"Everybody pretty much agrees that the relationship between elephants and people has dramatically changed," [says psychologist Gay] Bradshaw. . . . "Where for centuries humans and elephants lived in relatively peaceful coexistence, there is now hostility and violence. Now, I use the term 'violence' because of the intentionality associated with it, both in the aggression of humans and, at times, the recently observed behavior of elephants." . . .

Typically, elephant researchers have cited, as a cause of aggression, the high levels of testosterone in newly matured male elephants or the competition for land and resources between elephants and humans. But. . . Bradshaw and several colleagues argue. . . that today's elephant populations are suffering from a form of chronic stress, a kind of species-wide trauma. Decades of poaching and culling and habitat loss, they claim, have so disrupted the intricate web of familial and societal relations by which young elephants have traditionally been raised in the wild, and by which established elephant herds are governed, that what we are now witnessing is nothing less than a precipitous collapse of elephant culture. . . .

Elephants, when left to their own devices, are profoundly social creatures. . . . Young elephants are raised within an extended, multitiered network of doting female caregivers that includes the birth mother, grandmothers, aunts and friends. These relations are maintained over a life span as long as 70 years. Studies of established herds have shown that young elephants stay within 15 feet of their mothers for nearly all of their first eight years of life, after which young females are socialized into the matriarchal network, while young males go off for a time into an all-male social group before coming back into the fold as mature adults. . . .

This fabric of elephant society, Bradshaw and her colleagues [demonstrate], ha[s] effectively been frayed by years of habitat loss and poaching, along with systematic culling by government agencies to control elephant numbers and translocations of herds to different habitats. . . . As a result of such social upheaval, calves are now being born to and raised by ever younger and inexperienced mothers. Young orphaned elephants, meanwhile, that have witnessed the death of a parent at the hands of poachers are coming of age in the absence of the support system that defines traditional elephant life. "The loss of elephant elders," [says] Bradshaw . . . "and the traumatic experience of witnessing the massacres of their family, impairs normal brain and behavior development in young elephants."

What Bradshaw and her colleagues describe would seem to be an extreme form of anthropocentric conjecture if the evidence that they've compiled from various elephant researchers. . . weren't so compelling. The elephants of decimated herds, especially orphans who've watched the death of their parents and elders from poaching and culling, exhibit behavior typically associated with post-traumatic stress disorder and other trauma-related disorders in humans: abnormal startle response, unpredictable asocial behavior, inattentive mothering and hyperaggression. . . .

[According to Bradshaw], "Elephants are suffering and behaving in the same ways that we recognize in ourselves as a result of violence. . . . Except perhaps for a few specific features, brain organization and early development of elephants and humans are extremely similar."

Q 1: The passage makes all of the following claims EXCEPT:

1. elephant mothers are evolving newer ways of rearing their calves to adapt to emerging threats.
2. the elephant response to deeply disturbing experiences is similar to that of humans.
3. human actions such as poaching and culling have created stressful conditions for elephant communities.
4. elephants establish extended and enduring familial relationships as do humans.

Q 2: Which of the following statements best expresses the overall argument of this passage?

1. Recent elephant behaviour could be understood as a form of species-wide trauma-related response.
2. Elephants, like the humans they are in conflict with, are profoundly social creatures.
3. The relationship between elephants and humans has changed from one of coexistence to one of hostility.
4. The brain organisation and early development of elephants and humans are extremely similar.

Q 3: Which of the following measures is Bradshaw most likely to support to address the problem of elephant aggression?

1. Funding of more studies to better understand the impact of testosterone on male elephant aggression.
2. The development of treatment programmes for elephants drawing on insights gained from treating post-traumatic stress disorder in humans.
3. Studying the impact of isolating elephant calves on their early brain development, behaviour and aggression.
4. Increased funding for research into the similarity of humans and other animals drawing on insights gained from human-elephant similarities.

Q 4: In paragraph 4, the phrase, "The fabric of elephant society . . . has(s) effectively been frayed by . . ." is:

1. an accurate description of the condition of elephant herds today.
2. a metaphor for the effect of human activity on elephant communities.
3. an exaggeration aimed at bolstering Bradshaw's claims.
4. an ode to the fragility of elephant society today.

Q 5: In the first paragraph, Bradshaw uses the term "violence" to describe the recent change in the human-elephant relationship because, according to him:

1. there is a purposefulness in human and elephant aggression towards each other.
2. elephant herds and their habitat have been systematically destroyed by humans.
3. human-elephant interactions have changed their character over time.
4. both humans and elephants have killed members of each other's species.

The only thing worse than being lied to is not knowing you're being lied to. It's true that plastic pollution is a huge problem, of planetary proportions. And it's true we could all dwvg o more to

reduce our plastic footprint. The lie is that blame for the plastic problem is wasteful consumers and that changing our individual habits will fix it.

Recycling plastic is to saving the Earth what hammering a nail is to halting a falling skyscraper. You struggle to find a place to do it and feel pleased when you succeed. But your effort is wholly inadequate and distracts from the real problem of why the building is collapsing in the first place. The real problem is that single-use plastic—the very idea of producing plastic items like grocery bags, which we use for an average of 12 minutes but can persist in the environment for half a millennium—is an incredibly reckless abuse of technology. Encouraging individuals to recycle more will never solve the problem of a massive production of single-use plastic that should have been avoided in the first place.

As an ecologist and evolutionary biologist, I have had a disturbing window into the accumulating literature on the hazards of plastic pollution. Scientists have long recognized that plastics biodegrade slowly, if at all, and pose multiple threats to wildlife through entanglement and consumption. More recent reports highlight dangers posed by absorption of toxic chemicals in the water and by plastic odors that mimic some species' natural food. Plastics also accumulate up the food chain, and studies now show that we are likely ingesting it ourselves in seafood. . . .

Beginning in the 1950s, big beverage companies like Coca-Cola and Anheuser-Busch, along with Phillip Morris and others, formed a non-profit called Keep America Beautiful. Its mission is/was to educate and encourage environmental stewardship in the public. . . . At face value, these efforts seem benevolent, but they obscure the real problem, which is the role that corporate polluters play in the plastic problem. This clever misdirection has led journalist and author Heather Rogers to describe Keep America Beautiful as the first corporate greenwashing front, as it has helped shift the public focus to consumer recycling behavior and actively thwarted legislation that would increase extended producer responsibility for waste management. . . . [T]he greatest success of Keep America Beautiful has been to shift the onus of environmental responsibility onto the public while simultaneously becoming a trusted name in the environmental movement. . . .

So what can we do to make responsible use of plastic a reality? First: reject the lie. Litterbugs are not responsible for the global ecological disaster of plastic. Humans can only function to the best of their abilities, given time, mental bandwidth and systemic constraints. Our huge problem with

plastic is the result of a permissive legal framework that has allowed the uncontrolled rise of plastic pollution, despite clear evidence of the harm it causes to local communities and the world's oceans. Recycling is also too hard in most parts of the U.S. and lacks the proper incentives to make it work well.

Q 6: In the second paragraph, the phrase "what hammering a nail is to halting a falling skyscraper" means:

1. relying on emerging technologies to mitigate the ill-effects of plastic pollution.
2. encouraging the responsible production of plastics by firms.
3. focusing on consumer behaviour to tackle the problem of plastics pollution.
4. focusing on single-use plastic bags to reduce the plastics footprint.

Q 7: In the first paragraph, the author uses "lie" to refer to the:

1. blame assigned to consumers for indiscriminate use of plastics.
2. understatement of the enormity of the plastics pollution problem.
3. understatement of the effects of recycling plastics.
4. fact that people do not know they have been lied to.

Q 8: The author lists all of the following as negative effects of the use of plastics EXCEPT the:

1. slow pace of degradation or non-degradation of plastics in the environment.
2. air pollution caused during the process of recycling plastics.
3. adverse impacts on the digestive systems of animals exposed to plastic.
4. poisonous chemicals released into the water and food we consume.

Q 9: Which of the following interventions would the author most strongly support:

1. completely banning all single-use plastic bags.

2. having all consumers change their plastic consumption habits.
3. recycling all plastic debris in the seabed.
4. passing regulations targeted at producers that generate plastic products.

Q 10: It can be inferred that the author considers the Keep America Beautiful organisation:

1. an innovative example of a collaborative corporate social responsibility initiative.
2. a sham as it diverted attention away from the role of corporates in plastics pollution.
3. an important step in sensitising producers to the need to tackle plastics pollution.
4. a "greenwash" because it was a benevolent attempt to improve public recycling habits.

Economists have spent most of the 20th century ignoring psychology, positive or otherwise. But today there is a great deal of emphasis on how happiness can shape global economies, or — on a smaller scale — successful business practice. This is driven, in part, by a trend in "measuring" positive emotions, mostly so they can be optimized. Neuroscientists, for example, claim to be able to locate specific emotions, such as happiness or disappointment, in particular areas of the brain. Wearable technologies, such as Spire, offer data-driven advice on how to reduce stress.

We are no longer just dealing with "happiness" in a philosophical or romantic sense — it has become something that can be monitored and measured, including by our behavior, use of social media and bodily indicators such as pulse rate and facial expressions.

There is nothing automatically sinister about this trend. But it is disquieting that the businesses and experts driving the quantification of happiness claim to have our best interests at heart, often concealing their own agendas in the process. In the workplace, happy workers are viewed as a "win-win." Work becomes more pleasant, and employees, more productive. But this is now being pursued through the use of performance-evaluating wearable technology, such as Humanyze or Virgin Pulse, both of which monitor physical signs of stress and activity toward the goal of increasing productivity.

Cities such as Dubai, which has pledged to become the "happiest city in the world," dream up ever-more elaborate and intrusive ways of collecting data on well-being — to the point where there is now talk of using CCTV cameras to monitor facial expressions in public spaces. New

ways of detecting emotions are hitting the market all the time: One company, Beyond Verbal, aims to calculate moods conveyed in a phone conversation, potentially without the knowledge of at least one of the participants. And Facebook [has] demonstrated . . . that it could influence our emotions through tweaking our news feeds — opening the door to ever-more targeted manipulation in advertising and influence.

As the science grows more sophisticated and technologies become more intimate with our thoughts and bodies, a clear trend is emerging. Where happiness indicators were once used as a basis to reform society, challenging the obsession with money that G.D.P. measurement entrenches, they are increasingly used as a basis to transform or discipline individuals.

Happiness becomes a personal project, that each of us must now work on, like going to the gym. Since the 1970s, depression has come to be viewed as a cognitive or neurological defect in the individual, and never a consequence of circumstances. All of this simply escalates the sense of responsibility each of us feels for our own feelings, and with it, the sense of failure when things go badly. A society that deliberately removed certain sources of misery, such as precarious and exploitative employment, may well be a happier one. But we won't get there by making this single, often fleeting emotion, the over-arching goal.

Q 11: In the author's opinion, the shift in thinking in the 1970s:

1. introduced greater stress into people's lives as they were expected to be responsible for their own happiness.
2. was a welcome change from the earlier view that depression could be cured by changing circumstances.
3. put people in touch with their own feelings rather than depending on psychologists.
4. reflected the emergence of neuroscience as the authority on human emotions.

Q 12: The author's view would be undermined by which of the following research findings?

1. There is a definitive move towards the adoption of wearable technology that taps into emotions.

2. A proliferation of gyms that are collecting data on customer well-being.
3. Individuals worldwide are utilising technologies to monitor and increase their well-being.
4. Stakeholders globally are moving away from collecting data on the well-being of individuals.

Q 13: According to the author, Dubai:

1. develops sophisticated technologies to monitor its inhabitants' states of mind.
2. incentivises companies that prioritise worker welfare.
3. collaborates with Facebook to selectively influence its inhabitants' moods.
4. is on its way to becoming one of the world's happiest cities.

Q 14: According to the author, wearable technologies and social media are contributing most to:

1. happiness as a "personal project".
2. disciplining individuals to be happy.
3. depression as a thing of the past.
4. making individuals aware of stress in their lives.

Q 15: From the passage we can infer that the author would like economists to:

1. correlate measurements of happiness with economic indicators.
2. measure the effectiveness of Facebook and social media advertising.
3. incorporate psychological findings into their research cautiously.
4. work closely with neuroscientists to understand human behaviour.

When researchers at Emory University in Atlanta trained mice to fear the smell of almonds (by pairing it with electric shocks), they found, to their consternation, that both the children and grandchildren of these mice were spontaneously afraid of the same smell. That is not supposed to happen. Generations of schoolchildren have been taught that the inheritance of acquired

characteristics is impossible. A mouse should not be born with something its parents have learned during their lifetimes, any more than a mouse that loses its tail in an accident should give birth to tailless mice. . . .

Modern evolutionary biology dates back to a synthesis that emerged around the 1940s-60s, which married Charles Darwin's mechanism of natural selection with Gregor Mendel's discoveries of how genes are inherited. The traditional, and still dominant, view is that adaptations – from the human brain to the peacock's tail – are fully and satisfactorily explained by natural selection (and subsequent inheritance). Yet [new evidence] from genomics, epigenetics and developmental biology [indicates] that evolution is more complex than we once assumed. . . .

In his book On Human Nature (1978), the evolutionary biologist Edward O Wilson claimed that human culture is held on a genetic leash. The metaphor [needs revision]. . . . Imagine a dog-walker (the genes) struggling to retain control of a brawny mastiff (human culture). The pair's trajectory (the pathway of evolution) reflects the outcome of the struggle. Now imagine the same dog-walker struggling with multiple dogs, on leashes of varied lengths, with each dog tugging in different directions. All these tugs represent the influence of developmental factors, including epigenetics, antibodies and hormones passed on by parents, as well as the ecological legacies and culture they bequeath. . . .

The received wisdom is that parental experiences can't affect the characters of their offspring. Except they do. The way that genes are expressed to produce an organism's phenotype – the actual characteristics it ends up with – is affected by chemicals that attach to them. Everything from diet to air pollution to parental behaviour can influence the addition or removal of these chemical marks, which switches genes on or off. Usually these so-called 'epigenetic' attachments are removed during the production of sperm and eggs cells, but it turns out that some escape the resetting process and are passed on to the next generation, along with the genes. This is known as 'epigenetic inheritance', and more and more studies are confirming that it really happens. Let's return to the almond-fearing mice. The inheritance of an epigenetic mark transmitted in the sperm is what led the mice's offspring to acquire an inherited fear. . . .

Epigenetics is only part of the story. Through culture and society, [humans and other animals] inherit knowledge and skills acquired by [their] parents. . . . All this complexity . . . points to an

evolutionary process in which genomes (over hundreds to thousands of generations), epigenetic modifications and inherited cultural factors (over several, perhaps tens or hundreds of generations), and parental effects (over single-generation timespans) collectively inform how organisms adapt. These extra-genetic kinds of inheritance give organisms the flexibility to make rapid adjustments to environmental challenges, dragging genetic change in their wake – much like a rowdy pack of dogs.

Q 16: The Emory University experiment with mice points to the inheritance of:

1. psychological markers
2. acquired characteristics
3. personality traits
4. acquired parental fears

Q 17: Which of the following best describes the author's argument?

1. Darwin's and Mendel's theories together best explain evolution.
2. Mendel's theory of inheritance is unfairly underestimated in explaining evolution.
3. Wilson's theory of evolution is scientifically superior to either Darwin's or Mendel's.
4. Darwin's theory of natural selection cannot fully explain evolution.

Q 18: Which of the following, if found to be true, would negate the main message of the passage?

1. A study affirming the influence of socio-cultural markers on evolutionary processes.
2. A study highlighting the criticality of epigenetic inheritance to evolution.
3. A study indicating the primacy of ecological impact on human adaptation.
4. A study affirming the sole influence of natural selection and inheritance on evolution.

Q 19: The passage uses the metaphor of a dog walker to argue that evolutionary adaptation is most comprehensively understood as being determined by:

1. extra genetic, genetic, epigenetic and genomic legacies.
2. socio-cultural, genetic, epigenetic, and genomic legacies
3. ecological, hormonal, extra genetic and genetic legacies.
4. genetic, epigenetic, developmental factors, and ecological legacies.

Q 20: In the first paragraph, the author laments the fact that:

1. there is no recognition of the Indian soldiers who served in the Second World War.
2. the new war memorial will be built right next to India Gate.
3. India lost thousands of human lives during the Second World War.
4. funds will be wasted on another war memorial when we already have the India Gate memorial.

The] Indian government [has] announced an international competition to design a National War Memorial in New Delhi, to honour all of the Indian soldiers who served in the various wars and counter-insurgency campaigns from 1947 onwards. The terms of the competition also specified that the new structure would be built adjacent to the India Gate – a memorial to the Indian soldiers who died in the First World War. Between the old imperialist memorial and the proposed nationalist one, India's contribution to the Second World War is airbrushed out of existence.

The Indian government's conception of the war memorial was not merely absent-minded. Rather, it accurately reflected the fact that both academic history and popular memory have yet to come to terms with India's Second World War, which continues to be seen as little more than mood music in the drama of India's advance towards independence and partition in 1947. Further, the political trajectory of the postwar subcontinent has militated against popular remembrance of the war. With partition and the onset of the India-Pakistan rivalry, both of the

new nations needed fresh stories for self-legitimisation rather than focusing on shared wartime experiences.

However, the Second World War played a crucial role in both the independence and partition of India. . . . The Indian army recruited, trained and deployed some 2.5 million men, almost 90,000 of which were killed and many more injured. Even at the time, it was recognised as the largest volunteer force in the war. . . .

India's material and financial contribution to the war was equally significant. India emerged as a major military-industrial and logistical base for Allied operations in south-east Asia and the Middle East. This led the United States to take considerable interest in the country's future, and ensured that this was no longer the preserve of the British government.

Other wartime developments pointed in the direction of India's independence. In a stunning reversal of its long-standing financial relationship with Britain, India finished the war as one of the largest creditors to the imperial power.

Such extraordinary mobilization for war was achieved at great human cost, with the Bengal famine the most extreme manifestation of widespread wartime deprivation. The costs on India's home front must be counted in millions of lives.

Indians signed up to serve on the war and home fronts for a variety of reasons. . . . [M]any were convinced that their contribution would open the doors to India's freedom. . . . The political and social churn triggered by the war was evident in the massive waves of popular protest and unrest that washed over rural and urban India in the aftermath of the conflict. This turmoil was crucial in persuading the Attlee government to rid itself of the incubus of ruling India. . . .

Seventy years on, it is time that India engaged with the complex legacies of the Second World War. Bringing the war into the ambit of the new national memorial would be a fitting – if not overdue – recognition that this was India's War.

Q 21: The phrase "mood music" is used in the second paragraph to indicate that the Second World War is viewed as:

1. setting the stage for the emergence of the India–Pakistan rivalry in the subcontinent.

2. a tragic period in terms of loss of lives and national wealth.
3. a backdrop to the subsequent independence and partition of the region.
4. a part of the narrative on the ill-effects of colonial rule on India.

Q 22: The author lists all of the following as outcomes of the Second World War EXCEPT:

1. independence of the subcontinent and its partition into two countries.
2. US recognition of India's strategic location and role in the War.
3. large-scale deaths in Bengal as a result of deprivation and famine.
4. the large financial debt India owed to Britain after the War.

Q 23: The author claims that omitting mention of Indians who served in the Second World War from the new National War Memorial is:

1. a reflection of the academic and popular view of India's role in the War.
2. appropriate as their names can always be included in the India Gate memorial.
3. a reflection of misplaced priorities of the post-independence Indian governments.
4. is something which can be rectified in future by constructing a separate memorial.

Q 24: The author suggests that a major reason why India has not so far acknowledged its role in the Second World War is that it:

1. blames the War for leading to the momentous partition of the country.
2. wants to forget the human and financial toll of the War on the country.
3. has been focused on building an independent, non-colonial political identity.
4. views the War as a predominantly Allied effort, with India playing only a supporting role.

Q 25: The four sentences (labelled 1,2,3,4) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper sequence of order of the sentences and key in this sequence of four numbers as your answer:

1. Impartiality and objectivity are fiendishly difficult concepts that can cause all sorts of injustices even if transparently implemented.
2. It encourages us into bubbles of people we know and like, while blinding us to different perspectives, but the deeper problem of 'transparency' lies in the words "…and much more".
3. Twitter's website says that "tweets you are likely to care about most will show up first in your timeline…based on accounts you interact with most, tweets you engage with, and much more."
4. We are only told some of the basic principles, and we can't see the algorithm itself, making it hard for citizens to analyse the system sensibly or fairly or be convinced of its impartiality and objectivity.
5.

Q 26: Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. Translators are like bumblebees.
2. Though long since scientifically disproved, this factoid is still routinely trotted out.
3. Similar pronouncements about the impossibility of translation have dogged practitioners since Leonardo Bruni's De interpretatione recta, published in 1424.
4. Bees, unaware of these deliberations, have continued to flit from flower to flower, and translators continue to translate.
5. In 1934, the French entomologist August Magnan pronounced the flight of the bumblebee to be aerodynamically impossible

Q 27: The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. The woodland's canopy receives most of the sunlight that falls on the trees.

2. Swifts do not confine themselves to woodlands, but hunt wherever there are insects in the air.
3. With their streamlined bodies, swifts are agile flyers, ideally adapted to twisting and turning through the air as they chase flying insects – the creatures that form their staple diet.
4. Hundreds of thousands of insects fly in the sunshine up above the canopy, some falling prey to swifts and swallows
5.

Q 28: The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Production and legitimation of scientific knowledge can be approached from a number of perspectives. To study knowledge production from the sociology of professions perspective would mean a focus on the institutionalization of a body of knowledge. The professions-approach informed earlier research on managerial occupation, business schools and management knowledge. It however tends to reify institutional power structures in its understanding of the links between knowledge and authority. Knowledge production is restricted in the perspective to the selected members of the professional community, most notably to the university faculties and professional colleges. Power is understood as a negative mechanism, which prevents the non-professional actors from offering their ideas and information as legitimate knowledge.

1. Professions-approach aims at the institutionalization of knowledge but restricts knowledge production as a function of a select few.
2. The study of knowledge production can be done through many perspectives.
3. Professions-approach focuses on the creation of institutions of higher education and disciplines to promote knowledge production
4. The professions-approach has been one of the most relied upon perspective in the study of management knowledge production.
5.

Q 29: The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Artificial embryo twinning is a relatively low-tech way to make clones. As the name suggests, this technique mimics the natural process that creates identical twins. In nature, twins form very early in development when the embryo splits in two. Twinning happens in the first days after egg and sperm join, while the embryo is made of just a small number of unspecialized cells. Each half of the embryo continues dividing on its own, ultimately developing into separate, complete individuals. Since they developed from the same fertilized egg, the resulting individuals are genetically identical.

1. Artificial embryo twinning is low-tech and mimetic of the natural development of genetically identical twins from the embryo after fertilization.
2. Artificial embryo twinning is low-tech unlike the natural development of identical twins from the embryo after fertilization.
3. Artificial embryo twinning is just like the natural development of twins, where during fertilization twins are formed.
4. Artificial embryo twinning is low-tech and is close to the natural development of twins where the embryo splits into two identical twins.
5.

Q 30: The passage given below is followed by four summaries. Choose the option that best captures the author's position.

The conceptualization of landscape as a geometric object first occurred in Europe and is historically related to the European conceptualization of the organism, particularly the human body, as a geometric object with parts having a rational, three-dimensional organization and integration. The European idea of landscape appeared before the science of landscape emerged, and it is no coincidence that Renaissance artists such as Leonardo da Vinci, who studied the structure of the human body, also facilitated an understanding of the structure of landscape. Landscape which had been a subordinate background to religious or historical narratives, became an independent genre or subject of art by the end of sixteenth century or the beginning of the seventeenth century.

1. Landscape became a major subject of art at the turn of the sixteenth century.

2. The three-dimensional understanding of the organism in Europe led to a similar approach towards the understanding of landscape.
3. The study of landscape as an independent genre was aided by the Renaissance artists.
4. The Renaissance artists were responsible for the study of landscape as a subject of art.
5.

Q 31: The four sentences (labelled 1,2,3,4) given in this question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a number. Decide on the proper sequence of order of the sentences and key in this sequence of four numbers as your answer:

1. But now we have another group: the unwitting enablers.
2. Democracy and high levels of inequality of the kind that have come to characterize the United States are simply incompatible.
3. Believing these people are working for a better world, they are, actually, at most, chipping away at the margins, making slight course corrections, ensuring the system goes on as it is, uninterrupted.
4. Very rich people will always use money to maintain their political and economic power.
5.

Q 32: Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. In many cases time inconsistency is what prevents our going from intention to action.
2. For people to continuously postpone getting their children immunized, they would need to be constantly fooled by themselves.
3. In the specific case of immunization, however, it is hard to believe that time inconsistency by itself would be sufficient to make people permanently postpone the decision if they were fully cognizant of its benefits.
4. In most cases, even a small cost of immunization was large enough to discourage most people.
5. Not only do they have to think that they prefer to spend time going to the camp next month rather than today, they also have to believe that they will indeed go next month.

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

1. Displacement in Bengal is thus not very significant in view of its magnitude.
2. A factor of displacement in Bengal is the shifting course of the Ganges leading to erosion of river banks.
3. The nature of displacement in Bengal makes it an interesting case study.
4. Since displacement due to erosion is well spread over a long period of time, it remains invisible.
5. Rapid displacement would have helped sensitize the public to its human costs.

Q 34: The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. The eventual diagnosis was skin cancer and after treatment all seemed well.
2. The viola player didn't know what it was; nor did her GP.
3. Then a routine scan showed it had come back and spread to her lungs.
4. It started with a lump on Cathy Perkins' index finger.

1600 satellites were sent up by a country for several purposes. The purposes are classified as broadcasting (B), communication (C), surveillance (S), and others (O). A satellite can serve multiple purposes; however a satellite serving either B, or C, or S does not serve O.

The following facts are known about the satellites:

1. The numbers of satellites serving B, C, and S (though may be not exclusively) are in the ratio 2:1:1.

2. The number of satellites serving all three of B, C, and S is 100.

3. The number of satellites exclusively serving C is the same as the number of satellites exclusively serving S. This number is 30% of the number of satellites exclusively serving B.

4. The number of satellites serving O is the same as the number of satellites serving both C and S but not B.

Q 35: What best can be said about the number of satellites serving C?

1. Must be between 450 and 725
2. Cannot be more than 800
3. Must be between 400 and 800
4. Must be at least 100

Q 36: What is the minimum possible number of satellites serving B exclusively?

1. 100
2. 200
3. 500
4. 250

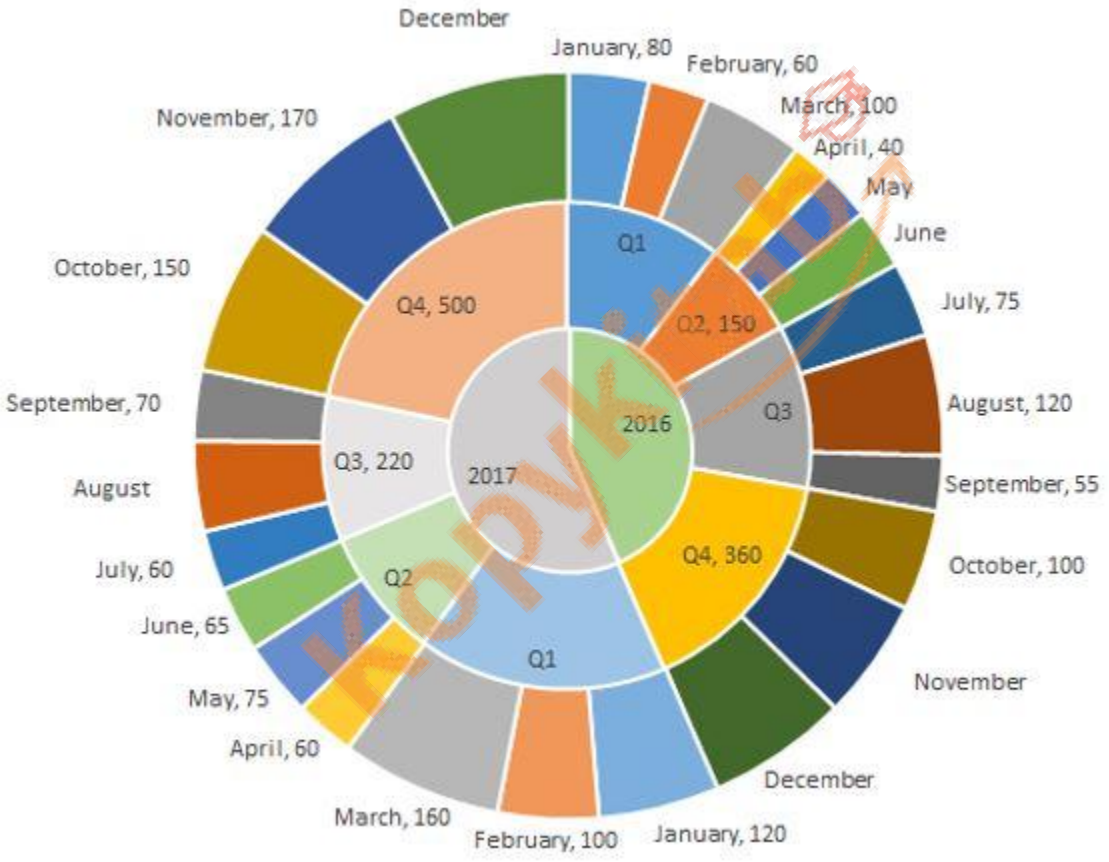
Q 37: If at least 100 of the 1600 satellites were serving O, what can be said about the number of satellites serving S?

1. At most 475
2. Exactly 475
3. At least 475
4. No conclusion is possible based on the given information

Q 38: If the number of satellites serving at least two among B, C, and S is 1200, which of the following MUST be FALSE?

1. The number of satellites serving C cannot be uniquely determined
2. The number of satellites serving B is more than 1000
3. All 1600 satellites serve B or C or S
4. The number of satellites serving B exclusively is exactly 250

The multi-layered pie-chart below shows the sales of LED television sets for a big retail electronics outlet during 2016 and 2017. The outer layer shows the monthly sales during this period, with each label showing the month followed by sales figure of that month. For some months, the sales figures are not given in the chart. The middle-layer shows quarter-wise aggregate sales figures (in some cases, aggregate quarter-wise sales numbers are not given next to the quarter). The innermost layer shows annual sales. It is known that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression, as do the three monthly sales figures in the fourth quarter (October, November, December) of that year.



Q 39: What is the percentage increase in sales in December 2017 as compared to the sales in December 2016?

1. 28.57

2. 22.22
3. 50.00
4. 38.46

Q 40: In which quarter of 2017 was the percentage increase in sales from the same quarter of 2016 the highest?

1. Q1
2. Q3
3. Q4
4. Q2

Q 41: During which quarter was the percentage decrease in sales from the previous quarter's sales the highest?

1. Q2 of 2017
2. Q1 of 2017
3. Q4 of 2017
4. Q2 of 2016

Q 42: During which month was the percentage increase in sales from the previous month's sales the highest?

1. March of 2017
2. October of 2017
3. October of 2016
4. March of 2016

An ATM dispenses exactly Rs. 5000 per withdrawal using 100, 200 and 500 rupee notes. The ATM requires every customer to give her preference for one of the three denominations of notes.

It then dispenses notes such that the number of notes of the customer's preferred denomination exceeds the total number of notes of other denominations dispensed to her.

Q 43: In how many different ways can the ATM serve a customer who gives 500 rupee notes as her preference?

Q 44: If the ATM could serve only 10 customers with a stock of fifty 500 rupee notes and a sufficient number of notes of other denominations, what is the maximum number of customers among these 10 who could have given 500 rupee notes as their preferences?

Q 45: What is the maximum number of customers that the ATM can serve with a stock of fifty 500 rupee notes and a sufficient number of notes of other denominations, if all the customers are to be served with at most 20 notes per withdrawal?

1. 10
2. 16
3. 12
4. 13

Q 46: What is the number of 500 rupee notes required to serve 50 customers with 500 rupee notes as their preferences and another 50 customers with 100 rupee notes as their preferences, if the total number of notes to be dispensed is the smallest possible?

1. 800
2. 750
3. 900
4. 1400

Adriana, Bandita, Chitra, and Daisy are four female students, and Amit, Barun, Chetan, and Deb are four male students. Each of them studies in one of three institutes - X, Y, and Z. Each student

majors in one subject among Marketing, Operations, and Finance, and minors in a different one among these three subjects. The following facts are known about the eight students:

1. Three students are from X, three are from Y, and the remaining two students, both female, are from Z.

2. Both the male students from Y minor in Finance, while the female student from Y majors in Operations.

3. Only one male student majors in Operations, while three female students minor in Marketing.

4. One female and two male students major in Finance.

5. Adriana and Deb are from the same institute. Daisy and Amit are from the same institute.

6. Barun is from Y and majors in Operations. Chetan is from X and majors in Finance.

7. Daisy minors in Operations.

Q 47: Who are the students from the institute Z?

1. Adriana and Bandita
2. Adriana and Daisy
3. Bandita and Chitra
4. Chitra and Daisy

Q 48: Which subject does Deb minor in?

1. Cannot be determined uniquely from the given information
2. Marketing
3. Operations
4. Finance

Q 49: Which subject does Amit major in?

1. Operations
2. Marketing
3. Cannot be determined uniquely from the given information
4. Finance

Q 50: If Chitra majors in Finance, which subject does Bandita major in?

1. Cannot be determined uniquely from the given information
2. Marketing
3. Finance
4. Operations

You are given an n×n square matrix to be ?lled with numerals so that no two adjacent cells have the same numeral. Two cells are called adjacent if they touch each other horizontally, vertically or diagonally. So a cell in one of the four corners has three cells adjacent to it, and a cell in the ?rst or last row or column which is not in the corner has five cells adjacent to it. Any other cell has eight cells adjacent to it.

Q 51: What is the minimum number of different numerals needed to ?ll a 3×3 square matrix?

Q 52: What is the minimum number of different numerals needed to ?ll a 5×5 square matrix?

Q 53: Suppose you are allowed to make one mistake, that is, one pair of adjacent cells can have the same numeral. What is the minimum number of different numerals required to ?ll a 5×5 matrix?

1. 16
2. 4
3. 25
4. 9

Q 54: Suppose that all the cells adjacent to any particular cell must have different numerals. What is the minimum number of different numerals needed to fill a 5×5 square matrix?

1. 9
2. 16
3. 4
4. 25

Fuel contamination levels at each of 20 petrol pumps P1, P2, …, P20 were recorded as either high, medium, or low.

1. Contamination levels at three pumps among P1 – P5 were recorded as high.

2. P6 was the only pump among P1 – P10 where the contamination level was recorded as low.

3. P7 and P8 were the only two consecutively numbered pumps where the same levels of contamination were recorded.

4. High contamination levels were not recorded at any of the pumps P16 – P20.

5. The number of pumps where high contamination levels were recorded was twice the number of pumps where low contamination levels were recorded.

Q 55: Which of the following MUST be true?

1. The contamination level at P10 was recorded as high.
2. The contamination level at P13 was recorded as low.
3. The contamination level at P20 was recorded as medium.
4. The contamination level at P12 was recorded as high.

Q 56: What best can be said about the number of pumps at which the contamination levels were recorded as medium?

1. Exactly 8
2. More than 4
3. At least 8
4. At most 9

Q 57: If the contamination level at P11 was recorded as low, then which of the following MUST be true?

1. The contamination level at P12 was recorded as high.
2. The contamination level at P14 was recorded as medium.
3. The contamination level at P15 was recorded as medium.
4. The contamination level at P18 was recorded as low.

Q 58: If contamination level at P15 was recorded as medium, then which of the following MUST be FALSE?

1. Contamination level at P14 was recorded to be higher than that at P15.
2. Contamination levels at P10 and P14 were recorded as the same.
3. Contamination levels at P13 and P17 were recorded as the same.
4. Contamination levels at P11 and P16 were recorded as the same.

A company administers a written test comprising of three sections of 20 marks each – Data Interpretation (DI), Written English (WE) and General Awareness (GA), for recruitment. A composite score for a candidate (out of 80) is calculated by doubling her marks in DI and adding it to the sum of her marks in the other two sections. Candidates who score less than 70% marks in two or more sections are disqualified. From among the rest, the four with the highest composite scores are recruited. If four or less candidates qualify, all who qualify are recruited.

Ten candidates appeared for the written test. Their marks in the test are given in the table below. Some marks in the table are missing, but the following facts are known:

1. No two candidates had the same composite score.

2. Ajay was the unique highest scorer in WE.

3. Among the four recruited, Geeta had the lowest composite score.

4. Indu was recruited.

5. Danish, Harini, and Indu had scored the same marks the in GA.

6. Indu and Jatin both scored 100% in exactly one section and Jatin's composite score was 10 more than Indu's.

Candidate	marks out of 20		
	DI	WE	GA
Ajay	8		16
Bala		9	11
Chetna	19	4	12
Danish	8	15	
Ester	12	18	16
Falak	15	7	10
Geeta	14		6
Harini	5		
Indu		8	
Jatin		16	14

Q 59: Which of the following statements MUST be true?

1. Jatin's composite score was more than that of Danish.

2. Indu scored less than Chetna in DI.

3. Jatin scored more than Indu in GA.

1. Only 2
2. Only 1
3. Both 1 and 2
4. Both 2 and 3

Q 60: Which of the following statements MUST be FALSE?

1. Chetna scored more than Bala in DI
2. Harini's composite score was less than that of Falak
3. Bala's composite score was less than that of Ester
4. Bala scored same as Jatin in DI

Q 61: If all the candidates except Ajay and Danish had different marks in DI, and Bala's composite score was less than Chetna's composite score, then what is the maximum marks that Bala could have scored in DI?

Q 62: If all the candidates scored different marks in WE then what is the maximum marks that Harini could have scored in WE?

Twenty four people are part of three committees which are to look at research, teaching, and administration respectively. No two committees have any member in common. No two committees are of the same size. Each committee has three types of people: bureaucrats, educationalists, and politicians, with at least one from each of the three types in each committee. The following facts are also known about the committees:

1. The numbers of bureaucrats in the research and teaching committees are equal, while the number of bureaucrats in the research committee is 75% of the number of bureaucrats in the administration committee.

2. The number of educationalists in the teaching committee is less than the number of educationalists in the research committee. The number of educationalists in the research committee is the average of the numbers of educationalists in the other two committees.

3. 60% of the politicians are in the administration committee, and 20% are in the teaching committee.

Q 63: Based on the given information, which of the following statements MUST be FALSE?

1. The size of the research committee is less than the size of the administration committee

2. In the teaching committee the number of educationalists is equal to the number of politicians
3. In the administration committee the number of bureaucrats is equal to the number of educationalists
4. The size of the research committee is less than the size of the teaching committee

Q 64: What is the number of bureaucrats in the administration committee?

Q 65: What is the number of educationalists in the research committee?

Q 66: Which of the following CANNOT be determined uniquely based on the given information?

1. The total number of educationalists in the three committees
2. The total number of bureaucrats in the three committees
3. The size of the research committee
4. The size of the teaching committee

Q 67: Let x, y, z be three positive real numbers in a geometric progression such that x < y < z. If 5x, 16y, and 12z are in an arithmetic progression then the common ratio of the geometric progression is

1. 3/6
2. 3/2
3. 5/2
4. 1/6

Q 68: A tank is fitted with pipes, some filling it and the rest draining it. All filling pipes fill at the same rate, and all draining pipes drain at the same rate. The empty tank gets completely filled in 6 hours when 6 filling and 5 draining pipes are on, but this time becomes 60 hours when 5 filling and 6 draining pipes are on. In how many hours will the empty tank get completely filled when one draining and two filling pipes are on?

Q 69: Given that $x^{2018}y^{2017} = 1/2$ and $x^{2016}y^{2019} = 8$, the value of $x^2 + y^3$ is

1. 35/4
2. 37/4
3. 31/4
4. 33/4

Q 70: Point P lies between points A and B such that the length of BP is thrice that of AP. Car 1 starts from A and moves towards B. Simultaneously, car 2 starts from B and moves towards A. Car 2 reaches P one hour after car 1 reaches P. If the speed of car 2 is half that of car 1, then the time, in minutes, taken by car 1 in reaching P from A is

Q 71: If $\log_2\left(5+\log_3 a\right)=3$ and $\log_5\left(4a+12+\log_2 b\right)=3$, then a + b is equal to

1. 67
2. 40
3. 32
4. 59

Q 72: A trader sells 10 litres of a mixture of paints A and B, where the amount of B in the mixture does not exceed that of A. The cost of paint A per litre is Rs. 8 more than that of paint B. If the trader sells the entire mixture for Rs. 264 and makes a profit of 10%, then the highest possible cost of paint B, in Rs. per litre, is

1. 26
2. 16
3. 20
4. 22

Q 73: In a circle, two parallel chords on the same side of a diameter have lengths 4 cm and 6 cm. If the distance between these chords is 1 cm, then the radius of the circle, in cm, is

1. $\sqrt{12}$
2. $\sqrt{14}$
3. $\sqrt{13}$
4. $\sqrt{11}$

Q 74: If among 200 students, 105 like pizza and 134 like burger, then the number of students who like only burger can possibly be

1. 93
2. 26
3. 23
4. 96

Q 75: In an apartment complex, the number of people aged 51 years and above is 30 and there are at most 39 people whose ages are below 51 years. The average age of all the people in the apartment complex is 38 years. What is the largest possible average age, in years, of the people whose ages are below 51 years?

1. 27
2. 28

3. 26
4. 25

Q 76: Given an equilateral triangle T1 with side 24 cm, a second triangle T2 is formed by joining the midpoints of the sides of T1. Then a third triangle T3 is formed by joining the midpoints of the sides of T2. If this process of forming triangles is continued, the sum of the areas, in sq cm, of infinitely many such triangles T1, T2, T3,... will be

1. $164\sqrt{3}$
2. $188\sqrt{3}$
3. $248\sqrt{3}$
4. $192\sqrt{3}$

Q 77: If $u^2 + (u-2v-1)^2 = -4v(u + v)$, then what is the value of $u + 3v$?

1. 1/4
2. 0
3. 1/2
4. -1/4

Q 78: If x is a positive quantity such that $2^x = 3^{\log_5 2}$, then x is equal to

1. $1+\log_3 \frac{5}{3}$
2. $\log_5 8$
3. $1+\log_5 \frac{3}{5}$
4. $\log_5 9$

Q 79: While multiplying three real numbers, Ashok took one of the numbers as 73 instead of 37. As a result, the product went up by 720. Then the minimum possible value of the sum of squares of the other two numbers is

Q 80: Points E, F, G, H lie on the sides AB, BC, CD, and DA, respectively, of a square ABCD. If EFGH is also a square whose area is 62.5% of that of ABCD and CG is longer than EB, then the ratio of length of EB to that of CG is

1. 2 : 5
2. 4 : 9
3. 3 : 8
4. 1 : 3

Q 81: A right circular cone, of height 12 ft, stands on its base which has diameter 8 ft. The tip of the cone is cut off with a plane which is parallel to the base and 9 ft from the base. With π = 22/7, the volume, in cubic ft, of the remaining part of the cone is

Q 82: $\log_{12} 81 = p, then\ 3\left(\frac{4-p}{4+p}\right)$ is equal to

1. $\log_4 16$
2. $\log_6 8$
3. $\log_6 16$
4. $\log_2 8$

Q 83: Train T leaves station X for station Y at 3 pm. Train S, traveling at three quarters of the speed of T, leaves Y for X at 4 pm. The two trains pass each other at a station Z, where the distance between X and Z is three-fifths of that between X and Y. How many hours does train T take for its journey from X to Y?

Q 84: Each of 74 students in a class studies at least one of the three subjects H, E and P. Ten students study all three subjects, while twenty study H and E, but not P. Every student who studies P also studies H or E or both. If the number of students studying H equals that studying E, then the number of students studying H is

Q 85: A wholesaler bought walnuts and peanuts, the price of walnut per kg being thrice that of peanut per kg. He then sold 8 kg of peanuts at a profit of 10% and 16 kg of walnuts at a profit of 20% to a shopkeeper. However, the shopkeeper lost 5 kg of walnuts and 3 kg of peanuts in

transit. He then mixed the remaining nuts and sold the mixture at Rs. 166 per kg, thus making an overall profit of 25%. At what price, in Rs. per kg, did the wholesaler buy the walnuts?

1. 98
2. 96
3. 84
4. 86

Q 86: A CAT aspirant appears for a certain number of tests. His average score increases by 1 if the first 10 tests are not considered, and decreases by 1 if the last 10 tests are not considered. If his average scores for the first 10 and the last 10 tests are 20 and 30, respectively, then the total number of tests taken by him is

Q 87: Raju and Lalitha originally had marbles in the ratio 4:9. Then Lalitha gave some of her marbles to Raju. As a result, the ratio of the number of marbles with Raju to that with Lalitha became 5:6. What fraction of her original number of marbles was given by Lalitha to Raju?

1. 1/4
2. 7/33
3. 1/5
4. 6/19

Q 88: Let ABCD be a rectangle inscribed in a circle of radius 13 cm. Which one of the following pairs can represent, in cm, the possible length and breadth of ABCD?

1. 24, 10
2. 25, 9
3. 24, 12
4. 25, 10

Q 89: In a parallelogram ABCD of area 72 sq cm, the sides CD and AD have lengths 9 cm and 16 cm, respectively. Let P be a point on CD such that AP is perpendicular to CD. Then the area, in sq cm, of triangle APD is

1. $18\sqrt{3}$
2. $24\sqrt{3}$
3. $32\sqrt{3}$
4. $12\sqrt{3}$

Q 90: In a circle with center O and radius 1 cm, an arc AB makes an angle 60 degrees at O. Let R be the region bounded by the radii OA, OB and the arc AB. If C and D are two points on OA and OB, respectively, such that OC = OD and the area of triangle OCD is half that of R, then the length of OC, in cm, is

1. $\left(\frac{\pi}{3\sqrt{3}}\right)^{\frac{1}{2}}$
2. $\left(\frac{\pi}{4}\right)^{\frac{1}{2}}$
3. $\left(\frac{\pi}{6}\right)^{\frac{1}{2}}$
4. $\left(\frac{\pi}{4\sqrt{3}}\right)^{\frac{1}{2}}$

Q 91: How many numbers with two or more digits can be formed with the digits 1,2,3,4,5,6,7,8,9, so that in every such number, each digit is used at most once and the digits appear in the ascending order?

Q 92: The number of integers x such that $0.25 < 2^x < 200$, and $2^x + 2$ is perfectly divisible by either 3 or 4, is

Q 93: If $f(x + 2) = f(x) + f(x + 1)$ for all positive integers x, and $f(11) = 91$, $f(15) = 617$, then $f(10)$ equals

Q 94: In an examination, the maximum possible score is N while the pass mark is 45% of N. A candidate obtains 36 marks, but falls short of the pass mark by 68%. Which one of the following is then correct?

1. $N \leq 200$.

2. $243 \leq N \leq 252$.
3. $N \geq 253$.
4. $201 \leq N \leq 242$.

Q 95: Two types of tea, A and B, are mixed and then sold at Rs. 40 per kg. The profit is 10% if A and B are mixed in the ratio 3 : 2, and 5% if this ratio is 2 : 3. The cost prices, per kg, of A and B are in the ratio

1. 18 : 25
2. 19 : 24
3. 21 : 25
4. 17 : 25

Q 96: John borrowed Rs. 2,10,000 from a bank at an interest rate of 10% per annum, compounded annually. The loan was repaid in two equal instalments, the first after one year and the second after another year. The first instalment was interest of one year plus part of the principal amount, while the second was the rest of the principal amount plus due interest thereon. Then each instalment, in Rs., is

Q 97: Let $f(x) = \min\{2x^2, 52-5x\}$, where x is any positive real number. Then the maximum possible value of f(x) is

Q 98: The distance from A to B is 60 km. Partha and Narayan start from A at the same time and move towards B. Partha takes four hours more than Narayan to reach B. Moreover, Partha reaches the mid-point of A and B two hours before Narayan reaches B. The speed of Partha, in km per hour, is

1. 4
2. 6
3. 5
4. 3

Q 99: Humans and robots can both perform a job but at different efficiencies. Fifteen humans and five robots working together take thirty days to finish the job, whereas five humans and

fifteen robots working together take sixty days to finish it. How many days will fifteen humans working together (without any robot) take to finish it?

1. 36
2. 32
3. 45
4. 40

Q 100: When they work alone, B needs 25% more time to finish a job than A does. They two finish the job in 13 days in the following manner: A works alone till half the job is done, then A and B work together for four days, and finally B works alone to complete the remaining 5% of the job. In how many days can B alone finish the entire job?

1. 20
2. 16
3. 22
4. 18

.

Solution 1

The second choice can be seen in the last sentence of the second last paragraph: "the elephants of decimated herds, especially orphans who've watched the death of their parents and elders from poaching and culling, exhibit behavior typically associated with…. humans…"

Again, the evidence for choice 2 can been found in the second last paragraph; anthropocentric means concerning humans or brought by/caused by humans. Thus both options 2 and 3 can be safely eliminated.

The clue to the choice 4 can be found in the third paragraph, which says that elephants are profoundly social creatures. For option1 we have no evidence.

Solution 2

This question is just another way of asking the central idea of the question. Here we have been asked to express the overall argument of the passage.

Though option 4 is visible in the paragraph, it is not the central idea. The central idea seems to be focusing on the change in the elephants' attitude towards humans. Option 1 captures the key argument of the passage.

Like option 4, option 2, though true as per the passage, is not the key focus of the passage.

Option 3 might look like a good choice, but there is a flaw in the option. The passage is not focusing on the relationship between elephants and humans, though the passage starts on that note. The author is more focused on bringing to our attention the aggressive behavior of elephants and tries to find out the causes of that aggression.

Option 1 is the best choice because bulk of the passage is dedicated to how and why the elephants behave aggressively (species-wide-trauma-related response)

Solution 3

To answer this question, we must first carefully read the question. The question wants us to address the problem of aggression in elephants, suggesting that we must pick the option that brings a solution to the problem of elephant aggression.

Option 1 goes out because the testosterone issue is not at all a concern or the bone of contention. Moreover, by understanding it, how would we be able to address the problem concerning elephant aggression.

Option 2 could indeed help us address the problem of elephant aggression because the trauma experienced by elephants is very similar to stress disorder in humans, and because elephants are social creatures just as humans are, insights gained from treating post-traumatic stress disorder in humans might help us address the problem of elephant aggression. Option 2 is the right choice

Both option 3 and 4 are not likely to contribute in any ways to addressing the problem of elephant aggression. If yes, then there must a strong evidence for that in the passage, but we have no such evidence.

Solution 4

The fabric has been frayed is a figurative expression in which the elephant society has been compared to a fabric that humans have frayed. Choice 2, by stating that it is a metaphor, properly captures the essence of the statement.

Option 1 is incorrect because the statement is not a description but an assertion of a condition that exists today.

Both option 3 and 4 are not in tune with the author's purpose. The author is not exaggerating the disintegration of elephant society. He is, in fact, being quite sympathetic.

Option 4 suggests that the society has become frail on its own, without any external cause. But human activity is the cause and that has frayed the fabric. Thus, option 4 too is not correctly expressing the idea given in the question.

Solution 5

The hint to the right answer is there in the first para. The author says that there is intentionality associated with the word 'violence', suggesting that there is a reason behind human and elephant aggression towards each other. Option 1 is thus the right choice.

Option 2 says 'systematically destroyed'. There is no evidence of 'systematic destruction' of elephant herds by humans. It is an extreme choice.

Option 3 is true as per the passage, but that is not the reason behind the author's using the term 'violence' to describe the recent change in the human-elephant relationship.

Option 4 is incorrect but the author is focusing on elephants' aggression towards humans, something that should not be necessarily interpreted as 'killing'

Solution 6

The clue to the right answer is given in the last sentence of the first para and first sentence of the second para. The last sentence of the first para says "the lie is that blame for the plastic problem is wasteful consumers and that changing our individual habits will fix it." The author suggests that changing consumer habits may not be a solution to the problem.

He further adds in the second para "Recycling plastic is to saving the Earth what hammering a nail is to halting a falling skyscraper". He suggests that neither recycling nor change in consumer behavior is going to solve the problem. The right answer is 3

Solution 7

The answer to this question can be directly found in the passage. The author has used the word 'lie' in the first para. He says "The lie is that blame for the plastic problem is wasteful consumers and that changing our individual habits will fix it". The first part gives us the answer: the lie is the blame for the plastic problem is consumers. Thus, option 1 is the right choice. Since, the answer is directly stated and we have got the right choice, there is no point in disproving the others.

Solution 8

This is one of the simplest questions in this paper. You have to search the options and you will find the right answer. Except for the air pollution effect, everything is given in the passage. Thus option 2 is the right choice.

Solution 9

The clue to the right answer can be found in the last sentence of the paragraph. Right from the start the author says that there is no point in blaming consumers and in recycling plastics. The problem is likely to persist until we change the legal framework. The last part of the para says "Our huge problem with plastic is the result of a permissive legal framework that has allowed the uncontrolled rise of plastic pollution, despite clear evidence of the harm it causes to local communities and the world's oceans."

If we pass regulations targeted at producers of plastics, we might be able to change the situation. Thus option 4 is the right choice.

Solution 10

The authors opinion about Keep America Beautiful can be found in the following lines in the

second last paragraph of the passage: This clever misdirection has led journalist and author Heather Rogers to describe Keep America Beautiful as the first corporate greenwashing front, as it has helped shift the public focus to consumer recycling behavior and actively thwarted legislation…. From this sentence we can infer that the author believes that Keep America Beautiful diverted people's attention away from the role of corporates in plastic pollution.

Solution 11

This is a very good question. We must touch the right area of the passage to arrive at the answer. The clue to the answer lies in the last paragraph, which says "Since the 1970s, depression has come to be viewed as a cognitive or neurological defect in the individual, and never a consequence of circumstances. All of this simply escalates the sense of responsibility each of us feels for our own feelings, and with it, the sense of failure when things go badly."

The author suggests that before 1970 people thought that depression was a result of one's circumstances. Option b is incorrect, as it speaks about how depression could be cured, while the passage has nothing about it.

As the second part of the extract suggests, people, after 1970, became more responsible towards their happiness, as it became clear that depression was not a result of circumstances but of neurological or cognitive defects.

Option 1 is the best choice.

Solution 12

This is a slightly tricky question. To answer this question correctly, we have to correctly identify the author's argument or view. The author's views can be found in many parts of the passage. The author's views are clearly expressed in the second paragraph:

As the science grows more sophisticated and technologies become more intimate with our thoughts and bodies, a clear trend is emerging. Where happiness indicators were once used as a basis to reform society, challenging the obsession with money that G.D.P. measurement entrenches, they are increasingly used as a basis to transform or discipline individuals.

The author in the last sentence says that happiness indicators are used as a basis to transform or discipline individuals. Option 4 clearly weakens the author's argument by saying that stakeholders are moving away from collecting data on the well-being of individuals. Thus, option 4 is undermining or weakening the author's argument.

All the other three choices are supportive of the author's views given in the paragraph.

Solution 13

Option 1 is clearly stated in the second paragraph of the passage. The second para says:
Cities such as Dubai, which has pledged to become the "happiest city in the world," dream up ever-more elaborate and intrusive ways of collecting data on well-being — to the point where there is now talk of using CCTV cameras to monitor facial expressions in public spaces…

Thus, option 1 is the right choice. There is no evidence for option 2 and 3, while option 4 says that it is on its way to becoming one of the world's happiest cities. However, the passage says that Dubai wants to become. It doesn't mean that it is likely to become the happiest city in the world.

Solution 14

The clue to the right answer is in the first paragraph; towards the end the author says that wearable devices are helping us to reduce stress. In other words, they are disciplining individuals to be happy. Option 3 is not so good a choice because though it is trying to make us happy, it does not say that it will entirely overcome depression in individuals. Option 3 is too extreme an interpretation of what is given in the passage.

Solution 15

The clue to the right answer is given in the very first sentence of the passage. The author right at the start says that economists have ignored psychology. From this we can infer that he would like economists to incorporate psychological findings in their research work. Option 3 becomes the right choice.

Solution 16

This is a very easy question and right at the start of the passage the clue to the right answer can be found. The passage says "a mouse should not be born with something that its parents have learned during their lifetime". Thus the author suggests that they should not have been born with acquired characteristics during their lifetime. We should not be tempted with option 4 because though it looks good, it is not the right choice. Fear is just one characteristics that is likely to be inherited, while the passage points at a broader conclusion that can be derived from this experiment. So the inheritance may not necessarily be of fears, but of anything that the parents might have acquired in their lifetime.

Solution 17

The hint to the right answer can be found in the second paragraph of the passage. The second para says: The traditional, and still dominant, view is that adaptations – from the human brain to the peacock's tail – are fully and satisfactorily explained by natural selection (and subsequent inheritance). Yet [new evidence] from genomics, epigenetics and developmental biology [indicates] that evolution is more complex than we once assumed. .

Thus 1 is the best choice, as the author attributes inheritance to much more than natural selection and mendelian gentics. The other negative opinions expressed in the other options cannot be seen anywhere in the passage.

Solution 18

To answer this question correctly, we have to understand the main message of the passage. The main idea is that there is a lot more to inheritance than just natural selection and genetics. So if there is a study that affirms the sole influence of natural selection and inheritance on evolution than the author's main argument would be weakened.

We can see clear evidence in these lines: All these tugs represent the influence of developmental factors, including epigenetics, antibodies and hormones passed on by parents, as well as the ecological legacies and culture they bequeath.

Solution 19

This too is an easy question, the clue to the right answer can be seen here in these lines:

We can see clear evidence in these lines: All these tugs represent the influence of developmental factors, including epigenetics, antibodies and hormones passed on by parents, as well as the ecological legacies and culture they bequeath.

Solution 20

The clue to the right answer is there right in the first paragraph. The author says: Between the old imperialist memorial and the proposed nationalist one, India's contribution to the Second World War is airbrushed out of existence.

The phrase 'airbrushed out of existence' has that regret in the tone. Thus 1 is the right choice.

Solution 21

3

Passage Overview: In the passage the author seems to be stressing on “India’s contribution to the second world war, and its consequences, something which has been ignored both by academicians and the Indian government”

This question is a kind of interpretation question. If we don’t know the meaning of the phrase ‘mood music’, we must try to the see the context in which it has been used. By the way, ‘mood music’ is recorded music that is played in the background to make the audience relax. So if you know the meaning, you can straightaway mark 3 as the answer. A backdrop is a background just as mood music is played in the background. Even from the passage it is clear that to the Indian government and Indian academicians, India’s contribution to the second world war is just a little more than a mood music, in other words it is not a significant contribution, something that the author seems to be lamenting. Option 3 is the right choice.

Solution 22

This is a factual question whose answer depends on how well you are able to find the information scattered in the passage. The first outcome is stated in the first sentence of the third paragraph where the author says that “India’s contribution played a significant role in India’s independence and partition”. So, since option 1 is given, it is not the right answer. Option 2 is given in the fourth paragraph. Option 3 is stated in the third last paragraph. Thus, option 4 is the right choice.

We could have marked option 4 directly, as it is stating exactly opposite of what is given in the passage. It was not India but Britain that owed large financial debt. India was one of the biggest creditors to Britain, the passage says. This means that it was India had lent resources to Britain.

Solution 23

This is a very easy question, as the clue to the right answer is directly visible in the passage. The first sentence of the second paragraph says that the ‘omission was not absent-minded, suggesting that it was deliberate. He further adds that the omission “accurately reflected the fact that both academic history and popular memory have

yet to come to terms with India’s Second World War”. The other choices are neither stated nor implied in the paragraph.

.

Solution 24

This is a slightly difficult question, but can be solved by the process of elimination. Though the passage nowhere directly states the reason why India has not so far acknowledged its role in the Second World War, the hint is there in the second paragraph.

The last sentence of the second paragraph says: With partition and the onset of the India-Pakistan rivalry, both of the new nations needed fresh stories for self-legitimization rather than focusing on shared wartime experiences. "Self-legitimization" would mean self-assertion, or establishing oneself as a strong legal entity. This makes option 3 the right choice. Moreover, none of the other options have any hint in the paragraph. Option 1 and 4 go out because the author asserts that India did make a significant contribution to the war. Option might seem a tempting choice, but there is no hint for it.

Solution 25

This is an average difficulty question. Right from the start we can sense that sentence 1 is likely to start the paragraph. It introduces the idea of 'impartiality and objectivity'. Sentences 2,3 and 4 form one unit because they all revolve around Twitter. The algorithm that statement 4 talks about must be about algorithm that twitter would be using. The pronoun 'it' in statement 2 refers to Twitter. Thus 2 must come after 3. 32 is a pair. The problem of transparency in statement 2 is further elaborated in statement 4. Statement 2 says that the problem of transparency lies in something…statement 4 takes over by saying ..we are only told some of the basic principles..(the problem of transparency is continued).

Solution 26

This is a dubious question, and deserves a challenge. All the sentences can come together and form a coherent paragraph. 'this factoid' in statement 2 can be found in statement 5. Thus 5 and 2 form a pair. 1 opens the paragraph. Impossibility of translation in 3 and impossibility of bumblebee flight are connected. Thus 1523 form a coherent paragraph. Statement 4 can come in the concluding lines. This question has no odd sentence. The source of the passage can be found here

Solution 27

This is a difficult question as there very little to choose from two sequences 1423 and 1432. Both the sequences are plausible, though 1 and 4 will come before 2 and 3. 'the canopy' in statement 4 refers to the woodland's canopy in statement 1. Thus 1 and 4 form a pair. The hunting process of

the swifts is described in statement 3, and this hunting is not just confined to woodlands is what statement 2 says. Thus 3 and 2 form a pair. The right sequence is 1432.

Solution 28

This question, though it looks a little challenging, is in fact quite simple. You must read the passage twice to get some basic understanding of it. The first sentence says that scientific knowledge can be approached from a number of perspectives. Studying something from the perspective of a particular profession would lead to institutionalization of that knowledge. Though it helps, it restricts knowledge production to a domain of few, which results in power centered in the hands of few, preventing the non-professional actors from offering their ideas. The above simplification helps us arrive at option 1 as the right choice. Options 3 and 4 are against the author's stand in the passage. Option 2 is not the core message, but an inference that can be derived from the above passage.

Solution 29

This is a slightly tricky question in which we have to pick the options after carefully comparing them with the others. The first sentence says that artificial embryo twinning is low-tech. The second sentence says that it mimics the natural process that creates identical twins. Option 1 very much captures the key ideas. In option 2, the word 'unlike' shows dissimilarity, but the passage focuses on similarity, not dissimilarity. Option 2 goes out. Option 3 says twins are formed during fertilization, but the passage says that the twins are formed after fertilization. Option 4 is close to 1 but does not clearly specify the exact time when the embryo splits into two. Moreover, the passage says mimics, while option 4 says 'close to', which is a slight distortion of the facts as given in the passage.

Solution 30

Both options 2 and 3 are very close. Option a goes out because the paragraph says that landscape became an independent genre of art of form, while the option says it became a major subject of art. This is a distortion of the fact given in the passage.

Option 2 too has some distortions; while the passage says that conceptualization of landscape as geometric object is related to the European conceptualization of the organism as a geometric object, the option says that three-dimensional understanding of the organism led to a similar approach…. It should be geometric understanding of the organism.

Option 3 best captures the author's position, which in the passage is clearly visible as "Renaissance artists also facilitated an understanding of the structure of landscape".

Option 4 is incorrect because it distorts the fact by saying the Renaissance artists were responsible, while the passage says that they facilitated.

Solution 31

There is little doubt that statement 2 will open the paragraph. The sentence says that democracy and high levels of inequality are simple incompatible. Why? Because very rich people will always use money to maintain their political and economic power. Thus 2 and 4 form a pair. Statement 1 says that now apart from the rich people we have another group: the unwitting enablers. What they do is described in sentence 3. Thus 2413 is the right sequence.

Solution 32

This question is of a very high difficulty. It would be difficult for us to arrive at the answer because we don't see any sentence that can start the paragraph. Statement 2 and 5 form a pair and must go together. Statement 2 says people will have to fool themselves and statement 5 says how they should fool themselves. Now we must find two more statements that can go together. Those two are statements 1 and 3. Both 1 and 3 speak of time inconsistency, 1 speaks of time inconsistency in most cases, while 3 speaks of time inconsistency in specific cases. Thus 1325 form a coherent para, there is no place for statement 4, as it does not connect with any other sentence.

Solution 33

Though it would be difficult for us to create a coherent paragraph in this question, we can find the odd one out by looking for the sentence that does not match with any other sentence. Statement 3 is likely to open the paragraph, 2 will take the idea ahead as it explains to us the cause of that displacement, which in this case is caused by erosion. Statement 4 says that since displacement due to erosion is well spread over a long period of time, it remains invisible. Finally, we have the conclusion in statement 1. Statement 5 does not seem to connect with any of the sentences.

Solution 34

This is one of the easiest questions of CAT 18 VA. The clue to the sequence lies in the pronoun 'it', and in the phrase 'had come back', which suggests that it must have gone first, and then it

must have come back. The pronoun ‘it’ refers to a disease, and is most likely to refer to the noun ‘skin cancer’. Also, we must look for that sentence in which ‘the skin cancer’ must have gone back. Sentence 1 has the noun ‘skin cancer’ and says that the treatment had gone well. This connects sentence 1 with 3. 13 is a pair. Statement 4 is likely to start the paragraph because it opens the idea by suggesting that something had started. So the idea goes like this: it started with a lump and no one knew what it was. Thus, 4 and 2 form a pair. After this must have come the diagnosis. Thus 4213 is the right sequence.

Solution

It is given that the satellites serving either B, C or S do not serve O.

From (1), let the number of satellites serving B, C and S be 2K, K, K respectively.

Let the number of satellites exclusively serving B be x.

From (3), the number of satellites exclusively serving C and exclusively serving S will each be 0.3x

From (4), the number of satellites serving O is same as the number of satellites serving only C and S. Let that number be y.

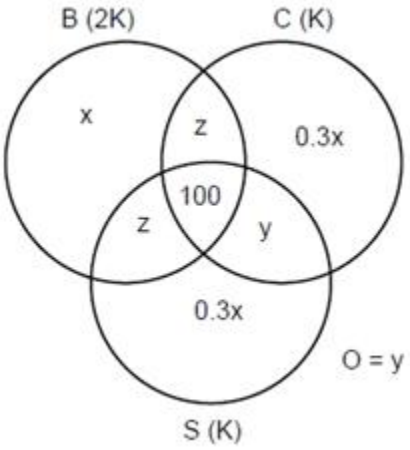
Since the number of satellites serving C is same as the number of satellites serving S, we can say that

(number of satellites serving only B and C) + 0.3x + 100 + y = (number of satellites serving only B and S) +

0.3x + 100 + y

Let the number of satellites serving only B and C = the number of satellites serving only B and S = Z

Therefore, the venn diagram will be as follows



Given that there are a total of 1600 satellites

=> x + z + 0.3x + z + 100 + y + 0.3x + y = 1600

1.6x + 2y + 2z = 1500 ---------- (1)

Also K = 0.3x + z + y +100

Satellites serving B = 2K = x + 2z + 100

=> 2(0.3x + z + y + 100) = x + 2z + 100

0.4x = 2y + 100

x = 5y + 250 ----------(2)

Substituting (2) in (1), we will get

1.6 (5y + 250) + 2y + 2z = 1500

10y + 2z = 1100

Z = 550 – 5y ---------- (3)

Question 1:

The number of satellites serving C = z + 0.3x + 100 + y

= (550 – 5y) + 0.3(5y + 250) + 100 + y = 725 – 2.5y

This number will be maximum when y is minimum.

Minimum value of y is 0.

Therefore, the maximum number of satellites serving C will be 725.

From ③, $z = 550 - 5y$

Since the number of satellites cannot be negative,

$z \geq 0 \Rightarrow 550 - 5y \geq 0$

$y \leq 110$

Maximum value of y is 110.

When y = 110, the number of satellites serving C will be $725 - 2.5 \times 110 = 450$. This will be the minimum

number of satellites serving C.

The number of satellites serving C must be between 450 and 725.

Question 2:

From 2, the number of satellites serving B exclusively is $x = 5y + 250$

This is minimum when y is minimum.

Minimum value of y = 0.

The minimum number of satellites serving B exclusively = $5 \times 0 + 250 = 250$.

Question 3:

Given that at least 100 satellites serve 0; we can say in this case that $y \geq 100$.

Number of satellites serving $s = 0.3x + z + 100 + y = 725 - 2.5y$

This is minimum when y is maximum, i.e. 110, (from ③)

Minimum number of satellites serving = $725 - 2.5 \times 100 = 450$.

This is maximum when y is minimum, i.e., 100 in this case.

Maximum number of satellites serving = $725 - 2.5 \times 100 = 475$

Therefore, the number of satellites serving S is at most 475

Question 4:

The number of satellites serving at least two of B, C or S = number of satellites serving exactly two of

B, C or S + Number of satellites serving all the three

= z + z + y + 100

= 2(550 – 5y) + y + 100

= 1200 – 9y.

Given that this is equal to 1200

1200 – 9y = 1200

=> y = 0

If y = 0, x = 5y + 250 = 250

z = 550 – 5y = 550

No. of satellites serving C = k = z + 0.3x + 100 + y

= 550 + 0.3 × 250 + 100 + y

= 725

No. of satellites serving B = 2k = 2 × 725 = 1450.

From the given options, we can say that the option “the number of satellites serving C cannot be uniquely determined” must be FALSE

Solution

It is given that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression.

So 40 + (40 + x) + (40 + 2x) = 150

Or x = 10

April 2016 = 40

May 2016 = 50

June 2016 = 60

Also, the same case holds for October, November, December of 2016.

100 + (100 + x) ++ (100 + 2x) = 360

Or x = 20

October 2016 = 100

November 2016 = 120

December 2016 = 140

2016			2017		
Quarter	Month	Sales Figures	Quarter	Month	Sales Figures
Q_1 (240)	January	80	Q_1 (380)	January	120
	February	60		February	100
	March	100		March	160
Q_2 (150)	April	40	Q_2 (200)	April	60
	May	50		May	75
	June	60		June	65
Q_3 (250)	July	75	Q_3 (220)	July	60
	August	120		August	90
	September	55		September	70
Q_4 (360)	October	100	Q_4 (500)	October	150
	November	120		November	170
	December	140		December	180

Sales in December 2017 = 180

Sales in December 2016 = 140

Percentage increase $= \frac{40}{140} \times 100 = 28.57\%$

	2017	2016	Percentage increase
Q_1	380	240	$\frac{140}{240} \times 100 = 58.33$
Q_2	200	150	$\frac{50}{150} \times 100 = 33.33$
Q_3	220	250	$\frac{-30}{250} \times 100 = -12$
Q_4	500	360	$\frac{140}{560} \times 100 = 38.88$

So the percentage increase in the sales is highest for Q1

$\rightarrow Q_1$ of 2017 compared with Q_4 of 2016

$= \frac{380-360}{360} \times 100 = 5.55\%$ increase.

$\rightarrow Q_2$ of 2016 compared with Q_1 of 2016

$= \frac{150-240}{240} \times 100 = -37.5\%$ increase or 37.5% decrease

$\rightarrow Q_4$ of 2017 with compared with Q_3 of 2017

There is an increase from 220 to 500 .

$\rightarrow Q_2$ of 2017 with compared with Q_1 of 2017

$= \frac{200-380}{380} \times 100 = -47.36$ or 47.36% decrease

So, sales of Q_2 of \$2017 ,\$ had the highest percentage decrease compared with Q_1 of \$2017 .\$

Solution

Question 1:

The ATM dispenses only 500, 200 and 100 notes and since 500 rupee notes is the preference, it has to dispense more 500 rupee notes than the other two notes combined. The following ways are possible:

500 rupee notes	200 rupee notes	100 rupee notes
10	0	0
9	2	1
9	1	3
9	0	5
8	5	0
8	4	2
8	3	4

Hence, a total of seven ways are possible. **Ans : 7**

Question 2:

To serve the maximum number of customers with 500 rupee notes as preference, we need to minimize the number of 500 rupee notes that can be served to any person.

From the above solution, the minimum number of 500 rupee notes that the ATM can dispense to any person with 500 rupee notes as his/her preference is 8. Hence, with fifty 500 rupee notes, a total of 6 persons can be served. **Ans : 6**

Question 3:

Since there are a limited number of 500 rupee notes, we can minimize the number of 500 rupee notes dispensed to each customer, while ensuring that each customer is served at most 20 notes.

If no 500 rupee notes is dispensed, the minimum number of notes that must be dispensed is 25 (all 200 rupee notes). This is not possible.

If one 500 rupee note is dispensed, the minimum number of notes is 14 (one 500 rupee note, twelve 200 rupee notes and one 100 rupee note). This is also not possible.

If two 500 rupee notes are dispensed, the minimum number of notes is 22 (two 500 rupee notes and twenty 200 rupee notes).

If three 500 rupee notes are dispensed, the minimum number of notes is 21 (three 500 rupee notes, seventeen 200 rupee notes and one 100 rupee note). If four 500 rupee notes are dispensed, the minimum number of notes is 19 (four 500 rupee notes and fifteen 200 rupee notes). Hence, the minimum number of 500 rupee notes that can be dispensed to any person is 4. With fifty 500 rupee notes, a maximum of 12 persons can be served. **Ans : 12**

Question 4:

To dispense the smallest possible number of notes to a person with 500 rupee notes as his/her preference, the ATM should dispense all 500 rupee notes. Hence, minimum number of notes required to serve any person with 500 rupee notes as his/her preference = 10 (all of 500 rupees).

Total number of 500 rupee notes required to serve 50 customers with 500 rupee notes as his/her preference = $10 \times 50 = 500$

To minimize the number of notes to be served to a person with 100 rupee notes as his/her preference, we can maximize the number of 500 rupee notes served to him, keeping the 100 rupee notes more than the sum of the other two denominations.

This is possible if the machine serves eight 500 rupee notes and ten 100 rupee notes. Hence, the total number of 500 rupee notes required to serve 50 customers with 100 rupee notes as his/her preference = $8 \times 50 = 400$

Total number of 500 rupee notes required in the given scenario = 500 + 400 = 900 **Ans : 900**

Note: Given that the ATM dispenses 500, 200 and 100 rupee notes. A possible interpretation of this is that at least one note of each denomination is dispensed. However, as there is no additional information supporting this, you should also consider the cases in which not all the three denominations are dispensed.

Solution

Name	Gender	Institute	Major	Minor
Adriana	F	P		F
Bandita	F	Z		F
Chitra	F	Z		F
Daisy	F	q		O
Amit	M	q		
Barun	M	Y	O	F
Chetan	M	X	F	
Deb	M			

Daisy minors in operations (O) so other three must have minored in Finance (F). Let Adriana and Ded be from the some institute P. Daisy and Amit are from some institute q. So Bandita and Chitra must be from z as only two females are from z. Female student from y majors in operations so daisy cannot be from Y so daisy is from X so is Amit. So Adriana and Deb are form Y

	Gender	Institute	Major	Minor
Adriana	F	Y	O	M
Bandita	F	Z	F/O	M
Chitra	F	Z	F/O	M
Daisy	F	X	F/M	O
Amit	M	X	F	O/M
Barun	M	Y	O	F
Chetan	M	X	F	O/M
Deb	M	Y	M	F

Question 1:

Chitra and Bandita. **Ans : Chitra and Bandita**

Question 2:

Deb minors in Finance. **Ans : Finance**

Question 3:

Amit majors in finance. **Ans : Finance**

Question 4:

Given one female student majors in finance. If chitra majors in finance, Bandita majors in operations.

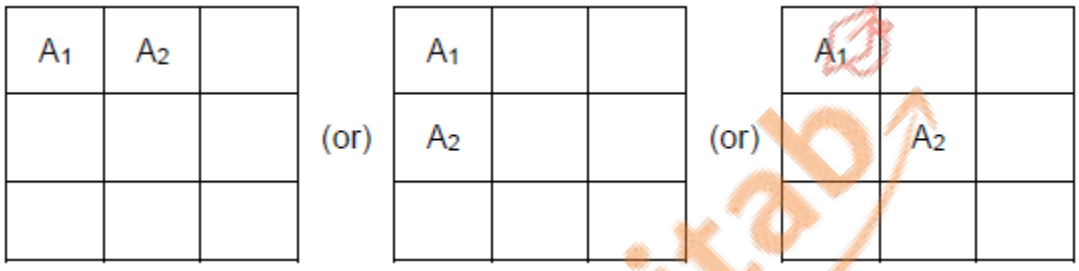
Ans : Operations

Solution

Given that n × n square matrix to be filled with numerals so that no two adjacent cells have the same numeral.

Also, two cells are called adjacent if they touch each other horizontally, vertically or diagonally.

As per the given definition, in the following matrix, the following are the cases of adjacent cells.



Question1:

As per the information, we've the following diagram for a 3 x 3 matrix to have minimum number of numerals.

1	2	1
3	4	3
1	2	1

So, we require 4 elements to have all different numerals**. Ans : 4**

Question 2:

As per the information, we've the following diagram for a 5 x 5 matrix to have minimum number of numerals.

1	2	1	2	1
4	3	4	3	4
1	2	1	2	1
4	3	4	3	4
1	2	1	2	1

So, we require 4 elements to have all different numerals. **Ans : 4**

Question 3:

Even if one mistake is allowed, then also there won't be any change in the solution given above. **Ans : 4**

Question 4:

Given that all the cells adjacent to any particular cell must have different numerals, which is satisfied only

when there are at least 9 numerals. **Ans : 9**

Solution

According to 1 and 2, we get

P1	P2	P3	P4	P5	P6
H	M	H	M	H	L

Also, from 4, we get 2 cases:

P16	P17	P18	P19	P20
L	M	L	M	L
M	L	M	L	M

From (5)

If total number of low (L) pipes = 3

number of high (H) pipes = 6

number of medium (M) pipes = 11

Also if number of low (L) pipes = 4

number of high (H) pipes = 8

number of medium (M) pipes = 8

P7 and P8 can be HH or MM

Therefore, two cases arise for P1 – P10

1	2	3	4	5	6	7	8	9	10
H	M	H	M	H	L	M	M	H	M
H	M	H	M	H	L	H	H	M	H

Combining (1) & (2), we get the following possible

cases for P1 – P 20

Case 1:

H M H M H L H H M H

M H M H M L M L M L

No. (L) = 4

No. (H) = 8

No. (M) = 8

Case 2:

H M H M H L H H M H

L M H M H M L M L M

No. (L) = 4,

No. (H) = 8,

and No. (M) = 8

Case 3:

H M H M H L H H M H

M L H M H M L M L M

No. (L) = 4

No. (H) = 8

No. (M) = 8

Solution

Given, Indu was recruited and Indu scored 100% in exactly one section.

Jatin scored 100% in exactly one section

=> Jatin's scored are

DI	WE	GA
20	16	14

Composite score = 20 x + 2 + 16 + 14 = 70

Indu's score is 70 – 10 =60

If Indu scores 20 in DI, Indus's score in GA = 60 – 40 – 8 = 12

In this case, Indu will not quality Hence, Indu scored 20 in GA.

$\Rightarrow$ score in $\text{Dl} = \frac{60-20-8}{2} = \frac{32}{2} = 16$

$\Rightarrow$ Danish, Harini and Indu scored 20 in GA

Score of Danish is 2(8) + 15 + 20 = 51

Hence, Score of Ajay is 2(8) + 20 + 16 = 52

(As Ajay scores either 19 or 20 in DI, the composite score cannot be 51)

	DI	WE	GA	Total
A	8	20	16	52
B		9	11	
c	19	4	12	54
d	8	15	20	51
e	12	18	16	58
f	15	7	10	47
g	14	> 14	6	
h	5		20	
i	16	8	20	60
j	20	16	14	70

Question 1:

(Jatin's composite score was more than that of Danish) and (Indu scored less than Chetan in DI).

Ans : Both 1 and 2

Question 2:

If Bala scores 20 in DI, Score = 2(20) + 9 + 11 = 60, which is the same as that of Indu.

Not possible

Hence, Bala scored same as Jatin in DI must be false. **Ans : Bala scored same as Jatin in DI**

Question 3:

Ans: 13

Question 4:

Ans: 14

Solution

	Research	Teaching	Administration
Bureaucrats	3x	3x	4x
Educationalist	m > n	n	o
Politicians	y	y	3y

Total = 24

Bureaucrats are in the ratio 3 : 3 : 4 only value will be 3, 3, 4. So x = 1

Educationalist $n < m < o$ and $m = \frac{o+n}{2}$

Politicians are in ratio 1 : 1 : 3 only value will be 1, 1, 3.

Possible value of m, n, o are 3, 2, 4 and 3, 1, 5.

Case (i)

	R	T	A	
B	3	3	4	10
E	3	2	4	9
P	1	1	3	5
	7	6	11	24

Case (ii)

	R	T	A	
B	3	3	4	10
E	3	1	5	9
P	1	1	3	5
	7	5	12	24

Solution 67

Since x, y ,and z are in G.P. and x<y<z, let x = a, y=ar and $z=ar^2$, where a>0 and r>1.

It is also given that, 15x, 16y and 12z are in A.P.

Therefore, 2×16y=5x+12z

Substituting the values of x, y and z we get,

$32ar = 5a + 12ar^2$

$\Rightarrow 32r = 5 + 12r^2$

$\Rightarrow 12r^2 - 32r + 5 = 0$

On solving the above quadratic equation we get r=1/6 or 5/2.

Since r>1, therefore r=5/2.

Solution 68

Let the rate of each filling pipes be 'x lts/hr' similarly, the rate of each draining pipes be 'y lts/hr'.

As per the first condition,

Capacity of tank = (6x - 5y)×6.....(i)

Similarly, from the second condition,

Capacity of tank = (5x - 6y) × 60.....(ii)

On equating (i) and (ii), we get

(6x - 5y) × 6 = (5x - 6y)×60

or, 6x - 5y = 50x - 60y

or, 44x = 55y

or, 4x = 5y

or, x = 1.25y

Therefore, the capacity of the tank = (6x - 5y) × 6 = (7.5y - 5y) × 6 = 15y lts

Effective rate of 2 filling pipes and 1 draining pipe = (2x - y) = (2.5y - y) = 1.5y

Hence, the required time = 15y/1.5y=10 hours.

Solution 69

$x^{2018} y^{2017} = \frac{1}{2} \ldots..(1)$

and $x^{2016}y^{2019} = 8$ …..(2)

Dividing (1) by (2), $\frac{x^2}{y^2} = \frac{1}{16}$

$\frac{x}{y} = \frac{1}{4}$ i.e. $x = \pm\frac{1}{4}y$

$\left(\pm\frac{1}{4}y\right)^{2018} y^{2017} = \frac{1}{2}$

$y^{4035} = 2^{4035}$

$y = 2$

Therefore, $x = \pm\frac{1}{4}y = \pm\frac{1}{2}$

Hence, $x^2 + y^3 = \frac{1}{4} + 8 = \frac{33}{4}$

Solution 70

Let the time taken for car 1 to reach P from A be x hours.

Speed of car 1=AP/x

Given BP=3AP

Car 2 starts from B to A and reaches P one hour after car 1 reaches P.

Speed of car $2 = \frac{3AP}{x+1}$

Therefore, $\frac{3AP}{x+1} = \frac{1}{2}\left(\frac{AP}{x}\right)$

Or $x = \frac{1}{5}$. Time taken for car 1 to reach P from A is 12 min.

Solution 71

$5+\log_3 a = 2^3 = 8 \Rightarrow a = 27$

Similarly, $4a+12+\log_2 b = 5^3 = 125$

since $a = 27, 4(27)+12+\log_2 b = 125 \Rightarrow b = 32$

a + b = 59.

Solution 72

Let the quantities of the paints A and B in the mixture sold be a litres and b litres respectively.

Value at which the entire mixture is sold=264 Profit percent made=10%

Value at which the entire mixture is bought = $264 \times \frac{100}{110} = 240$

Price at which the entire mixture is bought=24 per litre Let the cost of B be x per litre.

Cost of A=(x+8)per litre

$\frac{(x+8)a+xb}{10} = 24$

Maximum cost of B will occur when a is minimum. b<=a. So, minimum a is 5.

Corresponding b is 5. Then (x+8)(5)+x(5)=240 x=20

Solution 73

Let the 6 cm long chord be x cm away from the centre of the circle. Let the radius of the circle be r cm.

The perpendiculars from the centre of the circle to the chords bisect the chords.

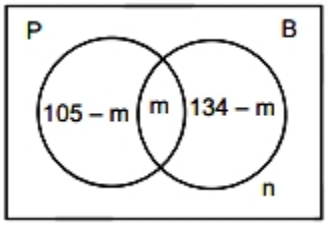
$r^2 = x^2 + 3^2 = (x+1)^2 + 2^2$

Solving, $x = 2$ and $r = \sqrt{13}$

Solution 74

Let the number of students who like both pizza and burger be ‘m’ .

The number of students who like neither of them be n



From venn diagram 105 – m + m + 134 – m + n = 200 m – n = 39

∴ The possible values of (m, n) are (39, 0) (40, 1)…….(105, 66)

∴ The number of students who like only burger is lies in the range [134 – 105, 134 – 39] = [29, 95]

∴ From options, 93 is a possible answer

Solution 75

Let the average age of people aged 51 years and above be x years.

Let the average age of people aged below 51 years be y years.

Let the number of people aged below 51 years be N.

Given, the average age of all the people in the apartment complex is 38 years.

Therefore,

$$\frac{x\times 30+y\times N}{30+N}=38 \ \ldots.(1)$$

We want to maximize y, which occurs when x is minimum i.e. for x=51.

Substituting the value of x in (1) we get

390=N×(38-y)

Again, when y is maximum, N is also maximum i.e. 39

Therefore maximum value of y = 28.

Solution 76

Any equilateral triangle formed by joining the midpoints of the sides of another equilateral triangle will have its side equal to half the side of the second equilateral triangle.

Side of T1 = 24 cm Side of T2 = 12 cm Side of T3 = 6 cm and so on.

Sum of the areas of all the triangles

$$= \frac{\sqrt{3}}{4}\left(24^2 + 12^2 + 6^2 + \ldots\ldots\right)$$

$$= \frac{\sqrt{3}}{4}\left(\frac{576}{1-\frac{1}{4}}\right) = 192\sqrt{3}$$

Solution 77

$$u^2 + (u - 2v - 1)^2 = -4v(u + v)$$

$$\Rightarrow u^2 + u^2 + 4v^2 + 1 - 4uv + 4v - 2u + 4vu + 4v^2 = 0$$

$$\Rightarrow 2u^2 - 2u + 8v^2 + 4v + 1 = 0$$

$$\Rightarrow 2\left(u^2 - u + \frac{1}{4}\right) + 2\left(4v^2 + 2v + \frac{1}{4}\right) = 0$$

$$\Rightarrow 2\left(u - \frac{1}{2}\right)^2 + 2\left(2v + \frac{1}{2}\right)^2 = 0$$

$$\Rightarrow u - \frac{1}{2} = 0; 2v + \frac{1}{2} = 0$$

$$\mathrm{u} = \frac{1}{2} \text{ and } \mathrm{v} = -\frac{1}{4}$$

$$\mathrm{u} + 3\mathrm{v} = \frac{1}{2} - \frac{3}{4} = -\frac{1}{4}$$

Solution 78

Givne that: $2^x = 3^{\log_5 2}$

$\Rightarrow\ 2^x = 2^{\log_5 3}$

$\Rightarrow\ x = \log_5 3$

$\Rightarrow\ x = \log_5 \frac{3*5}{5}$

$\Rightarrow\ x = \log_5 5 + \log_5 \frac{3}{5}$

$\Rightarrow\ x = 1 + \log_5 \frac{3}{5}.$

Solution 79

Let the other two numbers be y and z.

As per the condition

73yz - 37yz = 720

Or 36yz=720

Or yz=20

Minimum possible sum of the squares of the other two numbers would occur when y = z i.e.

$y = z = \sqrt{20}$

Hence the required sum = 40.

Solution 80

Let the area of ABCD be 100. Side of ABCD = 10 Area of EFGH is 62.5 => Side of EFGH = √62.5

Triangles AEH, BFE, CGF and DHG are congruent by ASA.

Let AE = BF = CG = DH = x; EB = FC = DG = AH = 10 -xx

$AE^2 + AH^2 = EH^2$

$x^2 + (10 - x)^2 = (\sqrt{62.5})^2$

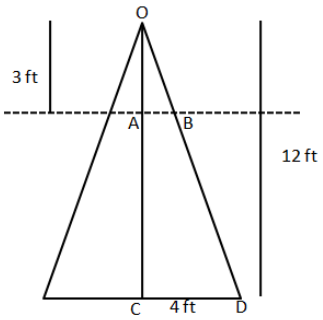
Solving, x = 2.5 or 7.5

Since it's given that CG is longer than EB, CG = 7.5 and EB = 2.5.

Therefore, EB : CG = 1 : 3

Solution 81

We are given that diameter of base = 8 ft. Therefore, the radius of circular base = 8/2 = 4 ft



In triangle OAB and OCD

$$\frac{OA}{AB} = \frac{OC}{CD}$$

$$\Rightarrow \text{AB} = \frac{3 \times 4}{12} = 1 \text{ ft.}$$

Therefore, the volume of remaining part = Volume of entire cone - Volume of smaller cone

$$\Rightarrow \frac{1}{3} \times \pi \times 4^2 \times 12 - \frac{1}{3} \times \pi \times 1^2 \times 3$$

$$\Rightarrow \frac{1}{3} \times \pi \times 189$$

$$\Rightarrow \frac{22}{7 \times 3} \times 189$$

$$\Rightarrow 198 \text{ cubic ft}$$

Solution 82

$\log_{12} 81 = p \Rightarrow \log_{12} 3^4 = p$

$\Rightarrow 4\log_{12} 3 = p$

$\Rightarrow \frac{p}{4} = \log_{12} 3$

$3\left(\frac{4-p}{4+p}\right) = 3\left(\frac{1-\frac{p}{4}}{1+\frac{p}{4}}\right)$

$= 3\left(\frac{1-\log_{12} 3}{1+\log_{12} 3}\right)$

$= 3\left(\frac{\log_{12} 12 - \log_{12} 3}{\log_{12} 12 + \log_{12} 3}\right)$

$= 3\left(\frac{\log(12/3)}{\log(12/3)}\right)$

$= 3\frac{\log 4}{\log 36} = 3\log_{36} 4$

$= \log_6 8$

Solution 83

Train T starts at 3 PM and train S starts at 4 PM.

Let the speed of train T be t.

=> Speed of train S = 0.75t.

When the trains meet, train t would have traveled for one more hour than train S.

Let us assume that the 2 trains meet x hours after 3 PM. Trains S would have traveled for x-1 hours.

Distance traveled by train T = xt

Distance traveled by train S = (x-1)*0.75t = 0.75xt-0.75t

We know that train T has traveled three fifths of the distance. Therefore, train S should have traveled two-fifths the distance between the 2 cities.

=> (xt)/(0.75xt-0.75t) = 3/2

2xt = 2.25xt-2.25t

0.25x = 2.25

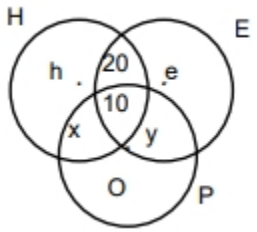
x = 9 hours.

Train T takes 9 hours to cover three-fifths the distance. Therefore, to cover the entire distance, train T will take 9*(5/3) = 15 hours.

Therefore, 15 is the correct answer.

Solution 84

Let the number of students who studying only H be h, only E be e, only H and P but not E be x, only E and P but not H be y



Given only P = 0 All three = 10; Studying only H and E but not P = 20

Given number of students studying H = Number of students studying E

= h + x + 20 + 10

= e + y + 20 + 10

h + x = e + y total number of students = 74

Therefore, h + x + 20 + 10 + e + y = 74

h + x + e + y = 44

h + x + h + x = 44

h + x = 22

Therefore, the number of students studying H = h + x + 20 + 10 = 22 + 20 + 10 = 52.

Solution 85

Let the cost price of peanuts for the wholesaler be x per kg.

Cost price of walnuts for the wholesaler is 3x per kg.

The wholesaler sold 8 kg of peanuts at 10% profit and 16 kg of walnuts at 20% profit to a shopkeeper.

Total cost price to the shopkeeper = (8)(x)(1.1) + 16(3x)(1.2) = 66.4x

The shopkeeper lost 5 kg walnuts and 3 kg peanuts.

The shopkeeper sold the mixture of 11 kg walnuts and 5 kg peanuts.

His total selling price=166(16) = 2656

His total cost price $= 2656\left(\frac{100}{125}\right) = 2124.8$

$66.4x = 2124.8$

$x = 32$

Price at which the wholesaler bought walnuts = 3x = 96/- per kg

Solution 86

Let the average score of the aspirant in all the tests be x. Let the number of tests be n.

The aspirant's average score for the first 10 tests and last 10 tests are 20 and 30 respectively.

$\frac{nx-200}{n-10} = x+1$ and $\frac{nx-300}{n-10} = x-1$

Solving, we get n=60

Solution 87

Let the number of marbles with Raju and Lalitha initially be 4x and 9x.

Let the number of marbles that Lalitha gave to Raju be y.

It has been given that (4x+y)/(9x-y) = 5/6

24x + 6y = 45x – 5y

11y = 21x

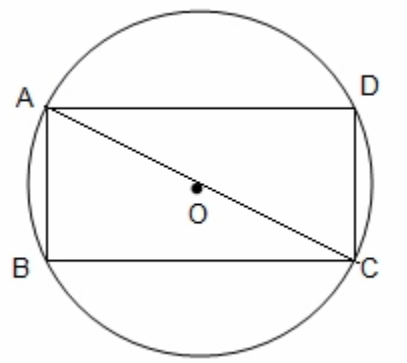
y/x = 21/11

Fraction of original marbles given to Raju by Lalitha = y/9x (As Lalitha had 9x marbles initially).

y/9x = 21/99

= 7/33.

Solution 88



We know that AC is the diameter and $\angle$ ABC = 90°. AC = 2*13 = 26 cm

In right angle triangle ABC,

$AC^2 = AB^2 + BC^2$

$\Rightarrow \ AB^2 + BC^2 = 26^2$

$\Rightarrow \ AB^2 + BC^2 = 676$

Let us check with the options.

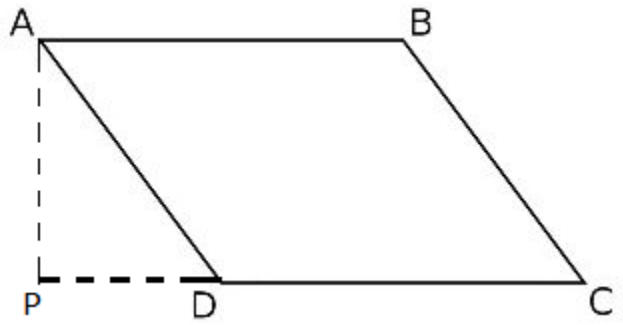
Option (A): $24^2 + 10^2 = 676$.

Option (B): $25^2 + 9^2 = 706 \neq 676$.

Option (C): $25^2 + 10^2 = 725 \neq 676$.

Option (D): $24^2 + 12^2 = 720 \neq 676$.

Solution 89



Area of the parallelogram ABCD = (base)(height) = (CD)(AP) = 72 sq.cm.

(CD)(AP) = 72 9(AP) = 72 => AP = 8

$DP = \sqrt{AD^2 - AP^2} = \sqrt{16^2 - 8^2} = 8\sqrt{3}$

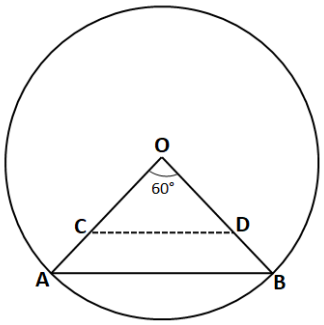
Area of triangle $APD = \frac{1}{2}(AP)(PD) = 32\sqrt{3}$

Solution 90

It is given that radius of the circle = 1 cm

Chord AB subtends an angle of 60° on the centre of the given circle. R be the region bounded by the radii OA, OB and the arc AB.

Therefore, R = $\frac{60°}{360°} \times$Area of the circle = $\frac{1}{6} \times \pi \times (1)^2 = \frac{\pi}{6}$ sq. cm



It is given that OC = OD and area of triangle OCD is half that of R. Let OC = OD = x.

Area of triangle COD = $\frac{1}{2} \times OC \times OD \times \sin 60°$

$\frac{\pi}{6 \times 2} = \frac{1}{2} \times x \times x \times \frac{\sqrt{3}}{2}$

$\Rightarrow x^2 = \frac{\pi}{3\sqrt{3}}$

$\Rightarrow x = (\frac{\pi}{3\sqrt{3}})^{\frac{1}{2}}$ cm.

Solution 91

As the digits appear in ascending order in the numbers, number of ways of forming a n-digit number using the 9 digits = ${}^9C_n$

Number of possible two-digit numbers which can be formed =

$^9C_2 + ^9C_3 + ^9C_4 + ^9C_5 + ^9C_6 + ^9C_7 + ^9C_8 + ^9C_9$

$= 2^9 - (9C_1 + ^9C_1)$

$= 512 - (1+9) = 502$

Solution 92

$0.25 \le 2^x \le 200$

Possible values of x satisfying the above inequality are –2, –1,0, 1, 2, 3, 4, 5, 6, 7.

When x = 0, 1, 2, 4 and 6, $2^x + 2$ is divisible by 3 or 4.

The number of values of x is 5

Solution 93

f(x+2) = f(x) + f(x+1)

f(11) = 91

Let f(12) = a

f(13) = 91 + a

f(14) = 91 + 2a

f(15) = 182 + 3a.

This is also equal to 617.

182 + 3a = 617 => a = 145

f(10) = f(12) - f(11) = 145 - 91 = 54

Solution 94

A got 36 marks but falls short of pass marks by 68%.

Maximum possible score is N.

Pass mark is 45% of N. 32% of 45% of N = 36 => N = 250

Solution 95

The selling price of the mixture is Rs.40/kg.

Let a be the quantity of tea A in the mixture and b be the quantity of tea B in the mixture.

It has been given that the profit is 10% if the 2 varieties are mixed in the ratio 3:2

Let the cost price of the mixture be x.

It has been given that 1.1x = 40

x = 40/1.1

$$\frac{3a+2b}{5}=\frac{40}{1.1}$$

$3.3a+2.2b=200$ --------(1)

The profit is 5% if the 2 varieties are mixed in the ratio 2:3.

$$\frac{2a+3b}{5}=\frac{40}{1.05}$$

$2.1a+3.15b=200$ ------(2)

Equating (1) and (2), we get,

$3.3a+2.2b=2.1a+3.15b$

$1.2a=0.95b$

$$\frac{a}{b}=\frac{0.95}{1.2}$$

$$\frac{a}{b}=\frac{19}{24}$$

Solution 96

Let each instalment be ₹x. Equating the present value of both the instalments to the money borrowed,

$$\frac{x}{1.1}+\frac{x}{1.1^2}=210000$$

x=121000

Solution 97

f(x) = min $(2x^2, 52-5x)$

The maximum possible value of this function will be attained when $2x^2=52-5x$.

$2x^2+5x-52=0$

$(2x+13)(x-4)=0$

$\Rightarrow x=\frac{-13}{2}$ or $x=4$

Since x has to be positive integer, we can discard the case $x=\frac{-13}{2}$.

$x=4$ is the point at which the function attains the maximum value.

putting $x=4$ in the original function, we get, $2x^2=2*4^2=32$.

Or the maximum value of f(x) = 32

Solution 98

Let the time taken by Partha to cover 60 km be x hours.

As per the condition, Narayan will cover 60 km in x-4 hours.

Therefore, Speed of Partha = 60/x
And Speed of Narayan = 60/(x−4)

It is also given that Partha reaches the mid-point of A and B two hours before Narayan reaches B. Hence,

$\Rightarrow \frac{30}{\frac{60}{x}}+2=\frac{60}{\frac{60}{(x-4)}}$

$\frac{x}{2}+2=x-4$

$\frac{x+4}{2}=x-4$

$x+4=2x-8$

$x=12$

OR Partha will take 12 hours to cross 60 km.

=> Speed of Partha = 60/12=5 Kmph.

Solution 99

Let the rates of work of each human and each robot be H and R respectively (both in units/day).

$15H + 5R = \frac{1}{30}$ …… (1)

$5H + 15R = \frac{1}{60}$ ……(2)

$3(1) - (2) => 40H = \frac{1}{12}$

$H = \frac{1}{480}$

In a day, 15 humans can complete 15H i.e. $\frac{1}{32}th$ of the job.

15 humans can complete the job in 32 days

Solution 100

Let the time taken by A to finish the job be "a" days.

Time taken by B to finish the job $= \frac{5}{4}a$ days.

Part of the job completed when A and B worked together for 4 days = $1 = \frac{1}{2} - \frac{5}{100} = \frac{9}{20}$

$$4\left(\frac{1}{a} + \frac{1}{\frac{5a}{4}}\right) = \frac{9}{20} \Rightarrow a = 16$$

Time taken by B alone to complete the entire job = 5a/4 = 20 days.