



All India CAT Open Mock - 1 2019

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VARC

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Sec 1

Direction for questions (1-5): Read the given passage and answer the questions that follow.

Which would you prefer to be: a medieval monarch or a modern office-worker? [...] The question is more than just a parlour game. It shows how tricky it is to compare living standards over time. Yet such comparisons are not just routinely made, but rely heavily on a

single metric: gross domestic product (GDP). This one number has become shorthand for material well-being, even though it is a deeply flawed gauge of prosperity, and getting worse all the time. That may in turn be distorting levels of anxiety in the rich world about everything from stagnant incomes to disappointing productivity growth.

Defenders of GDP say that the statistic is not designed to do what is now asked of it. A creature of the 1930s slump and the exigencies of war in the 1940s, its original purpose was to measure the economy's capacity to produce. Since then, GDP has become a lodestar for policies to set taxes, fix unemployment and manage inflation.

Yet it is often wildly inaccurate: Nigeria's GDP was bumped up by 89% in 2014, after number-crunchers adjusted their methods. Guesswork prevails: the size of the paid-sex market in Britain is assumed to expand in line with the male population; charges at lap-dancing clubs are a proxy for prices. Revisions are common, and in big, rich countries, bar America, tend to be upwards. Since less attention is paid to revised figures, this adds to an often exaggerated impression that America is doing far better than Europe. It also means that policymakers take decisions based on faulty data.

If GDP is failing on its own terms, as a measurement of the value-added in an economy, its use as a welfare benchmark is even more dubious. That has always been so: the benefits of sanitation, better health care and the comforts of heating or air-conditioning meant that GDP growth almost certainly understated the true advance in living standards in the decades after the second world war. But at least the direction of travel was the same. GDP grew rapidly; so did quality of life. Now GDP is still growing (albeit more slowly), but living standards are thought to be stuck. Part of the problem is widening inequality: median household income in America, adjusted for inflation, has barely budged for 25 years. But increasingly, too, the things that people hold dear are not being captured by the main yardstick of value.

With a few exceptions, such as computers, what is produced and consumed is assumed to be of constant quality. That assumption worked well enough in an era of mass-produced, standardised goods. It is less reliable when a growing share of the economy consists of services. Firms compete for custom on the quality of output and how tailored it is to individual tastes. If restaurants serve fewer but more expensive meals, it pushes up inflation and lowers GDP, even if this reflects changes, such as fresher ingredients or fewer tables, that customers want. The services to consumers provided by Google and Facebook are free, so are excluded from GDP. When paid-for goods, such as maps and music recordings, become free digital services they too drop out of GDP. The convenience of online shopping and banking is a boon to consumers. But if it means less investment in buildings, it detracts from GDP. Measuring prosperity better requires three changes. [...] Building these benchmarks will demand a revolution in national statistical agencies as bold as the one that created GDP in the first place. Even then, since so much of what people value is a matter of judgment, no reckoning can be perfect. But the current measurement of prosperity is riddled with errors and omissions. Better to embrace a new approach than to ignore the progress that pervades modern life.

Q.1

What is the main point that the author is trying to highlight in the passage?

1 How faulty GDP calculation has impacted its core goal in measuring standard of living across the globe

2 How GDP has failed and continues to fail to provide adequate economic data to take informed decisions

3 Why GDP has not been adaptable to the changing consumer needs as its benchmarking style is inherently unsuitable to the economic needs of a nation

4 Why GDP fails to give an accurate picture of the economic welfare of a nation

x

Solution:

Correct Answer : 4

Your Answer : 3

The author's main argument in the passage is that GDP is not an accurate measure of a country's economic progress. It doesn't mean that GDP is not useful. It simply was not meant to measure the more complex service based economy that we see nowadays.

 **Bookmark**

 **Answer key/Solution**

Option 1 – The core goal of GDP was never to measure standard of living. Refer to the line: "...its original purpose was to measure the economy's capacity to produce." So, this is factually incorrect. It also is too narrow to be the main focus of the argument.

Option 2 – The problem of faulty decision making is not a result of GDP's miscalculations. It was not meant to be a driving force behind economic policy making. So, this is a misleading option too.

Option 3 – The part 'inherently unsuitable' makes this option incorrect. It is not stated that the creation of GDP was faulty from the beginning. So, this is a distorted option.

Option 4 – This is the correct option as it aptly captures the main concern of the author: GDP should not be taken as an indicator of how progressive or economically happy a country is.

FeedBack

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Q.2

As per the passage, the author would most likely answer the question raised in the opening sentence by:

-
- 1 highlighting the futility of trying to compare two abstract life choices.
-

- 2 exposing the flaws of using GDP to compare lifestyles.
- 3 analysing the two lifestyles in order to show how complicated the matter actually is.
- 4 discussing the respective merits and demerits of the two lifestyles so as to prove that GDP is not helpful in making a life related decision.

Solution:

Correct Answer : 3

This is a slightly tricky question. It requires one to read the subsequent portion of the passage. The opening question is rhetoric in nature. The author goes on to say that the answer to this question proves that it is difficult to compare two different lifestyles. It is not an easy or straightforward matter. GDP is then introduced as an extension of this point: problems that accompany any attempt to measure lifestyles.

 **Bookmark**

 **Answer key/Solution**

Option 1 – The data doesn't support 'futility' as a tone of the author. Secondly, the two categories are not abstract. This option is vague and it fails to answer the question.

Option 2 – GDP and its lacunae are not part of the opening question. It is introduced later in a different context. So, this option is incorrect.

Option 3 – This is the best option. It attempts to answer an otherwise rhetorical question. Then it introduces the concept that is later on applied to GDP: the problems that arise when one attempts to measure lifestyles.

Option 4 – GDP again is the focus of this option. So, it is incorrect.

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Q.3

Which of the following has not been mentioned as a shortcoming of GDP in this passage?

- 1 Its upward revision by all the countries in the world
- 2 Its inability to consider qualitative service changes
- 3 Its imperfect indication of prosperity
- 4 Its inability to account for free services in an economy



Solution:**Correct Answer : 1****Your Answer : 1**

This is an easy question. Options 2, 3, and 4 can be located in the passage. Option 1 is factually incorrect as the author says that most countries do an upward revision. It's clearly stated that America doesn't (bar America). So, option 1 is the correct answer.

Bookmark**Answer key/Solution****FeedBack**

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Q.4

What's the main point the author tries to highlight by the example of Google and Facebook?

- 1 Google and Facebook prove that GDP downplays free services.
- 2 GDP doesn't count services as being of economic value.
- 3 The assumption of the constant quality of mass-produced, standardised goods has been disproved by Google and Facebook.
- 4 GDP doesn't consider Google and Facebook as they are services tailored to the needs of firms.



Solution:

Correct Answer : 2

Your Answer : 2

The paragraph where Google and Facebook are mentioned is focused on the inability of GDP to measure a country's economic welfare correctly when the economy is driven by services. This is the main or broader point. So, option 2 is the correct answer.

Bookmark

Answer key/Solution

Option 1 – These two companies are taken as examples. They are not the proof. Secondly GDP doesn't consider any service, not just free service.

Option 3 – This is an illogical option. Two separate issues have been mentioned together and a faulty cause-effect relationship has been created.

Option 4 – This option doesn't answer the question. It is also wrong as Google and Facebook are mass products; they are not tailored to the need of firms.

FeedBack

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judgment, no reckoning can be perfect. But the current measurement of prosperity is riddled with errors and omissions. Better to embrace a new approach than to ignore the progress that pervades modern life.

Q.5

What can be inferred about the author's intention behind writing the last sentence of the passage?

- 1 S/he is a pessimist when it comes to the concept of improving the living standard of people.
- 2 S/he is happy yet cautious about the high standard of living in rich countries.
- 3 S/he doesn't believe that the judgements of people can be quantified.
- 4 S/he believes economic prosperity to be a subjective matter.



Solution:

Correct Answer : 4

Your Answer : 4

This question can be answered by the process of elimination.

Bookmark

Answer key/Solution

Option 1 – The author doesn't discuss anything about improving the standard of living of people. The main concern is how to make GDP account for the changes in the standards of living of people. So, this is not a logical inference.

Option 2 – This is totally irrelevant to the context of the passage.

Option 3 – The author does mention that a lot of what people value can't be completely accounted for by GDP or any other indicator of economic welfare. But this inference is about 'judgements of people' which is too generic. So, the inference is incorrect.

Option 4 – The author mentions that "...so much of what people value is a matter of judgment". So, it means that many of the indicators of economic prosperity are subjective. So, option 4 is an inference that is likely to be supported by the author. This is the correct choice.

[FeedBack](#)

Direction for questions (6-10): Read the given passage and answer the questions that follow.

[...] It's easy to understand how massive humpbacks can swim from Arctic to Antarctic waters, but most of the miniature worms, snails and crustaceans on the researchers list are no bigger than grains of rice. How could tiny creatures adapted for the frigid waters travel 9,500 kilometres through warmer climes to reach the opposite pole?

Under the microscope, these invertebrates sometimes look like shredded plastic bags or shrimp with bullhorns. It's unclear how they could cross a swimming pool, let alone the globe. So, their "bipolarity" poses a 160-year mystery of the ocean—one that has only grown with time. [...]

The discovery of bipolar species dates back to the 1840s expeditions of Victorian explorer James Clark Ross and his two heavy-duty battle cruisers, the HMS *Erebus* and *Terror*. During missions to map the North and South poles, he collected samples of marine flora and fauna that looked remarkably similar. He theorized that somehow these tiny species had been able to survive not only the icy waters that would eventually sink his ships, but also a journey halfway around the planet.

Since then, sceptics have bickered about the evidence. Some complained that the underwater life specimens were misidentified or appeared too different. But in 2000 Kate Darling, an oceanographer at University of Edinburgh in Scotland, settled any debate. In the northern and southern subpolar waters off Iceland and the Falkland Islands, respectively, Darling collected foraminifera, single-celled ocean drifters that look like prickly gobs of bubblegum. When she sequenced the ribosomal DNA from three species—*Globigerina bulloides*, *Turborotalia quinqueloba* and *Neogloboquadrina pachyderma*—she found the genes to be so similar that, she says "they must be mixing, maybe even now." [...]

Some scientists and naturalists, including Charles Darwin, have hypothesized that species migrated over thousands of years when average ocean temperatures were much colder, probably at some point in geologic time between the Tertiary period and the last ice age 18,000 years ago. Darling's data, however, puts a dent in that theory. The minuscule genetic differences in her "bugs," as she calls them, suggest that the species mingled far more recently.

Today, most scientists think the species travel a deep-water conveyor belt called the thermohaline circulation, the ocean-wide phenomenon responsible for currents such as the Atlantic's Gulf Stream. Because cold water at both poles changes salinity and sinks as it spreads, it forms discrete submarine rivers that descend at the equator and resurface at opposite ends of the planet. Along the way, temperatures only waver between 2 to 4 degrees Celsius, consistent enough for most polar dwellers to survive. The creatures themselves make the journey from one pole to its antipode suspended as larvae or eggs, or as live adults, reproducing over generations on their 9,500-kilometer trek before arriving 400 to 600 years later. To return to their pole of origin it could take another 1,600 years because of prevailing currents.

Besides the enormous travel time, the theory partially refutes bipolarity: It suggests that species may live outside of polar regions but we just haven't found them yet. "It's the awkwardness of how you define something. Is the definition functional or based on lack of data? We know so little about the deep layers of the ocean compared to the surface," Hopcroft says.

The list of bipolars is tentative for another reason: biologists identified most of the species

based on morphology, or form and structure. Species that live in similar environments often look identical but can be genetic strangers. "Until you do the genetics you can't know that they're bipolar for sure," Darling says...

Q.6

The author of the passage presents his/her ideas by:

- 1 posing questions that are later explained by competing theories.
- 2 debating the many possible contradictions in answering a biological puzzle.
- 3 analysing some theories speculated to account for an evolutionary puzzle.
- 4 raising an issue of scientific interest and then testing the various hypotheses suggested to resolve the issue.

Solution:

Correct Answer : 3

As this is a logical structure question, there is not a single format for writing the answer. Such questions should be solved by the method of elimination only.



[Answer key/Solution](#)

Option 1 – There are no competing theories. These are simply different theories. So, this option is incorrect.

Option 2 – It's not a biological puzzle. That term is vague. 'Contradictions' is the wrong word as the theories don't contradict each other.

Option 3 – It is an evolutionary dilemma and the author does analyse the merits of at least two theories. So, it is the best choice.

Option 4 – The author clearly says that this issue is not resolved. Secondly, these are not hypotheses but theories. So, this option is incorrect.

[FeedBack](#)

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Q.7

Which of the following is definitely true about bipolar species, as per the passage?

- 1 They are at least 18000 year old.
- 2 They have been of interest to oceanographers for 400 to 600 years.
- 3 Some of them have a lifespan of 1600 years.
- 4 Some of them have been misidentified by scientists.

Solution:

Correct Answer : 4

This is an easy question.

 **Bookmark**

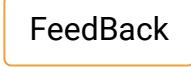
 **Answer key/Solution**

Option 1 – In the next line, the author says that these species were speculated to be 18000 year old but Kate Darling's research challenges it. So, it is not definitely true.

Option 2 – The issue was first raised in 1860. The author calls it a 160 year old question. So, 400-600 (which is used to talk about the migration time of the species) is misleading factually.

Option 3 – This is completely illogical. 1600 years is mentioned with reference to the time taken by the species to move from one pole to another.

Option 4 – This is clearly true. 'Some' makes it logically correct too. Kate Darling's research shows that at least one such species has been misidentified in terms of its genetic makeup. So, this is the correct answer.

 **FeedBack**

Direction for questions (6-10): Read the given passage and answer the questions that follow.

[...] It's easy to understand how massive humpbacks can swim from Arctic to Antarctic waters, but most of the miniature worms, snails and crustaceans on the researchers list are no bigger than grains of rice. How could tiny creatures adapted for the frigid waters travel 9,500 kilometres through warmer climes to reach the opposite pole?

Under the microscope, these invertebrates sometimes look like shredded plastic bags or shrimp with bullhorns. It's unclear how they could cross a swimming pool, let alone the globe. So, their "bipolarity" poses a 160-year mystery of the ocean—one that has only grown with time. [...]

The discovery of bipolar species dates back to the 1840s expeditions of Victorian explorer James Clark Ross and his two heavy-duty battle cruisers, the HMS *Erebus* and *Terror*. During

missions to map the North and South poles, he collected samples of marine flora and fauna that looked remarkably similar. He theorized that somehow these tiny species had been able to survive not only the icy waters that would eventually sink his ships, but also a journey halfway around the planet.

Since then, sceptics have bickered about the evidence. Some complained that the underwater life specimens were misidentified or appeared too different. But in 2000 Kate Darling, an oceanographer at University of Edinburgh in Scotland, settled any debate. In the northern and southern subpolar waters off Iceland and the Falkland Islands, respectively, Darling collected foraminifera, single-celled ocean drifters that look like prickly gobs of bubblegum. When she sequenced the ribosomal DNA from three species—*Globigerina bulloides*, *Turborotalia quinqueloba* and *Neogloboquadrina pachyderma*—she found the genes to be so similar that, she says "they must be mixing, maybe even now." [...]

Some scientists and naturalists, including Charles Darwin, have hypothesized that species migrated over thousands of years when average ocean temperatures were much colder, probably at some point in geologic time between the Tertiary period and the last ice age 18,000 years ago. Darling's data, however, puts a dent in that theory. The minuscule genetic differences in her "bugs," as she calls them, suggest that the species mingled far more recently.

Today, most scientists think the species travel a deep-water conveyor belt called the thermohaline circulation, the ocean-wide phenomenon responsible for currents such as the Atlantic's Gulf Stream. Because cold water at both poles changes salinity and sinks as it spreads, it forms discrete submarine rivers that descend at the equator and resurface at opposite ends of the planet. Along the way, temperatures only waver between 2 to 4 degrees Celsius, consistent enough for most polar dwellers to survive. The creatures themselves make the journey from one pole to its antipode suspended as larvae or eggs, or as live adults, reproducing over generations on their 9,500-kilometer trek before arriving 400 to 600 years later. To return to their pole of origin it could take another 1,600 years because of prevailing currents.

Besides the enormous travel time, the theory partially refutes bipolarity: It suggests that species may live outside of polar regions but we just haven't found them yet. "It's the awkwardness of how you define something. Is the definition functional or based on lack of data? We know so little about the deep layers of the ocean compared to the surface," Hopcroft says.

The list of bipolars is tentative for another reason: biologists identified most of the species based on morphology, or form and structure. Species that live in similar environments often look identical but can be genetic strangers. "Until you do the genetics you can't know that they're bipolar for sure," Darling says...

Q.8

All of the following evidence supports the passage's explanation of bipolarity being a tentative concept EXCEPT:

- 1 The length of the trek between the two poles
- 2 The speculation that many bipolar species travel as larvae or eggs
- 3 The lack of information about the deep layers of ocean
- 4 The duration of time required to travel from one pole to the other

Solution:

Correct Answer : 2

This is an easy question. The author mentions 1, 3, and 4 as reasons for not diagnosing the species correctly. The length of the trek and the time required have been shown as reasons why some scientists have speculated that these species have been identified.

 **Bookmark**

 **Answer key/Solution**

Option 2 – This is a misleading option. The author says that many such species travel as larvae or eggs. Some also travel as adults. But this is not raised as a problem. It is mentioned to highlight the problem raised by option 4. So, option 2 is the correct choice.

FeedBack

Direction for questions (6-10): Read the given passage and answer the questions that follow.

[...] It's easy to understand how massive humpbacks can swim from Arctic to Antarctic waters, but most of the miniature worms, snails and crustaceans on the researchers list are no bigger than grains of rice. How could tiny creatures adapted for the frigid waters travel 9,500 kilometres through warmer climes to reach the opposite pole?

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Today, most scientists think the species travel a deep-water conveyor belt called the thermohaline circulation, the ocean-wide phenomenon responsible for currents such as the Atlantic's Gulf Stream. Because cold water at both poles changes salinity and sinks as it spreads, it forms discrete submarine rivers that descend at the equator and resurface at opposite ends of the planet. Along the way, temperatures only waver between 2 to 4 degrees Celsius, consistent enough for most polar dwellers to survive. The creatures themselves make the journey from one pole to its antipode suspended as larvae or eggs, or as live adults, reproducing over generations on their 9,500-kilometer trek before arriving 400 to 600 years later. To return to their pole of origin it could take another 1,600 years because of prevailing currents.

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Q.9

The author quotes Kate Darling's research to prove that:

- 1 bipolar species are an evolutionary myth.
 - 2 genetic analysis is the best way to resolve the issue of bipolarity of some species.
 - 3 the debate between scientists and naturalists regarding evolutionary puzzles is now settled.
 - 4 unless genes are involved, the issue of migratory patterns of bipolar species will remain a matter of contention.
-

Solution:**Correct Answer : 2**

The main aim of Kate Darling's research can be found in the last line of the passage. Even in the beginning, the author mentions her research to show that the genetic makeup of some species which were believed to be bipolar has been found to be false. So, the main focus is on the fact that genetic analysis can only resolve this dilemma. So, option 2 is the clear answer.

Bookmark**Answer key/Solution**

Options 1 and 3 can be clearly eliminated.

Option 4 talks about 'genes' which is different from the branch called genetics. So, it is a misleading option.

FeedBack

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Q.10

In the first paragraph, the author emphasises on the tiny size of the creatures in order to:

-
- 1 introduce a comparison between large and tiny creatures who migrate to separate poles.
 - 2 bring forth the issue of the impossibility of minuscule creatures to be able to cross the warmer climates.
 - 3 introduce the deliberation regarding a maritime mystery which continues to fascinate scientists.
 - 4 bring forth the voyage of James Clark Ross who started the debate about the existence of bipolar species.
-

Solution:**Correct Answer : 3**

The main aim of the first paragraph is to introduce the problem known as the 160 year old problem. Only option 3 comes close.

Bookmark**Answer key/Solution**

Option 1 – This is not a relevant option.

Option 2 – The author says that the fact that these tiny creatures are said to travel from one pole to the other is a matter of fascination. The word 'impossibility' can only be speculated but not determined by the data provided in the passage. So, it can be eliminated on logical ground.

Option 4 – This looks close but it is not the focus of the question. The focus is on the consequence of Ross's voyage. So, option 3 is still the better choice.

FeedBack

Direction for questions (11-15): Read the given passage and answer the questions that follow.

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"That nebula outweighs the planets about a thousand to one, so the gas can push the planets around really dramatically," Walsh says. As a result, he realized, the early solar system must have been more like bumper cars than clockwork. He also saw that if he fully embraced the idea of instability and took it to its logical conclusions, he could account for many aspects of the solar system that had previously defied easy explanation: Why is Mars so small? How did the asteroid belt form? And above all, why is Earth's chemical makeup so different than was predicted by the original formation models?

Walsh knit his ideas into a theory he calls the Grand Tack, which creates a startlingly new narrative of how the Earth and other planets formed. At present, Jupiter's orbit is 5.2 times wider than Earth's. It is also sticking to its 11.8-year orbit like a metronome. But according to Walsh, Jupiter actually formed quite a bit farther out and then, during the solar system's

initial 5 million years, executed a series of dramatic swoops. First it spiraled inward to the place where Mars is now (about 1.5 times the Earth-sun distance), as the dense gas in the nebula dragged it toward the sun. Then it migrated out past its current location, yanked by the gravitational influence of the newly formed planet Saturn. The whole process took about 500,000 years—an eternity in human terms, but blazingly fast for the solar system, which is 4.6 billion years old.

So what happens when a planet that size goes on the prowl? "Oh, it raises hell!" Walsh replies. "That's a really big planet and it's moving all over the place. It acts like a giant snowplow and essentially wipes out everything in its way."

Fortunately for us, Earth had not yet formed when Jupiter was on the move; if it had, our planet might have plunged into the sun or spun off into dark oblivion. The giant planet's influence on the inner solar system, where we live, was more indirect. Most of the action happened on the outbound track, when Jupiter rammed through thick swarms of icy comets and asteroids. That snowplow effect sent those water-rich objects raining down on Earth just as it was beginning to grow. "The bulk of the water that we see on Earth is a result of the scattering from Jupiter's outward migration," Walsh says. Whenever you take a swim, or just take a drink, you are benefitting from the solar system's foundational instability. [...]

Q.11

The main objective of the passage is to:

- 1 highlight the contribution of Jupiter in making our planet habitable.
- 2 establish that the inherent cosmic chaos of the solar system is a boon to the planetary bodies.
- 3 provide evidence that refutes the theory that our universe will always remain stable.
- 4 discuss the possibility of an alternate theory to our accepted evolutionary model.



Bookmark

Answer key/Solution

Solution:**Correct Answer : 4****Your Answer : 4**

The first paragraph of the passage very clearly introduces the main idea of the passage. The beginning of the second para makes it clearer. Our understanding of the creation of the universe or solar system is currently based on the mathematical models. These models don't show the complete picture as the system is governed by an inherent chaos. So, option 4 is the correct choice.

Option 1 – It is too narrow.

Option 2 – The passage states that due to this chaos many planetary bodies are destroyed. So, this can't be a fact. It is also not the main idea of the passage.

Option 3 – This again is a narrow option. The focus is not on the longevity of our universe. It is about how our understanding of its formation is misleading.

FeedBack

Direction for questions (11-15): Read the given passage and answer the questions that follow.

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Q.12

Based on the information in the passage, we can infer that, Jupiter as a planet:

- 1 was important for the formation of Saturn.
- 2 is the reason why Mars is so small.
- 3 affected the formation of the belt between Mars and Earth.
- 4 travelled a very long distance to acquire a gravitational field.



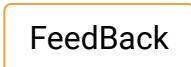
Solution:**Correct Answer : 3****Your Answer : 3****This is an easy question as the options are easy to eliminate.****Refer to the portion in the passage that talks about Jupiter.** **Bookmark** **Answer key/Solution**

Option 1 – The reverse is true. Saturn pulled Jupiter back with the former's gravitational force. So, this is a misleading option.

Option 2 – This can't be supported by the information provided in the passage.

Option 3 – This is correct. Due to Jupiter's outbound movement, Earth was affected. So, indirectly, the belt between Mars and Earth should have been affected too.

Option 4 – It is again a misleading option. The passage doesn't say when Jupiter acquired a gravitational field.

 **FeedBack**

Direction for questions (11-15): Read the given passage and answer the questions that follow.

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Q.13

Based on the information provided in the passage, we can conclude that:

- 1 infant planets behave more like bumper cars, and not like clocks.
- 2 many cosmic creations are the results of unpredictable chaos.
- 3 Carl Sagan believed that our Earth is more like a star such as a nebula.
- 4 big planets like Jupiter are responsible for the formation of the asteroid belt.



Solution:**Correct Answer : 2****Your Answer : 2****This can be answered by the method of elimination.** **Bookmark** **Answer key/Solution**

Option 1 – This is a vague option as it just quotes a line from the paragraph without the context.

Option 2 – This matches the main idea of the passage. The creation of Jupiter and Earth were clearly the result of chaos. So, this is the correct answer.

Option 3 – Sagan said that we are made from the stuff of stars. It can't be conclusively stated that we are like stars.

Option 4 – This is beyond the scope of the passage as the process of the 'formation of asteroid belt' is not mentioned.

FeedBack

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Q.14

Why does the author state that "instability is our natural state"?

- 1 Because s/he wants to show that Newton was wrong about his evolutionary model.
 - 2 Because s/he wants to show that Sagan and Morbidelli helped correct an evolutionary mistake.
 - 3 Because s/he wants to show that evolutionary theories don't account for the cosmic chaos in describing the original movement of the solar system.
 - 4 Because s/he wants to show that mathematical models are inadequate in explaining the origin of the solar system.
-



Solution:**Correct Answer : 4****Your Answer : 4**

The opening line of the passage most often introduces the main idea of the passage.

 **Bookmark** **Answer key/Solution**

Options 1 and 2 – Proving Newton wrong or praising Sagan and Morbidelli is not the main focus of the author. Their opinions on a particular evolutionary theory is crucial. So, these two options fail to answer the question.

Option 3 – This is partly true. However, it is also hinted that only the mathematical models don't consider chaos. Modern theories (like those of Sagan and others) do try to understand this instability. So, this can't be the answer.

Option 4 is the correct answer as it is the closest to the main idea of the passage.

 **FeedBack**

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“That nebula outweighs the planets about a thousand to one, so the gas can push the planets around really dramatically,” Walsh says. As a result, he realized, the early solar system must have been more like bumper cars than clockwork. He also saw that if he fully embraced the idea of instability and took it to its logical conclusions, he could account for many aspects of the solar system that had previously defied easy explanation: Why is Mars so small? How did the asteroid belt form? And above all, why is Earth’s chemical makeup so different than was predicted by the original formation models?

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Walsh, Jupiter actually formed quite a bit farther out and then, during the solar system's initial 5 million years, executed a series of dramatic swoops. First it spiraled inward to the place where Mars is now (about 1.5 times the Earth-sun distance), as the dense gas in the nebula dragged it toward the sun. Then it migrated out past its current location, yanked by the gravitational influence of the newly formed planet Saturn. The whole process took about 500,000 years—an eternity in human terms, but blazingly fast for the solar system, which is 4.6 billion years old.

So what happens when a planet that size goes on the prowl? "Oh, it raises hell!" Walsh replies. "That's a really big planet and it's moving all over the place. It acts like a giant snowplow and essentially wipes out everything in its way."

Fortunately for us, Earth had not yet formed when Jupiter was on the move; if it had, our planet might have plunged into the sun or spun off into dark oblivion. The giant planet's influence on the inner solar system, where we live, was more indirect. Most of the action happened on the outbound track, when Jupiter rammed through thick swarms of icy comets and asteroids. That snowplow effect sent those water-rich objects raining down on Earth just as it was beginning to grow. "The bulk of the water that we see on Earth is a result of the scattering from Jupiter's outward migration," Walsh says. Whenever you take a swim, or just take a drink, you are benefitting from the solar system's foundational instability. [...]

Q.15

The phrase "executed a series of dramatic swoops" is used to explain:

- 1 **Walsh's Grand Tack theory.**
- 2 **the process by which Jupiter came to stick to its 11.8-year orbit.**
- 3 **that Jupiter's inward spiral was less eventful than its outward journey.**
- 4 **the significance of the time taken for Jupiter to stabilise.**



Solution:

Correct Answer : 1

Your Answer : 1

This phrase is mentioned in the paragraph whose main focus is Walsh's theory. So, option 1 is the correct answer.

Bookmark

Answer key/Solution

Option 2 – This is a misleading option. No such process has been clearly mentioned.

Option 3 – This is factually true but it doesn't justify the use of the phrase.

Option 4 – The author says that the time was actually not that significant. So, this is not the answer.

FeedBack

Direction for questions (16-20): Read the given passage and answer the questions that follow.

Hirsch's theory focuses on what he calls "cultural literacy". He argues that all students need a "core knowledge" so they can develop into better citizens. In one of his books, he lists various facts, phrases and historical events that he believes all young Americans should be aware of, including the Founding Fathers and Adirondack Mountains.

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Moreover, teaching a prescribed "core knowledge" instils a culture of conformity and an insipid, passive absorption of carefully selected knowledge among young people. It doesn't encourage students to think critically about society – nor does it fire a desire to challenge the views they are taught. Schools that adopt this method become nothing more than pipelines producing robotic citizens, perpetuating the vision of a capitalist society and consequently preventing social mobility.

Social stagnation through education is epitomised by the recent influx of Teach First practitioners. The narcissistic notion that we can help underprivileged students by providing them with teachers who are privileged young graduates from elite institutions is a mistake. This outlook pays no attention to – and fails to value – the backgrounds and identities of the students it intends to save. Rather it continues the problem by trying to inflict the values and beliefs of the dominant social class on others.

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freedom that provokes students to fight against the corridors of power and enforce equality for themselves and others.

Critical pedagogy is the only way to achieve this. Critical pedagogy isn't a prescriptive set of practices – it's a continuous moral project that enables young people to develop a social awareness of freedom. This pedagogy connects classroom learning with the experiences, histories and resources that every student brings to their school. It allows students to understand that with knowledge comes power; the power that can enable young people to do something differently in their moment in time and take positive and constructive action.

Q.16

Which of the following would most strongly challenge the author's view on the Teach First practitioners?

- 1 Many of the Teach First practitioners come from ethnically minor groups.**
 - 2 Teach First mostly hires graduates who have got a background in dealing with underprivileged people.**
 - 3 Teach First has a strong orientation program that helps the elite young graduates understand the background of the class they would be teaching.**
 - 4 Many of the teachers volunteering for Teach First have advanced degree in minority studies.**
-

Solution:**Correct Answer : 2**

This question asks us to challenge the assumption behind the author's criticism of the Teach First practitioners. The author states the following two points:

- a. These teachers are young graduates from elite schools.
- b. They are privileged.

 **Bookmark**
 **Answer key/Solution**

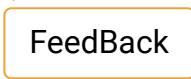
The author simply assumes that these graduates are privileged because of their alma mater and, as a result, they are unaware of the challenges faced by students who belong to minority or working class communities. The negation of this assumption will result in the weakening of the author's argument.

Option 1 – Ethnically minor group doesn't mean awareness of 'economic struggle'. So, this may weaken but it is not a strong option.

Option 2 – This will show that the teachers hired are more than capable of understanding the requirement of the underprivileged students. So, this is the correct option.

Option 3 – An orientation program may or may not be effective. This is not as strong an option as option 2.

Option 4 – Degree in a subject may not translate into capability to handle ground situations. So, this is not the right answer.

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Q.17

On the basis of the passage, which of the following teacher is least likely to be successful in imparting critical pedagogy?

- 1 Someone who believes that youngsters should be allowed the process of self-discovery
- 2 Someone who advocates that education should help a student understand the importance of his/her background

3 Someone who espouses the cause of challenging the capitalist status quo

4 Someone who challenges the notion that social truths can be understood by students

Solution:

Correct Answer : 4

The main problem identified by the author is that the current education system may not encourage the students to think for themselves. Critical pedagogy is suggested as the solution.

Options 1, 2, and 3 talk about teachers who practice at least part of the critical pedagogy.

 **Bookmark**

 **Answer key/Solution**

Option 4 is the answer. It is a misleading option. If a teacher doesn't believe that social truths can ever be understood by students, s/he would not encourage the students to try to find the truth. So, this teacher would be the least effective in terms of the standards set by the author.

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Q.18

The author criticises Hirsh for all of the following reasons EXCEPT that:

-
- 1 he wanted to teach all young Americans about the Founding Fathers and Adirondack Mountains.
 - 2 his ideology caters to the vision of the white middle class.
 - 3 the core knowledge that he advocated for students to become better citizens propagates racial or cultural discrimination.
 - 4 his vision didn't discourage racial and gender based bias.
-

Solution:**Correct Answer : 1**

This is a very easy question. The author clearly mentions options 2, 3, and 4 in the first two paragraphs.

 **Bookmark** **Answer key/Solution**

Option 1 – This is misleading. The author doesn't say that what Hirsh wants students to know is inherently wrong. The problem is the limitation or the scope of the teaching. So, learning about American history may or may not be bad. Only reading one type of history is considered inadequate. So, this is the correct answer.

FeedBack

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Q.19

Which of the following most comprehensively describes the effect of "social stagnation through education"?

-
- 1 The perpetuation of the self-serving notion that the elites can help the underprivileged students in acquiring a dynamic identity**
 - 2 The instilling of a culture of orthodoxy and a bland absorption of knowledge**
 - 3 The spreading of a culture of creating students who lack the ability to question the existing hegemony**
 - 4 The creation of unimaginative students who blindly conform to capitalist views and social mobility**
-

Solution:**Correct Answer : 3**

The most comprehensive answer is option 3 which reiterates the main point of the passage: the inability of our current education system in developing critical thinking ability in students.

 **Bookmark**
 **Answer key/Solution**

Option 1 – This is partly true. But it doesn't mention the core problem.

Option 2 – This is mentioned in a different context in the passage. This is also the cause, not the impact, of social stagnation.

Option 4 – This is a very close option. The only problem is that these students are indifferent to 'social mobility'. They don't conform to the same. So, this is a trap option.

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Q.20

As per the author, the main purpose of education should be:

-
- 1 to help young kids assert their individuality.**
 - 2 to propel a student to critically think for himself/herself.**
 - 3 to raise citizens who challenge any kind of established knowledge.**
 - 4 to assist young students to become more socially responsible students.**
-

Solution:**Correct Answer : 2**

It's the main idea of the passage. Refer to the last paragraph of the passage and also the explanation of Q16. The main aim of the author is to encourage schools and teachers to impart critical pedagogy. So, option 2 is the answer.

 **Bookmark** **Answer key/Solution****Option 1 is partly correct.**

Option 3 is wrong as the author doesn't say that these students will become citizens who will not believe in any established knowledge.

Option 4 is vague and irrelevant. **FeedBack**

Direction for questions (21-24): Read the given passage and answer the questions that follow.

[...] Nor is India rising very fast on the report's Human Development index, where it ranks 127, just two rungs above Myanmar and more than 70 below Cuba and Mexico. Despite a recent reduction in poverty levels, nearly 380 million Indians still live on less than a dollar a day.

Malnutrition affects half of all children in India, and there is little sign that they are being helped by the country's market reforms, which have focused on creating private wealth rather than expanding access to health care and education. Despite the country's growing economy, 2.5 million Indian children die annually, accounting for one out of every five child deaths worldwide; and facilities for primary education have collapsed in large parts of the country. In the countryside, where 70 percent of India's population lives, the government has reported that about 100,000 farmers committed suicide in the last decade.

Feeding on the resentment of those left behind by the urban-oriented economic growth, communist insurgencies have erupted in some of the most populous and poorest parts of north and central India. The Indian government no longer effectively controls many of the districts where communists battle landlords and police, imposing a harsh form of justice on a largely hapless rural population.

The potential for conflict – among castes as well as classes – also grows in urban areas, where India's cruel social and economic disparities are as evident as its new prosperity. The main reason for this is that India's economic growth has been largely jobless. Only 1.3 million out of a working population of 400 million are employed in the information technology and business processing industries that make up the so-called new economy.

No labour-intensive manufacturing boom of the kind that powered the economic growth of almost every developed and developing country in the world has yet occurred in India. Unlike China, India still imports more than it exports. This means that as 70 million more people enter the work force in the next five years, most of them without the skills required for the new economy, unemployment and inequality could provoke even more social instability than they have already.

The insurgency in Kashmir, which has claimed some 80,000 lives in the last decade and a half, and the strength of violent communist militants across India, hint that regular elections may not be enough to contain the frustration and rage of millions of have-nots, or to shield them from the temptations of religious and ideological extremism.

Many serious problems confront India. They are unlikely to be solved as long as the wealthy, both inside and outside the country, choose to believe their own complacent myths.

Q.21

In the context of the passage, we can infer that 'complacent myths' (last paragraph) refer to:

- 1 the one-sided realisation that India is developing.

- 2 the lack of understanding about the non-inclusive growth in India.
- 3 the realisation that many of India's serious problems are yet to be solved.
- 4 the notion that everyone in India faces disparity on the basis of economic status.

X

Solution:

Correct Answer : 2

Your Answer : 4

This is surely an easy to read passage. The ideas presented are familiar.

 **Bookmark**

 **Answer key/Solution**

The last line of the passage mentions these myths. The author doesn't explain them. Contextually, we can infer that these myths have to be related to the lack of financial inclusion in the country.

So, option 3 can be directly eliminated. It says that there is a realisation. The lack of the realisation is the myth.

Option 1 – It is a vague option. This one sided notion has not angered the public or the have-nots.

Option 4 – 'Everyone' makes this option logically incorrect.

Option 2 is the correct answer. It, in a way, mentions the central problem raised by the author: many in India are left out of the economic development which is more skewed in favour of urban areas.

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Q.22

As per the passage, all of the following would help India improve its Human Development Index EXCEPT:

- 1 Providing better healthcare to the rural poor

2 Revamping the primary education sector

3 Introducing a ground level programme to curb malnutrition in rural areas

4 Initiating steps to convert India into an export based economy



Solution:

Correct Answer : 4

Your Answer : 4

From the context of the passage, we can infer that the upliftment of the poor and the underprivileged will help India improve its performance in the ranking system.



[Answer key/Solution](#)

[FeedBack](#)

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Q.23

Why, according to the author, have communist insurgencies flared up in India?

- 1 Because a large number of skilled Indian workforce is without a proper job.

- 2 Because the Indian government has failed to provide justice to a large number of rural poor.
- 3 Because many are angered by the skewed economic growth in the country
- 4 Because there is a conflict of class and caste in urban areas in India.

Solution:

Correct Answer : 3

Refer to the lines: "Feeding on the resentment of those left behind by the urban-oriented economic growth, communist insurgencies have erupted in some of the most populous and poorest parts of north and central India." Option 3 is the clear answer.

 **Bookmark**

 **Answer key/Solution**

Options 1 and 2 are partly correct but they can't be factually verified.

Option 4 is too generic to answer this specific question.

[FeedBack](#)

Direction for questions (21-24): Read the given passage and answer the questions that follow.

[...] Nor is India rising very fast on the report's Human Development index, where it ranks 127, just two rungs above Myanmar and more than 70 below Cuba and Mexico. Despite a recent reduction in poverty levels, nearly 380 million Indians still live on less than a dollar a day.

Malnutrition affects half of all children in India, and there is little sign that they are being helped by the country's market reforms, which have focused on creating private wealth rather than expanding access to health care and education. Despite the country's growing economy, 2.5 million Indian children die annually, accounting for one out of every five child deaths worldwide; and facilities for primary education have collapsed in large parts of the country. In the countryside, where 70 percent of India's population lives, the government has reported that about 100,000 farmers committed suicide in the last decade.

Feeding on the resentment of those left behind by the urban-oriented economic growth, communist insurgencies have erupted in some of the most populous and poorest parts of north and central India. The Indian government no longer effectively controls many of the districts where communists battle landlords and police, imposing a harsh form of justice on a largely hapless rural population.

The potential for conflict – among castes as well as classes – also grows in urban areas, where India's cruel social and economic disparities are as evident as its new prosperity. The main reason for this is that India's economic growth has been largely jobless. Only 1.3 million out of a working population of 400 million are employed in the information technology and business processing industries that make up the so-called new economy.

No labour-intensive manufacturing boom of the kind that powered the economic growth of almost every developed and developing country in the world has yet occurred in India. Unlike China, India still imports more than it exports. This means that as 70 million more people enter the work force in the next five years, most of them without the skills required for the new economy, unemployment and inequality could provoke even more social instability than they have already.

The insurgency in Kashmir, which has claimed some 80,000 lives in the last decade and a half, and the strength of violent communist militants across India, hint that regular elections may not be enough to contain the frustration and rage of millions of have-nots, or to shield them from the temptations of religious and ideological extremism.

Many serious problems confront India. They are unlikely to be solved as long as the wealthy, both inside and outside the country, choose to believe their own complacent myths.

Q.24

Which of the following, if true, would undermine the passage's main argument?

- 1 With every passing day, a greater number of Indians are participating in the democratic electoral process of the country.

- 2 The new government in India has taken a number of steps to promote social and financial inclusion in the country.
- 3 The government has been able to curb communist emergencies and other social conflicts with increasing efficiency.
- 4 The Indian diaspora is expected to continue to thrive which will only add more jobs to the Indian economy.

X**Solution:****Correct Answer : 2****Your Answer : 1**

As the main issue of the passage is the lack of financial inclusion, option 2, if true, would counter the author's argument most convincingly.

Bookmark**Answer key/Solution**

Options 1, 3, and 4 are either vague or weak.

FeedBack**Q.25**

Directions for question (25): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

An ethical overview is meant to be more than just another bureaucratic hurdle in doing research; it is a guarantee that all research is held to certain minimum standards and, particularly for human patient research, it is an assurance that the participants' welfare is being looked after and that the risk to them is minimized. However, there is very little oversight of how well this overview meets its stated aims, especially for human research. Moreover, what little data exists points to some worrying inconsistencies. Given the increasingly knotty ethical challenges that neuroscience advances present, it is critical that we try to improve this situation by encouraging review boards to make their decision-making process more open and by encouraging greater cross-talk between different ethical review boards.

- 1 By encouraging review boards to share their process more openly, we can ensure that the humans participating in researches are saved from risk and the benefit is maximized for the entire community.
- 2 The main aim of ethical research is not being met properly; hence, there is a need to encourage greater transparency to safeguard the welfare of the patients in research.

- 3 There is a need for us to share our findings, especially in the field of human research, so that the benefit is extended to all without any discrimination.
- 4 The modern day approach to ethical research has failed at multiple levels, thereby jeopardizing the patients and making the process less open.

Solution:

Correct Answer : 2

The main points of the paragraph are: the problem in implementing ethical overview, what should be the ethics, and how increased data sharing will help improve the situation.

 **Bookmark**

 **Answer key/Solution**

Option 2 is the only option that clearly mentions all these points.

Option 1 – This only mentions the second and third points.

Option 3 – This mentions only the third point.

Option 4 – It mentions the first two points.

FeedBack

Q.26

Directions for question (26): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

City officials should not look to relocate people, but rather they should improve and secure existing areas of informal housing – and, critically, they need to involve communities in the process. The conventional approach in too many places is to displace poor residents and destroy their homes to make way for new development. But this has an adverse effect on these populations. Many informal settlements and slums have strong social fabrics, home to people with economic and cultural ties to one another. These elements contribute to the kind of well-functioning neighbourhoods that define great cities and could be harnessed by to accommodate people where they already are.

- 1 The need of the hour is not to relocate people in a city, but to make sure that their existing social fabrics, and economic and cultural ties are strengthened.
- 2 City officials must critically examine their method of displacing poor residents without involving the communities in the process.
- 3 Instead of relocating people or displace the poor residents in cities, the city officials can bolster the existing informal housing areas to build stronger neighbourhoods.

- 4 While tackling the problem of urban housing, city officials can do better by not following the conventional approach of displacing the poor to accommodate the rich, and, thus, build safer neighbourhoods.



Solution:

Correct Answer : 3

Your Answer : 3

There are two main points in this paragraph:

- a) How city officials should strengthen informal housing to tackle the problem of urban housing
- b) The importance and features of informal housing

Only option 3 mentions both the points.

Bookmark

Answer key/Solution

Option 1 – This is a generic option. It doesn't say anything about informal housing.

Option 2 – This goes against the paragraph as the author clearly says that city officials must involve the local communities.

Option 4 – It mentions point A. But it doesn't mention point B.

FeedBack

Q.27

Directions for question (27): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Perhaps it is permissible to dream of a future when men will know no other use of their freedom than this free unfurling of itself; constructive activity would be possible for all; each one would be able to aim positively through his projects at his own future. But today the fact is that there are men who can justify their life only by a negative action. As we have already seen, every man transcends himself. But it happens that this transcendence is condemned to fall uselessly back upon itself because it is cut off from its goals. That is what defines a situation of oppression.

1 Every man is condemned to fail unless he scales the boundary of constructive activity.

2 In future, it will be possible for men to focus on constructive activity, but right now it looks like a utopian dream.

3 A situation of oppression arises when a man transcends himself in justifying his life by a negative action, and this tendency needs to change.

4 It is desirable for a man to justify his life through constructive activity, not by negative action that ultimately hurts him.



Solution:

Correct Answer : 4

Your Answer : 4

The main points of the author in the paragraph are:

- a) What is constructive activity and how it is hypothetically possible
- b) What is today's situation with regards to constructive activity
- c) What is needed is a kind of self-transcendence

Option 4 mentions all of these. So, it is the correct answer.

Bookmark

Answer key/Solution

Option 1 – This partially correct. It reads as an extreme conclusion.

Option 2 – It only mentions point A.

Option 3 – It has a distorted meaning as it says that transcendence process needs to change.

FeedBack

Q.28

Directions for question (28): 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. This session, led by the partner in charge of the audit, is designed to provide a time for the audit team to consider how the company could commit fraud.
2. Often, a fraud specialist attends the meeting to provide insight into other frauds committed by similar companies or industries and help identify the client's risk factors.
3. Under generally accepted auditing standards, audit engagement teams must hold a fraud brainstorming session at the beginning of the audit.
4. Further, the brainstorming meeting is used to set a tone of professional scepticism in the audit.



Solution:**Correct Answer : 3142****Your Answer : 3214**

The first sentence starts with 'this session'. It can only refer to the

'brainstorming session' mentioned in 3. So, 31 is a mandatory pair.

'Further' and 'professional scepticism' add to the features of this brainstorming meeting. So, 4 follows 3 and 1.

2 has to come after 4. 'Fraud specialist' can help set the tone of 'professional scepticism in audit'. So, 42 is a mandatory pair.

Hence, the correct order is 3142.

[FeedBack](#) [Bookmark](#) [Answer key/Solution](#)**Q.29**

Directions for question (29): 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. In home health care, annual expenditure growth rates went from more than 10 percent in the 1980s and early 1990s to minus 3 percent between 1998 and 1999.
2. The current "long-term care system" is built around private providers of services—some non-profit and some for-profit.
3. When resources expand, new services develop quickly, and when resources contract, capacity can also shrink quickly.
4. Of course, expansion and contraction of nursing home beds respond more slowly to market forces because of the durable capital aspect of nursing home care.



Solution:**Correct Answer : 2314****Your Answer : 2314**

2 and 3 create a mandatory pair. 3 explains how the 'long term care system' works. This care system is defined by 2.

Bookmark**Answer key/Solution**

1 is provided as an example to further the idea presented in 3. 4 has to come after 1 as it gives a new view to the ideas presented in 3 and 1.

So, 2314 is the correct order.

FeedBack**Q.30**

Directions for question (30): 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 CEOs of America's largest companies make something like 300 times as much as the typical worker.**
- 2. These are the people, remember, who sweat and toil to make our food; the people who care for our family members or ourselves when we can no longer walk or exercise or shower or take our medicine or use the bathroom on our own.**
- 3. Is anyone willing to defend the idea that any human being is really able to provide society with labour that is '300 times' more useful than another's?**
- 4. If we made a world where opportunity is abundant and prosperity is shared, would the rejiggering of resources and money flows still leave room for billionaires to become billionaires?**

X**Solution:****Correct Answer : 4132****Your Answer : 3142**

The opening sentence has to be 4 as it is the broadest in theme.

There are two questions. But these two are not directly related.

Bookmark**Answer key/Solution**

'300 times' in 3 shows that it should follow 1. So, 31 is a pair. 2 has to come at the end of the paragraph.

So, 4132 is the correct sequence.

FeedBack

Q.31

Directions for question (31): 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. But that was precisely what most Americans, at least in the North, came to believe.
2. Southerners and would-be aristocrats in the North vainly tried to argue that Jefferson could never have meant that all men were literally equal and that they all had equal rights.
3. Within decades following the Declaration of Independence the United States became one of the most egalitarian nations the world has ever seen, and it remains so today, regardless of its great disparities of wealth.
4. Some came to say not just white men but black men had these equal rights; and some eventually went so far as to say that not just men but women as well had these equal rights.



Solution:

Correct Answer : 2143

Your Answer : 2143

'But' in 1 shows that it is thematically opposite to 2. So, 21 is a pair.

Bookmark

Answer key/Solution

43 is a pair as 3 talks about the result of 4. So, the correct order is 2143.

FeedBack

Q.32

Directions for question (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. For short-term projections, the biggest impact comes from an existing population, particularly women in childbearing ages.
2. Last month, the United Nations released the 26th revision of World Population Prospects and forecast that India will overtake China as the most populous country by 2027.
3. Population projections are developed using existing population and by adjusting for expected births, deaths and migration.
4. Thus, even if India could institute a policy that reduces its fertility rate to the Chinese level, India will overtake China as the most populous country.
5. Not a news really! We have known for a long time that India is destined to be the most populous country in the world.

**Solution:****Correct Answer : 4****Your Answer : 31425****The correct order is 2531. This is an easy question. 1, 2, 3, and 5****talk about population problem in India. All these sentences****highlight the problem.** **Bookmark** **Answer key/Solution**

Sentence 4 starts with 'thus' and then shows how India will overtake China despite trying to reduce fertility. This conclusion can't be derived from the remaining four sentences. So, 4 is the odd one out.

FeedBack**Q.33**

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

- 1. As the liquid metal in the outer core moves, it generates electric currents, which lead to a magnetic field.**
- 2. This positive feedback loop is called the geomagnetic dynamo.**
- 3. The ability to see Earth's magnetic field, known as magnetoreception, relies on the presence of specifically the blue wavelength of light.**
- 4. The continual movement of liquid metal through this magnetic field creates stronger electrical currents and thus a stronger magnetic field.**
- 5. The Earth's magnetic field is a result of the movement or convection of liquid iron in the outer core.**



Solution:**Correct Answer : 3****Your Answer : 3****The correct order is 5142.** **Bookmark** **Answer key/Solution**

142 create a strong pair. 'This...loop' in 2 refers to 1 and 4. So, these three sentences belong to the paragraph.

Now the choice is left between 3 and 5. The theme of the paragraph is Earth's magnetic field. The ability to perceive it is a new topic. So, 3 is the odd one out. 5 will be the opening sentence of the paragraph.

FeedBack**Q.34**

Directions for question (34): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

- 1. Anxiety disorders are the most prevalent mental health conditions.**
- 2. Anxiety disorders can be effectively treated with psychopharmacological and cognitive-behavioural interventions.**
- 3. Both dimensional and structural diagnoses have been used in clinical treatment and research.**
- 4. The diagnoses of anxiety disorders are being continuously revised.**
- 5. Although they are less visible than schizophrenia, depression, and bipolar disorder, they can be just as disabling.**

**Solution:****Correct Answer : 2****Your Answer : 2****The correct order is 1543. This is a tricky question. We need to find a few pairs to eliminate sentences.** **Bookmark** **Answer key/Solution**

15 is a pair – 'They' in 5 refers to the disorders in 1. So, 15 is a pair. Hence, both the sentences belong to the paragraph.

Sentences 3 and 4 talk about diagnosis of anxiety disorders. Sentence 2 talks about the treatment. So, 2 has to be the odd one out.

FeedBack

Sec 2

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

Six friends – Anita, Babita, Cyra, Deenu, Eshita and Farmin decided to go for shopping to purchase items viz. T-shirt, bag, ring, shoes and wristband having cost as Rs.1100 / piece , Rs.1800 / piece, Rs.400 / piece, Rs.4500 / pair and Rs.300 / piece respectively. Together, they purchased total 22 items and spent Rs.2900, Rs.3200, Rs.4700, Rs.5500, Rs.5600 and Rs.7100 in any order. These friends belong to six different places of Delhi-NCR – Saket, Vikaspuri, Lajpat Nagar, Ghaziabad, Noida and Preet Vihar – not necessarily in that order. The following information is also known:

- I. The number of items purchased by each friend was neither less than 2 nor more than 4. At least 3 items of each type were purchased by six of them put together.
- II. The amount spent by Babita who had not purchased wrist band was less than that by the friend who was from Lajpat Nagar but more than that by the friend from Saket.
- III. Eshita from Vikaspuri purchased single piece (or pair) of any type of items.
- IV. The friend, who had spent the most, had not purchased T-shirt. Friend from Noida had purchased shoes.
- V. Farmin was from Ghaziabad. The absolute difference between the amount spent by Cyra and Deenu was more than Rs. 1500.
- VI. Amount spent by Cyra was more than that by Babita but less than that by the friend who belongs to Noida.

Q.35

How many T-shirts was/were purchased by the friend who belonged to Saket?

1 0

2 1

3 2

4 Either (2) or (3)

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

Any friend can purchase 2, 3 or 4 items.

The possible combination for expenditure of Rs. 2,900, Rs. 3,200, Rs. 4,700, Rs. 5,500, Rs. 5,600 and Rs. 7,100 are as following:

- 2900 → 1100 + 1800 (Not possible as explained below)
- 300 + 400 + 400 + 1800 (Not possible as explained below)
- 300 + 400 + 1100 + 1100

- 3200 = 300 + 1100 + 1800
- 4700 = 1100 + 1800 + 1800
- 5500 = 300 + 300 + 400 + 4500

- 5600 → 1100 + 4500 (Not possible as explained below)
- 300 + 400 + 400 + 4500

- 7100 → 400 + 400 + 1800 + 4500
- 400 + 1100 + 1100 + 4500 (Not possible as per statement IV)

As, total 22 items were purchased, the friend who had spent Rs. 2,900 and Rs. 5,600 must have purchased four items each. From statement III and above possible combinations; we can conclude that Eshita must have spent Rs. 3,200.

From statement I; As, at least 3 items of each type were purchased we can conclude that the possible combination for Rs. 2,900 is 300 + 400 + 1100 + 1100 because if we considered the combination – 300 + 400 + 400 + 1800, then minimum required quantity for T-shirt will not be fulfilled.

From statement II and on the basis of above possible combinations, we may say that Babita would have spent Rs. 4,700 and the friend from Saket had purchased for Rs. 2,900.

From statement VI; Amount spent by Cyra may be either Rs. 5,500 or Rs. 5,600.

Further observations lead to the following four possibilities.

Name	Place	Expenditure
Anita	Noida	Rs.7100
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5600
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5500

Name	Place	Expenditure
Anita	Noida	Rs.5600
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.7100

Name	Place	Expenditure
Anita	Saket	Rs.2900
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Noida	Rs.7100
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

Name	Place	Expenditure
Anita	Noida	Rs.7100
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

Two T-shirts were purchased by the friend who belonged to Saket.

FeedBack

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

Six friends – Anita, Babita, Cyra, Deenu, Eshita and Farmin decided to go for shopping to purchase items viz. T-shirt, bag, ring, shoes and wristband having cost as Rs.1100 / piece , Rs.1800 / piece, Rs.400 / piece, Rs.4500 / pair and Rs.300 / piece respectively. Together, they purchased total 22 items and spent Rs.2900, Rs.3200, Rs.4700, Rs.5500, Rs.5600 and Rs.7100 in any order. These friends belong to six different places of Delhi-NCR – Saket, Vikaspuri, Lajpat Nagar, Ghaziabad, Noida and Preet Vihar – not necessarily in that order. The following information is also known:

- I. The number of items purchased by each friend was neither less than 2 nor more than 4. At least 3 items of each type were purchased by six of them put together.
- II. The amount spent by Babita who had not purchased wrist band was less than that by the friend who was from Lajpat Nagar but more than that by the friend from Saket.
- III. Eshita from Vikaspuri purchased single piece (or pair) of any type of items.
- IV. The friend, who had spent the most, had not purchased T-shirt. Friend from Noida had purchased shoes.
- V. Farmin was from Ghaziabad. The absolute difference between the amount spent by Cyra and Deenu was more than Rs.1500.
- VI. Amount spent by Cyra was more than that by Babita but less than that by the friend who belongs to Noida.

Q.36

How many of the following combination(s) is/are definitely correct?

- I. Anita – Saket – 2 T-shirts, 1 ring and 1 wrist band.
- II. Eshita – Vikaspuri – Rs.3200
- III. Cyra – Lajpat Nagar – 1 shoe, 2 rings and 1 wristband
- IV. Babita – Noida – Rs.4700

1 1

2 2

3 3

4 4

Solution:**Correct Answer : 1****Bookmark****Answer key/Solution**

Any friend can purchase 2, 3 or 4 items.

The possible combination for expenditure of Rs. 2,900, Rs. 3,200, Rs. 4,700, Rs. 5,500, Rs. 5,600 and Rs. 7,100 are as following:

- 2900 → 1100 + 1800 (Not possible as explained below)
- 300 + 400 + 400 + 1800 (Not possible as explained below)
- 300 + 400 + 1100 + 1100

- 3200 = 300 + 1100 + 1800
- 4700 = 1100 + 1800 + 1800
- 5500 = 300 + 300 + 400 + 4500

- 5600 → 1100 + 4500 (Not possible as explained below)
- 300 + 400 + 400 + 4500

- 7100 → 400 + 400 + 1800 + 4500
- 400 + 1100 + 1100 + 4500 (Not possible as per statement IV)

As, total 22 items were purchased, the friend who had spent Rs. 2,900 and Rs. 5,600 must have purchased four items each. From statement III and above possible combinations; we can conclude that Eshita must have spent Rs. 3,200.

From statement I; As, at least 3 items of each type were purchased we can conclude that the possible combination for Rs. 2,900 is 300 + 400 + 1100 + 1100 because if we considered the combination – 300 + 400 + 400 + 1800, then minimum required quantity for T-shirt will not be fulfilled.

From statement II and on the basis of above possible combinations, we may say that Babita would have spent Rs. 4,700 and the friend from Saket had purchased for Rs. 2,900.

From statement VI; Amount spent by Cyra may be either Rs. 5,500 or Rs. 5,600.

Further observations lead to the following four possibilities.

Name	Place	Expenditure
Anita	Noida	Rs.7100
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5600
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5500

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Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.7100

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Deenu	Noida	Rs.7100
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

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Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

Statement II is definitely correct. Hence, answer is 1.

FeedBack

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

Six friends – Anita, Babita, Cyra, Deenu, Eshita and Farmin decided to go for shopping to purchase items viz. T-shirt, bag, ring, shoes and wristband having cost as Rs.1100 / piece , Rs.1800 / piece, Rs.400 / piece, Rs.4500 / pair and Rs.300 / piece respectively. Together, they purchased total 22 items and spent Rs.2900, Rs.3200, Rs.4700, Rs.5500, Rs.5600 and Rs.7100 in any order. These friends belong to six different places of Delhi-NCR – Saket, Vikaspuri, Lajpat Nagar, Ghaziabad, Noida and Preet Vihar – not necessarily in that order. The following information is also known:

- I. The number of items purchased by each friend was neither less than 2 nor more than 4. At least 3 items of each type were purchased by six of them put together.
- II. The amount spent by Babita who had not purchased wrist band was less than that by the friend who was from Lajpat Nagar but more than that by the friend from Saket.
- III. Eshita from Vikaspuri purchased single piece (or pair) of any type of items.
- IV. The friend, who had spent the most, had not purchased T-shirt. Friend from Noida had purchased shoes.
- V. Farmin was from Ghaziabad. The absolute difference between the amount spent by Cyra and Deenu was more than Rs.1500.
- VI. Amount spent by Cyra was more than that by Babita but less than that by the friend who belongs to Noida.

Q.37

The number of items purchased was maximum for

1 Ring

2 Wristband

3 T-shirt

4 Bag

Solution:

Correct Answer : 1

 **Bookmark**

 **Answer key/Solution**

Any friend can purchase 2, 3 or 4 items.

The possible combination for expenditure of Rs. 2,900, Rs. 3,200, Rs. 4,700, Rs. 5,500, Rs. 5,600 and Rs. 7,100 are as following:

2900	→ 1100 + 1800 (Not possible as explained below)
	→ 300 + 400 + 400 + 1800 (Not possible as explained below)
	→ 300 + 400 + 1100 + 1100
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4700 = 1100 + 1800 + 1800	
5500 = 300 + 300 + 400 + 4500	
5600	→ 1100 + 4500 (Not possible as explained below)
	→ 300 + 400 + 400 + 4500
7100	→ 400 + 400 + 1800 + 4500
	→ 400 + 1100 + 1100 + 4500 (Not possible as per statement IV)

As, total 22 items were purchased, the friend who had spent Rs. 2,900 and Rs. 5,600 must have purchased four items each. From statement III and above possible combinations; we can conclude that Eshita must have spent Rs. 3,200.

From statement I; As, at least 3 items of each type were purchased we can conclude that the possible combination for Rs. 2,900 is 300 + 400 + 1100 + 1100 because if we considered the combination – 300 + 400 + 400 + 1800, then minimum required quantity for T-shirt will not be fulfilled.

From statement II and on the basis of above possible combinations, we may say that Babita would have spent Rs. 4,700 and the friend from Saket had purchased for Rs. 2,900.

From statement VI; Amount spent by Cyra may be either Rs. 5,500 or Rs. 5,600.

Further observations lead to the following four possibilities.

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Farmin	Ghaziabad	Rs.5500

Name	Place	Expenditure
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Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.7100

Name	Place	Expenditure
Anita	Saket	Rs.2900
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Noida	Rs.7100
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

Name	Place	Expenditure
Anita	Noida	Rs.7100
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

The number of items purchased was maximum for ring.

FeedBack

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

Six friends – Anita, Babita, Cyra, Deenu, Eshita and Farmin decided to go for shopping to purchase items viz. T-shirt, bag, ring, shoes and wristband having cost as Rs.1100 / piece , Rs.1800 / piece, Rs.400 / piece, Rs.4500 / pair and Rs.300 / piece respectively. Together, they purchased total 22 items and spent Rs.2900, Rs.3200, Rs.4700, Rs.5500, Rs.5600 and Rs.7100 in any order. These friends belong to six different places of Delhi-NCR – Saket, Vikaspuri, Lajpat Nagar, Ghaziabad, Noida and Preet Vihar – not necessarily in that order. The following information is also known:

- I. The number of items purchased by each friend was neither less than 2 nor more than 4. At least 3 items of each type were purchased by six of them put together.
- II. The amount spent by Babita who had not purchased wrist band was less than that by the friend who was from Lajpat Nagar but more than that by the friend from Saket.
- III. Eshita from Vikaspuri purchased single piece (or pair) of any type of items.
- IV. The friend, who had spent the most, had not purchased T-shirt. Friend from Noida had purchased shoes.
- V. Farmin was from Ghaziabad. The absolute difference between the amount spent by Cyra and Deenu was more than Rs.1500.
- VI. Amount spent by Cyra was more than that by Babita but less than that by the friend who belongs to Noida.

Q.38

Which of the following pairs could have spent the least and the maximum amount respectively?

1 Anita and Eshita

2 Farmin and Deenu

3 Anita and Deenu

4 Eshita and Farmin

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

Any friend can purchase 2, 3 or 4 items.

The possible combination for expenditure of Rs. 2,900, Rs. 3,200, Rs. 4,700, Rs. 5,500, Rs. 5,600 and Rs. 7,100 are as following:

- 2900 → 1100 + 1800 (Not possible as explained below)
- 300 + 400 + 400 + 1800 (Not possible as explained below)
- 300 + 400 + 1100 + 1100

- 3200 = 300 + 1100 + 1800
- 4700 = 1100 + 1800 + 1800
- 5500 = 300 + 300 + 400 + 4500

- 5600 → 1100 + 4500 (Not possible as explained below)
- 300 + 400 + 400 + 4500

- 7100 → 400 + 400 + 1800 + 4500
- 400 + 1100 + 1100 + 4500 (Not possible as per statement IV)

As, total 22 items were purchased, the friend who had spent Rs. 2,900 and Rs. 5,600 must have purchased four items each. From statement III and above possible combinations; we can conclude that Eshita must have spent Rs. 3,200.

From statement I; As, at least 3 items of each type were purchased we can conclude that the possible combination for Rs. 2,900 is 300 + 400 + 1100 + 1100 because if we considered the combination – 300 + 400 + 400 + 1800, then minimum required quantity for T-shirt will not be fulfilled.

From statement II and on the basis of above possible combinations, we may say that Babita would have spent Rs. 4,700 and the friend from Saket had purchased for Rs. 2,900.

From statement VI; Amount spent by Cyra may be either Rs. 5,500 or Rs. 5,600.

Further observations lead to the following four possibilities.

Name	Place	Expenditure
Anita	Noida	Rs.7100
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5600
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5500

Name	Place	Expenditure
Anita	Noida	Rs.5600
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.7100

Name	Place	Expenditure
Anita	Saket	Rs.2900
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Noida	Rs.7100
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

Name	Place	Expenditure
Anita	Noida	Rs.7100
Babita	Preet Vihar	Rs.4700
Cyra	Lajpat Nagar	Rs.5500
Deenu	Saket	Rs.2900
Eshita	Vikaspuri	Rs.3200
Farmin	Ghaziabad	Rs.5600

Anita and Deenu could have spent the least and the maximum amount respectively.

FeedBack

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

Every year, a list of most powerful athletes, is published in 'The Forbes'. Only those athletes who won 5 or more medals in the tournaments in a calendar year are included in the ranking list for that year. There were only 60 athletes who have won 5 or more medals in the tournaments happened in the year 2018. The table given below shows the rankings of the 10 athletes, who got ranks among 51 to 60 in the year 2018 and also compares these rankings with their previous year's ranking. Positive change means that the rank has been improved as compared to the previous year. Rank 1 is considered to be the highest rank while rank 60 to be the least, among those top 60 athletes. Nine out of the 10 athletes in the given list were among the rankers from 51 to 60 in the previous year as well.

Rank achieved in 2018	Athletes	Change in rank as compared to previous year's
51	Michael Bloomberg	3
52	Wian Jianling	4
53	Marry Barra	6
54	Moon Jae-In	-2
55	Barnard Arnualt	2
56	Justin Trudeau	-1
57	Robin Li	A
58	Michael Dell	B
59	Mike Pence	C
60	John Roberts	NA

'NA' in the table indicates that the player was not able to make his place in the last year's rankings. A, B, C are the variables assigned to the values not known.

Q.39

What is the maximum possible value of $|A| + |B| + |C|$?

Solution:

Correct Answer : 16

All the three – Robin Li, Michael Dell and Mike Pence have to be ranked from 51 to 60 in the previous year too, since 9 out of the ten people were figured in the list from 51 to 60. Also, Monty was not there in the last year. Hence, the remaining 9 were also there in the same list last year. The ranks left to be allotted are 51, 53, 58 and 60. The maximum value for A is +3, B is -5, and C is -8. Therefore, $|A| + |B| + |C|$ is 16.

Bookmark

Answer key/Solution

FeedBack

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

Every year, a list of most powerful athletes, is published in 'The Forbes'. Only those athletes who won 5 or more medals in the tournaments in a calendar year are included in the ranking list for that year. There were only 60 athletes who have won 5 or more medals in the tournaments happened in the year 2018. The table given below shows the rankings of the 10 athletes, who got ranks among 51 to 60 in the year 2018 and also compares these rankings with their previous year's ranking. Positive change means that the rank has been improved as compared to the previous year. Rank 1 is considered to be the highest rank while rank 60 to be the least, among those top 60 athletes. Nine out of the 10 athletes in the given list were among the rankers from 51 to 60 in the previous year as well.

Rank achieved in 2018	Athletes	Change in rank as compared to previous year's
51	Michael Bloomberg	3
52	Wian Jianling	4
53	Marry Barra	6
54	Moon Jae-In	-2
55	Barnard Arnault	2
56	Justin Trudeau	-1
57	Robin Li	A
58	Michael Dell	B
59	Mike Pence	C
60	John Roberts	NA

'NA' in the table indicates that the player was not able to make his place in the last year's rankings. A, B, C are the variables assigned to the values not known.

Q.40

The number of athletes who have definitely improved their rankings as compared to their last year's ranking, out of the given ten athletes except John Roberts, is

Solution:

Correct Answer : 4

Two among Robin Li, Michael Dell and Mike Pence must have occupied 51st and 53rd rankings the previous year. So two of them must have definitely dropped. As far as the third person is concerned, he could have improved/ remained at the same position (or) could have dropped in the rankings. Nothing can be said about him. We can be sure that there were 4 people who have definitely improved their rankings.

 **Bookmark**

 **Answer key/Solution**

FeedBack

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

Every year, a list of most powerful athletes, is published in 'The Forbes'. Only those athletes who won 5 or more medals in the tournaments in a calendar year are included in the ranking list for that year. There were only 60 athletes who have won 5 or more medals in the tournaments happened in the year 2018. The table given below shows the rankings of the 10 athletes, who got ranks among 51 to 60 in the year 2018 and also compares these rankings with their previous year's ranking. Positive change means that the rank has been improved as compared to the previous year. Rank 1 is considered to be the highest rank while rank 60 to be the least, among those top 60 athletes. Nine out of the 10 athletes in the given list were among the rankers from 51 to 60 in the previous year as well.

Rank achieved in 2018	Athletes	Change in rank as compared to previous year's
51	Michael Bloomberg	3
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53	Marry Barra	6
54	Moon Jae-In	-2
55	Barnard Arnualt	2
56	Justin Trudeau	-1
57	Robin Li	A
58	Michael Dell	B
59	Mike Pence	C
60	John Roberts	NA

'NA' in the table indicates that the player was not able to make his place in the last year's rankings. A, B, C are the variables assigned to the values not known.

Q.41

If none of the three athletes - Robin Li, Michael Dell and Mike Pence - has improved his ranking in year 2018 as compared to 2017, then which of the following can be the values of B and C respectively?

- 1 -5, -7
- 2 -7, -6
- 3 -5, -1
- 4 0, -4

Solution:**Correct Answer : 3**

Comparing with the previous year's ranking, we find that Michael Dell and Mike Pence cannot occupy 51st and 53rd rank between them otherwise, 58th or 60th rank for Robin Li would mean improvement this year. Hence, the answer is option (3).

Bookmark**Answer key/Solution****FeedBack**

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

Every year, a list of most powerful athletes, is published in 'The Forbes'. Only those athletes who won 5 or more medals in the tournaments in a calendar year are included in the ranking list for that year. There were only 60 athletes who have won 5 or more medals in the tournaments happened in the year 2018. The table given below shows the rankings of the 10 athletes, who got ranks among 51 to 60 in the year 2018 and also compares these rankings with their previous year's ranking. Positive change means that the rank has been improved as compared to the previous year. Rank 1 is considered to be the highest rank while rank 60 to be the least, among those top 60 athletes. Nine out of the 10 athletes in the given list were among the rankers from 51 to 60 in the previous year as well.

Rank achieved in 2018	Athletes	Change in rank as compared to previous year's
51	Michael Bloomberg	3
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53	Marry Barra	6
54	Moon Jae-In	-2
55	Barnard Arnualt	2
56	Justin Trudeau	-1
57	Robin Li	A
58	Michael Dell	B
59	Mike Pence	C
60	John Roberts	NA

'NA' in the table indicates that the player was not able to make his place in the last year's rankings. A, B, C are the variables assigned to the values not known.

Q.42

Among the given athletes except John Roberts, what could have been the maximum possible absolute difference between the rank in 2018 and the rank in the previous year of any athlete?

Solution:**Correct Answer : 8****Maximum difference is for Mike Pence = $59 - 51 = 8$.****FeedBack****Bookmark****Answer key/Solution**

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

Ten government officers – Pankaj, Qureshi, Raman, Sara, Tipu, Utsav, Vanita, Wahab, Xeon and Yavi – are posted in five different regions – E, W, N, S and NE – of India, with at least one officer in each region. These officers pay income tax in the region they are posted. All of them are ranked from 1 to 10 on the basis of the amount of income tax paid by each of them i.e. the officer paying the highest income tax is ranked at 1st position, and the one paying the lowest is ranked at 10th position. Any two officers ranked on consecutive positions are not posted in same region. It is also known that,

- I. Two officers among Xeon, Yavi and Utsav, are posted in same region and are ranked at alternate positions. Sara and Qureshi are posted in same region.
- II. Raman, Vanita, Xeon and Tipu are ranked on 3rd, 5th, 7th and 10th position respectively.
- III. The difference between the number of officers paying income tax more than that by Pankaj and less than that by Wahab is an even number.
- IV. Income tax paid by Yavi is more than that by Pankaj, which in turn, is more than that by Utsav.

Q.43**In how many different ways can they be ranked?****Solution:****Correct Answer : 12****Bookmark****Answer key/Solution**

From statement I: We can say that any one pair among Xeon & Yavi/Yavi & Utsav/Xeon & Utsav may be from same region and they will be ranked at alternate positions.

From statement IV; Tax paid by Yavi > Pankaj > Utsav.

From statement II:

Rank	1	2	3	4	5	6	7	8	9	10
Officer		Raman		Vanita	Xeon		Tipu			

From statement IV; We can conclude that Yavi can't be placed at 8th & 9th position, similarly Pankaj can't be placed at 1st position. Suppose; Yavi and Utsav are from same region. In this case Yavi, Pankaj and Utsav must be at three consecutive positions which is not possible as we can see in above table. So, Yavi and Xeon can't be placed at alternate places.

Ultimately, we can say that Xeon and Utsav are from same region and Utsav at position 9.

We can observe in the table that Pankaj will always be placed at even numbered position, since he can't be placed at 1st position or 9th position

From statement III: We can conclude that if Pankaj is at even numbered position, Wahab must be at an odd numbered position and the only position possible for Wahab is 1.

Now, we can place Yavi at three possible positions i.e., 6, 4 and 2.

Case I: Yavi at 2nd position.

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman		Vanita	Xeon		Utsav	Tipu	

in the above case Pankaj may be at any of three positions i.e., 4th/6th/8th.

There are 3 possibilities:

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman	Pankaj	Vanita	Sara/Qureshi	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Qureshi/Sara	Xeon	Pankaj	Utsav	Tipu

Case II: Yavi at 4th position. In this case Pankaj may be at 6th/8th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Yavi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Qureshi/Sara	Raman	Yavi	Vanita	Sara/Qureshi	Xeon	Pankaj	Utsav	Tipu

Case III: Yavi at 6th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Qureshi/Sara	Vanita	Yavi	Xeon	Pankaj	Utsav	Tipu

Total 12 cases are possible.

FeedBack

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

Ten government officers – Pankaj, Qureshi, Raman, Sara, Tipu, Utsav, Vanita, Wahab, Xeon and Yavi – are posted in five different regions – E, W, N, S and NE – of India, with at least one officer in each region. These officers pay income tax in the region they are posted. All of them are ranked from 1 to 10 on the basis of the amount of income tax paid by each of them i.e. the officer paying the highest income tax is ranked at 1st position, and the one paying the lowest is ranked at 10th position. Any two officers ranked on consecutive positions are not posted in same region. It is also known that,

- I. Two officers among Xeon, Yavi and Utsav, are posted in same region and are ranked at alternate positions. Sara and Qureshi are posted in same region.
- II. Raman, Vanita, Xeon and Tipu are ranked on 3rd, 5th, 7th and 10th position respectively.
- III. The difference between the number of officers paying income tax more than that by Pankaj and less than that by Wahab is an even number.
- IV. Income tax paid by Yavi is more than that by Pankaj, which in turn, is more than that by Utsav.

Q.44

How many of the following statement(s) is/are definitely true?

- I. Rank of Wahab is 1.
- II. Sum of the ranks of Sara and Qureshi is an even number.
- III. Raman and Pankaj are not necessarily posted in same region.
- IV. Tipu and Utsav are posted in the same region.

1 1

2 2

3 3

4 4

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

From statement I: We can say that any one pair among Xeon & Yavi/Yavi & Utsav/Xeon & Utsav may be from same region and they will be ranked at alternate positions.

From statement IV: Tax paid by Yavi > Pankaj > Utsav.

From statement II:

Rank	1	2	3	4	5	6	7	8	9	10
Officer		Raman		Vanita		Xeon			Tipu	

From statement IV: We can conclude that Yavi can't be placed at 8th & 9th position, similarly Pankaj can't be placed at 1st position. Suppose; Yavi and Utsav are from same region. In this case Yavi, Pankaj and Utsav must be at three consecutive positions which is not possible as we can see in above table. So, Yavi and Xeon can't be placed at alternate places.

Ultimately, we can say that Xeon and Utsav are from same region and Utsav at position 9.

We can observe in the table that Pankaj will always be placed at even numbered position, since he can't be placed at 1st position or 9th position

From statement III: We can conclude that if Pankaj is at even numbered position, Wahab must be at an odd numbered position and the only position possible for Wahab is 1.

Now, we can place Yavi at three possible positions i.e., 6, 4 and 2.

Case I: Yavi at 2nd position.

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman		Vanita		Xeon		Utsav	Tipu

in the above case Pankaj may be at any of three positions i.e., 4th/6th/8th.

There are 3 possibilities:

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman	Pankaj	Vanita	Sara/Qureshi	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Qureshi/Sara	Xeon	Pankaj	Utsav	Tipu

Case II: Yavi at 4th position. In this case Pankaj may be at 6th/8th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Yavi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Qureshi/Sara	Raman	Yavi	Vanita	Sara/Qureshi	Xeon	Pankaj	Utsav	Tipu

Case III: Yavi at 6th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Qureshi/Sara	Vanita	Yavi	Xeon	Pankaj	Utsav	Tipu

Statement IV is not correct so three questions are correct.

FeedBack

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

Ten government officers – Pankaj, Qureshi, Raman, Sara, Tipu, Utsav, Vanita, Wahab, Xeon and Yavi – are posted in five different regions – E, W, N, S and NE – of India, with at least one officer in each region. These officers pay income tax in the region they are posted. All of them are ranked from 1 to 10 on the basis of the amount of income tax paid by each of them i.e. the officer paying the highest income tax is ranked at 1st position, and the one paying the lowest is ranked at 10th position. Any two officers ranked on consecutive positions are not posted in same region. It is also known that,

- I. Two officers among Xeon, Yavi and Utsav, are posted in same region and are ranked at alternate positions. Sara and Qureshi are posted in same region.
- II. Raman, Vanita, Xeon and Tipu are ranked on 3rd, 5th, 7th and 10th position respectively.
- III. The difference between the number of officers paying income tax more than that by Pankaj and less than that by Wahab is an even number.
- IV. Income tax paid by Yavi is more than that by Pankaj, which in turn, is more than that by Utsav.

Q.45

Additional information for questions 45 and 46:

- I. Tax collected from officers in region E is represented by T_E ; in region W is represented by T_W and so on for all the five regions. Also, it is known that $T_E > T_W > T_N > T_S > T_{NE}$
- II. In each region, equal number of officers are posted.
- III. The difference between the income tax paid by any two consecutively ranked officers is Rs. 1 lakh.
- IV. Yavi and Raman are posted in same region.

In how many way(s) can they be posted in their respective regions?

1 2

2 3

3 4

4 1

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

From statement I: We can say that any one pair among Xeon & Yavi/Yavi & Utsav/Xeon & Utsav may be from same region and they will be ranked at alternate positions.

From statement IV: Tax paid by Yavi > Pankaj > Utsav.

From statement II:

Rank	1	2	3	4	5	6	7	8	9	10
Officer		Raman		Vanita	Xeon		Tipu			

From statement IV: We can conclude that Yavi can't be placed at 8th & 9th position, similarly Pankaj can't be placed at 1st position. Suppose; Yavi and Utsav are from same region. In this case Yavi, Pankaj and Utsav must be at three consecutive positions which is not possible as we can see in above table. So, Yavi and Xeon can't be placed at alternate places.

Ultimately, we can say that Xeon and Utsav are from same region and Utsav at position 9.

We can observe in the table that Pankaj will always be placed at even numbered position, since he can't be placed at 1st position or 9th position

From statement III: We can conclude that if Pankaj is at even numbered position, Wahab must be at an odd numbered position and the only position possible for Wahab is 1.

Now, we can place Yavi at three possible positions i.e., 6, 4 and 2.

Case I: Yavi at 2nd position.

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman		Vanita	Xeon		Utsav	Tipu	

in the above case Pankaj may be at any of three positions i.e., 4th/6th/8th.

There are 3 possibilities:

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman	Pankaj	Vanita	Sara/Qureshi	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Qureshi/Sara	Xeon	Pankaj	Utsav	Tipu

Case II: Yavi at 4th position. In this case Pankaj may be at 6th/8th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Yavi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Qureshi/Sara	Raman	Yavi	Vanita	Sara/Qureshi	Xeon	Pankaj	Utsav	Tipu

Case III: Yavi at 6th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Qureshi/Sara	Vanita	Yavi	Xeon	Pankaj	Utsav	Tipu

We do not have any data regarding the exact value of income tax paid by them - we know that the difference between any two persons at consecutive positions is 1 lakh. Suppose, the tax paid by the person at position 10 is 1 lakh. Then the tax paid by persons ranked 9th, 8th, 7th, 6th, 5th, 4th, 3rd, 2nd and 1st will 2, 3, 4, 5, 6, 7, 8, 9 and 10 lakhs respectively.

Total tax collection = $1 + 2 + 3 + \dots + 9 + 10 = 55$ lakhs.

and

$$T_E > T_W > T_N > T_S > T_{NE}$$

From statement IV, only case III is possible because in other two cases Yavi and Raman are at consecutive position, they cannot be from same region.

These are three pairs known who belong from same region.

Sara and Qureshi = $7 + 9 = 16$ lakhs

Xeon and Utsav = $4 + 2 = 6$ lakhs

Yavi and Raman = $5 + 8 = 13$ lakhs

Total tax collection = 55 lakhs

Now remaining two regions collect $55 - 16 - 6 - 13 = 20$ lakhs

Remaining officers are:

Wahab = 10 lakhs

Vanita = 6 lakhs

Pankaj = 3 lakhs

Tipu = 1 lakh

The only possible combination of $T_E, T_W, T_N, T_S, T_{NE}$ is

16, 13, 11, 9 and 6 lakhs respectively.

Only one case is possible.

FeedBack

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

Ten government officers – Pankaj, Qureshi, Raman, Sara, Tipu, Utsav, Vanita, Wahab, Xeon and Yavi – are posted in five different regions – E, W, N, S and NE – of India, with at least one officer in each region. These officers pay income tax in the region they are posted. All of them are ranked from 1 to 10 on the basis of the amount of income tax paid by each of them i.e. the officer paying the highest income tax is ranked at 1st position, and the one paying the lowest is ranked at 10th position. Any two officers ranked on consecutive positions are not posted in same region. It is also known that,

- I. Two officers among Xeon, Yavi and Utsav, are posted in same region and are ranked at alternate positions. Sara and Qureshi are posted in same region.
- II. Raman, Vanita, Xeon and Tipu are ranked on 3rd, 5th, 7th and 10th position respectively.
- III. The difference between the number of officers paying income tax more than that by Pankaj and less than that by Wahab is an even number.
- IV. Income tax paid by Yavi is more than that by Pankaj, which in turn, is more than that by Utsav.

Q.46

Additional information for questions 45 and 46:

- I. Tax collected from officers in region E is represented by T_E ; in region W is represented by T_W and so on for all the five regions. Also, it is known that $T_E > T_W > T_N > T_S > T_{NE}$
- II. In each region, equal number of officers are posted.
- III. The difference between the income tax paid by any two consecutively ranked officers is Rs. 1 lakh.
- IV. Yavi and Raman are posted in same region.

Yavi and Raman belong to which region?

1 E

2 W

3 N

4 S

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

From statement I: We can say that any one pair among Xeon & Yavi/Yavi & Utsav/Xeon & Utsav may be from same region and they will be ranked at alternate positions.

From statement IV: Tax paid by Yavi > Pankaj > Utsav.

From statement II:

Rank	1	2	3	4	5	6	7	8	9	10
Officer		Raman		Vanita	Xeon		Tipu			

From statement IV: We can conclude that Yavi can't be placed at 8th & 9th position, similarly Pankaj can't be placed at 1st position. Suppose; Yavi and Utsav are from same region. In this case Yavi, Pankaj and Utsav must be at three consecutive positions which is not possible as we can see in above table. So, Yavi and Xeon can't be placed at alternate places.

Ultimately, we can say that Xeon and Utsav are from same region and Utsav at position 9.

We can observe in the table that Pankaj will always be placed at even numbered position, since he can't be placed at 1st position or 9th position

From statement III: We can conclude that if Pankaj is at even numbered position, Wahab must be at an odd numbered position and the only position possible for Wahab is 1.

Now, we can place Yavi at three possible positions i.e., 6, 4 and 2.

Case I: Yavi at 2nd position.

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman		Vanita	Xeon		Utsav	Tipu	

in the above case Pankaj may be at any of three positions i.e., 4th/6th/8th.

There are 3 possibilities:

1	2	3	4	5	6	7	8	9	10
Wahab	Yavi	Raman	Pankaj	Vanita	Sara/Qureshi	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Yavi	Raman	Sara/Qureshi	Vanita	Qureshi/Sara	Xeon	Pankaj	Utsav	Tipu

Case II: Yavi at 4th position. In this case Pankaj may be at 6th/8th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Yavi	Vanita	Pankaj	Xeon	Qureshi/Sara	Utsav	Tipu
Wahab	Qureshi/Sara	Raman	Yavi	Vanita	Sara/Qureshi	Xeon	Pankaj	Utsav	Tipu

Case III: Yavi at 6th position.

1	2	3	4	5	6	7	8	9	10
Wahab	Sara/Qureshi	Raman	Qureshi/Sara	Vanita	Yavi	Xeon	Pankaj	Utsav	Tipu

We do not have any data regarding the exact value of income tax paid by them - we know that the difference between any two persons at consecutive positions is 1 lakh. Suppose, the tax paid by the person at position 10 is 1 lakh. Then the tax paid by persons ranked 9th, 8th, 7th, 6th, 5th, 4th, 3rd, 2nd and 1st will 2, 3, 4, 5, 6, 7, 8, 9 and 10 lakhs respectively.

Total tax collection = $1 + 2 + 3 + \dots + 9 + 10 = 55$ lakhs.

and

$$T_E > T_W > T_N > T_S > T_{NE}$$

From statement IV, only case III is possible because in other two cases Yavi and Raman are at consecutive position, they cannot be from same region.

These are three pairs known who belong from same region.

$$\text{Sara and Qureshi} = 7 + 9 = 16 \text{ lakhs}$$

$$\text{Xeon and Utsav} = 4 + 2 = 6 \text{ lakhs}$$

$$\text{Yavi and Raman} = 5 + 8 = 13 \text{ lakhs}$$

$$\text{Total tax collection} = 55 \text{ lakhs}$$

Now remaining two regions collect $55 - 16 - 6 - 13 = 20$ lakhs

Remaining officers are:

$$\text{Wahab} = 10 \text{ lakhs}$$

$$\text{Vanita} = 6 \text{ lakhs}$$

$$\text{Pankaj} = 3 \text{ lakhs}$$

$$\text{Tipu} = 1 \text{ lakh}$$

The only possible combination of $T_E, T_W, T_N, T_S, T_{NE}$ is
16, 13, 11, 9 and 6 lakhs respectively.

Yavi and Raman belong to 'W' region.

Feedback

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

Four contractors - A, B, C and D - are building four structures such that each one is building a distinct structure. They are using four different materials - P, Q, R and S - to build their complete individual structures. When asked about the quantity which they are using while building those structures, the following observations were made from their answers:

- I. The ratio of the materials P, Q, R and S used by A to build the structure is 1 : 2 : 3 : 4. Also, the total quantity of P, used by A, B, C and D, was in the ratio of 1 : 3 : 5 : 7.
- II. The total quantity of P, Q, R and S taken together, used by A, B and C were in the ratio of 10 : 12 : 17. Also, the total quantity of P, Q and R that was used, by all four, were in the ratio of 16 : 9 : 14.
- III. The quantity of material R used by any of the four contractors is the average of the quantity of Q and S used by that contractor.
- IV. The quantity of material S used by contractor D is twice of the quantity of material R used by contractor B which in turn is equal to the quantity of material Q used by contractor C.

Q.47

If contractor A uses 1800 kg of Q, then the total quantity (in kg) of S used by all 4 contractors is

X

Solution:

Correct Answer : 17100

Your Answer : 2000

 **Bookmark**

 **Answer key/Solution**

From statements I and II, we can draw a table. All the given values are based on ratio so, we can express them in terms of k. Therefore, the quantity of material P, Q, R and S used by contractor A was k, 2k, 3k and 4k respectively. And as for contractor A, the quantity of material P was k so, for contractors B, C and D, it would be 3k, 5k and 7k respectively.

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k				→ 12 k
C	5k				→ 17k
D	7k				
	↓ 16k	↓ 9k	↓ 14k		

Now, the quantity of material P used by B was 3k and total quantity of P, Q, R and S used by B was 12k so, quantity of Q, R and S together used by B = 12k - 3k = 9k.

Let the quantity of Q, R and S used by B be x, y and z respectively.

$$\therefore x + y + z = 9k$$

And from statement III,

$$y = \frac{x+z}{2}$$

$$\text{or } x + z = 2y$$

$$\therefore y + 2y = 9k$$

$$\Rightarrow y = 3k.$$

Similarly, for contractor C, we can find the quantity of material R used and it is equal to 4k.

Now using statement IV, we can find out that the quantity of S used by D = $2 \times 3k = 6k$ and the quantity of Q used by C = 3k.

$$\therefore \text{Quantity of S used by C} = 17k - (5k + 3k + 4k) = 5k.$$

$$\text{Quantity of R used by D} = 14k - (3k + 3k + 4k) = 4k.$$

Now, for D, we know the quantity of materials P, R, and S.

\therefore Using statement III, we can easily find out the quantity of Q used by D and let it be m.

$$\therefore 4k = \frac{m+6k}{2} \Rightarrow m = 2k.$$

Now, calculate the quantity of Q used by B

We know the total quantity of Q used by all A, B, C and D and we know the quantity of material Q used by A, C and D.

$$\therefore \text{Quantity of Q used by B} = 9k - (2k + 3k + 2k) = 2k.$$

$$\text{Hence, quantity of S used by B} = 12k - (3k + 2k + 3k) = 4k.$$

So, the final table is

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k	2k	3k	4k	→ 12 k
C	5k	3k	4k	5k	→ 17k
D	7k	2k	4k	6k	
	↓ 16k	↓ 9k	↓ 14k		

If A uses 1800 kg of Q,

$$\therefore 2k = 1800$$

$$\Rightarrow k = 900$$

$$\therefore \text{The total quantity of S used by all 4 contractors is } (4k + 4k + 5k + 6k) = 19k \\ = 19 \times 900 = 17100 \text{ kg.}$$

FeedBack

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

Four contractors - A, B, C and D - are building four structures such that each one is building a distinct structure. They are using four different materials - P, Q, R and S - to build their complete individual structures. When asked about the quantity which they are using while building those structures, the following observations were made from their answers:

- I. The ratio of the materials P, Q, R and S used by A to build the structure is 1 : 2 : 3 : 4. Also, the total quantity of P, used by A, B, C and D, was in the ratio of 1 : 3 : 5 : 7.
- II. The total quantity of P, Q, R and S taken together, used by A, B and C were in the ratio of 10 : 12 : 17. Also, the total quantity of P, Q and R that was used, by all four, were in the ratio of 16 : 9 : 14.
- III. The quantity of material R used by any of the four contractors is the average of the quantity of Q and S used by that contractor.
- IV. The quantity of material S used by contractor D is twice of the quantity of material R used by contractor B which in turn is equal to the quantity of material Q used by contractor C.

Q.48

Which contractor used the maximum quantity of S?

1 A

2 B

3 C

4 D

Solution:

Correct Answer : 4

 **Bookmark**

 **Answer key/Solution**

From statements I and II, we can draw a table. All the given values are based on ratio so, we can express them in terms of k. Therefore, the quantity of material P, Q, R and S used by contractor A was k, 2k, 3k and 4k respectively. And as for contractor A, the quantity of material P was k so, for contractors B, C and D, it would be 3k, 5k and 7k respectively.

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k				→ 12 k
C	5k				→ 17k
D	7k				
	↓ 16k	↓ 9k	↓ 14k		

Now, the quantity of material P used by B was 3k and total quantity of P, Q, R and S used by B was 12k so, quantity of Q, R and S together used by B = 12k - 3k = 9k.

Let the quantity of Q, R and S used by B be x, y and z respectively.

$$\therefore x + y + z = 9k$$

And from statement III,

$$y = \frac{x+z}{2}$$

$$\text{or } x + z = 2y$$

$$\therefore y + 2y = 9k$$

$$\Rightarrow y = 3k.$$

Similarly, for contractor C, we can find the quantity of material R used and it is equal to 4k.

Now using statement IV, we can find out that the quantity of S used by D = $2 \times 3k = 6k$ and the quantity of Q used by C = 3k.

$$\therefore \text{Quantity of S used by C} = 17k - (5k + 3k + 4k) = 5k.$$

$$\text{Quantity of R used by D} = 14k - (3k + 3k + 4k) = 4k.$$

Now, for D, we know the quantity of materials P, R, and S.

\therefore Using statement III, we can easily find out the quantity of Q used by D and let it be m.

$$\therefore 4k = \frac{m+6k}{2} \Rightarrow m = 2k.$$

Now, calculate the quantity of Q used by B

We know the total quantity of Q used by all A, B, C and D and we know the quantity of material Q used by A, C and D.

$$\therefore \text{Quantity of Q used by B} = 9k - (2k + 3k + 2k) = 2k.$$

$$\text{Hence, quantity of S used by B} = 12k - (3k + 2k + 3k) = 4k.$$

So, the final table is

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k	2k	3k	4k	→ 12 k
C	5k	3k	4k	5k	→ 17k
D	7k	2k	4k	6k	
	↓ 16k	↓ 9k	↓ 14k		

Clearly, from the final table, D is the one who used maximum quantity of S.

FeedBack

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

Four contractors - A, B, C and D - are building four structures such that each one is building a distinct structure. They are using four different materials - P, Q, R and S - to build their complete individual structures. When asked about the quantity which they are using while building those structures, the following observations were made from their answers:

- I. The ratio of the materials P, Q, R and S used by A to build the structure is 1 : 2 : 3 : 4. Also, the total quantity of P, used by A, B, C and D, was in the ratio of 1 : 3 : 5 : 7.
- II. The total quantity of P, Q, R and S taken together, used by A, B and C were in the ratio of 10 : 12 : 17. Also, the total quantity of P, Q and R that was used, by all four, were in the ratio of 16 : 9 : 14.
- III. The quantity of material R used by any of the four contractors is the average of the quantity of Q and S used by that contractor.
- IV. The quantity of material S used by contractor D is twice of the quantity of material R used by contractor B which in turn is equal to the quantity of material Q used by contractor C.

Q.49

What is the ratio of the quantity of P used by A to the quantity of Q used by C?

1 1 : 2

2 1 : 3

3 2 : 3

4 3 : 5

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

From statements I and II, we can draw a table. All the given values are based on ratio so, we can express them in terms of k. Therefore, the quantity of material P, Q, R and S used by contractor A was k, 2k, 3k and 4k respectively. And as for contractor A, the quantity of material P was k so, for contractors B, C and D, it would be 3k, 5k and 7k respectively.

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k				→ 12 k
C	5k				→ 17k
D	7k				
	↓	↓	↓		
	16k	9k	14k		

Now, the quantity of material P used by B was 3k and total quantity of P, Q, R and S used by B was 12k so, quantity of Q, R and S together used by B = 12k - 3k = 9k.

Let the quantity of Q, R and S used by B be x, y and z respectively.

$$\therefore x + y + z = 9k$$

And from statement III,

$$y = \frac{x+z}{2}$$

$$\text{or } x + z = 2y$$

$$\therefore y + 2y = 9k$$

$$\Rightarrow y = 3k.$$

Similarly, for contractor C, we can find the quantity of material R used and it is equal to 4k.

Now using statement IV, we can find out that the quantity of S used by D = $2 \times 3k = 6k$ and the quantity of Q used by C = 3k.

$$\therefore \text{Quantity of S used by C} = 17k - (5k + 3k + 4k) = 5k.$$

$$\text{Quantity of R used by D} = 14k - (3k + 3k + 4k) = 4k.$$

Now, for D, we know the quantity of materials P, R, and S.

\therefore Using statement III, we can easily find out the quantity of Q used by D and let it be m.

$$\therefore 4k = \frac{m+6k}{2} \Rightarrow m = 2k.$$

Now, calculate the quantity of Q used by B

We know the total quantity of Q used by all A, B, C and D and we know the quantity of material Q used by A, C and D.

$$\therefore \text{Quantity of Q used by B} = 9k - (2k + 3k + 2k) = 2k.$$

$$\text{Hence, quantity of S used by B} = 12k - (3k + 2k + 3k) = 4k.$$

So, the final table is

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k	2k	3k	4k	→ 12 k
C	5k	3k	4k	5k	→ 17k
D	7k	2k	4k	6k	
	↓	↓	↓		
	16k	9k	14k		

$$\text{Ratio of the quantity of P used by A to the quantity of Q used by C} = \frac{k}{3k} = 1 : 3.$$

Feedback

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

Four contractors - A, B, C and D - are building four structures such that each one is building a distinct structure. They are using four different materials - P, Q, R and S - to build their complete individual structures. When asked about the quantity which they are using while building those structures, the following observations were made from their answers:

- I. The ratio of the materials P, Q, R and S used by A to build the structure is 1 : 2 : 3 : 4. Also, the total quantity of P, used by A, B, C and D, was in the ratio of 1 : 3 : 5 : 7.
- II. The total quantity of P, Q, R and S taken together, used by A, B and C were in the ratio of 10 : 12 : 17. Also, the total quantity of P, Q and R that was used, by all four, were in the ratio of 16 : 9 : 14.
- III. The quantity of material R used by any of the four contractors is the average of the quantity of Q and S used by that contractor.
- IV. The quantity of material S used by contractor D is twice of the quantity of material R used by contractor B which in turn is equal to the quantity of material Q used by contractor C.

Q.50

The ratio of the quantity of Q used by contractors A, B, C and D is

1 1 : 3 : 5 : 7

2 2 : 2 : 3 : 2

3 3 : 3 : 4 : 4

4 4 : 4 : 5 : 6

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

From statements I and II, we can draw a table. All the given values are based on ratio so, we can express them in terms of k. Therefore, the quantity of material P, Q, R and S used by contractor A was k, 2k, 3k and 4k respectively. And as for contractor A, the quantity of material P was k so, for contractors B, C and D, it would be 3k, 5k and 7k respectively.

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k				→ 12 k
C	5k				→ 17k
D	7k				
	↓ 16k	↓ 9k	↓ 14k		

Now, the quantity of material P used by B was 3k and total quantity of P, Q, R and S used by B was 12k so, quantity of Q, R and S together used by B = 12k - 3k = 9k.

Let the quantity of Q, R and S used by B be x, y and z respectively.

$$\therefore x + y + z = 9k$$

And from statement III,

$$y = \frac{x+z}{2}$$

$$\text{or } x + z = 2y$$

$$\therefore y + 2y = 9k$$

$$\Rightarrow y = 3k.$$

Similarly, for contractor C, we can find the quantity of material R used and it is equal to 4k.

Now using statement IV, we can find out that the quantity of S used by D = $2 \times 3k = 6k$ and the quantity of Q used by C = 3k.

$$\therefore \text{Quantity of S used by C} = 17k - (5k + 3k + 4k) = 5k.$$

$$\text{Quantity of R used by D} = 14k - (3k + 3k + 4k) = 4k.$$

Now, for D, we know the quantity of materials P, R, and S.

\therefore Using statement III, we can easily find out the quantity of Q used by D and let it be m.

$$\therefore 4k = \frac{m+6k}{2} \Rightarrow m = 2k.$$

Now, calculate the quantity of Q used by B

We know the total quantity of Q used by all A, B, C and D and we know the quantity of material Q used by A, C and D.

$$\therefore \text{Quantity of Q used by B} = 9k - (2k + 3k + 2k) = 2k.$$

$$\text{Hence, quantity of S used by B} = 12k - (3k + 2k + 3k) = 4k.$$

So, the final table is

Materials Contractors	P	Q	R	S	
A	k	2k	3k	4k	→ 10 k
B	3k	2k	3k	4k	→ 12 k
C	5k	3k	4k	5k	→ 17k
D	7k	2k	4k	6k	
	↓ 16k	↓ 9k	↓ 14k		

The ratio of the quantity of Q used by contractors A, B, C and D is $2k : 2k : 3k : 2k = 2 : 2 : 3 : 2$.

FeedBack

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

Ms. Reena went to a supermarket with her two kids - Vishal and Montu. In that supermarket, five baskets - basket I, basket II, basket III, basket IV and basket V - of fruits were there. In each basket, there were twenty fruits consisting of only five types - apple, orange, mango, guava and watermelon - with at least one fruit of each of the five types. Vishal and Montu were always proud of identifying fruits of special kind. If a fruit was either an apple or an orange, Vishal would always identify it correctly. Also, he could confuse mango, guava and watermelon with any of the five types of fruits. Similarly, if a fruit was a mango or a guava or a watermelon, then Montu would always identify it correctly else for apple and orange, he could confuse it with any of the five types.

Vishal tried to identify the fruits in each of the five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	2	1	2	7
Orange	3	3	3	2	7
Mango	7	5	8	2	4
Guava	4	4	2	3	2
Watermelon	1	6	6	11	0
Total	20	20	20	20	20

Montu, then, tried to identify the fruits in each of those same five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	1	2	2	9
Orange	1	1	2	1	2
Mango	1	2	2	4	3
Guava	2	5	6	7	4
Watermelon	11	11	8	6	2
Total	20	20	20	20	20

Q.51

Find the least possible number of watermelons in all the five baskets taken together.

Solution:**Correct Answer : 31****Bookmark****Answer key/Solution**

$$A = \{\text{Apple, Orange}\}$$

$$B = \{\text{Mango, Guava, Watermelon}\}$$

Vishal identifies fruits of set A correctly and Montu identifies fruits of set B correctly.

Now, if we look at the given information.

Vishal: Identifies apples and oranges correctly i.e., if he looks at an apple, he identifies it as an apple and if he looks at an orange he will identify that as an orange and he cannot identify the other types of fruits properly i.e., if he looks at a guava, he may name it as an apple/orange/mango/guava/watermelon.

If Vishal says there are five apples in basket I, there are not more than five apples in basket I and similarly in basket I, there are not more than 3 oranges. But from table I, we cannot say anything definite about the other three varieties of fruits.

Similarly, from the second table, in basket I, Montu is saying there are 14 fruits of set B, the number of this set B fruits is at most 14 and thus that of set A fruits is at least 6. Now by combining the information from Vishal and Montu. In basket I, there are at least six and at most eight fruits of set A and at least twelve and at most fourteen fruits of set B.

Range of number of fruits

	Basket				
	I	II	III	IV	V
Fruits	Min/Max	Min/Max	Min/Max	Min/Max	Min/Max
A	6/8	2/5	4/4	3/4	11/14
B	12/14	15/18	16/16	16/17	6/9

We have to make the number of watermelons as least as possible. For that, the number of total fruits of set B must be as least as possible and the other varieties of fruits (other than watermelon) of set B must be as maximum as possible.

In basket I, there must be only 12 fruits of set B, there can be at most 2 guavas and 1 mango.

Therefore, there must be at least 9 watermelons. Similarly, in baskets II, III, IV and V there must be at least 8, 8, 5 and 1 watermelons respectively. Therefore, there are at least 31 watermelons on the whole.

FeedBack

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

Ms. Reena went to a supermarket with her two kids - Vishal and Montu. In that supermarket, five baskets - basket I, basket II, basket III, basket IV and basket V - of fruits were there. In each basket, there were twenty fruits consisting of only five types - apple, orange, mango, guava and watermelon - with at least one fruit of each of the five types. Vishal and Montu were always proud of identifying fruits of special kind. If a fruit was either an apple or an orange, Vishal would always identify it correctly. Also, he could confuse mango, guava and watermelon with any of the five types of fruits. Similarly, if a fruit was a mango or a guava or a watermelon, then Montu would always identify it correctly else for apple and orange, he could confuse it with any of the five types.

Vishal tried to identify the fruits in each of the five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	2	1	2	7
Orange	3	3	3	2	7
Mango	7	5	8	2	4
Guava	4	4	2	3	2
Watermelon	1	6	6	11	0
Total	20	20	20	20	20

Montu, then, tried to identify the fruits in each of those same five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	1	2	2	9
Orange	1	1	2	1	2
Mango	1	2	2	4	3
Guava	2	5	6	7	4
Watermelon	11	11	8	6	2
Total	20	20	20	20	20

Q.52

Which of the following statements is definitely false?

- 1 The number of mangoes in basket IV is 1.
- 2 The number of apples in basket I is 3.
- 3 The number of watermelons in basket II is 9.
- 4 None of the above

Solution:**Correct Answer : 1****Bookmark****Answer key/Solution**

$$A = \{\text{Apple, Orange}\}$$

$$B = \{\text{Mango, Guava, Watermelon}\}$$

Vishal identifies fruits of set A correctly and Montu identifies fruits of set B correctly.

Now, if we look at the given information.

Vishal: Identifies apples and oranges correctly i.e., if he looks at an apple, he identifies it as an apple and if he looks at an orange he will identify that as an orange and he cannot identify the other types of fruits properly i.e., if he looks at a guava, he may name it as an apple/orange/mango/guava/watermelon.

If Vishal says there are five apples in basket I, there are not more than five apples in basket I and similarly in basket I, there are not more than 3 oranges. But from table I, we cannot say anything definite about the other three varieties of fruits.

Similarly, from the second table, in basket I, Montu is saying there are 14 fruits of set B, the number of this set B fruits is at most 14 and thus that of set A fruits is at least 6. Now by combining the information from Vishal and Montu. In basket I, there are at least six and at most eight fruits of set A and at least twelve and at most fourteen fruits of set B.

Range of number of fruits

	Basket				
	I	II	III	IV	V
Fruits	Min/Max	Min/Max	Min/Max	Min/Max	Min/Max
A	6/8	2/5	4/4	3/4	11/14
B	12/14	15/18	16/16	16/17	6/9

In basket IV, the least possible number of mangoes = least possible number of fruits of set B – (maximum possible number of (guavas + watermelons)) = 16 – (6 + 7) = 3. Hence, statement I is definitely false.

Whereas the other three statements can be true.

FeedBack

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

Ms. Reena went to a supermarket with her two kids - Vishal and Montu. In that supermarket, five baskets - basket I, basket II, basket III, basket IV and basket V - of fruits were there. In each basket, there were twenty fruits consisting of only five types - apple, orange, mango, guava and watermelon - with at least one fruit of each of the five types. Vishal and Montu were always proud of identifying fruits of special kind. If a fruit was either an apple or an orange, Vishal would always identify it correctly. Also, he could confuse mango, guava and watermelon with any of the five types of fruits. Similarly, if a fruit was a mango or a guava or a watermelon, then Montu would always identify it correctly else for apple and orange, he could confuse it with any of the five types.

Vishal tried to identify the fruits in each of the five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	2	1	2	7
Orange	3	3	3	2	7
Mango	7	5	8	2	4
Guava	4	4	2	3	2
Watermelon	1	6	6	11	0
Total	20	20	20	20	20

Montu, then, tried to identify the fruits in each of those same five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	1	2	2	9
Orange	1	1	2	1	2
Mango	1	2	2	4	3
Guava	2	5	6	7	4
Watermelon	11	11	8	6	2
Total	20	20	20	20	20

Q.53

If the number of guavas in basket IV is 6, then find the number of oranges in basket IV.

Solution:**Correct Answer : 2** **Bookmark** **Answer key/Solution**

$$A = \{\text{Apple, Orange}\}$$

$$B = \{\text{Mango, Guava, Watermelon}\}$$

Vishal identifies fruits of set A correctly and Montu identifies fruits of set B correctly.

Now, if we look at the given information.

Vishal: Identifies apples and oranges correctly i.e., if he looks at an apple, he identifies it as an apple and if he looks at an orange he will identify that as an orange and he cannot identify the other types of fruits properly i.e., if he looks at a guava, he may name it as an apple/orange/mango/guava/watermelon.

If Vishal says there are five apples in basket I, there are not more than five apples in basket I and similarly in basket I, there are not more than 3 oranges. But from table I, we cannot say anything definite about the other three varieties of fruits.

Similarly, from the second table, in basket I, Montu is saying there are 14 fruits of set B, the number of this set B fruits is at most 14 and thus that of set A fruits is at least 6. Now by combining the information from Vishal and Montu. In basket I, there are at least six and at most eight fruits of set A and at least twelve and at most fourteen fruits of set B.

Range of number of fruits

	Basket				
	I	II	III	IV	V
Fruits	Min/Max	Min/Max	Min/Max	Min/Max	Min/Max
A	6/8	2/5	4/4	3/4	11/14
B	12/14	15/18	16/16	16/17	6/9

Number of Guavas in Basket IV = 6.

Therefore, one extra fruit which is identified as Guava by Montu must be from set A.

Therefore, total number of fruits of set A must be at least $1 + 2 + 1$ i.e., 4.

From the above table, the number of fruits of set A must be exactly 4. Since Vishal identified only 4 fruits [2 apples and 2 oranges] of set A, there are only 2 oranges and 2 apples in basket IV.

FeedBack

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

Ms. Reena went to a supermarket with her two kids - Vishal and Montu. In that supermarket, five baskets - basket I, basket II, basket III, basket IV and basket V - of fruits were there. In each basket, there were twenty fruits consisting of only five types - apple, orange, mango, guava and watermelon - with at least one fruit of each of the five types. Vishal and Montu were always proud of identifying fruits of special kind. If a fruit was either an apple or an orange, Vishal would always identify it correctly. Also, he could confuse mango, guava and watermelon with any of the five types of fruits. Similarly, if a fruit was a mango or a guava or a watermelon, then Montu would always identify it correctly else for apple and orange, he could confuse it with any of the five types.

Vishal tried to identify the fruits in each of the five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	2	1	2	7
Orange	3	3	3	2	7
Mango	7	5	8	2	4
Guava	4	4	2	3	2
Watermelon	1	6	6	11	0
Total	20	20	20	20	20

Montu, then, tried to identify the fruits in each of those same five baskets and came up with the following table to show the number of fruits of each type in each basket:

Fruit	Basket I	Basket II	Basket III	Basket IV	Basket V
Apple	5	1	2	2	9
Orange	1	1	2	1	2
Mango	1	2	2	4	3
Guava	2	5	6	7	4
Watermelon	11	11	8	6	2
Total	20	20	20	20	20

Q.54

For how many of the five baskets can the exact number of mangoes be determined?

1 2

2 1

3 0

4 More than 2

Solution:**Correct Answer : 1****Bookmark****Answer key/Solution**

$$A = \{\text{Apple, Orange}\}$$

$$B = \{\text{Mango, Guava, Watermelon}\}$$

Vishal identifies fruits of set A correctly and Montu identifies fruits of set B correctly.

Now, if we look at the given information.

Vishal: Identifies apples and oranges correctly i.e., if he looks at an apple, he identifies it as an apple and if he looks at an orange he will identify that as an orange and he cannot identify the other types of fruits properly i.e., if he looks at a guava, he may name it as an apple/orange/mango/guava/watermelon.

If Vishal says there are five apples in basket I, there are not more than five apples in basket I and similarly in basket I, there are not more than 3 oranges. But from table I, we cannot say anything definite about the other three varieties of fruits.

Similarly, from the second table, in basket I, Montu is saying there are 14 fruits of set B, the number of this set B fruits is at most 14 and thus that of set A fruits is at least 6. Now by combining the information from Vishal and Montu. In basket I, there are at least six and at most eight fruits of set A and at least twelve and at most fourteen fruits of set B.

Range of number of fruits

	Basket				
	I	II	III	IV	V
Fruits	Min/Max	Min/Max	Min/Max	Min/Max	Min/Max
A	6/8	2/5	4/4	3/4	11/14
B	12/14	15/18	16/16	16/17	6/9

As Montu [who identifies mangoes as mangoes] identified only 1 mango in basket I, and there is at least one fruit of each type in each box, there is only one mango in basket I.

From the above table, we can say that in basket III the total number of fruits in set A is 4 and that of in set B is 16.

As Montu identified 2 mangoes, 6 guavas and 8 watermelons, in basket III, which add upto 16, there will be exactly 2 mangoes in basket III.

The number of mangoes in the other baskets cannot be found uniquely.

FeedBack

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

Eight children – Raja, Praja, Rohan, Mohan, Sohan, Rani, Deewani and Shivani – were discussing monthly income of their fathers – Arun, Varun, Tarun, Sanjay, Ram, Lalit, Dheeraj and Hardik – not necessarily in the same order, who were sitting around a circular table facing towards the center. Monthly income (in rupees) of their fathers were 30k, 33k, 35k, 39k, 41k, 44k, 46k and 50k, in any order.

Some additional information known to us is as follows:

- I. Neither Lalit nor Dheeraj had his monthly income as 41k.
- II. Raja's father Ram and Deewani's father were sitting opposite to each other and their monthly incomes were 39k and 44k, not necessarily in that order.
- III. The person, whose monthly income was the least among all of them, was not sitting adjacent to the persons whose income were 33k and 46k.
- IV Rani's father and Deewani's father were not immediate neighbours of each other. The person having his monthly income as 41k was sitting on the immediate right of Sanjay.
- V. Lalit and Dheeraj were facing each other and the monthly incomes of both of them were more than that of Raja's father.
- VI. Sohan's father, whose monthly income was 33k, was sitting third to the right of Tarun, whose income was higher than that of his neighbours.
- VII. Varun was sitting third to the left of Arun. The number of people sitting between Rohan's father and Rani's father was equal to the number of people sitting between Rohan's father and Shivani's father.
- VIII. The two, who had highest and second highest monthly income, were sitting opposite to each other.
- IX. Praja's father was sitting exactly between Mohan's father and Deewani's father.

Q.55

Who was Sohan's father?

1 Arun

2 Sanjay

3 Hardik

4 Either (2) or (3)



Solution:**Correct Answer : 3****Your Answer : 3****Bookmark****Answer key/Solution**

From statement V, each of Lalit and Dheeraj has monthly income more than that of Raja's father. Raja's father may have monthly income of 39k or 44k as per statement no. II. Lalit's income cannot be equal to 41k as per statement no. I. From these facts, we can conclude that the monthly income of Lalit and Dheeraj are 46k or 50k in any order.

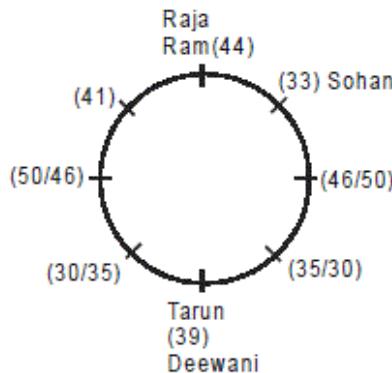
From statement VI, Tarun's income is more than his neighbours. So, Tarun's income cannot be equal to 30k or 33k or 35k. It can be said that Tarun's income is either 39k or 41k or 44k.

Case I: Let Tarun's income be 39k.

From statement II, Raja's father i.e., Ram's income will be 44k and Tarun will be Deewani's father.

From statement VI, Tarun's income is more than his neighbours.

So neighbours income will be 30k and 35k in any order.



Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

But, above arrangement is not possible because as per statement IV, person with monthly income of 41k must sit on the immediate right of Sanjay which is not possible in this case.

Case II: Let Tarun's income be 41k.

Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

From statement IV, Tarun should sit immediate right of Sanjay. Now we know that the persons with incomes 39k and 44k and 46k and 50k should be opposite to each other as per instructions given in statement II and VIII.

∴ Person with income 39k can sit only immediate right of Tarun.

So from statement VI, Tarun's income is higher than his neighbours.

Therefore, the person with monthly income either 30k or 35k will sit on immediate left of Tarun.

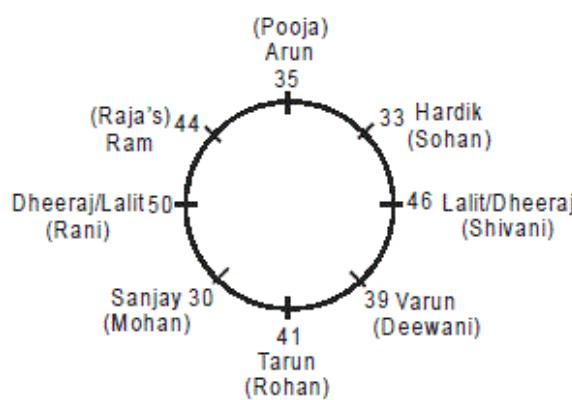
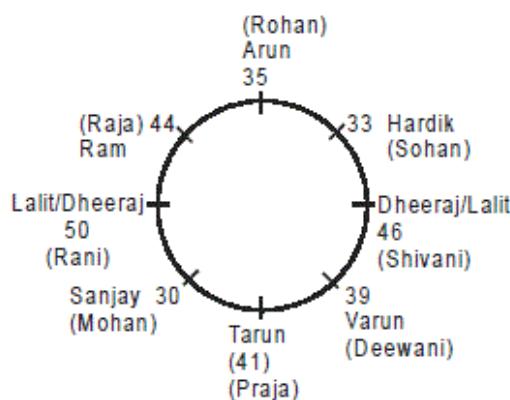
But if the person with income 35k sit on immediate left of Tarun, then the only place left for the person with monthly income 30k is opposite to Tarun which is not possible as per statement III.

So, the person with income 30k only can sit on the immediate left of the person with income 41k i.e., Tarun.

We can also conclude that the person with income 35k will sit opposite to Tarun.

The only position left for Varun is immediate right of Tarun.

So there are two arrangements which are possible are given below.



Case III: Let Tarun's income be 44k. Similarly, as of case I, case III is not possible.

Hardik was Sohan's father.

FeedBack

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

Eight children – Raja, Praja, Rohan, Mohan, Sohan, Rani, Deewani and Shivani – were discussing monthly income of their fathers – Arun, Varun, Tarun, Sanjay, Ram, Lalit, Dheeraj and Hardik – not necessarily in the same order, who were sitting around a circular table facing towards the center. Monthly income (in rupees) of their fathers were 30k, 33k, 35k, 39k, 41k, 44k, 46k and 50k, in any order.

Some additional information known to us is as follows:

- I. Neither Lalit nor Dheeraj had his monthly income as 41k.
- II. Raja's father Ram and Deewani's father were sitting opposite to each other and their monthly incomes were 39k and 44k, not necessarily in that order.
- III. The person, whose monthly income was the least among all of them, was not sitting adjacent to the persons whose income were 33k and 46k.
- IV Rani's father and Deewani's father were not immediate neighbours of each other. The person having his monthly income as 41k was sitting on the immediate right of Sanjay.
- V. Lalit and Dheeraj were facing each other and the monthly incomes of both of them were more than that of Raja's father.
- VI. Sohan's father, whose monthly income was 33k, was sitting third to the right of Tarun, whose income was higher than that of his neighbours.
- VII. Varun was sitting third to the left of Arun. The number of people sitting between Rohan's father and Rani's father was equal to the number of people sitting between Rohan's father and Shivani's father.
- VIII. The two, who had highest and second highest monthly income, were sitting opposite to each other.
- IX. Praja's father was sitting exactly between Mohan's father and Deewani's father.

Q.56

How many of the following three statement(s) must be true?

- I. The persons with least and next to least monthly incomes were facing each other.
- II. Two or four persons were sitting between Sanjay and Rohan's father.
- III. Rani's father and Shivani were sitting opposite to each other.



Solution:

Correct Answer : 2

Your Answer : 2

Bookmark

Answer key/Solution

From statement V, each of Lalit and Dheeraj has monthly income more than that of Raja's father. Raja's father may have monthly income of 39k or 44k as per statement no. II. Lalit's income cannot be equal to 41k as per statement no. I. From these facts, we can conclude that the monthly income of Lalit and Dheeraj are 46k or 50k in any order.

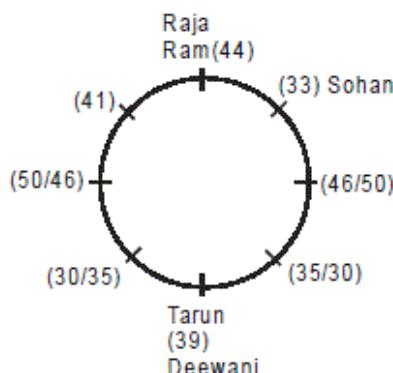
From statement VI, Tarun's income is more than his neighbours. So, Tarun's income cannot be equal to 30k or 33k or 35k. It can be said that Tarun's income is either 39k or 41k or 44k.

Case I: Let Tarun's income be 39k.

From statement II, Raja's father i.e., Ram's income will be 44k and Tarun will be Deewani's father.

From statement VI, Tarun's income is more than his neighbours.

So neighbours income will be 30k and 35k in any order.



Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

But, above arrangement is not possible because as per statement IV, person with monthly income of 41k must sit on the immediate right of Sanjay which is not possible in this case.

Case II: Let Tarun's income be 41k.

Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

From statement IV, Tarun should sit immediate right of Sanjay. Now we know that the persons with incomes 39k and 44k and 46k and 50k should be opposite to each other as per instructions given in statement II and VIII.

∴ Person with income 39k can sit only immediate right of Tarun.

So from statement VI, Tarun's income is higher than his neighbours.

Therefore, the person with monthly income either 30k or 35k will sit on immediate left of Tarun.

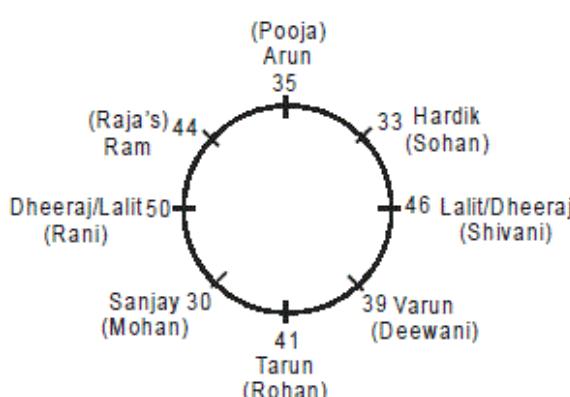
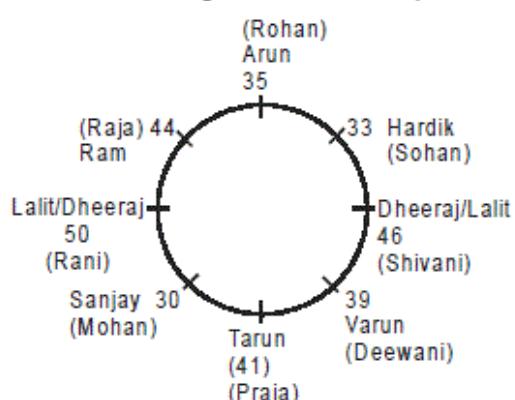
But if the person with income 35k sit on immediate left of Tarun, then the only place left for the person with monthly income 30k is opposite to Tarun which is not possible as per statement III.

So, the person with income 30k only can sit on the immediate left of the person with income 41k i.e., Tarun.

We can also conclude that the person with income 35k will sit opposite to Tarun.

The only position left for Varun is immediate right of Tarun.

So there are two arrangements which are possible are given below.



Case III: Let Tarun's income be 44k. Similarly, as of case I, case III is not possible.

Statement I and statement III must be true. Hence, answer is 2.

FeedBack

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

Eight children – Raja, Praja, Rohan, Mohan, Sohan, Rani, Deewani and Shivani – were discussing monthly income of their fathers – Arun, Varun, Tarun, Sanjay, Ram, Lalit, Dheeraj and Hardik – not necessarily in the same order, who were sitting around a circular table facing towards the center. Monthly income (in rupees) of their fathers were 30k, 33k, 35k, 39k, 41k, 44k, 46k and 50k, in any order.

Some additional information known to us is as follows:

- I. Neither Lalit nor Dheeraj had his monthly income as 41k.
- II. Raja's father Ram and Deewani's father were sitting opposite to each other and their monthly incomes were 39k and 44k, not necessarily in that order.
- III. The person, whose monthly income was the least among all of them, was not sitting adjacent to the persons whose income were 33k and 46k.
- IV Rani's father and Deewani's father were not immediate neighbours of each other. The person having his monthly income as 41k was sitting on the immediate right of Sanjay.
- V. Lalit and Dheeraj were facing each other and the monthly incomes of both of them were more than that of Raja's father.
- VI. Sohan's father, whose monthly income was 33k, was sitting third to the right of Tarun, whose income was higher than that of his neighbours.
- VII. Varun was sitting third to the left of Arun. The number of people sitting between Rohan's father and Rani's father was equal to the number of people sitting between Rohan's father and Shivani's father.
- VIII. The two, who had highest and second highest monthly income, were sitting opposite to each other.
- IX. Praja's father was sitting exactly between Mohan's father and Deewani's father.

Q.57

Who was sitting opposite to Ram?

1 Tarun

2 Sanjay

3 Hardik

4 Varun



Bookmark

Answer key/Solution

Solution:**Correct Answer : 4****Your Answer : 4**

From statement V, each of Lalit and Dheeraj has monthly income more than that of Raja's father. Raja's father may have monthly income of 39k or 44k as per statement no. II. Lalit's income cannot be equal to 41k as per statement no. I. From these facts, we can conclude that the monthly income of Lalit and Dheeraj are 46k or 50k in any order.

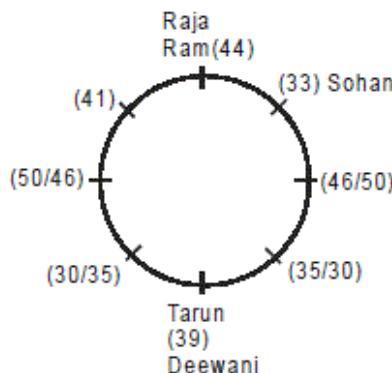
From statement VI, Tarun's income is more than his neighbours. So, Tarun's income cannot be equal to 30k or 33k or 35k. It can be said that Tarun's income is either 39k or 41k or 44k.

Case I: Let Tarun's income be 39k.

From statement II, Raja's father i.e., Ram's income will be 44k and Tarun will be Deewani's father.

From statement VI, Tarun's income is more than his neighbours.

So neighbours income will be 30k and 35k in any order.



Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

But, above arrangement is not possible because as per statement IV, person with monthly income of 41k must sit on the immediate right of Sanjay which is not possible in this case.

Case II: Let Tarun's income be 41k.

Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

From statement IV, Tarun should sit immediate right of Sanjay. Now we know that the persons with incomes 39k and 44k and 46k and 50k should be opposite to each other as per instructions given in statement II and VIII.

∴ Person with income 39k can sit only immediate right of Tarun.

So from statement VI, Tarun's income is higher than his neighbours.

Therefore, the person with monthly income either 30k or 35k will sit on immediate left of Tarun.

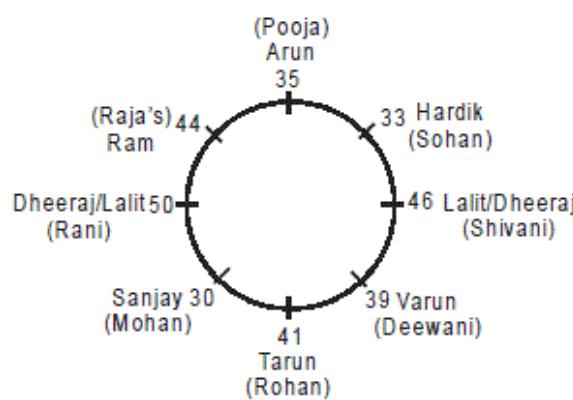
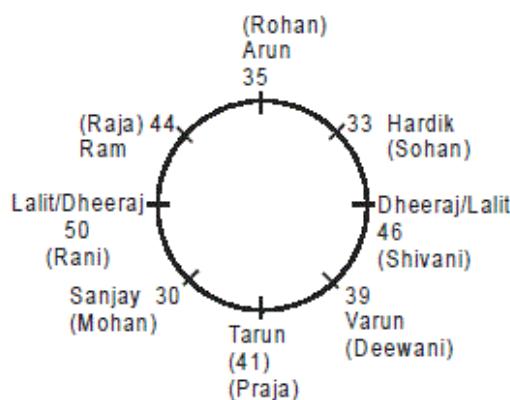
But if the person with income 35k sit on immediate left of Tarun, then the only place left for the person with monthly income 30k is opposite to Tarun which is not possible as per statement III.

So, the person with income 30k only can sit on the immediate left of the person with income 41k i.e., Tarun.

We can also conclude that the person with income 35k will sit opposite to Tarun.

The only position left for Varun is immediate right of Tarun.

So there are two arrangements which are possible are given below.



Case III: Let Tarun's income be 44k. Similarly, as of case I, case III is not possible.

Varun was sitting opposite to Ram.

FeedBack

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

Eight children – Raja, Praja, Rohan, Mohan, Sohan, Rani, Deewani and Shivani – were discussing monthly income of their fathers – Arun, Varun, Tarun, Sanjay, Ram, Lalit, Dheeraj and Hardik – not necessarily in the same order, who were sitting around a circular table facing towards the center. Monthly income (in rupees) of their fathers were 30k, 33k, 35k, 39k, 41k, 44k, 46k and 50k, in any order.

Some additional information known to us is as follows:

- I. Neither Lalit nor Dheeraj had his monthly income as 41k.
- II. Raja's father Ram and Deewani's father were sitting opposite to each other and their monthly incomes were 39k and 44k, not necessarily in that order.
- III. The person, whose monthly income was the least among all of them, was not sitting adjacent to the persons whose income were 33k and 46k.
- IV Rani's father and Deewani's father were not immediate neighbours of each other. The person having his monthly income as 41k was sitting on the immediate right of Sanjay.
- V. Lalit and Dheeraj were facing each other and the monthly incomes of both of them were more than that of Raja's father.
- VI. Sohan's father, whose monthly income was 33k, was sitting third to the right of Tarun, whose income was higher than that of his neighbours.
- VII. Varun was sitting third to the left of Arun. The number of people sitting between Rohan's father and Rani's father was equal to the number of people sitting between Rohan's father and Shivani's father.
- VIII. The two, who had highest and second highest monthly income, were sitting opposite to each other.
- IX. Praja's father was sitting exactly between Mohan's father and Deewani's father.

Q.58

For which of the following pair of fathers, the sum of their monthly salary is definitely 76k?

1 Sanjay and Lalit

2 Arun and Tarun

3 Varun and Hardik

4 None of these

Solution:

Correct Answer : 2

 **Bookmark**

 **Answer key/Solution**

From statement V, each of Lalit and Dheeraj has monthly income more than that of Raja's father. Raja's father may have monthly income of 39k or 44k as per statement no. II. Lalit's income cannot be equal to 41k as per statement no. I. From these facts, we can conclude that the monthly income of Lalit and Dheeraj are 46k or 50k in any order.

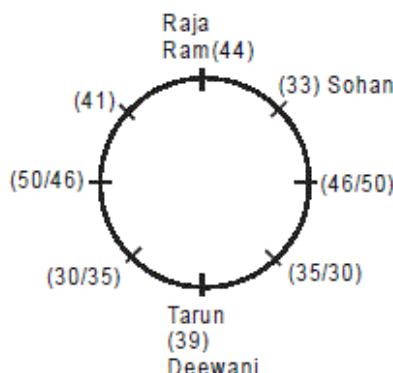
From statement VI, Tarun's income is more than his neighbours. So, Tarun's income cannot be equal to 30k or 33k or 35k. It can be said that Tarun's income is either 39k or 41k or 44k.

Case I: Let Tarun's income be 39k.

From statement II, Raja's father i.e., Ram's income will be 44k and Tarun will be Deewani's father.

From statement VI, Tarun's income is more than his neighbours.

So neighbours income will be 30k and 35k in any order.



Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

But, above arrangement is not possible because as per statement IV, person with monthly income of 41k must sit on the immediate right of Sanjay which is not possible in this case.

Case II: Let Tarun's income be 41k.

Sohan's father whose income is Rs.33k is sitting third to the right of Tarun as per statement VI.

From statement IV, Tarun should sit immediate right of Sanjay. Now we know that the persons with incomes 39k and 44k and 46k and 50k should be opposite to each other as per instructions given in statement II and VIII.

∴ Person with income 39k can sit only immediate right of Tarun.

So from statement VI, Tarun's income is higher than his neighbours.

Therefore, the person with monthly income either 30k or 35k will sit on immediate left of Tarun.

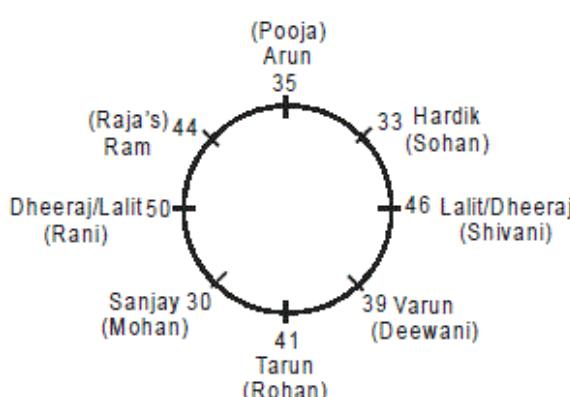
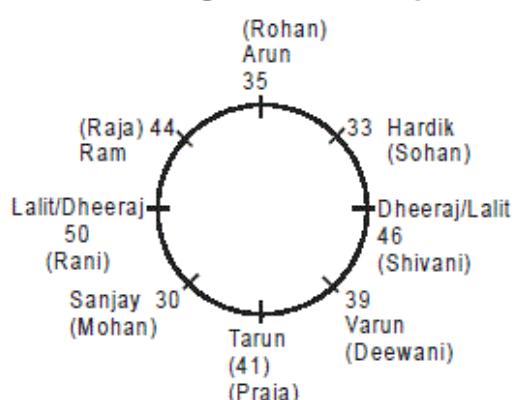
But if the person with income 35k sit on immediate left of Tarun, then the only place left for the person with monthly income 30k is opposite to Tarun which is not possible as per statement III.

So, the person with income 30k only can sit on the immediate left of the person with income 41k i.e., Tarun.

We can also conclude that the person with income 35k will sit opposite to Tarun.

The only position left for Varun is immediate right of Tarun.

So there are two arrangements which are possible are given below.



Case III: Let Tarun's income be 44k. Similarly, as of case I, case III is not possible.

The sum of monthly salary of Arun (35k) and Tarun (41k) is definitely Rs.76k.

FeedBack

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

In a class of 100 students, 60 students like Physics, 50 students like Chemistry and 40 students like Maths. It is known that at least one student likes only Physics, only Chemistry and only Maths. Similarly, at least one student likes both Physics and Chemistry (but not Maths), both Physics and Maths (but not Chemistry) and both Chemistry and Maths (but not Physics). Further, at least one student likes all the three subjects. Each student likes at least one subject.

Q.59

What can be the maximum number of students who like all the three subjects?

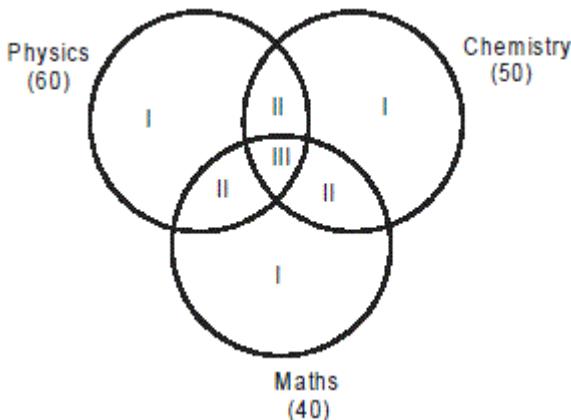
1 **23**

2 **40**

3 **37**

4 **24**



Solution:**Correct Answer : 1****Your Answer : 1****Bookmark****Answer key/Solution**

$$I + II + III = 100 \quad \dots(1)$$

$$I + 2II + 3III = 60 + 50 + 40 = 150 \quad \dots(2)$$

Where I = number of students who like exactly one subject.

From (1) and (2)

$$II + 2III = 50 \quad \dots(3)$$

II – number of students who like exactly two subjects

III – number of students who like all three subjects.

$II_{\min} = 3 (1 + 1 + 1)$ (liking Physics-Chemistry but not Maths, liking Chemistry-Maths not Physics and liking Physics-Maths but not Chemistry)

$$III_{\max} = \frac{50 - 4}{2} = 23$$

But on putting $II_{\min} = 3$, we don't get a natural number for III_{\max} , so put $II_{\min} = 4$, then we get $III_{\max} = 23$.

FeedBack

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

In a class of 100 students, 60 students like Physics, 50 students like Chemistry and 40 students like Maths. It is known that at least one student likes only Physics, only Chemistry and only Maths. Similarly, at least one student likes both Physics and Chemistry (but not Maths), both Physics and Maths (but not Chemistry) and both Chemistry and Maths (but not Physics). Further, at least one student likes all the three subjects. Each student likes at least one subject.

Q.60

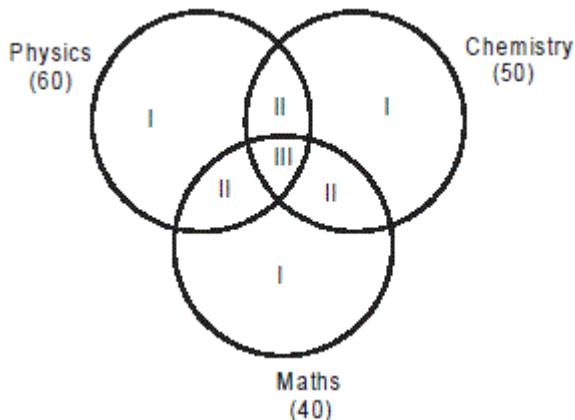
What can be the maximum number of students who like exactly two subjects?

1 24

2 48

3 46

4 49

Solution:**Correct Answer : 2****Bookmark****Answer key/Solution**

$$\text{I} + \text{II} + \text{III} = 100 \quad \dots(1)$$

$$\text{I} + 2\text{II} + 3\text{III} = 60 + 50 + 40 = 150 \quad \dots(2)$$

Where I = number of students who like exactly one subject.

From (1) and (2)

$$\text{II} + 2\text{III} = 50 \quad \dots(3)$$

II – number of students who like exactly two subjects

III – number of students who like all three subjects.

From (3)

$$\text{II} + 2\text{III} = 50$$

$$\Rightarrow \text{II}_{\max} = 50 - 2 \times \text{III}_{\min} = 50 - 2 \times 1 = 48$$

FeedBack

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

In a class of 100 students, 60 students like Physics, 50 students like Chemistry and 40 students like Maths. It is known that at least one student likes only Physics, only Chemistry and only Maths. Similarly, at least one student likes both Physics and Chemistry (but not Maths), both Physics and Maths (but not Chemistry) and both Chemistry and Maths (but not Physics). Further, at least one student likes all the three subjects. Each student likes at least one subject.

Q.61

If exactly 15 students like all the three subjects, then what can be the maximum value of the sum of the number of students who like both Physics and Maths but not Chemistry, and the number of students who like both Chemistry and Maths but not Physics?

 1 24

 2 25

 3 19

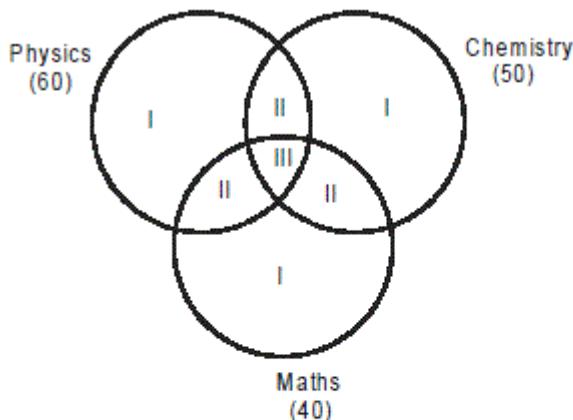
4 None of these

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution



$$I + II + III = 100 \quad \dots(1)$$

$$I + 2II + 3III = 60 + 50 + 40 = 150 \quad \dots(2)$$

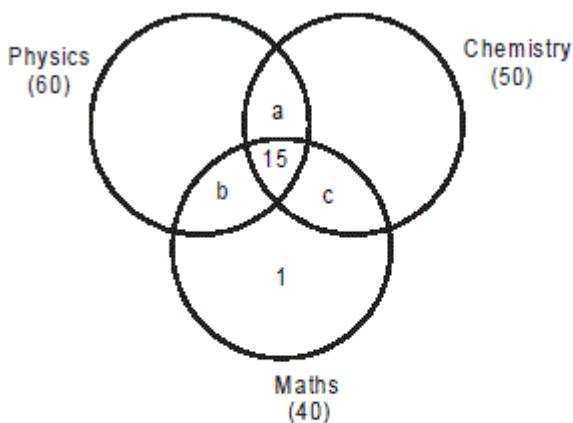
Where I = number of students who like exactly one subject.

From (1) and (2)

$$II + 2III = 50 \quad \dots(3)$$

II – number of students who like exactly two subjects

III – number of students who like all three subjects.



We need to find $(b + c)_{\max}$.

To maximize $b + c$, we'll take least value of a and a is equal to 1.

From (3)

$$II + 2III = 50$$

$$\Rightarrow a + b + c + 2 \times 15 = 50 \Rightarrow 1 + b + c = 20 \Rightarrow b + c = 19.$$

FeedBack

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

In a class of 100 students, 60 students like Physics, 50 students like Chemistry and 40 students like Maths. It is known that at least one student likes only Physics, only Chemistry and only Maths. Similarly, at least one student likes both Physics and Chemistry (but not Maths), both Physics and Maths (but not Chemistry) and both Chemistry and Maths (but not Physics). Further, at least one student likes all the three subjects. Each student likes at least one subject.

Q.62

If exactly 15 students like all the three subjects, then what can be the maximum number of students who like both Physics and Chemistry but not Maths?

1 24

2 31

3 18

4 Cannot be determined



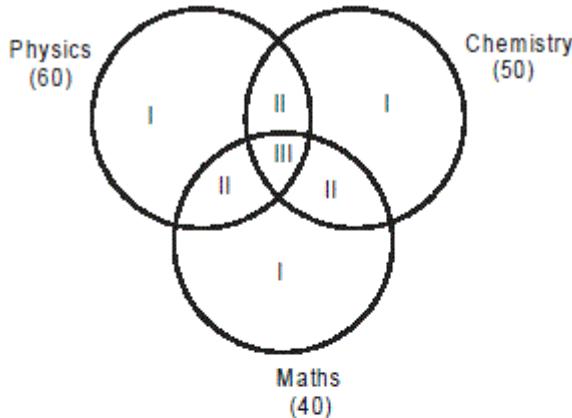
Solution:

Correct Answer : 3

Your Answer : 3

Bookmark

Answer key/Solution



$$I + II + III = 100 \quad \dots(1)$$

$$I + 2II + 3III = 60 + 50 + 40 = 150 \quad \dots(2)$$

Where I = number of students who like exactly one subject.

From (1) and (2)

$$II + 2III = 50 \quad \dots(3)$$

II – number of students who like exactly two subjects

III – number of students who like all three subjects.

Here, we have to find a_{\max}

Since $a + b + c = II$

and $II + 2III = 50$ from equation (3)

$$\Rightarrow II = 50 - 2 \times 15 = 20$$

So, $a_{\max} = II - (b + c)_{\min}$

$$\Rightarrow a_{\max} = 20 - 2 = 18$$

(Since minimum value for b and c will be 1 for each).

FeedBack

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

Four families decided to attend the Thanks-Giving dinner arranged by one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the dinner. Given below is some information about the families, and who reached when to attend the dinner.

- I. The family with 2 kids came just before the family with no kids.
- II. Shawn who does not have any kids reached just before Sharon's family.
- III. Mason and his wife reached last with their only kid.
- IV. Anderson is not the husband of Julie.
- V. Both Anderson and Ross are males.
- VI. Sharon's and Phoebe's daughters go to the same school.
- VII. Julie came before Shawn and when she reached, she met Phoebe.
- VIII. Rajesh stays the farthest from the venue and so he was not able to reach first.
- IX. Ross said his son could not come because of his exams.

Q.63

Which woman arrived third?

1 **Shawn**

2 **Sharon**

3 **Phoebe**

4 **Julie**



Solution:**Correct Answer : 1****Your Answer : 1****Bookmark****Answer key/Solution**

The basic information may be summarised as:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife				
Children				1 kid

This is about the only direct clue in the question. Thus, we need to focus on the indirect clues to move further.

The first thing we should do perhaps is to collate the 4 names of men and women.

The four men are: Anderson, Ross, Mason and Rajesh.

The four women are: Shawn, Sharon, Julie and Phoebe.

From the 2nd and the 7th clues together, we get the information of the order of arrival of the women.

Shawn, who does not have any kids, reached just before Sharon and Julie came before Shawn and met Phoebe when she reached the venue.

Phoebe-Julie-Shawn-Sharon.

The table now becomes:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Also given that Anderson and Ross are males, Anderson is not the husband of Julie, and Rajesh did not arrive first. So, we can further transform the table:

Order or coming	1st	2nd	Third	Last
Husband	Anderson/Ross	Ross/Rajesh	Rajesh/Anderson	Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Shawn arrived third.

FeedBack

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

Four families decided to attend the Thanks-Giving dinner arranged by one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the dinner. Given below is some information about the families, and who reached when to attend the dinner.

- I. The family with 2 kids came just before the family with no kids.
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- III. Mason and his wife reached last with their only kid.
- IV. Anderson is not the husband of Julie.
- V. Both Anderson and Ross are males.
- VI. Sharon's and Phoebe's daughters go to the same school.
- VII. Julie came before Shawn and when she reached, she met Phoebe.
- VIII. Rajesh stays the farthest from the venue and so he was not able to reach first.
- IX. Ross said his son could not come because of his exams.

Q.64

Which of them could be the correct pair of husband and wife?

1 Ross and Shawn

2 Mason and Sharon

3 Ross and Phoebe

4 Both (2) and (3)



Solution:

Correct Answer : 4

Your Answer : 4

Bookmark

Answer key/Solution

The basic information may be summarised as:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife				
Children				1 kid

This is about the only direct clue in the question. Thus, we need to focus on the indirect clues to move further.

The first thing we should do perhaps is to collate the 4 names of men and women.

The four men are: Anderson, Ross, Mason and Rajesh.

The four women are: Shawn, Sharon, Julie and Phoebe.

From the 2nd and the 7th clues together, we get the information of the order of arrival of the women.

Shawn, who does not have any kids, reached just before Sharon and Julie came before Shawn and met Phoebe when she reached the venue.

Phoebe-Julie-Shawn-Sharon.

The table now becomes:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Also given that Anderson and Ross are males, Anderson is not the husband of Julie, and Rajesh did not arrive first. So, we can further transform the table:

Order or coming	1st	2nd	Third	Last
Husband	Anderson/Ross	Ross/Rajesh	Rajesh/Anderson	Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Both Mason and Sharon, and Ross and Phoebe could be the correct pair of husband and wife.

FeedBack

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

Four families decided to attend the Thanks-Giving dinner arranged by one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the dinner. Given below is some information about the families, and who reached when to attend the dinner.

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- IV. Anderson is not the husband of Julie.
- V. Both Anderson and Ross are males.
- VI. Sharon's and Phoebe's daughters go to the same school.
- VII. Julie came before Shawn and when she reached, she met Phoebe.
- VIII. Rajesh stays the farthest from the venue and so he was not able to reach first.
- IX. Ross said his son could not come because of his exams.

Q.65

Of the following pairs, whose daughters could go to the same school?

-
- 1 Anderson and Rajesh
 - 2 Mason and Rajesh
 - 3 Mason and Anderson
 - 4 Ross and Anderson
-

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

The basic information may be summarised as:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife				
Children				1 kid

This is about the only direct clue in the question. Thus, we need to focus on the indirect clues to move further.

The first thing we should do perhaps is to collate the 4 names of men and women.

The four men are: Anderson, Ross, Mason and Rajesh.

The four women are: Shawn, Sharon, Julie and Phoebe.

From the 2nd and the 7th clues together, we get the information of the order of arrival of the women.

Shawn, who does not have any kids, reached just before Sharon and Julie came before Shawn and met Phoebe when she reached the venue.

Phoebe-Julie-Shawn-Sharon.

The table now becomes:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Also given that Anderson and Ross are males, Anderson is not the husband of Julie, and Rajesh did not arrive first. So, we can further transform the table:

Order or coming	1st	2nd	Third	Last
Husband	Anderson/Ross	Ross/Rajesh	Rajesh/Anderson	Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Mason's and Anderson's daughters could go to the same school.

FeedBack

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

Four families decided to attend the Thanks-Giving dinner arranged by one of their colleagues. One family has no kids, while the others have at least one kid each. Each family with kids has at least one kid attending the dinner. Given below is some information about the families, and who reached when to attend the dinner.

- I. The family with 2 kids came just before the family with no kids.
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- IV. Anderson is not the husband of Julie.
- V. Both Anderson and Ross are males.
- VI. Sharon's and Phoebe's daughters go to the same school.
- VII. Julie came before Shawn and when she reached, she met Phoebe.
- VIII. Rajesh stays the farthest from the venue and so he was not able to reach first.
- IX. Ross said his son could not come because of his exams.

Q.66

Whose family could have more than one kid for certain?

1 **Rajesh's**

2 **Ross's**

3 **Anderson's**

4 **Cannot be determined**



Solution:

Correct Answer : 4

Your Answer : 4

Bookmark

Answer key/Solution

The basic information may be summarised as:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife				
Children				1 kid

This is about the only direct clue in the question. Thus, we need to focus on the indirect clues to move further.

The first thing we should do perhaps is to collate the 4 names of men and women.

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Shawn, who does not have any kids, reached just before Sharon and Julie came before Shawn and met Phoebe when she reached the venue.

Phoebe-Julie-Shawn-Sharon.

The table now becomes:

Order or coming	1st	2nd	Third	Last
Husband				Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

Also given that Anderson and Ross are males, Anderson is not the husband of Julie, and Rajesh did not arrive first. So, we can further transform the table:

Order or coming	1st	2nd	Third	Last
Husband	Anderson/Ross	Ross/Rajesh	Rajesh/Anderson	Mason
Wife	Phoebe	Julie	Shawn	Sharon
Children	At least 1 kid	2 kids	No kid	1 kid(daughter)

It can be either Ross or Rajesh. So, it cannot be determined.

FeedBack

Sec 3

Q.67

Neha starts playing a game with some amount. The amount gets increased by some percentage in the first hour of the game but in the second hour of the game, it was decreased by the same percentage. At the end of the second hour, she had Rs.5,040. Similarly, on increasing and decreasing in the same pattern, also with the same percentage, at the end of the fourth hour, that amount became Rs.4,961.25. Following the same pattern, the amount she had (in nearest integer) at the end of the fifth hour was

- 1 Rs.5,278
- 2 Rs.5,581
- 3 Rs.5,349
- 4 Rs.5,287

**Solution:**

Correct Answer : 2

Your Answer : 2



[Answer key/Solution](#)

Let the percentage increase and decrease be $r\%$.

$$\text{As per the question; } 5040 \left(1 + \frac{r}{100}\right) \left(1 - \frac{r}{100}\right) = 4961.25 \Rightarrow 1 - \left(\frac{r}{100}\right)^2 = \frac{4961.25}{5040} = \frac{63}{64} \Rightarrow \frac{r}{100} = \frac{1}{8}$$

$$\text{Amount at the end of the 5th hour} = 4961.25 \times \left(1 + \frac{1}{8}\right) \approx \text{Rs. 5,581.}$$

[FeedBack](#)

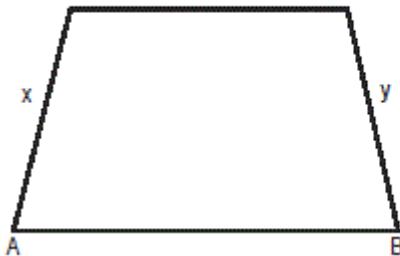
Q.68

There are two cities - A and B - such that the road to travel between them is partly uphill, partly on level ground and partly downhill. It took three hours for a bus to go from A to B, whereas it took 40 minutes more for the same bus to come back from B to A. Find the distance (in km) between A and B, if the speed of the bus at uphill, downhill and that on the level ground are 40 km/hr, 60 km/hr and 48 km/hr respectively.



Solution:**Correct Answer : 160****Your Answer : 150****Bookmark****Answer key/Solution**

Let us denote the total distance, the uphill distance and the downhill distance by d , x , and y respectively.
So, the distance covered on level ground = $d - (x + y)$



On his onward journey i.e., from A to B,

$$\text{total time taken} = \frac{x}{40} + \frac{d-(x+y)}{48} + \frac{y}{60} = 3$$

$$\text{On his return journey i.e., from B to A, total time taken} = \frac{y}{40} + \frac{d-(x+y)}{48} + \frac{x}{60} = 3\frac{2}{3}$$

Adding these two equations, we get

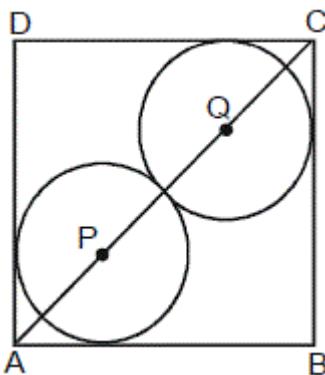
$$\left(\frac{x}{40} + \frac{x}{60}\right) + \frac{2d}{48} - \frac{2(x+y)}{48} + \left(\frac{y}{40} + \frac{y}{60}\right) = 6\frac{2}{3} \Rightarrow \frac{x}{24} + \frac{d}{24} - \frac{x}{24} - \frac{y}{24} + \frac{y}{24} = \frac{20}{3} \Rightarrow \frac{d}{24} = \frac{20}{3} \Rightarrow d = 160 \text{ km}$$

Therefore, the required total distance between A and B = 160 km.

FeedBack

Q.69

In the diagram shown below, ABCD is a square. The two identical circles touch each other and also touch two sides of the square. The centers of the circles, P and Q, lie along the diagonal AC. If the radius of each circle is 1 unit, then find the side of the square ABCD.



1 2($1 + \sqrt{2}$)

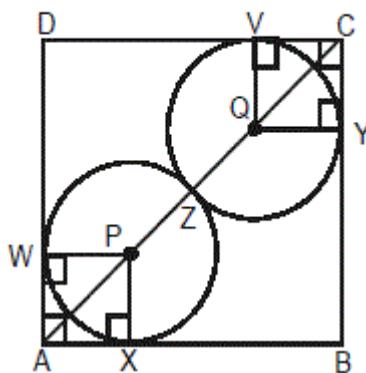
2 $2 + \sqrt{2}$

3 $2\sqrt{2}$

4 $1 + \sqrt{2}$

Solution:**Correct Answer : 2**

Let us make some construction as shown in the diagram below:


[**Bookmark**](#)
[**Answer key/Solution**](#)

We have:

$$PX = PW = PZ = QZ = QY = QV = \text{radius of the circle} = 1$$

Thus, PWAX and QVCY are squares of side 1

$$\text{Thus, } PA = QC = \sqrt{1+1} = \sqrt{2}$$

$$\text{Hence, diagonal } AC = PA + PZ + QZ + QC = \sqrt{2} + 1 + 1 + \sqrt{2} = 2(\sqrt{2} + 1)$$

$$\text{So, each side of the square } ABCD = \frac{AC}{\sqrt{2}} = \frac{2(\sqrt{2} + 1)}{\sqrt{2}} = \sqrt{2}(\sqrt{2} + 1) = 2 + \sqrt{2}.$$

[FeedBack](#)
Q.70

If $N = 84 \times 192 \times 217 \times 301$, then find the remainder when N is divided by 27.

1 9

2 7

3 6

4 5



Solution:**Correct Answer : 1****Your Answer : 1**

$$N = 84 \times 192 \times 217 \times 301$$

$$\text{Rem}\left[\frac{N}{27}\right] = \text{Rem}\left[\frac{84 \times 192 \times 217 \times 301}{27}\right]$$

$$\text{Rem}\left[\frac{84}{27}\right] = 3$$

$$\text{Rem}\left[\frac{192}{27}\right] = 3$$

$$\text{Rem}\left[\frac{217}{27}\right] = 1$$

$$\text{Rem}\left[\frac{301}{27}\right] = 4$$

$$\text{Rem}\left[\frac{N}{27}\right] = \text{Rem}\left[\frac{3 \times 3 \times 1 \times 4}{27}\right] = 9.$$

 **Bookmark**
 **Answer key/Solution**
Q.71

For a quadratic equation: $ax^2 + bx + c = 0$, the sum of the square of its roots is equal to the sum of the cubes of its roots. If $b^3 + ab^2 = 2a + 3b \neq 0$, then find the value of 'ac'.

1 02 13 -24 4

Solution:**Correct Answer : 2****Your Answer : 2** **Bookmark** **Answer key/Solution**

Let α and β be the roots of the equation $ax^2 + bx + c = 0$.

$$\text{Therefore, } \alpha + \beta = -\frac{b}{a} \text{ and } \alpha\beta = \frac{c}{a}$$

$$\text{Given, } \alpha^2 + \beta^2 = \alpha^3 + \beta^3$$

$$\Rightarrow (\alpha + \beta)^2 - 2\alpha\beta = (\alpha + \beta)^3 - 3\alpha\beta(\alpha + \beta)$$

$$\Rightarrow \left(\frac{-b}{a}\right)^2 - \frac{2c}{a} = \left(\frac{-b}{a}\right)^3 - 3 \times \frac{c}{a} \left(\frac{-b}{a}\right) \Rightarrow \frac{b^2}{a^2} - \frac{2c}{a} = \frac{-b^3}{a^3} + \frac{3bc}{a^2} \Rightarrow \frac{b^2 - 2ac}{a^2} = \frac{-b^3 + 3abc}{a^3}$$

$$\Rightarrow ab^2 - 2a^2c = -b^3 + 3abc \Rightarrow b^3 + ab^2 = 2a^2c + 3abc \Rightarrow b^3 + ab^2 = ac(2a + 3b)$$

But given that, $b^3 + ab^2 = 2a + 3b \neq 0 \Rightarrow ac = 1$.

FeedBack**Q.72**

Manohar, a typist, had just finished typing an entire book. If in order to number all the pages of that book, he made a total of 5001 key presses, then find the number of pages in that book.

Solution:**Correct Answer : 1527** **Bookmark** **Answer key/Solution**

To type all the page numbers, he need to press the keys only once for single digit page numbers, twice for two-digits page numbers, thrice for three-digits page numbers and four times for four-digits page numbers.

	Number of pages	Number of key press
Single digit number	9	9
Two digit numbers	90	180
Three digit numbers	900	2700

$$\text{Remaining number of key press} = 5001 - (2700 + 180 + 9) = 2112$$

$$\text{So, number of four-digits page numbers} = \frac{2112}{4} = 528$$

$$\text{Thus, the total number of pages in the book is } 9 + 90 + 900 + 528 = 1527.$$

FeedBack

Q.73

A starts a certain work and leaves after completing exactly half of the work, then B takes up the remaining work. In this way, the work is completed in 25 days. If A and B would work together, the same work get completed in 12 days. It is known that A is slower than B. Find the number of days in which the work will be completed, if A alone first works on exactly one-fifth of the work and then B alone completes the rest of the work.

1 20

2 22

3 25

4 30



Solution:

Correct Answer : 2

Your Answer : 2

Bookmark

Answer key/Solution

Let the number of days taken by A alone and B alone to complete the whole work be a and b respectively. Since each of A and B worked on exactly half the work and finished it in 25 days,

$$\frac{a}{2} + \frac{b}{2} = 25 \Rightarrow a + b = 50 \quad \dots(1)$$

Also, together they take 12 days.

$$\Rightarrow \frac{ab}{a+b} = 12 \quad \dots(2)$$

Solving (1) and (2), using condition that A is slower than B, we get

$a = 30$, $b = 20$ (since A is slower)

Let total work be $\text{LCM}(30, 20) = 60$ units.

Hence, 2 units/day and 3 units/day be the working capacity of A and B respectively.

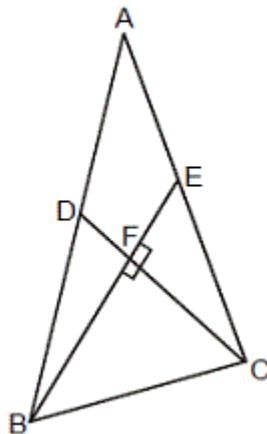
Now, if A completes $\frac{1}{5}$ th of the work i.e., 12 units in 6 days and B does the remaining $\frac{4}{5}$ th, i.e., 48 units in 16 days.

\therefore Total time taken = $6 + 16 = 22$ days.

FeedBack

Q.74

In the figure below, $DB = DC$, $\angle ACD = 20^\circ$, $\angle CAB = 30^\circ$ and $BF \perp DC$. If BF , when produced intersects AC at E , then find the measure (in degrees) of $\angle EBC$.

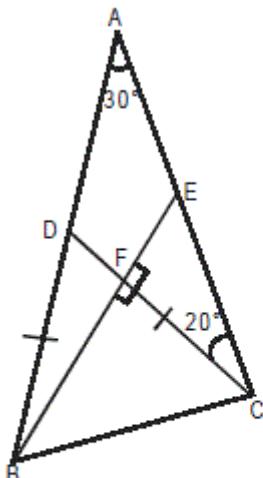


Solution:

Correct Answer : 25

Bookmark

Answer key/Solution



In the given figure, it is known that $\angle EFC = 90^\circ$

$\therefore \angle AEF = 90^\circ + 20^\circ = 110^\circ$ (Since the exterior angle is equal to sum of opposite interior angles)

$\therefore \angle ABE = 180^\circ - 30^\circ - 110^\circ = 40^\circ$

Again, $\angle BDC = 30^\circ + 20^\circ = 50^\circ$ (Exterior angle of $\triangle ADC$)

As $DB = DC$, so $\angle DBC = \angle DCB = 65^\circ$

$\therefore \angle EBC = \angle DBC - \angle ABE = 65^\circ - 40^\circ = 25^\circ$

FeedBack

Q.75

If a certain sum, invested under compound interest, amounts to twice as much at the end of the seventh year as it would at the end of the second year, then the amount at the end of the 64th year will be how many times of the amount that was at the end of the 49th year?

Solution:**Correct Answer : 8** **Bookmark** **Answer key/Solution**

Let the principal and the rate of interest per annum be denoted by P and r respectively.
It is given that $A_7 = 2A_2$, where A_i denotes the amount at the end of i^{th} year,

$$P \left(1 + \frac{r}{100}\right)^7 = 2P \left(1 + \frac{r}{100}\right)^2 \Rightarrow \left(1 + \frac{r}{100}\right)^5 = 2$$

Now, we need to find $\frac{A_{64}}{A_{49}} = \frac{P \left(1 + \frac{r}{100}\right)^{64}}{P \left(1 + \frac{r}{100}\right)^{49}} = \left(1 + \frac{r}{100}\right)^{15} = \left(1 + \frac{r}{100}\right)^{5 \times 3} = 2^3 = 8$.

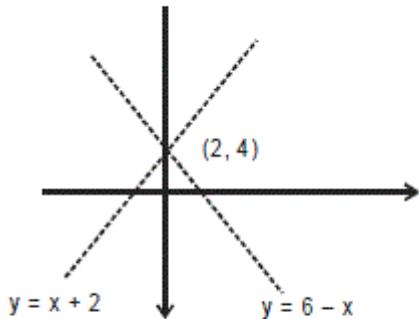
FeedBack**Q.76**

If $L(x) = \frac{1}{2} \times \max(6 - x, x + 2)$ for all real values of x, then the smallest possible value of L(x) is

1 12 23 34 4

Solution:**Correct Answer : 2** **Bookmark** **Answer key/Solution**

The two expression can be thought of as two straight lines $y = 6 - x$ and $y = x + 2$ which intersect at $x = 2$. By plotting the lines on the x-y plane, the behavior of the maximum and minimum can be easily understood.



The bold part of the graph above is $\max(6 - x, x + 2)$, and therefore, it attains its least value at $x=2$, i.e., $(6 - x) = (x + 2) = 4$

Hence, $\left(\frac{1}{2}\right) \max(6 - x, x + 2)$ attains a least value of $\frac{4}{2} = 2$.

So, smallest possible value of $L(x)$ is 2.

FeedBack

Q.77

There are four identical containers which are half filled with milk solution having concentration level of 100%, 50%, 25% and 20% respectively. The content of the first container is fully poured into the second container and then half of the content of the second container is poured into the third container and so on. Find the concentration of milk in the fourth container after the completion of this process.

1 35%

2 50%

3 22.5%

4 47.5%



Solution:**Correct Answer : 1****Your Answer : 1****Bookmark****Answer key/Solution**

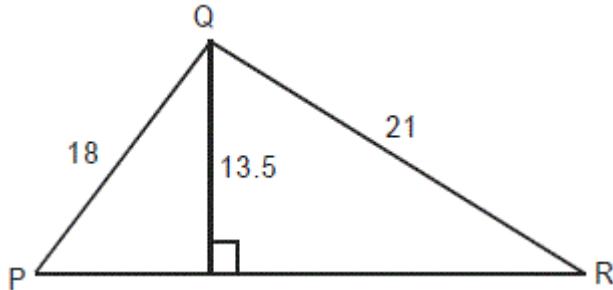
	M	W	
I	100	0	→ 200
II	50	50	→ 200
III	25	75	→ 200
IV	20	80	→ 200
	M	W	
In container II →	150	50	$\frac{1}{2}$
	75	25	$\frac{1}{2}$
In container III →	$\frac{+25}{100}$	$\frac{+75}{100}$	$\frac{1}{2}$
In container IV →	$\frac{50}{70}$	$\frac{50}{80}$	$\frac{1}{2}$

$$\therefore \text{Required concentration} = \frac{70}{200} \times 100 = 35\%.$$

FeedBack**Q.78**

In a triangle PQR, if PQ = 18 units, QR = 21 units and the length of the altitude drawn from Q to PR measures 13.5 units, then find the area (in sq. units) of the circle circumscribing the triangle. Take $\pi = 22/7$

1 5002 6163 6254 750

Solution:**Correct Answer : 2****Bookmark****Answer key/Solution**

$$\text{Area of } \triangle PQR = \frac{1}{2}(PR)(13.5) = \frac{(18)(21)(PR)}{4 \times \text{circumradius}}$$

$$\Rightarrow \frac{13.5}{2} = \frac{(18)(21)}{4r}, \text{ where } r \text{ is circumradius.}$$

$$\Rightarrow 27r = 18 \times 21 \Rightarrow r = 14$$

Therefore, the area of the circle circumscribing triangle PQR = $\pi(r)^2 = \frac{22}{7}(14)^2 = 616$ sq. units.

FeedBack
Q.79

If $x^2 + y^2 = 14xy$, then $\log\left(\frac{x^4 + y^4 - 2x^2y^2}{192}\right)$ is equivalent to which of the following expressions?

- 1 **$\log(x) \log(y)$**
- 2 **$4(\log x - \log y)$**
- 3 **$2(\log x + \log y)$**
- 4 **None of the above**

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

It is given that, $x^2 + y^2 = 14xy$... (1)

Adding $2xy$ both side we get,

$$(x + y)^2 = 16xy$$

Similarly, subtracting $2xy$ from both side in (1) we get,

$$(x - y)^2 = 12xy$$

$$\text{Now, } \log\left(\frac{x^4 + y^4 - 2x^2y^2}{192}\right) = \log\frac{(x^2 - y^2)^2}{192} = \log\frac{((x+y)(x-y))^2}{192} = \log\frac{(16xy)(12xy)}{192} = \log(xy)^2 = 2(\log x + \log y).$$

FeedBack**Q.80**

Wanik, by means of his false balance, defrauds to the extent of 10% in buying goods. Then he marks up the price by 80% and gives discount of 50% while selling the goods, but defrauds to the extent of 10% with customer also. Find his gain percentage in this whole transaction.

1 $7\frac{7}{7}\%$

2 $11\frac{1}{9}\%$

3 $5\frac{5}{9}\%$

4 10%

Solution:**Correct Answer : 4** **Bookmark** **Answer key/Solution**

Let Wanik invests Rs.100. He would get 110 gm of goods (Let cost price of 1 gm of goods be Rs.1). As he marks up the price by 80% and gives discount of 50%,

Selling price/gram will be $= 1 \times \frac{180}{100} \times \frac{50}{100}$ = Rs.0.90/gram.

He had 110 gm, but at the time of selling, he will take money at Rs.0.90/gram for $= 110 \times \frac{100}{90} = \frac{1100}{9}$ gm

Total amount received $= \frac{1100}{9} \times 0.9 = \text{Rs.110}$

\therefore Profit (%) $= \frac{110 - 100}{100} \times 100 = 10\%$.

FeedBack

Q.81

After giving B a head start of 24 m in a race of 240m, A was able to catch up with B in 16 seconds.

If the speed of A is $33\frac{1}{3}\%$ more than that of B, by how many seconds will A beat B in that race?

**Solution:****Correct Answer : 8****Your Answer : 8**

Let us denote the speed of B by u m/s.

Therefore, the speed of A = $\frac{4}{3}u$ m/s.

A catch up in 16 seconds implies $\frac{24}{\frac{4}{3}u-u}=16$.

$$\text{Hence, } 16 \times \frac{u}{3} = 24 \Rightarrow u = \frac{9}{2} \text{ m/s}$$

So, speed of A = 6 m/s

Now, time taken by A = $240/6 = 40$ seconds
and time taken by B = $216/4.5 = 48$ seconds.

Therefore, A beats B by 8 seconds.


[Answer key/Solution](#)
[FeedBack](#)
Q.82

There are 3 friends - Sachin, Saurav and Rahul - having a total of 30 apples with them. In how many ways can they distribute the apples among them so that Sachin gets more apples than Saurav, who gets more apples than Rahul, if Rahul gets atleast one apple?

Solution:**Correct Answer : 61** **Bookmark** **Answer key/Solution**

Let the number of apples Sachin, Saurav and Rahul be x , y and z respectively.
 Since the number of apples with them can only be in order Sachin > Saurav > Rahul, so $x > y > z$.
 Also each has atleast one apple, therefore $x > y > z \geq 1$
 Let us made the following table, starting with least possible value of z i.e., 1.

z	y (Max, Min.)	x (Min, Max.)	Total cases
1	(14, 2)	(15, 27)	13
2	(13, 3)	(15, 25)	11
3	(13, 4)	(14, 23)	10
4	(12, 5)	(14, 21)	8
5	(12, 6)	(13, 19)	7
6	(11, 7)	(13, 17)	5
7	(11, 8)	(12, 15)	4
8	(10, 9)	(12, 13)	2
9	10	11	1
Total			61

FeedBack**Q.83**

A sequence, whose n th term is ' t_n ', is defined as $t_n = (t_{n-1} - 1)^2 + 1$ for every n greater than 1. If $t_1 = 3$, then what is the product of the first 10 terms of the sequence?

1 $2^{1023} - 1$ 2 $2^{1024} - 1$ 3 $2^{512} - 1$ 4 $2^{2048} - 1$ **Solution:****Correct Answer : 2**Given, $t_1 = 3$, we first evaluate the first few terms as $t_2 = 5$, $t_3 = 17$... and so on.Now, the product of the first term = $3 = 2^2 - 1$ The product of the first two terms = $3 \times 5 = 2^4 - 1$ The product of the first three terms = $3 \times 5 \times 17 = 2^8 - 1$ Hence, the pattern is established as product of the first n terms = $(2^{2^n} - 1)$ Hence, product of first 10 terms = $(2^{2^{10}} - 1) = 2^{1024} - 1$. **Bookmark** **Answer key/Solution** **FeedBack**

Q.84

In a village 'X', ratio of male to female population is 1 : 3, whereas in another village 'Y', ratio of male to female population is 4 : 5. If the ratio of male to female population of both the villages taken together is 2 : 3, then find the ratio of males in village 'X' to males in village 'Y'.

1 1 : 6

2 1 : 4

3 2 : 3

4 Cannot be determined

**Solution:**

Correct Answer : 1

Your Answer : 1

Let the total population of village X = 4a
and total population of village Y = 9b

Given: ratio of males to females of both the village = 2 : 3

$$\frac{a+4b}{3a+5b} = \frac{2}{3} \Rightarrow \text{on solving this we get ratio of } a:b = 2:3$$

So population of males in village X = a and Y = 4b

Ratio is 1 : 6.



[Answer key/Solution](#)

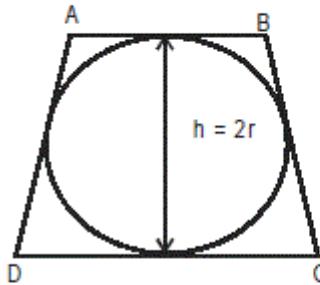
[FeedBack](#)

Q.85

Raghu wants to construct a circular swimming pool in his trapezium shaped plot. The lengths of the non-parallel sides of the plot are 26 m and 30 m. If the radius of the biggest circular pool that can be constructed inside the plot is 12 m, then what is the least possible area (in sq. meter) of the plot?

Solution:**Correct Answer : 672****Bookmark****Answer key/Solution**

The size of the plot will be the minimum when all the four sides of the plot (i.e., trapezium) touch the pool i.e., the circle is inscribed inside the plot.



Let the oblique sides be AD and BC. Since the circle is inscribed in ABCD, the sum of the lengths of opposite sides will be equal.

Hence, $AB + DC = AD + BC = 30 + 26 = 56$ cm

Also height of the trapezium = $h = 2r$ = diameter of circle = $12 \times 2 = 24$ m

Hence, the minimum possible area of trapezium = $\frac{1}{2} \times (AB + DC) \times h = \frac{1}{2} \times 56 \times 24 = 672$ sq.m.

FeedBack

Q.86

If a two-digit number is equal to the sum of its tens place digit and the square of its units place digit, then find the value obtained on adding that 2-digit number to the sum of its digits.

1 85

2 92

3 100

4 106

x

Solution:**Correct Answer : 4****Your Answer : 2** **Bookmark** **Answer key/Solution**

Let the two digit number be $10x + y$.

$$\therefore 10x + y = x + y^2$$

$$\Rightarrow 9x = y(y - 1)$$

As x and y are single digit and cannot be equal to each other and both y and $(y - 1)$ cannot be simultaneously multiples of 3, either y or $y - 1$ must be equal to 9.

But y is single digit, therefore $y - 1 \neq 9$

$$\therefore y = 9 \text{ and } x = y - 1 = 9 - 1 = 8$$

Therefore, the number is 89.

Therefore, the required sum = $89 + 8 + 9 = 106$.

Q.87

If the number of subsets of set P that contains exactly four elements is 126, then find the total number of proper subsets of set P.

1 **475**

2 **511**

3 **631**

4 **745**

Solution:**Correct Answer : 2** **Bookmark** **Answer key/Solution**

Let the total number of element in set P be n.

Number of sets containing exactly four elements = all possible combination of four elements = ${}^nC_4 = 126$

$$\text{i.e., } \frac{n(n-1)(n-2)(n-3)}{4 \times 3 \times 2 \times 1} = 126$$

$$\Rightarrow n(n-1)(n-2)(n-3) = 126 \times 4 \times 3 \times 2$$

$$\therefore n = 9$$

Total number of subsets = $2^n = 2^9$

and number of proper subsets of set P = $2^n - 1 = 2^9 - 1 = 512 - 1 = 511$.

Q.88

Taps - A, B and C - can fill a tank in 6 hours, 8 hours and 12 hours respectively. Initially, taps A and B were opened but after some time, tap B was closed and tap C was opened. Again, after sometime tap A and tap C both were closed whereas tap B was opened. In this way, the tank was filled in 4 hours. What may be the minimum gap (in hours) between closing and re-opening of tap B?

(Note: Taps are opened or closed only at the interval of $\frac{1}{2}$ hr / 1hr / $\frac{3}{2}$ hr / 2hr.... and so on.)

1 1/2

2 1

3 3/2

4 2

**Solution:**

Correct Answer : 4

Your Answer : 4

Let the capacity of the tank be LCM of (6, 8, 12) i.e., 24

Taps A, B and C fill 4 litres, 3 litres and 2 litres per hr respectively.

Let tap A and tap B were opened for x hours.

Tap A and tap C were opened for y hours.

Tap B alone was opened for z hours.

According to the question;

$$x + y + z = 4 \quad \dots(i)$$

$$\text{and } (4 + 3)x + (4 + 2)y + 3z = 24 \quad \dots(ii)$$

$\Rightarrow 7x + 6y + 3z = 24$

The only value that satisfies equation (i) & (ii) is

$$x = \frac{3}{2}, y = 2 \text{ and } z = \frac{1}{2}.$$

So, we may observe that tap B was closed after $\frac{3}{2}$ hrs and re-opened after $\frac{7}{2}$ hrs.

Hence, the required answer is $\frac{7}{2} - \frac{3}{2} = 2$ hrs.

Bookmark

Answer key/Solution

FeedBack

Q.89

If x, y, and z are three integers such that $x + y + z = 15$ and $xy + xz = 54$, then what is the minimum possible value of $y^2 + z^2$?



Solution:**Correct Answer : 18****Your Answer : 2****Bookmark****Answer key/Solution**

$$x + y + z = 15$$

$$xy + xz = 54 \Rightarrow x(y + z) = 54 \Rightarrow x(15 - x) = 54$$

$$\Rightarrow x^2 - 15x + 54 = 0 \Rightarrow (x - 9)(x - 6) = 0$$

$\Rightarrow x = 9$ or 6 , Hence, $y + z = 9$ or 6

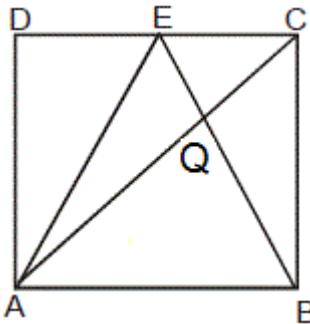
$(y + z)^2 = y^2 + 2yz + z^2$, As $(y + z)^2$ is a constant (it takes values of 81 or 36), $y^2 + z^2$ is minimum when $2yz$ is maximum, i.e., $y = z$.

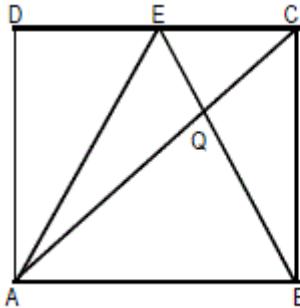
$$\Rightarrow y = z = \frac{6}{2} = 3 (y + z = 9 \text{ can be ignored, as we are looking for minimum value})$$

Hence, the minimum value of $y^2 + z^2 = 3^2 + 3^2 = 18$.

FeedBack**Q.90**

In the figure given below, ABCD is a square. A triangle AEB is drawn with a point E on CD. If the diagonal AC intersects BE at Q, such that the area of triangle AQB = 10 sq.cm and that of triangle CQE = 5 sq.cm, then find the area (in sq. cm) of triangle AED.

1 102 53 84 Cannot be determined

Solution:**Correct Answer : 2****Bookmark****Answer key/Solution**

Let side of the square ABCD i.e., $AB = BC = CD = AD = s$ units.

$$\text{Now, area of triangle } ACB = \frac{1}{2} (AB)(AC) = \frac{s^2}{2}$$

$$\text{So, area of triangle } CQB = \frac{s^2}{2} - 10$$

Also, area of triangle AEC = area of triangle ECB (area of triangle on same base and between same parallel lines)
So, area of triangle AEQ = area of triangle CQB

$$\text{So, ar (triangle AED)} = \text{ar(ABCD)} - \text{ar(ABC)} - \text{ar(AEQ)} - \text{ar(ECQ)} = s^2 - \left(\frac{s^2}{2} + \frac{s^2}{2} - 10 + 5 \right)$$

$$\Rightarrow \text{Area of triangle AED} = 5 \text{ cm}^2.$$

[FeedBack](#)
Q.91

A dishonest milkman dilutes milk by mixing water in it and then sells the diluted milk at a price of 20% higher than the price at which he purchased the milk. If he makes an overall profit of 50% in this manner, then how many ml of water does he add to every liter of milk?

Solution:**Correct Answer : 250****Bookmark****Answer key/Solution**

Let the cost price of each ml of milk be Rs. 1.

Therefore, the selling price of each ml of diluted milk = Rs. 1.2

Let the initial quantity of milk be purchased be 1000 ml.

CP of 1000 ml of milk = Rs. 1,000

Let the quantity of water added be x ml.

Now, total selling price = $(1000 + x)1.2 = 1.5(1000)$

$$\Rightarrow 1000 + x = 1250 \Rightarrow x = 250 \text{ ml}$$

Therefore, he adds 250 ml of water to every liter of milk.

[FeedBack](#)
Q.92

How many distinct real values of x satisfy the equation $|3x + 2| - |2x - 3| = 5$?

1 02 23 34 More than 3**Solution:****Correct Answer : 2** **Bookmark** **Answer key/Solution**

Based on the two modulus expressions given in the question, we consider the three ranges

$$\left(-\infty, -\frac{2}{3}\right), \left[-\frac{2}{3}, \frac{3}{2}\right] \text{ and } \left[\frac{3}{2}, \infty\right)$$

In the range $\left(-\infty, -\frac{2}{3}\right)$, our expression becomes $-(3x + 2) + (2x - 3) = 5$

$\Rightarrow x = -10$, which lies in the given range.

In the range $\left[-\frac{2}{3}, \frac{3}{2}\right]$, our expression becomes

$$(3x + 2) + (2x - 3) = 5$$

$\Rightarrow x = \frac{6}{5}$, which lies in the given range.

In the range $\left[\frac{3}{2}, \infty\right)$, our expression becomes

$$(3x + 2) - (2x - 3) = 5$$

$$\Rightarrow x + 5 = 5$$

$\Rightarrow x = 0$, (Not admissible as it does not lie in the given range)

Therefore, the equation holds true for $x = -10$ and $x = \frac{6}{5}$.

Hence, two real values are possible to satisfy the given equation.

FeedBack**Q.93**

If the average of nine consecutive even natural numbers, the greatest of which is y , is x , then what is the average of 17 consecutive natural numbers, the least of which is x ?

1 $y - 2$ 2 y 3 $y - 1$ 4 $y + 4$ 

Solution:**Correct Answer : 2****Your Answer : 1****Bookmark****Answer key/Solution**

The nine consecutive even numbers ending with y are as follows::.

$y - 16, y - 14, \dots, \text{up to } y - 2, y$

Their average will be the middle value i.e., $y - 8$

It is given that $y - 8 = x$

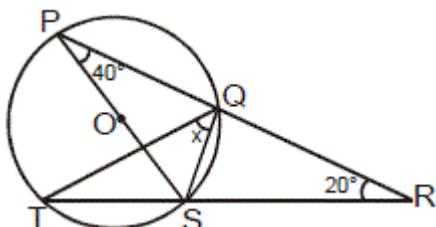
Now 17 consecutive natural numbers starting with x as the least number will be:

$y - 8, y - 7, y - 1, y + 1, \dots, y + 7, y + 8$

Therefore, the average of 17 consecutive natural numbers starting with $y - 8$ will be y .

FeedBack**Q.94**

PQR and TSR are two secants of the circle, as shown in the figure below. O is the centre of the circle, $\angle P = 40^\circ$ and $\angle R = 20^\circ$. Find the measure (in degrees) of angle x.

**Solution:****Correct Answer : 30**

$\angle QTS = \angle QPS = 40^\circ$ (angle in same segment)

In triangle PSR, $\angle S = 180^\circ - (20^\circ + 40^\circ) = 120^\circ$

Similarly, in triangle TQR, $\angle Q = 180^\circ - (20^\circ + 40^\circ) = 120^\circ$

As PS is diameter of the circle, $\angle PQS = 90^\circ$

Now, $\angle PQT + x = 90^\circ$ and $\angle RQS + x = 120^\circ$

Also, $\angle PQT + x + \angle RQS = 180^\circ$ (linear pair)

Therefore, $x = 90^\circ + 120^\circ - 180^\circ = 30^\circ$.

Bookmark**Answer key/Solution****FeedBack****Q.95**

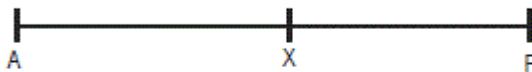
Two trains started simultaneously at 11:00 a.m. from Asansol and Patna moving towards Patna and Asansol respectively, and met each other at 3:00 p.m. If the second train reached its respective destination 88 minutes before the other train reached its respective destination, then when did the train starting from Asansol reach Patna?

1 7:20 p.m.

2 7:30 p.m.

3 7:48 p.m.4 8:00 p.m.**Solution:****Correct Answer : 3****Your Answer : 3**[Answer key/Solution](#)

Let the speed of the trains starting from Asansol and Patna be a and p respectively. Let us denote Asansol, Patna and their meeting points by A , P and X respectively. Considering the train starting from Patna take t hours more to reach its destination after crossing the other train.



Before meeting, $AX = a \times 4$, $PX = p \times 4 \Rightarrow (AX)(PX) = ap \times 16$

$$\text{After meeting, } XP = a\left(t + \frac{88}{60}\right), XA = pt \Rightarrow (XP)(XA) = apt\left(t + \frac{88}{60}\right)$$

$$\therefore ap \times 16 = apt\left(t + \frac{88}{60}\right) \Rightarrow t\left(t + \frac{88}{60}\right) = 16$$

$$\Rightarrow 15t^2 + 22t - 240 = 0 \Rightarrow (3t - 10)(5t + 24) = 0$$

$$\Rightarrow t = \frac{10}{3}$$

$$\text{Now, } t + \frac{88}{60} = \frac{10}{3} + \frac{88}{60} = \frac{24}{5} \text{ hrs.}$$

Thus the train reaches Patna $\frac{24}{5}$ hours after 3 p.m. i.e., at 7:48 pm.

[FeedBack](#)**Q.96**

The number $2x + 2$, which is the second term in a number series, is obtained by multiplying the number x , which is the first term of the same number series, by y . The third term in that number series is $3x + 3$ and it is equal to $2(xy + y)$. In that number series, if the fourth term is obtained by multiplying the third term by y , then what is the fourth term of the number series? (All the numbers in that series are real numbers)

1 -132 123 -13.54 $4x + 4$

Solution:**Correct Answer : 3** **Bookmark** **Answer key/Solution**

Let the fourth term be d.

From the given information, we can conclude that x, 2x + 2, 3x + 3, d are in G.P. and y is the common ratio of the G.P.

$$y = \frac{2x+2}{x} = \frac{3x+3}{2x+2}$$

$$\Rightarrow 4x^2 + 4 + 8x = 3x^2 + 3x \Rightarrow x = -1 \text{ or } -4$$

When $x = -1$, the terms are -1, 0, 0 which is not possible. Hence, $x = -4$.
So, the fourth number in the series is $= (3x + 3)y = -13.5$.

FeedBack**Q.97**

If $a = b^2 = c^3 = d^4$, then find the value of $\log_{(bc)^2} abcd$.

1 12 33 25/1084 5/4**Solution:****Correct Answer : 4**

$$a = b^2 = c^3 = d^4 = k$$

$$\therefore a = k, b = k^{\frac{1}{2}}, c = k^{\frac{1}{3}}, d = k^{\frac{1}{4}}$$

$$abcd = k \left(k^{\frac{1}{2}} \right) \left(k^{\frac{1}{3}} \right) \left(k^{\frac{1}{4}} \right) = k^{\frac{25}{12}}$$

$$(bc)^2 = \left(k^{\frac{1}{2}} k^{\frac{1}{3}} \right)^2 = k^{\frac{5}{6} \times 2} = k^{\frac{5}{3}}$$

$$\log_{(bc)^2} abcd = \log_{\left(k^{\frac{5}{3}} \right)} \left(k^{\frac{25}{12}} \right) = \frac{\left(\frac{25}{12} \right)}{\left(\frac{5}{3} \right)} = \frac{5}{4}.$$

Bookmark **Answer key/Solution****FeedBack**

Q.98

If A is 25% as efficient as B and can complete a certain work taking 15 days more than that taken by B, then in how many days will both A and B together complete the work?



Solution:

Correct Answer : 4

Your Answer : 4

Bookmark

Answer key/Solution

Efficiency ratio of A and B = 1 : 4

Therefore, ratio of time taken by A and B = 4 : 1

Let time taken by A and B be 4t, t respectively.

Hence, the difference between the two time = $3t = 15 \Rightarrow t = 5$

Therefore, A takes 20 days and B takes 5 days to complete the work.

Hence, while working together they will complete the work in $\frac{1}{\frac{1}{20} + \frac{1}{5}} = 4$ days.

FeedBack

Q.99

A seven-digit number is formed by using first seven natural numbers without repetition. What is the probability that the number will be divisible by 11?

1 **2/105**

2 **4/105**

3 **4/35**

4 **2/35**

Solution:**Correct Answer : 3****Bookmark****Answer key/Solution**

A number is divisible by 11, if and only if the difference of sum of digits at even and those at odd places is divisible by 11. (viz. 0, 11, 22, 33, 44, ...)

$$\text{Sum of first seven natural numbers} = 1 + 2 + 3 + \dots + 6 + 7 = \frac{7 \times 8}{2} = 28$$

Now, we should try to break 28 into two parts such that the difference of these two parts are 0, 11, 22, ...

Ist case: Difference of zero.

In this case both parts (even placed digits & odd placed digits are 14).

$$\begin{array}{c|c|c|c} (1,6,7) & (2,5,7) & (3,4,7) & (3,5,6) \\ \hline (2,3,4,5) & (1,3,4,6) & (1,2,5,6) & (1,2,4,7) \end{array}$$

There are four possibilities.

IIInd case: Difference of 11

Let the sum of digits at even places and sum of digits at odd places be a and b respectively.

$$\Rightarrow a + b = 28 \quad \text{and} \quad a - b = 11$$

We can see that no such value of a and b are possible.

IIIrd case: $a + b = 28$ and $a - b = 22$

$$\Rightarrow a = 25, b = 3$$

b cannot be equal to 3 as sum of three least natural numbers is 6.

So, we can see that no further case is possible

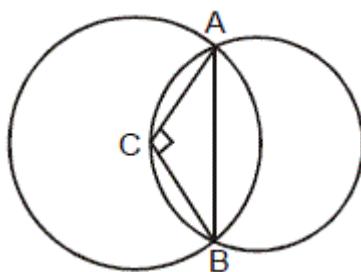
Total numbers made using first 7 natural numbers = $7!$

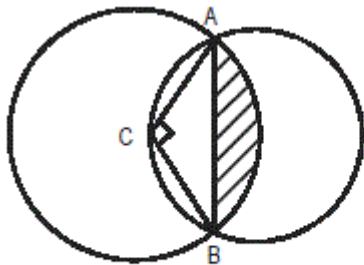
Possible numbers in 1st case = $4 \times 3! \times 4!$

$$\therefore \text{Required probability} = \frac{4 \times 3! \times 4!}{7!} = \frac{4 \times 6}{5 \times 6 \times 7} = \frac{4}{35}.$$

FeedBack
Q.100

If in the figure shown below, C is the center of the bigger circle, $\angle ACB = 90^\circ$ and the measure of the common chord AB is 14 cm, then find the area (in sq. cm) common to both the circles.



Solution:**Correct Answer : 105****Bookmark****Answer key/Solution**

As $\angle ACB = 90^\circ$, AB is the diameter of the smaller circle.

Again, AC = BC = Radius of the larger circle = r

$$\therefore AB = \sqrt{AC^2 + BC^2} = \sqrt{r^2 + r^2} = r\sqrt{2} = 14$$

$$\Rightarrow r = 7\sqrt{2}$$

Area of the shaded region = Area of the sector CAB – Area of the triangle CAB

$$= \frac{1}{4}\pi r^2 - \frac{1}{2}(r)^2 = \frac{1}{4} \times \frac{22}{7} \times (7\sqrt{2})^2 - \frac{1}{2} \times (7\sqrt{2})^2 = 77 - 49 = 28$$

Area of the region common to both the circles = Area of the shaded region + $\frac{1}{2}$ (Area of the smaller circle)

$$= 28 + \frac{1}{2}\pi(7)^2 = 28 + \frac{1}{2} \times \frac{22}{7} \times (7 \times 7) = 28 + 77 = 105 \text{ sq.cm.}$$

[FeedBack](#)