Solutions of Mock CAT – 2 2017

Scorecard (procreview.jsp? qsetId=EIp5ajh9idY=&qsetName=Mock CAT – 2 2017)	Accuracy (AccSelectGraph.jsp? qsetId=EIp5ajh9idY=&qsetName=Mock CAT – 2 2017)	Qs Analysis (QsAnalysis.jsp? qsetId=EIp5ajh9idY=&qsetName=Mock CAT – 2 2017)	Video Attempt (VideoAnalysis.jsp? qsetId=EIp5ajh9idY=&qsetName=Mock CAT – 2 2017)
VRC		DILR	QA

Sec 1

Directions for questions 1 to 6: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

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Today, largemouth bass still swim rampant. "Once that top predator is dominant, it's very hard to dislodge," said Stephen Carpenter, an ecologist who led the experiment. "You could do it, but it's gonna cost you."

The Peter Lake experiment demonstrated a well-known problem with complex systems: They are sensitive beasts. Just as when the Earth periodically plunges into an ice age, or when grasslands turn to desert, fisheries suddenly collapse, or a person slumps into a deep depression, systems can drift toward an invisible edge, where only a small change is needed to touch off a dramatic and often disastrous transformation. But systems that exhibit such "critical transitions" tend to be so complicated and riddled with feedback loops that experts cannot hope to calculate in advance where their tipping points lie — or how much additional tampering they can withstand before snapping irrevocably into a new state.

At Peter Lake, though, Carpenter and his team saw the critical transition coming. Rowing from trap to trap counting wriggling minnows and harvesting other data every day for three summers, the researchers captured the first field evidence of an early-warning signal that is theorized to arise in many complex systems as they drift toward their unknown points of no return.

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Since the Peter Lake study, interest in critical slowing down has spread across disciplines, bringing with it the hope of foreseeing and preventing a plethora of catastrophic failures. As theoreticians refine their understanding of the phenomenon, experimentalists are gathering further evidence of it in a mix of real-world systems.

"We have all these complex systems like the brain, the climate, ecosystems, the financial market, that are really difficult to understand, and we will probably never fully understand them," said Marten Scheffer, a complex systems theorist at Wageningen University. "So it's really kind of a small miracle that across these very different systems, we could find these universal indicators of how close they are to a threshold."

Experts stress that the study of critical slowing down is in its early stages, and not yet ready to serve as a call to action in the management of real systems. In some cases, responding to the signal might save an endangered species, a patient's mental health, or an industry. But in other types of complex systems that have been studied mathematically — such as food webs that, unlike Peter Lake's, are so chaotic that they do not exhibit critical transitions at all — the same signal might be a false alarm. Carpenter, who has returned to Peter Lake for a new experiment, says much more research is needed to sort out these different cases. In the meantime, he said, "don't try this at home."

Carpenter has worked on and off for 35 years at the experimental reserve where Peter Lake is located, making use of the relatively closed systems that lakes provide to test big ideas in complexity theory.

Q.1
The article mentions the example of bass in order to

1 ◯ introduce the concept of complex systems, which are then discussed further in the passage.

2 ◯ show that a bottom predator like the minnow is better than the top predator like the bass.

3 ◯ showcase the hard-work that Carpenter has put in for the last 35 years at Peter Lake.

4 ◯ discuss potential solutions to the problem of having too many bass in the lake.

Solution:
Correct Answer : 1
The passage mentions "The Peter Lake experiment demonstrated a well-known problem with complex systems: They are sensitive beasts." at the start of paragraph 3, immediately after the bass example. This makes option (1) correct. Option (2) is

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incorrect because the passage does not talk about bottom predators. While the passage does talk about option (3), the bass example is not with reference to hard work. The passage does not discuss the problem of too many bass. So, option (4) is incorrect.

FeedBack

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Q.2
An issue regarding the study of critical slowing down is that

1 ◯ it does not work for real world examples, but works only for theoretical ones like Peter Lake.

2 ◯ its studies are in the nascent stage, and not yet ready to be used for taking actions while managing real systems.

3 ◯ as interest has increased in critical slowing down, there have been turf wars between theoreticians and experimentalists.

4 ◯ the scientists who study critical slowing down cannot try it at home to improve their research.

Solution:
Correct Answer : 2
The penultimate paragraph says, "Experts stress that the study of critical slowing down is in its early stages, and not yet ready to serve as a call to action in the management of real systems." This makes option (2) correct. The other options are contrary to the passage.

FeedBack

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Answer key/Solution

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Q.3
According to the passage, it can be inferred that

1 ◯ once critical slowing down is sufficiently studied, we will fully understand complex systems.

2 ◯ Stephen Carpenter likes bass more than he likes minnows in open systems like lakes.

3 ◯ complex webs that are not studied mathematically do not exhibit critical transitions.

4 ◯ if minnows were to be introduced in Peter Lake in enough numbers, they could return the system to its earlier position.

Solution:
Correct Answer : 4
Minnows being introduced will lead to their eating bass hatchlings, and also fleas. This will reduce the number of bass, and increase algae, bringing the lake back to its original position. This makes option (4) correct. Option (1) is contrary to the passage, which states (in the fourth paragraph) about complex systems, "that are really difficult to understand, and we will probably never fully understand them". Option (2) is incorrect since a lake is a closed system as mentioned in the last paragraph. The passage discusses complex webs in the penultimate paragraph, but option (3) cannot be inferred from it.

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Q.4

Which of the following is a difference between Peter Lake and real-world complex systems?

1 ◯ The parameters in an experiment in Peter Lake are easier to control as compared to real world complex systems.

2 ◯ Peter Lake can experience critical slowing down, whereas real world systems cannot.

3 ◯ Peter Lake is a simulation of reality, whereas real-world complex systems actually exist.

4 ◯ Peter Lake can plunge the world into an ice age, whereas real world systems cannot.

Solution:
Correct Answer : 1
Peter Lake has a crew of ecologists working on a relatively closed system, making it easier to control. This makes option (1) correct. The other options do not have support in the passage.

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FeedBack

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Q.5

According to the author, all the points mentioned below are true, EXCEPT:

1 ◯ Complex systems such as the brain, and the climate are really difficult to understand.

2 ◯ Bass currently rule over clear water in Peter Lake.

3 ◯ The Peter Lake experiment demonstrated a well-known problem with complex systems.

4 ◯ Stephen Carpenter is an ecologist with Wageningen University.

Solution:
Correct Answer : 4
Marten Scheffer is a complex systems theorist at Wageningen University. The passage does not provide the university with which Stephen Carpenter is associated. This makes option (4) correct.

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FeedBack

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Q.6

The evidence that led Carpenter and his team to conclude that a critical transition was coming was

1 ◯ they knew that with the number of bass they had added, something had to change.

2 ◯ they were able to get help from Marten Scheffer, a complex systems theorist.

3 ◯ they got field evidence of an early warning signal.

4 ◯ they knew that there were problems with complex systems.

Solution:
Correct Answer : 3
From the fourth paragraph, "…saw the critical transition coming….the first field evidence of an early-warning signal….". This makes option (3) correct. The other options are not mentioned in the passage.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Q.7

The following question is based on the reasoning contained in brief statements or passages. You are to choose the best answer; that is, the response that most accurately and completely answers the question. You should not make assumptions that are by common sense standards implausible, superfluous, or incompatible with the passage.

An MBA college has two administrative buildings within the same locality, however the congeniality and comfort differ in regards to the facilities and overall environment of the buildings. After analyzing the productivity of the employees, the Human Resource department acknowledged the fact that the employees in the office premises with a beautiful campus around has recorded better productivity than the office employees who were in a shabby building even though the compatibility of the skills of the employees of both the buildings were comparable. The management confirmed that the overall environment of the office does make an effect on the productivity of the employees. Which of the following statements, if true, seriously weakens the management's conclusion in the paragraph?

1. Lesser productive resources spend less time at their shabby office than their non-productive counterparts in the beautiful building.
2. Less productive employees work less number of hours in a day as compared to the performing resources.
3. The productive lot of resources is rewarded by being shifted into the beautiful building.
4. An uncomfortable approach to the office and a rickety building dampens the spirits of the employees.

Solution:
Correct Answer : 3
Option (3) is the best answer because there inner quality of each employee is different irrespective of caliber. Hence, any employee who performs well is shifted to the better building can weaken the argument.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Q.8

The following question is based on the reasoning contained in brief statements or passages. You are to choose the best answer; that is, the response that most accurately and completely answers the question. You should not make assumptions that are by common sense standards implausible, superfluous, or incompatible with the passage.

In a garden a White child and a Black child were playing. Making a racist comment the White child asked the Black child, why Blacks are so ignorant and quiet in their approach. To this the Black child replied that probably he would prefer to take time in ascertaining if he were really ignorant as of the white child wanting to be wise.

Which of the following statements best describes the Black child's response?
1. The petulant remark of the observer shows what he lacks while the observed is thought to be ignorant.
2. For the Whites and Blacks to understand each other's perspective, it is important that they understand each other's challenges.
3. Black people are ignorant and quiet shy to express the same.
4. White children are better educated and aware than the backward countries where majority of the population is Black.

Solution:
Correct Answer : 1
Option (1) is the best answer because the Black child highlighted in his reply as being "ignorant and quiet" while the White child's perspective can be flawed in observation. But the lack of understanding of one's own flaw lets people concentrate on pointing out others.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Directions for questions 9 to 14: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

Whatever his shortcomings as a saint, Mu'awiya possessed tremendous political skill. The very qualities that helped him defeat the tormented Ali made him a successful monarch, and his reign institutionalized practices and procedures that would hold an Islamic empire together for centuries.

This is all very ironic because, let us not forget, when Mohammed's prophetic career began, the Umayyads were a leading clan among the rich elite of Mecca. When Mohammed as Messenger denounced the malefactors of great wealth who ignored the poor and exploited the widows and orphans, the Umayyads were some of the main people he was talking about. When Mohammed still lived in Mecca, the Umayyads outdid each other in harassing his followers. They helped plot the assassination of Mohammed before the Hijra and led some of the forces that tried to extinguish the Umma in its cradle after the Muslims moved to Medina.

But once Islam began to look like a juggernaut, the Umayyads converted, joined the Umma, and climbed to the top of the new society; and here they were again, back among the new elite. Before Islam, they were merely among the elite of a city. Now, they were the top elite of a global empire. I'm sure many among them were scratching their heads, trying to remember what they ever found to dislike in this new faith!

As rulers, the Umayyads possessed some powerful instruments of policy inherited from their predecessors, especially Omar and Othman. Omar had done them a great favor by sanctifying offensive warfare as jihad so long as it was conducted against infidels in the cause of Islam. This definition of jihad enabled the new Muslim rulers to maintain a perpetual state of war on their frontiers, a policy with pronounced benefits.

For one thing, perpetual war drained violence to the edges of the empire and helped keep the interior at peace, reinforcing the theory of a world divided between the realm of peace (Islam) and the realm of war (everything else), which developed in the days of the first khalifas.

Perpetual war on the frontiers helped to reify this concept of war and peace, first of all, by making the narrative seem true—the frontier was generally a violent place, while the interior was generally a place of peace and security—and second, by helping to make it actually be true. By unifying the Arab tribes against a surrounding Other, this concept of jihad reduced the incessant internecine warfare that marked Arab tribal life before Islam and thus really did help to make the Islamic world a realm of (relative) peace!

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Q.9
It cannot be inferred from the passage that

1 ◯ a motive for the Umayyad conversion was to acquire power.

2 ◯ the Umayyads had more than two predecessors.

3 ◯ Mu'awiya was a better ruler than the tormented Ali.

4 ◯ the Umayyads used the definition of jihad to their advantage.

Solution:
Correct Answer : 3
Answer Option 1 can be inferred from the entire third paragraph. Answer Option (2) can be inferred from the first line of paragraph four. Answer option (4) can be inferred from " This definition of jihad enabled the new Muslim rulers to maintain a perpetual state of war on their frontiers, a policy with pronounced benefits." in the fourth paragraph. Thus, the passage does not support option (3). The passage mentions one of his good qualities but doesn't compare it with that of Ali.

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🔍 Answer key/Solution

FeedBack

Umayyads were some of the main people he was talking about. When Mohammed still lived in Mecca, the Umayyads outdid each other in harassing his followers. They helped plot the assassination of Mohammed before the Hijra and led some of the forces that tried to extinguish the Umma in its cradle after the Muslims moved to Medina.

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Q.10

The people who were being directly addressed as malefactors of great wealth were

1 ○ Mu'awiya who had shortcomings as a saint, but defeated the tormented Ali.

2 ○ The Umayyad rulers who inherited from Omar and Othman.

3 ○ The tormented Ali, for ignoring the poor, and exploiting the widows and orphans.

4 ○ The Umayyads, who were among the rich elite of Mecca.

Solution:
Correct Answer : 4
The questions asks for "directly addressed". The malefactors are mentioned in the second paragraph in connection with the Umayyad clan, making option (4) correct. The Umayyad rulers came from the same Umayyad clan, but the incident would have happened later, and they were not being directly addressed, making option (2) incorrect. Options (1) and (3) are not connected with the malefactors.

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🔍 **Answer key/Solution**

[FeedBack]

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Whatever his shortcomings as a saint, Mu'awiya possessed tremendous political skill. The very qualities that helped him defeat the tormented Ali made him a successful monarch, and his reign institutionalized practices and procedures that would hold an Islamic empire together for centuries.

This is all very ironic because, let us not forget, when Mohammed's prophetic career began, the Umayyads were a leading clan among the rich elite of Mecca. When Mohammed as Messenger denounced the malefactors of great wealth who ignored the poor and exploited the widows and orphans, the Umayyads were some of the main people he was talking about. When Mohammed still lived in Mecca, the Umayyads outdid each other in harassing his followers. They helped plot the assassination of Mohammed before the Hijra and led some of the forces that tried to extinguish the Umma in its cradle after the Muslims moved to Medina.

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Q.11
It is true about one specific Umayyad mentioned in the passage that

1 ◯ he enacted visible miracles like the ones performed by Jesus and Moses.

2 ◯ he ordered tribal armies to fight in order to reduce incessant internecine warfare.

3 ◯ he was a successful monarch with tremendous political skills.

4 ◯ he scratched his head, trying to remember what he found to dislike in the new faith.

Solution:
Correct Answer : 3
The first line of the passage says, "....Mu'awiya possessed tremendous political skill....made him a successful monarch". We also know he was a Umayyad. This makes option (3) correct. "..., astonishing military and political success had functioned as Islam's core confirming miracle " makes option (1) incorrect. Option (2) is contrary to the passage, which says that tribes could not be ordered around. Option (4) refers literally to a figure of speech used in the passage. Also, the question ask for "one specific Umayyad mentioned", whereas the example is generic.

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🔍 **Answer key/Solution**

FeedBack

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Q.12
An example cited in the passage for the use of powerful instruments of policy is

1 ◯ **that of the Umayyads converting to Islam, joining the Umma, and climbing to the top of the new society.**

2 ◯ **that of the new Muslim rulers using the definition of jihad to maintain a perpetual state of war on their frontiers.**

3 ◯ **that of the Umayyads using tribal armies instead of professional soldiers to fight their wars.**

4 ◯ **institutionalizing practices and procedures that would hold an Islamic empire for centuries.**

Solution:
Correct Answer : 2
Reading paragraph four from the passage makes it clear that option (2) is correct. The other options are correct, but not mentioned in the context of the question being asked.

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FeedBack

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Q.13

Which of the following is not an advantage of perpetual war, as discussed in the passage?

1 ⃝ Tangible benefits to everybody, including the liberated people, the Muslims, and the defeated princes.

2 ⃝ A confirmation of Islam's claim to divine sanction so long as it kept leading to victory.

3 ⃝ Keeping tribal armies who might otherwise be fighting at home occupied in fighting at the borders.

4 ⃝ Draining violence to the edges of the empire, and helping keep the interior at peace.

Solution:
Correct Answer : 1
Option 1 is contrary to the passage, which says, "This made the liberated people happy and the Muslims rich: everybody ended up ahead *except the defeated princes.*" The other options are mentioned in paragraphs five (option 4), seven (option 3) and eight (option 2).

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🔍 **Answer key/Solution**

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Q.14
The ironic nature of the Umayyad approach to Islam is best illustrated in which of the following sayings?

1 ◯ All's well that ends well.

2 ◯ Every dog has his day.

3 ◯ If you can't beat them, join them.

4 ◯ If wishes were horses, beggars would ride.

Solution:
Correct Answer : 3
Paragraph three talks about how the Umayyad were an elite group who harassed the followers of Mohammed, and then converted to become the elite of a global empire from the elite of a city. This makes option (3) correct.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Q.15
The following question is based on the reasoning contained in brief statements or passages. You are to choose the best answer; that is, the response that most accurately and completely answers the question. You should not make assumptions that are by common sense standards implausible, superfluous, or incompatible with the passage.

In 1980, the tiger poachers and sandal smugglers killed more than 5000 tigers. During the same period the number of tigers decreased and the anti-poaching regulations were introduced. There were arrests and other restrictions in place but the number further decreased by 16,000 in the 1980s.

Which of the below, if true, best explains the apparent paradoxical situation in the paragraph?
1. The NGOs and other tribal groups publicized the tiger killings, hence the demand for the tiger skin and other useful body parts decreased.
2. The adjacent states have also shown remarkable decrease in the tiger population in the forests in the same time period.
3. Even though the stringent laws were drafted, these were hardly executed at the micro level in the villages and forests.
4. During the same time period the major portions of forest land, which was the natural habitat of tigers, were cleared for agricultural purposes.

Solution:
Correct Answer : 4
Option (4) serves as the only plausible explanation explaining the paradox, as all other options seem to contradict what the passage suggests.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Directions for questions 16 to 18: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

The shift to lungs and limbs doesn't tell the full story of these creatures' transformation. As they emerged from the sea, they gained something perhaps more precious than oxygenated air: information. In air, eyes can see much farther than they can under water. The increased visual range provided an "informational zip line" that alerted the ancient animals to bountiful food sources near the shore, according to Malcolm MacIver, a neuroscientist and engineer at Northwestern University.

This zip line, MacIver maintains, drove the selection of rudimentary limbs, which allowed animals to make their first brief forays onto land. Furthermore, it may have had significant implications for the emergence of more advanced cognition and complex planning. "It's hard to look past limbs and think that maybe information, which doesn't fossilize well, is really what brought us onto land," MacIver said.

MacIver first came up with his hypothesis in 2007 while studying the black ghost knifefish of South America — an electric fish that hunts at night by generating electrical currents in the water to sense its environment. MacIver compares the effect to a kind of radar system. Being something of a polymath, MacIver built a robotic version of the knifefish, complete with an electrosensory system, to study its exotic sensing abilities and its unusually agile movement.

When MacIver compared the volume of space in which the knifefish can potentially detect water fleas, one of its favorite prey, with that of a fish that relies on vision to hunt the same prey, he found they were roughly the same. This was surprising. Because the knifefish must generate electricity to perceive the world — something that requires a lot of energy — he expected it would have a smaller sensory volume for prey compared to that of a vision-centric fish. At first he thought he had made a simple calculation error. But he soon discovered that the critical factor accounting for the unexpectedly small visual sensor space was the amount that water absorbs and scatters light. Because of this, aquatic creatures rarely gain much evolutionary benefit from an increase in eye size, and they have much to lose. Eyes are costly in evolutionary terms because they require so much energy to maintain; photoreceptor cells and neurons in the visual areas of the brain need a lot of oxygen to function. Therefore, any increase in eye size had better yield significant benefits to justify that extra energy. MacIver likens increasing eye size in the water to switching on high beams in the fog in an attempt to see farther ahead. But once you take eyes out of the water and into air, a larger eye size leads to a proportionate increase in how far you can see.

Q.16
The reason a knifefish has a sensory volume similar to a vision-centric fish, rather than smaller as expected in the passage is because

1 ◯ the knifefish must generate electricity, while the vision-centric fish must generate light.

2 ◯ the amount of light that water absorbs and scatters makes having better vision prohibitively expensive.

3 ◯ the calculations were done with a robotic knifefish, which differed from the actual knifefish.

4 ◯ the knifefish is from South America, whereas the vision-centric fish is not.

Solution:
Correct Answer : 2
Option (2) is correct from the third paragraph, "But he soon discovered that the critical factor accounting for the unexpectedly small visual sensory space was the amount that water absorbs and scatters light." Option 1 is incorrect since the passage does not say that the vision-centric fish generates light. Options (3) and (4) are not stated in the passage.

◼ Bookmark

⚲ Answer key/Solution

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Q.17
Which of the following options is not mentioned in the passage as something done by MacIver in relation to the work on his hypothesis?

1 ◯ Building a robotic version of the knifefish with an electro-sensory system.

2 ◯ Comparing the volume of space in which a knifefish can detect water fleas with that of a fish that relies on vision.

3 ◯ Rechecking his work to eliminate simple calculation errors.

4 ◯ Studying the exotic sensing abilities and unusually agile movement of the knifefish.

Solution:
Correct Answer : 3
The passage mentions options (1) and (4) (paragraph three, last sentence), and option (2) (last paragraph, first sentence). The passage does not mention option (3) – rechecking of work.

◼ Bookmark

⚲ Answer key/Solution

FeedBack

Directions for questions 16 to 18: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

The shift to lungs and limbs doesn't tell the full story of these creatures' transformation. As they emerged from the sea, they gained something perhaps more precious than oxygenated air: information. In air, eyes can see much farther than they can under water. The increased visual range provided an "informational zip line" that alerted the ancient animals to bountiful food sources near the shore, according to Malcolm MacIver, a neuroscientist and engineer at Northwestern University.

This zip line, MacIver maintains, drove the selection of rudimentary limbs, which allowed animals to make their first brief forays onto land. Furthermore, it may have had significant implications for the emergence of more advanced cognition and complex planning. "It's hard to look past limbs and think that maybe information, which doesn't fossilize well, is really what brought us onto land," MacIver said.

MacIver first came up with his hypothesis in 2007 while studying the black ghost knifefish of South America — an electric fish that hunts at night by generating electrical currents in the water to sense its environment. MacIver compares the effect to a kind of radar system. Being something of a polymath, MacIver built a robotic version of the knifefish, complete with an electrosensory system, to study its exotic sensing abilities and its unusually agile movement.

When MacIver compared the volume of space in which the knifefish can potentially detect water fleas, one of its favorite prey, with that of a fish that relies on vision to hunt the same prey, he found they were roughly the same. This was surprising. Because the knifefish must generate electricity to perceive the world — something that requires a lot of energy — he expected it would have a smaller sensory volume for prey compared to that of a vision-centric fish. At first he thought he had made a simple calculation error. But he soon discovered that the critical factor accounting for the unexpectedly small visual sensor space was the amount that water absorbs and scatters light. Because of this, aquatic creatures rarely gain much evolutionary benefit from an increase in eye size, and they have much to lose. Eyes are costly in evolutionary terms because they require so much energy to maintain; photoreceptor cells and neurons in the visual areas of the brain need a lot of oxygen to function. Therefore, any increase in eye size had better yield significant benefits to justify that extra energy. MacIver likens increasing eye size in the water to switching on high beams in the fog in an attempt to see farther ahead. But once you take eyes out of the water and into air, a larger eye size leads to a proportionate increase in how far you can see.

Q.18
Based on the passage, MacIver's hypothesis states that it is likely that

1 ◯ it was information which really brought us onto land.

2 ◯ the reason that a knifefish has a similar sensory volume compared to that of a vision centric fish must be investigated.

3 ◯ the shift to lungs and limbs doesn't tell the full story of these creatures' transformation.

4 ◯ eyes are costly in evolutionary terms because they require so much energy to maintain.

Solution:
Correct Answer : 1

This hypothesis is covered in paragraphs one and two, and is best expressed in option (1). From the end of paragraph one, "It's hard to look past limbs and think that maybe information, which doesn't fossilize well, is really what brought us onto land," MacIver said.' From the start of paragraph two, "MacIver first came up with his hypothesis in 2007.....". This makes option (1) the hypothesis since it is mentioned in the paragraph in this context. The other options are mentioned in the passage, but are not the hypothesis.

🔖 **Bookmark**

🔑 **Answer key/Solution**

[FeedBack]

Q.19
The question contains a set of six sentences. The first and the last sentences are in the correct order. The remaining four sentences need to be arranged in logical order so as to make a coherent paragraph.

S1: In her poetic and careful study of vaccination, *On Immunity* (2014), Eula Biss showed how the human immune system is better compared to a well-maintained garden than a militia.
A. War metaphors in health and healing can be valid, but bring different ideas to the mind of each patient – an appreciation of storytelling can assist physicians to choose the metaphor that will best help their patients, and also help patients articulate inner experience to their physicians.
B. Pain descriptions are the most vivid daily example of our tendency to metaphorical experience – next time you have a pain, think about whether it's 'stabbing' or 'ripping', 'throbbing' or 'aching'.
C. The nerves perceiving the pain communicate none of these things, but studies have shown that the language we use to articulate pain has the power to transform our experience of it.
D. In his autobiographical essay *The Practice* (1951), the poet and general practitioner William Carlos Williams wrote that medicine's clamour and diversity can, if approached in the right spirit, be inspirational and even restorative.
S6: Medicine nourished Carlos Williams's sense as a writer of what it means to be human, and offered the very lexicon he used to write

1. ACBD
2. ACDB
3. ABCD
4. ADBC

Solution:
Correct Answer : 3

Option (3) is the best answer because "pain description" in the Statement B gels well with the phrase "patients articulate inner experience to their physicians" in Statement A making AB a pair. ABC is a series because "The nerves perceiving the pain communicate" connects with the "pain description" in Statement B. The information in S6 is an extension of Statement D, hence ABCD is the correct series.

🔖 **Bookmark**

🔑 **Answer key/Solution**

[FeedBack]

Q.20
The question contains a set of six sentences. The first and the last sentences are in the correct order. The remaining four sentences need to be arranged in logical order so as to make a coherent paragraph.

S1: The legal world is wonderfully strange.
A. All of this draws on the faculty of the imagination.
B. Pull down a dusty volume of case law from a barrister's bookshelf, and you'll discover a parade of fantastical beings that could have been lifted from the pages of Jorge Luis Borges or Dr Seuss.
C. In the law, constitutions behave like living trees, the island of Minorca is treated as a suburb of London, immobile houses suddenly zoom along beltways, Clapham omnibuses are packed with reasonable men, and spectral officious bystanders routinely spy on contractual negotiations.
D. The legal realm is full of unlikely and improbable possibilities, as well as paths not taken, counterfactuals, mights, perhapses and maybes.
S6: You'd be forgiven for thinking of a judge as someone who spends all day shoehorning 'the facts' into pre-fabricated principles, and laying down determinative rulings like geological strata.
1. BACD
2. BADC
3. BDCA
4. BCDA

Solution:
Correct Answer : 4
Option (4) is the best answer because the strangeness mentioned in Statement A is elaborated in Statement B. The information in Statement C, "constitutions behave like living trees, the island of Minorca is treated as a suburb of London, immobile houses suddenly zoom along beltways," gels with the "fantastical beings" in Statement B. The legal realm mentioned in Statement D goes with the phrase "In the law" in Statement C. Hence BCD becomes a series. No other option shows the same, hence BCDA is the correct series.

🔖 **Bookmark**

⚙ **Answer key/Solution**

FeedBack

Directions for questions 21 to 26: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

When talking about the end of my soccer career, I can barely spit those last two words out. They sound formal and flat and, like a photograph, can impart only the image, but not what it meant to be there. I wore the dark tan between my shorts and shin guards proudly. If a spontaneous pick-up game started and I didn't have cleats, I played in sandals. As a teenager, I turned down alcohol and cigarettes so I wouldn't risk sabotaging my fitness. I knew I would eventually be something else in life, but I was first and always a soccer player.

That meant more than can be conveyed by this two-syllable, hard consonant word. With the right teammates, soccer is an electric current and there is an art to how the game flows. Passes are elegantly strung together based on each person's talent and intelligence. The game unfolds in time and space as the team searches for the right way to crack a defence or hold possession in the midfield. On the best days, the collective performance is equal parts grace, brilliance and determination.

A girl might shout directions such as switch it or drop or square, but the greatest plays are unspoken. Even if a fellow player is obnoxious or petty off the field, you know where she is and where she wants to go. You find her in your head and then at a diagonal pass or by lobbing the ball over the defender, and she does something beautiful in turn.

You must be technically gifted to feel this hum, but it grows stronger with practice. If the conditions are right and your teammates are also skilled, the game becomes meditation and the static of life's uncertainties drops away. In that place you can command a power that exists nowhere else in daily life.

Sometimes it feels like a song. First the sound of cheering parents cuts out and you hear it clearly: that piece of music you played on the cassette player while warming up. As a teenager, I had Pearl Jam's Breath and Porch and Corduroy in heavy rotation. It was always the bridge I'd hear, that 30 seconds or so of guitars whining and then wailing, the bass blowing out, the high hats and snare crashing, the solo ripping through it all.

And then suddenly I was the song in all its orchestrated fury. My body was an instrument and I could riff or harmonise or wail with every play on the field. My brain sent me hurtling into space because it knew what was about to happen. I could fall deep into this rhythm and count on at least one transcendent moment where every shred of hope and rage and brilliance I could muster was expressed in a single play.

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Q.21
In the passage, the author has not made which of the following direct or indirect comparisons?

1 ◯ With the right teammates, soccer is an electric current and there is an art in it to see how the game flows.

2 ◯ Sometimes, soccer feels like a song, and suddenly the author becomes the song.

3 ◯ With enough practice, the game becomes meditation and life's uncertainties ebb away.

4 ⃝ **On the best days, the collective performance is equal parts grace, brilliance and determination.**

Solution:
Correct Answer : 3
The passage says in paragraph four, *"If the conditions are right and your teammates are also skilled, the game becomes meditation and the static of life's uncertainties drops away."* This is contrary to and different from option (3) – which talks about practice rather than conditions, and does not mention teammates, making it correct.

FeedBack

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Q.22
The description of how a defender plays is most similar to

1 ⃝ a game of chess where the player thinks through how a sequence of moves will play out.

2 ⃝ a game of volleyball where the ball bounces back and forth over the net.

3 ⃝ a game of poker where the player must bluff in order to win the game.

4 ⃝ a game of golf where the number of shots taken must be minimised.

Solution:
Correct Answer : 1
A chess game is one where you have to think ahead in terms of moves to be made by your opponent. This is similar to the description in the passage – penultimate paragraph. This makes option (1) correct.

FeedBack

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and I didn't have cleats, I played in sandals. As a teenager, I turned down alcohol and cigarettes so I wouldn't risk sabotaging my fitness. I knew I would eventually be something else in life, but I was first and always a soccer player.

That meant more than can be conveyed by this two-syllable, hard consonant word. With the right teammates, soccer is an electric current and there is an art to how the game flows. Passes are elegantly strung together based on each person's talent and intelligence. The game unfolds in time and space as the team searches for the right way to crack a defence or hold possession in the midfield. On the best days, the collective performance is equal parts grace, brilliance and determination.

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Q.23
The author's requirement from the sport of soccer, as based on a reading of the passage is

1 ○ having the right teammates with whom, independent of obnoxiousness, you can have great plays.

2 ○ the development of a prodigy, who can become a story that tells about who the author is.

3 ○ an identity that allowed the author to feel part of a family that were all associated with soccer.

4 ○ a technical gift that allows you to feel a hum that grows stronger with practice.c

Solution:
Correct Answer : 3
Option (3) is correct from the first line of the last pargraph, " What I wanted from my sport was not a career, but an identity."
The other options are not mentioned in this context in the passage.

⌖ **Bookmark**

⚲ **Answer key/Solution**

FeedBack

Directions for questions 21 to 26: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

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Q.24
It can be inferred from the passage that the statement that is most likely to be correct about the author is that

1 ◯ the author is of the male gender, and has a deep passion for soccer.

2 ◯ the author is a teenager who would turn down drugs to risk sabotaging his fitness.

3 ◯ the author is a woman who is bitter about having spent her formative years in soccer.

4 ◯ the author is of the female gender, and she was a defender for her team.

Solution:
Correct Answer : 4
The author consistently refers to "her" when talking about players. However, we have no reason to believe her either to be a man or a teenager or bitter. This makes option (4) correct.

🔖 **Bookmark**

🔑 **Answer key/Solution**

FeedBack

Directions for questions 21 to 26: The passage given below is followed by a set of six questions. Choose the most appropriate answer to each question.

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Q.25
The author's primary feeling about the end of the soccer career is

1 ◯ a feeling of depression at no longer having the opportunity to play any more soccer.

2 ◯ disappointment at not being a part of the soccer that she liked and the one that gave her identity.

3 ◯ happiness at knowing that she can finally move on to being something else in her life.

4 ◯ ambivalence about not knowing whether it is a good thing.

Solution:
Correct Answer : 2
As the first paragraph and the last make clear, the author's identity is associated with soccer, and she is disappointed with its end in her life. This makes option (2) correct.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

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Q.26
The main purpose of this passage is to

1 ◯ convey how soccer can be compared to many things – including song, meditation and performance.

2 ◯ show that the author fits in her family and that there is nothing wrong with her.

3 ◯ critically review the author's past in various aspects in order to improve her future prospects.

4 ◯ talk about the meaning of soccer to the author with the end of the author's career as a backdrop.

Solution:
Correct Answer : 4
The entire passage talks about what soccer means to the author, as she compares it to many positives things. The end of the author's career is also discussed here as a backdrop. This makes option (4) correct. The other options are partially covered in the passage, and are not the main purpose.

FeedBack

Q.27
The question contains a set of six sentences. The first and the last sentences are in the correct order. The remaining four sentences need to be arranged in logical order so as to make a coherent paragraph.

S1: Giving a good answer to a 'Why?' question is not just a philosophical abstraction.
A. Wonderful work in the psychology of explanation shows that laws, unification and causal mechanisms all have a place in human psychology, tracking distinct concepts that get triggered depending on one's audience, interests, background beliefs and social environment.
B. Evaluating when someone successfully performs this speech act should take account of the psychology of explanatory reasoning and its subtle context sensitivity.
C. In this sense, an explanation is what is known as a speech act, which is an utterance that serves a certain function in communication.
D. An explanation has cognitive, real-world functions, and it promotes learning and discovery, and good explanatory theories are vital to navigate the environment smoothly.
S6: Results from psychology also expose a striking similarity between children's and scientists' explanatory reasoning.

1. DCBA
2. CDBA
3. BCDA
4. ABCD

Solution:
Correct Answer : 1
Option (1) is the best answer because Statement D gels with the opening sentence in S1. Statement C is a natural extension of the Statement D elaborating the explanation to "Why?". "Wonderful work in the psychology" in Statement 1 and "Results from psychology" in Statement S6 go together. Hence, DCBA is the best series.

FeedBack

Q.28
The following question has a sentence with two blanks. Given below in the options are four pairs of words. Choose the pair that best completes the sentence.

_____ her most important discovery occurred after her husband's death when, she and her team found a set of 3.6-million-year-old early hominid footprints that revealed, for the first time, the way in which our earliest _____ ancestors walked upright.

1. Comparably…baboon
2. Comparatively…handicapped
3. Ultimately…bipedal
4. Unfortunately….independent

Solution:
Correct Answer : 3
Option (3) is the best answer because the clue words show that the second blank needs a word related to footprints, hence "bipedal" is the only word that fits in. Hence, "Ultimately" also makes sense to the meaning of the sentence.

FeedBack

Directions for questions 29 to 31: The passage given below is followed by a set of three questions. Choose the most appropriate answer to each question.

After Donald Trump became a candidate for President, publications ran articles that raised questions about his involvement in the Baku project. These reports cited a series of cables sent from the U.S. Embassy in Azerbaijan in 2009 and 2010, which were made public by WikiLeaks. In one of the cables, a U.S. diplomat described ZiyaMammadov as "notoriously corrupt even for Azerbaijan." The Trump Organization's chief legal officer, Alan Garten, told reporters that the Baku hotel project raised no ethical issues for Donald Trump, because his company had never engaged directly with Mammadov.

According to Garten, Trump played a passive role in the development of the property: he was "merely a licensor" who allowed his famous name to be used by a company headed by ZiyaMammadov's son, Anar, an entrepreneur. It's not clear how much money Trump made from the licensing agreement. Trump als had signed a contract to manage the hotel once it opened, for an undisclosed fee tied to the hotel's performance.

A month after Trump was elected President,Garten announced that the Trump Organisation had severed its ties with the hotel project, describing the decision to CNN as little more than "housecleaning." I was in Baku at the time, and it had become clear that the Trump Organization's story of the hotel wa

incomplete and inaccurate. Trump's company had made the deal not just with AnarMammadov but also with Ziya's brother Elton—an influential member of the Azerbaijani parliament. Elton signed the contracts, and in an interview he confirmed that he founded Baku XXI Century, the company that owns the Trump Tower Baku. When he was asked who owns Baku XXI Century, he called it a "commercial secret" but added that he "controlled all its operations" unt 2015, when he cut ties to the company. Elton denied having used his political position for profit.

An Azerbaijani lawyer who worked on the project revealed to me that the Trump Organization had not just licensed the family name; it also had signed a technical-services agreement in which it promised to help its partner meet Trump design standards. Technical-services agreements are often nominal addenda to licensing deals. Major hospitality brands compile exhaustive specifications for licensed hotels, and tend to approve design elements remotely; foreign site is visited only occasionally. But in the case of Trump Tower Baku the oversight appears to have been extensive. Trump staff visited Baku at lea: monthly to give the go-ahead for the next round of work orders. Trump designers went to Turkey to vet the furniture and fabrics acquired there.

Q.29
The main purpose of this passage is

1 ○ to provide a history of the Baku project, alongwith a description of its accomplishments, and issues.

2 ○ to chronicle the Baku projects in Azerbaijan, and state the places where it had compliance issues.

3 ○ to show how Azerbaijan is a notoriously corrupt country, as proved by the US Embassy.

4 ○ to point issues with the Baku project and showcase the involvement of the Trump Organisation in it.

Solution:
Correct Answer : 4
The passage talks repeatedly about the involvement of Trump, and also keeps looking at it from the point of view of possible problems. This makes option (4) correct. The other options cover minor parts of the passage, not its crux.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

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Q.30
An issue which is pointed out in the passage with respect to Trump's involvement in the Baku project is that

1 ○ Trump used his political position for the profit of Baku XXI Century.

2 ○ Trump played a passive role in the development of the property, abdicating his responsibility.

3 ○ the CNN ran articles that raised questions about his involvement in the Baku project.

4 ○ the Trump Organization's story of the hotel was incomplete and inaccurate.

Solution:
Correct Answer : 4
The passage talks about Elton denying involvement in using his political position, not Trump, making option (1) incorrect. The abdication of responsibility in option (2) makes it incorrect. Option (3) talks about CNN, while the passage does not mention any specific publication. Option (4) is mentioned at the beginning of paragraph two, making it correct.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

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Q.31
The primary reason for the author of the passage to mention technical services agreements is to

1 ◯ point out the difference between the Trump Organisation and major hospitality brands.

2 ◯ deduce that the Trump Organisation did not compile exhaustive specifications, as required.

3 ◯ show that the involvement of the Trump Organisation was more than routine.

4 ◯ point out that they are often nominal addenda to licensing deals.

Solution:
Correct Answer : 3
The author wants to show that while technical services agreements are often just a formality, in this case they were not. This is clear from, "But in the case of Trump Tower Baku the oversight appears to have been extensive. Trump staff visited Baku at least monthly to give the go-ahead for the next round of work orders. Trump designers went to Turkey to vet the furniture and fabrics acquired there." This makes option (3) correct. The other options do not have support in the passage.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Q.32
The following question has a sentence with two blanks. Given below in the options are four pairs of words. Choose the pair that best completes the sentence.

US Customs and Border Protection agents reportedly _____ and even _____ non-citizen travellers, including Green Card-holders, visa-holders and refugees who had been cleared.

1. liberated...expelled
2. detained...deported
3. impeded...expatriated
4. outcaste...departed

Solution:
Correct Answer : 2
Option (2) is the best answer because both the blanks need the words which are negative, and are related to the US customs and Border Protection.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

Q.33
The following question has a sentence with two blanks. Given below in the options are four pairs of words. Choose the pair that best completes the sentence.

More _____, the earliest known concept of using a curved mirror to focus light predated Newton by more than 1,500 years; the final realisation of a practical reflecting telescope post-dated him by more than a half century.

1. propounding
2. compounding
3. impounding
4. confounding

Solution:

Correct Answer : 4

Option (4) "confounding" (amazing, surprising or bewildering) is the best answer because the context portrays a kind of surprise. Rest of the options is incorrect because they do not fit the context. Propounding means to put forward or offer for consideration, acceptance, or adoption; set forth; propose, compounding means to make or form by combining parts, elements, etc.; construct, and impounding means to seize and retain in custody of the law, as a document for evidence.

FeedBack

Bookmark

Answer key/Solution

Q.34

The following question has a sentence with two blanks. Given below in the options are four pairs of words. Choose the pair that best completes the sentence.

The more that animosity and _____take centre-stage in the opposition to this regime, rather than reason and procedure, the more the forces of injustice will grow.

1. commendation
2. ridicule
3. extol
4. raving

Solution:

Correct Answer : 2

Option (2) is the best answer because the blank needs a negative word that goes with animosity; hence Options (1) and (3) are eliminated. Commendation means the act of recommendation and praise and extol means to praise highly; laud; eulogize: . Raving means talking wildly, delirious, frenzied.

FeedBack

Bookmark

Answer key/Solution

Sec 2

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

Five companies – Alta Vista, Bultaco, Coleco, Dixons and Eletropaulo – are disguised as A, B, C, D and E – not necessarily in the same order. The square charts represent the percentage profit earned by the five companies in the years 2015 and 2016. In each of these charts, the numerical value of the area of each of the regions A, B, C, D and E gives the percentage profit earned by the company represented by the letter. The cumulative bar chart represents the revenue (in rupees crores) of these five companies in given years.

Profit % in 2015 | Profit % in 2016

Revenue in 2015 and 2016 of Five Companies

Further, it is known as:

1. Revenue = Expenditure + Profit, and Profit % = $\frac{\text{Total Profit}}{\text{Expenditure}} \times 100$.

2. Among the five companies, "Dixons" earned the minimum profit in both the years 2015 and 2016.

3. Among the five companies, Eletropaulo had the maximum difference between the profit earned in the years 2015 and 2016.

Q.35
Among the five companies, if Coleco earned the highest profit in 2015, which company(ies) earned the second highest profit in 2015?

1 ○ Both Alta Vista and Bultaco

2 ○ Both Bultaco and Eletropaulo

3 ○ Both Eletropaulo and Alta Vista

4 ○ Alta Vista

Solution:
Correct Answer : 1

The following table can be made:

(all figures in rupee crores)

	2015			2016		
	Revenue	Profit %	Profit	Revenue	Profit %	Profit
A	4600	15	600	6720	12	720
B	3900	30	900	5000	25	1000
C	2700	35	700	3840	28	840
D	6600	10	600	5000	25	1000
E	7700	10	700	8800	10	800

By the given information, A is Dixons and D is Eletropaulo.

Here B is Coleco. The second highest profit in 2015 is Rs.700 crore. So both Alta Vista and Bultaco is the answer.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

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

Five companies – Alta Vista, Bultaco, Coleco, Dixons and Eletropaulo – are disguised as A, B, C, D and E – not necessarily in the same order. The square charts represent the percentage profit earned by the five companies in the years 2015 and 2016. In each of these charts, the numerical value of the area of each of the regions A, B, C, D and E gives the percentage profit earned by the company represented by the letter. The cumulative bar chart represents the revenue (in rupees crores) of these five companies in given years.

Profit % in 2015

Profit % in 2016

Revenue in 2015 and 2016 of Five Companies

(Rupee Crores)

Further, it is known as:

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2.   Among the five companies, "Dixons" earned the minimum profit in both the years 2015 and 2016.

3.   Among the five companies, Eletropaulo had the maximum difference between the profit earned in the years 2015 and 2016.

Q.36

Among the five companies, if Alta Vista earned the second highest profit in the year 2016, which of the following choices contains the names of the companies the profit of which could be the highest in 2016?

1 ◯ **Both Bultaco and Dixons**

2 ◯ **Both Coleco and Eletropaulo**

3 ◯ **Both Eletropaulo and Dixons**

4 ◯ **Both Bultaco and Coleco**

Solution:

Correct Answer : 2

The following table can be made:

🔖 Bookmark

🔍 Answer key/Solution

(all figures in rupee crores)

	2015			2016		
	Revenue	Profit %	Profit	Revenue	Profit %	Profit
A	4600	15	600	6720	12	720
B	3900	30	900	5000	25	1000
C	2700	35	700	3840	28	840
D	6600	10	600	5000	25	1000
E	7700	10	700	8800	10	800

By the given information, A is Dixons and D is Eletropaulo.

Here C is Alta Vista. The highest profit earned by any Company in 2016 is Rs. 1000 crore.
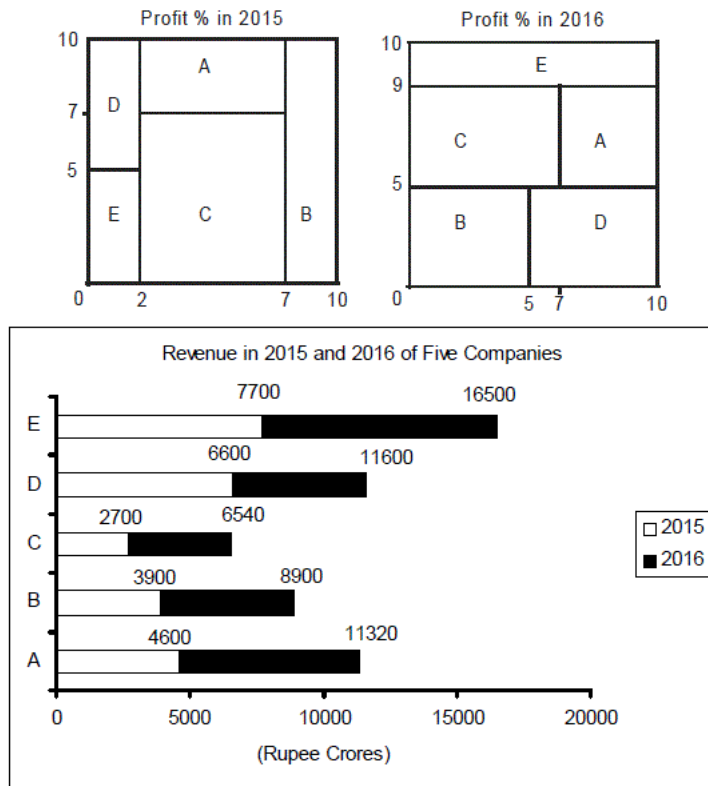So, from the choices, Coleco and Electropaulo is the answer.

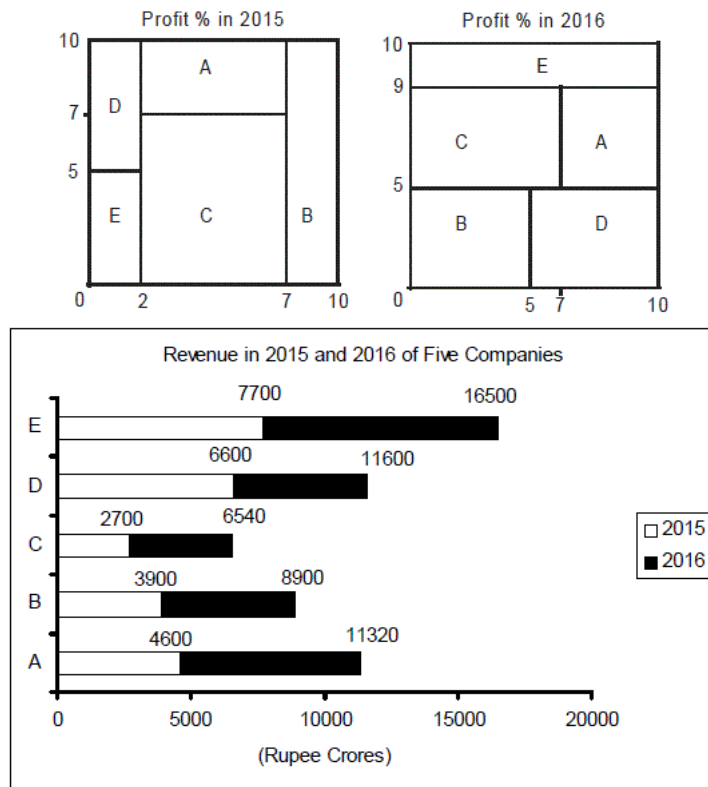FeedBack

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1. Revenue = Expenditure + Profit, and Profit % = $\frac{\text{Total Profit}}{\text{Expenditure}} \times 100$.

2. Among the five companies, "Dixons" earned the minimum profit in both the years 2015 and 2016.
3. Among the five companies, Eletropaulo had the maximum difference between the profit earned in the years 2015 and 2016.

Q.37
The total revenue of the companies represented by A, C and D put together in 2015 was what percentage of the total revenue of the companies represented by B, D and E put together in 2016?

1 ◯ **60.67**

2 ◯ **73.94**

3 ◯ **75.6**

4 ◯ **80.57**

Solution:
Correct Answer : 2

🔖 **Bookmark**

🔍 **Answer key/Solution**

The following table can be made:

(all figures in rupee crores)

	2015			2016		
	Revenue	Profit %	Profit	Revenue	Profit %	Profit
A	4600	15	600	6720	12	720
B	3900	30	900	5000	25	1000
C	2700	35	700	3840	28	840
D	6600	10	600	5000	25	1000
E	7700	10	700	8800	10	800

By the given information, A is Dixons and D is Eletropaulo.

Total revenue of the companies represented by A, C and D put together in 2015 = 4600 + 2700 + 6600 = 13900

Total revenue of the companies represented by B, D and E put together in 2016
= (8900 − 3900) + (11600 − 6600) + (16500 − 7700)
= 18800.

Required percentage = $\dfrac{13900}{18800} \times 100 = 73.94$.

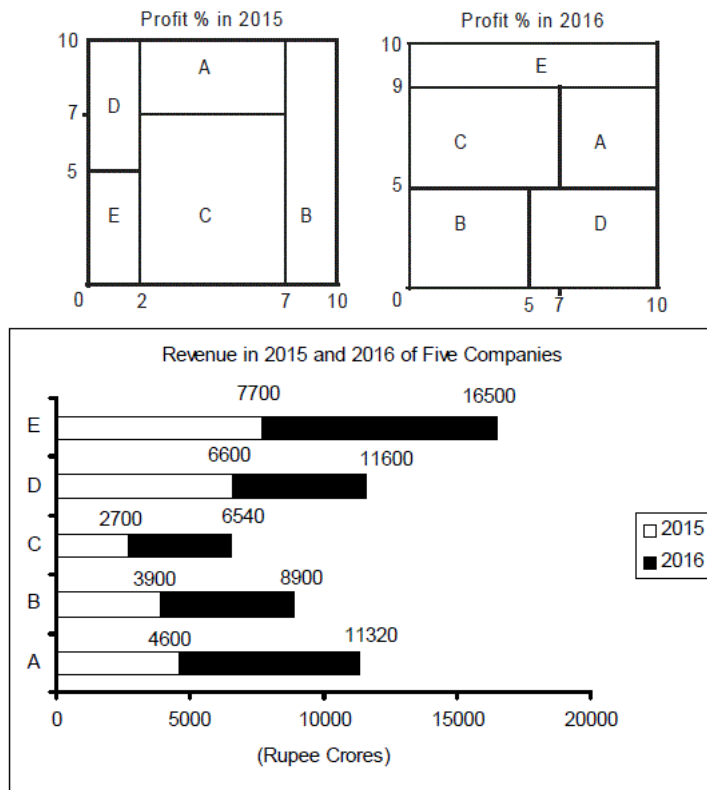[FeedBack]

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Further, it is known as:

1.   Revenue = Expenditure + Profit, and Profit % = $\dfrac{\text{Total Profit}}{\text{Expenditure}} \times 100$.

2.   Among the five companies, "Dixons" earned the minimum profit in both the years 2015 and 2016.

3.   Among the five companies, Eletropaulo had the maximum difference between the profit earned in the years 2015 and 2016.

Q.38
What is the absolute difference (in Rs. crore) between the total expenditure of Alta Vista, Bultaco and Coleco in 2015 and the total revenue of Dixons and Electropaulo in 2016

1 ◯ **2000**

2 ◯ **280**

3 ◯ **290**

4 ◯ **300**

Solution:

Correct Answer : 2

The following table can be made:

(all figures in rupee crores)

	2015			2016		
	Revenue	Profit %	Profit	Revenue	Profit %	Profit
A	4600	15	600	6720	12	720
B	3900	30	900	5000	25	1000
C	2700	35	700	3840	28	840
D	6600	10	600	5000	25	1000
E	7700	10	700	8800	10	800

By the given information, A is Dixons and D is Eletropaulo.

The required difference
= (3000 + 2000 + 7000) − (6720 + 5000) = 280.

[FeedBack]

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

Aseem, Ayaan and Samantha appeared for the board examinations in March 2017. Each of the three students appeared for tests in six different subjects namely Maths, Social Studies, Science, English, Hindi and Commerce. The following table provides information about the marks obtained by each student i every subject as a percentage of the aggregate marks obtained by that student in all the six subjects put together.

	Maths	Social Studies	Science	English	Hindi	Commerce
Aseem	12%	20%	18%	10%	24%	16%
Ayaan	10%	10%	36%	24%	5%	15%
Samantha	20%	20%	10%	16%	10%	24%

The marks lost by each of the three students in each of the six subjects were due to five different reasons namely P, Q, R, S and T. The following bar graph provides information about the marks lost by each student due to each of the mentioned reasons as a percentage of the aggregate marks lost by that student in that subject. This holds true for all the given six subjects.

The marks lost by Aseem, Ayaan and Samantha in each subject as a percentage of the marks obtained by each one of them in that subject was 40%, 25% an 20% respectively.

Q.39

If the marks lost by Aseem, Samantha and Ayaan in English were the same, then the marks lost by Ayaan in Science due to reason R as the percentage of th total marks obtained by Aseem in all the subjects together was

Fill 1 if "your answer is 2%"
Fill 2 if "your answer is 0.6%"
Fill 3 if "your answer is 1%"
Fill 4 if "your answer is 1.5%"

Solution:

Correct Answer : 2

Let the total marks obtained by Aseem, Ayaan and Samantha be x, y and z respectively.
∴ Marks obtained by Aseem, Ayaan and Samantha in

English is $\dfrac{x}{10}$, $\dfrac{6y}{25}$ and $\dfrac{4z}{25}$ respectively.

Marks lost by Aseem in English = 40% of $\dfrac{x}{10} = \dfrac{x}{25}$

Similarly, marks lost by Ayaan and Samantha in

English is $\dfrac{3y}{50}$ and $\dfrac{4z}{125}$ respectively.

As per the question,

$\dfrac{x}{25} = \dfrac{3y}{50} = \dfrac{4z}{125} \Rightarrow 10x = 15y = 8z$

Marks lost by Ayaan in Science due to reason R

$= \left(\dfrac{36}{100} \times \dfrac{1}{4} \times \dfrac{1}{10} \times y\right) = \dfrac{9y}{1000}$

Required Percentage

$= \left(\dfrac{9}{1000} \times \dfrac{y}{x} \times 100\right) = \left(\dfrac{9}{1000} \times \dfrac{10}{15} \times 100\right) = 0.6\%$

FeedBack

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The marks lost by Aseem, Ayaan and Samantha in each subject as a percentage of the marks obtained by each one of them in that subject was 40%, 25% an 20% respectively.

Q.40
Given that the marks obtained by Aseem in Maths were not less than the marks obtained by Ayaan in Social Studies and the marks obtained by Ayaan in English were not less than the marks obtained by Samantha in Hindi. If the marks obtained by Samantha in Commerce were 144, then what could be the minimum marks obtained by Aseem in Science?

Fill 1 if "your answer is $25\dfrac{1}{4}$"

Fill 2 if "your answer is $40\dfrac{1}{4}$"

Fill 3 if "your answer is $48\dfrac{3}{4}$"

Fill 4 if "your answer is $37\dfrac{1}{2}$"

Solution:

🔖 **Bookmark**

Correct Answer : 4

Marks obtained by Aseem in Maths = $\frac{3x}{25}$

Marks obtained by Ayaan in Social Studies = $\frac{y}{10}$

Marks obtained by Ayaan in English = $\frac{6y}{25}$

Marks obtained by Samantha in Hindi = $\frac{z}{10}$

Now as per the information given $\frac{3x}{25} \geq \frac{y}{10}$ and $\frac{6y}{25} \geq \frac{z}{10}$

Given that $\frac{6z}{25} = 144$, therefore z = 24 × 25.

Marks obtained by Aseem in Science = $\frac{9x}{50}$

Since, $\frac{3x}{25} \geq \frac{y}{10}$ and $\frac{6y}{25} \geq \frac{z}{10}$ $\Rightarrow \frac{x}{z} \geq \frac{25}{72}$

Therefore, the marks obtained by Aseem in Science is

at least $\frac{9}{50} \times \frac{25}{72} \times 24 \times 25 = 37\frac{1}{2}$.

FeedBack

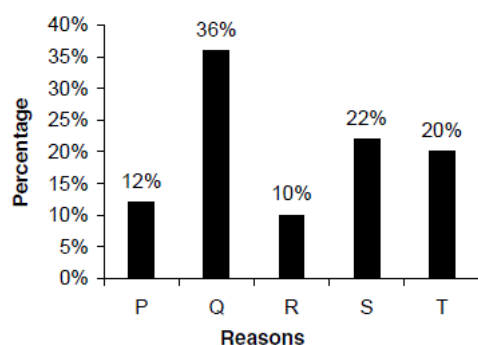**Directions for questions 39 to 42: Answer the questions on the basis of the information given below.**

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The marks lost by Aseem, Ayaan and Samantha in each subject as a percentage of the marks obtained by each one of them in that subject was 40%, 25% an 20% respectively.

Q.41

Given that the marks obtained by Aseem in Maths were not less than the marks obtained by Ayaan in Social Studies and the marks obtained by Ayaan in English were not less than the marks obtained by Samantha in Hindi. If the marks lost by Ayaan in English due to reason Q were 45, then the marks lost by Samantha in Maths due to reason T could not be more than

Fill 1 if "your answer is 50"
Fill 2 if "your answer is 32"
Fill 3 if "your answer is 36"
Fill 4 if "your answer is 40"

Solution:
Correct Answer : 4

Marks obtained by Aseem in Maths $= \dfrac{3x}{25}$

Marks obtained by Ayaan in Social Studies $= \dfrac{y}{10}$

Marks obtained by Ayaan in English $= \dfrac{6y}{25}$

Marks obtained by Samantha in Hindi $= \dfrac{z}{10}$

Now as per the information given $\dfrac{3x}{25} \geq \dfrac{y}{10}$ and $\dfrac{6y}{25} \geq \dfrac{z}{10}$

Marks lost by Ayaan in English due to reason Q

$= \dfrac{36}{100} \times \dfrac{1}{4} \times \dfrac{24}{100} y$

Therefore, $\dfrac{36}{100} \times \dfrac{1}{4} \times \dfrac{24}{100} \times y = 45$

$\Rightarrow y = \dfrac{125 \times 50}{3}$

Marks lost by Samantha in Maths due to reason

$T = \dfrac{z}{5} \times \dfrac{1}{5} \times \dfrac{1}{5} = \dfrac{z}{125}$

Also, $\dfrac{y}{z} \geq \dfrac{5}{12}$

Maximum possible value of 'z' = 5000

Maximum possible marks lost by Samantha in Maths due to reason T is 40.
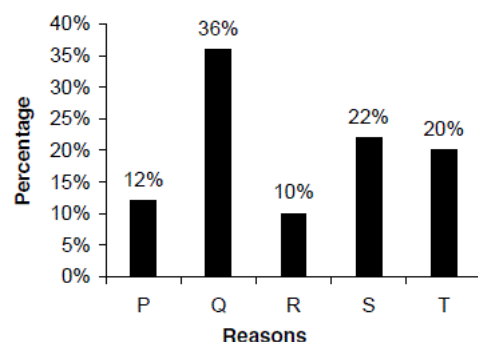
FeedBack

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

Aseem, Ayaan and Samantha appeared for the board examinations in March 2017. Each of the three students appeared for tests in six different subjects namely Maths, Social Studies, Science, English, Hindi and Commerce. The following table provides information about the marks obtained by each student i every subject as a percentage of the aggregate marks obtained by that student in all the six subjects put together.

	Maths	Social Studies	Science	English	Hindi	Commerce
Aseem	12%	20%	18%	10%	24%	16%
Ayaan	10%	10%	36%	24%	5%	15%
Samantha	20%	20%	10%	16%	10%	24%

The marks lost by each of the three students in each of the six subjects were due to five different reasons namely P, Q, R, S and T. The following bar graph provides information about the marks lost by each student due to each of the mentioned reasons as a percentage of the aggregate marks lost by that student in that subject. This holds true for all the given six subjects.

The marks lost by Aseem, Ayaan and Samantha in each subject as a percentage of the marks obtained by each one of them in that subject was 40%, 25% an 20% respectively.

Q.42

If the ratio of the marks obtained by Aseem in the six subjects taken together to that by Samantha in the six subjects taken together was 2 : 5, the marks lost by Samantha in Hindi due to reason T was what percentage more than the marks lost by Aseem in Social Studies due to reason R?

Fill 1 if "your answer is 20%"
Fill 2 if "your answer is 30%"
Fill 3 if "your answer is 25%"
Fill 4 if "your answer is 16.67%"

Solution:
Correct Answer : 3

🔖 **Bookmark**

🔍 **Answer key/Solution**

Let the marks obtained by Aseem and Samantha be 200x and 500x.
The marks lost by Aseem in Social Studies due to reason R

$$= \frac{20}{100} \times \frac{40}{100} \times \frac{10}{100} \times 200 = 1.6x$$

The marks lost by Samantha in Hindi due to reason T

$$= \frac{10}{100} \times \frac{20}{100} \times \frac{20}{100} \times 500 = 2x$$

Hence, required percentage $= \frac{2x - 1.6x}{1.6x} \times 100 = 25$.

FeedBack

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

In the city of Gotham, crime has been a major problem that is affecting the growth of the city. The two major gangs that are responsible for most of the crimes are Gangnam and Kitkat. The following chart shows the percentage increase/decrease in crime over the previous year. In year 2011, the number of murders was 8000, the number of extortions was 4000 and the number of other crimes was 6000. In each year from 2012 to 2016, the total number of crimes committed by Gangnam and Kitkat put together was the same. The ratio of the number of crimes committed by these two gangs, in the aforementioned order, for the years 2012 to 2016 was 5 : 6, 3 : 4, 7 : 3, 2 : 3 and 9 : 8 respectively.

Q.43
What was the total number of crimes committed by the other gangs for the given 5 years, i.e. from 2012 to 2016, collectively?

1 ◯ 75053

2 ◯ 86143

3 ◯ 48143

4 ◯ Cannot be determined

Solution:
Correct Answer : 1

🔖 **Bookmark**

🔍 **Answer key/Solution**

Year	Murders	Extortions	Others	Total	Crimes by G + K	Crimes by Others	Crimes by Gangnam
2011	8000	4000	6000	18000			
2012	12000	7000	9000	28000	13090	14910	5950
2013	10800	8400	10800	30000	13090	16910	5610
2014	8100	10500	7560	26160	13090	13070	9163
2015	6480	11550	9450	27480	13090	14390	5236
2016	7128	10395	11340	28863	13090	15773	6930
Total crimes(2012 to 2016)				140503			

Ratio of crimes committed by Gangnam and Kitkat over the years 2011 - 2016 is 5 : 6, 3 : 4, 7 : 3, 2 : 3 & 9 : 8
Also, total number of crimes committed by Gangnam and Kitkat taken together each year was constant
∴ Total crimes committed per year by Gangnam and Kitkat must be divisible by 11, 7, 10, 5 and 17 i.e. must be divisible by 13,090.
Also, the total crimes committed by the 2 gangs must be ≥ minimum of total crimes committed from 2012 to 2016
Now, 13090 × 2 = 26180 > 26160 (total crimes committed in 2014)
∴ Total crimes committed by Gangnam and Kitkat each year has to be 13090

Number of total crimes committed by other gangs in the given 5 years = 140503 – (13090 × 5) = 75053.

FeedBack

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

In the city of Gotham, crime has been a major problem that is affecting the growth of the city. The two major gangs that are responsible for most of the crimes are Gangnam and Kitkat. The following chart shows the percentage increase/decrease in crime over the previous year. In year 2011, the number of murders was 8000, the number of extortions was 4000 and the number of other crimes was 6000. In each year from 2012 to 2016, the total number of crimes committed by Gangnam and Kitkat put together was the same. The ratio of the number of crimes committed by these two gangs, in the aforementioned order, for the years 2012 to 2016 was 5 : 6, 3 : 4, 7 : 3, 2 : 3 and 9 : 8 respectively.

Q.44
For which year, was the percentage of crimes committed by other gangs as a percentage of crimes committed by Gangnam minimum?

1 ◯ **2012**

2 ◯ **2014**

3 ◯ **2015**

4 ◯ **2016**

Solution:
Correct Answer : 2

🔖 **Bookmark**

🔍 **Answer key/Solution**

Year	Murders	Extortions	Others	Total	Crimes by G + K	Crimes by Others	Crimes by Gangnam
2011	8000	4000	6000	18000			
2012	12000	7000	9000	28000	13090	14910	5950
2013	10800	8400	10800	30000	13090	16910	5610
2014	8100	10500	7560	26160	13090	13070	9163
2015	6480	11550	9450	27480	13090	14390	5236
2016	7128	10395	11340	28863	13090	15773	6930
Total crimes(2012 to 2016)				140503			

Ratio of crimes committed by Gangnam and Kitkat over the years 2011 - 2016 is 5 : 6, 3 : 4, 7 : 3, 2 : 3 & 9 : 8

Also, total number of crimes committed by Gangnam and Kitkat taken together each year was constant

∴ Total crimes committed per year by Gangnam and Kitkat must be divisible by 11, 7, 10, 5 and 17 i.e. must be divisible by 13,090.

Also, the total crimes committed by the 2 gangs must be ≥ minimum of total crimes committed from 2012 to 2016

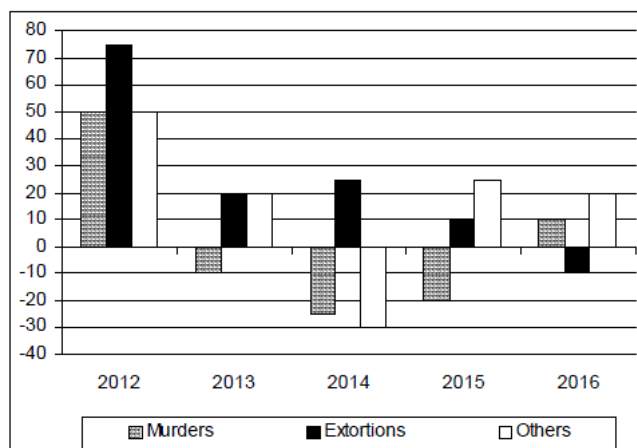Now, 13090 × 2 = 26180 > 26160 (total crimes committed in 2014)

∴ Total crimes committed by Gangnam and Kitkat each year has to be 13090

By the table above the ratio of crimes committed by others and crimes committed by Gangnam is least for the year 2014.

FeedBack

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

In the city of Gotham, crime has been a major problem that is affecting the growth of the city. The two major gangs that are responsible for most of the crimes are Gangnam and Kitkat. The following chart shows the percentage increase/decrease in crime over the previous year. In year 2011, the number of murders was 8000, the number of extortions was 4000 and the number of other crimes was 6000. In each year from 2012 to 2016, the total number of crimes committed by Gangnam and Kitkat put together was the same. The ratio of the number of crimes committed by these two gangs, in the aforementioned order, for the years 2012 to 2016 was 5 : 6, 3 : 4, 7 : 3, 2 : 3 and 9 : 8 respectively.

Q.45

In 2013, had the ratio of crimes committed by Gangnam and Kitkat been 1:1 and all the other conditions remain the same, what would have been the approximate ratio of crimes committed by other gangs to that of Gangnam for the same year?

1 ○ **4 : 1**

2 ○ **9 : 2**

3 ○ **3 : 1**

4 ○ **Cannot be determined**

Solution:
Correct Answer : 4

◾ **Bookmark**

🔍 **Answer key/Solution**

Year	Murders	Extortions	Others	Total	Crimes by G + K	Crimes by Others	Crimes by Gangnam
2011	8000	4000	6000	18000			
2012	12000	7000	9000	28000	13090	14910	5950
2013	10800	8400	10800	30000	13090	16910	5610
2014	8100	10500	7560	26160	13090	13070	9163
2015	6480	11550	9450	27480	13090	14390	5236
2016	7128	10395	11340	28863	13090	15773	6930
Total crimes(2012 to 2016)				140503			

Ratio of crimes committed by Gangnam and Kitkat over the years 2011 - 2016 is 5 : 6, 3 : 4, 7 : 3, 2 : 3 & 9 : 8
Also, total number of crimes committed by Gangnam and Kitkat taken together each year was constant
∴ Total crimes committed per year by Gangnam and Kitkat must be divisible by 11, 7, 10, 5 and 17 i.e. must be divisible by 13,090.
Also, the total crimes committed by the 2 gangs must be ≥ minimum of total crimes committed from 2012 to 2016
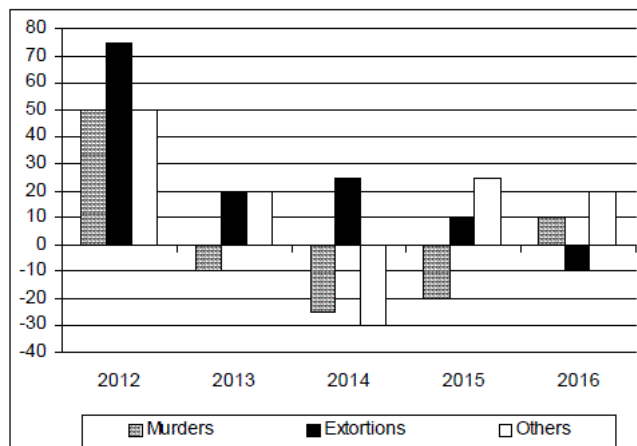Now, 13090 × 2 = 26180 > 26160 (total crimes committed in 2014)
∴ Total crimes committed by Gangnam and Kitkat each year has to be 13090

In this case the total crimes committed by Gangnam and Kitkat per year is divisible by 11, 2, 10, 5 and 17 i.e. divisible by 1870. Thus, the value could be any of the multiples of 1870 below 26160.
Hence, cannot be determined.

FeedBack

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

In the city of Gotham, crime has been a major problem that is affecting the growth of the city. The two major gangs that are responsible for most of the crimes are Gangnam and Kitkat. The following chart shows the percentage increase/decrease in crime over the previous year. In year 2011, the number of murders was 8000, the number of extortions was 4000 and the number of other crimes was 6000. In each year from 2012 to 2016, the total number of crimes committed by Gangnam and Kitkat put together was the same. The ratio of the number of crimes committed by these two gangs, in the aforementioned order, for the years 2012 to 2016 was 5 : 6, 3 : 4, 7 : 3, 2 : 3 and 9 : 8 respectively.

Q.46
In which year, during the period 2012-16, crime committed by others the maximum?

1 ○ **2012**

2 ○ **2013**

3 ○ **2015**

4 ○ **2016**

Solution:
Correct Answer : 2

🔖 **Bookmark**

🔍 **Answer key/Solution**

Year	Murders	Extortions	Others	Total	Crimes by G + K	Crimes by Others	Crimes by Gangnam
2011	8000	4000	6000	18000			
2012	12000	7000	9000	28000	13090	14910	5950
2013	10800	8400	10800	30000	13090	16910	5610
2014	8100	10500	7560	26160	13090	13070	9163
2015	6480	11550	9450	27480	13090	14390	5236
2016	7128	10395	11340	28863	13090	15773	6930

Total crimes(2012 to 2016)   140503

Ratio of crimes committed by Gangnam and Kitkat over the years 2011 - 2016 is 5 : 6, 3 : 4, 7 : 3, 2 : 3 & 9 : 8
Also, total number of crimes committed by Gangnam and Kitkat taken together each year was constant
∴ Total crimes committed per year by Gangnam and Kitkat must be divisible by 11, 7, 10, 5 and 17 i.e. must be divisible by 13,090.
Also, the total crimes committed by the 2 gangs must be ≥ minimum of total crimes committed from 2012 to 2016
Now, 13090 × 2 = 26180 > 26160 (total crimes committed in 2014)
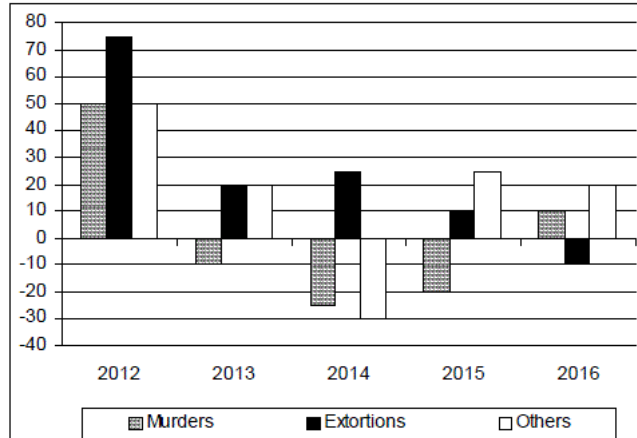∴ Total crimes committed by Gangnam and Kitkat each year has to be 13090

The required year is 2013.

FeedBack

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

	PHYSICS				CHEMISTRY				MATHS				
	I	II	III	S1	I	II	III	S2	I	II	III	S3	S
A	13	12				11	11		8	9			36
B	20		16				1	9			20		40
C	18		15		11			15			5		42
D		14				19		16	14		3	9	
E		20	2		15			16		18	5		42
F	17	17	5		18	20			16		7		43
G	19			16	4	19	19			20			48
H	10	16			6	11			19			15	

The table given above shows the partial information about the marks scored by eight students in an entrance examination conducted by a reputed engineering college. There were three subjects namely Physics, Chemistry and Maths, with three papers viz. I, II and III each. The maximum marks for each paper in each of the subjects was 20. In the table, S1, S2 and S3 represent the average marks obtained by the students in Physics, Chemistry and Maths respectively, and S represents the sum of S1, S2 and S3. Each of the eight students appeared in all the papers and no student scored zero marks in any of the given papers. Following information is also available:
(i) The average marks of the eight students in Physics I, Physics III and Maths III were 16, 12 and 10 respectively.
(ii) Except the marks already given in the table, no student scored 20 out of 20 in any of the papers.
(iii) In Physics, the average marks of A and H was the same, and it was a prime number.
(iv) G scored a total of 47 marks in Physics II, III and Maths I put together.
(v) In Chemistry, the average marks of A and that of H are distinct prime numbers.
(vi) The marks scored by each of the eight students in all the papers and the values of S1, S2 and S3 were integers.
(vii) The average of S1 as well as S2 for the eight students was 14.

Q.47
Which of the following could not be the sum of the total marks scored by A and H put together in Physics III and that by E in Physics I?

1 ○ **29**

2 ○ **32**

3 ○ **35**

4 ○ **41**

Solution:
Correct Answer : 3

🔖 **Bookmark**

🔍 **Answer key/Solution**

Let the marks scored by A in Physics III, E in Physics I and H in Physics III be x, y and z respectively and the average marks scored by them in Physics test is p, q and r respectively.

$\therefore p = \dfrac{(25 + x)}{2}$, $q = \dfrac{(22 + y)}{2}$ and $r = \dfrac{(26 + z)}{2}$

Possible pairs of values of 'x' and 'p' are tabulated as follows:

x	2	5	8	11	14	17
p	9	10	11	12	13	14

Similarly, possible pairs of values of 'y' and 'q', z and 'r' are tabulated as follows:

y	2	5	8	11	14	17
q	8	9	10	11	12	13

z	1	4	7	10	13	16	19
r	9	10	11	12	13	14	15

The average of Physics I is 16. So, the total of this paper must have been 128. It means the marks scored by D and E taken together must have been 31.

$\therefore y \geq 14$

From the table shown above, possible values of 'y' are 14 and 17. Also from condition (iii), possible values of (p, r) can be (11, 11) or (13, 13). Therefore, the corresponding values of 'x' and 'z' are (8, 7) or (14, 13).

All possible values of x, z and y are tabulated below:

x	z	y	x + y + z
8	7	14	29
8	7	17	32
14	13	14	41
14	13	17	44

Hence, 35 could not be a possible value.

FeedBack

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

	PHYSICS				CHEMISTRY				MATHS				
	I	II	III	S1	I	II	III	S2	I	II	III	S3	S
A	13	12				11	11		8	9			36
B	20			16			1	9			20		40
C	18			15	11			15			5		42
D		14				19		16	14		3	9	
E		20	2		15			16		18	5		42
F	17	17	5		18	20			16		7		43
G	19			16	4	19	19			20			48
H	10	16			6	11			19			15	

The table given above shows the partial information about the marks scored by eight students in an entrance examination conducted by a reputed engineering college. There were three subjects namely Physics, Chemistry and Maths, with three papers viz. I, II and III each. The maximum marks for each paper in each of the subjects was 20. In the table, S1, S2 and S3 represent the average marks obtained by the students in Physics, Chemistry and Maths respectively, and S represents the sum of S1, S2 and S3. Each of the eight students appeared in all the papers and no student scored zero marks in any of the given papers. Following information is also available:
(i) The average marks of the eight students in Physics I, Physics III and Maths III were 16, 12 and 10 respectively.
(ii) Except the marks already given in the table, no student scored 20 out of 20 in any of the papers.
(iii) In Physics, the average marks of A and H was the same, and it was a prime number.
(iv) G scored a total of 47 marks in Physics II, III and Maths I put together.
(v) In Chemistry, the average marks of A and that of H are distinct prime numbers.
(vi) The marks scored by each of the eight students in all the papers and the values of S1, S2 and S3 were integers.
(vii) The average of S1 as well as S2 for the eight students was 14.

Q.48
The sum of the average marks of F and H in Chemistry was

1 ⃝ **29**

2 ⃝ **28**

3 ⃝ **23**

4 ⃝ **22**

Solution:

Correct Answer : 1

Let the average marks scored by A, F and H in Chemistry be x, y and z respectively and the marks scored by A in Chemistry I and marks scored by F and H in Chemistry III be p, q and r respectively.

∴ 3x = 22 + p, 3y = 38 + q, 3z = 17 + r

As the average of S2 is 14, the total of S2 = 112.

Average marks of G in Chemistry = $\frac{19 + 19 + 4}{3}$ = 14.

So, x + y + z = 112 – (9 + 15 + 16 + 16 + 14)

or x + y + z = 42

Possible values of x, y and z are as follows:

x = 8, 9, 10, 11, 12, 13

y = 13, 14, 15, 16, 17, 18, 19

z = 6, 7, 8, 9, 10, 11, 12

But from condition (v), only possible values of ordered pair (x, z) are (11, 7), (13, 7) and (13, 11).

Among the given possible values, only set of values of (x, y, z) that satisfy the given conditions is (13, 18, 11).

Hence, the sum of average marks scored by F and H = (18 + 11) = 29.

FeedBack

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

	PHYSICS				CHEMISTRY				MATHS				
	I	II	III	S1	I	II	III	S2	I	II	III	S3	S
A	13	12				11	11		8	9			36
B	20		16			1	9			20			40
C	18		15		11		15			5			42
D		14			19		16		14	3	9		
E		20	2		15		16			18	5		42
F	17	17	5		18	20			16		7		43
G	19		16		4	19	19			20			48
H	10	16			6	11			19			15	

The table given above shows the partial information about the marks scored by eight students in an entrance examination conducted by a reputed engineering college. There were three subjects namely Physics, Chemistry and Maths, with three papers viz. I, II and III each. The maximum marks for each paper in each of the subjects was 20. In the table, S1, S2 and S3 represent the average marks obtained by the students in Physics, Chemistry and Maths respectively, and S represents the sum of S1, S2 and S3. Each of the eight students appeared in all the papers and no student scored zero marks in any of the given papers. Following information is also available:

(i) The average marks of the eight students in Physics I, Physics III and Maths III were 16, 12 and 10 respectively.

(ii) Except the marks already given in the table, no student scored 20 out of 20 in any of the papers.

(iii) In Physics, the average marks of A and H was the same, and it was a prime number.

(iv) G scored a total of 47 marks in Physics II, III and Maths I put together.

(v) In Chemistry, the average marks of A and that of H are distinct prime numbers.

(vi) The marks scored by each of the eight students in all the papers and the values of S1, S2 and S3 were integers.

(vii) The average of S1 as well as S2 for the eight students was 14.

Q.49

Which of the following could be the average marks of D in Physics?

1 ◯ **12**

2 ◯ **13**

3 ◯ **16**

4 ◯ **17**

Solution:

Correct Answer : 2

Average marks scored by 8 students in Physics I = 16
Total marks scored by 8 students in Physics I
= 16 × 8 = 128
As we have already calculated that the marks scored
by E in Physics I as either 14 or 17.
Marks scored by D = (128 – 111) = 17 or (128 – 114)
= 14
As average of S1 is 14, total of S1 = 112. As we have
already calculated that the average marks in Physics
of: A = 11 or 13 ; E = 12 or 13; H = 11 or 13.
On combining these conditions, we get the possible
values of average marks of D in Physics as (13, 14, 17
or 18). But D could have scored either 14 or 17 in
Physics I paper. Even if he had scored 19 in Physics III,
the average would not have been 18. Moreover, the
average needs to be an integer also. So, the possible
values can be either 13 or 14.

FeedBack

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

	PHYSICS				CHEMISTRY				MATHS				
	I	II	III	S1	I	II	III	S2	I	II	III	S3	S
A	13	12				11	11		8	9			36
B	20			16			1	9			20		40
C	18			15	11			15			5		42
D		14				19		16	14		3	9	
E		20	2		15			16		18	5		42
F	17	17	5		18	20			16		7		43
G	19			16	4	19	19			20			48
H	10	16			6	11			19			15	

The table given above shows the partial information about the marks scored by eight students in an entrance examination conducted by a reputed engineering college. There were three subjects namely Physics, Chemistry and Maths, with three papers viz. I, II and III each. The maximum marks for each paper in each of the subjects was 20. In the table, S1, S2 and S3 represent the average marks obtained by the students in Physics, Chemistry and Maths respectively, and S represents the sum of S1, S2 and S3. Each of the eight students appeared in all the papers and no student scored zero marks in any of the given papers. Following information is also available:
(i) The average marks of the eight students in Physics I, Physics III and Maths III were 16, 12 and 10 respectively.
(ii) Except the marks already given in the table, no student scored 20 out of 20 in any of the papers.
(iii) In Physics, the average marks of A and H was the same, and it was a prime number.
(iv) G scored a total of 47 marks in Physics II, III and Maths I put together.
(v) In Chemistry, the average marks of A and that of H are distinct prime numbers.
(vi) The marks scored by each of the eight students in all the papers and the values of S1, S2 and S3 were integers.
(vii) The average of S1 as well as S2 for the eight students was 14.

Q.50
The marks scored by F in Maths II was

1 ◯ **11**

2 ◯ **13**

3 ◯ **16**

4 ◯ **19**

Solution:
Correct Answer : 2
Total marks scored by F in all tests = 43 × 3 = 129
As we have already calculated that the average marks
of F in Chemistry was 18.
Average marks scored by F in Maths
= 43 – (13 + 18) = 12
Marks scored in Maths II paper = 12 × 3 – (16 + 7) = 13.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Directions for questions 51 to 54: Answer the questions based on the following information.

In each of the five consecutive years – Year 1 through Year 5 – the sports department of a school organized a game in which exactly five students participated every year. Every year, at the end of the game, the five participants were given five different ranks – 1 through 5. The number of points awarded to the participants ranked 1, 2 and 3 were 5, 3 and 1 respectively. No points were awarded to the participants ranked 4 and 5. A total of 9 different players participated in the game over the span of five years. The following table shows the total number of points garnered by each of the nine players.

Name of the Student	Points
Aman	5
Aabhas	5
Naveen	8
Urmi	2
Sameer	5
Rashmi	6
Sanjay	4
Kanika	10
Prashant	0

In Year 1, Aman, Aabhas, Naveen, Urmi and Sameer participated in the game. In Year 2, Rashmi replaced Aman; in Year 3, Sanjay replaced Aabhas; in Year 4, Kanika replaced Naveen; in Year 5, Prashant replaced Urmi. Once a player was replaced by another player, he/she did not participate in the game in the subsequent years. It is also known that Kanika was the only participant who was awarded points in two consecutive years.

Q.51
Who got 4th rank in Year 3?

Fill 1 if "your answer is Urmi"
Fill 2 if "your answer is Rashmi"
Fill 3 if "your answer is Sameer"
Fill 4 if "your answer is Either Urmi or Rashmi"

Solution:
Correct Answer : 4

🔖 **Bookmark**

🔍 **Answer key/Solution**

Since Aman participated only in Year 1 and was awarded a total of 5 points, we conclude that Aman was given Rank 1 in Year 1.

Aabhas participated only in Year 1 and Year 2 and was awarded a total of 5 points. This possible only if he was awarded either Rank 4 or Rank 5 in Year 1 and Rank 1 in Year 2.

Naveen participated in each of the three years viz. Year 1, Year 2 and Year 3 and was awarded a total of 8 points. This is possible only if he was awarded Rank 1 in Year 3 and Rank 2 in either Year 1 or Year 2.

Kanika played only in Year 4 and Year 5 and was awarded a total of 10 points and this is possible only if she was awarded Rank 1 in Year 4 as well as Year 5.

Further, the following conclusions can be drawn

Similarly, Sanjay was awarded 1 point in one of the years and 3 points in one of the years

Also, Sameer was awarded 1 point in two of the years and 3 points in one of the years.

Rashmi was awarded 3 points each in two of the years.

Urmi was awarded 1 point in two of the years.

Sanjay was awarded points only in Year 3 and Year 5 because it is given that Kanika is the only participant who was awarded points in two consecutive years.
By the same logic, Sameer was awarded points only in Year 1, Year 3 and Year 5.

Therefore, Rashmi was awarded points only in Year 2 and Year 4.

Also, Naveen was awarded points only in Year 1 and Urmi was awarded points in Year 2 and Year 4.

Now, top three rankers for each of the five years are tabulated as below:

	Rank 1	Rank 2	Rank 3
Year 1	Aman	Naveen	Sameer
Year 2	Aabhas	Rashmi	Urmi
Year 3	Naveen	Sanjay/Sameer	Sameer/Sanjay
Year 4	Kanika	Rashmi	Urmi
Year 5	Kanika	Sameer/Sanjay	Sanjay/Sameer

Either Urmi or Rashmi can get 4th rank in year 3.

FeedBack

Directions for questions 51 to 54: Answer the questions based on the following information.

In each of the five consecutive years – Year 1 through Year 5 – the sports department of a school organized a game in which exactly five students participated every year. Every year, at the end of the game, the five participants were given five different ranks – 1 through 5. The number of points awarded to the participants ranked 1, 2 and 3 were 5, 3 and 1 respectively. No points were awarded to the participants ranked 4 and 5. A total of 9 different players participated in the game over the span of five years. The following table shows the total number of points garnered by each of the nine players.

Name of the Student	Points
Aman	5
Aabhas	5
Naveen	8
Urmi	2
Sameer	5
Rashmi	6
Sanjay	4
Kanika	10
Prashant	0

In Year 1, Aman, Aabhas, Naveen, Urmi and Sameer participated in the game. In Year 2, Rashmi replaced Aman; in Year 3, Sanjay replaced Aabhas; in Year 4 Kanika replaced Naveen; in Year 5, Prashant replaced Urmi. Once a player was replaced by another player, he/she did not participate in the game in the subsequent years. It is also known that Kanika was the only participant who was awarded points in two consecutive years.

Q.52
If Sameer was given rank 3 in Year 3, then who was given Rank 2 in Year 3?

Fill 1 if "your answer is Naveen"
Fill 2 if "your answer is Rashmi"
Fill 3 if "your answer is Sanjay"
Fill 4 if "your answer is Either Naveen or Rashmi"

Solution:
Correct Answer : 3

Since Aman participated only in Year 1 and was awarded a total of 5 points, we conclude that Aman was given Rank 1 in Year 1.

Aabhas participated only in Year 1 and Year 2 and was awarded a total of 5 points. This possible only if he was awarded either Rank 4 or Rank 5 in Year 1 and Rank 1 in Year 2.

Naveen participated in each of the three years viz. Year 1, Year 2 and Year 3 and was awarded a total of 8 points. This is possible only if he was awarded Rank 1 in Year 3 and Rank 2 in either Year 1 or Year 2.

Kanika played only in Year 4 and Year 5 and was awarded a total of 10 points and this is possible only if she was awarded Rank 1 in Year 4 as well as Year 5.

Further, the following conclusions can be drawn

Similarly, Sanjay was awarded 1 point in one of the years and 3 points in one of the years

Also, Sameer was awarded 1 point in two of the years and 3 points in one of the years.

Rashmi was awarded 3 points each in two of the years.

Urmi was awarded 1 point in two of the years.

Sanjay was awarded points only in Year 3 and Year 5 because it is given that Kanika is the only participant who was awarded points in two consecutive years.
By the same logic, Sameer was awarded points only in Year 1, Year 3 and Year 5.

Therefore, Rashmi was awarded points only in Year 2 and Year 4.

Also, Naveen was awarded points only in Year 1 and Urmi was awarded points in Year 2 and Year 4.

Now, top three rankers for each of the five years are tabulated as below:

	Rank 1	Rank 2	Rank 3
Year 1	Aman	Naveen	Sameer
Year 2	Aabhas	Rashmi	Urmi
Year 3	Naveen	Sanjay/Sameer	Sameer/Sanjay
Year 4	Kanika	Rashmi	Urmi
Year 5	Kanika	Sameer/Sanjay	Sanjay/Sameer

From the table given above we can easily conclude that if Sameer was awarded Rank 3 in Year 3, then Sanjay was awarded Rank 2, in Year 3.

FeedBack

Directions for questions 51 to 54: Answer the questions based on the following information.

In each of the five consecutive years – Year 1 through Year 5 – the sports department of a school organized a game in which exactly five students participated every year. Every year, at the end of the game, the five participants were given five different ranks – 1 through 5. The number of points awarded to the participants ranked 1, 2 and 3 were 5, 3 and 1 respectively. No points were awarded to the participants ranked 4 and 5. A total of 9 different players participated in the game over the span of five years. The following table shows the total number of points garnered by each of the nine players.

Name of the Student	Points
Aman	5
Aabhas	5
Naveen	8
Urmi	2
Sameer	5
Rashmi	6
Sanjay	4
Kanika	10
Prashant	0

In Year 1, Aman, Aabhas, Naveen, Urmi and Sameer participated in the game. In Year 2, Rashmi replaced Aman; in Year 3, Sanjay replaced Aabhas; in Year 4 Kanika replaced Naveen; in Year 5, Prashant replaced Urmi. Once a player was replaced by another player, he/she did not participate in the game in the subsequent years. It is also known that Kanika was the only participant who was awarded points in two consecutive years.

Q.53

At the end of the game in Year 4, the total number of points awarded to how many participants, out of those who had participated in the game at least in one of the year by Year 4, was lesser than the total number of points awarded to Rashmi?

Fill 1 if "your answer is 7"
Fill 2 if "your answer is 8"
Fill 3 if "your answer is 5"
Fill 4 if "your answer is 6"

Solution:
Correct Answer : 4

Since Aman participated only in Year 1 and was awarded a total of 5 points, we conclude that Aman was given Rank 1 in Year 1.

Aabhas participated only in Year 1 and Year 2 and was awarded a total of 5 points. This possible only if he was awarded either Rank 4 or Rank 5 in Year 1 and Rank 1 in Year 2.

Naveen participated in each of the three years viz. Year 1, Year 2 and Year 3 and was awarded a total of 8 points. This is possible only if he was awarded Rank 1 in Year 3 and Rank 2 in either Year 1 or Year 2.

Kanika played only in Year 4 and Year 5 and was awarded a total of 10 points and this is possible only if she was awarded Rank 1 in Year 4 as well as Year 5.

Further, the following conclusions can be drawn

Similarly, Sanjay was awarded 1 point in one of the years and 3 points in one of the years

Also, Sameer was awarded 1 point in two of the years and 3 points in one of the years.

Rashmi was awarded 3 points each in two of the years.

Urmi was awarded 1 point in two of the years.

Sanjay was awarded points only in Year 3 and Year 5 because it is given that Kanika is the only participant who was awarded points in two consecutive years.
By the same logic, Sameer was awarded points only in Year 1, Year 3 and Year 5.

Therefore, Rashmi was awarded points only in Year 2 and Year 4.

Also, Naveen was awarded points only in Year 1 and Urmi was awarded points in Year 2 and Year 4.

Now, top three rankers for each of the five years are tabulated as below:

	Rank 1	Rank 2	Rank 3
Year 1	Aman	Naveen	Sameer
Year 2	Aabhas	Rashmi	Urmi
Year 3	Naveen	Sanjay/Sameer	Sameer/Sanjay
Year 4	Kanika	Rashmi	Urmi
Year 5	Kanika	Sameer/Sanjay	Sanjay/Sameer

At the end of the game in Year 4, every participant except Naveen has been awarded lesser number of points than Rashmi and Prashant did not participate till then.
So, there are 6 participants who were awarded lesser number of points than Rashmi at the end of the game in Year 4.

Bookmark

Answer key/Solution

FeedBack

Directions for questions 51 to 54: Answer the questions based on the following information.

In each of the five consecutive years – Year 1 through Year 5 – the sports department of a school organized a game in which exactly five students participated every year. Every year, at the end of the game, the five participants were given five different ranks – 1 through 5. The number of points awarded to the participants ranked 1, 2 and 3 were 5, 3 and 1 respectively. No points were awarded to the participants ranked 4 and 5. A total of 9 differen players participated in the game over the span of five years. The following table shows the total number of points garnered by each of the nine players.

Name of the Student	Points
Aman	5
Aabhas	5
Naveen	8
Urmi	2
Sameer	5
Rashmi	6
Sanjay	4
Kanika	10
Prashant	0

In Year 1, Aman, Aabhas, Naveen, Urmi and Sameer participated in the game. In Year 2, Rashmi replaced Aman; in Year 3, Sanjay replaced Aabhas; in Year 4 Kanika replaced Naveen; in Year 5, Prashant replaced Urmi. Once a player was replaced by another player, he/she did not participate in the game in the subsequent years. It is also known that Kanika was the only participant who was awarded points in two consecutive years.

Q.54
In Year 5, what was the ratio of the number of points awarded to Sanjay to that to Sameer?

Fill 1 if "your answer is 1 : 3"
Fill 2 if "your answer is 3 : 1"
Fill 3 if "your answer is 1 : 5"
Fill 4 if "your answer is Cannot be determined"

Solution:
Correct Answer : 4

🔖 **Bookmark**

🔍 **Answer key/Solution**

Since Aman participated only in Year 1 and was awarded a total of 5 points, we conclude that Aman was given Rank 1 in Year 1.

Aabhas participated only in Year 1 and Year 2 and was awarded a total of 5 points. This possible only if he was awarded either Rank 4 or Rank 5 in Year 1 and Rank 1 in Year 2.

Naveen participated in each of the three years viz. Year 1, Year 2 and Year 3 and was awarded a total of 8 points. This is possible only if he was awarded Rank 1 in Year 3 and Rank 2 in either Year 1 or Year 2.

Kanika played only in Year 4 and Year 5 and was awarded a total of 10 points and this is possible only if she was awarded Rank 1 in Year 4 as well as Year 5.

Further, the following conclusions can be drawn

Similarly, Sanjay was awarded 1 point in one of the years and 3 points in one of the years

Also, Sameer was awarded 1 point in two of the years and 3 points in one of the years.

Rashmi was awarded 3 points each in two of the years.

Urmi was awarded 1 point in two of the years.

Sanjay was awarded points only in Year 3 and Year 5 because it is given that Kanika is the only participant who was awarded points in two consecutive years.
By the same logic, Sameer was awarded points only in Year 1, Year 3 and Year 5.

Therefore, Rashmi was awarded points only in Year 2 and Year 4.

Also, Naveen was awarded points only in Year 1 and Urmi was awarded points in Year 2 and Year 4.

Now, top three rankers for each of the five years are tabulated as below:

	Rank 1	Rank 2	Rank 3
Year 1	Aman	Naveen	Sameer
Year 2	Aabhas	Rashmi	Urmi
Year 3	Naveen	Sanjay/Sameer	Sameer/Sanjay
Year 4	Kanika	Rashmi	Urmi
Year 5	Kanika	Sameer/Sanjay	Sanjay/Sameer

From the table given above, the ratio of the number of points awarded to Sanjay and Sameer could be either 1 : 3 or 3 : 1.
Hence, option (4) is the correct choice.

FeedBack

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

Each of the six friends – Aabhas, Barun, Charu, Deepak, Farooq and Govinda – holds a different designation from among MD, Actor, B.M., Footballer, Consultant, Doctor – with no two of them holding the same designation. Each of them lives in a different city from among Faridabad, Chennai, Delhi, Gurgaon, Kolkata and Bombay and owns a different car from among Corolla, Mercedes, Santro, Swift, Dicor and BMW. Each of the six cars is of a different colour out of Blue, White, Black, Yellow, Green and Red. It is also known that:
I. Aabhas stays in Faridabad and owns a Swift. The actor owns the Mercedes and stays in Delhi.
II. For exactly one of them, the initial letter of his name, his designation, his city, his car and the colour of the car is the same.
III. For exactly one of them, the initial letter for all the four parameters is different from the initial letter of his name.
IV. Except for the above two friends, mentioned in statements II and III, for every other friend exactly one out of designation, city, car, colour of the car starts with the same initial letters as their names.
V. The person having the black Corolla stays in Gurgaon.
VI. Dicor is Yellow in color, and Santro is owned by the Doctor and is not Green in colour.
VII. Deepak does not own Santro.

Q.55
Which of the following is true about Charu?

1 ◯ He owns Corolla

2 ◯ He lives in Chennai

3 ◯ He is a Consultant

4 ◯ Both (1) and (2)

Solution:
Correct Answer : 2										🔖 **Bookmark**

By observation it can be analyzed that the person having all the attributes starting with the first alphabet of his name is Barun.

Aabhas is the one who has no attribute starting with the first letter of his name because Aabhas cannot be an actor as the actor stays in Delhi.

Farooq has only two attributes starting with the first letter of his name, i.e. Faridabad and Footballer. Since Aabhas stays in Faridabad, Farooq is a Footballer.

Now, as Deepak, Farooq and Govinda cannot have a Santro, Charu must have the Santro.
Therefore, we can also conclude that Charu stays in Chennai.

The attribute starting with the first letter of the name of Govinda is the color of his car i.e. green, as no other color matches with the first alphabet of anybody's name.

Further analysis leads to the following cases:

Name	Profession	Car	Place	Color
Aabhas	MD/Consultant	Swift	Faridabad	Red / White
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	Red / White
Deepak	MD / Consultant	Dicor	Kolkata	Yellow
Farooq	Footballer	Corolla	Gurgaon	Black
Govinda	Actor	Mercedes	Delhi	Green

Or

Name	Profession	Car	Place	Color
Aabhas	MD/Consultant	Swift	Faridabad	
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	
Deepak	Actor	Mercedes	Delhi	Red / White
Farooq	Footballer	Dicor	Kolkata	Yellow
Govinda	Consultant/MD	Corolla	Gurgaon	Black

Chennai

FeedBack

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

Each of the six friends – Aabhas, Barun, Charu, Deepak, Farooq and Govinda – holds a different designation from among MD, Actor, B.M., Footballer, Consultant, Doctor – with no two of them holding the same designation. Each of them lives in a different city from among Faridabad, Chennai, Delhi, Gurgaon, Kolkata and Bombay and owns a different car from among Corolla, Mercedes, Santro, Swift, Dicor and BMW. Each of the six cars is of a different colour out of Blue, White, Black, Yellow, Green and Red. It is also known that:
I. Aabhas stays in Faridabad and owns a Swift. The actor owns the Mercedes and stays in Delhi.
II. For exactly one of them, the initial letter of his name, his designation, his city, his car and the colour of the car is the same.
III. For exactly one of them, the initial letter for all the four parameters is different from the initial letter of his name.
IV. Except for the above two friends, mentioned in statements II and III, for every other friend exactly one out of designation, city, car, colour of the car starts with the same initial letters as their names.
V. The person having the black Corolla stays in Gurgaon.
VI. Dicor is Yellow in color, and Santro is owned by the Doctor and is not Green in colour.
VII. Deepak does not own Santro.

Q.56
The designation of the person who stays in Kolkata is

1 ◯ Doctor

2 ◯ MD

3 ◯ Footballer

4 ◯ Cannot be determined

Solution:
Correct Answer : 4

By observation it can be analyzed that the person having all the attributes starting with the first alphabet of his name is Barun.

Aabhas is the one who has no attribute starting with the first letter of his name because Aabhas cannot be an actor as the actor stays in Delhi.

Farooq has only two attributes starting with the first letter of his name, i.e. Faridabad and Footballer. Since Aabhas stays in Faridabad, Farooq is a Footballer.

Now, as Deepak, Farooq and Govinda cannot have a Santro Charu must have the Santro.
Therefore, we can also conclude that Charu stays in Chennai

The attribute starting with the first letter of the name of Govinda is the color of his car i.e. green, as no other color matches with the first alphabet of anybody's name.

Further analysis leads to the following cases:

Name	Profession	Car	Place	Color
Aabhas	MD/ Consultant	Swift	Faridabad	Red / White
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	Red / White
Deepak	MD / Consultant	Dicor	Kolkata	Yellow
Farooq	Footballer	Corolla	Gurgaon	Black
Govinda	Actor	Mercedes	Delhi	Green

Or

Name	Profession	Car	Place	Color
Aabhas	MD/Consultant	Swift	Faridabad	
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	
Deepak	Actor	Mercedes	Delhi	Red / White
Farooq	Footballer	Dicor	Kolkata	Yellow
Govinda	Consultant/MD	Corolla	Gurgaon	Black

Cannot be determined because he can either be the MD or the Consultant.

FeedBack

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

Each of the six friends – Aabhas, Barun, Charu, Deepak, Farooq and Govinda – holds a different designation from among MD, Actor, B.M., Footballer, Consultant, Doctor – with no two of them holding the same designation. Each of them lives in a different city from among Faridabad, Chennai, Delhi, Gurgaon, Kolkata and Bombay and owns a different car from among Corolla, Mercedes, Santro, Swift, Dicor and BMW. Each of the six cars is of a different colour out of Blue, White, Black, Yellow, Green and Red. It is also known that:
I. Aabhas stays in Faridabad and owns a Swift. The actor owns the Mercedes and stays in Delhi.
II. For exactly one of them, the initial letter of his name, his designation, his city, his car and the colour of the car is the same.
III. For exactly one of them, the initial letter for all the four parameters is different from the initial letter of his name.
IV. Except for the above two friends, mentioned in statements II and III, for every other friend exactly one out of designation, city, car, colour of the car starts with the same initial letters as their names.
V. The person having the black Corolla stays in Gurgaon.
VI. Dicor is Yellow in color, and Santro is owned by the Doctor and is not Green in colour.
VII. Deepak does not own Santro.

Q.57
Which of the following is definitely true about the person who lives in Kolkata?

1 ◯ **He owns a yellow car**

2 ◯ **He is the Footballer**

3 ◯ **He owns the Corolla**

4 ◯ **None of the above**

Solution:
Correct Answer : 1

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🔍 **Answer key/Solution**

By observation it can be analyzed that the person having all the attributes starting with the first alphabet of his name is Barun.

Aabhas is the one who has no attribute starting with the first letter of his name because Aabhas cannot be an actor as the actor stays in Delhi.

Farooq has only two attributes starting with the first letter of his name, i.e. Faridabad and Footballer. Since Aabhas stays in Faridabad, Farooq is a Footballer.

Now, as Deepak, Farooq and Govinda cannot have a Santro, Charu must have the Santro.
Therefore, we can also conclude that Charu stays in Chennai.

The attribute starting with the first letter of the name of Govinda is the color of his car i.e. green, as no other color matches with the first alphabet of anybody's name.

Further analysis leads to the following cases:

Name	Profession	Car	Place	Color
Aabhas	MD/ Consultant	Swift	Faridabad	Red / White
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	Red / White
Deepak	MD / Consultant	Dicor	Kolkata	Yellow
Farooq	Footballer	Corolla	Gurgaon	Black
Govinda	Actor	Mercedes	Delhi	Green

Or

Name	Profession	Car	Place	Color
Aabhas	MD/Consultant	Swift	Faridabad	
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	
Deepak	Actor	Mercedes	Delhi	Red / White
Farooq	Footballer	Dicor	Kolkata	Yellow
Govinda	Consultant/MD	Corolla	Gurgaon	Black

The person who lives in Kolkata must owns Dicor (i.e. an yellow car).

FeedBack

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

Each of the six friends – Aabhas, Barun, Charu, Deepak, Farooq and Govinda – holds a different designation from among MD, Actor, B.M., Footballer, Consultant, Doctor – with no two of them holding the same designation. Each of them lives in a different city from among Faridabad, Chennai, Delhi, Gurgaon, Kolkata and Bombay and owns a different car from among Corolla, Mercedes, Santro, Swift, Dicor and BMW. Each of the six cars is of a different colour out of Blue, White, Black, Yellow, Green and Red. It is also known that:
I. Aabhas stays in Faridabad and owns a Swift. The actor owns the Mercedes and stays in Delhi.
II. For exactly one of them, the initial letter of his name, his designation, his city, his car and the colour of the car is the same.
III. For exactly one of them, the initial letter for all the four parameters is different from the initial letter of his name.
IV. Except for the above two friends, mentioned in statements II and III, for every other friend exactly one out of designation, city, car, colour of the car starts with the same initial letters as their names.
V. The person having the black Corolla stays in Gurgaon.
VI. Dicor is Yellow in color, and Santro is owned by the Doctor and is not Green in colour.
VII. Deepak does not own Santro.

Q.58
If Deepak owns Decor, then Govinda owns

1 ◯ **BMW**

2 ◯ **Santro**

3 ◯ **Mercedes**

4 ◯ **Corolla**

Solution:
Correct Answer : 3

🔖 **Bookmark**

🔍 **Answer key/Solution**

By observation it can be analyzed that the person having all the attributes starting with the first alphabet of his name is Barun.

Aabhas is the one who has no attribute starting with the first letter of his name because Aabhas cannot be an actor as the actor stays in Delhi.

Farooq has only two attributes starting with the first letter of his name, i.e. Faridabad and Footballer. Since Aabhas stays in Faridabad, Farooq is a Footballer.

Now, as Deepak, Farooq and Govinda cannot have a Santro Charu must have the Santro.
Therefore, we can also conclude that Charu stays in Chennai.

The attribute starting with the first letter of the name of Govinda is the color of his car i.e. green, as no other color matches with the first alphabet of anybody's name.

Further analysis leads to the following cases:

Name	Profession	Car	Place	Color
Aabhas	MD/Consultant	Swift	Faridabad	Red / White
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	Red / White
Deepak	MD / Consultant	Dicor	Kolkata	Yellow
Farooq	Footballer	Corolla	Gurgaon	Black
Govinda	Actor	Mercedes	Delhi	Green

Or

Name	Profession	Car	Place	Color
Aabhas	MD/Consultant	Swift	Faridabad	
Barun	B.M	BMW	Bombay	Blue
Charu	Doctor	Santro	Chennai	
Deepak	Actor	Mercedes	Delhi	Red / White
Farooq	Footballer	Dicor	Kolkata	Yellow
Govinda	Consultant/MD	Corolla	Gurgaon	Black

If Deepak owns Dicore then Govinda owns Mercedes.

FeedBack

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

Manky is given a puzzle called "Prime Game" by his mathematics teacher. He is required to determine a single digit, non-even prime number which is written on one out of the four cards namely "a", "b", "c" and "d". The four cards are lying on a table starting from his left to his right. Three out of the four cards have single digit, non-prime even numbers written on them. He can take help of a super computer "Param" which can be given a four-digit binary code as the input. The super computer multiplies each digit of the binary code to the respective number on the card from left to right.

For example:
If computer is given 1011 as the input then it completes multiplication in the following order:
$1 × a + 0 × b + 1 × c + 1 × d$

where a, b, c and d are the single digit distinct numbers written on cards "a", "b", "c" and "d" respectively. The super computer then gives the above output in the decimal notation. Manky can see both the input as well as the output on the super computer.

In case an input has less than four digits in the binary system, prefix appropriate number of '0' to make the input a four digit number. For example, if an input is 11, then consider it as 0011.

Q.59
One of the options below shows the set of values in decimal notation , whose binary equivalent as input to the computer would be sufficient to determine the prime number written on one of the cards. Which of the following is the required set ?

1 ◯ **1, 2, 4 and 8**

2 ◯ **7, 5, 1 and 2**

3 ◯ **3, 2, 1 and 4**

4 ◯ **3, 3, 1 and 2**

Solution:
Correct Answer : 1

🔖 **Bookmark**

🔍 **Answer key/Solution**

Each binary code we send as input to the computer
should be such that it gives number written on exactly
1 card.
If 0001 is given as input, computer will generate output
as: a × 0 + b × 0 + c × 0 + 1 × d = d
If 0010 is given as input, computer will generate output
as: a × 0 + b × 0 + c × 1 + 0 × d = c
If 0100 is given as input, computer will generate output
as: a × 0 + b × 1 + c × 0 + 0 × d = b
If 1000 is given as input, computer will generate output
as: a × 1 + b × 0 + c × 0 + 0 × d = a
Hence the above 4 binary code as input is sufficient to
determine each of the number written on the 4 cards.
Decimal notation of 0001, 0010, 0100, and 1000 are 1,
2, 4 and 8 respectively.

FeedBack

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

Manky is given a puzzle called "Prime Game" by his mathematics teacher. He is required to determine a single digit, non-even prime number which is written on one out of the four cards namely "a", "b", "c" and "d". The four cards are lying on a table starting from his left to his right. Three out of the four cards have single digit, non-prime even numbers written on them. He can take help of a super computer "Param" which can be given a four-digit binary cod as the input. The super computer multiplies each digit of the binary code to the respective number on the card from left to right.

For example:
If computer is given 1011 as the input then it completes multiplication in the following order:
1 × a + 0 × b + 1 × c + 1 × d
where a, b, c and d are the single digit distinct numbers written on cards "a", "b", "c" and "d" respectively. The super computer then gives the above output i the decimal notation. Manky can see both the input as well as the output on the super computer.
In case an input has less than four digits in the binary system, prefix appropriate number of '0' to make the input a four digit number. For example, if an input is 11, then consider it as 0011.

Q.60
If Manky sends binary equivalent of 15 as input to the super computer and gets 25 as the output, then the prime number thus obtained by Manky is

1 ◯ **3**

2 ◯ **5**

3 ◯ **2**

4 ◯ **7**

Solution:
Correct Answer : 4

Binary equivalent of 15 is 1111.
If 1111 is send as input to the computer, it will generate
the output as: 1 × a + 1 × b + 1 × c + 1 × d
According to the question,
a + b + c + d = 25.
Since it's given that three numbers are even and one
of them is prime.
The only possible combination is 4, 6, 7 and 8.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

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

Manky is given a puzzle called "Prime Game" by his mathematics teacher. He is required to determine a single digit, non-even prime number which is written on one out of the four cards namely "a", "b", "c" and "d". The four cards are lying on a table starting from his left to his right. Three out of the four cards have single digit, non-prime even numbers written on them. He can take help of a super computer "Param" which can be given a four-digit binary cod as the input. The super computer multiplies each digit of the binary code to the respective number on the card from left to right.

For example:
If computer is given 1011 as the input then it completes multiplication in the following order:
1 × a + 0 × b + 1 × c + 1 × d
where a, b, c and d are the single digit distinct numbers written on cards "a", "b", "c" and "d" respectively. The super computer then gives the above output i the decimal notation. Manky can see both the input as well as the output on the super computer.
In case an input has less than four digits in the binary system, prefix appropriate number of '0' to make the input a four digit number. For example, if an input is 11, then consider it as 0011.

Q.61
If the number written on card 'd' is 5 and the decimal notation of the input is 14 then which of the following is the output?

1 ◯ **20**

2 ◯ **22**

3 ◯ **24**

4 ◯ **18**

Solution:
Correct Answer : 4

The only possible non-prime even numbers are 4, 6
and 8.
So, when the input is 14, i.e. 1110, the output will be
$(1 \times 4) + (1 \times 6) + (1 \times 8) + (0 \times 5) = 18$
Here, the order of 4, 6, 8 does not matter as in any
case 0 will be multiplied by 5 only.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

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

Manky is given a puzzle called "Prime Game" by his mathematics teacher. He is required to determine a single digit, non-even prime number which is written on one out of the four cards namely "a", "b", "c" and "d". The four cards are lying on a table starting from his left to his right. Three out of the four cards have single digit, non-prime even numbers written on them. He can take help of a super computer "Param" which can be given a four-digit binary cod as the input. The super computer multiplies each digit of the binary code to the respective number on the card from left to right.

For example:
If computer is given 1011 as the input then it completes multiplication in the following order:
$1 \times a + 0 \times b + 1 \times c + 1 \times d$
where a, b, c and d are the single digit distinct numbers written on cards "a", "b", "c" and "d" respectively. The super computer then gives the above output i the decimal notation. Manky can see both the input as well as the output on the super computer.
In case an input has less than four digits in the binary system, prefix appropriate number of '0' to make the input a four digit number. For example, if an input is 11, then consider it as 0011.

Q.62
If input is 13, then the value of output cannot be more than

1 ◯ **21**

2 ◯ **19**

3 ◯ **18**

4 ◯ **16**

Solution:
Correct Answer : 1

$13 = (1101)_2$
∴ Output $= 1 \times a + 1 \times b + 0 \times c + 1 \times d = a + b + d$
For maximizing its value take the value of (a, b, d) as
(8, 7, 6) in any order.
∴ The required output $= 8 + 7 + 6 = 21$.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

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

Table given below shows the month and year of birth of twelve children. Each child belongs to exactly one family from among Dahiya's, Ahuja's, Khanna's, Shrivas' and Bajpayee's. Each of the five families has at least two children and at most three children. The total number of children with the five families is 12. Child's age is counted in terms of number of years and months only. For example Aditya's age in May 2002 was 6 years and 2 months, irrespective of hi date of birth (The birth of month is not counted).

Name	Month and year of Birth	
Afsana	February	1991
Sukrit	December	1991
Salim	September	1992
Akash	April	1993
Samaksh	July	1994
Anirudh	October	1994
Anjan	May	1995
Aditya	March	1996
Ansar	May	1998
Siddharth	October	1998
Sandy	June	1999
Sami	January	2000

Q.63

If average age of two children of Dahiya family in January 2001 was 6 years and 1 month and Siddharth is one of the children of the Dahiya family, who among the following can be other child of Dahiya family?

1 ◯ Afsana

2 ◯ Anjan

3 ◯ Samaksh

4 ◯ Ansar

Solution:

Correct Answer : 1

Age of Siddharth in Jan 2001 = 2 years and 3 months.
For the average age to be 6 years and 1 months, the age of the other child has to be 9 years and 11 months.
Among the given option Afsana's age is 9 years and 11 months.

🔖 **Bookmark**

🔍 **Answer key/Solution**

FeedBack

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

Table given below shows the month and year of birth of twelve children. Each child belongs to exactly one family from among Dahiya's, Ahuja's, Khanna's, Shrivas' and Bajpayee's. Each of the five families has at least two children and at most three children. The total number of children with the five families is 12. Child's age is counted in terms of number of years and months only. For example Aditya's age in May 2002 was 6 years and 2 months, irrespective of his date of birth (The birth of month is not counted).

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Ansar	May	1998
Siddharth	October	1998
Sandy	June	1999
Sami	January	2000

Q.64

In January 2000, if with the birth of second child in Khanna family, the average age of children of Khanna family became equal to the average age of children of Ahuja family, which has exactly two children, then who was the first child of Khanna family?

1 ◯ Either Anjan or Anirudh

2 ◯ Either Samaksh or Anjan

3 ◯ Either Salim or Samaksh

4 ◯ Either Salim or Aditya

Solution:

Correct Answer : 3

Case I: One case is possible when 1st child of Khanna family is Samaksh and second child is Sami, born in January 2000. Children of Ahuja family can be Ansar and Aditya.

Age of Aditya in January 2000 = 46 months.
Age of Ansar in January 2000 = 20 months.
Age of Samaksh in January 2000 = 66 months.
Age of Sami in January 2000 = 0 month.

$$\therefore \text{Average age} = \frac{46+20}{2} = \frac{66+0}{2}$$

Case II: Another case is possible when 1st child of Khanna family is Salim and second child is Sami, born in January 2000. Children of Ahuja family are Akash and Sandy.

Age of Akash in January 2000 = 81 months.
Age of Sandy in January 2000 = 7 months.
Age of Salim in January 2000 = 88 months.
Age of Sami in January 2000 = 0 month.

$$\therefore \text{Average age} = \frac{81+7}{2} = \frac{88+0}{2}$$

FeedBack

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

Table given below shows the month and year of birth of twelve children. Each child belongs to exactly one family from among Dahiya's, Ahuja's, Khanna's, Shrivas' and Bajpayee's. Each of the five families has at least two children and at most three children. The total number of children with the five families is 12. Child's age is counted in terms of number of years and months only. For example Aditya's age in May 2002 was 6 years and 2 months, irrespective of hi date of birth (The birth of month is not counted).

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Aditya	March	1996
Ansar	May	1998
Siddharth	October	1998
Sandy	June	1999
Sami	January	2000

Q.65
In December 1999, average age of three children of Bajpayee family was integer number of years. If names of all the children of Bajpayee family starts wit the same letter, which of the following could be children of Bajpayee family?

1 ◯ Sandy, Siddharth, Salim

2 ◯ Akash, Anjan, Ansar

3 ◯ Ansar, Afsana, Aditya

4 ◯ Afsana, Ansar, Anjan

Solution:

Correct Answer : 4

Age of children as on January 2000 (in months) is given below.

Name	Age
Akash	81
Anjan	56
Ansar	20
Afsana	107
Aditya	46
Anirudh	63
Sandy	7
Siddharth	15
Salim	88
Sukrit	97
Sami	0
Samaksh	66

Now, average age of children will be integer number of years only if their ages add up to 36 months, 72 months, 108 months and so on.
For that to happen sum of ages of children (in months) should be a multiple of 3 at any point of time.
Among the given options, only the sum of ages (in months) of Afsana, Ansar and Anjan is a multiple of 36.

FeedBack

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

Table given below shows the month and year of birth of twelve children. Each child belongs to exactly one family from among Dahiya's, Ahuja's, Khanna's, Shrivas' and Bajpayee's. Each of the five families has at least two children and at most three children. The total number of children with the five families is 12. Child's age is counted in terms of number of years and months only. For example Aditya's age in May 2002 was 6 years and 2 months, irrespective of hi date of birth (The birth of month is not counted).

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Aditya	March	1996
Ansar	May	1998
Siddharth	October	1998
Sandy	June	1999
Sami	January	2000

Q.66
In July 2000, the age of one of the child of Srivas's family was twice that of other child of the same family, then who are two children of Srivas family?

1 ○ **Ansar and Aditya**

2 ○ **Anjar and Anjan**

3 ○ **Ansar and Sandy**

4 ○ **Either (1) or (3)**

Solution:
Correct Answer : 4
Age of Ansar (in months) = 26
Age of Aditya (in months) = 52
Age of Sandy (in months) = 13.

FeedBack

🔖**Bookmark**

🔍 **Answer key/Solution**

Sec 3

Q.67
In rectangle ABCD, E is a point on BC such that ∠BEA = 30° and ∠CED = 60°. If BE = 60 cm, then what is the area (in cm^2) of the rectangle?

1 ◯ **1600**

2 ◯ **800**
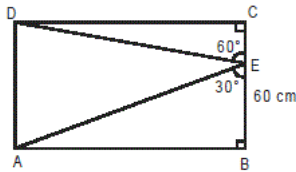
3 ◯ **1600√3**

4 ◯ **800√3**

[✖]

Solution:
Correct Answer : 3
Your Answer : 4

In ΔABE, $\tan 60° = \dfrac{EB}{AB} = \dfrac{60}{AB}$

⇒ $AB = \dfrac{60}{\tan 60°} = \dfrac{60}{\sqrt{3}} = 20\sqrt{3}$ cms

In ΔDEC, $\tan 30° = \dfrac{CE}{DC} = \dfrac{CE}{AB}$

⇒ $CE = AB\tan 30° = 20\sqrt{3} \times \dfrac{1}{\sqrt{3}} = 20$ cms

So, BC = BE + EC = 60 + 20 = 80 cms.
∴ Area of the rectangle = AB × BC

$= 20\sqrt{3} \times 80 = 1600\sqrt{3}$ cm².

[FeedBack]

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.68
If the LCM of 6^6 , 8^8 and 'x' is 12^{12}, how many values can 'x' take?

[✔]

Solution:
Correct Answer : 25
Your Answer : 25

Given LCM of 6^6, 8^8 and x is 12^{12}
⇒ LCM of ($2^6 \times 3^6$, 2^{24} and x) is $2^{24} \times 3^{12}$
So, x can take values:
$2^0 \times 3^{12}$, $2^1 \times 3^{12}$, $2^2 \times 3^{12}$, ..., $2^{24} \times 3^{12}$.
So, the number of values that x can take is 25.

[FeedBack]

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.69
If log a$_1$, log a$_2$, ..., log an are in an Arithmetic Progression and a$_4$ = 24 and a$_7$ – a$_5$ = 144, then find the value of (a$_1$ + a$_2$ + a$_3$ + ... + a$_{10}$).

1 ◯ **2311**

2 ◯ **3059**

3 ◯ **5462**

4 ◯ **3069**

Solution:
Correct Answer : 4

🔖 **Bookmark**

🔍 **Answer key/Solution**

Since log a_1, log a_2, log a_3 ... are in A.P.
∴ a_1, a_2, a_3 ... must be in G.P.
Let d be the common ratio of this G.P.
So, $a_4 = a_1 \times d^3 = 24$ ...(i)
$a_7 - a_5 = a_1 \times d^6 - a_1 \times d^4 = a_1 \times d^4 (d^2 - 1) = 144$
$\Rightarrow 24d (d^2 - 1) = 144$
or $d(d^2 - 1) = 6$
$\Rightarrow d = 2$ & $a_1 = 3$.
So, $a_1 + a_2 + a_3 ... + a_{10} = a_1 + a_1d + a_1d^2 + ... + a_1d^9$
$= a_1 (1 + d + d^2 + ... + d^9)$
$= 3 (1 + 2 + 2^2 + ... + 2^9)$

$= 3\dfrac{(2^{10} - 1)}{2 - 1}$

$= 3 (1024 - 1) = 3 \times 1023 = 3069.$

FeedBack

Q.70
How many four-digit numbers, with distinct digits, are there such that the sum of the digits of each of these numbers is an odd natural number?

1 ◯ **2160**

2 ◯ **2090**

3 ◯ **1880**

4 ◯ **2376**

Solution:
Correct Answer : 1

The sum of the digits of a four-digit number can be odd in two cases.

Case I: One digit is odd and the other three digits are even
The number of ways to select one odd digit (out of 1, 3, 5, 7, 9) = $^5C_1 = 5$
While selecting even digits, we have to take cognizance of whether one of the selected digits is zero or not as it will have bearing on the numbers that we are to form.
When all the even digits are non zero, the number of numbers that can be formed = $^5C_1 \times {}^4C_3 \times 4! = 480$
When one of the even digits is zero, the number of numbers that can be formed
$= {}^5C_1 \times {}^4C_2 \times 3 \times 3 \times 2 \times 1 = 540$
Total ways = 480 + 540 = 1020

Case II: Three digits are odd and the remaining one digit is even
By using the concept used in the previous case, the number of numbers in case comes out to be 1140

Hence, the total number of required numbers
= 1020 + 1140 = 2160.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.71
Train X traveling at 120 km/hr takes 31 seconds to cross a platform and 4 seconds to cross an electric pole. What is the length of the platform?

1 ◯ **1.2 km**

2 ◯ **1 km**

3 ◯ **0.9 km**

4 ◯ **0.8 km**

✔

Solution:
Correct Answer : 3
Your Answer : 3

🔖 **Bookmark**

🔍 **Answer key/Solution**

Train X traveling at 120 km/hr $= \left(\dfrac{100}{3}\right)$ m/sec

Length of train X $= \left(\dfrac{100}{3}\right) \times 4 = \left(\dfrac{400}{3}\right)$ m

Let the length of the platform be x m.

Therefore, $x + \dfrac{400}{3} = 31 \times \dfrac{100}{3} \Rightarrow x = 0.9$ km.

FeedBack

Q.72
What is the maximum value of (x + 2) × (12 − 3x)?

✔

Solution:
Correct Answer : 27
Your Answer : 27
(12 − 3x) (x + 2) = 3(4 − x) (x + 2)
It will be maximum when 4 − x = x + 2 (because their sum is constant)
⇒ x = 1
Maximum value of the function = 27.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.73
There is an empty tank to be filled with water by using three pipes namely P1, P2 and P3. P1 and P2 can fill the tank completely in 30 and 45 hours respectively. P1 and P2 are opened alternately for one hour each, starting with P1. P3 is open throughout this time but supplying water at 75% of its usual capacity. The tank is filled to 70% of its capacity in 15 hours. What is the time taken by P3 to fill the tank completely operating alone at its normal capacity

1 ⃝ **45 hours**

2 ⃝ **40.5 hours**

3 ⃝ **56.25 hours**

4 ⃝ **50 hours**

✔

Solution:
Correct Answer : 2
Your Answer : 2
Pipe 'P$_1$' alone takes 30 hours to fill the tank.
Pipe 'P$_2$' alone takes 45 hours to fill the tank.
Let pipe 'P$_3$' alone take 'Z' hours to fill the tank.
Total fraction of the tank filled in the first hour when

both the pipes 'P$_1$' and 'P$_3$' fill the tank $= \left(\dfrac{1 \times 0.75}{Z} + \dfrac{1}{30}\right)$

(We are multiplying 0.75 with $\dfrac{1}{Z}$ because the supply
of water through pipe 'P$_3$' is 75% of the original supply
when pipe 'P$_3$' is opened along with pipe 'P$_1$' or pipe
'P$_2$').
Total fraction of the tank filled in 15 hours

$= 8\left(\dfrac{1 \times 0.75}{Z} + \dfrac{1}{30}\right) + 7\left(\dfrac{1 \times 0.75}{Z} + \dfrac{1}{45}\right)$

$= \dfrac{15 \times 0.75}{Z} + \dfrac{8}{30} + \dfrac{7}{45}$

$\Rightarrow \dfrac{15 \times 0.75}{Z} + \dfrac{8}{30} + \dfrac{7}{45} = \dfrac{7}{10}$

$\therefore \ Z = 40.5$ hours

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.74
Three points lie at a distance of 3 cm from each other. A fourth point, which is not in the same plane as the other 3 points are, is at a distance of 2.5 cm from each of the 3 points. What is the surface area of the figure formed by joining the four points?

1
○ $9\left(1+\dfrac{\sqrt{3}}{4}\right)$

2
○ $9\left(1+\dfrac{\sqrt{3}}{2}\right)$

3
○ $6\left(1+\dfrac{\sqrt{3}}{4}\right)$

4
○ $6\left(1+\dfrac{\sqrt{3}}{2}\right)$

☑

Solution:
Correct Answer : 1
Your Answer : 1

The base of the figure will be an equilateral triangle of side 3 cm.

The area of the base = $\dfrac{\sqrt{3}}{4}a^2 = \dfrac{\sqrt{3}}{4}3^2 = \dfrac{9\sqrt{3}}{4}$ cm²

There will be 3 isosceles triangles of sides 2.5 cm, 2.5 cm and 3 cm.
The combined area of these 3 triangles

$= 3 \times \sqrt{s(s-3)(s-2.5)(s-2.5)}$

$= 3 \times \sqrt{4 \times 1 \times 1.5 \times 1.5}$ $\quad\left(s = \dfrac{3+2.5+2.5}{2} = 4\right)$

$= 3 \times 2 \times 1.5 = 9$ cm².

∴ Total area = $\dfrac{9\sqrt{3}}{4} + 9 = 9\left(1+\dfrac{\sqrt{3}}{4}\right)$ cm².

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.75
If one of roots of the equation $px^2 + qx + r = 0$ is less than –2 and the other is greater than 2, where p > 0, then which of the following relations is always true?

1 ○ 4p + 2 |q| + r = 0

2 ○ 4p + 2 |q| + r ≤ 0

3 ○ 4p + 2 |q| + r > 0

4 ○ 4p + 2 |q| + r < 0

Solution:
Correct Answer : 4

Since p > 0 and one of the roots of the equations $px^2 + qx + r = 0$ is less than –2 and the other is greater than 2, the graph of $y = px^2 + qx + r$ will be look like
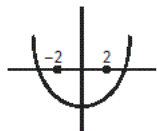
So, at x = 2 and –2, the value of y must be negative
So, 4p + 2q + r < 0 and 4p – 2q + r < 0
Hence, 4p + 2 | q | + r < 0

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.76
A function f(k) is defined as $f(k) = 1 - k + k^2 - k^3 + \ldots - k^{15} + k^{16} - k^{17}$ for all real values of k. If f(k) can be expressed as a polynomial in only one variable named 'm', where m = k + 1, then find the coefficient of m^2 in the polynomial in 'm'.

1 ○ 680

2 ○ 306

3 ◯ **153**

4 ◯ **816**

Solution:

Correct Answer : 4

$1 - k + k^2 - \ldots - k^{17}.$

$= 1 - k + k^2 - k^3 + \ldots - k^{17} = \dfrac{1 - k^{18}}{1 + k}$

$\Rightarrow \dfrac{1 - k^{18}}{1 + k} = \dfrac{1 - (m-1)^{18}}{m}$, for $m = k + 1$.

The coefficient of m^3 in $1 - (m-1)^{18} = {}^{18}C_3 = 17 \times 48$

$= 816$, which is the coefficient of m^2 in $\dfrac{1 - (m-1)^{18}}{m}$.

FeedBack

Q.77

A sum of money was invested in a bank at 8% rate of interest, compounded annually. Had the interest been 10% and compounded semi annually, the amount received at the end of 1st year would have been Rs. 225 more. What was the principal amount (in Rs.) invested in the bank?

Solution:

Correct Answer : 10000

Let the principal be P
After one year, amount = 1.08P
In other case, amount = 1.05^2 P = 1.1025P
Difference = 0.0225P = 225
$\Rightarrow$ P = Rs. 10000.

FeedBack

Q.78

A function F(n) is defined as $F(n-1) = \dfrac{1}{(2 - F(n))}$, where 'n' is a natural number. If $F(1) = 2$, then

what is the value of $[F(1)] + [F(2)] + \ldots\ldots\ldots + [F(50)]$, where [x] represents the greatest integer less than or equal to 'x'?

1 ◯ **51**

2 ◯ **55**

3 ◯ **54**

4 ◯ **52**

✔

Solution:

Correct Answer : 1

Your Answer : 1

Given that $F(n-1) = \dfrac{1}{(2 - F(n))}$ and F(1)= 2.

For n = 2: $F(1) = \dfrac{1}{(2 - F(2))} \Rightarrow F(2) = \dfrac{3}{2}$,

Similarly, values of F(3), F(4), F(5) can be calculated

as $\dfrac{4}{3}, \dfrac{5}{4}$ and $\dfrac{6}{5}$ respectively.

$\therefore F(n) = \dfrac{n+1}{n}$

From this we can say that every term except [F(1)], each term of the series [F(1)] + [F (2)] +…………+ [F(50)] is equal to 1 as for 'n' > 0, F(n) lies between 1 and 2.
Therefore, [F(1)] + [F(2)] +……+ [F(50)] = 51.

FeedBack

Q.79

If $f(z) = \dfrac{1}{z} + \dfrac{1}{z^2} + \dfrac{1}{z^3} + \ldots\ldots\infty, \ |z| > 1$, then $\dfrac{f(z)}{f(z^2)}$ is a

1 ◯ **Linear Function**

2 ◯ **Quadratic Function**

3 ◯ **Cubic Function**

4 ◯ **Constant**

Solution:
Correct Answer : 1

📑 **Bookmark**

🔍 **Answer key/Solution**

Given that $f(z) = \dfrac{1}{z} + \dfrac{1}{z^2} + \dfrac{1}{z^3} + \ldots + \infty, \ |z| > 1$

$\Rightarrow \ f(z) = \dfrac{1}{z-1}$

Similarly, $f(z^2) = \dfrac{1}{z^2 - 1}$

$\therefore \ \dfrac{f(z)}{f(z^2)} = \left(\dfrac{1}{z-1}\right) \times \left(z^2 - 1\right) = z + 1$

Hence, $\dfrac{f(z)}{f(z^2)}$ is a linear function.

[FeedBack]

Q.80
In the following figure, the area of equilateral triangle ABC is $900\sqrt{3}$ m². Points P and Q are the midpoints of AB and AC respectively. Find the area of the shaded region.
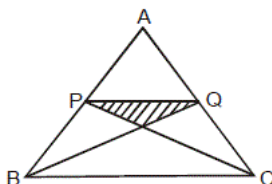
1 ◯ $64\sqrt{3}$ m²

2 ◯ $80\sqrt{3}$ m²

3 ◯ $75\sqrt{3}$ m²

4 ◯ $72\sqrt{3}$ m²

Solution:
Correct Answer : 3

📑 **Bookmark**

🔍 **Answer key/Solution**
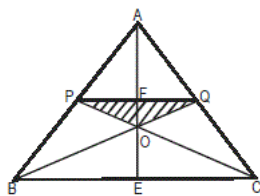
$\dfrac{\sqrt{3}}{4}(BC)^2 = 900\sqrt{3}$

$\Rightarrow BC = 60\text{ m}$

In the equilateral triangle, PQ||BC because P and Q are the mid points of sides AB and AC.

So, $BC = 2PQ \Rightarrow PQ = 30\text{ m}$

Now, $AE = \dfrac{\sqrt{3}}{2} \times 60 = 30\sqrt{3}\text{m}$.

Since 'O' is the centroid, So AO : OE = 2 : 1.

$\Rightarrow OE = 10\sqrt{3}\text{ m}$ and $AO = 20\sqrt{3}\text{m}$

$AF = \dfrac{1}{2}AE = 15\sqrt{3}\text{m}$ and $FO = AO - AF = 5\sqrt{3}\text{m}$

Therefore area of $\triangle PQO = \dfrac{1}{2} \times PQ \times FO$

$= \dfrac{1}{2} \times 30 \times 5\sqrt{3} = 75\sqrt{3}\text{ m}^2$

FeedBack

Q.81
In an isosceles triangle ABC, AB = AC = 13 cm. An equilateral triangle A'BC is constructed such that the line segment AA' cuts the side BC at point D. Whic of the following cannot be the measure of ∠DAC and ∠DA'C put together?

1 ○ **75°**

2 ○ **45°**

3 ○ **90°**

4 ○ **120°**

✔

Solution:
Correct Answer : 4
Your Answer : 4

🔖 **Bookmark**

🔍 **Answer key/Solution**

There are three possibilities.

Case I:
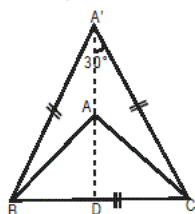
$60° < \angle DAC + \angle DA'C < \angle 120°$

Case II:
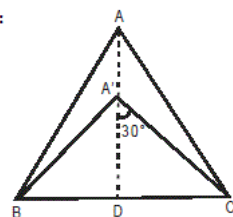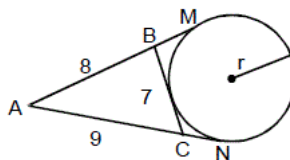

$30° < \angle DAC + \angle DA'C < \angle 60°$

Case III:
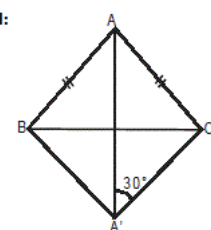
$30° < \angle DAC + \angle DA'C < 120°$

Hence, the aggregate measure of $\angle DAC + \angle DA'C$ cannot be equal to 120°.

FeedBack

Q.82
In the figure given below. AM, AN and BC are tangents to the circle. Find the radius of the circle if AB = 8 cm, BC = 7 cm and CA = 9 cm.
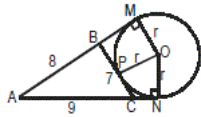

1 ◯ $12\sqrt{5}$ cm

2 ◯ $12/\sqrt{5}$ cm

3 ◯ 12 cm

4 ◯ $5\sqrt{12}$ cm

Solution:
Correct Answer : 2

🔖 **Bookmark**

🔍 **Answer key/Solution**

AM = AN

$\Rightarrow 8 + BM = 9 + CN \Rightarrow BM - CN = 1.$

But, BM + CN = BP + PC = 7

$\Rightarrow$ BM = 4 and CN = 3

Area of quadrilateral ANOM $= \dfrac{1}{2}AM \times OM + \dfrac{1}{2}AN \times ON$

$= \dfrac{1}{2} \times 12r + \dfrac{1}{2} \times 12r = 12r$

Area of $\triangle ABC = \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{12 \times 5 \times 4 \times 3}$

$= 12\sqrt{5}$

Area of pentagon BMONCB

$= ar(\triangle BMO) + ar(\triangle OBC) + ar(\triangle CON)$

$= \dfrac{1}{2}(4r) + \dfrac{1}{2}(7r) + \dfrac{1}{2}(3r) = 7r$

$\Rightarrow 12r = 7r + 12\sqrt{5}$

$\Rightarrow 5r = 12\sqrt{5}$

$\Rightarrow r = \dfrac{12}{\sqrt{5}}$ cm

FeedBack

Q.83

Four married couples are to be seated around a circular table with 8 identical seats. In how many ways can they be seated so that males and females sit alternately and no wife sits adjacent to her husband?

1 ○ **12**

2 ○ **6**

3 ○ **18**

4 ○ **24**

Solution:

Correct Answer : 1

Bookmark

🔍 **Answer key/Solution**

First of all 4 wives can be seated on 4 alternate chairs in (4 − 1)! = 6 ways. Now the first husband will have two choices and rest of them will have exactly one choice each.

∴ Total number of ways = 6 × 2 = 12

FeedBack

Q.84

There are nine distinct numbers; five of which are positive and the others are negative. All the possible sets of three numbers out of the nine numbers are chosen, and the product of the three numbers in each set is calculated. How many of these products are positive?

1 ○ 48

2 ○ 300

3 ○ 40

4 ○ 90

Solution:

Correct Answer : 3

Bookmark

🔍 **Answer key/Solution**

There are 5 positive numbers and 4 negative numbers. If we select 3 positive numbers or 1 positive number and 2 negative numbers, their product will be positive.

Hence, the number of required ways

$= {}^5C_3 + {}^5C_1 \times {}^4C_2 = 10 + 30 = 40.$

FeedBack

Q.85

In an Arithmetic Progression, for any values of p and k, where p ≠ k, the ratio of the sum of the first

p terms to the sum of the first k terms is $\frac{p^2}{k^2}$. If the 6th term of the progression is 77, what is the

15th term of the progression?

1 ◯ **343**

2 ◯ **302**

3 ◯ **203**

4 ◯ **None of these**

✔

Solution:

Correct Answer : 3

Your Answer : 3

Let the first term and common difference of the AP be
'a' and 'd' respectively.
∴ Second term = a + d.
According to the question,

$\frac{\text{Sum of first 2 terms}}{\text{Sum of first term}} = \frac{2^2}{1^2} = 4$

$\Rightarrow \frac{a+a+d}{a} = 4$

$\Rightarrow 2a + d = 4a$

$\Rightarrow d = 2a$

Sixth term of the AP = a + 5d = a + 10a = 11a = 77

$\Rightarrow$ a = 7

∴15th term of the AP = a + 14d = a + 28a = 29a = 203.

Alternative method:

$\frac{\frac{p}{2}(2a+(p-1)d)}{\frac{k}{2}(2a+(k-1)d)} = \frac{p^2}{k^2}$

$\Rightarrow \frac{2a+(p-1)d}{2a+(k-1)d} = \frac{p}{k}$

$\Rightarrow 2ak + kpd - kd = 2ap + kpd - pd$

$\Rightarrow 2ak - 2ap = kd - pd$

$\Rightarrow 2a = d$.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.86

S is a set containing three natural numbers such that the sum and HCF of the three numbers in it are 168 and 8 respectively. If at least one number in S is not greater than 24, how many such sets are possible?

Solution:

Correct Answer : 22

Since the HCF of the numbers in set S is 8, the numbers
have to be of the form 8a, 8b and 8c respectively,
where the HCF of a, b and c is 1.
Also, 8a + 8b + 8c = 168 or a + b + c = 21
When either of a or b or c =1, the other two could be
(1, 19); (2, 18); (3, 17);...; (9, 11) and (10, 10) – a total
of 10 combinations.
When either of a or b or c = 2, the other two could be
(2, 17); (3, 16); (4, 15); (5, 14); (6, 13); (7, 12); (8, 11)
and (9, 10) – a total of 8 combinations.
When either of a or b or c = 3, the other two could be
(4, 14); (5, 13); (7, 11) and (8, 10) – a total of 4
combinations.
So, there are 22 such sets possible.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.87

A combo pack having a bulb and a tubelight costs Rs. 52. If the cost of the bulb drops by 20% and the cost of the tubelight escalates by 50%, the cost of the combo pack would become Rs. 50. Find the original cost (in Rs.) of a tubelight?

✔

Solution:
Correct Answer : 12
Your Answer : 12

Let the cost (in Rs) of a tubelight and a bulb t and 'b'
respectively.
t + b = 52
Cost of bulb drops by 20% and cost of tubelight
increases by 50%.
∴ 1.5t + 0.8b = 50
Solving the above two equations, we get
t = 12.

FeedBack

Bookmark

🔍 **Answer key/Solution**

Q.88
In the figure given below, the radius of the bigger circle with center O is 5 cm. The length of each of chords PQ and RS is 8 cm. The smaller circle, with center C, touches the bigger circle and chords PQ and RS. If the line joining the centers of the two circles passes through M, find the radius (in cm) of the smaller circle.
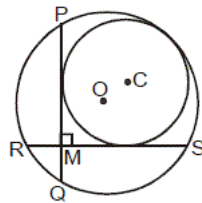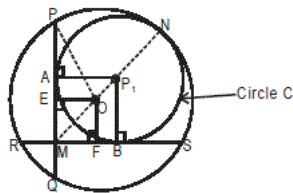

1 ◯ $(1 + 2\sqrt{2})$

2 ◯ $(2 + \sqrt{3})$

3 ◯ $(\sqrt{2} + \sqrt{2})$

4
◯ $\left(3 + \dfrac{\sqrt{3}}{2}\right)$

Solution:
Correct Answer : 1

Let the radius of the smaller circle be 'x' cm.

$OE = \sqrt{OP^2 - PE^2} = \sqrt{5^2 - 4^2} = 3$ cm

$OM = \sqrt{OE^2 + EM^2} = 3\sqrt{2}$ cm

$OP_1 = 5 - x$

$P_1M = \sqrt{P_1B^2 + BM^2} = \sqrt{2}x$ cm

Also, $P_1O + OM = P_1M$

$\Rightarrow 5 - x + 3\sqrt{2} = \sqrt{2}x$

$\Rightarrow x = \dfrac{5 + 3\sqrt{2}}{1 + \sqrt{2}} = 1 + 2\sqrt{2}$ cm

FeedBack

Bookmark

🔍 **Answer key/Solution**

Q.89
Find the number of trailing zeros at the end of the following number:

$$\dfrac{5^1 \times 10^2 \times 15^3 \times \ldots\ldots 100^{20}}{1^1 \times 2^2 \times 3^3 \times \ldots\ldots 10^{10}}.$$

1 ◯ **245**

2 ◯ **195**

3 ⃝ **160**

4 ⃝ **147**

Solution:

Correct Answer : 3

The given expression can be reduced to

$$\frac{2^{210} \times 5^{260}}{2^{50} \times 5^{15}} \times k = 10^{160} \times 5^{85} \times k$$

Where k is a natural number.
Hence, 160 consecutive zeroes will be there at the end
of the expression.

[FeedBack]

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.90

How many multiples of 18 are there that are less than 3500 and also 2 more than the square of a natural number?

1 ⃝ **6**

2 ⃝ **7**

3 ⃝ **5**

4 ⃝ **8**

Solution:

Correct Answer : 2

Any multiple of 18 can be written as 18k, where k is a
natural number.
According to the given question,
18k = n² + 2   ... (i)
Where n is a natural number.
From equation (i), it can be noted that n is an even
natural number.
Let n = 2x.
Putting the value of 'n' in equation (i), we get
18k = 4x² + 2
⇒ 9k = 2x² + 1   ...(ii)
When x = 9p, where p is a whole number, the RHS of
equation (ii) will not be a multiple of 9.
When x = 9p ± 1, the RHS of equation (ii) will not be a
multiple of 9.
When x = 9p ± 2, the RHS of equation (ii) will be a
multiple of 9.
When x = 9p ± 3 or 9p ± 4, the RHS of equation (ii) will
not be a multiple of 9.
As the number is less than 3500, 2x < 60 or x < 30.
∴ 9p ± 2 < 30
⇒ p = 2, 7, 11, 16, 20, 25 and 29
Hence, the number of required multiples of 18 is 7.

[FeedBack]

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.91

There are 6 students in a class – each of them with an integer age. The ages of exactly three students are prime numbers, none of which is an even number, and the ages of the other three students are even numbers. If the ages of the 6 students are in an Arithmetic Progression, and the age of each of the six students is less than 20 years, then which of the following can be the average age of the students in the class? (Note: All ages are in complete years)

1 ⃝ **5.5**

2 ⃝ **6**

3 ⃝ **4.5**

4 ⃝ **6.5**

✔

Solution:

Correct Answer : 1

Your Answer : 1

🔖 **Bookmark**

🔍 **Answer key/Solution**

The possible sets of the ages of the six students are
(3, 4, 5, 6, 7, 8) and (4, 7, 10, 13, 16, 19).
Hence, the average age

$$= \frac{3+4+5+6+7+8}{6} \text{ or } \frac{4+7+10+13+16+19}{6}$$

= 5.5 or 11.5 years.

FeedBack

Q.92
What is the diameter (in units) of the circle $x^2 + y^2 - 2x - 2y - 7 = 0$?

✔

Solution:
Correct Answer : 6
Your Answer : 6

The given equation can be rewritten as
$(x - 1)^2 + (y - 1)^2 = (3)^2$
From the above equation, it can be noted that the
radius of the circle is 3 units.
Hence, the diameter = 6 units.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.93
If the roots of the equation $4x^3 - 12x^2 + cx + 21 = 0$ are in an Arithmetic Progression, find the value of c.

1 ◯ **13/4**

2 ◯ **-13**

3 ◯ **13**

4 ◯ **-13/4**

✖

Solution:
Correct Answer : 2
Your Answer : 4

Let the roots of the given equation be 'a − d', 'a' and
'a + d', where 'd' is the common difference.

$\therefore$ a − d + a + a + d = $\frac{-(-12)}{4}$ = 3 $\Rightarrow$ a = 1

Also, the product of the roots = (a − d) × (a) × (a + d)

$= \frac{-21}{4} \Rightarrow d = \pm \left(\frac{5}{2}\right)$

So, the three roots of the equation are $\frac{-3}{2}$, 1 and $\frac{7}{2}$

Sum of the roots of the equation taken two at a time

$= \frac{c}{4} = \frac{-3}{2} \times 1 + \frac{-3}{2} \times \frac{7}{2} + \frac{1 \times 7}{2} \Rightarrow c = -13.$

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.94
A pond is inhabited by only four types of fishes, namely A, B, C and D. The number of Type A fishes is 25% more than that of type C; the number of type B fishes is 10% less than that of type A fishes, and the number of type D fishes constitutes 20% of the total fishes in the pond. If the number of type B fishes is 144, the total number of fishes in the pond is

✔

Solution:
Correct Answer : 540
Your Answer : 540

🔖 **Bookmark**

🔍 **Answer key/Solution**

Let the number of fishes of type C be '8x'.
Number of fishes of type A = 10x
Number of fishes of type B = 9x
According to the question,
9x = 144 ⟹ x = 16
The total number of fishes of types A, B and C put
together = 27x
It's also known that the number of fishes of Type D
constitutes 20% of the total number of fishes.
Hence, the total number of fishes in the pond
$= \frac{27x}{4} \times 5 = \frac{27 \times 16}{4} \times 5 = 540.$

FeedBack

Q.95

When Saurav was born, his mother Lakshmi was 24 years old. When Saurav turned 50, his mother was still alive. In these 50 years how many times was Lakshmi's age divisible by Saurav's age? (Assume that the number that denotes the age of a person is always an integer.)

1 ◯ 6

2 ◯ 7

3 ◯ 8

4 ◯ 12

✔

Solution:

Correct Answer : 3

Your Answer : 3

Let the ages of Saurav and Lakshmi be S and L
respectively.
L = S + 24
If L has to be divisible by S, S + 24 has to be divisible
by S. This means 24 has to be divisible by S.
Hence, it can happen as many times as the number of
factors of 24 i.e. 8.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.96

All possible four-digit numbers are formed by using the digits 3, 5, 6 and 8, without repetition. Out of all such numbers formed, how many are divisible by
but divisible by neither 8 nor 11?

✔

Solution:

Correct Answer : 2

Your Answer : 2

There are 4 numbers which would be divisible by 11
and these are 5368, 6358, 5863 and 6853. Out of
which only one is divisible by 8 and hence divisible by
4 also.
Numbers which are divisible by 4 should have either
56, 36 or 68 as their last 2 digits.
Number of such numbers = 3 × 2! = 6
Out of which, four numbers are divisible by 8 and
these are 5368, 3568, 3856 and 8536.
∴ Numbers which are divisible by 4 but divisible by
neither 8 and 11 are 8356 and 5836. So there are two
such numbers.

FeedBack

🔖 **Bookmark**

🔍 **Answer key/Solution**

Q.97

In 2014, the ratio of the number of students in Batch A and Batch B in January and February was 2 : 3 and 5 : 8 respectively. The rate at which the number of students in Batch A grew in March over the previous month was twice the rate at which it increased in February over the previous month. The rate at which the number of students in Batch B grew in March over the previous month was thrice the rate at which it increased in February over the previous month. If the ratio of the aggregate number of students in these two batches put together in February and January was 26 : 5, find the ratio of number of students in Batch A and Batch B in March?

1 ⚪ **25 : 64**

2 ⚪ **25 : 84**

3 ⚪ **45 : 112**

4 ⚪ **35 : 92**

Solution:

Correct Answer : 3

Let the number of students in Batch A in January = 2x
Let number of students in Batch A in February = 5y.
Total number of students in Batch A and Batch B in
January and February is 5x and 13y respectively.
Therefore 13y : 5x = 26:5 or y : x = 2:1 or y = 2x.
From here, we can compile the following table:

	Batch A	Batch B
Number of students in January	2x	3x
Number of students in February	10x	16x
Rate of increase from Jan to Feb	400%	(1300/3)%
Rate of increase from Feb to March	800%	1300%
Number of students in March	90x	224x

Required Ratio = 45 : 112.

[FeedBack]

Q.98

78 identical cubes with edge 2 cm each are joined together to form a cuboid. If the perimeter of the base of the cuboid is 64 cm, the number of cubes along the height of the cuboid is

1 ⚪ **3**

2 ⚪ **8**

3 ⚪ **2**

4 ⚪ **4**

[✔]

Solution:

Correct Answer : 3

Your Answer : 3

Perimeter of the base of cuboid = 64 cm
Length of the base + Width of the base = 32 cm
Length of edge of every cube = 2 cm
Therefore, the total number of cubes along the length

and the width of the cuboid $= \dfrac{32}{2} = 16$.

Therefore, the number of cubes along the length and
the width of the cuboid can be (1, 15), (2, 14), (3, 13),
(4, 12), (5, 11), (6, 10), (7, 9) and (8, 8) not necessarily
in that particular order.
Also, in the cuboid (Number of cubes along the length)
× (Number of cubes along the breadth) × (Number of
cubes along the height) = 78
The only possibility = 3 × 13 × 2 = 78
Hence, the number of cubes along the height of the
cuboid is 2.
Hence, option (3) is the correct choice.

[FeedBack]

Q.99

The length, breadth and height of a cuboid are given by linear functions L(x), B(x) and H(x) respectively, where 'x' is a real number. The volume of this cuboid is given by the cubic function $V(x) = -x^3 - 4x^2 + 31x + 70$. Which of the following is a permissible value of 'x'?

1 ⚪ **7**

2 ⚪ **– 3**

3 ⚪ **6**

4 ⚪ **4**

✔

Solution:
Correct Answer : 4
Your Answer : 4

Volume of a cuboid is given by the product of its length, breadth and height.

Therefore, $V(x) = L(x) \times B(x) \times H(x)$
By hit and trail, when we put $x = -2$, we get $V(-2) = 0$.
Hence $(x + 2)$ is a factor of the cubic function $V(x)$.

As $(x + 2)$ completely divides $V(x)$ and gives $(5 - x)(x + 7)$ as the quotient, we can write $V(x) = (x + 2)(x + 7)(5 - x)$

Hence, the three linear functions $L(x)$, $B(x)$ and $H(x)$ are $(x + 2)$, $(x + 7)$ and $(5 - x)$ (not in any particular order).

As the three linear functions represent length, breadth and height of a cuboid, they can take positive values only.

Hence, only those values of x are permissible, which simultaneously satisfy the following three inequalities.
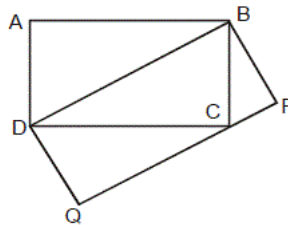$x + 2 > 0 \Rightarrow x > -2$
$x + 7 > 0 \Rightarrow x > -7$
$5 - x > 0 \Rightarrow x < 5$
$\Rightarrow$ All permissible values of x must satisfy $-2 < x < 5$.
Among the given options, only $x = 4$, satisfy this and is a permissible value of x.

FeedBack

Bookmark

Answer key/Solution

Q.100
In the given figure, ABCD and BDQP are two rectangles, in which AB = 12 units and AD = 5 units. Find the area of rectangle BDQP.

1 ○ **78 sq. units**

2 ○ **60 sq. units**

3 ○ **65 sq. units**

4 ○ **30√3 sq.units**

Solution:
Correct Answer : 2

If AB = 12, AD = 5

Area of $\triangle BDC = \dfrac{1}{2}(12 \times 5) = 30$ units

$\triangle BDC$ and rectangle BDQP have the same base BD and same height BP

$\therefore$ Area$(\triangle BDC) = \dfrac{1}{2}$ Area(BDQP)

or area of rectangle BDQP = $2 \times 30 = 60$ sq. units.

FeedBack

Bookmark

Answer key/Solution