—development.

Answer: A

### Explanation:

The first part of the passage talks about British colonial policy, which went through two policy phases.

Hence, the options B and C which have military power as the introductory idea are incorrect.

The second idea mentioned in the passage is about Enlightenment rationalism, of which the British colonizers were inheritors and representatives of.

The subsequent ideas are about how modernity was inorganically injected into India by subjecting it to external forces. The passage further talks about how these economic alterations did not give rise to the construction of a classical capitalist economy, but rather led to the development of underdevelopment.

Option A mentions all the ideas correctly and hence it is the correct answer.

### Question 9

Which of the following observations is a valid conclusion to draw from the author's statement that "the logical structure of endogenous change does not apply here. Here transformation agendas attack as an external force"?

- A Colonised societies cannot be changed through logic; they need to be transformed with external force.
- B The transformation of Indian society did not happen organically, but was forced by colonial agendas.
- C The endogenous logic of colonialism can only bring change if it attacks and transforms external forces.
- D Indian society is not endogenous; it is more accurately characterised as aggressively exogenous.

Answer: B

### Explanation:

"Theoretically, because modernity was externally introduced, it is explanatorily unhelpful to apply the logical format of the 'transition process' to this pattern of change."

From the given lines it can be understood that the general endogenous method of the process of transition could not be accepted to British colonisation of India, because modernity did not occur naturally but was externally introduced.

The passage only states that initiatives for modernity were introduced to India through external sources. It does not state that all colonised societies cannot be changed by logic. Hence this option is incorrect.

In the case of India, the transformational agents themselves are inorganic external forces. Hence, option C cannot be inferred.

The passage nowhere states that Indian society is exogamous. Hence option D is incorrect.

Option B best describes the conclusion that can be drawn from the author's statement. Hence it is the correct answer.

### Instructions

### Comprehension:

Around the world, capital cities are disgorging bureaucrats. In the post-colonial fervour of the 20th century, coastal capitals picked by trade-focused empires were spurned for "regionally neutral" new ones. But decamping wholesale is costly and unpopular; governments these days prefer piecemeal dispersal. The trend reflects how the world has changed. In past eras, when information travelled at a snail's pace, civil servants had to cluster together. But now desk-workers can ping emails and video-chat around the world. Travel for face-to-face meetings may be unavoidable, but transport links, too, have improved.

Proponents of moving civil servants around promise countless benefits. It disperses the risk that a terrorist attack or natural disaster will cripple an entire government. Wonks in the sticks will be inspired by new ideas that walled-off capitals cannot conjure up. Autonomous regulators perform best far from the pressure and lobbying of the big city. Some even hail a cure for ascendant cynicism and populism. The unloved bureaucrats of faraway capitals will become as popular as firefighters once they mix with regular folk.

Beyond these sunny visions, dispersing central-government functions usually has three specific aims: to improve the lives of both civil servants and those living in clogged capitals; to save money; to redress regional imbalances. The trouble is that these goals are not always realised.

The first aim—improving living conditions—has a long pedigree. After the second world war, Britain moved thousands of civil servants to "agreeable English country towns" as London was rebuilt. But swapping the capital for somewhere smaller is not always agreeable. Attrition rates can exceed 80%. . . . The second reason to pack bureaucrats off is to save money. Office space costs far more in capitals. Agencies that are moved elsewhere can often recruit better workers on lower salaries than in capitals, where well-paying multinationals mop up talent.

The third reason to shift is to rebalance regional inequality. Norway treats federal jobs as a resource every region deserves to enjoy, like profits from oil. Where government jobs go, private ones follow. Sometimes the aim is to fulfil the potential of a country's second-tier cities. Unlike poor, remote places, bigger cities can make the most of relocated government agencies, linking them to local universities and businesses and supplying a better-educated workforce. The decision in 1946 to set up America's Centres for Disease Control in Atlanta rather than Washington, D.C., has transformed the city into a hub for health-sector research and business.

The dilemma is obvious. Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers; opt for larger cities with infrastructure and better-qualified residents, and the country's most deprived areas see little benefit.

Others contend that decentralisation begets corruption by making government agencies less accountable. A study in America found that state-government corruption is worse when the state capital is isolated—journalists, who tend to live in the bigger cities, become less watchful of those in power.

### Question 10

According to the passage, colonial powers located their capitals:

- A based on political expediency.
- B to promote their trading interests.
- C where they had the densest populations.
- D to showcase their power and prestige.

Answer: B

### Explanation:

"In the post-colonial fervour of the 20th century, coastal capitals picked by trade-focused empires were spurned for "regionally neutral" new ones".

From these lines, it can be inferred that the colonial empires had their capitals in the coasts as the empires were mostly focused on trade. It goes on to say that, post - colonisation, empires had their capitals changed to regionally neutral areas.

Hence, it can be directly inferred that colonies had capitals in coasts to promote their trading interests.

Option B is the correct answer.

### Question 11

According to the author, relocating government agencies has not always been a success for all of the following reasons EXCEPT:

- A a rise in pollution levels and congestion in the new locations.
- B the difficulty of attracting talented, well-skilled people in more remote areas.
- C increased avenues of corruption away from the capital city.
- D high staff losses, as people may not be prepared to move to smaller towns.

**Answer:** A

#### **Explanation:**

Option B is a problem of relocating government agencies and it can be inferred from this line " Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers". Hence, option B is incorrect.

Option C is true with respect to the passage. It can be inferred from the line " Others contend that decentralisation begets corruption by making government agencies less accountable. " Hence it is incorrect.

Option D is also mentioned in the passage. Qualified workers do not want to live in smaller cities. Hence, it is also a reason for relocation not being a success.

Option A is not mentioned in the passage and hence it is the correct answer.

### Question 12

The "long pedigree" of the aim to shift civil servants to improve their living standards implies that this move:

- A has become common practice in several countries worldwide.
- B is supported by politicians and the ruling elites.
- C takes a long time to achieve its intended outcomes.
- D is not a new idea and has been tried in the past.

**Answer:** D

#### **Explanation:**

The word pedigree has a meaning, " history of an idea or an activity". The term long pedigree indicates that the idea has been touted with a lot of times in the past.

Option D is the only option that conveys this meaning and hence it is the correct answer.

### Question 13

Based on the passage, people who support decentralising central government functions are LEAST likely to cite which of the following reasons for their view?

- A It could weaken the nexus between bureaucrats and media in the capital.
- B More independence could be enjoyed by regulatory bodies located away from political centres.
- C Policy makers may benefit from fresh thinking in a new environment.
- D It reduces expenses as infrastructure costs and salaries are lower in smaller cities.

**Answer:** A

#### **Explanation:**

The passage states that regulators perform best if they are far from the lobbying of a big city. Hence, the people who support decentralizing central government functions are likely to cite the above reason for their view. Option B and C are incorrect for this reason.

Option D is incorrect as the passage states that infrastructure costs and salaries would become lower in smaller cities. The argument is used in the passage. Hence it is correct.



The nexus between bureaucrats and media is not mentioned in the passage. Hence the argument is least likely to be used by people who support the decentralising of central government functions.

Option A is the correct answer.

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### Question 14

The "dilemma" mentioned in the passage refers to:

- A keeping government agencies in the largest city with good infrastructure or moving them to a remote area with few amenities.
- B relocating government agencies to boost growth in remote areas with poor amenities or to relatively larger cities with good amenities.
- C encouraging private enterprises to relocate to smaller towns or not incentivising them in order to keep government costs in those towns low.
- D concentrating on decongesting large cities or focusing on boosting employment in relatively larger cities.

**Answer: B**

### Explanation:

"The dilemma is obvious. Pick small, poor towns, and areas of high unemployment get new jobs, but it is hard to attract the most qualified workers; opt for larger cities with infrastructure and better-qualified residents, and the country's most deprived areas see little benefit"

Option A is incorrect. The passage makes no mention of having the government agencies in the "largest" city. It talks about having them in "larger cities". Hence it is incorrect.

Option C talks about the relocation of private enterprises. This is not mentioned in the passage as the passage is primarily about the relocation of government bureaucrats.

Option D makes no mention of decongesting large cities. Hence it is incorrect.

Option B makes the right comparison. It compares the hard task of relocating qualified workers to smaller towns, to allocating workers to larger cities, which would result in smaller towns receiving little benefit.

Option B is the correct answer.

### Instructions

Read the passage carefully and answer the questions given below:

The magic of squatter cities is that they are improved steadily and gradually by their residents. To a planner's eye, these cities look chaotic. I trained as a biologist and to my eye, they look organic. Squatter cities are also unexpectedly green. They have maximum density—1 million people per square mile in some areas of Mumbai—and have minimum energy and material use. People get around by foot, bicycle, rickshaw, or the universal shared taxi.

Not everything is efficient in the slums, though. In the Brazilian favelas where electricity is stolen and therefore free, people leave their lights on all day. But in most slums recycling is literally a way of life. The Dharavi slum in Mumbai has 400 recycling units and 30,000 ragpickers. Six thousand tons of rubbish are sorted every day. In 2007, the Economist reported that in Vietnam and Mozambique, "Waves of gleaners sift the sweepings of Hanoi's streets, just as Mozambiquan children pick over the rubbish of Maputo's main tip. Every city in Asia and Latin America has an industry based on gathering up old cardboard boxes." . . .

In his 1985 article, Architect Peter Calthorpe made a statement that still jars with most people: "The city is the most environmentally benign form of human settlement. Each city dweller consumes less land, less energy, less water, and produces less pollution than his counterpart in settlements of lower densities." "Green Manhattan" was the inflammatory title of a 2004 New Yorker article by David Owen. "By the most significant measures," he wrote, "New York is the greenest community in the United States and one of the greenest cities in the world . . . The key to New York's relative environmental benignity is its extreme compactness. . . . Placing one and a half million people on a twenty - three-square-mile island sharply reduces their opportunities to be wasteful." He went on to note that this very compactness forces people to live in the world's most energy-efficient apartment buildings. . . .

Urban density allows half of humanity to live on 2.8 per cent of the land. . . . Consider just the infrastructure efficiencies. According to a 2004 UN report: "The concentration of population and enterprises in urban areas greatly reduces the unit cost of piped water, sewers, drains, roads, electricity, garbage collection, transport, health care, and schools." . . .

[T]he nationally subsidised city of Manaus in northern Brazil "answers the question" of how to stop deforestation: give people decent jobs. Then they can afford houses, and gain security. One hundred thousand people who would otherwise be deforesting the jungle around Manaus are now prospering in town making such things as mobile phones and televisions. . . .

Of course, fast-growing cities are far from an unmitigated good. They concentrate crime, pollution, disease and injustice as much as business, innovation, education and entertainment. . . . But if they are overall a net good for those who move there, it is because cities offer more than just jobs. They are transformative: in the slums, as well as the office towers and leafy suburbs, the progress is from hick to metropolitan to cosmopolitan . . .

**Question 15**

**We can infer that Calthorpe's statement "still jars" with most people because most people:**

- A do not consider cities to be eco-friendly places.
- B consider cities to be very crowded and polluted.
- C do not regard cities as good places to live in.
- D regard cities as places of disease and crime.

**Answer: A**

**Explanation:**

"The city is the most environmentally benign form of human settlement. Each city dweller consumes less land, less energy, less water, and produces less pollution than his counterpart in settlements of lower densities."

Calthorpe's major contention is that cities are eco-friendly as they consume less resources than people living in places that have lower population densities.

Options B,C,D does not directly contradict Calthorpe's statement. Hence , they cannot be the reason why the statement that jars with most people.

Option A is directly opposed to Calthorpe's viewpoints. Hence, this option is most likely to jar with most people.

Option A i the correct answer.

**Question 16**

**In the context of the passage, the author refers to Manaus in order to:**

- A explain how urban areas help the environment.
- B describe the infrastructure efficiencies of living in a city.
- C promote cities as employment hubs for people.
- D explain where cities source their labour for factories.

**Answer: A**

**Explanation:**

The author gives the example of Manaus to show how an entire community of people whose major job was deforestation of the jungle have now been able to prosper by making things such as mobile phones and televisions.

Option A is the correct answer. It is the major reason for the author giving out the example of Manaus.

Options D is incorrect and is not mentioned in the passage.

Option B and C are the pros of being in a squatter city, but it is not the reason why the author gives the example of Manaus.

Option A is the correct answer.

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**Question 17**

**According to the passage, squatter cities are environment-friendly for all of the following reasons EXCEPT:**

- A they recycle material.

- B their transportation is energy efficient.
- C their streets are kept clean.
- D they sort out garbage.

**Answer: C**

**Explanation:**

Option A would help keep squatter cities environment friendly, as recycling material would reduce the amount of non-biodegradable materials present in the environment.

Option B would also help squatter cities be more environment friendly by reducing pollution.

Option D would also help squatter cities be more environment friendly as sorting garbage and treating them would go a long way in preventing soil and water pollution.

Option C is incorrect. This is because, keeping the streets clean would mean that the wastes are somewhere in dumped in the environment near the local community.

Hence, option C cannot be inferred from the passage and is the correct answer.

**Question 18**

**Which one of the following statements would undermine the author's stand regarding the greenness of cities?**

- A Sorting through rubbish contributes to the rapid spread of diseases in the slums.
- B The high density of cities leads to an increase in carbon dioxide and global warming.
- C The compactness of big cities in the West increases the incidence of violent crime.
- D Over the last decade the cost of utilities has been increasing for city dwellers.

**Answer: B**

**Explanation:**

The rapid spread of diseases in the slum would only affect the people in the slums and not the greenness of the cities. Hence it is incorrect.

Option C is incorrect as the incidence of crime in the West would not impact the greenness of the cities.

Increasing cost of utilities, in the same way would not affect the flora of the cities.

An increase in carbon-di-oxide and global warming, however, would contribute greatly to the change in climate. A change in climate would adversely affect the greenery in the cities. Hence, this would greatly undermine the author's stand that cities are indeed green.

**Question 19**

**From the passage it can be inferred that cities are good places to live in for all of the following reasons EXCEPT that they:**

- A help prevent destruction of the environment.
- B contribute to the cultural transformation of residents.
- C offer employment opportunities.
- D have suburban areas as well as office areas.

**Answer: D**

**Explanation:**

From the sentence, "One hundred thousand people who would otherwise be deforesting the jungle around Manaus are now prospering in town making such things as mobile phones and televisions" given in the passage, option A can be inferred.

"But if they are overall a net good for those who move there, it is because cities offer more than just jobs. They are transformative" From this line, option B can be inferred.

The entire second paragraph of the passage mentions how multiple people have got jobs in squatter cities. Hence, option C can be

inferred.

Option D is not a reason for cities being a good place to live in. Hence, this option cannot be inferred and is the correct answer.

## Top-500 Free CAT Questions (With Solutions)

### Instructions

#### Comprehension:

War, natural disasters and climate change are destroying some of the world's most precious cultural sites. Google is trying to help preserve these archaeological wonders by allowing users access to 3D images of these treasures through its site. But the project is raising questions about Google's motivations and about who should own the digital copyrights. Some critics call it a form of "digital colonialism." When it comes to archaeological treasures, the losses have been mounting. ISIS blew up parts of the ancient city of Palmyra in Syria and an earthquake hit Bagan, an ancient city in Myanmar, damaging dozens of temples, in 2016. In the past, all archaeologists and historians had for restoration and research were photos, drawings, remnants and intuition. But that's changing. Before the earthquake at Bagan, many of the temples on the site were scanned. . . . [These] scans . . . are on Google's Arts & Culture site. The digital renditions allow viewers to virtually wander the halls of the temple, look up-close at paintings and turn the building over, to look up at its chambers. . . . [Google Arts & Culture] works with museums and other nonprofits . . . to put high-quality images online. The images of the temples in Bagan are part of a collaboration with CyArk, a nonprofit that creates the 3D scanning of historic sites. . . . Google . . . says [it] doesn't make money off this website, but it fits in with Google's mission to make the world's information available and useful.

Critics say the collaboration could be an attempt by a large corporation to wrap itself in the sheen of culture. Ethan Watrall, an archaeologist, professor at Michigan State University and a member of the Society for American Archaeology, says he's not comfortable with the arrangement between CyArk and Google. . . . Watrall says this project is just a way for Google to promote Google. "They want to make this material accessible so people will browse it and be filled with wonder by it," he says. "But at its core, it's all about advertisements and driving traffic." Watrall says these images belong on the site of a museum or educational institution, where there is serious scholarship and a very different mission. . . . [There's] another issue for some archaeologists and art historians. CyArk owns the copyrights of the scans — not the countries where these sites are located. That means the countries need CyArk's permission to use these images for commercial purposes.

Erin Thompson, a professor of art crime at John Jay College of Criminal Justice in New York City, says it's the latest example of a Western nation appropriating a foreign culture, a centuries-long battle. . . . CyArk says it copyrights the scans so no one can use them in an inappropriate way. The company says it works closely with authorities during the process, even training local people to help. But critics like Thompson are not persuaded. . . . She would prefer the scans to be owned by the countries and people where these sites are located.

#### Question 20

Which of the following, if true, would most strongly invalidate Dr. Watrall's objections?

- A Google takes down advertisements on its website hosting CyArk's scanned images.
- B There is a ban on CyArk scanning archeological sites located in other countries.
- C CyArk uploads its scanned images of archaeological sites onto museum websites only.
- D CyArk does not own the copyright on scanned images of archaeological sites.

Answer: C

#### Explanation:

"They want to make this material accessible so people will browse it and be filled with wonder by it," he says. "But at its core, it's all about advertisements and driving traffic." Watrall says these images belong on the site of a museum or educational institution, where there is serious scholarship and a very different mission".

From the above mentioned lines it can be reasonably inferred that Dr. Watrall is not critical if the digitally scanned images are on official museum websites and archaeological sites.

Watrall's objections do not touch upon the ownership of the copyright of the scanned images. His objections are mainly about the uneasy relationship between Cyark and Google, and the profit based motive of Google. Hence, option D is incorrect.

Option C mentions the case when CyArk uploads the scanned images on museum sites only. This would invalidate the arguments made by Dr.Watrall.

Option A is incorrect as Dr. Watrall considers the venture as a medium to promote Google itself. Just taking down advertisements would not invalidate the professor's claim.

Option B is incorrect as a ban in certain locations would certainly not prevent promotion of and commercialization by Google. The same reason can be attributed to option D. CyArk not owning the copyright of the archaeological sites would not prevent using it for commercial purposes.

Hence, option C is the correct answer.

#### Question 21

By "digital colonialism", critics of the CyArk-Google project are referring to the fact that:

- A the scanning process can damage delicate frescos and statues at the sites.
- B CyArk and Google have not shared the details of digitisation with the host countries.
- C countries where the scanned sites are located do not own the scan copyrights.
- D CyArk and Google have been scanning images without copyright permission from host countries.

Answer: C

#### Explanation:

From the lines, "[There's] another issue for some archaeologists and art historians. CyArk owns the copyrights of the scans – not the countries where these sites are located. That means the countries need CyArk's permission to use these images for commercial purposes", it can be seen that critics view the Google-CyArk project as one that appropriates the copyrights of the digital scans in such a way even the countries in which the sites are located need CyArk's permission to use the images.

Option A, D, B are not mentioned anywhere in the passage.

Option C describes perfectly why the critics of the Google-CyArk project term it as digital colonialism and hence it is the correct answer.

#### Question 22

Of the following arguments, which one is LEAST likely to be used by the companies that digitally scan cultural sites?

- A It helps preserve precious images in case the sites are damaged or destroyed.
- B It enables people who cannot physically visit these sites to experience them.
- C It provides images free of cost to all users.
- D It allows a large corporation to project itself as a protector of culture.

Answer: D

#### Explanation:

The option that would not help a company that digitally scans cultural sites would be the given answer.

Option A is incorrect as preserving images of sites in case they are damaged would be one of the foremost arguments made by these companies.

Option B and C would surely help the cause of companies that scan cultural sites. Hence, they are incorrect.

Option D is the correct answer. A company that digitally scans cultural sites would not give the reason of being able to project itself as a protector of culture as a reason to scan the cultural sites. This is a self-centered goal such a company and hence is the least likely of the arguments that would be used in this case.

Hence, option D is the correct answer.

## Free CAT Study Material

#### Question 23

Based on his views mentioned in the passage, one could best characterise Dr. Watrall as being:

- A uneasy about the marketing of archaeological images for commercial use by firms such as Google and CyArk.

- B dismissive of laypeople's access to specialist images of archaeological and cultural sites.
- C critical about the links between a non-profit and a commercial tech platform for distributing archaeological images.
- D opposed to the use of digital technology in archaeological and cultural sites in developing countries.

Answer: C

**Explanation:**

From the passage, it can be inferred that Dr. Watrall is not comfortable with the arrangement between Cyark and Google. He is of the opinion that though the material is promoted as a means for people to view the artifacts, the ulterior motive is for advertisements and commercial purposes.

Option A is incorrect. The professor is uneasy about the arrangement between a non-profit organisation and a commercial organisation, whose values are, in reality, different from what they portray.

Option B is incorrect. The professor is not dismissive of laypeople's access to specialist images and such information is not given in the passage.

Option D is incorrect. The professor is only dismissive of the commercial agreement between two organisations that portray themselves to be involved in non-profit work. He is not against the use of digital technology in archaeological and cultural sites in developing countries.

Option C is correct and it correctly represents the views of professor Dr. Watrall.

**Question 24**

**In Dr. Thompson's view, CyArk owning the copyright of its digital scans of archaeological sites is akin to:**

- A tourists uploading photos of monuments onto social media.
- B the seizing of ancient Egyptian artefacts by a Western museum.
- C the illegal downloading of content from the internet.
- D digital platforms capturing users' data for market research.

Answer: B

**Explanation:**

After reading the lines, "Erin Thompson, a professor of art crime at John Jay College of Criminal Justice in New York City, says it's the latest example of a Western nation appropriating a foreign culture, a centuries-long battle." it can be inferred that professor accuses CyArk of appropriating a foreign culture.

The only option present that is an example of a western nation appropriating a foreign culture would be the seizing of ancient Egyptian artefacts by a Western museum. Hence, option B is the correct answer.

**Instructions**

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.

**Question 25**

1. To the uninitiated listener, atonal music can sound like chaotic, random noise.
2. Atonality is a condition of music in which the constructs of the music do not 'live' within the confines of a particular key signature, scale, or mode.
3. After you realize the amount of knowledge, skill, and technical expertise required to compose or perform it, your tune may change, so to speak.
4. However, atonality is one of the most important movements in 20th century music.

Answer:2143

**Explanation:**

After reading all the sentences, it can be inferred that though atonal music can sometimes sound random and chaotic, there is a lot of knowledge and skill that is required to perform atonal music.

Sentence 2 talks about what exactly atonal music is. Hence, this sentence must be the first sentence of the paragraph. Sentence 1 talks about the misconceptions of atonal music that the uninitiated make. This sentence must be the second sentence of the passage.

Sentence 4, now clears the misconception about atonality and states that it is one of the most important movements in music. Sentence 3 gives the reason why atonality is music is so difficult to attain and says that the untrained listener would change his mind when he understands the amount of knowledge and skill required to produce atonality. Therefore, sentences 4 and 3 form a block.

Therefore the correct sequence of sentences is 2-1-4-3.

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### Question 26

1. Living things—animals and plants—typically exhibit correlational structure.
2. Adaptive behaviour depends on cognitive economy, treating objects as equivalent.
3. The information we receive from our senses, from the world, typically has structure and order, and is not arbitrary.
4. To categorize an object means to consider it equivalent to other things in that category, and different—along some salient dimension—from things that are not.

Answer:2431

#### Explanation:

After reading all the sentences, it can be inferred that the passage talks about how comparisons are made between objects in different aspects, and how such comparisons are important facets of cognitive ability and consequently our adaptive behaviour.

Sentence 2 introduces how adaptive behavior depends on cognitive economy. Hence, it is the first sentence of the paragraph.

Sentence 4 elaborates on how different objects are compared. This sentence logically follows sentence 2. Sentence 3 shows how such comparisons have structure and order, and how they are not arbitrary. Hence, sentence 3 follows sentence 4. Sentence 1 completes the passage in a way that elucidates how animals and plants are equivalent to each other by exhibiting correlational structure.

The correct sequence is 2-4-3-1.

### Question 27

1. Conceptualisations of 'women's time' as contrary to clock-time and clock-time as synonymous with economic rationalism are two of the deleterious results of this representation.
2. While dichotomies of 'men's time', 'women's time', clock-time, and caring time can be analytically useful, this article argues that everyday caring practices incorporate a multiplicity of times; and both men and women can engage in these multiple-times
3. When the everyday practices of working sole fathers and working sole mothers are carefully examined to explore conceptualisations of gendered time, it is found that caring time is often more focused on the clock than generally theorised.
4. Clock-time has been consistently represented in feminist literature as a masculine artefact representative of a 'time is money' perspective.

Answer:4132

#### Explanation:

After reading all the lines it can be seen that the paragraph talks about the deleterious results of introducing the concept of women's time, and how the everyday practices of both men and women incorporate a multiplicity of times.

Sentence 4 introduces the concept of clock time which has been represented in feminist literature and it is the introductory sentence of the paragraph. The passage goes on to say that the concept of 'women's time' as is deleterious. Hence, sentence 1 follows sentence 4.

Sentence 3 explains how the concept of clock time actually works out for working sole fathers and working sole mothers. It follows sentence 1. Sentence 2 gives a summary of the paragraph which states that the everyday caring practices involve a multiplicity of times hence it would be the last sentence of the paragraph.

The correct order of sequence is 4-1-3-2.

#### Instructions

The passage given below is followed by four alternate summaries. Choose the option that best captures the essence of the passage.

### Question 28

Language is an autapomorphy found only in our lineage, and not shared with other branches of our group such as primates. We also have no definitive evidence that any species other than Homo sapiens ever had language. However, it must be noted straightaway that 'language' is not a monolithic entity, but rather a complex bundle of traits that must have evolved over a significant time frame....

Moreover, language

crucially draws on aspects of cognition that are long established in the primate lineage, such as memory: the language faculty as a whole comprises more than just the uniquely linguistic features.

- A Language evolved with linguistic features building on features of cognition such as memory.
- B Language, a derived trait found only in humans, has evolved over time and involves memory.
- C Language is not a single, uniform entity but the end result of a long and complex process of linguistic evolution.
- D Language is a distinctively human feature as there is no evidence of the existence of language in any other species.

**Answer: A**

**Explanation:**

The passage states that language is only found in humans and not among any other primates. The passage also states that language is a bundle of traits such as memory that evolved over a period of time.

The passage does not talk about language that has evolved over time. Hence, option B is incorrect.

Option C does not completely summarise the passage. Hence, it is incorrect.

Option D talks only about language being a distinctive human feature. It does not talk about language having evolved from a complex bundle of traits. Hence it is incorrect.

Option A correctly summarises the main idea of the passage and is the correct answer.

## CAT Syllabus (Download PDF)

**Question 29**

**Privacy-challenged office workers may find it hard to believe, but open-plan offices and cubicles were invented by architects and designers who thought that to break down the social walls that divide people, you had to break down the real walls, too. Modernist architects saw walls and rooms as downright fascist. The spaciousness and flexibility of an open plan would liberate homeowners and office dwellers from the confines of boxes. But companies took up their idea less out of a democratic ideology than a desire to pack in as many workers as they could. The typical open-plan office of the first half of the 20th century was a white-collar assembly line. Cubicles were interior designers' attempt to put some soul back in.**

- A Wall-free office spaces could have worked out the way their utopian inventors intended had companies cared for workers' satisfaction.
- B Wall-free office spaces did not quite work out as desired and therefore cubicles came into being.
- C Wall-free office spaces did not quite work out the way their utopian inventors intended, as they became tools for exploitation of labor.
- D Wall-free office spaces did not quite work out as companies don't believe in democratic ideology.

**Answer: C**

**Explanation:**

After reading the entire paragraph, it can be inferred that the main idea of the passage is that while the inventors of the open-plan offices had the liberation of office dwellers from boxes in mind, the companies used it to pack as much people as possible inside.

Option A is incorrect as the passage makes no mentions about workers satisfaction.

Option B is incorrect as it misrepresents the timeline given in the passage. Cubicles existed earlier and only later were wall free office spaces invented.

Option D is incorrect as it could not be inferred from the passage that the companies that did not believe in democratic ideology

Option C correctly encapsulates the main idea of the passage and hence it is the correct answer.

**Question 30**

**Social movement organizations often struggle to mobilize supporters from allied movements in their efforts to achieve critical mass. Organizations with hybrid identities—those whose organizational identities span the boundaries of two or more social movements, issues, or identities—are vital to mobilizing these constituencies. Studies of the post-9/11 U.S. antiwar movement show that individuals with past involvement in non-anti-war movements are more likely to join hybrid organizations than are individuals without involvement in non-anti-war movements. In addition, they show that organizations with hybrid identities occupy relatively more central positions in inter-organizational contact networks within the antiwar movement and thus recruit significantly more participants in demonstrations than do non hybrid organizations.**



- A Movements that work towards social change often find it difficult to mobilize a critical mass of supporters.
- B Organizations with hybrid identities are able to mobilize individuals with different points of view.
- C Post 9/11 studies show that people who are involved in non anti-war movements are likely to join hybrid organizations.
- D Hybrid organizations attract individuals that are deeply involved in anti-war movements.

**Answer: B**

**Explanation:**

After reading all the lines of the paragraph, it is evident that social movement organisations depend on organisations with hybrid identities because , within them they contain individuals with multiple points of views on different movements and issues. The example gives shows how people who are campaigning for non-anti-war movements are more likely to join hybrid organisations. It also says that organisations with hybrid identities occupy more central positions within organisations that are involved in anti-war movements.

Option A is incorrect. The passage talks more about why hybrid organisations are vital to providing participants in social movements.

Option C is just an illustration of the idea that the paragraph is trying to make. Hence, it would not be the most appropriate summary of the paragraph.

Option D is incorrect. From the paragraph we can infer that hybrid organisations attract individuals that are deeply involved in non-anti-war movements.

Option B is an appropriate summary of the passage and hence it is the correct answer.

**Instructions**

For the following questions answer them individually

**Question 31**

Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. Ocean plastic is problematic for a number of reasons, but primarily because marine animals eat it.
2. The largest numerical proportion of ocean plastic falls in small size fractions.
3. Aside from clogging up the digestive tracts of marine life, plastic also tends to adsorb pollutants from the water column.
4. Plastic in the oceans is arguably one of the most important and pervasive environmental problems today.
5. Eating plastic has a number of negative consequences such as the retention of plastic particles in the gut for longer periods than normal food particles.

**Answer:2**

**Explanation:**

After reading all the sentences it can be inferred that the passage talks about the impact of ocean plastic on marine organisms.

Sentence 4 introduces the important and pervasive environmental problem of having plastic in the oceans.Hence it is the first sentence of the passage. Sentence 1 gives the reason behind why ocean plastic is problematic, elucidating that marine animals eat it. Hence it should follow sentence 4. Sentence 5 gives the consequences of marine animals eating ocean plastic. Sentence 3 further elaborates sentence 5 and follows it.

Hence the correct order of sentences is 4-1-5-3. Sentence 2 does not fit in with the rest of the passage and is the correct option.

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**Question 32**

The four sentences (labelled 1, 2, 3, 4) given below, when properly sequenced would yield a coherent paragraph. Decide on the proper sequence of the order of the sentences and key in the sequence of the four numbers as your answer.

1. Such a belief in the harmony of nature requires a purpose presumably imposed by the goodness and wisdom of a deity.
2. These parts, all fit together into an integrated, well-ordered system that was created by design.
3. Historically, the notion of a balance of nature is part observational, part metaphysical, and not scientific in any way.
4. It is an example of an ancient belief system called teleology, the notion that what we call nature has a predetermined destiny associated with its component parts.

**Answer:3421**

**Explanation:**

After reading all the sentences it can be reasonably inferred that the passage talks about the ancient belief system called teleology which describes how nature has a predetermined destiny associated with its component parts, and how these parts fit together into an ordered system.

Sentence 3 introduces the idea of the notion of balance of nature. Hence, this would serve as the introductory sentence. Sentence 4 gives an example of a system that tries to explain the balance in nature called teleology. Hence, this sentence follows sentence 3. Sentence 2 follows sentence 4 as it furthers the idea given in sentence 4. It explains about how the component parts explained in sentence 4 fit together. Sentence 1 would serve as the concluding sentence as it gives the necessary condition required to have a belief that has been explained in sentences 4 and 2.

Hence, the correct ordering of the sentences is 3-4-2-1.

**Question 33**

Five sentences related to a topic are given below in a jumbled order. Four of them form a coherent and unified paragraph. Identify the odd sentence that does not go with the four. Key in the number of the option that you choose.

1. Socrates told us that 'the unexamined life is not worth living' and that to 'know thyself' is the path to true wisdom
2. It suggests that you should adopt an ancient rhetorical method favored by the likes of Julius Caesar and known as 'illeism' - or speaking about yourself in the third person.
3. Research has shown that people who are prone to rumination also often suffer from impaired decision making under pressure and are at a substantially increased risk of depression.
4. Simple rumination - the process of churning your concerns around in your head - is not the way to achieve self-realization.
5. The idea is that this small change in perspective can clear your emotional fog, allowing you to see past your biases.

Answer:1

**Explanation:**

After reading all the sentences, it can be reasonably inferred that the passage talks about how rumination is not the way to achieve-self realization, but another method favored by Caesar, 'illeism' would help a person see past his biases.

Sentence 4 introduces the idea of rumination. Hence this sentence would serve as the introductory sentence. Sentence 3 follows sentence 4 because it indicates the results of the research done on rumination. Sentence 2 would be the next logical progression, since it puts forth an alternative to rumination, known as illeism. Sentence 2 and sentence 5 would form a block as sentence 5 explains the consequences of adopting the ancient method of illeism, mentioned in sentence 2.

4-3-2-5 would be the correct ordering of the sentences. Sentence 1 does not fit in with the passage and hence, it is the correct answer.

**Question 34**

Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. A particularly interesting example of inference occurs in many single panel comics.
2. It's the creator's participation and imagination that makes the single-panel comic so engaging and so rewarding.
3. Often, the humor requires you to imagine what happened in the instant immediately before or immediately after the panel you're being shown.
4. To get the joke, you actually have to figure out what some of these missing panels must be.
5. It is as though the cartoonist devised a series of panels to tell the story and has chosen to show you only one - and typically not even the funniest.

Answer:2

**Explanation:**

After reading all the sentences it is clear that the paragraph talks about how to understand the humor behind the single panel comics.

The sentence 1 sets the platform for the author to explain how to infer humour in a single panel comic.

Consider the sentences 3,4,5. Those sentences are aimed at the reader.

"3. Often, the humor requires you to imagine what happened in the instant immediately before or immediately after the panel you're being shown."

"4. To get the joke, you actually have to figure out what some of these missing panels must be."

"5. It is as though the cartoonist devised a series of panels to tell the story and has chosen to show you only one - and typically not even the funniest."

Sentence 2 on the other hand is a stand alone sentence that does not fit in with the rest of the paragraph. Hence, it is the odd sentence.

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## Instructions

Ten players, as listed in the table below, participated in a rifle shooting competition comprising of 10 rounds. Each round had 6 participants. Players numbered 1 through 6 participated in Round 1, players 2 through 7 in Round 2, ..., players 5 through 10 in Round 5, players 6 through 10 and 1 in Round 6, players 7 through 10, 1 and 2 in Round 7 and so on. The top three performances in each round were awarded 7, 3 and 1 points respectively. There were no ties in any of the 10 rounds. The table below gives the total number of points obtained by the 10 players after Round 6 and Round 10.

Player No.	Player Name	Points after Round 6	Points after Round 10
1	Amita	8	18
2	Bala	2	5
3	Chen	3	6
4	David	6	6
5	Eric	3	10
6	Fatima	10	10
7	Gordon	17	17
8	Hansa	1	4
9	Ikea	2	17
10	Joshin	14	17

The following information is known about Rounds 1 through 6:

- Gordon did not score consecutively in any two rounds.
- Eric and Fatima both scored in a round.

The following information is known about Rounds 7 through 10:

- Only two players scored in three consecutive rounds. One of them was Chen. No other player scored in any two consecutive rounds.
- Joshin scored in Round 7, while Amita scored in Round 10.
- No player scored in all the four rounds.

## Question 35

What were the scores of Chen, David, and Eric respectively after Round 3?

- A 3, 6, 3
- B 3, 3, 3
- C 3, 3, 0
- D 3, 0, 3

Answer: B

## Explanation:

From the condition given in the premise, we can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A		X	X	X	X		8					18
B			X	X	X	X	2					5
C				X	X	X	3	X				6
D					X	X	6	X	X			6
E						X	3	X	X	X		10
F							10	X	X	X	X	10
G	X						17		X	X	X	17
H	X	X					1			X	X	4
I	X	X	X				2				X	17
J	X	X	X	X			14					17

The information known about Rounds 1 through 6:

1. Gordon(G) did not score consecutively in any two rounds.
2. Eric(E) and Fatima(F) both scored in a round.

By observing the table:

1. Jordan(J) scored 7 points in both the rounds 5th & 6th.
2. Amita (A) scored 1,7 points then she scored 7 in the first round.
3. Bala (B) scored 1 point in both the rounds 1st and 2nd.
4. Ikea (I) scored 1 point in the round 4th and 5th.
5. Gordon(G- 7,7,3) did not score consecutively in any two rounds so it scored in 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> rounds respectively.

We can make the following table from the details given in the question.

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

1. Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.
2. Ikea scored 15 points (1,7,7) in three rounds respectively.
3. Eric scored 7 in round 10.
4. Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8	7	0	0	3	18
B	1	1	X	X	X	X	2	0	0	3	0	5
C	3	0	0	X	X	X	3	X	1	1	1	6
D	0	3	0	3	X	X	6	X	X	0	0	6
E	0	0	3	0	0	X	3	X	X	X	7	10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17	0	X	X	X	17
H	X	X	1	0	0	0	1	0	3	X	X	4
I	X	X	X	1	1	0	2	1	7	7	X	17
J	X	X	X	X	7	7	14	3	0	0	0	17

Hence option B is correct.

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### Question 36

Which three players were in the last three positions after Round 4?

- A Bala, Ikea, Joshin
- B Bala, Hansa, Ikea
- C Bala, Chen, Gordon
- D Hansa, Ikea, Joshin

Answer: D

**Explanation:**

From the condition given in the premise, we can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A		X	X	X	X		8					18
B			X	X	X	X	2					5
C				X	X	X	3	X				6
D					X	X	6	X	X			6
E						X	3	X	X	X		10
F							10	X	X	X	X	10
G	X						17		X	X	X	17
H	X	X					1			X	X	4
I	X	X	X				2				X	17
J	X	X	X	X			14					17

The information known about Rounds 1 through 6:

1. Gordon(G) did not score consecutively in any two rounds.
2. Eric(E) and Fatima(F) both scored in a round.

By observing the table:

1. Jordan(J) scored 7 points in both the rounds 5th & 6th.
2. Amita (A) scored 1,7 points then she scored 7 in the first round.
3. Bala (B) scored 1 point in both the rounds 1st and 2nd.
4. Ikea (I) scored 1 point in the round 4th and 5th.
5. Gordon(G- 7,7,3) did not score consecutively in any two rounds so it scored in 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> rounds respectively.

We can make the following table from the details given in the question.

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

1. Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.
2. Ikea scored 15 points (1,7,7) in three rounds respectively.
3. Eric scored 7 in round 10.
4. Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8	7	0	0	3	18
B	1	1	X	X	X	X	2	0	0	3	0	5
C	3	0	0	X	X	X	3	X	1	1	1	6
D	0	3	0	3	X	X	6	X	X	0	0	6
E	0	0	3	0	0	X	3	X	X	X	7	10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17	0	X	X	X	17
H	X	X	1	0	0	0	1	0	3	X	X	4
I	X	X	X	1	1	0	2	1	7	7	X	17
J	X	X	X	X	7	7	14	3	0	0	0	17

Hence option D is correct.

**Question 37**

**Which player scored points in maximum number of rounds?**

- A Joshin
- B Chen
- C Amita
- D Ikea

**Answer: D**

**Explanation:**

From the condition given in the premise, we can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A		X	X	X	X		8					18
B			X	X	X	X	2					5
C				X	X	X	3	X				6
D					X	X	6	X	X			6
E						X	3	X	X	X		10
F							10	X	X	X	X	10
G	X						17		X	X	X	17
H	X	X					1			X	X	4
I	X	X	X				2				X	17
J	X	X	X	X			14					17

The information known about Rounds 1 through 6:

- Gordon(G) did not score consecutively in any two rounds.
- Eric(E) and Fatima(F) both scored in a round.

By observing the table:

- Jordan(J) scored 7 points in both the rounds 5th & 6th.
- Amita (A) scored 1,7 points then she scored 7 in the first round.
- Bala (B) scored 1 point in both the rounds 1st and 2nd.
- Ikea (I) scored 1 point in the round 4th and 5th.
- Gordon(G- 7,7,3) did not score consecutively in any two rounds so it scored in 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> rounds respectively.

We can make the following table from the details given in the question.

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

- Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.
- Ikea scored 15 points (1,7,7) in three rounds respectively.
- Eric scored 7 in round 10.
- Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8	7	0	0	3	18
B	1	1	X	X	X	X	2	0	0	3	0	5
C	3	0	0	X	X	X	3	X	1	1	1	6
D	0	3	0	3	X	X	6	X	X	0	0	6
E	0	0	3	0	0	X	3	X	X	X	7	10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17	0	X	X	X	17
H	X	X	1	0	0	0	1	0	3	X	X	4
I	X	X	X	1	1	0	2	1	7	7	X	17
J	X	X	X	X	7	7	14	3	0	0	0	17

Hence option D is correct.

**Question 38**

**Which players scored points in the last round?**

- A Amita, Eric, Joshin
- B Amita, Chen, David
- C Amita, Bala, Chen
- D Amita, Chen, Eric

**Answer: D**

**Explanation:**

From the condition given in the premise, we can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A		X	X	X	X		8					18
B			X	X	X	X	2					5
C				X	X	X	3	X				6
D					X	X	6	X	X			6
E						X	3	X	X	X		10
F							10	X	X	X	X	10
G	X						17		X	X	X	17
H	X	X					1			X	X	4
I	X	X	X				2				X	17
J	X	X	X	X			14					17

The information known about Rounds 1 through 6:

1. Gordon(G) did not score consecutively in any two rounds.
2. Eric(E) and Fatima(F) both scored in a round.

By observing the table:

1. Jordan(J) scored 7 points in both the rounds 5th & 6th.
2. Amita (A) scored 1,7 points then she scored 7 in the first round.
3. Bala (B) scored 1 point in both the rounds 1st and 2nd.
4. Ikea (I) scored 1 point in the round 4th and 5th.
5. Gordon(G- 7,7,3) did not score consecutively in any two rounds so it scored in 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> rounds respectively.

We can make the following table from the details given in the question.

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8					18
B	1	1	X	X	X	X	2					5
C	3	0	0	X	X	X	3	X				6
D	0	3	0	3	X	X	6	X	X			6
E	0	0	3	0	0	X	3	X	X	X		10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17		X	X	X	17
H	X	X	1	0	0	0	1			X	X	4
I	X	X	X	1	1	0	2				X	17
J	X	X	X	X	7	7	14					17

T: Total after the sixth round and TT: Total after the 10th round.

- Only two players scored in three consecutive rounds. One of them was Chen. So He scored 1 point in the rounds 8th, 9th and 10th.
- Ikea scored 15 points (1,7,7) in three rounds respectively.
- Eric scored 7 in round 10.
- Amita will score 3 in round 10, and 7 in round 7.

We can make the following table:

	1	2	3	4	5	6	T	7	8	9	10	TT
A	7	X	X	X	X	1	8	7	0	0	3	18
B	1	1	X	X	X	X	2	0	0	3	0	5
C	3	0	0	X	X	X	3	X	1	1	1	6
D	0	3	0	3	X	X	6	X	X	0	0	6
E	0	0	3	0	0	X	3	X	X	X	7	10
F	0	0	7	0	3	0	10	X	X	X	X	10
G	X	7	0	7	0	3	17	0	X	X	X	17
H	X	X	1	0	0	0	1	0	3	X	X	4
I	X	X	X	1	1	0	2	1	7	7	X	17
J	X	X	X	X	7	7	14	3	0	0	0	17

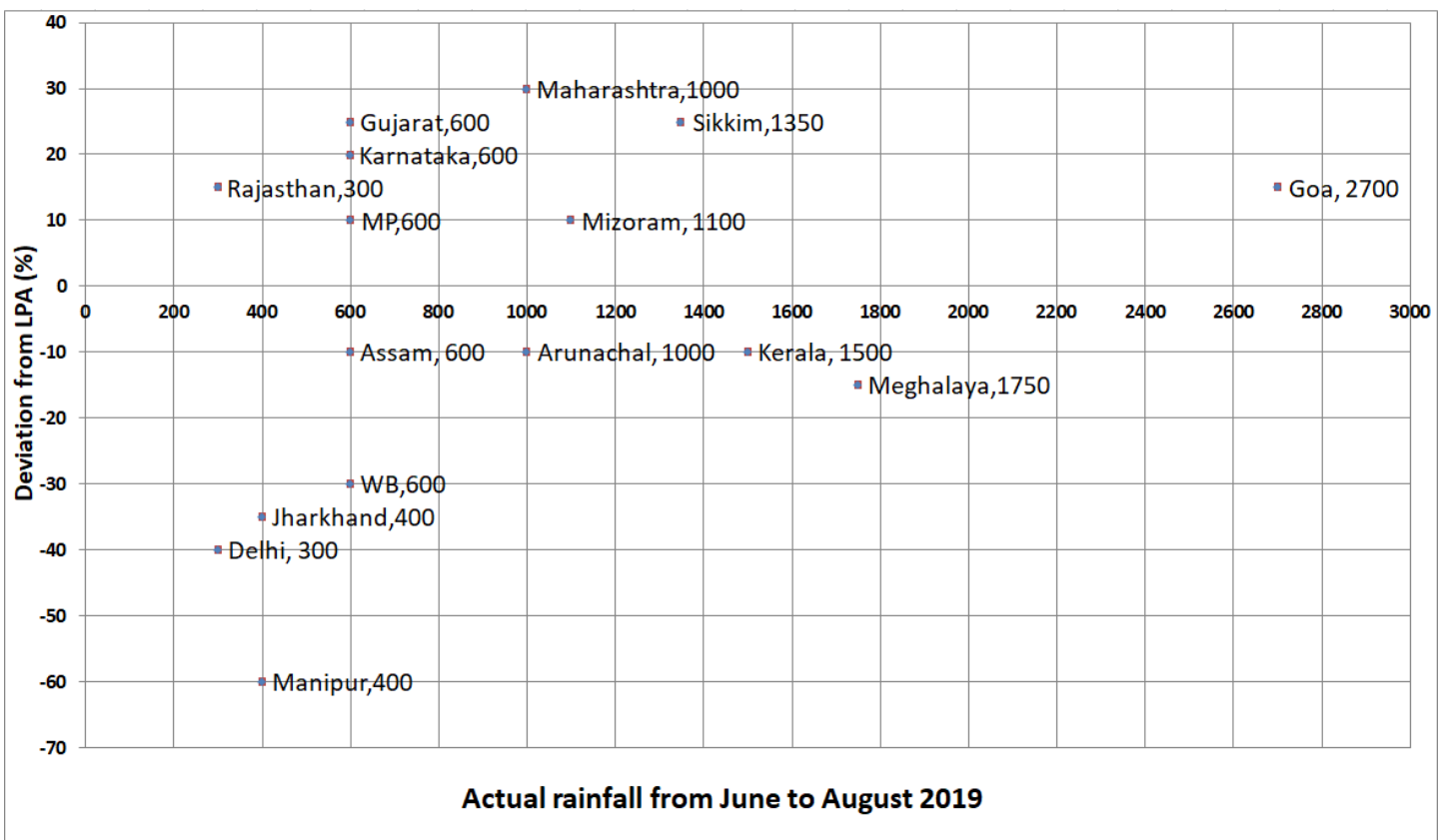
Hence option D is correct.

## Important Verbal Ability Questions for CAT (Download PDF)

### Instructions

To compare the rainfall data, India Meteorological Department (IMD) calculated the Long Period Average (LPA) of rainfall during period June-August for each of the 16 states. The figure given below shows the actual rainfall (measured in mm) during June-August, 2019 and the percentage deviations from LPA of respective states in 2018. Each state along with its actual rainfall is presented in the figure.





**Question 39**

If a 'Heavy Monsoon State' is defined as a state with actual rainfall from June-August, 2019 of 900 mm or more, then approximately what percentage of 'Heavy Monsoon States' have a negative deviation from respective LPAs in 2019?

- A 42.86
- B 75.00
- C 57.14
- D 14.29

**Answer: A**

**Explanation:**

The states which satisfy the condition given in the question:

Maharashtra, Mizoram, Sikkim, Goa, Arunachal, Kerla, Meghalaya.....7 states

The 'Heavy Monsoon States' have a negative deviation: Arunachal, Kerla, Meghalaya

=  $\frac{3}{7} \times 100 = 42.86\%$

Option A

**Question 40**

If a 'Low Monsoon State' is defined as a state with actual rainfall from June-August, 2019 of 750 mm or less, then what is the median 'deviation from LPA' (as defined in the Y-axis of the figure) of 'Low Monsoon States'?

- A -10%
- B 10%
- C -20%
- D -30%

**Answer: A**

**Explanation:**

All the states which satisfy the condition for ' Low monsoon state' are Gujrat (+25%), Karnataka (+20%), Rajasthan (+15), MP (+10%), Assam (-10%), WB (-30%), Jharkhand (-35%), Delhi (-40%) and Manipur (-60%).

The median of all the deviation is -10% Assam.

**Question 41**

What is the average rainfall of all states that have actual rainfall of 600 mm or less in 2019 and have a negative deviation from LPA?

- A 367 mm
- B 500 mm
- C 450 mm
- D 460 mm

**Answer: D**

**Explanation:**

The states Assam, WB, Jharkhand, Delhi and Manipur satisfy the conditions given in the question.

The actual rainfall of all these states in 2019 are 600,600,400,300,400

Average of these states=  $2300/5=460\text{mm}$

## CAT Percentile Predictor

**Question 42**

The LPA of a state for a year is defined as the average rainfall in the preceding 10 years considering the period of June-August. For example, LPA in 2018 is the average rainfall during 2009-2018 and LPA in 2019 is the average rainfall during 2010-2019. It is also observed that the actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009. The LPA of Gujarat in 2019 is closest to

- A 475 mm
- B 505 mm
- C 490 mm
- D 525 mm

**Answer: C**

**Explanation:**

The actual rainfall in Gujarat in 2019 is 20% more than the rainfall in 2009.

So If the actual rainfall in 2009 = x mm

Then the actual rainfall in 2019=  $1.2x$  mm

Actual rainfall in 2019= 600mm

Then, actual rainfall in 2009 = 500mm

As deviation is +25% so average 2009 - 2018 is  $600/1.25 = 480$

LPA 2019 =  $(480 \times 10 - 500 + 600)/10 = 490\text{mm}$

Answer C

**Instructions**

The first year students in a business school are split into six sections. In 2019 the Business Statistics course was taught in these six sections by Annie, Beti, Chetan, Dave, Esha, and Fakir. All six sections had a common midterm (MT) and a common endterm (ET) worth 100 marks each. ET contained more questions than MT. Questions for MT and ET were prepared collectively by the six faculty members. Considering MT and ET together, each faculty member prepared the same number of questions.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least

two questions that were worth 15 marks. In both MT and ET, all the 5-mark questions preceded the 10-mark questions, and all the 15-mark questions followed the 10-mark questions.

The following additional facts are known.

- i. Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks.
- ii. Annie prepared one question for MT. Every other faculty member prepared more than one questions for MT.
- iii. All questions prepared by a faculty member appeared consecutively in MT as well as ET.
- iv. Chetan prepared the third question in both MT and ET; and Esha prepared the eighth question in both.
- v. Fakir prepared the first question of MT and the last one in ET. Dave prepared the last question of MT and the first one in ET.

**Question 43**

The second question in ET was prepared by:

- A Chetan
- B Beti
- C Esha
- D Dave

**Answer: D**

**Explanation:**

All six sections had a common midterm (MT) and a common end term (ET) worth 100 marks each.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks.

$$5 \times 4 = 20, 10 \times 3 = 30, 15 \times 2 = 30$$

The total possible with considering the minimum number of questions of each type =  $20 + 30 + 30 = 80$  marks.

Rest 20 marks are possible by the following cases:  $\{5,5,5,5\}$   $\{5,5,10\}$   $\{10,10\}$   $\{5,15\}$

ET contained more questions than MT.

Thus MT cannot consider the case  $\{5,5,5,5\}$

The number of questions in each case:

- 1)  $\{5,5,5,5\} = 9 + 4 = 13$  questions
- 2)  $\{5,5,10\} = 9 + 3 = 12$  questions
- 3)  $\{10,10\} = 9 + 2 = 11$  questions
- 4)  $\{5,15\} = 9 + 2 = 11$  questions

Considering MT and ET together, each faculty member prepared the same number of questions. The total number of questions should be multiple of 6, thus the total number of questions will be 24.

For ET and MT, there are 2 cases :

$\{5,5,5,5\}\{5,15\}$

$\{5,5,5,5\}\{10,10\}$

According to the statement (i), Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks. Thus  $\{10,10\}$  case is not possible.

MT  $\{5,5,5,5,5,10,10,10,15,15,15\}$

ET  $\{5,5,5,5,5,5,5,10,10,10,15,15\}$

From statement (i),(ii),(iv),(v), every other faculty member prepared two questions for MT. we can create the following table:

	1	2	3	4	5	6	7	8	9	10	11
MT	5	5	5	5	5	10	10	10	15	15	15
	F	F	C	C	A	B	B	E	E	D	D

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D		C		A			E					F

{ Annie(A), Beti(B), Chetan(C), Dave (D), Fakir(F) }

There are 24 questions in total so each faculty will make 4 questions.

We can create the following table for ET.

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D	D	C	C	A	A	A	E	E	B	B	F	F

Hence the correct option is D

#### Question 44

How many 5-mark questions were there in MT and ET combined?

- A 13
- B 12
- C 10
- D Cannot be determined

Answer: A

#### Explanation:

All six sections had a common midterm (MT) and a common end term (ET) worth 100 marks each.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks.

$$5 \times 4 = 20, 10 \times 3 = 30, 15 \times 2 = 30$$

The total possible with considering the minimum number of questions of each type =  $20 + 30 + 30 = 80$  marks.

Rest 20 marks are possible by the following cases: {5,5,5,5} {5,5,10} {10,10} {5,15}

ET contained more questions than MT.

Thus MT cannot consider the case {5,5,5,5}

The number of questions in each case:

- 1) {5,5,5,5} =  $9 + 4 = 13$  questions
- 2) {5,5,10} =  $9 + 3 = 12$  questions
- 3) {10,10} =  $9 + 2 = 11$  questions
- 4) {5,15} =  $9 + 2 = 11$  questions

Considering MT and ET together, each faculty member prepared the same number of questions. The total number of questions should be multiple of 6, thus the total number of questions will be 24.

For ET and MT, there are 2 cases :

{5,5,5,5}{5,15}

{5,5,5,5}{10,10}

According to the statement (i), Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks. Thus {10,10} case is not possible.

MT {5,5,5,5,5,10,10,15,15,15}

ET {5,5,5,5,5,5,5,10,10,10,15,15}

From statement (i),(ii),(iv),(v), every other faculty member prepared two questions for MT. we can create the following table:

	1	2	3	4	5	6	7	8	9	10	11
MT	5	5	5	5	5	10	10	10	15	15	15
	F	F	C	C	A	B	B	E	E	D	D

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D		C		A			E					F

{ Annie(A), Beti(B), Chetan(C), Dave (D), Fakir(F) }

There are 24 questions in total so each faculty will make 4 questions.

We can create the following table for ET.

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D	D	C	C	A	A	A	E	E	B	B	F	F

Hence the correct option is A

## About CAT exam

### Question 45

Who prepared 15-mark questions for MT and ET?

- A Only Beti, Dave, Esha and Fakir
- B Only Dave and Fakir
- C Only Esha and Fakir
- D Only Dave, Esha and Fakir

**Answer: D**

#### Explanation:

All six sections had a common midterm (MT) and a common end term (ET) worth 100 marks each.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks.

$$5 \times 4 = 20, 10 \times 3 = 30, 15 \times 2 = 30$$

The total possible with considering the minimum number of questions of each type =  $20 + 30 + 30 = 80$  marks.

Rest 20 marks are possible by the following cases: {5,5,5,5} {5,5,10} {10,10} {5,15}

ET contained more questions than MT.

Thus MT cannot consider the case {5,5,5,5}

The number of questions in each case:

- 1) {5,5,5,5} =  $9 + 4 = 13$  questions
- 2) {5,5,10} =  $9 + 3 = 12$  questions
- 3) {10,10} =  $9 + 2 = 11$  questions
- 4) {5,15} =  $9 + 2 = 11$  questions

Considering MT and ET together, each faculty member prepared the same number of questions. The total number of questions should be multiple of 6, thus the total number of questions will be 24.

For ET and MT, there are 2 cases :

{5,5,5,5}{5,15}

{5,5,5,5}{10,10}

According to the statement (i), Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks. Thus {10,10} case is not possible.

MT {5,5,5,5,10,10,10,15,15,15}

ET {5,5,5,5,5,5,10,10,10,15,15}

From statement (i),(ii),(iv),(v), every other faculty member prepared two questions for MT. we can create the following table:

	1	2	3	4	5	6	7	8	9	10	11
MT	5	5	5	5	5	10	10	10	15	15	15
	F	F	C	C	A	B	B	E	E	D	D

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D		C		A			E					F

{ Annie(A), Beti(B), Chetan(C), Dave (D), Fakir(F) }

There are 24 questions in total so each faculty will make 4 questions.

We can create the following table for ET.

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D	D	C	C	A	A	A	E	E	B	B	F	F

Hence the correct option is D

#### Question 46

Which of the following questions did Beti prepare in ET?

- A Seventh question
- B Fourth question
- C Ninth question
- D Tenth question

Answer: D

#### Explanation:

All six sections had a common midterm (MT) and a common end term (ET) worth 100 marks each.

Each of MT and ET had at least four questions that were worth 5 marks, at least three questions that were worth 10 marks, and at least two questions that were worth 15 marks.

$$5 \times 4 = 20, 10 \times 3 = 30, 15 \times 2 = 30$$

The total possible with considering the minimum number of questions of each type =  $20 + 30 + 30 = 80$  marks.

Rest 20 marks are possible by the following cases: {5,5,5,5} {5,5,10} {10,10} {5,15}

ET contained more questions than MT.

Thus MT cannot consider the case {5,5,5,5}

The number of questions in each case:

- 1) {5,5,5,5} =  $9 + 4 = 13$  questions
- 2) {5,5,10} =  $9 + 3 = 12$  questions
- 3) {10,10} =  $9 + 2 = 11$  questions
- 4) {5,15} =  $9 + 2 = 11$  questions

Considering MT and ET together, each faculty member prepared the same number of questions. The total number of questions should be multiple of 6, thus the total number of questions will be 24.

For ET and MT, there are 2 cases :

{5,5,5,5}{5,15}

{5,5,5,5}{10,10}

According to the statement (i), Annie prepared the fifth question for both MT and ET. For MT, this question carried 5 marks. Thus {10,10} case is not possible.

MT {5,5,5,5,10,10,10,15,15,15}

ET {5,5,5,5,5,5,10,10,10,15,15}

From statement (i),(ii),(iv),(v), every other faculty member prepared two questions for MT. we can create the following table:

	1	2	3	4	5	6	7	8	9	10	11
MT	5	5	5	5	5	10	10	10	15	15	15
	F	F	C	C	A	B	B	E	E	D	D

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D		C		A			E					F

{ Annie(A), Beti(B), Chetan(C), Dave (D), Fakir(F) }

There are 24 questions in total so each faculty will make 4 questions.

We can create the following table for ET.

	1	2	3	4	5	6	7	8	9	10	11	12	13
ET	5	5	5	5	5	5	5	5	10	10	10	15	15
	D	D	C	C	A	A	A	E	E	B	B	F	F

Hence the correct option is D

#### Instructions

	column 1	column 2	column 3
row 1			
row 2			
row 3			

	Column 1	Column 2	Column 3
Row 1	(2, 4)	(6, 8)	(1, 3)
Row 2	(3, 5)	(1, 1)	(6, 20)
Row 3	(1, 2)	(1, 2)	(2, 5)

Three pouches (each represented by a filled circle) are kept in each of the nine slots in a  $3 \times 3$  grid, as shown in the figure. Every pouch has a certain number of one-rupee coins. The minimum and maximum amounts of money (in rupees) among the three pouches in each of the nine slots are given in the table. For example, we know that among the three pouches kept in the second column of the first row, the minimum amount in a pouch is Rs. 6 and the maximum amount is Rs. 8.

There are nine pouches in any of the three columns, as well as in any of the three rows. It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. It is also known that the total amount of money kept in the three pouches in the first column of the third row is Rs. 4.

#### Question 47

What is the total amount of money (in rupees) in the three pouches kept in the first column of the second row?

Answer:13

#### Explanation:

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {column 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.



	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

The total amount of money (in rupees) in the three pouches kept in the first column of the second row=13

Correct answer 13

## Know the CAT Percentile Required for IIM Calls

### Question 48

How many pouches contain exactly one coin?

Answer:8

#### Explanation:

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {column 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

Answer 8

#### Question 49

What is the number of slots for which the average amount (in rupees) of its three pouches is an integer?

Answer:2

#### Explanation:

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {column 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

Answer 2

**Question 50**

The number of slots for which the total amount in its three pouches strictly exceeds Rs. 10 is

Answer:3

**Explanation:**

We can make the following table from "the total amount of money kept in the three pouches in the first column of the third row is Rs. 4."

If the minimum and maximum value are 1, then the sum of the three pouches in the middle will be Rs 3.

	Column 1	Column 2	Column 3
Row 1			
Row 2		3 (1,1,1)	
Row 3	4 (1,1,2)		

If we calculate the maximum and minimum value possible for each slot in column 1. For the slot, column 1 and row 1, the maximum value possible is 10{2,4,4} while the minimum value possible is 8{2,2,4}.

Similarly, for the slot, column 1 and row 2, the maximum value possible is 13{3,5,5} while the minimum value possible is 11{3,3,5}.

It is known that the average amount of money (in rupees) kept in the nine pouches in any column or in any row is an integer. Thus the sum of coins in a row or column must be a multiple of 9.

So, we can iterate that 10,13,4 ...{27} is the only sum possible for the slots of column 1.

We now know two elements of row 2, thus we can iterate from the maximum and the minimum value possible for the slot {column 3, row 2} that 38 is the only value possible for the slot.

We can make the following table:

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)		
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)		

Similarly, we can find the amount for Column 2.

For the slot, column 2 and row 1, the maximum value possible is 22{6,8,8} while the minimum value possible is 20{6,6,8}.

For the slot, column 2 and row 3, the maximum value possible is 5{1,2,3} while the minimum value possible is 4{1,1,2}.

Thus {20,3,4} is the only solution possible.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	

We can similarly make the following table for the last column.

	Column 1	Column 2	Column 3
Row 1	10 (2,4,4)	20 (6,6,8)	6 (1,2,3)
Row 2	13 (3,5,5)	3 (1,1,1)	38 (6,12,20)
Row 3	4 (1,1,2)	4 (1,1,2)	10 (2,3,5)

Answer 3

## How to prepare for Logical Reasoning for CAT

### Instructions

Three doctors, Dr. Ben, Dr. Kane and Dr. Wayne visit a particular clinic Monday to Saturday to see patients. Dr. Ben sees each patient for 10 minutes and charges Rs. 100/-. Dr. Kane sees each patient for 15 minutes and charges Rs. 200/-, while Dr. Wayne sees each patient for 25 minutes and charges Rs. 300/-. The clinic has three rooms numbered 1, 2 and 3 which are assigned to the three doctors as per the following table.

Room No.	Monday & Tuesday	Wednesday & Thursday	Friday & Saturday
1	Ben	Wayne	Kane
2	Kane	Ben	Wayne
3	Wayne	Kane	Ben

The clinic is open from 9 a.m. to 11.30 a.m. every Monday to Saturday.

On arrival each patient is handed a numbered token indicating their position in the queue, starting with token number 1 every day. As soon as any doctor becomes free, the next patient in the queue enters that emptied room for consultation. If at any time, more than one room is free then the waiting patient enters the room with the smallest number. For example, if the next two patients in the queue have token numbers 7 and 8 and if rooms numbered 1 and 3 are free, then patient with token number 7 enters room number 1 and patient with token number 8 enters room number 3.

**Question 51**

**What is the maximum number of patients that the clinic can cater to on any single day?**

- A 12
- B 30
- C 31
- D 15

**Answer: C**

**Explanation:**

If all the doctors served the patients one after the other, then in 2.5 hrs, Ben will serve 15 patients, Kane will serve 10 patients and Wayne will serve 6 patients.

A total of 31 patients can be served on a particular day.

**Question 52**

**The queue is never empty on one particular Saturday. Which of the three doctors would earn the maximum amount in consultation charges on that day?**

- A Dr. Wayne
- B Dr. Kane
- C Dr. Ben
- D Both Dr. Wayne and Dr. Kane

**Answer: B**

**Explanation:**

If all the doctors served the patients one after the other, then in 2.5 hrs, Ben will serve 15 patients, Kane will serve 10 patients and Wayne will serve 6 patients.

Ben will earn =  $15 \times 100 = \text{Rs } 1500$

Kane will earn =  $10 \times 200 = \text{Rs } 2000$

Wayne will earn =  $6 \times 300 = \text{Rs } 1800$

So Kane will earn the maximum amount in consultation charges on that day.

Option B

**Question 53**

**Mr. Singh visited the clinic on Monday, Wednesday, and Friday of a particular week, arriving at 8:50 a.m. on each of the three days. His token number was 13 on all three days. On which day was he at the clinic for the maximum duration?**

- A Same duration on all three days

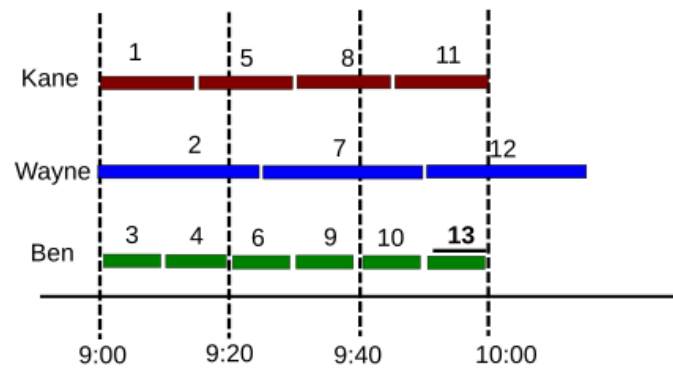
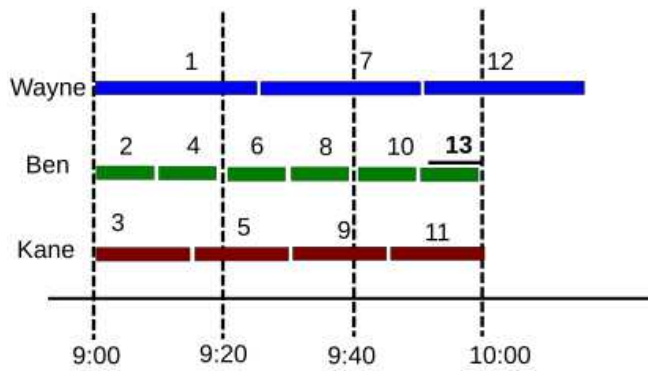
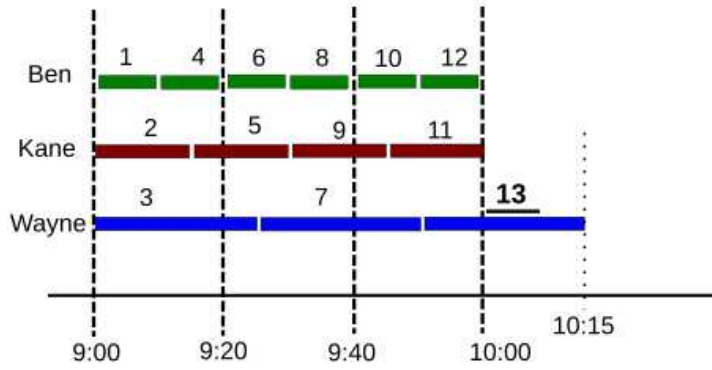
- B Friday
- C Monday
- D Wednesday

Answer: C

**Explanation:**

Mr Singh is 13th in the sequence on all the three days.

The following table will show the sequence for Monday, Wednesday and Friday.



He will stay the longest when the 13th guy is served by Doctor Wayne.

From the table, on Monday he had to wait at the clinic for the maximum duration: till 10:15.

Option C

**Data Interpretation for CAT Questions (download pdf)**

**Question 54**

On a slow Thursday, only two patients are waiting at 9 a.m. After that two patients keep arriving at exact 15-minute intervals starting at 9:15 a.m. -- i.e. at 9:15 a.m., 9:30 a.m., 9:45 a.m. etc. Then the total duration in minutes when all three doctors are simultaneously free is

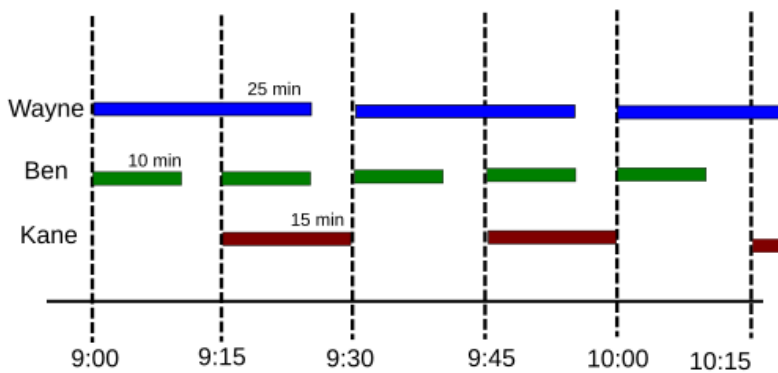
- A 30
- B 10
- C 15
- D 0

Answer: D

**Explanation:**

On Thursday, the preference order for the patients is Wayne, Ben and Kane.

The first two customers will be served by Wayne and Ben. While Kane will be empty for the first 15 mins. Then he and Ben will serve the next two customers and Wayne will be empty for 5 minutes as shown in the figure below.



As we can see that the cycle will repeat after every 30 mins.

So all three doctors are never simultaneously free.

Option D

**Instructions**

In the table below the check marks indicate all languages spoken by five people: Paula, Quentin, Robert, Sally and Terence. For example, Paula speaks only Chinese and English.

	Arabic	Basque	Chinese	Dutch	English	French
Paula			✓		✓	
Quentin				✓	✓	
Robert	✓					✓
Sally		✓			✓	
Terence			✓			✓

These five people form three teams, Team 1, Team 2 and Team 3. Each team has either 2 or 3 members. A team is said to speak a particular language if at least one of its members speak that language.

The following facts are known.

- (1) Each team speaks exactly four languages and has the same number of members.
- (2) English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team.
- (3) None of the teams include both Quentin and Robert.
- (4) Paula and Sally are together in exactly two teams.
- (5) Robert is in Team 1 and Quentin is in Team 3.

**Question 55**

Who among the following four is not a member of Team 2?

- A Paula
- B Terence
- C Quentin



D Sally

Answer: C

**Explanation:**

From statement 1 and 2, Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1, Team 2, Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is C.

**Question 56**

Who among the following four people is a part of exactly two teams?

- A Paula
- B Quentin
- C Sally
- D Robert

**Answer: C**

**Explanation:**

From statement 1 and 2, Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1, Team 2, Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is C.

## Logical Reasoning for CAT Questions (download pdf)

### Question 57

Who among the five people is a member of all teams?

- A Terence
- B Sally
- C Paula
- D No one

Answer: C

#### Explanation:

From statement 1 and 2, Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1, Team 2, Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3		Team 2		Team 1	
English	Paula, Sally, Quentin	English	Paula, Sally	English	Paula
Chinese	Paula	Chinese	Paula, Terence	Chinese	Paula, Terence
Basque	Sally	Basque	Sally	Arabic	Terence, Robert
Dutch	Quentin	French	Terence	French	Robert

From the table, the correct option is C.

#### Question 58

Apart from Chinese and English, which languages are spoken by Team 1?

- A Arabic and French
- B Basque and French
- C Arabic and Basque
- D Basque and Dutch

Answer: A

#### Explanation:

From statement 1 and 2, Each team speaks exactly four languages. English and Chinese are spoken by all three teams, Basque and French by exactly two teams and the other languages by exactly one team, multiple options are possible.

In the following tables: A, B, C can be any team among Team 1, Team 2, Team 3.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
French	French	Dutch

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Dutch
Arabic	French	French

From the data given in the question, the person who speaks Arabic also speaks French. Thus the only option possible is 'Table 2'.

A	B	C
English	English	English
Chinese	Chinese	Chinese
Basque	Basque	Arabic
Dutch	French	French

According to statement 4, "Paula and Sally are together in exactly two teams."

Sally knows Basque, thus, she will be in group A and B, with Paula.

According to statement 5, Robert(Arabic) is in Team 1 and Quentin(Dutch) is in Team 3.

Thus, Group C is Team 1 and Group A is Team 3.

Team 3	Team 2	Team 1
English	Paula, Sally, Quentin	English
Chinese	Paula	Chinese
Basque	Sally	Basque
Dutch	Quentin	French
		Paula, Sally
		Paula, Terence
		Terence, Robert
		Robert

From the table, the correct option is A.

### Instructions

A large store has only three departments, Clothing, Produce, and Electronics. The following figure shows the percentages of revenue and cost from the three departments for the years 2016, 2017 and 2018. The dotted lines depict percentage levels. So for example, in 2016, 50% of store's revenue came from its Electronics department while 40% of its costs were incurred in the Produce department.





In this setup, Profit is computed as  $(\text{Revenue} - \text{Cost})$  and Percentage Profit as  $\text{Profit}/\text{Cost} \times 100\%$ . It is known that

1. The percentage profit for the store in 2016 was 100%.
2. The store's revenue doubled from 2016 to 2017, and its cost doubled from 2016 to 2018.
3. There was no profit from the Electronics department in 2017.
4. In 2018, the revenue from the Clothing department was the same as the cost incurred in the Produce department.

**Question 59**

**What was the percentage profit of the store in 2018?**

**Answer:**25

**Explanation:**

We can make the following table from the web chart given in the question:

	Revenue				Cost			
	Clothing	Produce	Electronics		Clothing	Produce	Electronics	
2016	20	30	50		30	40	30	
2017	30	40	30		30	30	40	
2018	40	40	20		20	50	30	

If we consider the total cost in the year

2016 as 100, then according to Statement 1, the total revenue in 2016 must be 200.

The store's revenue doubled from 2016 to 2017, thus the total revenue in the year 2017 = 400.

We can find the revenue for the individual department in the year 2017, from the table.

There was no profit from the Electronics department in 2017, thus, we can find the total cost in 2017= 300

Considering the statement 4, we can find the total revenue in 2018 and tabulate the following table.

	Cost						
	Clothing		Produce		Electronics		Total
2016	30%	30	40%	40	30%	30	100
2017	30%	90	30%	90	40%	120	300
2018	20%	40	50%	100	30%	60	200

Revenue							
	Clothing		Produce		Electronics		
2016	20%	40	30%	60	50%	100	200
2017	30%	120	40%	160	30%	120	400
2018	40%	100	40%	100	20%	50	250

The percentage profit of the store in 2018 =  $(250-200)/200 = 25\%$

## Quantitative Aptitude for CAT Questions (download pdf)

### Question 60

What was the ratio of revenue generated from the Produce department in 2017 to that in 2018?

- A 16 : 9
- B 4 : 3
- C 9 : 16
- D 8 : 5

Answer: D

### Explanation:

We can make the following table from the web chart given in the question:

	Revenue			Cost		
	Clothing	Produce	Electronics	Clothing	Produce	Electronics
2016	20	30	50	30	40	30
2017	30	40	30	30	30	40
2018	40	40	20	20	50	30

If we consider the total cost in the year

2016 as 100, then according to Statement 1, the total revenue in 2016 must be 200.

The store's revenue doubled from 2016 to 2017, thus the total revenue in the year 2017 = 400.

We can find the revenue for the individual department in the year 2017, from the table.

There was no profit from the Electronics department in 2017, thus, we can find the total cost in 2017 = 300

Considering the statement 4, we can find the total revenue in 2018 and tabulate the following table.

	Cost						
	Clothing		Produce		Electronics		Total
2016	30%	30	40%	40	30%	30	100
2017	30%	90	30%	90	40%	120	300
2018	20%	40	50%	100	30%	60	200

Revenue							
	Clothing		Produce		Electronics		
2016	20%	40	30%	60	50%	100	200
2017	30%	120	40%	160	30%	120	400
2018	40%	100	40%	100	20%	50	250

The ratio of revenue generated from the Produce department in 2017 to that in 2018 = 160:100= 8:5

#### Question 61

What percentage of the total profits for the store in 2016 was from the Electronics department?

Answer:70

#### Explanation:

We can make the following table from the web chart given in the question:

Revenue				Cost			
	Clothing	Produce	Electronics		Clothing	Produce	Electronics
2016	20	30	50		30	40	30
2017	30	40	30		30	30	40
2018	40	40	20		20	50	30

If we consider the total cost in the year

2016 as 100, then according to Statement 1, the total revenue in 2016 must be 200.

The store's revenue doubled from 2016 to 2017, thus the total revenue in the year 2017 = 400.

We can find the revenue for the individual department in the year 2017, from the table.

There was no profit from the Electronics department in 2017, thus, we can find the total cost in 2017= 300

Considering the statement 4, we can find the total revenue in 2018 and tabulate the following table.

Cost							
	Clothing		Produce		Electronics		Total
2016	30%	30	40%	40	30%	30	100
2017	30%	90	30%	90	40%	120	300
2018	20%	40	50%	100	30%	60	200

Revenue							
	Clothing		Produce		Electronics		
2016	20%	40	30%	60	50%	100	200
2017	30%	120	40%	160	30%	120	400
2018	40%	100	40%	100	20%	50	250

Profit in 2016 = 200-100= 100

Profit in the electronic department in 2016= 100-30=70

The total profits= for the store in 2016 were from the Electronics department 70%

#### Question 62

What was the approximate difference in profit percentages of the store in 2017 and 2018?



- A 15.5
- B 25.0
- C 8.3
- D 33.3

Answer: C

**Explanation:**

We can make the following table from the web chart given in the question:

Revenue				Cost			
	Clothing	Produce	Electronics		Clothing	Produce	Electronics
2016	20	30	50		30	40	30
2017	30	40	30		30	30	40
2018	40	40	20		20	50	30

If we consider the total cost in the year

2016 as 100, then according to Statement 1, the total revenue in 2016 must be 200.

The store's revenue doubled from 2016 to 2017, thus the total revenue in the year 2017 = 400.

We can find the revenue for the individual department in the year 2017, from the table.

There was no profit from the Electronics department in 2017, thus, we can find the total cost in 2017= 300

Considering the statement 4, we can find the total revenue in 2018 and tabulate the following table.

Cost							
	Clothing		Produce		Electronics		Total
2016	30%	30	40%	40	30%	30	100
2017	30%	90	30%	90	40%	120	300
2018	20%	40	50%	100	30%	60	200

Revenue							
	Clothing		Produce		Electronics		Total
2016	20%	40	30%	60	50%	100	200
2017	30%	120	40%	160	30%	120	400
2018	40%	100	40%	100	20%	50	250

Profit percentage in 2017=  $(400-300)/300 \%$  = 33.33%

Profit percentage in 2018=  $(250-200)/200 \%$  = 25%

The approximate difference in profit percentages of the store in 2017 and 2018=  $(33.33-25)\%$  = 8.33%

Option C.

**Top MBA Colleges**

**Instructions**

Students in a college are discussing two proposals –

A: a proposal by the authorities to introduce dress code on campus, and

B: a proposal by the students to allow multinational food franchises to set up outlets on college campus.

A student does not necessarily support either of the two proposals.

In an upcoming election for student union president, there are two candidates in fray: Sunita and Ragini. Every student prefers one of the two candidates.

A survey was conducted among the students by picking a sample of 500 students. The following information was noted from this survey.

1. 250 students supported proposal A and 250 students supported proposal B.
2. Among the 200 students who preferred Sunita as student union president, 80% supported proposal A.
3. Among those who preferred Ragini, 30% supported proposal A.
4. 20% of those who supported proposal B preferred Sunita.
5. 40% of those who did not support proposal B preferred Ragini.
6. Every student who preferred Sunita and supported proposal B also supported proposal A.
7. Among those who preferred Ragini, 20% did not support any of the proposals.

**Question 63**

**Among the students surveyed who supported proposal A, what percentage preferred Sunita for student union president?**

**Answer:**64

**Explanation:**

Total number of students surveyed= 500

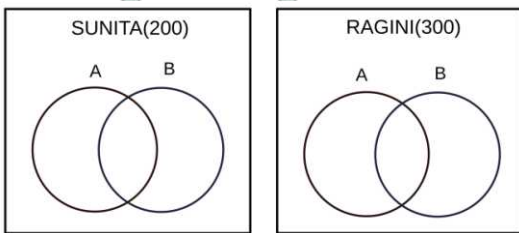
Every student prefers one of the two candidates. Ragini(R) and Sunita(S).

Thus,  $R+S=500$ .

According to statement 2, "Among the 200 students who preferred Sunita as student union president, 80% supported proposal A."

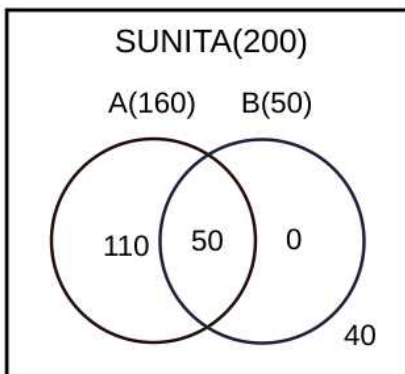
The number of students who support Sunita(S)=200

The number of students who supported Ragini(R)=300

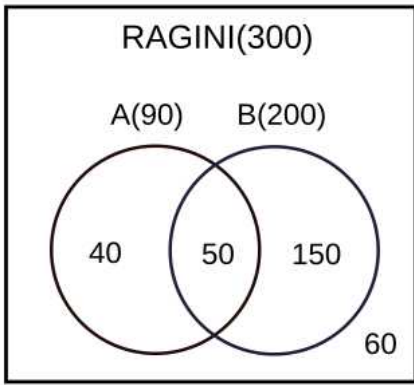


According to statements 2 and 3, 160 students who supported Sunita also supported the proposal A & 90 students who supported Ragini also supported proposal A.

According to statements 4 and 6, we can make the following Venn diagram for Sunita.



According to statement 5 and 7, we can make the following Venn diagram.



The number of students who preferred Sunita and the proposal A=160  
 $=160/250=64\%$

**Question 64**

**What percentage of the students surveyed who did not support proposal A preferred Ragini as student union president?**

**Answer:84**

**Explanation:**

Total number of students surveyed= 500

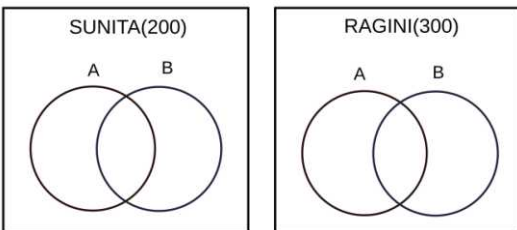
Every student prefers one of the two candidates. Ragini(R) and Sunita(S).

Thus,  $R+S=500$ .

According to statement 2, "Among the 200 students who preferred Sunita as student union president, 80% supported proposal A."

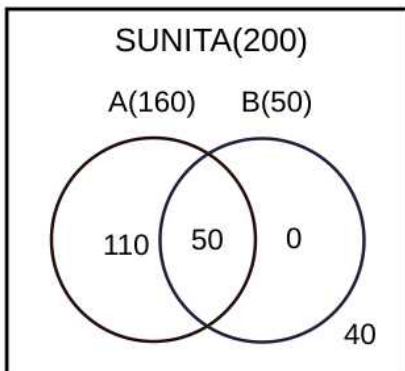
The number of students who support Sunita(S)=200

The number of students who supported Ragini(R)=300

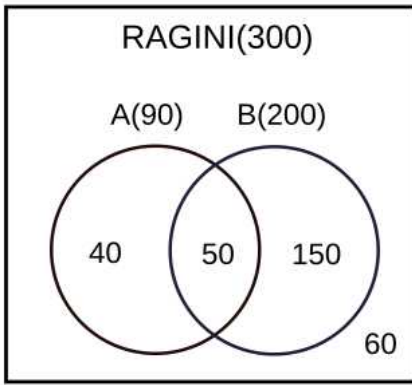


According to statements 2 and 3, 160 students who supported Sunita also supported the proposal A & 90 students who supported Ragini also supported proposal A.

According to statements 4 and 6, we can make the following Venn diagram for Sunita.



According to statement 5 and 7, we can make the following Venn diagram.



The percentage of the students surveyed who did not support proposal A preferred Ragini as student union president =  $210/250=84\%$

Answer 84

**Question 65**

What percentage of the students surveyed who supported both proposals A and B preferred Sunita as student union president?

- A 40
- B 25
- C 20
- D 50

Answer: D

**Explanation:**

Total number of students surveyed= 500

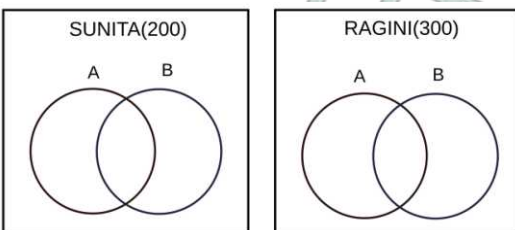
Every student prefers one of the two candidates. Ragini(R) and Sunita(S).

Thus,  $R+S=500$ .

According to statement 2, "Among the 200 students who preferred Sunita as student union president, 80% supported proposal A."

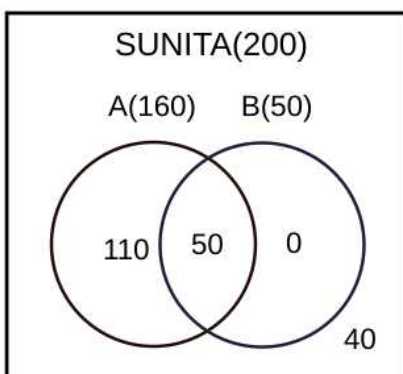
The number of students who support Sunita(S)=200

The number of students who supported Ragini(R)=300

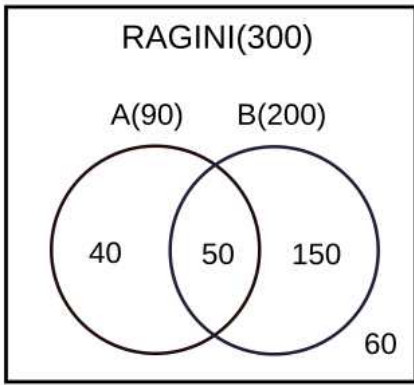


According to statements 2 and 3, 160 students who supported Sunita also supported the proposal A & 90 students who supported Ragini also supported proposal A.

According to statements 4 and 6, we can make the following Venn diagram for Sunita.



According to statement 5 and 7, we can make the following Venn diagram.



According to the Venn diagram, the students surveyed who supported both proposals A and B preferred Sunita as student union president  $\frac{50}{50+50} \% = 50\%$

## Join MBA Telegram Group

### Question 66

How many of the students surveyed supported proposal B, did not support proposal A and preferred Ragini as student union president?

- A 150
- B 210
- C 200
- D 40

Answer: A

#### Explanation:

Total number of students surveyed= 500

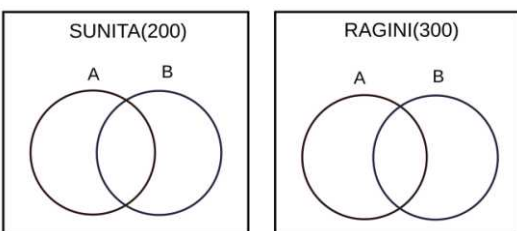
Every student prefers one of the two candidates. Ragini(R) and Sunita(S).

Thus,  $R+S=500$ .

According to statement 2, "Among the 200 students who preferred Sunita as student union president, 80% supported proposal A."

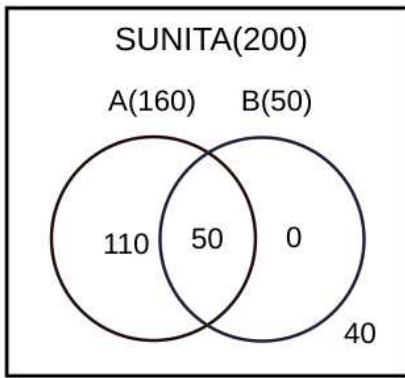
The number of students who support Sunita(S)=200

The number of students who supported Ragini(R)=300

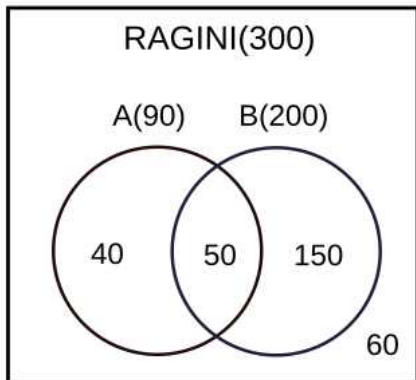


According to statements 2 and 3, 160 students who supported Sunita also supported the proposal A & 90 students who supported Ragini also supported proposal A.

According to statements 4 and 6, we can make the following Venn diagram for Sunita.



According to statement 5 and 7, we can make the following Venn diagram.



From the diagram, we can understand that option A is correct.

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## Quantitative Aptitude

### Instructions

For the following questions answer them individually

### Question 67

The average of 30 integers is 5. Among these 30 integers, there are exactly 20 which do not exceed 5. What is the highest possible value of the average of these 20 integers?

- A 3.5
- B 5
- C 4.5
- D 4

**Answer:** C

### Explanation:

It is given that the average of the 30 integers = 5

Sum of the 30 integers =  $30 \times 5 = 150$

There are exactly 20 integers whose value is less than 5.

To maximise the average of the 20 integers, we have to assign minimum value to each of the remaining 10 integers

So the sum of 10 integers =  $10 \times 6 = 60$

The sum of the 20 integers =  $150 - 60 = 90$

Average of 20 integers =  $\frac{90}{20} = 4.5$

## Cracku CAT Success Stories

### Question 68

Amal invests Rs 12000 at 8% interest, compounded annually, and Rs 10000 at 6% interest, compounded semi-annually, both investments being for one year. Bimal invests his money at 7.5% simple interest for one year. If Amal and Bimal get the same amount of interest, then the amount, in Rupees, invested by Bimal is

**Answer:**20920

#### Explanation:

The amount with Amal at the end of 1 year =  $12000 \times 1.08 + 10000 \times 1.03 \times 1.03 = 23569$

Interest received by Amal =  $23569 - 22000 = 1569$

Let the amount invested by Bimal =  $100b$

Interest received by Bimal =  $100b \times 7.5 \times 1 / 100 = 7.5b$

It is given that the amount of interest received by both of them is the same

$7.5b = 1569$

$b = 209.2$

Amount invested by Bimal =  $100b = 20920$

### Question 69

What is the largest positive integer  $n$  such that  $\frac{n^2+7n+12}{n^2-n-12}$  is also a positive integer?

- A 6
- B 16
- C 8
- D 12

**Answer:** D

#### Explanation:

$$\frac{n^2+3n+4n+12}{n^2-4n+3n-12}$$

$$= \frac{n(n+3)+4(n+3)}{n(n-4)+3(n-4)}$$

$$= \frac{(n+4)(n+3)}{(n-4)(n+3)}$$

$$= \frac{(n+4)}{(n-4)}$$

$$= \frac{(n-4)+8}{(n-4)}$$

$$= 1 + \frac{8}{(n-4)}$$
 which will be maximum when  $n-4 = 8$

$$n = 12$$

D is the correct answer.

### Question 70

How many pairs  $(m, n)$  of positive integers satisfy the equation  $m^2 + 105 = n^2$ ?

**Answer:**4

#### Explanation:

$$n^2 - m^2 = 105$$

$$(n-m)(n+m) = 1 \times 105, 3 \times 35, 5 \times 21, 7 \times 15, 15 \times 7, 21 \times 5, 35 \times 3, 105 \times 1.$$

$$n-m=1, n+m=105 \implies n=53, m=52$$

$$n-m=3, n+m=35 \implies n=19, m=16$$

$$n-m=5, n+m=21 \implies n=13, m=8$$

$$n-m=7, n+m=15 \implies n=11, m=4$$

$$n-m=15, n+m=7 \implies n=11, m=-4$$

$$n-m=21, n+m=5 \implies n=13, m=-8$$

$$n-m=35, n+m=3 \implies n=19, m=-16$$

$$n-m=105, n+m=1 \implies n=53, m=-52$$

Since only positive integer values of  $m$  and  $n$  are required. There are 4 possible solutions.

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### Question 71

Two ants A and B start from a point P on a circle at the same time, with A moving clock-wise and B moving anti-clockwise. They meet for the first time at 10:00 am when A has covered 60% of the track. If A returns to P at 10:12 am, then B returns to P at

A 10:25 am

B 10:45 am

C 10:18 am

D 10:27 am

**Answer: D**

#### Explanation:

When A and B met for the first time at 10:00 AM, A covered 60% of the track.

So B must have covered 40% of the track.

It is given that A returns to P at 10:12 AM i.e A covers 40% of the track in 12 minutes

60% of the track in 18 minutes

B covers 40% of track when A covers 60% of the track.

B covers 40% of the track in 18 minutes.

B will cover the rest 60% in 27 minutes, hence it will return to B at 10:27 AM

### Question 72

Let  $a_1, a_2, \dots$  be integers such that

$$a_1 - a_2 + a_3 - a_4 + \dots + (-1)^{n-1} a_n = n, \text{ for all } n \geq 1.$$

Then  $a_{51} + a_{52} + \dots + a_{1023}$  equals

A 0

B 1

C 10

D -1

**Answer: B**

#### Explanation:

$$a_1 - a_2 + a_3 - a_4 + \dots + (-1)^{n-1} a_n = n$$

It is clear from the above equation that when  $n$  is odd, the co-efficient of  $a$  is positive otherwise negative.



$$a_1 - a_2 = 2$$

$$a_1 = a_2 + 2$$

$$a_1 - a_2 + a_3 = 3$$

On substituting the value of  $a_1$  in the above equation, we get

$$a_3 = 1$$

$$a_1 - a_2 + a_3 - a_4 = 4$$

On substituting the values of  $a_1, a_3$  in the above equation, we get

$$a_4 = -1$$

$$a_1 - a_2 + a_3 - a_4 + a_5 = 5$$

On substituting the values of  $a_1, a_3, a_4$  in the above equation, we get

$$a_5 = 1$$

So we can conclude that  $a_3, a_5, a_7, \dots, a_{n+1} = 1$  and  $a_2, a_4, a_6, \dots, a_{2n} = -1$

Now we have to find the value of  $a_{51} + a_{52} + \dots + a_{1023}$

$$\text{Number of terms} = 1023 - 51 + (n-1)1$$

$$n = 973$$

There will be 486 even and 487 odd terms, so the value of  $a_{51} + a_{52} + \dots + a_{1023} = 486 \cdot (-1) + 487 \cdot 1 = 1$

### Question 73

Two circles, each of radius 4 cm, touch externally. Each of these two circles is touched externally by a third circle. If these three circles have a common tangent, then the radius of the third circle, in cm, is

A  $\frac{1}{\sqrt{2}}$

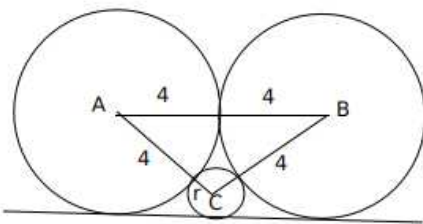
B  $\frac{\pi}{3}$

C  $\sqrt{2}$

D 1

Answer: D

Explanation:



Let 'h' be the height of the triangle ABC, semiperimeter(S) =  $\frac{4+4+r+4+4+r}{2} = 8+r$ ,  
 $a = 4+r, b = 4+r, c = 8$

$$\text{Area of triangle ABC} = \sqrt{s \cdot (s-a) \cdot (s-b) \cdot (s-c)} = \sqrt{(8+r) \times 4 \times 4 \times r} = \frac{1}{2} \times (4+4) \times \text{height}$$

$$\text{Height (h)} = \sqrt{(8+r)r}$$

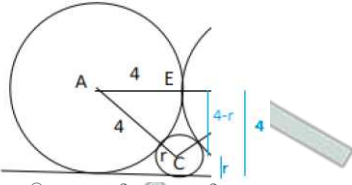
Now,  $h + r = 4 \rightarrow \sqrt{(8+r)r} + r = 4$  (Considering the height of the triangle)

$$\sqrt{(8+r)r} = 4-r$$

$$16r = 16$$

$$r = 1$$

Alternatively,



$$AE^2 + EC^2 = AC^2 \rightarrow 4^2 + (4-r)^2 = (4+r)^2 \rightarrow \rightarrow \rightarrow r = 1$$

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### Question 74

Let  $A$  be a real number. Then the roots of the equation  $x^2 - 4x - \log_2 A = 0$  are real and distinct if and only if

- A  $A > \frac{1}{16}$
- B  $A < \frac{1}{16}$
- C  $A < \frac{1}{8}$
- D  $A > \frac{1}{8}$

Answer: A

#### Explanation:

The roots of  $x^2 - 4x - \log_2 A = 0$  will be real and distinct if and only if the discriminant is greater than zero

$$16 + 4 \log_2 A > 0$$

$$\log_2 A > -4$$

$$A > 1/16$$

### Question 75

The quadratic equation  $x^2 + bx + c = 0$  has two roots  $4a$  and  $3a$ , where  $a$  is an integer. Which of the following is a possible value of  $b^2 + c$ ?

- A 3721
- B 361
- C 427
- D 549

Answer: D

#### Explanation:

Given,

The quadratic equation  $x^2 + bx + c = 0$  has two roots  $4a$  and  $3a$

$$7a = -b$$

$$12a^2 = c$$

We have to find the value of  $b^2 + c = 49a^2 + 12a^2 = 61a^2$

Now let's verify the options

$$61a^2 = 3721 \implies a = 7.8 \text{ which is not an integer}$$

$$61a^2 = 361 \implies a = 2.42 \text{ which is not an integer}$$

$$61a^2 = 427 \implies a = 2.64 \text{ which is not an integer}$$

$$61a^2 = 3721 \implies a = 3 \text{ which is an integer}$$

#### Question 76

The base of a regular pyramid is a square and each of the other four sides is an equilateral triangle, length of each side being 20 cm. The vertical height of the pyramid, in cm, is

- A 12
- B  $10\sqrt{2}$
- C  $8\sqrt{3}$
- D  $5\sqrt{5}$

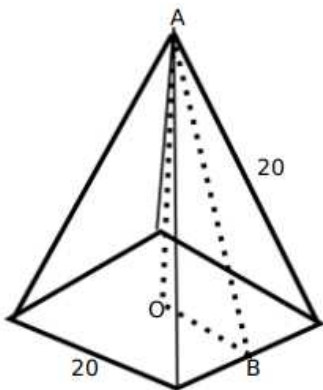
Answer: B

#### Explanation:

It is given that the base of the pyramid is square and each of the four sides are equilateral triangles.

Length of each side of the equilateral triangle = 20cm

Since the side of the triangle will be common to the square as well, the side of the square = 20cm



Let  $h$  be the vertical height of the pyramid i.e.  $OA$

$OB = 10$  since it is half the side of the square

$AB$  is the height of the equilateral triangle i.e.  $10\sqrt{3}$

$\triangle AOB$  is a right angle, so applying the Pythagorean formula, we get

$$OA^2 + OB^2 = AB^2$$

$$h^2 + 100 = 300$$

$$h = 10\sqrt{2}$$

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#### Question 77

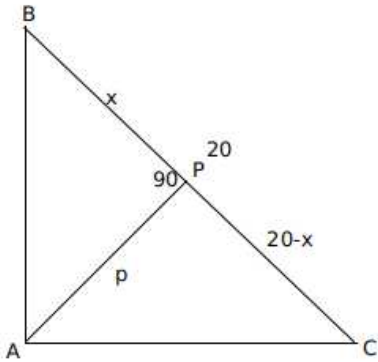
Let  $\triangle ABC$  be a right-angled triangle with hypotenuse  $BC$  of length 20 cm. If  $AP$  is perpendicular on  $BC$ , then the maximum possible length of  $AP$ , in cm, is

- A 10
- B 5
- C  $8\sqrt{2}$

D  $6\sqrt{2}$

Answer: A

Explanation:



Let  $p$  be the length of  $AP$ .

It is given that  $\angle BAC = 90$  and  $\angle APC = 90$

Let  $\angle ABC = \theta$ , then  $\angle BAP = 90 - \theta$  and  $\angle BCA = 90 - \theta$

So  $\angle PAC = \theta$

Triangles  $BPA$  and  $APC$  are similar

$$p^2 = x(20 - x)$$

We have to maximize the value of  $p$ , which will be maximum when  $x=20-x$

$$x=10$$

Question 78

If  $x$  is a real number, then  $\sqrt{\log_e \frac{4x-x^2}{3}}$  is a real number if and only if

A  $1 \leq x \leq 3$

B  $1 \leq x \leq 2$

C  $-1 \leq x \leq 3$

D  $-3 \leq x \leq 3$

Answer: A

Explanation:

$\sqrt{\log_e \frac{4x-x^2}{3}}$  will be real if  $\log_e \frac{4x-x^2}{3} \geq 0$

$$\frac{4x-x^2}{3} \geq 1$$

$$4x - x^2 - 3 \geq 0$$

$$x^2 - 4x + 3 \leq 0$$

$$1 \leq x \leq 3$$

Question 79

If  $5^x - 3^y = 13438$  and  $5^{x-1} + 3^{y+1} = 9686$ , then  $x + y$  equals

Answer: 13

Explanation:

$$5^x - 3^y = 13438 \text{ and } 5^{x-1} + 3^{y+1} = 9686$$

$$5^x + 3^y * 15 = 9686 * 5$$

$$5^x + 3^y * 15 = 48430$$

$$16 * 3^y = 34992$$

$$3^y = 2187$$

$$y = 7$$

$$5^x = 13438 + 2187 = 15625$$

$$x = 6$$

$$x + y = 13$$

## CAT previous papers (download pdf)

### Question 80

The strength of a salt solution is  $p\%$  if 100 ml of the solution contains  $p$  grams of salt. Each of three vessels A, B, C contains 500 ml of salt solution of strengths 10%, 22%, and 32%, respectively. Now, 100 ml of the solution in vessel A is transferred to vessel B. Then, 100 ml of the solution in vessel B is transferred to vessel C. Finally, 100 ml of the solution in vessel C is transferred to vessel A. The strength, in percentage, of the resulting solution in vessel A is

A 15

B 13

C 12

D 14

Answer: D

### Explanation:

Each of three vessels A, B, C contains 500 ml of salt solution of strengths 10%, 22%, and 32%, respectively.

The amount of salt in vessels A, B, C = 50 ml, 110 ml, 160 ml respectively.

The amount of water in vessels A, B, C = 450 ml, 390 ml, 340 ml respectively.

In 100 ml solution in vessel A, there will be 10 ml of salt and 90 ml of water

Now, 100 ml of the solution in vessel A is transferred to vessel B. Then, 100 ml of the solution in vessel B is transferred to vessel C. Finally, 100 ml of the solution in vessel C is transferred to vessel A

i.e after the first transfer, the amount of salt in vessels A, B, C = 40, 120, 160 ml respectively.

after the second transfer, the amount of salt in vessels A, B, C = 40, 100, 180 ml respectively.

After the third transfer, the amount of salt in vessels A, B, C = 70, 100, 150 respectively.

Each transfer can be captured through the following table.

Salt solution		Initial Conc.(ml)	After 1st transfer	After 2nd transfer	After 3rd transfer
A	Total Conc.	500	400	400	500
	Salt Conc.	50	40	40	70
	Water	450	360	360	430
B	Total Conc.	500	600	500	500
	Salt Conc.	110	120	100	100
	Water	390	480	400	400
C	Total Conc.	500	500	600	500
	Salt Conc.	160	160	180	150
	Water	340	340	420	350

Percentage of salt in vessel A =  $\frac{70}{500} \times 100$

=14%

#### Question 81

A cyclist leaves A at 10 am and reaches B at 11 am. Starting from 10:01 am, every minute a motorcycle leaves A and moves towards B. Forty-five such motorcycles reach B by 11 am. All motorcycles have the same speed. If the cyclist had doubled his speed, how many motorcycles would have reached B by the time the cyclist reached B?

- A 22
- B 23
- C 15
- D 20

Answer: C

#### Explanation:

It is given that starting from 10:01 am, every minute a motorcycle leaves A and moves towards B.

Forty-five such motorcycles reach B by 11 am.

It means that the forty-fifth motorcycle starts at 10:45 AM at A and reaches B by 11:00 AM i.e 15 minutes.

Since the speed of all the motorcycles is the same, all the motorcycles will take the same duration i.e 15 minutes.

If the cyclist doubles the speed, then he will reach B by 10:30 AM. (Since if the speed is doubled, time is reduced by half)

Since each motorcycle takes 15 minutes to reach B, 15 motorcycles would have reached B by the time the cyclist reaches B

#### Question 82

A man makes complete use of 405 cc of iron, 783 cc of aluminium, and 351 cc of copper to make a number of solid right circular cylinders of each type of metal. These cylinders have the same volume and each of these has radius 3 cm. If the total number of cylinders is to be kept at a minimum, then the total surface area of all these cylinders, in sq cm, is

- A  $1026(1 + \pi)$
- B  $8464\pi$
- C  $928\pi$
- D  $1044(4 + \pi)$

Answer: A

#### Explanation:

It is given that the volume of all the cylinders is the same, so the volume of each cylinder = HCF of (405, 783, 351)

$$=27$$

$$\text{The number of iron cylinders} = \frac{405}{27} = 15$$

$$\text{The number of aluminium cylinders} = \frac{783}{27} = 29$$

$$\text{The number of copper cylinders} = \frac{351}{27} = 13$$

$$15 * \pi r^2 h = 405$$

$$15 * \pi 9 * h = 405$$

$$\pi h = 3$$

Now we have to calculate the total surface area of all the cylinders

$$\text{Total number of cylinders} = 15 + 29 + 13 = 57$$

$$\text{Total surface area of the cylinder} = 57 * (2\pi rh + 2\pi r^2)$$

$$= 57(2 * 3 * 3 + 2 * 9 * \pi)$$

$$= 1026(1 + \pi)$$

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### Question 83

The real root of the equation  $2^{6x} + 2^{3x+2} - 21 = 0$  is

A  $\log_2 9$

B  $\frac{\log_2 3}{3}$

C  $\log_2 27$

D  $\frac{\log_2 7}{3}$

Answer: B

Explanation:

Let  $2^{3x} = v$

$$2^{6x} + 2^{3x+2} - 21 = 0$$

$$= v^2 + 4v - 21 = 0$$

$$= (v+7)(v-3) = 0$$

$$v = 3, -7$$

$$2^{3x} = 3 \text{ or } 2^{3x} = -7 \text{ (This can be negated)}$$

$$3x = \log_2 3$$

$$x = \log_2 \frac{3}{3}$$

### Question 84

How many factors of  $2^4 \times 3^5 \times 10^4$  are perfect squares which are greater than 1?

Answer: 44

Explanation:

$$2^4 \times 3^5 \times 10^4$$

$$= 2^4 \times 3^5 \times 2^4 \times 5^4$$

$$= 2^8 \times 3^5 \times 5^4$$

For the factor to be a perfect square, the factor should be even power of the number.

In  $2^8$ , the factors which are perfect squares are  $2^0, 2^2, 2^4, 2^6, 2^8 = 5$

Similarly, in  $3^5$ , the factors which are perfect squares are  $3^0, 3^2, 3^4 = 3$

In  $5^4$ , the factors which are perfect squares are  $5^0, 5^2, 5^4 = 3$

Number of perfect squares greater than 1 =  $5 \times 3 \times 3 - 1$

=44

#### Question 85

In a six-digit number, the sixth, that is, the rightmost, digit is the sum of the first three digits, the fifth digit is the sum of first two digits, the third digit is equal to the first digit, the second digit is twice the first digit and the fourth digit is the sum of fifth and sixth digits. Then, the largest possible value of the fourth digit is

Answer:7

#### Explanation:

Let the six-digit number be ABCDEF

$F = A+B+C$ ,  $E = A+B$ ,  $C=A$ ,  $B= 2A$ ,  $D= E+F$ .

Therefore  $D = 2A+2B+C = 2A + 4A + A = 7A$ .

A cannot be 0 as the number is a 6 digit number.

A cannot be 2 as D would become 2 digit number.

Therefore A is 1 and D is 7.

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#### Question 86

John jogs on track A at 6 kmph and Mary jogs on track B at 7.5 kmph. The total length of tracks A and B is 325 metres. While John makes 9 rounds of track A, Mary makes 5 rounds of track B. In how many seconds will Mary make one round of track A?

Answer:48

#### Explanation:

Speed of John = 6kmph

Speed of Mary = 7.5 kmph

Lengths of tracks A and B = 325 m

Let the length of track A be a, then the length of track B =  $325-a$

9 rounds of John on track A = 5 rounds of Mary on track B

$$9 \times \frac{a}{6} = 5 \times \frac{(325-a)}{7.5}$$

On solving we get ,  $13a=1300$

$a=100$

The length of track A = 100m, track B = 225m

Mary makes one round of track A =  $\frac{100}{7.5} \times \frac{5}{18}$

= 48 sec

#### Question 87

In 2010, a library contained a total of 11500 books in two categories - fiction and nonfiction. In 2015, the library contained a total of 12760 books in these two categories. During this period, there was 10% increase in the fiction category while there was 12% increase in the non-fiction category. How many fiction books were in the library in 2015?



- A 6160
- B 6600
- C 6000
- D 5500

**Answer:** B

**Explanation:**

Let the number of fiction and non-fiction books in 2010 = 100a, 100b respectively

It is given that the total number of books in 2010 = 11500

$$100a + 100b = 11500 \quad \text{-----Eq 1}$$

The number of fiction and non-fiction books in 2015 = 110a, 112b respectively

$$110a + 112b = 12760 \quad \text{-----Eq 2}$$

On solving both the equations we get, b=55, a= 60

The number of fiction books in 2015 = 110\*60=6600

**Question 88**

John gets Rs 57 per hour of regular work and Rs 114 per hour of overtime work. He works altogether 172 hours and his income from overtime hours is 15% of his income from regular hours. Then, for how many hours did he work overtime?

**Answer:**12

**Explanation:**

It is given that John works altogether 172 hours i.e including regular and overtime hours.

Let a be the regular hours, 172-a will be the overtime hours

John's income from regular hours = 57\*a

John's income for working overtime hours = (172-a)\*114

It is given that his income from overtime hours is 15% of his income from regular hours

$$a * 57 * 0.15 = (172 - a) * 114$$

$$a = 160$$

The number of hours for which he worked overtime = 172-160=12 hrs

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**Question 89**

If  $(2n + 1) + (2n + 3) + (2n + 5) + \dots + (2n + 47) = 5280$ , then what is the value of  $1 + 2 + 3 + \dots + n$ ?

**Answer:**4851

**Explanation:**

Let us first find the number of terms

$$47 = 1 + (n-1)2$$

$$n = 24$$

$$24 * 2n + 1 + 3 + 5 + \dots + 47 = 5280$$

$$48n + 576 = 5280$$

$$48n = 4704$$

$$n = 98$$

Sum of first 98 terms =  $98 \cdot 99 / 2$

=4851

**Question 90**

A shopkeeper sells two tables, each procured at cost price  $p$ , to Amal and Asim at a profit of 20% and at a loss of 20%, respectively. Amal sells his table to Bimal at a profit of 30%, while Asim sells his table to Barun at a loss of 30%. If the amounts paid by Bimal and Barun are  $x$  and  $y$ , respectively, then  $(x - y) / p$  equals

- A 1
- B 1.2
- C 0.50
- D 0.7

**Answer: A**

**Explanation:**

CP of the table at which the shopkeeper procured each table =  $p$

It is given that shopkeeper sold the tables to Amal and Asim at a profit of 20% and at a loss of 20%, respectively

The selling price of the tables =  $1.2p$  and  $0.8p$  to Amal and Asim respectively.

Amal sells his table to Bimal at a profit of 30%

So, CP of the table by Bimal ( $x$ ) =  $1.2p \cdot 1.3 = 1.56p$

Asim sells his table to Barun at a loss of 30%

So, CP of the table by Barun ( $y$ ) =  $0.7 \cdot 0.8p = 0.56p$

$(x-y)/p = (1.56p - 0.56p)/p = p/p = 1$

**Question 91**

In a triangle ABC, medians AD and BE are perpendicular to each other, and have lengths 12 cm and 9 cm, respectively. Then, the area of triangle ABC, in sq cm, is

- A 78
- B 80
- C 72
- D 68

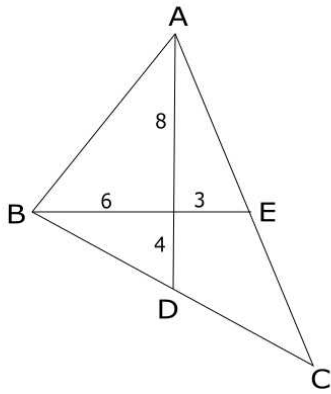
**Answer: C**

**Explanation:**

It is given that AD and BE are medians which are perpendicular to each other.

The lengths of AD and BE are 12cm and 9cm respectively.

It is known that the centroid G divides the median in the ratio of 2:1



Area of  $\triangle ABC = 2 \times$  Area of the triangle ABD

Area of  $\triangle ABD =$  Area of  $\triangle AGB +$  Area of  $\triangle BGD$

Since  $\angle AGB = \angle BGD = 90$  (Given)

$$\text{Area of } \triangle AGB = \frac{1}{2} \times 8 \times 6 = 24$$

$$\text{Area of } \triangle BGD = \frac{1}{2} \times 6 \times 4 = 12$$

$$\text{Area of } \triangle ABD = 24 + 12 = 36$$

$$\text{Area of } \triangle ABC = 2 \times 36 = 72$$

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### Question 92

The number of common terms in the two sequences: 15, 19, 23, 27, . . . , 415 and 14, 19, 24, 29, . . . , 464 is

- A 21
- B 20
- C 18
- D 19

**Answer: B**

#### Explanation:

A: 15, 19, 23, 27, . . . , 415

B: 14, 19, 24, 29, . . . , 464

Here the first common term = 19

Common difference = LCM of 5, 4 = 20

$$19 + (n-1)20 \leq 415$$

$$(n-1)20 \leq 396$$

$$(n-1) \leq 19.8$$

$$n = 20$$

### Question 93

Let a, b, x, y be real numbers such that  $a^2 + b^2 = 25$ ,  $x^2 + y^2 = 169$ , and  $ax + by = 65$ . If  $k = ay - bx$ , then

A  $0 < k \leq \frac{5}{13}$

B  $k > \frac{5}{13}$

C  $k = \frac{5}{13}$

D  $k = 0$

Answer: D

Explanation:

$$(ax + by)^2 = 65^2$$

$$a^2x^2 + b^2y^2 + 2abxy = 65^2$$

$$k = ay - bx$$

$$k^2 = a^2y^2 + b^2x^2 - 2abxy$$

$$(a^2 + b^2)(x^2 + y^2) = 25 \times 169$$

$$a^2x^2 + a^2y^2 + b^2x^2 + b^2y^2 = 25 \times 169$$

$$k^2 = 65^2 - (25 \times 169)$$

$$k = 0$$

D is the correct answer.

#### Question 94

Mukesh purchased 10 bicycles in 2017, all at the same price. He sold six of these at a profit of 25% and the remaining four at a loss of 25%. If he made a total profit of Rs. 2000, then his purchase price of a bicycle, in Rupees, was

A 6000

B 8000

C 4000

D 2000

Answer: C

Explanation:

Let the cost of each bicycle = 100b

CP of 10 bicycles = 1000b

It is given that he sold six of these at a profit of 25% and the remaining four at a loss of 25%

SP of 10 bicycles =  $125b \times 6 + 75b \times 4$

$$= 1050b$$

$$\text{Profit} = 1050b - 1000b = 50b$$

$$50b = 2000$$

$$\text{CP} = 100b = 4000$$

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#### Question 95

In an examination, the score of A was 10% less than that of B, the score of B was 25% more than that of C, and the score of C was 20% less than that of D. If A scored 72, then the score of D was

Answer: 80

Explanation:

Let the score of D = 100d

The score of C = 20% less than that of D = 80d

The score of B = 25% more than C = 100d

The score of A = 10% less than B = 90d

$$90d=72$$

$$100d= 72*100/90$$

$$= 80$$

#### Question 96

The salaries of Ramesh, Ganesh and Rajesh were in the ratio 6:5:7 in 2010, and in the ratio 3:4:3 in 2015. If Ramesh's salary increased by 25% during 2010-2015, then the percentage increase in Rajesh's salary during this period is closest to

A 10

B 7

C 9

D 8

Answer: B

#### Explanation:

Let the salaries of Ramesh, Ganesh and Rajesh in 2010 be 6x, 5x, 7x respectively

Let the salaries of Ramesh, Ganesh and Rajesh in 2015 be 3y, 4y, 3y respectively

It is given that Ramesh's salary increased by 25% during 2010-2015,  $3y = 1.25*6x$

$$y=2.5x$$

Percentage increase in Rajesh's salary =  $\frac{7.5-7}{7}=0.07$

$$=7\%$$

#### Question 97

Let A and B be two regular polygons having a and b sides, respectively. If  $b = 2a$  and each interior angle of B is  $\frac{3}{2}$  times each interior angle of A, then each interior angle, in degrees, of a regular polygon with a + b sides is

Answer:150

#### Explanation:

Each interior angle in an n-sided polygon =  $\frac{(n-2)180}{n}$

It is given that each interior angle of B is  $\frac{3}{2}$  times each interior angle of A and  $b = 2a$

$$\frac{(b-2)180}{b} = \frac{3}{2} \times \frac{(a-2)180}{a}$$

$$2 \times (b-2) \times a = 3 \times (a-2) \times b$$

$$2(ab-2a) = 3(ab-2b)$$

$$ab-6b+4a=0$$

$$a*2a-12a+4a=0$$

$$2a^2 - 8a = 0$$

$$a(2a-8) = 0$$

a cannot be zero so  $2a=8$

$$a=4, b = 4*2=8$$

$$a+b = 12$$

Each interior angle of a regular polygon with 12 sides =  $\frac{(12-2) \times 180}{12}$

$$=150$$

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### Question 98

Let  $f$  be a function such that  $f(mn) = f(m)f(n)$  for every positive integers  $m$  and  $n$ . If  $f(1)$ ,  $f(2)$  and  $f(3)$  are positive integers,  $f(1) < f(2)$ , and  $f(24) = 54$ , then  $f(18)$  equals

Answer: 12

#### Explanation:

Given,  $f(mn) = f(m)f(n)$

when  $m=n=1$ ,  $f(1) = f(1)*f(1) \implies f(1) = 1$

when  $m=1$ ,  $n=2$ ,  $f(2) = f(1)*f(2) \implies f(1) = 1$

when  $m=n=2$ ,  $f(4) = f(2)*f(2) \implies f(4) = [f(2)]^2$

Similarly  $f(8) = f(4)*f(2) = [f(2)]^3$

$f(24) = 54$

$[f(2)]^3 * [f(3)] = 3^3 * 2$

On comparing LHS and RHS, we get

$f(2) = 3$  and  $f(3) = 2$

Now we have to find the value of  $f(18)$

$f(18) = [f(2)] * [f(3)]^2$

$= 3*4=12$

### Question 99

Anil alone can do a job in 20 days while Sunil alone can do it in 40 days. Anil starts the job, and after 3 days, Sunil joins him. Again, after a few more days, Bimal joins them and they together finish the job. If Bimal has done 10% of the job, then in how many days was the job done?

A 12

B 13

C 15

D 14

Answer: B

#### Explanation:

Let the total work be LCM of 20, 40 = 40 units

Efficiency of Anil and Sunil is 2 units and 1 unit per day respectively.

Anil works alone for 3 days, so Anil must have completed 6 units.

Bimal completes 10% of the work while working along with Anil and Sunil.

Bimal must have completed 4 units.

The remaining 30 units of work is done by Anil and Sunil

Number of days taken by them  $30/3=10$

The total work is completed in  $3+10=13$  days

### Question 100

In an examination, Rama's score was one-twelfth of the sum of the scores of Mohan and Anjali. After a review, the score of each of them increased by 6. The revised scores of Anjali, Mohan, and Rama were in the ratio 11:10:3. Then Anjali's score exceeded Rama's score by

A 26

B 32

C 35

D 24

**Answer: B**

**Explanation:**

Let the scores of Rama, Anjali and Mohan be  $r, a, m$ .

It is given that Rama's score was one-twelfth of the sum of the scores of Mohan and Anjali

$$r = \frac{m+a}{12} \text{ ----(1)}$$

The scores of Rama, Anjali and Mohan after review =  $r+6, a+6, m+6$

$$a+6:m+6:r+6 = 11:10:3$$

$$\text{Let } a+6 = 11x \Rightarrow a = 11x-6$$

$$m+6=10x \Rightarrow m=10x-6$$

$$r+6=3x \Rightarrow r=3x-6$$

Substituting these values in equation (1), we get

$$3x-6 = \frac{21x-12}{12}$$

$$12(3x-6) = 21x-12$$

$$x=4$$

Anjali's score exceeds Rama's score by  $(a-r)=8x=32$

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