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CAT 2022 Slot 3

VARC

Instructions [1 - 4]

A set of questions accompanies the passage below. Choose the best answer to each question.

Interpretations of the Indian past . . . were inevitably influenced by colonial concerns and interests, and also by prevalent European ideas about history, civilization and the Orient. Orientalist scholars studied the languages and the texts with selected Indian scholars, but made little attempt to understand the worldview of those who were teaching them. The readings, therefore, are something of a disjuncture from the traditional ways of looking at the Indian past. . . .

Orientalism [which we can understand broadly as Western perceptions of the Orient] fuelled the fantasy and the freedom sought by European Romanticism, particularly in its opposition to the more disciplined Neo-Classicism. The cultures of Asia were seen as bringing a new Romantic paradigm. Another Renaissance was anticipated through an acquaintance with the Orient, and this, it was thought, would be different from the earlier Greek Renaissance. It was believed that this Oriental Renaissance would liberate European thought and literature from the increasing focus on discipline and rationality that had followed from the earlier Enlightenment. . . . [The Romantic English poets, Wordsworth and Coleridge,] were apprehensive of the changes introduced by industrialization and turned to nature and to fantasies of the Orient.

However, this enthusiasm gradually changed, to conform with the emphasis later in the nineteenth century on the innate superiority of European civilization. Oriental civilizations were now seen as having once been great but currently in decline. The various phases of Orientalism tended to mould European understanding of the Indian past into a particular pattern. . . . There was an attempt to formulate Indian culture as uniform, such formulations being derived from texts that were given priority. The so-called 'discovery' of India was largely through selected literature in Sanskrit. This interpretation tended to emphasize non-historical aspects of Indian culture, for example, the idea of an unchanging continuity of society and religion over 3,000 years; and it was believed that the Indian pattern of life was so concerned with metaphysics and the subtleties of religious belief that little attention was given to the more tangible aspects.

German Romanticism endorsed this image of India, and it became the mystic land for many Europeans, where even the most ordinary actions were imbued with a complex symbolism. This was the genesis of the idea of the spiritual east, and also, incidentally, the refuge of European intellectuals seeking to distance themselves from the changing patterns of their own societies. A dichotomy in values was maintained, Indian values being described as 'spiritual' and European values as 'materialistic', with little attempt to juxtapose these values with the reality of Indian society. This theme has been even more firmly endorsed by a section of Indian opinion during the last hundred years.

It was a consolation to the Indian intelligentsia for its perceived inability to counter the technical superiority of the west, a superiority viewed as having enabled Europe to colonize Asia and other parts of the world. At the height of anti-colonial nationalism it acted as a salve for having been made a colony of Britain.

1. **It can be inferred from the passage that to gain a more accurate view of a nation's history and culture, scholars should do all of the following EXCEPT:**

A develop an oppositional framework to grasp cultural differences.

B examine their own beliefs and biases.

C read widely in the country's literature.

D examine the complex reality of that nation's society.

Answer: A

Video Solution

Explanation:

Option A: *"There was an attempt to formulate Indian culture as uniform, such formulations being derived from texts that were given priority... A dichotomy in values was maintained, Indian values being described as 'spiritual' and European values as 'materialistic', with little attempt to juxtapose these values with the reality of Indian society..."*

It can be understood from the above lines of the passage that the author did not approve(even criticize) the position where one should develop an oppositional framework to grasp cultural differences. Thus, this will not bear any fruit in getting a more accurate view of one nation's history and culture. This is the correct option.

Option B: Throughout the passage, the author criticized the framework the Englishmen adopted to understand India's culture. Thus, the author will support this view that can help give a more accurate picture of a nation's history and culture; hence, this is not the correct

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option.

Option C: Reading widely into a country's literature without any selection bias will give a more encompassing view of the nation's history; hence, this is also not the correct option.

Option D: This can be rejected on the same ground as option B.

Thus, the correct option is A.

2. **It can be inferred from the passage that the author is not likely to support the view that:**

A India's culture has evolved over the centuries.

B the Orientalist view of Asia fired the imagination of some Western poets.

C India became a colony although it matched the technical knowledge of the West.

D Indian culture acknowledges the material aspects of life.

Answer: C

Video Solution

Explanation:
Option A: Since the author criticized the uniform view adopted by the Englishmen to understand Indian culture, the author will support the argument presented in this option. Thus, this is not the correct option.

Option B: This can be understood from the starting and concluding lines of the second paragraph, and hence is not the correct option.

Option C: "*It was a consolation to the Indian intelligentsia for its perceived inability to counter the technical superiority of the west, a superiority viewed as having enabled Europe to colonize Asia and other parts of the world.*"

Although it can be inferred from the above excerpt that the Indians underestimated their culture and knowledge, it cannot be inferred from this excerpt that they matched the technical understanding of the west.

Thus, this view will not be supported by the author and hence, C is the correct option.

Option D: "*...it was believed that the Indian pattern of life was so concerned with metaphysics and the subtleties of religious belief that little attention was given to* ***the more tangible aspects*** *.*"

From the above excerpt, it can be inferred that the author disapproved of the Orientalist ignorance of the Indian view towards the materialistic(tangible) aspects. Thus, the author will agree with the view that the Indian culture acknowledges the material aspects of life.

Thus, the correct option is C.

3. **In the context of the passage, all of the following statements are true EXCEPT:**

A Indian texts influenced Orientalist scholars.

B Orientalist scholarship influenced Indians.

C India's spiritualism served as a salve for European colonisers.

D Orientalists' understanding of Indian history was linked to colonial concerns.

Answer: C

Video Solution

Explanation:
"*It was a consolation to the Indian intelligentsia for its perceived inability to counter the technical superiority of the west, a superiority viewed as having enabled Europe to colonize Asia and other parts of the world. At the height of anti-colonial nationalism it acted as a*

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salve for having been made a colony of Britain."

The author mentioned the reference to being a salve in the last paragraph of the passage(above excerpt). The above excerpt was not regarding colonisers; rather, it refers to the Indian intelligentsia (intellectuals or highly educated people as a group). Thus, it can be inferred that option C is not the correct inference and hence is the correct option.

Throughout the passage, it can be inferred that the Orientalist scholars' understanding of Indian history and culture was selective, uniform, generalized, and biased. They viewed the Indian culture largely through the lenses of limited and selected literature in Sanskrit. Thus, option A can be inferred and is not the correct option.

"*A dichotomy in values was maintained, Indian values being described as 'spiritual' and European values as 'materialistic', with little attempt to juxtapose these values with the reality of Indian society. This theme has been even more firmly endorsed by a section of Indian opinion during the last hundred years."*

From the above lines, option B can also be inferred.

Thus, the correct option is C.

4. **Which one of the following styles of research is most similar to the Orientalist scholars' method of understanding Indian history and culture?**

A Studying artefacts excavated at a palace to understand the lifestyle of those who lived there.

B Reading 18th century accounts by travellers to India to see how they viewed Indian life and culture of the time.

C Reading about the life of early American settlers and later waves of migration to understand the evolution of American culture.

D Analysing Hollywood action movies that depict violence and sex to understand contemporary America.

Answer: D

Video Solution

Explanation:

"*There was an attempt to formulate Indian culture as uniform, such formulations being derived from texts that were given priority. The so-called 'discovery' of India was largely through selected literature in Sanskrit. This interpretation tended to emphasize non-historical aspects of Indian culture, for example, the idea of an unchanging continuity of society and religion over 3,000 years*"

From the above excerpt of the passage, it can be inferred that the Orientalist scholars' method of understanding Indian history and culture was selective, uniform, generalized, and biased. They viewed the Indian culture largely through the lenses of limited and selected literature in Sanskrit.

Thus, we need to select an option which resembles the same approach.

Out of the four options, only option D uses a very limited understanding(of selected American movies) to form a generalized view of a nation.

Thus, option D is the correct option.

Instructions [5 - 8]

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Sociologists working in the Chicago School tradition have focused on how rapid or dramatic social change causes increases in crime. Just as Durkheim, Marx, Toennies, and other European sociologists thought that the rapid changes produced by industrialization and urbanization produced crime and disorder, so too did the Chicago School theorists. The location of the University of Chicago provided an excellent opportunity for Park, Burgess, and McKenzie to study the social ecology of the city. Shaw and McKay found . . . that areas of the city characterized by high levels of social disorganization had higher rates of crime and delinquency.

In the 1920s and 1930s Chicago, like many American cities, experienced considerable immigration. Rapid population growth is a disorganizing influence, but growth resulting from in-migration of very different people is particularly disruptive. Chicago's in-migrants were both native-born whites and blacks from rural areas and small towns, and foreign immigrants. The heavy industry of cities like Chicago, Detroit, and Pittsburgh drew those seeking opportunities and new lives. Farmers and villagers from America's hinterland, like

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their European cousins of whom Durkheim wrote, moved in large numbers into cities. At the start of the twentieth century, Americans were predominately a rural population, but by the century's mid-point, most lived in urban areas. The social lives of these migrants, as well as those already living in the cities they moved to, were disrupted by the differences between urban and rural life. According to social disorganization theory, until the social ecology of the "new place" can adapt, this rapid change is a criminogenic influence. But most rural migrants, and even many of the foreign immigrants to the city, looked like and eventually spoke the same language as the natives of the cities into which they moved. These similarities allowed for more rapid social integration for these migrants than was the case for African Americans and most foreign immigrants.

In these same decades, America experienced what has been called "the great migration": the massive movement of African Americans out of the rural South and into northern (and some southern) cities. The scale of this migration is one of the most dramatic in human history. These migrants, unlike their white counterparts, were not integrated into the cities they now called home. In fact, most American cities at the end of the twentieth century were characterized by high levels of racial residential segregation . . . Failure to integrate these immigrants, coupled with other forces of social disorganization such as crowding, poverty, and illness, caused crime rates to climb in the cities, particularly in the segregated wards and neighbourhoods where the migrants were forced to live.

Foreign immigrants during this period did not look as dramatically different from the rest of the population as blacks did, but the migrants from eastern and southern Europe who came to American cities did not speak English, and were frequently Catholic, while the native born were mostly Protestant. The combination of rapid population growth with the diversity of those moving into the cities created what the Chicago School sociologists called social disorganization.

5. **Which one of the following sets of words/phrases best encapsulates the issues discussed in the passage?**

A Chicago School; Native-born Whites; European immigrants; Poverty

B Chicago School; Social organisation; Migration; Crime

C Durkheim; Marx; Toennies; Shaw

D Rapid population growth; Heavy industry; Segregation; Crime

Answer: B

Video Solution

Explanation:
The passage starts by stating about the sociologists working in the Chicago school tradition on the causality between social disorganization and crime. Then the author describes the immigration experienced in American cities in the 1920s and 1930s. The author then gives the reason why this led to an increase in crime rates(some examples being *failure to integrate these immigrants, coupled with other forces of social disorganization, such as crowding, poverty, and illness, caused crime rates to climb in the cities, particularly in the segregated wards and neighborhoods where the migrants were forced to live.*)

Both options A and C should be eliminated because, in these options, the words social disorganization/ organization or crimes are missing. Compared with D, B is better because the term heavy industry is not a keyword of the passage. Also, more than population growth, migration is the primary reason behind social disorganization.

Thus, the correct option is B.

6. **A fundamental conclusion by the author is that:**

A according to European sociologists, crime in America is mainly in Chicago.

B the best circumstances for crime to flourish are when there are severe racial disparities.

C to prevent crime, it is important to maintain social order through maintaining social segregation.

D rapid population growth and demographic diversity give rise to social disorganization that can feed the growth of crime.

Answer: D

Video Solution

Explanation:
The above passage is a case study of how rapid or dramatic social change causes relate to increasing crime growth in Chicago. The

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passage focus on the effects of social disorganization on crime in Chicago.

Option A: There is no comparison of crime in Chicago with that of crime in other states. Thus, this is not the correct answer.

Option B: The passage focus on the effects of social disorganization on crime in Chicago. It is not specific only to the racial aspect. Thus, this is not the correct option.

Option C: This is a distortion of the passage's main idea. Thus, this is not the correct option.

Option D: This option aptly describes the main conclusion of the passage and hence, is the correct option.

The correct option is D.

7. **Which one of the following is not a valid inference from the passage?**

A The failure to integrate in-migrants, along with social problems like poverty, was a significant reason for the rise in crime in American cities.

B According to social disorganisation theory, the social integration of African American migrants into Chicago was slower because they were less organised.

C The differences between urban and rural lifestyles were crucial factors in the disruption experienced by migrants to American cities.

D According to social disorganisation theory, fast-paced social change provides fertile ground for the rapid growth of crime.

Answer: B

Video Solution

Explanation:

"*Failure to integrate these immigrants, coupled with other forces of social disorganization such as crowding, poverty, and illness, caused crime rates to climb in the cities, particularly in the segregated wards and neighborhoods where the migrants were forced to live.*"

From the above excerpt of the penultimate paragraph of the passage, it can be inferred that poverty and the rise in disorganization contributed to the increase in crime in American cities. Thus, option A is a valid inference and hence can be eliminated.

"*The social lives of these migrants, as well as those already living in cities they moved to, were disrupted by the differences between urban and rural life . According to social disorganization theory, until the social ecology of the "new place" can adapt, this rapid change is a criminogenic influence.*"

From the above excerpt of the second passage, it can be inferred that the difference between urban and rural life contributed to the disruption experienced by the migrants. Also, this rapid change contributes to the rise in crime in these cities. Thus, options C and D are also valid and hence cannot be the answer.

"*These migrants, unlike their white counterparts, were not integrated into the cities they now called home. In fact, most American cities at the end of the twentieth century was characterized by high levels of racial residential segregation.*"

Although the African American migrants faced a high level of racial segregation, it is nowhere mentioned that it was because they were less organised. Thus, option B is not true in the scope of the passage and hence is the correct option.

Thus, the correct option is B.

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8. **The author notes that, "At the start of the twentieth century, Americans were predominately a rural population, but by the century's mid-point most lived in urban areas." Which one of the following statements, if true, does not contradict this statement?**

A Economists have found that throughout the twentieth century, the size of the labour force in America has always been largest in rural areas.

B A population census conducted in 1952 showed that more Americans lived in rural areas than in urban ones.

C The estimation of per capita income in America in the mid-twentieth century primarily required data from rural areas.

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D Demographic transition in America in the twentieth century is strongly marked by an out-migration from rural areas.

Answer: D

Video Solution

Explanation:
Option A: If the workforce size is the largest in the rural area throughout the twenty-first century, then it directly contradicts the theory of the migration of most of the population from rural areas to urban areas. The sample space of the workforce population does not tally with this theory of migration. Thus, this is not the correct option.

Option B: If this population census of 1952 is accurate, it directly nullifies the above migration theory. Thus, this is not the correct option.

Option C: If the data for the estimation of per capita income in the mid-twentieth century primarily required data from the rural areas, then it is not possible that the majority of the population lives in the urban areas. Thus, this is not the correct option.

Option D: If this option is true, it will strengthen the theory of the intermigration of people from rural to urban areas. Thus, this is the correct option.

Thus, the correct option is D.

Instructions [9 - 12]

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Nature has all along yielded her flesh to humans. First, we took nature's materials as food, fibers, and shelter. Then we learned to extract raw materials from her biosphere to create our own new synthetic materials. Now Bios is yielding us her mind—we are taking her logic.

Clockwork logic—the logic of the machines—will only build simple contraptions. Truly complex systems such as a cell, a meadow, an economy, or a brain (natural or artificial) require a rigorous nontechnological logic. We now see that no logic except bio-logic can assemble a thinking device, or even a workable system of any magnitude.

It is an astounding discovery that one can extract the logic of Bios out of biology and have something useful. Although many philosophers in the past have suspected one could abstract the laws of life and apply them elsewhere, it wasn't until the complexity of computers and human-made systems became as complicated as living things, that it was possible to prove this. It's eerie how much of life can be transferred. So far, some of the traits of the living that have successfully been transported to mechanical systems are: self-replication, self-governance, limited self-repair, mild evolution, and partial learning.

We have reason to believe yet more can be synthesized and made into something new. Yet at the same time that the logic of Bios is being imported into machines, the logic of Technos is being imported into life. The root of bioengineering is the desire to control the organic long enough to improve it. Domesticated plants and animals are examples of technos-logic applied to life. The wild aromatic root of the Queen Anne's lace weed has been fine-tuned over generations by selective herb gatherers until it has evolved into a sweet carrot of the garden; the udders of wild bovines have been selectively enlarged in an "unnatural" way to satisfy humans rather than calves. Milk cows and carrots, therefore, are human inventions as much as steam engines and gunpowder are. But milk cows and carrots are more indicative of the kind of inventions humans will make in the future: products that are grown rather than manufactured.

Genetic engineering is precisely what cattle breeders do when they select better strains ofHolsteins, only bioengineers employ more precise and powerful control. While carrot and milk cow breeders had to rely on diffuse organic evolution, modern genetic engineers can use directed artificial evolution—purposeful design—which greatly accelerates improvements.

The overlap of the mechanical and the lifelike increases year by year. Part of this bionic convergence is a matter of words. The meanings of "mechanical" and "life" are both stretching until all complicated things can be perceived as machines, and all self-sustaining machines can be perceived as alive. Yet beyond semantics, two concrete trends are happening: (1)Human-made things are behaving more lifelike, and (2) Life is becoming more engineered. The apparent veil between the organic and the manufactured has crumpled to reveal that the two really are, and have always been, of one being.

9. **Which one of the following sets of words/phrases best serves as keywords to thepassage?**

A Complex systems; Carrots; Milk cows; Convergence; Technos-logic

B Nature; Computers; Carrots; Milk cows; Genetic engineering

C Nature; Bios; Technos; Self-repair; Holsteins

D Complex systems; Bio-logic; Bioengineering; Technos-logic; Convergence

Answer: D

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Explanation:
The starting two paragraphs discuss the complexity of the biosphere and how it is impossible to build a thinking device without bio-logic. In the next paragraphs, the author describes how with the increasing complexity of human-made systems(not until it was comparable to living things), it has become possible to transfer these traits into mechanical systems. Examples of these are bioengineering and genetic engineering. Then in the concluding paragraph, the author discusses about the convergence of these two logics(Biologic and Techno logic).

Options B and C do not talk about the conclusion of the passage(convergence of the logics), and hence can be eliminated. Out of options A and D, we should select the option with bio-logic and techno-logic instead of carrots and cows, because the broader idea is about bio and techno, not carrots and cows.

Thus, the correct option is D.

10. **The author claims that, "Part of this bionic convergence is a matter of words". Which one of the following statements best expresses the point being made by the author?**

A "Bios" and "Technos" are both convergent forms of logic, but they generate meanings about the world that are mutually exclusive.

B "Mechanical" and "life" are words from different logical systems and are, therefore,fundamentally incompatible in meaning.

C A bionic convergence indicates the meeting ground of genetic engineering and artificial intelligence.

D "Mechanical" and "life" were earlier seen as opposite in meaning, but the difference between the two is increasingly blurred.

Answer: D

Video Solution

Explanation:
"The overlap of the mechanical and the lifelike increases year by year. ***Part of this bionic convergence is a matter of words****. The meanings of "mechanical" and "life" are both stretching until all complicated things can be perceived as machines, and all self-sustaining machines can be perceived as alive."*

From the above line, the author tries to show the increasing similarities between 'mechanical' and 'lifelike' with the passage of time. He states that this increase in similarities will continue till the meanings and the perception of the words become synonymous.

Option A: This option states the opposite of what the author tried to convey and hence is not the correct option.

Option B: This option is distorted and can be rejected on the same grounds as option A.

Option C: This is a distorted inference, and the author did not use the above statement to show the meeting grounds of 'genetic engineering' and 'mechanical engineering'. Thus, this is not the correct option.

Option D: This option aptly expresses the point made by the author in the last paragraph, and hence is the correct option.

Thus, the correct option is D.

11. **The author claims that, "The apparent veil between the organic and the manufactured has crumpled to reveal that the two really are, and have always been, of one being."Which one of the following statements best expresses the point being made by the author here?**

A Organic reality has crumpled under the veil of manufacturing, rendering the apparent and the real as the same being.

B The crumpling of the organic veil between apparent and manufactured reality reveals them to have the same being.

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C Scientific advances are making it increasingly difficult to distinguish between organic reality and manufactured reality.

D Apparent reality and organic reality are distinguished by the fact that the former is manufactured.

Answer: C

Video Solution

Explanation:

"*Yet beyond semantics, two concrete trends are happening: (1)Human-made things are behaving more lifelike, and (2) Life is becoming more engineered. The apparent veil between the organic and the manufactured has crumpled to reveal that the two really are, and have always been, of one being..*"

The main argument made by the author in the last paragraph is regarding the increasing similarities between manufactured and organic(lifelike) reality. According to the author, the growing similarities(because of the scientific advances) have distorted the understanding of the realities and have made us think that perhaps these two are and have always been the same.

Option A: This is a distorted inference. It is not that the Organic reality has crumpled under the veil of manufacturing; instead, their meanings are converging mutually. Thus, this is not the correct option.

Option B: This is again a distorted inference. It is not the organic veil that has crumpled; instead, it is the apparent veil. Similarly, in the second half of the option, the organic reality is replaced with the apparent reality.

Option C: This option aptly expresses the main point of the author and is the correct option.

Option D: The author nowhere stated or implied this, and hence this option can be easily eliminated.

Thus, the correct option is D.

12. **None of the following statements is implied by the arguments of the passage, EXCEPT:**

A historically, philosophers have known that the laws of life can be abstracted and applied elsewhere.

B genetic engineers and bioengineers are the same insofar as they both seek to force evolution in an artificial way.

C the biological realm is as complex as the mechanical one; which is why the logic of Bios is being imported into machines.

D purposeful design represents the pinnacle of scientific expertise in the service of human betterment and civilisational progress.

Answer: B

Video Solution

Explanation:

*"Although many philosophers in the past **have suspected** one could abstract the laws of life and apply them elsewhere, it wasn't until the complexity of computers and human-made systems became as complicated as living things that it was possible to prove this."*

Option A can be easily rejected from the above excerpt from the passage. Also, it can be inferred that now(not before), since the complexity of computers and human-made systems are comparable, the logic of Bios can be applied to machines. Although option C seems to convey the same meaning, it generalises the complexity and is a distorted inference.

The author has nowhere mentioned or implied in the passage that purposeful design represents the pinnacle of scientific expertise in the service of human betterment and civilisational progress. Thus, option D can also be rejected.

"Genetic engineering is precisely what cattle breeders do when they select better strains of Holsteins, only bioengineers employ more precise and powerful control. While carrot and milk cow breeders had to rely on diffuse organic evolution, modern genetic engineers can use directed artificial evolution—purposeful design—which greatly accelerates improvements."

From the above excerpt from the penultimate paragraph, it can be inferred that although genetic engineering has less control over the products than bioengineering, they both try to evolve the product artificially. Thus, option B can be inferred from the passage.

Thus, the correct option is B.

Instructions [13 - 16]

The passage below is accompanied by a set of questions. Choose the best answer to each question.

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As software improves, the people using it become less likely to sharpen their own know-how. Applications that offer lots of prompts and tips are often to blame; simpler, less solicitous programs push people harder to think, act and learn.

Ten years ago, information scientists at Utrecht University in the Netherlands had a group of people carry out complicated analytical and planning tasks using either rudimentary software that provided no assistance or sophisticated software that offered a great deal of aid. The researchers found that the people using the simple software developed better strategies, made fewer mistakes and developed a deeper aptitude for the work. The people using the more advanced software, meanwhile, would often “aimlessly click around” when confronted with a tricky problem. The supposedly helpful software actually short-circuited their thinking and learning.

[According to] philosopher Hubert Dreyfus . . . . our skills get sharper only through practice, when we use them regularly to overcome different sorts of difficult challenges. The goal of modern software, by contrast, is to ease our way through such challenges. Arduous, painstaking work is exactly what programmers are most eager to automate—after all, that is where the immediate efficiency gains tend to lie. In other words, a fundamental tension ripples between the interests of the people doing the automation and the interests of the people doing the work.

Nevertheless, automation’s scope continues to widen. With the rise of electronic health records, physicians increasingly rely on software templates to guide them through patient exams. The programs incorporate valuable checklists and alerts, but they also make medicine more routinized and formulaic—and distance doctors from their patients. . . . Harvard Medical School professor Beth Lown, in a 2012 journal article . . . warned that when doctors become“screen-driven,” following a computer’s prompts rather than “the patient’s narrative thread,” their thinking can become constricted. In the worst cases, they may miss important diagnostic signals. . . .

In a recent paper published in the journal Diagnosis, three medical researchers . . . examined the misdiagnosis of Thomas Eric Duncan, the first person to die of Ebola in the U.S., at Texas Health Presbyterian Hospital Dallas. They argue that the digital templates used by the hospital’s clinicians to record patient information probably helped to induce a kind of tunnel vision. “These highly constrained tools,” the researchers write, “are optimized for data capture but at the expense of sacrificing their utility for appropriate triage and diagnosis, leading users to miss the forest for the trees.” Medical software, they write, is no “replacement for basic history-taking, examination skills, and critical thinking.” . . .

There is an alternative. In “human-centred automation,” the talents of people take precedence. . . . In this model, software plays an essential but secondary role. It takes over routine functions that a human operator has already mastered, issues alerts when unexpected situations arise, provides fresh information that expands the operator’s perspective and counters the biases that often distort human thinking. The technology becomes the expert's partner, not the expert’s replacement.

13. **In the Ebola misdiagnosis case, we can infer that doctors probably missed the forest for the trees because:**

A they were led by the data processed by digital templates

B the data collected were not sufficient for appropriate triage.

C the digital templates forced them to acquire tunnel vision.

D they used the wrong type of digital templates for the case.

Answer: A

Video Solution

Explanation:
"*In a recent paper published in the journal Diagnosis, three medical researchers . . . examined the misdiagnosis of Thomas Eric Duncan, the first person to die of Ebola in the U.S., at Texas Health Presbyterian Hospital Dallas. They argue that the digital templates used by the hospital’s clinicians to record patient information probably helped to induce a kind of tunnel vision.*"

From the above expert, we can infer that the misdiagnosis of the ebola patient could have been caused by the digital templates used. The information stored in the templates may have helped induce tunnel vision, so the diagnosis could not capture the virus.

" *"These highly constrained tools", the researchers write, "are optimized for data capture but at the expense of sacrificing their utility for appropriate triage and diagnosis, leading users to miss the forest for the trees". Medical software, they write, is no "replacement for basic history-taking, examination skills, and critical thinking.". . .*"

The subsequent excerpt gives information about such tools, which are primarily used to capture/store data at the expense of appropriate diagnosis, which leads the users to miss the more important information[to miss the forest for the trees].

Thus, the major culprit, in this case, is the less important data captured by the doctors, which led them to think in the wrong direction.

Since only option A puts the onus on the data processed by the digital templates, this is the correct option.

Options B, C, and D can be eliminated on the basis of the explanation provided above.

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14. **In the context of the passage, all of the following can be considered examples of human-centered automation EXCEPT:**

A medical software that provides optional feedback on the doctor's analysis of the medical situation.

B a smart-home system that changes the temperature as instructed by the resident.

C software that auto-completes text when the user writes an email.

D software that offers interpretations when requested by the human operator.

Answer: C

Video Solution

Explanation:
"*There is an alternative. In "human-centred automation," the talents of people takeprecedence. . . . In this model, software plays an essential but secondary role. It takes over routine functions that a human operator has already mastered, issues alerts when unexpected situations arise, provides fresh information that expands the operator's perspective and counters the biases that often distort human thinking. The technology becomes the expert's partner, not the expert's replacement.*"

The above excerpt from the passage defines and applies the human-centred approach. This model should have humans as the primary mind, and the software's rule should be restricted only to assistance.

Option A: Since the role of the software is only specified to the feedback on the doctor's analysis, this is a perfect example of the hum-centred approach. Thus, this is not the correct option.

Option B: In this option, too, the role of technology is dependent on the instructions provided by the resident(human), and hence, it is not the correct option.

Option C: Since the software, in this case, operates on its own(auto-completion), it does not take account of human talent and thinking and hence, is not an example of human-centred automation. Thus, this is the correct option.

Option D: In this case, the software only works or provides assistance when the user requests, and hence, it is not the correct option.

Thus, the correct option is C.

15. **From the passage, we can infer that the author is apprehensive about the use of sophisticated automation for all of the following reasons EXCEPT that:**

A it stunts the development of its users.

B it could mislead people.

C computers could replace humans.

D it stops users from exercising their minds.

Answer: C

Video Solution

Explanation:
Option A: From the findings of the information scientists at Utrecht University research(2nd paragraph), it can be concluded that the excessive usage of sophisticated software stunted the thinking and learning of its users. Thus, this is not the correct option.

Option B: From the penultimate paragraph of the passage, it can be inferred that the overemphasis on the data by these 'highly constrained tools' can lead the users astray from their desired target. Thus, this option is also not the correct option.

Option C: Nowhere in the passage is it mentioned or implied that the software can replace human beings. On the contrary, the example of the research paper in the journal Diagnosis points to the limitation of these 'sophisticated' softwares. Thus, this is the correct option.

Option D: This can be inferred from the second and third paragraphs of the passage.

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Thus, the correct option is C.

16. **It can be inferred that in the Utrecht University experiment, one group of people was"aimlessly clicking around" because:**

A they did not have the skill-set to address complicated tasks.

B they were hoping that the software would help carry out the tasks.

C the other group was carrying out the tasks more efficiently.

D they wanted to avoid making mistakes.

Answer: B

Video Solution

Explanation:

"*The researchers found that the people using the simple software developed better strategies, made fewer mistakes and developed a deeper aptitude for the work. The people using the more advanced software, meanwhile, would often "* ***aimlessly click around****" when confronted with a tricky problem. The supposedly helpful software actually short-circuited their thinking and learning.* "

The above excerpt gives the findings of the Utrecht University experiment. The two study groups(one assisted by simple software and the other by a more sophisticated one) show contrasting behaviours. When confronted with a tricky problem, the one with the advanced software would often aimlessly click around the screen to solve the problem. This shows the dependent behaviour of the user on the software. In other words, the users, rather than trying to develop a strategy for the problem, were expecting it to get done by the software.

Option A: Nowhere in the excerpt was the competency of the users questioned. Instead, it was the effect of the dependency on the software being tested. Thus, this option cannot be inferred.

Option B: The users expected the software to help with the tricky problems. This was described by the phrase "aimlessly click around" in the above excerpt. Thus, this is the correct option.

Option C: The phrase "aimlessly click around" was not used to contrast the strategies adopted by the two study groups; hence, this is not the correct option.

Option D: This again cannot be inferred from the above excerpt.

Thus, the correct option is B.

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

Tamsin Blanchard, curator of Fashion Open Studio, an initiative by a campaign group showcasing the work of ethical designers says, "We're all drawn to an exquisite piece of embroidery, a colourful textile or even a style of dressing that might have originated from another heritage. [But] this magpie mentality, where all of culture and history is up for grabs as 'inspiration', has accelerated since the proliferation of social media...Where once a fashion student might research the history and traditions of a particular item of clothing with care and respect, we now have a world where images are lifted from image libraries without a care for their cultural significance. It's easier than ever to steal a motif or a craft technique and transfer it on to a piece of clothing that is either mass produced or appears on a runway without credit or compensation to their original communities."

A Copying an embroidery design or pattern of textile from native communities who own them is tantamount to stealing, and they need to be compensated.

B Media has encouraged mass production; images are copied effortlessly without care or concern for the interests of ethnic communities.

C Taking fashion ideas from any cultural group without their consent is a form of appropriation without giving due credit, compensation, and respect.

D Cultural collaboration is the need of the hour. Beautiful design ideas of indigenous people need to be showcased and shared worldwide.

Answer: C

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Video Solution

Explanation:
The main points of the paragraph are:

i) The copying of fashion ideas unique to particular cultures or heritages is rising in this age of social media.

ii) The original communities are not credited and compensated when their unique ideas are used.

Option A: This is a distorted option. It is generalizing that copying a fashion idea is tantamount to stealing(not specifying whether it is done with or without the consent of the original communities.).Thus, this is not the correct option.

Option B: Again, this is a very general and extreme option. Also, it is a distorted inference that the media has encouraged mass production. Thus, this is also not the correct option.

Option C: Since this includes both the main points, this is the correct option.

Option D: This is a distorted option and does not include the main ideas of the paragraph.

Thus, the correct option is C.

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

    1. If I wanted to sit indoors and read, or play Sonic the Hedgehog on a red-hot SegaMega Drive, I would often be made to feel guilty about not going outside to "enjoy it while it lasts".
    2. My mum, quite reasonably, wanted me and my sister out of the house, in the sun.
    3. Tales of my mum's idyllic-sounding childhood in the Sussex countryside, where trees were climbed by 8 am and streams navigated by lunchtime, were passed down to us like folklore.
    4. To an introverted kid, that felt like a threat - and the feeling has stayed with me.

Answer:2314

Video Solution

Explanation:
A brief reading of sentences 1 and 4 tells us that they form a pair. In sentence 1, the author described how he/she was made to feel guilty about not going outside while staying Indoors. Statement 4 describes how it felt like a threat for an introverted kid. Thus, 1-4 is a pair.
Now, out of sentences 2 and 3, 2 initiates the topic of discussion[how the author was impelled by her mother to go in the sun]. Statement 3 gives the information about the tales and folklore given to the author to impel. Thus, 2-3 is a pair.
1 is a direct follow-up to 3; hence, the correct order is 2-3-1-4.

19. **There is a sentence that is missing in the paragraph below. Look at the paragraph and decide in which blank (option 1, 2, 3, or 4) the following sentence would best fit.**

    Sentence: When people socially learn from each other, they often learn without understanding why what they're copying—the beliefs and behaviours and technologies and know-how—works.

    Paragraph: ___(1)___. The dual-inheritance theory ….says….that inheritance is itself an evolutionary system. It has variation. What makes us a new kind of animal, and so different and successful as a species, is we rely heavily on social learning, to the point where socially acquired information is effectively a second line of inheritance, the first being our genes…. ___(2)___. People tend to home in on who seems to be the smartest or most successful person around, as well as what everybody seems to be doing—the majority of people have something worth learning. ___(3)___. When you repeat this process over time, you can get, around the world, cultural packages—beliefs or behaviours or technology or other solutions—that are adapted to the local conditions. People have different psychologies, effectively. ___(4)___.

A Option 1

B Option 2

C Option 3

D Option 4

Answer: B

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Video Solution

Explanation:
The sentence would best fit Blank 2 because it ties together the ideas presented in the paragraph. The paragraph describes the dual inheritance theory. In the first two lines, the author states the theory. The given sentence extends the idea and gives the implication of the theory. After blank 2, the author exemplifies the implication given in the sentence(problem sentence) in the following line.

Thus, the correct option is B.

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

To defend the sequence of alphabetisation may seem bizarre, so obvious is its application that it is hard to imagine a reference, catalogue or listing without it. But alphabetical order was not an immediate consequence of the alphabet itself. In the Middle Ages, deference for ecclesiastical tradition left scholars reluctant to categorise things according to the alphabet — to do so would be a rejection of the divine order. The rediscovery of the ancient Greek and Roman classics necessitated more efficient ways of ordering, searching and referencing texts. Government bureaucracy in the 16th and 17th centuries quickened the advance of alphabetical order, bringing with it pigeonholes, notebooks and card indexes.

A Unlike the alphabet, once the efficacy of the alphabetic sequence became apparent to scholars and administrators, its use became widespread.

B The alphabetic order took several centuries to gain common currency because of religious beliefs and a lack of appreciation of its efficacy in the ordering of things.

C The ban on the use by scholars of any form of categorisation - but the divinely ordained one - delayed the adoption of the alphabetic sequence by several centuries.

D While adoption of the written alphabet was easily accomplished, it took scholars several centuries to accept the alphabetic sequence as a useful tool in their work.

Answer: B

Video Solution

Explanation:
The main ideas of the paragraph are:

i) The alphabetical order did not directly follow the discovery of alphabets.

ii) Scholars were reluctant to categorize the alphabet in the middle ages because of the fear of rejection of the divine order.

iii) Only after the rediscovery of Greek and Roman classics and the Government bureaucracy in later centuries did the categorization happen.

Option A misses capturing the point of why scholars were reluctant to categorize things according to the alphabet.
Option C is factually incorrect in mentioning the ban on the use. Option D can be eliminated on the same grounds as option A.

Option B captures the essence of the main points most aptly and hence, is the best answer.

Thus, the correct option is B.

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

1. The more we are able to accept that our achievements are largely out of our control, the easier it becomes to understand that our failures, and those of others, are too.
2. But the raft of recent books about the limits of merit is an important correction to the arrogance of contemporary entitlement and an opportunity to reassert the importance of luck, or grace, in our thinking.
3. Meritocracy as an organising principle is an inevitable function of a free society, as we are designed to see our achievements as worthy of reward.
4. And that in turn should increase our humility and the respect with which we treat our fellow citizens, helping ultimately to build a more compassionate society.

Answer:3214

Video Solution

Explanation:
A brief reading of the sentences suggests that the paragraph is about the limits to considering meritocracy as an organising principle in a free society. Statement 3 introduces the topic at hand by stating the inevitability of meritocracy. Statement 2 initiates the main idea by citing the general idea given in recent books about the limits of merit and its applicability. Thus, 3-2 will form a pair.
Statement 1 extends this idea by giving the benefits of understanding the limits, and statement 4 follows this by applying this to build a more compassionate society.

Thus, the correct sequence will be 3-2-1-4.

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

1. Various industrial sectors including retail, transit systems, enterprises, educational institutions, event organizing, finance, travel etc. have now started leveraging these beacons solutions to track and communicate with their customers.
2. A beacon fixed on to a shop wall enables the retailer to assess the proximity of the customer, and come up with a much targeted or personalized communication like offers, discounts and combos on products in each shelf.
3. Smartphones or other mobile devices can capture the beacon signals, and distance can be estimated by measuring received signal strength.
4. Beacons are tiny and inexpensive, micro-location-based technology devices that can send radio frequency signals and notify nearby Bluetooth devices of their presence and transmit information.

Answer:4312

Video Solution

Explanation:
A brief reading of the sentences suggests that the paragraph is about beacons and their applications. Statement 4 introduces the topic by giving the definition and its utility. Statement 3 sheds light on the working of beacons. Thus, statement 3 will follow statement 4.

Sentences 1 and 2 discuss the utility of these beacons in different industrial sectors, with statement 2 explaining how the beacon would help retailers.

Thus, the correct order will be 4-3-1-2.

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23. **There is a sentence that is missing in the paragraph below. Look at the paragraph and decide in which blank (option 1, 2, 3, or 4) the following sentence would best fit.**

Sentence: This has meant a lot of uncertainty around what a wide-scale return to office might look like in practice.

Paragraph: Bringing workers back to their desks has been a rocky road for employers and employees alike. The evolution of the pandemic has meant that best-laid plans have often not materialised. ___(1)___ The flow of workers back into offices has been more of a trickle than a steady stream. ___(2)___ Yet while plenty of companies are still working through their new policies, some employees across the globe are now back at their desks, whether on a full-time or hybrid basis. ___(3)___ That means we're beginning to get some clarity on what return-to-office means - what's working, as well as what has yet to be settled. ___(4)___

A Option 1

B Option 2

C Option 3

D Option 4

Answer: B

Video Solution

Explanation:
The sentence would best fit in Blank 2 because it ties together the ideas presented in the paragraph. The paragraph describes the problems in getting back the employees in the office. In the first two lines, the author mentions this problem. The given sentence gives the effect of the problems and hence will occupy the blank 2. Also, after blank 2, the author changes the flow of the idea and starts describing the present scenario regarding the steps taken by the companies to face this issue.

Thus, the correct option is B.

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

"It does seem to me that the job of comedy is to offend, or have the potential to offend, and it cannot be drained of that potential," Rowan Atkinson said of cancel culture."Every joke has a victim. That's the definition of a joke. Someone or something or an idea is made to look ridiculous." The Netflix star continued, "I think you've got to be very, very careful about saying what you're allowed to make jokes about. You've always got to kick up? Really?" He added, "There are lots of extremely smug and self-satisfied people in what would be deemed lower down in society, who also deserve to be pulled up. In a proper free society, you should be allowed to make jokes about absolutely anything."

A All jokes target someone and one should be able to joke about anyone in the society, which is inconsistent with cancel culture.

B Every joke needs a victim and one needs to include people from lower down the society and not just the upper class.

C Victims of jokes must not only be politicians and royalty, but also arrogant people from lower classes should be mentioned by comedians.

D Cancel culture does not understand the role and duty of comedians, which is to deride and mock everyone.

Answer: A

Video Solution

Explanation:
The main ideas of the passage are:

i) The job of a joke is to offend its target(victim) irrespective of its status.

ii) The cancel culture deems it inappropriate to joke about people deemed lower in society.

Option A: This option includes both the main points and hence is the correct answer.

Option B: This is a distorted option. The ideas in the paragraph are not intended to persuade to include people from the lower class in the

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joke. Thus, this is not the correct answer.

Option C: Again, this is a distorted option and can be eliminated based on the explanation given in option B.

Option D: This is also a distorted option, as nowhere in the passage the duties of a comedian are mentioned. Thus, this is not the correct option.

Thus, the correct option is A.

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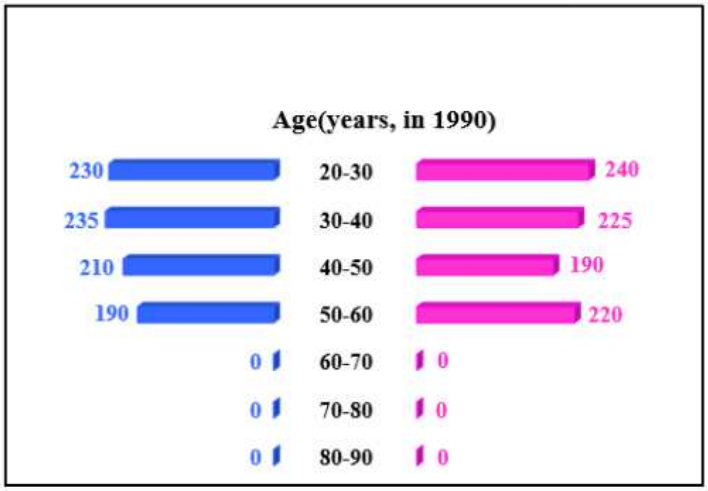
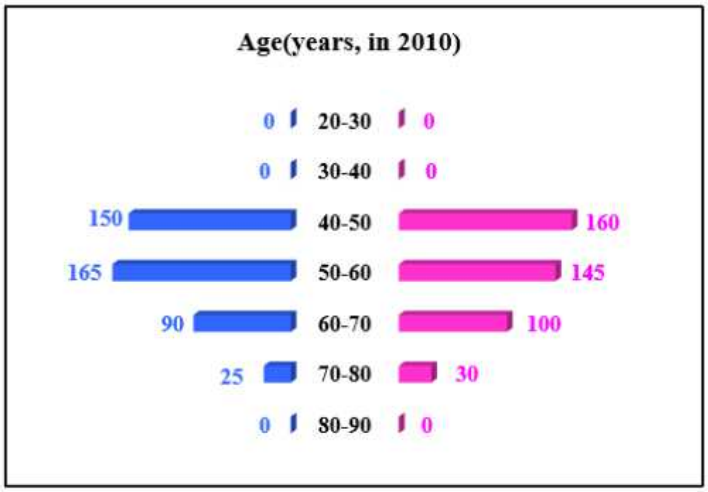
Instructions [25 - 29]

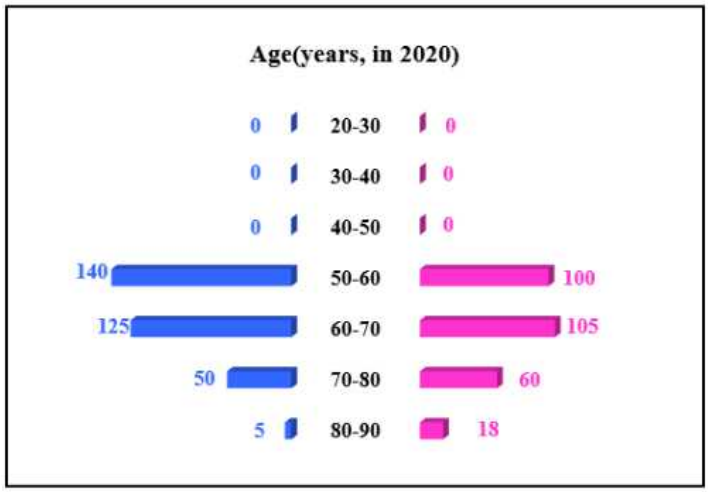
In the following, a year corresponds to 1st of January of that year.

A study to determine the mortality rate for a disease began in 1980. The study chose 1000 males and 1000 females and followed them for forty years or until they died, whichever came first. The 1000 males chosen in 1980 consisted of 250 each of ages 10 to less than 20, 20 to less than 30, 30 to less than 40, and 40 to less than 50. The 1000 females chosen in 1980 also consisted of 250 each of ages 10 to less than 20, 20 to less than 30, 30 to less than 40,and 40 to less than 50.

The four figures below depict the age profile of those among the 2000 individuals who were still alive in 1990, 2000, 2010, and 2020. The blue bars in each figure represent the number of males in each age group at that point in time, while the pink bars represent the number of females in each age group at that point in time. The numbers next to the bars give the exact numbers being represented by the bars. For example, we know that 230 males among those tracked and who were alive in 1990 were aged between 20 and 30.







25. **In 2000, what was the ratio of the number of dead males to dead females among those being tracked?**

A 71 : 69

B 41 : 43

C 129 : 131

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D 109 : 107

Answer: A

Video Solution

Explanation:
The total number of male and female test cases in 1980 = 1000

Age group(In 1980)	Males alive in 1990	Males alive in 2000	Males alive in 2010	Males alive in 2020
10-20	230	180	150	140
20-30	235	205	165	125
30-40	210	160	90	50
40-50	190	100	25	5

Age group(In 1980)	Females alive in 1990	Females alive in 2000	Females alive in 2010	Females alive in 2020
10-20	240	210	160	100
20-30	225	175	145	105
30-40	190	150	100	60
40-50	220	120	30	18

The total number of males alive in 2000 = 180 + 205 + 160 + 100 = 645

Thus, the number of dead males in 2000 = 1000 - 645 = 355

Similarly, the total number of dead females in 2000 = 1000 - (210 + 175 + 150 + 120) = 1000 - 655 = 345

Thus, the required ratio = 355 : 345 = 71 : 69.

Thus, the correct option is A.

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26. **How many people who were being tracked and who were between 30 and 40 years of age in 1980 survived until 2010?**

A 110

B 90

C 190

D 310

Answer: C

Video Solution

Explanation:
The total number of male and female test cases in 1980 = 1000

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Age group(In 1980)	Males alive in 1990	Males alive in 2000	Males alive in 2010	Males alive in 2020
10-20	230	180	150	140
20-30	235	205	165	125
30-40	210	160	90	50
40-50	190	100	25	5

Age group(In 1980)	Females alive in 1990	Females alive in 2000	Females alive in 2010	Females alive in 2020
10-20	240	210	160	100
20-30	225	175	145	105
30-40	190	150	100	60
40-50	220	120	30	18

The total number of males in the age group of 30-40(in 1980) alive till 2010 = 90

The total number of females in the age group of 30-40(in 1980) alive till 2010 = 100

Thus, the total number of people in the age group of 30-40(in 1980) alive till 2010 = 90 + 100 = 190

Thus, the correct option is C.

27. **How many individuals who were being tracked and who were less than 30 years of age in 1980 survived until 2020?**

A 240

B 580

C 470

D 230

Answer: C

Video Solution

Explanation:
The total number of male and female test cases in 1980 = 1000

Age group(In 1980)	Males alive in 1990	Males alive in 2000	Males alive in 2010	Males alive in 2020
10-20	230	180	150	140
20-30	235	205	165	125
30-40	210	160	90	50
40-50	190	100	25	5

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Age group(In 1980)	Females alive in 1990	Females alive in 2000	Females alive in 2010	Females alive in 2020
10-20	240	210	160	100
20-30	225	175	145	105
30-40	190	150	100	60
40-50	220	120	30	18

The total number of males less than 30 years (in 1980) survived until 2020 = 140 + 125 = 265

The total number of females less than 30 years (in 1980) survived until 2020 = 100 + 105 = 205

Thus, The total number of people less than 30 years (in 1980) survived until 2020 = 205 + 265 = 470

Thus, the correct option is C.

28. **How many of the males who were being tracked and who were between 20 and 30 years of age in 1980 died in the period 2000 to 2010?**

Answer:40

Video Solution

Explanation:
The total number of male and female test cases in 1980 = 1000

Age group(In 1980)	Males alive in 1990	Males alive in 2000	Males alive in 2010	Males alive in 2020
10-20	230	180	150	140
20-30	235	205	165	125
30-40	210	160	90	50
40-50	190	100	25	5

Age group(In 1980)	Females alive in 1990	Females alive in 2000	Females alive in 2010	Females alive in 2020
10-20	240	210	160	100
20-30	225	175	145	105
30-40	190	150	100	60
40-50	220	120	30	18

The total number of males between 20 and 30 years of age in 1980 who died in 2000 = 205

The total number of males between 20 and 30 years of age in 1980 who died in 2010 = 165

Thus, the total number of males between 20 and 30 years of age in 1980 who died in the period 2000 to 2010 = 205 - 165 = 40

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29. **How many of the females who were being tracked and who were between 20 and 30 years of age in 1980 died between the ages of 50 and 60?**

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Answer:30

Video Solution

Explanation:
The total number of male and female test cases in 1980 = 1000

Age group(In 1980)	Males alive in 1990	Males alive in 2000	Males alive in 2010	Males alive in 2020
10-20	230	180	150	140
20-30	235	205	165	125
30-40	210	160	90	50
40-50	190	100	25	5

Age group(In 1980)	Females alive in 1990	Females alive in 2000	Females alive in 2010	Females alive in 2020
10-20	240	210	160	100
20-30	225	175	145	105
30-40	190	150	100	60
40-50	220	120	30	18

We are given that there are 250 females from age 20-30 in 1980 and in 2000 these females age are from 40-50 but only 175 are alive in 2000.

In 2000 there were 175 females from age 40-50. If we assume that out of these, 30 females were of age 48 years in 2000 and they died in 2005, then there are 30 females who died at the age of 53.

If we assume that out of the 175 females, 30 females were of age 42 years in 2000, and they died in 2005, then 30 females died at the age of 47. Now, if we assume that there are 15 females of age 42 and 15 females of age 48 in the year 2000, and they all died in 2005, then we have 15 females who died at the age of 47 and 15 females who died at the age of 53.

So we can see that there are many cases possible. We are given that there were 250 females aged 20-30 in 1980, and in 2010, these females ages are from 50-60, but only 145 are alive in 2010.

In 2010 there were 145 females from age 50-60. If we assume that out of these, 40 females were of age 58 years in 2010 and they died in 2015, then there are 40 females who died at the age of 63.

If we assume that out of the 145 females, 40 females are of age 52 years age in 2010, and they died in 2015, then 40 females died at the age of 57. Now, if we assume that there are 15 females of age 52 and 25 females of age 58 in the year 2010, and they all died in 2015, then we have 15 females who died at the age of 57 and 25 females who died at the age of 63.
So we can see that again, there are many cases possible. In the first case, the range of values possible is from 0 to 30. In the second case, the range of values possible is from 0 to 40. So in total, we get a range of possible values from 0 to 70.

Thus, only one possible value of this question is not possible.

Instructions [30 - 34]

There are only four neighbourhoods in a city - Levmisto, Tyhrmisto, Pesmisto and Kitmisto.During the onset of a pandemic, the number of new cases of a disease in each of these neighbourhoods was recorded over a period of five days. On each day, the number of newcases recorded in any of the neighbourhoods was either 0, 1, 2 or 3.

The following facts are also known:

1.There was at least one new case in every neighbourhood on Day 1.
2.On each of the five days, there were more new cases in Kitmisto than in Pesmisto.
3.The number of new cases in the city in a day kept increasing during the five-day period. The number of new cases on Day 3 was exactly one more than that on Day 2.
4.The maximum number of new cases in a day in Pesmisto was 2, and this happened only once during the five-day period.
5.Kitmisto is the only place to have 3 new cases on Day 2.

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6.The total numbers of new cases in Levmisto, Tyhrmisto, Pesmisto and Kitmisto over the five-day period were 12, 12, 5 and 14 respectively.

30. **What BEST can be concluded about the total number of new cases in the city on Day2?**

A Either 7 or 8

B Exactly 7

C Either 6 or 7

D Exactly 8

Answer: D

Video Solution

Explanation:

From statement 6, it can be concluded that the total number of new cases is equal to 12+12+5+14 = 43.

Also, since the total number of cases in Kitmisto is 14, it can be concluded that the number of cases each day is either 2 or 3, where 3 cases are recorded on 4 days and 2 cases are recorded on 1 day.

From statement 4, it can be concluded that the number of new cases for Pesmisto will be 0,1,1,1, and 2, in any order(Since the total number of cases is 5, and the maximum number of new cases is 2).

In statement 3, it is given that the number of new cases kept increasing during the 5-day period.

Now, as it is already known that the maximum number of cases for Pesmisto is 2, the maximum total number of cases in a day(or on day 5) will be less than 12.

Let us consider the maximum number of cases on Day 5 as 10.

Thus the maximum number of cases possible for the remaining days will be 9, 8, 7, and 6. So, the total number of maximum cases possible for this case will be 40(less than 43).

Thus, the number of cases on Day 5 will be 11(i.e., b/w 10 and 11)

Now, if the number of cases on Day 4 is 9, the maximum number of cases possible for the remaining days will be 8, 7, and 6.

Thus, the maximum number of cases, in this case, will be 41(less than 43).

So, the number of cases on day 4 will be 10.

Now, if the number of cases on Day 3 is 8, the number of cases on day 2 will be 7, and the maximum possible number of cases on Day 1 will be 6.

Thus, the number of cases, in this case, will be 42(less than 43).

Thus, the number of cases on day 3 will be 9, the number of cases on day 2 will be 8, and the number of cases on day 1 will be 5.

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto						12
Tyhrmisto						12
Pesmisto						5
Kitmisto						14
Total	5	8	9	10	11	43

Since all the neighbourhood has at least one case on Day 1, the only possible combination will be 1, 1, 1, and 2 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, for the other 4 days, the number of cases in Kitmisto will be 3.

For day 5, the number of cases will be 3, 3, 2, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively(since the maximum

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number of cases in Pesmisto is 2).

And since Pesmisto only has the maximum number of cases on one day, the number of cases on day 4 will be 3, 3, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

On day 2, since Kitmisto is the only neighbourhood to have 3 cases, the number of cases on day 2 will be 2, 2, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, on day 3, the number of cases will be 3, 3, 0, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Thus, the final table will be as follows:

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto	1	2	3	3	3	12
Tyhrmisto	1	2	3	3	3	12
Pesmisto	1	1	0	1	2	5
Kitmisto	2	3	3	3	3	14
Total	5	8	9	10	11	43

From the data, it can be concluded that the total number of cases on Day 2 is equal to 8.

Thus, the correct option is D.

31. **What BEST can be concluded about the number of new cases in Levmisto on Day 3?**

A Either 2 or 3

B Exactly 2

C Exactly 3

D Either 0 or 1

Answer: C

Video Solution

Explanation:
From statement 6, it can be concluded that the total number of new cases is equal to 12+12+5+14 = 43.

Also, since the total number of cases in Kitmisto is 14, it can be concluded that the number of cases each day is either 2 or 3, where 3 cases are recorded on 4 days and 2 cases are recorded on 1 day.

From statement 4, it can be concluded that the number of new cases for Pesmisto will be 0,1,1,1, and 2, in any order(Since the total number of cases is 5, and the maximum number of new cases is 2).

In statement 3, it is given that the number of new cases kept increasing during the 5-day period.

Now, as it is already known that the maximum number of cases for Pesmisto is 2, the maximum total number of cases in a day(or on day 5) will be less than 12.

Let us consider the maximum number of cases on Day 5 as 10.

Thus the maximum number of cases possible for the remaining days will be 9, 8, 7, and 6. So, the total number of maximum cases possible for this case will be 40(less than 43).

Thus, the number of cases on Day 5 will be 11(i.e., b/w 10 and 11)

Now, if the number of cases on Day 4 is 9, the maximum number of cases possible for the remaining days will be 8, 7, and 6.

Thus, the maximum number of cases, in this case, will be 41(less than 43).

So, the number of cases on day 4 will be 10.

Now, if the number of cases on Day 3 is 8, the number of cases on day 2 will be 7, and the maximum possible number of cases on Day 1

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will be 6.

Thus, the number of cases, in this case, will be 42(less than 43).

Thus, the number of cases on day 3 will be 9, the number of cases on day 2 will be 8, and the number of cases on day 1 will be 5.

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto						12
Tyhrmisto						12
Pesmisto						5
Kitmisto						14
Total	5	8	9	10	11	43

Since all the neighbourhood has at least one case on Day 1, the only possible combination will be 1, 1, 1, and 2 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, for the other 4 days, the number of cases in Kitmisto will be 3.

For day 5, the number of cases will be 3, 3, 2, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively(since the maximum number of cases in Pesmisto is 2).

And since Pesmisto only has the maximum number of cases on one day, the number of cases on day 4 will be 3, 3, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

On day 2, since Kitmisto is the only neighbourhood to have 3 cases, the number of cases on day 2 will be 2, 2, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, on day 3, the number of cases will be 3, 3, 0, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Thus, the final table will be as follows:

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto	1	2	3	3	3	12
Tyhrmisto	1	2	3	3	3	12
Pesmisto	1	1	0	1	2	5
Kitmisto	2	3	3	3	3	14
Total	5	8	9	10	11	43

From the final table, it can be concluded that the total number of cases in Levmisto is 3 on day 3.

Thus, the correct option is C.

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32. **On which day(s) did Pesmisto not have any new case?**

A Only Day 3

B Only Day 2

C Both Day 2 and Day 3

D Both Day 2 and Day 4

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Answer: A

Video Solution

Explanation:
From statement 6, it can be concluded that the total number of new cases is equal to 12+12+5+14 = 43.

Also, since the total number of cases in Kitmisto is 14, it can be concluded that the number of cases each day is either 2 or 3, where 3 cases are recorded on 4 days and 2 cases are recorded on 1 day.

From statement 4, it can be concluded that the number of new cases for Pesmisto will be 0,1,1,1, and 2, in any order(Since the total number of cases is 5, and the maximum number of new cases is 2).

In statement 3, it is given that the number of new cases kept increasing during the 5-day period.

Now, as it is already known that the maximum number of cases for Pesmisto is 2, the maximum total number of cases in a day(or on day 5) will be less than 12.

Let us consider the maximum number of cases on Day 5 as 10.

Thus the maximum number of cases possible for the remaining days will be 9, 8, 7, and 6. So, the total number of maximum cases possible for this case will be 40(less than 43).

Thus, the number of cases on Day 5 will be 11(i.e., b/w 10 and 11)

Now, if the number of cases on Day 4 is 9, the maximum number of cases possible for the remaining days will be 8, 7, and 6.

Thus, the maximum number of cases, in this case, will be 41(less than 43).

So, the number of cases on day 4 will be 10.

Now, if the number of cases on Day 3 is 8, the number of cases on day 2 will be 7, and the maximum possible number of cases on Day 1 will be 6.

Thus, the number of cases, in this case, will be 42(less than 43).

Thus, the number of cases on day 3 will be 9, the number of cases on day 2 will be 8, and the number of cases on day 1 will be 5.

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto						12
Tyhrmisto						12
Pesmisto						5
Kitmisto						14
Total	5	8	9	10	11	43

Since all the neighbourhood has at least one case on Day 1, the only possible combination will be 1, 1, 1, and 2 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, for the other 4 days, the number of cases in Kitmisto will be 3.

For day 5, the number of cases will be 3, 3, 2, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively(since the maximum number of cases in Pesmisto is 2).

And since Pesmisto only has the maximum number of cases on one day, the number of cases on day 4 will be 3, 3, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

On day 2, since Kitmisto is the only neighbourhood to have 3 cases, the number of cases on day 2 will be 2, 2, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, on day 3, the number of cases will be 3, 3, 0, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Thus, the final table will be as follows:

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Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto	1	2	3	3	3	12
Tyhrmisto	1	2	3	3	3	12
Pesmisto	1	1	0	1	2	5
Kitmisto	2	3	3	3	3	14
Total	5	8	9	10	11	43

From the final table, it can be concluded that on Day 3, the number of cases will be zero for Pesmisto.

Thus, the correct option is A.

33. **Which of the two statements below is/are necessarily false?**
Statement A: There were 2 new cases in Tyhrmisto on Day 3.
Statement B: There were no new cases in Pesmisto on Day 2.

A Statement A only

B Neither Statement A nor Statement B

C Statement B only

D Both Statement A and Statement B

Answer: D

Video Solution

Explanation:
From statement 6, it can be concluded that the total number of new cases is equal to 12+12+5+14 = 43.

Also, since the total number of cases in Kitmisto is 14, it can be concluded that the number of cases each day is either 2 or 3, where 3 cases are recorded on 4 days and 2 cases are recorded on 1 day.

From statement 4, it can be concluded that the number of new cases for Pesmisto will be 0,1,1,1, and 2, in any order(Since the total number of cases is 5, and the maximum number of new cases is 2).

In statement 3, it is given that the number of new cases kept increasing during the 5-day period.

Now, as it is already known that the maximum number of cases for Pesmisto is 2, the maximum total number of cases in a day(or on day 5) will be less than 12.

Let us consider the maximum number of cases on Day 5 as 10.

Thus the maximum number of cases possible for the remaining days will be 9, 8, 7, and 6. So, the total number of maximum cases possible for this case will be 40(less than 43).

Thus, the number of cases on Day 5 will be 11(i.e., b/w 10 and 11)

Now, if the number of cases on Day 4 is 9, the maximum number of cases possible for the remaining days will be 8, 7, and 6.

Thus, the maximum number of cases, in this case, will be 41(less than 43).

So, the number of cases on day 4 will be 10.

Now, if the number of cases on Day 3 is 8, the number of cases on day 2 will be 7, and the maximum possible number of cases on Day 1 will be 6.

Thus, the number of cases, in this case, will be 42(less than 43).

Thus, the number of cases on day 3 will be 9, the number of cases on day 2 will be 8, and the number of cases on day 1 will be 5.

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Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto						12
Tyhrmisto						12
Pesmisto						5
Kitmisto						14
Total	5	8	9	10	11	43

Since all the neighbourhood has at least one case on Day 1, the only possible combination will be 1, 1, 1, and 2 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, for the other 4 days, the number of cases in Kitmisto will be 3.

For day 5, the number of cases will be 3, 3, 2, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively(since the maximum number of cases in Pesmisto is 2).

And since Pesmisto only has the maximum number of cases on one day, the number of cases on day 4 will be 3, 3, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

On day 2, since Kitmisto is the only neighbourhood to have 3 cases, the number of cases on day 2 will be 2, 2, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, on day 3, the number of cases will be 3, 3, 0, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Thus, the final table will be as follows:

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto	1	2	3	3	3	12
Tyhrmisto	1	2	3	3	3	12
Pesmisto	1	1	0	1	2	5
Kitmisto	2	3	3	3	3	14
Total	5	8	9	10	11	43

From the final table, it can be concluded that both statements are false.

Thus the correct option is D.

34. **On how many days did Levmisto and Tyhrmisto have the same number of new cases?**

A 2

B 3

C 4

D 5

Answer: D

Video Solution

Explanation:
From statement 6, it can be concluded that the total number of new cases is equal to 12+12+5+14 = 43.

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Also, since the total number of cases in Kitmisto is 14, it can be concluded that the number of cases each day is either 2 or 3, where 3 cases are recorded on 4 days and 2 cases are recorded on 1 day.

From statement 4, it can be concluded that the number of new cases for Pesmisto will be 0,1,1,1, and 2, in any order(Since the total number of cases is 5, and the maximum number of new cases is 2).

In statement 3, it is given that the number of new cases kept increasing during the 5-day period.

Now, as it is already known that the maximum number of cases for Pesmisto is 2, the maximum total number of cases in a day(or on day 5) will be less than 12.

Let us consider the maximum number of cases on Day 5 as 10.

Thus the maximum number of cases possible for the remaining days will be 9, 8, 7, and 6. So, the total number of maximum cases possible for this case will be 40(less than 43).

Thus, the number of cases on Day 5 will be 11(i.e., b/w 10 and 11)

Now, if the number of cases on Day 4 is 9, the maximum number of cases possible for the remaining days will be 8, 7, and 6.

Thus, the maximum number of cases, in this case, will be 41(less than 43).

So, the number of cases on day 4 will be 10.

Now, if the number of cases on Day 3 is 8, the number of cases on day 2 will be 7, and the maximum possible number of cases on Day 1 will be 6.

Thus, the number of cases, in this case, will be 42(less than 43).

Thus, the number of cases on day 3 will be 9, the number of cases on day 2 will be 8, and the number of cases on day 1 will be 5.

Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto						12
Tyhrmisto						12
Pesmisto						5
Kitmisto						14
Total	5	8	9	10	11	43

Since all the neighbourhood has at least one case on Day 1, the only possible combination will be 1, 1, 1, and 2 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, for the other 4 days, the number of cases in Kitmisto will be 3.

For day 5, the number of cases will be 3, 3, 2, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively(since the maximum number of cases in Pesmisto is 2).

And since Pesmisto only has the maximum number of cases on one day, the number of cases on day 4 will be 3, 3, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

On day 2, since Kitmisto is the only neighbourhood to have 3 cases, the number of cases on day 2 will be 2, 2, 1, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Now, on day 3, the number of cases will be 3, 3, 0, and 3 for Levmisto, Tyhrmisto, Pesmisto and Kitmisto, respectively.

Thus, the final table will be as follows:

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Neighbourhoods	Day 1	Day 2	Day 3	Day 4	Day 5	Total
Levmisto	1	2	3	3	3	12
Tyhrmisto	1	2	3	3	3	12
Pesmisto	1	1	0	1	2	5
Kitmisto	2	3	3	3	3	14
Total	5	8	9	10	11	43

It can be concluded from the final table that the number of cases will be the same for all the days.

Thus, the correct option is D

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Instructions [35 - 39]

All the first-year students in the computer science (CS) department in a university take both the courses (i) AI and (ii) ML. Students from other departments (non-CS students) can also take one of these two courses, but not both. Students who fail in a course get an F grade;others pass and are awarded A or B or C grades depending on their performance. The following are some additional facts about the number of students who took these two courses this year and the grades they obtained.

1.The numbers of non-CS students who took AI and ML were in the ratio 2 : 5.
2.The number of non-CS students who took either AI or ML was equal to the number of CS students.
3.The numbers of non-CS students who failed in the two courses were the same and their total is equal to the number of CS students who got a C grade in ML.
4. In both the courses, 50% of the students who passed got a B grade. But, while the numbers of students who got A and C grades were the same for AI, they were in the ratio 3 :2 for ML.
5. No CS student failed in AI, while no non-CS student got an A grade in AI.
6.The numbers of CS students who got A, B and C grades respectively in AI were in the ratio 3 : 5 : 2, while in ML the ratio was 4 : 5 : 2.
7.The ratio of the total number of non-CS students failing in one of the two courses to the number of CS students failing in one of the two courses was 3 : 1.
8. 30 students failed in ML.

35. **How many students took AI?**

A 60

B 210

C 90

D 270

Answer: D

Video Solution

Explanation: the numbers of CS students who got A, B and C grades respectively in AI were in the ratio 3a, 5a and 2a, while in ML the ratio was 4b, 5b and 2b.

From statement 3 we can say that the number of non- CS students who failed in AI and ML are b in each category.

Now from statement 8, we can say that number of CS students who failed in MI is equal to 30-b.

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		A	B	C	F	Total
CS	AI	3a	5a	2a	0	10a
	ML	4b	5b	2b	30-b	10b+30
Non CS	AI	0			b	2x
	ML				b	5x

From statement 7, we can say that, $\frac{2b}{30-b} = \frac{3}{1}$

or, 2b = 90-3b

or, b= 18

CS students take both the AI and ML courses, therefore 10a= 10b +30

or, a= b+3 = 21

From statement 2, we can say that 10a = 7x

or, x = 30

Substituting the values of a, b and x in the above table.

		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0			18	60
	ML				18	150

A total of 270 students took AI out of which 252 students passed and a total of 360 students took ML out of which 330 students passed.

From statement 4, we can say that out of the 252 students who passed in AI, 126 of them got Grade B and 63 got Grade A and 63 got Grade C.

Similarly, We can say that out of the 330 students who passed in ML, 165 of them got Grade C and 99 got Grade A and 66 got Grade C.

Therefore, the final table which we get is

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		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0	21	21	18	60
	ML	27	75	30	18	150

36. **How many CS students failed in ML?**

Answer:12

Video Solution

Explanation: the numbers of CS students who got A, B and C grades respectively in AI were in the ratio 3a, 5a and 2a, while in ML the ratio was 4b, 5b and 2b.

From statement 3 we can say that the number of non- CS students who failed in AI and ML are b in each category.

Now from statement 8, we can say that number of CS students who failed in MI is equal to 30-b.

		A	B	C	F	Total
CS	AI	3a	5a	2a	0	10a
	ML	4b	5b	2b	30-b	10b+30
Non CS	AI	0			b	2x
	ML				b	5x

From statement 7, we can say that, $\frac{2b}{30-b} = \frac{3}{1}$

or, 2b = 90-3b

or, b= 18

CS students take both the AI and ML courses, therefore 10a= 10b +30

or, a= b+3 = 21

From statement 2, we can say that 10a = 7x

or, x = 30

Substituting the values of a, b and x in the above table.

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		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0			18	60
	ML				18	150

A total of 270 students took AI out of which 252 students passed and a total of 360 students took ML out of which 330 students passed.

From statement 4, we can say that out of the 252 students who passed in AI, 126 of them got Grade B and 63 got Grade A and 63 got Grade C.

Similarly, We can say that out of the 330 students who passed in ML, 165 of them got Grade C and 99 got Grade A and 66 got Grade C.

Therefore, the final table which we get is

		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0	21	21	18	60
	ML	27	75	30	18	150

37. **How many non-CS students got A grade in ML?**

Answer:27

Video Solution

Explanation: the numbers of CS students who got A, B and C grades respectively in AI were in the ratio 3a, 5a and 2a, while in ML the ratio was 4b, 5b and 2b.

From statement 3 we can say that the number of non- CS students who failed in AI and ML are b in each category.

Now from statement 8, we can say that number of CS students who failed in MI is equal to 30-b.

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		A	B	C	F	Total
CS	AI	3a	5a	2a	0	10a
	ML	4b	5b	2b	30-b	10b+30
Non CS	AI	0			b	2x
	ML				b	5x

From statement 7, we can say that, $\frac{2b}{30-b} = \frac{3}{1}$

or, 2b = 90-3b

or, b= 18

CS students take both the AI and ML courses, therefore 10a= 10b +30

or, a= b+3 = 21

From statement 2, we can say that 10a = 7x

or, x = 30

Substituting the values of a, b and x in the above table.

		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0			18	60
	ML				18	150

A total of 270 students took AI out of which 252 students passed and a total of 360 students took ML out of which 330 students passed.

From statement 4, we can say that out of the 252 students who passed in AI, 126 of them got Grade B and 63 got Grade A and 63 got Grade C.

Similarly, We can say that out of the 330 students who passed in ML, 165 of them got Grade C and 99 got Grade A and 66 got Grade C.

Therefore, the final table which we get is

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		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0	21	21	18	60
	ML	27	75	30	18	150

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38. **How many students got A grade in AI?**

A 99

B 42

C 84

D 63

Answer: D

Video Solution

Explanation: the numbers of CS students who got A, B and C grades respectively in AI were in the ratio 3a, 5a and 2a, while in ML the ratio was 4b, 5b and 2b.

From statement 3 we can say that the number of non- CS students who failed in AI and ML are b in each category.

Now from statement 8, we can say that number of CS students who failed in MI is equal to 30-b.

		A	B	C	F	Total
CS	AI	3a	5a	2a	0	10a
	ML	4b	5b	2b	30-b	10b+30
Non CS	AI	0			b	2x
	ML				b	5x

From statement 7, we can say that, $\frac{2b}{30-b} = \frac{3}{1}$

or, 2b = 90-3b

or, b= 18

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CS students take both the AI and ML courses, therefore 10a= 10b +30

or, a= b+3 = 21

From statement 2, we can say that 10a = 7x

or, x = 30

Substituting the values of a, b and x in the above table.

		A	B	C	F	Total
CS	AI	63	105	42	0	210
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Similarly, We can say that out of the 330 students who passed in ML, 165 of them got Grade C and 99 got Grade A and 66 got Grade C.

Therefore, the final table which we get is

		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0	21	21	18	60
	ML	27	75	30	18	150

39. **How many non-CS students got B grade in ML?**

A 165

B 75

C 25

D 90

Answer: B

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Video Solution

Explanation: the numbers of CS students who got A, B and C grades respectively in AI were in the ratio 3a, 5a and 2a, while in ML the ratio was 4b, 5b and 2b.

From statement 3 we can say that the number of non- CS students who failed in AI and ML are b in each category.

Now from statement 8, we can say that number of CS students who failed in MI is equal to 30-b.

		A	B	C	F	Total
CS	AI	3a	5a	2a	0	10a
	ML	4b	5b	2b	30-b	10b+30
Non CS	AI	0			b	2x
	ML				b	5x

From statement 7, we can say that, $\frac{2b}{30-b} = \frac{3}{1}$

or, 2b = 90-3b

or, b= 18

CS students take both the AI and ML courses, therefore 10a= 10b +30

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From statement 2, we can say that 10a = 7x

or, x = 30

Substituting the values of a, b and x in the above table.

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A total of 270 students took AI out of which 252 students passed and a total of 360 students took ML out of which 330 students passed.

From statement 4, we can say that out of the 252 students who passed in AI, 126 of them got Grade B and 63 got Grade A and 63 got Grade C.

Similarly, We can say that out of the 330 students who passed in ML, 165 of them got Grade C and 99 got Grade A and 66 got Grade C.

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Therefore, the final table which we get is

		A	B	C	F	Total
CS	AI	63	105	42	0	210
	ML	72	90	36	12	210
Non CS	AI	0	21	21	18	60
	ML	27	75	30	18	150

Instructions [40 - 44]

Pulak, Qasim, Ritesh, and Suresh participated in a tournament comprising of eight rounds. In each round, they formed two pairs, with each of them being in exactly one pair. The only restriction in the pairing was that the pairs would change in successive rounds. For example, if Pulak formed a pair with Qasim in the first round, then he would have to form a pair with Ritesh or Suresh in the second round. He would be free to pair with Qasim again in the third round. In each round, each pair decided whether to play the game in that round or not. If they decided not to play, then no money was exchanged between them. If they decided to play, they had to bet either ₹1 or ₹2 in that round. For example, if they chose to bet ₹2, then the player winning the game got ₹2 from the one losing the game.

At the beginning of the tournament, the players had ₹10 each. The following table shows partial information about the amounts that the players had at the end of each of the eightrounds. It shows every time a player had ₹10 at the end of a round, as well as every time, at the end of a round, a player had either the minimum or the maximum amount that he would have had across the eight rounds. For example, Suresh had ₹10 at the end of Rounds 1, 3 and 8 and not after any of the other rounds. The maximum amount that he had at the end of any round was ₹13 (at the end of Round 5), and the minimum amount he had at the end of any round was ₹8 (at the end of Round 2). At the end of all other rounds, he must have had either ₹9, ₹11, or ₹12.

It was also known that Pulak and Qasim had the same amount of money with them at the end of Round 4.

	Pulak	Qasim	Ritesh	Suresh
Round 1		₹8	₹10	₹10
Round 2	₹13	₹10		₹8
Round 3				₹10
Round 4				
Round 5	₹10	₹10		₹13
Round 6				
Round 7		₹12	₹4	
Round 8	₹13			₹10

40. **What BEST can be said about the amount of money that Ritesh had with him at the end of Round 8?**

A ₹4 or ₹5

B Exactly ₹5

C ₹5 or ₹6

D Exactly ₹6

Answer: D

Video Solution

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Explanation:

Its given that the table shows every time a player had ₹10 at the end of a round, as well as every time, at the end of a round, a player had either the minimum or the maximum amount that he would have had across the eight rounds, which means that in Pulak's column the numbers possible are 11 or 12 only, similarly in Qasim's column numbers possible are only 9 or 11 only, similarly in Ritesh's column numbers possible are 5,6,7,8 or 9 only and in Suresh's column numbers possible are 9,11 or 12 only.

Everyone started with 10 rupees and the total amount,i.e., 40 in each round remains the same. So we get the following table

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4				
Round 5	10	10	7	13
Round 6				
Round 7		12	4	
Round 8	13			10

We are given that at the end of 4th round both Pulak and Qasim had the same amount with them and that amount possible is only 11.

As per the information given in the set the only possible amount with Qasim at the end of round 6 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11		
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amounts with Pulak and Qasim at the end of round 5 is decreased by 1 from the amounts which they had at the end of round 4, since the total amount will be same at the end of every round, so amounts with Ritesh and Suresh at the end of round 5 is increased by 1 from the amounts which they had at the end of round 4.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amount with Suresh at the end of round 2 is 8 and at the end of round 4 is 12, therefore, amount with Suresh at the end of round 3 is 10.

Amount with Qasim at the end of round 3 is either 9 or 11. If the amount is 9 then either amount with Ritesh has to be 10 or amount with Pulak has to to be 14, both of which is not possible. Therefore, amount with Qasim at the end of round 3 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3		11		10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Now Qasim has the same amount at the end of round 3 and round 4 so there must be another person whose amount is also same at the end of round 3 and round 4. This person can only be Pulak. So at the end of round 3 Pulak has 11 rupees and Ritesh has 8 rupees.

The only possible amount with Qasim at the end of round 8 can be 11 and therefore the amount at the end of round 8 with Ritesh will be 6.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13	11	6	10

The amount with Ritesh at the end of round 8 is 2 more than the amount with him at the end of round 7, so the amount with either Pulak or Suresh at the end of round 7 has to be 2 more than the amount at the end of round 8. This is only possible for Suresh who must have 12 rupees at the end of round 7 as Pulak cannot have rupees 15 at the end of round 7.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7	12	12	4	12
Round 8	13	11	6	10

The amount with Qasim at the end of round 7 is 1 more than the amount with him at the end of round 6. So there must be another person whose amount at the end of round 7 is 1 less than the amount him at the end of round 6. This only possible person can be Ritesh. So amount with Ritesh at the end of round 6 will be 5.

If the amount with Suresh at the end of round 6 is 11 then the amount with Pulak at the end of round 6 will be 13 which is not possible. Therefore the amount with Suresh at the end of round 6 is 12 and the amount with Pulak at the end of round 6 is 12.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6	12	11	5	12
Round 7	12	12	4	12
Round 8	13	11	6	10

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41. **What BEST can be said about the amount of money that Pulak had with him at the end of Round 6?**

A Exactly ₹12

B Exactly ₹11

C ₹12 or ₹13

D ₹11 or ₹12

Answer: A

Video Solution

Explanation:

Its given that the table shows every time a player had ₹10 at the end of a round, as well as every time, at the end of a round, a player had either the minimum or the maximum amount that he would have had across the eight rounds, which means that in Pulak's column the numbers possible are 11 or 12 only, similarly in Qasim's column numbers possible are only 9 or 11 only, similarly in Ritesh's column numbers possible are 5,6,7,8 or 9 only and in Suresh's column numbers possible are 9,11 or 12 only.

Everyone started with 10 rupees and the total amount,i.e., 40 in each round remains the same. So we get the following table

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4				
Round 5	10	10	7	13
Round 6				
Round 7		12	4	
Round 8	13			10

We are given that at the end of 4th round both Pulak and Qasim had the same amount with them and that amount possible is only 11.

As per the information given in the set the only possible amount with Qasim at the end of round 6 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11		
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amounts with Pulak and Qasim at the end of round 5 is decreased by 1 from the amounts which they had at the end of round 4, since the total amount will be same at the end of every round, so amounts with Ritesh and Suresh at the end of round 5 is increased by 1 from the amounts which they had at the end of round 4.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amount with Suresh at the end of round 2 is 8 and at the end of round 4 is 12, therefore, amount with Suresh at the end of round 3 is 10.

Amount with Qasim at the end of round 3 is either 9 or 11. If the amount is 9 then either amount with Ritesh has to be 10 or amount with Pulak has to to be 14, both of which is not possible. Therefore, amount with Qasim at the end of round 3 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3		11		10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Now Qasim has the same amount at the end of round 3 and round 4 so there must be another person whose amount is also same at the end of round 3 and round 4. This person can only be Pulak. So at the end of round 3 Pulak has 11 rupees and Ritesh has 8 rupees.

The only possible amount with Qasim at the end of round 8 can be 11 and therefore the amount at the end of round 8 with Ritesh will be 6.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13	11	6	10

The amount with Ritesh at the end of round 8 is 2 more than the amount with him at the end of round 7, so the amount with either Pulak or Suresh at the end of round 7 has to be 2 more than the amount at the end of round 8. This is only possible for Suresh who must have 12 rupees at the end of round 7 as Pulak cannot have rupees 15 at the end of round 7.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7	12	12	4	12
Round 8	13	11	6	10

The amount with Qasim at the end of round 7 is 1 more than the amount with him at the end of round 6. So there must be another person whose amount at the end of round 7 is 1 less than the amount him at the end of round 6. This only possible person can be Ritesh. So amount with Ritesh at the end of round 6 will be 5.

If the amount with Suresh at the end of round 6 is 11 then the amount with Pulak at the end of round 6 will be 13 which is not possible. Therefore the amount with Suresh at the end of round 6 is 12 and the amount with Pulak at the end of round 6 is 12.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6	12	11	5	12
Round 7	12	12	4	12
Round 8	13	11	6	10

42. **How much money (in ₹) did Ritesh have at the end of Round 4?**

Answer:6

Video Solution

Explanation:
Its given that the table shows every time a player had ₹10 at the end of a round, as well as every time, at the end of a round, a player had either the minimum or the maximum amount that he would have had across the eight rounds, which means that in Pulak's column the numbers possible are 11 or 12 only, similarly in Qasim's column numbers possible are only 9 or 11 only, similarly in Ritesh's column numbers possible are 5,6,7,8 or 9 only and in Suresh's column numbers possible are 9,11 or 12 only.

Everyone started with 10 rupees and the total amount,i.e., 40 in each round remains the same. So we get the following table

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4				
Round 5	10	10	7	13
Round 6				
Round 7		12	4	
Round 8	13			10

We are given that at the end of 4th round both Pulak and Qasim had the same amount with them and that amount possible is only 11.

As per the information given in the set the only possible amount with Qasim at the end of round 6 is 11.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11		
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amounts with Pulak and Qasim at the end of round 5 is decreased by 1 from the amounts which they had at the end of round 4, since the total amount will be same at the end of every round, so amounts with Ritesh and Suresh at the end of round 5 is increased by 1 from the amounts which they had at the end of round 4.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amount with Suresh at the end of round 2 is 8 and at the end of round 4 is 12, therefore, amount with Suresh at the end of round 3 is 10.

Amount with Qasim at the end of round 3 is either 9 or 11. If the amount is 9 then either amount with Ritesh has to be 10 or amount with Pulak has to to be 14, both of which is not possible. Therefore, amount with Qasim at the end of round 3 is 11.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3		11		10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Now Qasim has the same amount at the end of round 3 and round 4 so there must be another person whose amount is also same at the end of round 3 and round 4. This person can only be Pulak. So at the end of round 3 Pulak has 11 rupees and Ritesh has 8 rupees.

The only possible amount with Qasim at the end of round 8 can be 11 and therefore the amount at the end of round 8 with Ritesh will be 6.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13	11	6	10

The amount with Ritesh at the end of round 8 is 2 more than the amount with him at the end of round 7, so the amount with either Pulak or Suresh at the end of round 7 has to be 2 more than the amount at the end of round 8. This is only possible for Suresh who must have 12 rupees at the end of round 7 as Pulak cannot have rupees 15 at the end of round 7.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7	12	12	4	12
Round 8	13	11	6	10

The amount with Qasim at the end of round 7 is 1 more than the amount with him at the end of round 6. So there must be another person whose amount at the end of round 7 is 1 less than the amount him at the end of round 6. This only possible person can be Ritesh. So amount with Ritesh at the end of round 6 will be 5.

If the amount with Suresh at the end of round 6 is 11 then the amount with Pulak at the end of round 6 will be 13 which is not possible. Therefore the amount with Suresh at the end of round 6 is 12 and the amount with Pulak at the end of round 6 is 12.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6	12	11	5	12
Round 7	12	12	4	12
Round 8	13	11	6	10

43. **How many games were played with a bet of ₹2?**

Answer:6

Video Solution

Explanation:

Its given that the table shows every time a player had ₹10 at the end of a round, as well as every time, at the end of a round, a player had either the minimum or the maximum amount that he would have had across the eight rounds, which means that in Pulak's column the numbers possible are 11 or 12 only, similarly in Qasim's column numbers possible are only 9 or 11 only, similarly in Ritesh's column numbers possible are 5,6,7,8 or 9 only and in Suresh's column numbers possible are 9,11 or 12 only.

Everyone started with 10 rupees and the total amount,i.e., 40 in each round remains the same. So we get the following table

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4				
Round 5	10	10	7	13
Round 6				
Round 7		12	4	
Round 8	13			10

We are given that at the end of 4th round both Pulak and Qasim had the same amount with them and that amount possible is only 11.

As per the information given in the set the only possible amount with Qasim at the end of round 6 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11		
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amounts with Pulak and Qasim at the end of round 5 is decreased by 1 from the amounts which they had at the end of round 4, since the total amount will be same at the end of every round, so amounts with Ritesh and Suresh at the end of round 5 is increased by 1 from the amounts which they had at the end of round 4.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amount with Suresh at the end of round 2 is 8 and at the end of round 4 is 12, therefore, amount with Suresh at the end of round 3 is 10.

Amount with Qasim at the end of round 3 is either 9 or 11. If the amount is 9 then either amount with Ritesh has to be 10 or amount with Pulak has to to be 14, both of which is not possible. Therefore, amount with Qasim at the end of round 3 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3		11		10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Now Qasim has the same amount at the end of round 3 and round 4 so there must be another person whose amount is also same at the end of round 3 and round 4. This person can only be Pulak. So at the end of round 3 Pulak has 11 rupees and Ritesh has 8 rupees.

The only possible amount with Qasim at the end of round 8 can be 11 and therefore the amount at the end of round 8 with Ritesh will be 6.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13	11	6	10

The amount with Ritesh at the end of round 8 is 2 more than the amount with him at the end of round 7, so the amount with either Pulak or Suresh at the end of round 7 has to be 2 more than the amount at the end of round 8. This is only possible for Suresh who must have 12 rupees at the end of round 7 as Pulak cannot have rupees 15 at the end of round 7.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7	12	12	4	12
Round 8	13	11	6	10

The amount with Qasim at the end of round 7 is 1 more than the amount with him at the end of round 6. So there must be another person whose amount at the end of round 7 is 1 less than the amount him at the end of round 6. This only possible person can be Ritesh. So amount with Ritesh at the end of round 6 will be 5.

If the amount with Suresh at the end of round 6 is 11 then the amount with Pulak at the end of round 6 will be 13 which is not possible. Therefore the amount with Suresh at the end of round 6 is 12 and the amount with Pulak at the end of round 6 is 12.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6	12	11	5	12
Round 7	12	12	4	12
Round 8	13	11	6	10

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44. **Which of the following pairings was made in Round 5?**

A Qasim and Suresh

B Pulak and Ritesh

C Pulak and Qasim

D Pulak and Suresh

Answer: D

Video Solution

Explanation:
Its given that the table shows every time a player had ₹10 at the end of a round, as well as every time, at the end of a round, a player had either the minimum or the maximum amount that he would have had across the eight rounds, which means that in Pulak's column the numbers possible are 11 or 12 only, similarly in Qasim's column numbers possible are only 9 or 11 only, similarly in Ritesh's column numbers possible are 5,6,7,8 or 9 only and in Suresh's column numbers possible are 9,11 or 12 only.

Everyone started with 10 rupees and the total amount,i.e., 40 in each round remains the same. So we get the following table

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4				
Round 5	10	10	7	13
Round 6				
Round 7		12	4	
Round 8	13			10

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We are given that at the end of 4th round both Pulak and Qasim had the same amount with them and that amount possible is only 11.

As per the information given in the set the only possible amount with Qasim at the end of round 6 is 11.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11		
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amounts with Pulak and Qasim at the end of round 5 is decreased by 1 from the amounts which they had at the end of round 4, since the total amount will be same at the end of every round, so amounts with Ritesh and Suresh at the end of round 5 is increased by 1 from the amounts which they had at the end of round 4.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3				
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Amount with Suresh at the end of round 2 is 8 and at the end of round 4 is 12, therefore, amount with Suresh at the end of round 3 is 10.

Amount with Qasim at the end of round 3 is either 9 or 11. If the amount is 9 then either amount with Ritesh has to be 10 or amount with Pulak has to to be 14, both of which is not possible. Therefore, amount with Qasim at the end of round 3 is 11.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3		11		10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13			10

Now Qasim has the same amount at the end of round 3 and round 4 so there must be another person whose amount is also same at the end of round 3 and round 4. This person can only be Pulak. So at the end of round 3 Pulak has 11 rupees and Ritesh has 8 rupees.

The only possible amount with Qasim at the end of round 8 can be 11 and therefore the amount at the end of round 8 with Ritesh will be 6.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7		12	4	
Round 8	13	11	6	10

The amount with Ritesh at the end of round 8 is 2 more than the amount with him at the end of round 7, so the amount with either Pulak or Suresh at the end of round 7 has to be 2 more than the amount at the end of round 8. This is only possible for Suresh who must have 12 rupees at the end of round 7 as Pulak cannot have rupees 15 at the end of round 7.

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	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6		11		
Round 7	12	12	4	12
Round 8	13	11	6	10

The amount with Qasim at the end of round 7 is 1 more than the amount with him at the end of round 6. So there must be another person whose amount at the end of round 7 is 1 less than the amount him at the end of round 6. This only possible person can be Ritesh. So amount with Ritesh at the end of round 6 will be 5.

If the amount with Suresh at the end of round 6 is 11 then the amount with Pulak at the end of round 6 will be 13 which is not possible. Therefore the amount with Suresh at the end of round 6 is 12 and the amount with Pulak at the end of round 6 is 12.

	Pulak	Qasim	Ritesh	Suresh
Round 1	12	8	10	10
Round 2	13	10	9	8
Round 3	11	11	8	10
Round 4	11	11	6	12
Round 5	10	10	7	13
Round 6	12	11	5	12
Round 7	12	12	4	12
Round 8	13	11	6	10

For round 6 the pairs formed were Pulak-Ritesh and Qasim-Suresh. For round 4 the pairs formed were Pulak-Qasim and Ritesh-Suresh.

Therefore the pairs formed for round 5 were Pulak-Suresh and Qasim-Ritesh

About CAT exam

Quant

45. **If** $c = \frac{16x}{y} + \frac{49y}{x}$ **for some non-zero real numbers x and y, then c cannot take the value**

A 60

B -50

C -70

D -60

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Answer: B

Video Solution

Explanation:

Let $\frac{x}{y}$ $be\ t$

Therefore, $c = 16t + \frac{49}{t}$

Applying AM>= GM

$\frac{(16t + \frac{49}{t})}{2} \geq (16t \times \frac{49}{t})^{\frac{1}{2}}$

$16t + \frac{49}{t} \geq 56$

When t is positive then c is greater than equal to 56.

When t is negative then c is less than equal to -56.

Therefore $c \in (-\infty, -56] \cup [56, \infty]$

As -50 is not in the range of c so it is the answer

Important Verbal Ability Questions for CAT (Download PDF)

46. **Suppose k is any integer such that the equation $2x^2 + kx + 5 = 0$ has no real roots and the equation $x^2 + (k-5)x + 1 = 0$ has two distinct real roots for x. Then, the number of possible values of k is**

A 9

B 7

C 8

D 13

Answer: A

Video Solution

Explanation:

$2x^2 + kx + 5 = 0$ has no real roots so D<0

$k^2 - 40 < 0$

$(k - \sqrt{40})(k + \sqrt{40}) < 0$

$k \in (-\sqrt{40}, \sqrt{40})$

$x^2 + (k-5)x + 1 = 0$ has two distinct real roots so D>0

$(k-5)^2 - 4 > 0$

$k^2 - 10k + 21 > 0$

$(k-3)(k-7) > 0$

$k \in (-\infty, 3) \cup (7, \infty)$

Therefore possibe value of k are -6, -5, -4, -3, -2, -1, 0, 1, 2

In 9 total 9 integer values of k are possible.

47. **If $(\sqrt{\frac{7}{5}})^{3x-y} = \frac{875}{2401}$ and $(\frac{4a}{b})^{6x-y} = (\frac{2a}{b})^{y-6x}$, for all non-zero real values of a and b, then the value of $x + y$ is**

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Answer:14

Video Solution

Explanation:

$(\sqrt{\frac{7}{5}})^{3x-y} = \frac{875}{2401}$

$(\frac{7}{5})^{\frac{(3x-y)}{2}} = \frac{125}{343}$

$(\frac{7}{5})^{\frac{(3x-y)}{2}} = (\frac{7}{5})^{-3}$

3x-y = -6

$(\frac{4a}{b})^{6x-y} = (\frac{2a}{b})^{y-6x}$

Therefor, y=6x as the bases are different so the power should be zero for the results to be equal.

3x-y=-6

or, 3x - 6x = -6

or x= 2

y= 6x = 12

x+y = 14

48. **Consider six distinct natural numbers such that the average of the two smallest numbers is 14, and the average of the two largest numbers is 28. Then, the maximum possible value of the average of these six numbers is**

A 23

B 24

C 23.5

D 22.5

Answer: D

Video Solution

Explanation:

Let the six numbers be a, b, c, d, e, f in ascending order

a+b = 28

e+f = 56

If we want to maximise the average then we have to maximise the value of c and d and maximise e and minimise f

e+f = 56

As e and f are distinct natural numbers so possible values are 27 and 29

Therefore c and d will be 25 and 26 respecitively

So average = $\frac{(a+b+c+d+e+f)}{6} = \frac{(28+25+26+56)}{6} = \frac{135}{6} = 22.5$

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49. **Suppose the medians BD and CE of a triangle ABC intersect at a point O. If area of triangle ABC is 108 sq. cm., then, the area of the triangle EOD, in sq. cm., is**

Answer:9

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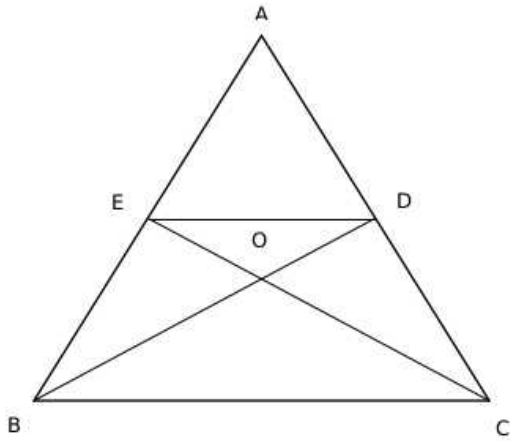
Video Solution

Explanation:



Area of ABD : Area of BDC = 1:1

Therefore, area of ABD = 54

Area of ADE : Area of EDB = 1:1

Therefore, area of ADE = 27

O is the centroid and it divides the medians in the ratio of 2:1

Area of BEO : Area of EOD = 2:1

Area of EOD = 9

50. **If $(3+2\sqrt{2})$ is a root of the equation $ax^2+bx+c=0$ and $(4+2\sqrt{3})$ is a root of the equation $ay^2+my+n=0$ where a, b, c, m and n are integers, then the value of $(\frac{b}{m}+\frac{c-2b}{n})$ is**

A 0

B 1

C 3

D 4

Answer: D

Video Solution

Explanation:

a, b, c, m and n are integers so if one root is $3+2\sqrt{2}$ then the other root is $3-2\sqrt{2}$

Sum of roots = 6 = -b/a or b= -6a

Product of roots = 1 = c/a or c=a

a, b, c, m and n are integers so if one root is $4+2\sqrt{3}$ then the other root is $4-2\sqrt{3}$

Sum of roots = 8 = -m/a or m = -8a

product of roots = 4 = n/a or n = 4a

$(\frac{b}{m}+\frac{c-2b}{n})$

$= \frac{6a}{8a}+\frac{(a+12a)}{4a} = \frac{3}{4}+\frac{13}{4} = \frac{16}{4} = 4$

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51. **A group of N people worked on a project. They finished 35% of the project by working 7 hours a day for 10 days. Thereafter, 10 people left the group and the remaining people finished the rest of the project in 14 days by working 10 hours a day. Then the value of N is**

A 150

B 23

C 36

D 140

Answer: D

Video Solution

Explanation:
Let the unit of work done by 1 man in 1 hour and 1 day be 1 MDH unit (Man Day Hour).

Thus, in 7 hours per day for 10 days, the work done by N people = $N \times 7 \times 10$ MDH units.

Since this is equal to 35% of the total work,

35% of the total work = $N \times 7 \times 10$ MDH units.

Total work = $\frac{(N \times 100 \times 7 \times 10)}{35} = 200 \times N$ MDH units.

The work left = $200N - 70N = 130N$ MDH units.

Now, 10 people left the job. So, the number of people left = (N-10)

Since (N-10) people completed the rest of work in 14 days by working 10 hours a day,

$(N - 10) \times 14 \times 10 = 130N$

$10N = 1400$

N = 140

Thus, the correct option is D.

How to prepare for Logical Reasoning for CAT

52. **A glass contains 500 cc of milk and a cup contains 500 cc of water. From the glass, 150 cc of milk is transferred to the cup and mixed thoroughly. Next, 150 cc of this mixture is transferred from the cup to the glass. Now, the amount of water in the glass and the amount of milk in the cup are in the ratio**

A 1 : 1

B 10 : 13

C 3 : 10

D 10 : 3

Answer: A

Video Solution

Explanation:
Initially: a glass 500cc milk and a cup 500cc water

Step 1: 150 cc of milk is transferred to the cup from glass

After step 1: Glass - 350 cc milk, Cup - 150 cc milk and 500 cc water

Step 2: 150 cc of this mixture is transferred from the cup to the glass

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After step 2:

Glass - 350 cc milk + 150 cc mixture with milk:water ratio 3:10

Cup - 500 cc mixture with milk:water ratio 3:10

water in glass : milk in cup = $\frac{10}{13} \times 150 : \frac{3}{13} \times 500 = 1:1$

The answer is option A.

53. **Nitu has an initial capital of ₹20,000. Out of this, she invests ₹8,000 at 5.5% in bank A, ₹5,000 at 5.6% in bank B and the remaining amount at x% in bank C, each rate being simple interest per annum. Her combined annual interest income from these investments is equal to 5% of the initial capital. If she had invested her entire initial capital in bank C alone, then her annual interest income, in rupees, would have been**

A 700

B 800

C 900

D 1000

Answer: B

Video Solution

Explanation:

It is given,

$\frac{5.5\times1\times8000}{100} + \frac{5.6\times1\times5000}{100} + \frac{x\times1\times7000}{100} = \frac{5}{100} \times 20000$

$440 + 280 + 70x = 1000$

x = 4%

Interest = $\frac{20000\times4\times1}{100}$ = Rs 800

The answer is option B.

54. **Two cars travel from different locations at constant speeds. To meet each other after starting at the same time, they take 1.5 hours if they travel towards each other, but 10.5 hours if they travel in the same direction. If the speed of the slower car is 60 km/hr, then the distance traveled, in km, by the slower car when it meets the other car while traveling towards each other, is**

A 100

B 90

C 120

D 150

Answer: B

Video Solution

Explanation:

Both the cars take 1.5 hrs to meet when they travel towards each other.

It is given, speed of slower car is 60 km/hr

Therefore, distance covered by slower car before they meet = 60*1.5 = 90 km

The answer is option B.

Data Interpretation for CAT Questions (download pdf)

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55. **The arithmetic mean of all the distinct numbers that can be obtained by rearranging the digits in 1421, including itself, is**

A 2222

B 2442

C 2592

D 3333

Answer: A

Video Solution

Explanation:

The number of 4-digit numbers possible using 1,1,2, and 4 is $\frac{4!}{2!} = 12$

Number of 1's, 2's and 4's in units digits will be in the ratio 2:1:1, i.e. 6 1's, 3 2's and 3 4's.

Sum = 6(1) + 3(2) + 3(4) = 24

Similarly, in tens digit, hundreds digit and thousands digit as well.

Therefore, sum = 24 + 24(10) + 24(100) + 24(1000) = 24(1111)

Mean = $\frac{24(1111)}{12} = 2222$

The answer is option A.

56. **The lengths of all four sides of a quadrilateral are integer valued. If three of its sides are of length 1 cm, 2 cm and 4 cm, then the total number of possible lengths of the fourth side is**

A 3

B 4

C 6

D 5

Answer: D

Video Solution

Explanation:

Sum of the three sides of a quadrilateral is greater than the fourth side.

Therefore, let the fourth side be

1+2+4>d or d<7

1+2+d>4 or d>1

Possible values of d are 2, 3, 4, 5 and 6.

57. **The average of all 3-digit terms in the arithmetic progression 38, 55, 72, ..., is**

Answer:548

Video Solution

Explanation:

General term = 38 + (n-1)17 = 17n + 21 = 17(n+1) + 4 = 17k + 4

Each term is in the form of 17k + 4

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Least 3-digit number in the form of 17k + 4 is at k = 6, i.e. 106

Highest 3-digit number in the form of 17k + 4 is at k = 58, i.e. 990

106, 123, 140,....., 990

990 = 106 + 17(n-1)

n = 53

Sum = $\frac{53}{2}(106 + 990) = 53 \times 548$

Average = $53 \times \frac{548}{53} = 548$

Logical Reasoning for CAT Questions (download pdf)

58. **In an examination, the average marks of students in sections A and B are 32 and 60, respectively. The number of students in section A is 10 less than that in section B. If the average marks of all the students across both the sections combined is an integer, then the difference between the maximum and minimum possible number of students in section A is**

Answer:63

Video Solution

Explanation:
Let the number of students in section A and B be a and b, respectively.

It is given, a = b - 10

$\frac{32a+60b}{a+b}$ is an integer

$\frac{32a+60(a+10)}{a+a+10} = k$

$\frac{46a+300}{a+5} = k$

$k = \frac{46(a+5)}{a+5} + \frac{70}{a+5}$

$k = 46 + \frac{70}{a+5}$

a can take values 2, 5, 9, 30, 65

Difference = 65 - 2 = 63

59. **Let r be a real number and** $f(x) = \begin{cases} 2x - r & if x \geq r \\ r & if x < r \end{cases}$**. Then, the equation** $f(x) = f(f(x))$ **holds for all real values of** x **where**

A $x > r$

B $x \leq r$

C $x \neq r$

D $x \geq r$

Answer: B

Video Solution

Explanation:
When x< r

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f(x) = r

f(x) = f(f(x))

r = f(r)

r= 2r-r

r=r

When x>=r

f(x) = 2x-r

f(x) = f(f(x))

2x-r = f(2x-r)

2x-r = 2(2x-r) - r

2x-r = 4x-3r

or, x=r

Therefore x<= r

60. **In a triangle ABC, AB = AC = 8 cm. A circle drawn with BC as diameter passes through A. Another circle drawn with center at A passes through Band C. Then the area, in sq. cm, of the overlapping region between the two circles is**

A 16π

B $16(\pi - 1)$

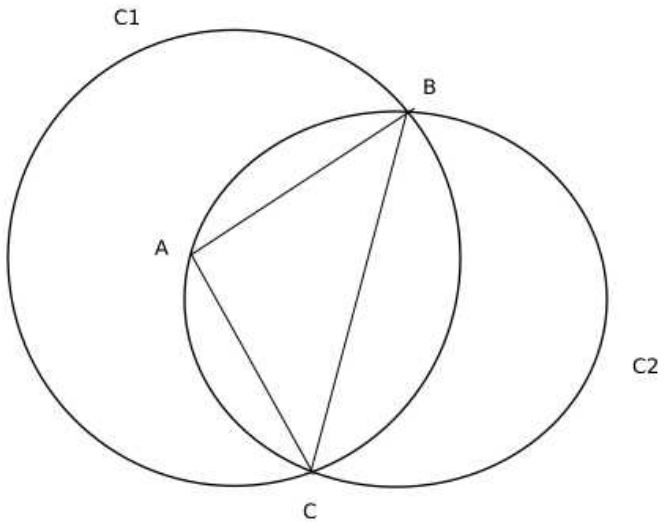
C $32(\pi - 1)$

D 32π

Answer: C

Video Solution

Explanation:



BC is the diameter of circle C2 so we can say that $\angle BAC = 90^\circ$ as angle in the semi circle is 90°

Therefore overlapping area = $\frac{1}{2}$(Area of circle C2) + Area of the minor sector made be BC in C1

AB= AC = 8 cm and as $\angle BAC = 90^\circ$, so we can conclude that BC= $8\sqrt{2}$ cm

Radius of C2 = Half of length of BC = $4\sqrt{2}$ cm

Area of C2 = $\pi \left(4\sqrt{2}\right)^2 = 32\pi\, cm^2$

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A is the centre of C1 and C1 passes through B, so AB is the radius of C1 and is equal to 8 cm

Area of the minor sector made be BC in C1 = $\frac{1}{4}$(Area of circle C1) - Area of triangle ABC = $\frac{1}{4}\pi(8)^2 - \left(\frac{1}{2} \times 8 \times 8\right) = 16\pi - 32\ cm^2$

Therefore,

Overlapping area between the two circles= $\frac{1}{2}$(Area of circle C2) + Area of the minor sector made be BC in C1

= $\frac{1}{2}(32\pi) + (16\pi - 32) = 32(\pi - 1)\ cm^2$

Quantitative Aptitude for CAT Questions (download pdf)

61. **A school has less than 5000 students and if the students are divided equally into teams of either 9 or 10 or 12 or 25 each, exactly 4 are always left out. However, if they are divided into teams of 11 each, no one is left out. The maximum number of teams of 12 each that can be formed out of the students in the school is**

Answer:150

Video Solution

Explanation:
Since the total number of students, when divided by either 9 or 10 or 12 or 25 each, gives a remainder of 4, the number will be in the form of LCM(9,10,12,25)k + 4 = 900k + 4.

It is given that the value of 900k + 4 is less than 5000.

Also, it is given that 900k + 4 is divided by 11.

It is only possible when k = 2 and total students = 1804.

So, the number of 12 students group = 1800/12 = 150.

62. **The minimum possible value of $\frac{x^2-6x+10}{3-x}$, for $x < 3$, is**

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

B 2

C $\frac{1}{2}$

D -2

Answer: B

Video Solution

Explanation:
Let $\frac{x^2-6x+10}{3-x} = p$

$x^2 - 6x + 10 = 3p - px$

$x^2 - (6-p)x + 10 - 3p = 0$

Since the equation will have real roots,

$(6-p)^2 - 4 \times (10 - 3p) \geq 0$

$p^2 - 12p + 12p + 36 - 40 \geq 0$

$p^2 \geq 4$

$p \geq 2\ ,\ p \leq -2$

Now, when $p = -2$, $x = 4$. Since it is given that $x < 3$, thus this value will be discarded.

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Now, $\frac{1}{2}$ and $-\frac{1}{2}$ do not come in the mentioned range.

when $p = 2, x = 2$

Thus, the minimum possible value of p will be 2.

Thus, the correct option is B.

Alternate explanation:

Since $x < 3$,

$3 - x > 0$

Let $3 - x = y$. So, $y > 0$.

Now, $\frac{x^2-6x+10}{3-x} = \frac{x^2-6x+9+1}{3-x}$

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

Since $3 - x = y$, the equation will transform to $\frac{y^2+1}{y}$ or $y + \frac{1}{y}$

The minimum value of the expression $y + \frac{1}{y}$ for $y > 0$ will at $y = 1$

i.e., **Minimum value** = $1 + 1 = 2$

Thus, the correct option is B.

63. **A donation box can receive only cheques of ₹100, ₹250, and ₹500. On one good day, the donation box was found to contain exactly 100 cheques amounting to a total sum of ₹15250. Then, the maximum possible number of cheques of ₹500 that the donation box may have contained, is**

Answer:12

Video Solution

Explanation:
Let the number of 100 cheques, 250 cheques and 500 cheques be x, y and z respectively.

We need to find the maximum value of z.

x + y + z = 100 ..... (1)

100x + 250y + 500z = 15250

2x + 5y + 10z = 305 ..... (2)

2x + 2y + 2z = 200 ..... (1)

(2) - (1), we get

3y + 8z = 105

At z = 12, x = 3

Therefore, maximum value z can take is 12.

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64. **Moody takes 30 seconds to finish riding an escalator if he walks on it at his normal speed in the same direction. He takes 20 seconds to finish riding the escalator if he walks at twice his normal speed in the same direction. If Moody decides to stand still on the escalator, then the time, in seconds, needed to finish riding the escalator is**

Answer:60

Video Solution

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Explanation:

Let the speed of Moody be 'x' steps/sec and that of the escalator be 'y' steps/sec.

In 30 seconds, Moody will finish riding the escalator when going in the same direction.

Thus, total steps = 30(x+y)

If Moody's speed becomes twice, the time becomes 20 seconds.

Thus, total steps = 20(2x+y)

Or 30x + 30y = 40x + 20y

Or x = y

So, total steps = 60y.

Time taken by only escalator= 60y/y = 60s.

65. **Two ships are approaching a port along straight routes at constant speeds. Initially, the two ships and the port formed an equilateral triangle with sides of length 24 km. When the slower ship travelled 8 km, the triangle formed by the new positions of the two ships and the port became right-angled. When the faster ship reaches the port, the distance, in km, between the other ship and the port will be**

A 4

B 12

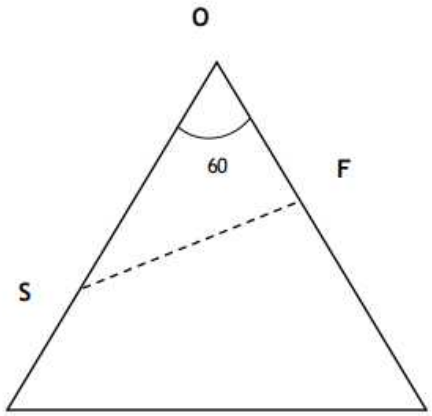
C 8

D 6

Answer: B

Video Solution

Explanation:



Let S be the slower ship and F be the faster ship.

It is given that when S travelled 8 km, the positions of ships with the port is forming a right triangle.

Since one of the angles is 60(since one vertex is still part of the equilateral triangle),

the other two vertexes will have angles of 30 and 90.

The distance between O and S = 24 - 8 = 16

In triangle OFS, $\cos 60^0 = \frac{OF}{OS}$

Thus, OF = 8.

Thus in the time, S covered 8 km, F will cover 24 - 8 = 16 km.

Thus, the ratio of their speeds is 2:1,

Thus, when F covers 24 km, S will cover 12 km.

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The correct option is B.

66. **Bob can finish a job in 40 days, if he works alone. Alex is twice as fast as Bob and thrice as fast as Cole in the same job. Suppose Alex and Bob work together on the first day, Bob and Cole work together on the second day, Cole and Alex work together on the third day, and then, they continue the work by repeating this three - day roster, with Alex and Bob working together on the fourth day, and so on. Then, the total number of days Alex would have worked when the job gets finished, is**

Answer:11

Video Solution

Explanation:

Let the efficiency of Bob be 3 units/day. So, Alex's efficiency will be 6 units/day, and Cole's will be 2 units/day.

Since Bob can finish the job in 40 days, the total work will be 40*3 = 120 units.

Since Alex and Bob work on the first day, the total work done = 3 + 6 = 9 units.

Similarly, for days 2 and 3, it will be 5 and 8 units, respectively.

Thus, in the first 3 days, the total work done = 9 + 5 + 8 = 22 units.

The work done in the first 15 days = 22*5 = 110 units.

Thus, the work will be finished on the 17th day(since 9 + 5 = 14 units are greater than the remaining work).

Since Alex works on two days of every 3 days, he will work for 10 days out of the first 15 days.

Then he will also work on the 16th day.

The total number of days = 11.

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