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Mock CAT – 11 2019

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VARC

DILR

QA

Sec 1

Direction for questions (1-4): Read the given passage and answer the questions that follow.

[…] For an employer, the benefit of part-time rather than full-time workers depends on the sector. When demand varies a lot, part-timers bring large productivity gains, according to an extensive study of employees in pharmacies. Companies where full-time employees work more than 48 hours a week could benefit from more part-timers, since productivity falls off above that threshold. But otherwise the evidence is mixed. In countries with fewer protections for part-timers, companies choose them for that reason.

Indeed, the gender pay gap could even widen further. One reason is growing demand for "flexible" workers, by which employers generally mean the opposite of what workers with caring responsibilities mean: permanently on-call rather than with predictable, mutually agreed hours and the ability to work from home. "I wouldn't be surprised if this new demand for flexibility creates new types of biases against women," says Mr Bassanini. Related to this is the rise of jobs with extremely short hours, mostly done by women.

Meanwhile the hourly reward for working in professions where very long hours are the norm, such as law and consulting, has risen dramatically. A study published by the National Bureau of Economic Research found that America's gender pay gap would be as much as 46% smaller were it not for the increasingly disproportionate rewards for working extra hours since the 1980s. It estimates that average wages rise by 20% in an occupation for every 10% rise in average hours. This premium for uncompromising jobs means "women have been swimming upstream in terms of achieving wage parity," write the authors. To make matters worse, says Youngjoo Cha of Indiana University, women in households where the man works more than 60 hours a week are three times as likely to stop work as women in households where the man works 35-50 hours a week. A wife working long hours does not make a man any more likely to quit.

As long as some people work punishing hours, the prospect of closing the gender pay gap appears remote. Men in the rich world are twice as likely as women to work more than 48 hours a week. In America 20% of American fathers, but just 6% of mothers, work more than 50 hours a week. This is one of several arguments made by campaigners for a four-day working week.

Yet even modern, family-oriented men face a dilemma. Their requests to work part-time are more likely than women's to be rejected. And those who do work part-time risk discrimination. A study in which CVs were sent to prospective employers found that men whose CVs showed them as working part-time were just half as likely to get a call-back as those who were identical, except that they were working full-time. Part-time women faced no such discrimination. As long as such double standards exist, many couples will still choose to scale back her career, rather than his.

Q.1

What issue does the author highlight via the last sentence of the passage?

1 **Societal hypocrisy in the form of bias against women**

2 **The gender pay gap that exists in the workplace**

3 **Employers giving preference to women in part time jobs**

4 **The gender bias against men who work part time**

Solution:
Correct Answer : 4
Genre: Economics

Bookmark

Answer key/Solution

Word Count# 481

It's an easy fact based question. Kindly refer to the words 'such double standards' in the last sentence. This clearly refers to the previous sentences. Contextually, they are referring to the reason why women find it difficult to get good pay in part time jobs. And it also refers to the issue of not giving men the same credit when they ask for part time jobs.

Option 1 – This is too generic. The passage is specifically discussing workplace issues for women.

Option 2 – This is not with reference to only part time jobs. So, this option, too, is generic in nature.

Option 3 – This is not the direct issue. The author talks about hypocrisy. So,

option 4 talks about the problem. That's a more direct answer.

So, option 4 is the correct choice.

FeedBack

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Q.2

According to the passage, all of the following are not definitely true EXCEPT:

1 **In America, if a man works for more than 48 hours a week, his wife is most likely not working.**

2 In rich countries, more men work for more than 48 hours a week than women.

3 If 46% more women work in America, the gender pay gap will be almost negligible.

4 Since 1980s, women working for more than 10% of their quota per week are likely to see a wage increase in America.

Solution:
Correct Answer : 2
Genre: Economics

Bookmark

Answer key/Solution

Word Count# 481

Options 1, 3, and 4 are all distorted.

Option 1 – Refer to the lines: "…women in households where the man works more than 60 hours a week are three times as likely to stop work as women in households where the man works 35-50 hours a week." And "Men in the rich world are twice as likely as women to work more than 48 hours a week." So, the option is a distortion of both these lines.

Option 2 – It is true. Refer to the line: "Men in the rich world are twice as likely as women to work more than 48 hours a week." So, this is the answer.

Option 3 – This is clearly an illogical inference drawn from the passage.

Option 4 – It is a distortion of the line: "A study published by the National Bureau of Economic Research found that America's gender pay gap would be as much as 46% smaller were it not for the increasingly disproportionate rewards for working extra hours since the 1980s." This shows that after a certain number of hours, there is a likelihood of wage increase. So, these are not the same.

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Q.3

In the context of the passage, the relationship between part time job and productivity is:

1 ○ **varied.**

2 **skewed inversely.**

3 **directly proportionate.**

4 **inversely proportionate.**

Solution:
Correct Answer : 1
Genre: Economics

Bookmark

Answer key/Solution

Word Count# 481

This is a direct question. Refer to the line: "But otherwise the evidence is mixed." The author, in the first paragraph, clearly states that the relationship between productivity and part time job is field specific. In certain fields, it proves to be more productive. Hence, 'varied' or option 1 is the correct choice. The other options can be eliminated due to insufficient data.

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Q.4

From the passage, it can be inferred that women are preferred over men when it comes to part time work because:

1 ○ **women have domestic responsibilities and can't work for long hours.**

2 women are more likely to do sustained part time work than men.

3 women are more productive than men when it comes to work which are not demanding.

4 women don't depend on their CVs to get work but men do.

Solution:
Correct Answer : 2
Genre: Economics

Bookmark

Answer key/Solution

Word Count# 481

This is an inference that needs to be drawn by looking at the main idea of the passage. The author states that more women are likely to do part time job due to various reasons. Also, men are likely to face career setbacks if they do even temporary part time jobs. So, one reason why employers prefer women over men can be inferred as the likelihood of the women doing the work for a longer period of time. This makes option 2 the correct answer. Next, we need to eliminate the wrong options.

Option 1 – This is partly correct. 'Domestic responsibilities' has not been defined in the passage.

Option 3 – This is clearly illogical. There is no definition of productivity on the basis of gender in the passage.

Option 4 – This again is an irrational option which has not been mentioned in the passage.

FeedBack

Direction for questions (5-9): Read the given passage and answer the questions that follow.

The academy has moved to the fast lane. Corporatisation has sped up the clock, compromising teaching, scholarship, and collegiality. The 'slow movement' – originating in slow food – challenges the frantic pace and homogenisation of contemporary culture. We believe that adopting the principles of slow into the professional practice of academia is an effective way to alleviate time poverty, preserve humanistic education, and resist the destructive effects of the corporate university.

'Slow', Carlo Petrini makes clear in *Slow Food Nation*, is not really about speed. It's about the difference 'between attention and distraction; slowness, in fact, is not so much a question of duration as of an ability to distinguish and evaluate, with the propensity to cultivate pleasure, knowledge, and quality.'

Being a professor is a privilege. We are not advocating slacking off, letting junior faculty do the heavy lifting, taking the summers off, missing deadlines, or doing less in class. Our view is rather about protecting the work that matters. Due to expanding workloads, the

casualisation of labour, the rise of technology, the consumer model of education, and increasing managerialism, the nature of the academy has changed dramatically in the past generation. Universities are now businesses. Teaching and learning are increasingly standardised, emphasising the transfer of skills and time to completion. Both are now assessed in quantitative rather than qualitative terms. Research now is about winning grants and generating output – all as quickly as possible. Collegiality now is about useful networking.

Distractedness and fragmentation characterise contemporary life. In order to protect the intellectual and pedagogic life of the university, we need to create opportunities to think and to shift our sense of time. This might mean getting away from having everything scheduled down to the minute. We can't do our best work if we are frantic.

It is also crucial to be aware of the structural changes in the university so we don't blame ourselves for not keeping up. And we should not forget the joy that is possible in teaching and scholarship. We are drawn to the slow movement because its critique of contemporary culture insists on the importance of pleasure and conviviality. Talking about individual stress and trying to find ways to foster wellbeing have political implications. If we are stressed, we feel powerless to change the larger context. In the corporate university, aggressive individualism and the familiar bottom line dominate at the expense of community and social critique.

Slow teaching is not about lowering standards. Rather, it is about reducing our distractedness so that we can focus on our students and our subjects. We need to be able to concentrate on creating a convivial classroom in which our students can meet the challenges – and we can foster the joys – of learning a discipline.

Slow scholarship is about resisting the pressure to reduce thinking to the imperative of immediate usefulness, marketability and grant generation. It's about preserving the idea of scholarship as open-ended enquiry. It will improve the quality of teaching and learning.

In the current climate, most of us simply don't have time for genuine collegiality. As academics become more isolated from each other, we are also becoming more compliant, more likely to see structural problems, including those of general working conditions, as individual failings. When that happens, resistance to corporatisation seems futile. Collegiality, properly understood as a community practice, is about mutual support rather than works-in-progress, about sharing our failures as well as our successes, and about collaboration as well as competition. It offers solidarity.

We acknowledge the systemic inequities in the university, but we believe that a slow approach is potentially relevant across the spectrum of academic positions. Slow time is inimical to the corporate university. Scholars in tenured positions, given the protection that we enjoy, have an obligation to try to improve in the working climate for all of us. We are concerned that the bar is being continually raised for faculty and for graduate students. We need to reflect on what we are modelling for each other and the next generation of academics.

Q.5

Which of the following best summarises Carlo Petrini's view as cited by the passage?

1 **Being slow is not a necessary hindrance to the pursuit of knowledge.**

2 **If one distinguishes between attention and distraction, one can use slowness to cultivate knowledge and pleasure.**

3 **Slowness has the beneficial effects increasing one's desire to cultivate pleasure, knowledge, and quality.**

4 **Slowness is the ability to differentiate between speed and distraction.**

Solution:
Correct Answer : 3
Genre: Education

Bookmark

Answer key/Solution

Word Count# 669

This can be answered from the lines: "'Slow', Carlo Petrini makes clear in Slow Food Nation, is not really about speed. It's about the difference 'between attention and distraction; slowness, in fact, is not so much a question of duration as of an ability to distinguish and evaluate, with the propensity to cultivate pleasure, knowledge, and quality.'" So, option 3 best summarises this meaning.

Option 1 - 'Necessary hindrance' has a different meaning. 'Not necessarily a hindrance' would have made this option correct.

Option 2 – This is a distortion which just mixes two parts of the given paragraph.

Option 4 – This is a narrow option. Option 3 is a clearer answer.

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Q.6

The dramatic shift in the nature of teaching in the past generation has been attributed to all of the following EXCEPT:

1 **Casualisation of labour**

2 **Effect of consumer model of education**

3 **Broadening workloads**

4 **Increasing materialism in society**

Solution:
Correct Answer : 4
Genre: Education

Bookmark

Answer key/Solution

Word Count# 669

Refer to the lines: "Due to expanding workloads, the casualisation of labour, the rise of technology, the consumer model of education, and increasing managerialism, the nature of the academy has changed dramatically in the past generation." Options 1, 2, and 3 are clearly mentioned.

'Managerialism' is not the same as 'materialism'. So, option 4 is the correct answer.

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need to reflect on what we are modelling for each other and the next generation of academics.

Q.7

Why does the author state that professors shouldn't schedule everything down to the minute?

1 Because they will be distracted and will become part of the contemporary life.

2 Because a breakneck speed impedes their ability to deliver their best.

3 Because this leads to the destruction of their intellect and teaching abilities.

4 Because they need the time to think and shift their focus.

Solution:
Correct Answer : 2
Genre: Education

Bookmark

Answer key/Solution

Word Count# 669

Refer to the lines: "Distractedness and fragmentation characterise contemporary life. In order to protect the intellectual and pedagogic life of the university, we need to create opportunities to think and to shift our sense of time. This might mean getting away from having everything scheduled down to the minute. We can't do our best work if we are frantic." Option 2 is the clear answer.

Option 1 – It is illogical.
Option 3 – This is too extreme.
Option 4 – This is irrelevant and illogical.

FeedBack

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We acknowledge the systemic inequities in the university, but we believe that a slow approach is potentially relevant across the spectrum of academic positions. Slow time is inimical to the corporate university. Scholars in tenured positions, given the protection that we enjoy, have an obligation to try to improve in the working climate for all of us. We are concerned that the bar is being continually raised for faculty and for graduate students. We

need to reflect on what we are modelling for each other and the next generation of academics.

Q.8
Which of the following is the main conclusion of the author in this passage?

1 Teachers in the universities should lead the movement to create a new model for the next generation.

2 The university academics should strive to rid the institutions of systemic inequities.

3 A slow approach towards teaching will be relevant across all spectrum of society.

4 If the academia is to reach its true potential, a slow approach to teaching should be adopted.

Solution:
Correct Answer : 4
Genre: Education

Bookmark

Answer key/Solution

Word Count# 669

This can be answered by the method of elimination. We need to find the main conclusion. So, the main idea of the passage is crucial. The author advises that the academia must adopt the slow approach. And s/he explains the pros of this approach by explaining its nature and countering some myths (it affects the quality of scholarship). So, option 4 is the correct answer.

Option 1 – This is wrong because of the phrase 'lead the movement'.

Option 2 – This is too narrow and is not a conclusion, but an observation that the author makes.

Option 3 – 'All spectrum of society' makes this an extreme option.

FeedBack

Direction for questions (5-9): Read the given passage and answer the questions that follow.

The academy has moved to the fast lane. Corporatisation has sped up the clock, compromising teaching, scholarship, and collegiality. The 'slow movement' – originating in slow food – challenges the frantic pace and homogenisation of contemporary culture. We believe that adopting the principles of slow into the professional practice of academia is an effective way to alleviate time poverty, preserve humanistic education, and resist the destructive effects of the corporate university.

'Slow', Carlo Petrini makes clear in *Slow Food Nation*, is not really about speed. It's about the

difference 'between attention and distraction; slowness, in fact, is not so much a question of duration as of an ability to distinguish and evaluate, with the propensity to cultivate pleasure, knowledge, and quality.'

Being a professor is a privilege. We are not advocating slacking off, letting junior faculty do the heavy lifting, taking the summers off, missing deadlines, or doing less in class. Our view is rather about protecting the work that matters. Due to expanding workloads, the casualisation of labour, the rise of technology, the consumer model of education, and increasing managerialism, the nature of the academy has changed dramatically in the past generation. Universities are now businesses. Teaching and learning are increasingly standardised, emphasising the transfer of skills and time to completion. Both are now assessed in quantitative rather than qualitative terms. Research now is about winning grants and generating output – all as quickly as possible. Collegiality now is about useful networking.

Distractedness and fragmentation characterise contemporary life. In order to protect the intellectual and pedagogic life of the university, we need to create opportunities to think and to shift our sense of time. This might mean getting away from having everything scheduled down to the minute. We can't do our best work if we are frantic.

It is also crucial to be aware of the structural changes in the university so we don't blame ourselves for not keeping up. And we should not forget the joy that is possible in teaching and scholarship. We are drawn to the slow movement because its critique of contemporary culture insists on the importance of pleasure and conviviality. Talking about individual stress and trying to find ways to foster wellbeing have political implications. If we are stressed, we feel powerless to change the larger context. In the corporate university, aggressive individualism and the familiar bottom line dominate at the expense of community and social critique.

Slow teaching is not about lowering standards. Rather, it is about reducing our distractedness so that we can focus on our students and our subjects. We need to be able to concentrate on creating a convivial classroom in which our students can meet the challenges – and we can foster the joys – of learning a discipline.

Slow scholarship is about resisting the pressure to reduce thinking to the imperative of immediate usefulness, marketability and grant generation. It's about preserving the idea of scholarship as open-ended enquiry. It will improve the quality of teaching and learning.

In the current climate, most of us simply don't have time for genuine collegiality. As academics become more isolated from each other, we are also becoming more compliant, more likely to see structural problems, including those of general working conditions, as individual failings. When that happens, resistance to corporatisation seems futile. Collegiality, properly understood as a community practice, is about mutual support rather than works-in-progress, about sharing our failures as well as our successes, and about collaboration as well as competition. It offers solidarity.

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approach is potentially relevant across the spectrum of academic positions. Slow time is inimical to the corporate university. Scholars in tenured positions, given the protection that we enjoy, have an obligation to try to improve in the working climate for all of us. We are concerned that the bar is being continually raised for faculty and for graduate students. We need to reflect on what we are modelling for each other and the next generation of academics.

Q.9
With which of the following would the author most likely to agree?

1 **The collective success or failure of academics depends, to a certain extent, on a sense of solidarity.**

2 **In order to better our ultimate teaching standard, we must accept the initial lowering of standard.**

3 **People have forgotten genuine feelings for their friends due to the commercialisation of social institutions.**

4 **Slow scholarship will resist any pressure put in its way by rules and regulations.**

Solution:
Correct Answer : 1
Genre: Education

Bookmark

Answer key/Solution

Word Count# 669

Refer to the lines: "Collegiality, properly understood as a community practice, is about mutual support rather than works-in-progress, about sharing our failures as well as our successes, and about collaboration as well as competition. It offers solidarity." So, the author will surely agree with option 1.

Option 2 – The author says that 'slow teaching' is not going to lead to any kind of 'lowering of standard'.

Option 3 – This is not part of the passage. 'Social institutions' is too broad a term.

Option 4 – This is illogical. The author doesn't say that 'slow scholarship' will be outside the scope of rules and regulations.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

[…] On Feb. 17, 478 B.C., the shadow of an annular eclipse spread across the Mediterranean Sea and crossed the Greek islands and peninsula of the Peloponnese, creating a "ring of fire"

in the sky that was visible for almost six minutes. Anaxagoras, living in Athens, would have been living along the midline of annularity and surely would have seen the sight, but he could not, all by himself, in only six minutes, measure the size of the shadow across the countryside. And yet in a stroke of genius, he found the answer to his question: He simply went down to the seashore and asked arriving sailors what they had seen. At that time, Athens was the center of trade for ships from all over the eastern Mediterranean. If sailors at sea had seen a ring of fire in the sky, they would remember where they had been when they had seen it. The locations of all those who did and did not see the spectacle revealed the extent of the shadow across the surrounding seascape. Without going farther than the local seaport, Anaxagoras measured the moon.

[…] The story of Anaxagoras standing on the beach measuring the size of the moon is the story of astronomy. We are a species confined to our own world (or at best, our own solar system). Yet from this one vantage spot we have had to survey the universe on whose shores we stand. To do so we have had to study eclipses, transits (when small things move in front of big things), and occultations (when big things move in front of small things). Astronomy is made possible, in part, by the shadows that span the stars.

[…] In the Mediterranean of the third century B.C., bematists were men who could walk at a precise and constant pace, and they were paid to do so. You could hire such a man to accurately measure long distances across the landscape. Bematists were used along the Egyptian Nile, which during its annual floods erased the features marking the boundaries between fields. Bematists were particularly suited to pace off the long, flat, featureless landscape along the Nile south from Alexandria to Syene, which they found to be 5,000 stadia apart (around 520 modern miles, depending on the exact definition of stadia used). We know this distance because sometime in around 240 B.C., Eratosthenes of Cyrene, the chief librarian of Alexandria, used it to find the size of the world.

Eratosthenes had heard that on the summer solstice, the noonday sun would shine straight down a well in Syene and cast no shadow. He knew no such thing happened in Alexandria on that or any other day, so one of two possibilities must be true: Either the Earth was flat and the sun was very close (much like a cloud that hangs over one town appears far to the south as seen from another), or the sun was far away and the Earth was round. The answer could be found by looking at the moon during a lunar eclipse. Aristotle had already noted a century before Eratosthenes's experiment that during every lunar eclipse the Earth's shadow looked like a circle. No matter where the eclipse occurred in the sky, the shadow the Earth cast never changed. The only figure that looked the same from any direction was a sphere.

Since the Earth's shadow already confirmed the Earth was round, the only explanation for the different lengths of the sun's shadows in Syene and Alexandria was the curvature of the Earth. From the difference in shadows and the distance between them, the circumference of the Earth was revealed.

Q.10

Which of the following best captures the thematic highlight of the passage?

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1 ○ **Ancient astronomy developed mainly due to the scientific thoughts of its common men.**

2 The story of the astronomy would not have progressed without scholars like Aristotle.

3 Astronomy advanced as a result of some people trying to better understand the cosmos.

4 Natural phenomena such as shadows and eclipses gave birth to modern astronomy.

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
Genre: History / Ancient Astronomy

Word Count# 610

One line of the passage captures its essence. "The story of Anaxagoras standing on the beach measuring the size of the moon is the story of astronomy." So, the second paragraph, in a way, sets forth the main message of the author.

Option 1 – It's not mentioned that Anaxagoras and Eratosthenes were common men. So, this can't be the main idea of the passage.

Option 2 – It's a narrow option. The passage talks about the efforts of a few. But it also talks about the importance of certain natural phenomena in helping astronomy progress.

Option 3 – it is the correct option.

Option 4 – They helped the development of Astronomy. But it can't be said that they gave birth to 'modern Astronomy'. So, this is not part of the discussion in this passage.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

[...] On Feb. 17, 478 B.C., the shadow of an annular eclipse spread across the Mediterranean Sea and crossed the Greek islands and peninsula of the Peloponnese, creating a "ring of fire" in the sky that was visible for almost six minutes. Anaxagoras, living in Athens, would have been living along the midline of annularity and surely would have seen the sight, but he could not, all by himself, in only six minutes, measure the size of the shadow across the countryside. And yet in a stroke of genius, he found the answer to his question: He simply went down to the seashore and asked arriving sailors what they had seen. At that time, Athens was the center of trade for ships from all over the eastern Mediterranean. If sailors at sea had seen a ring of fire in the sky, they would remember where they had been when they had seen it. The locations of all those who did and did not see the spectacle revealed the extent of the shadow across the surrounding seascape. Without going farther than the local seaport, Anaxagoras measured the moon.

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Q.11

As per the passage, all of the following are false EXCEPT:

1 **Anaxagoras was younger than both Aristotle and Eratosthenes.**

2 **The progression of astronomy is a tale of humans trying to live within their physical boundaries and vantage point.**

3 **Aristotle found that during lunar eclipses the shadow of Earth looked like geometric patterns.**

4 **Eratosthenes came to know that the Earth was round in shape.**

Solution:
Correct Answer : 4
Genre: History / Ancient Astronomy

Bookmark

Answer key/Solution

Word Count# 610

Option 1 – It is false. Anaxagoras (478 BC) would be older than Eratosthenes (240 BC). Aristotle came 100 years before Eratosthenes. He would still come after Anaxagoras.

Option 2 – The author says that humans try to go beyond their vantage point. So, this is false too.

Option 3 - Aristotle said that "during every lunar eclipse the Earth's shadow looked like a circle." That doesn't mean 'geometric patterns'.

Option 4 – It is correct.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

[...] On Feb. 17, 478 B.C., the shadow of an annular eclipse spread across the Mediterranean Sea and crossed the Greek islands and peninsula of the Peloponnese, creating a "ring of fire" in the sky that was visible for almost six minutes. Anaxagoras, living in Athens, would have been living along the midline of annularity and surely would have seen the sight, but he could not, all by himself, in only six minutes, measure the size of the shadow across the countryside. And yet in a stroke of genius, he found the answer to his question: He simply went down to the seashore and asked arriving sailors what they had seen. At that time, Athens was the center of trade for ships from all over the eastern Mediterranean. If sailors at sea had seen a ring of fire in the sky, they would remember where they had been when they had seen it. The locations of all those who did and did not see the spectacle revealed the extent of the shadow across the surrounding seascape. Without going farther than the local seaport, Anaxagoras measured the moon.

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Egyptian Nile, which during its annual floods erased the features marking the boundaries between fields. Bematists were particularly suited to pace off the long, flat, featureless landscape along the Nile south from Alexandria to Syene, which they found to be 5,000 stadia apart (around 520 modern miles, depending on the exact definition of stadia used). We know this distance because sometime in around 240 B.C., Eratosthenes of Cyrene, the chief librarian of Alexandria, used it to find the size of the world.

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Q.12

Which of the following has not been cited as a contributing factor to the development of astronomy?

1 **The rings surrounding planetary bodies**

2 **Eclipses**

3 **The distance between the Sun and the Earth**

4 **The longest day in a year**

Solution:
Correct Answer : 1
Genre: History / Ancient Astronomy

Bookmark

Answer key/Solution

Word Count# 610

Options 2, 3, and 4 are clearly mentioned in the passage.

Option 1 – Rings surrounding 'planetary bodies' have not been mentioned in the passage.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that

follow.

[…] On Feb. 17, 478 B.C., the shadow of an annular eclipse spread across the Mediterranean Sea and crossed the Greek islands and peninsula of the Peloponnese, creating a "ring of fire" in the sky that was visible for almost six minutes. Anaxagoras, living in Athens, would have been living along the midline of annularity and surely would have seen the sight, but he could not, all by himself, in only six minutes, measure the size of the shadow across the countryside. And yet in a stroke of genius, he found the answer to his question: He simply went down to the seashore and asked arriving sailors what they had seen. At that time, Athens was the center of trade for ships from all over the eastern Mediterranean. If sailors at sea had seen a ring of fire in the sky, they would remember where they had been when they had seen it. The locations of all those who did and did not see the spectacle revealed the extent of the shadow across the surrounding seascape. Without going farther than the local seaport, Anaxagoras measured the moon.

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Q.13

As per the passage, which of the following can be inferred about the *bematists?*

1 **Their services were used to settle property disputes during floods.**

2 **They helped Eratosthenes in his quest.**

3 **Women were not allowed to become *bematists.***

4 **They depended mainly on the Nile for their livelihood.**

Solution:
Correct Answer : 2
Genre: History / Ancient Astronomy

Bookmark

Answer key/Solution

Word Count# 610

Option 1 – We can't say anything about property disputes from the information given. So, it is an illogical inference.

Option 2 – This is true. Their estimate was used by Eratosthenes. It is the answer.

Option 3 – Nothing has been mentioned about the gender of the bematists.

Option 4 – 'Mainly' can't be defined from the passage.

FeedBack

Direction for questions (10-14): Read the given passage and answer the questions that follow.

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Q.14

With which of the following would the author of the passage least likely agree?

1 **The human curiosity has been propelling scientific curiosity from ancient times.**

2 **Humans have tried to go beyond their limited vantage point.**

3 **Without understanding the mechanism of eclipses, Anaxagoras wouldn't have been able to measure the size of moon.**

4 **Athens was not a major hub of knowledge and trade during the ancient times.**

Solution:
Correct Answer : 4
Genre: History / Ancient Astronomy

Bookmark

Answer key/Solution

Word Count# 610

'Least likely' is the clue.

Option 1 – This is something the author would agree with (may not be completely but to a large extent).

Option 2 – This can be inferred from the passage. The entire passage mentions the attempts made by some people to understand the cosmos.

Option 3 – This too is supported by the passage.

Option 4 – The author won't agree with this. S/he mentions Athens as a trading hub in the passage. So, this is the correct answer.

FeedBack

Direction for questions (15-19): Read the given passage and answer the questions that follow.

[…] The eruption of Mount St. Helens on May 18, 1980, blew away the top 1,314 feet of the mountain, reducing the once symmetrical, glacier-covered summit to a horseshoe-shaped crater. An avalanche of rocks plugged the Toutle River Valley at the base of the mountain and created a 23-square-mile zone of barren, hummocky land. A 300-mile-an-hour lateral blast of hot air and debris flattened the surrounding forest. A cloud of ash climbed to 80,000 feet in 15 minutes and circled the globe in 15 days. Torrents of superheated air, gases and rocks—a mixture known as a pyroclastic flow—surged down the mountain's northern face for hours, destroying everything in its path. All told, the eruption blasted more than 230 square miles of forests, lakes, meadows and streams. It killed 57 people, making it the deadliest eruption in U.S. history, and millions of animals and plants. "Death is everywhere," the *Oregonian* newspaper reported. "The living are not welcome."

Today, life has returned with a vengeance. Where the avalanche obliterated everything, Dale has counted more than 150 species of wildflowers, shrubs and trees, with an average of ten new plant species gaining a foothold every year. She has also documented five conifer species, including western hemlock and Pacific silver fir, that aren't supposed to be there yet; according to standard ecological theory, those trees should sprout only after generations of other plants have improved the soil and provided some shade. It seems life can take hold even in the most desolate landscape, and in ways no scientist could have foreseen.

Charlie Crisafulli, a U.S. Forest Service ecologist, has been watching life return to the Pumice

Plain, a six-square-mile area that was buried in ash and practically sterilized by the pyroclastic flows. Today, the mossy rain-fed ground cover glows chartreuse in the low light. Dense thickets of alders and willows, many 10 to 15 feet tall, grow along new streams that flow across the plain. Frogs croak, birds call. A small herd of elk grazes in the distance. Wildflowers dot the landscape with splashes of red, yellow, pink, white and purple.

It was these purple wildflowers, prairie lupines, that taught Crisafulli one of the key lessons of succession: the importance of chance. Lupines are not typically thought of as plants that colonize the middle of an empty landscape. They spread slowly, hug the ground, and have heavy seeds not easily borne on the wind. But in June 1982, Crisafulli and another ecologist, surveying the Pumice Plain by helicopter, spotted the first plant they'd seen for miles. They landed and found a flowering lupine, surrounded by a ring of seedlings. The deep ash and pumice held few nutrients, but lupines, like other plants in the pea family, get nitrogen from bacteria that live on their roots. Crisafulli established a 200-square-yard study plot around that pioneering plant. Within four years, he counted 16,000 lupines in the plot; three years later, 35,000. "People sometimes ask me how I can go back and study the exact same place year after year," he says. "I always tell them it's never the same."

The flourishing of life on the Pumice Plain may have begun with that lone lupine. Once the plants enriched the soil with nitrogen, adding organic material to it when they died, other plants and then animals soon followed. Within a decade of the eruption, Crisafulli had documented more than 27 plant species in the study plot. [...]

Q.15

Which of the following has not been mentioned as an immediate consequence of the eruption of Mount St. Helens?

1 A deadly flow obliterating everything in its path

2 The world being covered by a cloud of dust

3 The creation of a crater in the surrounding forest

4 The river valley at the base turning into a rock-filled uneven surface

Solution:
Correct Answer : 3
Genre: Ecology

Bookmark

Answer key/Solution

Word Count# 572

Refer to the first paragraph. Options 1, 2, and 4 are clearly mentioned.

Option 3 is distorted. It is written that the volcano reduced “the once symmetrical, glacier-covered summit to a horseshoe-shaped crater.” Nothing has been said about the crater in the forest. So, it is the correct answer.

FeedBack

Direction for questions (15-19): Read the given passage and answer the questions that follow.

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Today, life has returned with a vengeance. Where the avalanche obliterated everything, Dale has counted more than 150 species of wildflowers, shrubs and trees, with an average of ten new plant species gaining a foothold every year. She has also documented five conifer species, including western hemlock and Pacific silver fir, that aren't supposed to be there yet; according to standard ecological theory, those trees should sprout only after generations of other plants have improved the soil and provided some shade. It seems life can take hold even in the most desolate landscape, and in ways no scientist could have foreseen.

Charlie Crisafulli, a U.S. Forest Service ecologist, has been watching life return to the Pumice Plain, a six-square-mile area that was buried in ash and practically sterilized by the pyroclastic flows. Today, the mossy rain-fed ground cover glows chartreuse in the low light. Dense thickets of alders and willows, many 10 to 15 feet tall, grow along new streams that flow across the plain. Frogs croak, birds call. A small herd of elk grazes in the distance. Wildflowers dot the landscape with splashes of red, yellow, pink, white and purple.

It was these purple wildflowers, prairie lupines, that taught Crisafulli one of the key lessons of succession: the importance of chance. Lupines are not typically thought of as plants that colonize the middle of an empty landscape. They spread slowly, hug the ground, and have heavy seeds not easily borne on the wind. But in June 1982, Crisafulli and another ecologist, surveying the Pumice Plain by helicopter, spotted the first plant they'd seen for miles. They landed and found a flowering lupine, surrounded by a ring of seedlings. The deep ash and pumice held few nutrients, but lupines, like other plants in the pea family, get nitrogen from bacteria that live on their roots. Crisafulli established a 200-square-yard study plot around that pioneering plant. Within four years, he counted 16,000 lupines in the plot; three years later, 35,000. "People sometimes ask me how I can go back and study the exact same place year after year," he says. "I always tell them it's never the same."

The flourishing of life on the Pumice Plain may have begun with that lone lupine. Once the plants enriched the soil with nitrogen, adding organic material to it when they died, other plants and then animals soon followed. Within a decade of the eruption, Crisafulli had documented more than 27 plant species in the study plot. […]

Q.16

The main finding of Charlie Crisafulli, as per the author, is that:

1 **One can never be tired of studying the same space of Earth.**

2 **Life can flourish in an area even after a devastating natural catastrophe.**

3 **Volcanic eruptions are typically followed by a series of invasive plants returning to the place.**

4 **Change is the only constant when it comes to life on the planet.**

Solution:
Correct Answer : 2
Genre: Ecology

Bookmark

Answer key/Solution

Word Count# 572

Option 1 – It is an illogical generalisation. This is not the main finding. It's just a fact that has been mentioned in a way of proving a bigger point.

Option 2 – It is the main point of the study mentioned. After the eruption, Crisafulli found that a lot of life flourished in the area.

Option 3 – This is a generic conclusion. All the eruptions can't be followed by the same pattern. Secondly, 'invasive plants' is not mentioned.

Option 4 – This again is too generic and outside the scope of the study.

FeedBack

Direction for questions (15-19): Read the given passage and answer the questions that follow.

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The flourishing of life on the Pumice Plain may have begun with that lone lupine. Once the plants enriched the soil with nitrogen, adding organic material to it when they died, other plants and then animals soon followed. Within a decade of the eruption, Crisafulli had documented more than 27 plant species in the study plot. […]

Q.17

As per the data given in the passage, Dale is most likely to be a/an:

1 **professor of Botany.**

2 **research scholar.**

3 **environmental activist.**

4 **ecologist.**

Solution:
Correct Answer : 4
Genre: Ecology

Bookmark

Answer key/Solution

Word Count# 572

The passage is about Ecology. Dale is mentioned as a field researcher who has written quite a few books. So, option 4 is the most likely answer.

Option 1 – A teacher may not be involved in field studies.

Option 2 – It's vague as it doesn't mention the discipline.

Option 3 – It is clearly irrelevant.

FeedBack

Direction for questions (15-19): Read the given passage and answer the questions that follow.

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Q.18

Which of the following can be inferred from the line: “life has returned with a vengeance”?

1 **The Oregonian newspaper was wrong in hastily pronouncing its morbid utterings.**

2 **Mother Nature always finds a way to counter the effects of a natural disaster.**

3 **Mount St. Helens didn’t remain barren for long after the volcanic eruption in 1980.**

4 **The Earth knows how to avenge even the deadliest of catastrophes.**

Solution:
Correct Answer : 3
Genre: Ecology

Bookmark

Answer key/Solution

Word Count# 572

The author has clearly used the term ‘vengeance’ in a figurative manner here.

Option 1 – We can’t infer that the newspaper was hasty in its reporting. It’s also irrelevant to the question.

Option 2 – There is no data to show that the effects were ‘countered’. It is also too generic.

Option 3 – It matches the theme of the passage. So, it is the correct answer.

Option 4 – ‘Avenge’ will be literal and distorted interpretation of the information. So, it is not correct.

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Direction for questions (15-19): Read the given passage and answer the questions that follow.

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Q.19

What is the central claim of the author in this passage?

1 **Nature can make its presence felt even under the harshest of conditions.**

2 **Even the deadliest of volcanos couldn't defeat the spirit of scientists.**

3 **Scientists can never predict when and how the Earth bounces back from the brink of disaster.**

4 **The study of volcanos is a worthy pursuit as it helps one unravel the mystery of life flourishing in desolate landscapes.**

Solution:
Correct Answer : 1
Genre: Ecology

Bookmark

Answer key/Solution

Word Count# 572

The main aim of the author in this passage is to show that after a catastrophic event, life flourished in an unexpected manner at Mount St Helens. So, option 1 is the correct choice. 'Can' is the clue here.

Option 2 – This passage is not about 'scientists'.

Option 3 – This is indirectly mentioned in a specific context in the passage. It is too narrow to be the main idea.

Option 4 – This is beyond the scope of the passage.

FeedBack

Direction for questions (20-24): Read the given passage and answer the questions that follow.

[…] The fact that race is unyielding enough to shut out someone from the national community, yet malleable enough for my students to believe that it explains a group's apparent assimilation, hints at what a shapeshifting adversary race is. Race is incredibly tenacious and unforgiving, a source of grave inequality and injustice. Yet over time, racial categories evolve and shift.

To really grasp race, we must accept a double paradox. The first one is a truism of antiracist educators: we can see race, but it's not real. The second is stranger: race has real consequences, but we can't see it with the naked eye. Race is a power relationship; racial categories are not about interesting cultural or physical differences, but about putting other people into groups in order to dominate, exploit and attack them. Fundamentally, race makes power visible by assigning it to physical bodies. The evidence of race right before our eyes is 'not' a visual trace of a physical reality, but a by-product of social perceptions, in which we are trained to see certain features as salient or significant. Race does not exist as a matter of biological fact, but only as a consequence of a process of 'racialisation'.

Occasionally there are historical moments when the creation of race and its political meaning get spelled out explicitly. The US Constitution divided people into white, Black, or Indian, which were meant to stand in for power categories: those eligible for citizenship, those subjected to brutal enslavement, and those targeted for genocide. In the first census, each resident counted as one person, each slave as three-fifths a person, and each Indian was not counted at all.

But racialisation is often more insidious. It means that we see things that don't exist, and fail to recognise things that do. The most powerful racial category is often invisible: whiteness. The benefit of being in power is that whites can imagine that they are the norm and that only 'other' people have race. An early US census instructed people to leave the race section blank if they were white, and indicate only if someone were something else ('B' for Black, 'M' for Mulatto). Whiteness was literally unmarked. […]

Putting whiteness under inspection shows how powerful race is, despite the instability of racial categories. For decades, 'whiteness' was an explicit standard for citizenship. Blacks could technically be citizens, but enjoyed none of the legal benefits. Asians born outside the US were prohibited from becoming citizens until the mid-20th century. Eligibility for citizenship – painted as whiteness – has remained a category since its inscription in the Constitution, but those eligible for membership in that group have changed. Groups such as Germans, Irish, Italians, and Jews were popularly defined as non-citizens and non-white when they first arrived, and then became white. What we see as white today is not the same as it was 100 years ago. […]

Q.20

The author's attitude towards the 'white race' can be said to be:

1 ○ **vitriolic.**

2 **empathetic.**

3 **curious.**

4 **evaluative.**

Solution:
Correct Answer : 4
Genre: Sociology

Bookmark

Answer key/Solution

Word Count# 481

We need to read the question carefully. It's about 'white' race, not the process of racialisation. The author uses the concept of white race and white privileges to talk about the larger issue of racial discrimination. So, s/he analyses the different aspects of this issue.

Option 1 – Vitriolic or harsh is too extreme. The author is not personally against the race.

Options 2 and 3 – They don't match the theme of the passage.

Option 4 – This is the best choice. The author is objective and analytical in the passage.

FeedBack

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Q.21

In the passage, the author cites all of the following as signs of 'racialisation' EXCEPT:

1 **The ban on Asians born outside US from becoming US citizens**

2 **The apparent assimilation of one group in the US**

3 **The first census of US which assigned different personage to people of different racial category**

4 **Making whiteness the 'norm' in assigning citizenship in the US**

Solution:
Correct Answer : 2
Genre: Sociology

Bookmark

Answer key/Solution

Word Count# 481

Options 1, 3, and 4 are clearly mentioned in the passage.

Option 2 – This is a vague option. It is mentioned in the first paragraph in a different context. So, it is the correct answer.

FeedBack

Direction for questions (20-24): Read the given passage and answer the questions that follow.

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Q.22

As per the passage, what is the real purpose behind the creation of racial categories?

1 ○ **To attack an adversarial group**

2 To create power equations that favour the victorious party

3 To create bi-products of social perception

4 To subjugate the people seen as the 'other'

Solution:
Correct Answer : 4
Genre: Sociology

Bookmark

Answer key/Solution

Word Count# 481

Refer to the lines: "Race is a power relationship; racial categories are not about interesting cultural or physical differences, but about putting other people into groups in order to dominate, exploit and attack them. Fundamentally, race makes power visible by assigning it to physical bodies." Option 4 is the correct answer as it summarises these lines.

Options 1 and 2 – Both are partially correct.

Option 3 – This is irrelevant.

FeedBack

Direction for questions (20-24): Read the given passage and answer the questions that follow.

[…] The fact that race is unyielding enough to shut out someone from the national community, yet malleable enough for my students to believe that it explains a group's apparent assimilation, hints at what a shapeshifting adversary race is. Race is incredibly tenacious and unforgiving, a source of grave inequality and injustice. Yet over time, racial categories evolve and shift.

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Q.23

Why does the author term race as a 'shapeshifting adversary' in the first paragraph?

1 **Because it is both unyielding and malleable.**

2 **Because it evolves and shifts.**

3 **Because it projects a dual nature.**

4 **Because it is the source of grave inequality and injustice.**

Solution:
Correct Answer : 3
Genre: Sociology

Bookmark

Answer key/Solution

Word Count# 481

Refer to the lines: "The fact that race is unyielding enough to shut out someone from the national community, yet malleable enough for my students to believe that it explains a group's apparent assimilation, hints at what a shapeshifting adversary race is." So, option 3 is the most comprehensive reason.

Options 1 and 4 – These are both partially correct.

Option 2 – This doesn't match the tone of the given lines.

FeedBack

Direction for questions (20-24): Read the given passage and answer the questions that follow.

[…] The fact that race is unyielding enough to shut out someone from the national community, yet malleable enough for my students to believe that it explains a group's apparent assimilation, hints at what a shapeshifting adversary race is. Race is incredibly tenacious and unforgiving, a source of grave inequality and injustice. Yet over time, racial categories evolve and shift.

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Occasionally there are historical moments when the creation of race and its political meaning get spelled out explicitly. The US Constitution divided people into white, Black, or Indian, which were meant to stand in for power categories: those eligible for citizenship, those subjected to brutal enslavement, and those targeted for genocide. In the first census, each resident counted as one person, each slave as three-fifths a person, and each Indian was not counted at all.

But racialisation is often more insidious. It means that we see things that don't exist, and fail to recognise things that do. The most powerful racial category is often invisible: whiteness. The benefit of being in power is that whites can imagine that they are the norm and that only 'other' people have race. An early US census instructed people to leave the race section blank if they were white, and indicate only if someone were something else ('B' for Black, 'M' for Mulatto). Whiteness was literally unmarked. […]

Putting whiteness under inspection shows how powerful race is, despite the instability of racial categories. For decades, 'whiteness' was an explicit standard for citizenship. Blacks could technically be citizens, but enjoyed none of the legal benefits. Asians born outside the US were prohibited from becoming citizens until the mid-20th century. Eligibility for citizenship – painted as whiteness – has remained a category since its inscription in the Constitution, but those eligible for membership in that group have changed. Groups such as Germans, Irish, Italians, and Jews were popularly defined as non-citizens and non-white when they first arrived, and then became white. What we see as white today is not the same as it was 100 years ago. […]

Q.24

Which of the following is true about the sentence 'racialisation is often more insidious'?

1 **What exists and what we can't see define racialisation.**

2 The impact of racialisation has only been documented once in the US history.

3 The true impact of racial categorisation is more often than not difficult to decipher.

4 The logic behind racialisation most of the times defies logic.

Solution:
Correct Answer : 3
Genre: Sociology

Bookmark

Answer key/Solution

Word Count# 481

Refer to the lines: "But racialisation is often more insidious. It means that we see things that don't exist, and fail to recognise things that do." Now, we need to put it into perspective. Option 3 is clearly the answer.

Option 1 – This is irrelevant.

Options 2 – 'Only' makes this factually incorrect. Secondly, it doesn't directly answer the question.

Option 4 – The author says that reasons behind racial categorisation can be understood. So, 'defies logic' makes this incorrect.

FeedBack

Q.25

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

1. One is visible and the other invisible (subjective and objective).
2. Your internal world of thought, feelings, sensations, beliefs, and reaction is invisible and belongs to you.
3. Your external world enters through your five senses, and is shared by everyone.
4. You are living in two worlds: the external and the internal; yet they are both one.

Solution:
Correct Answer : 4132
This is an easy question.

Bookmark

Answer key/Solution

41 makes a mandatory pair – 'Two worlds' – 'one' and 'the other'.

3 will come first as the previous sentence starts with 'visible' and then 'invisible'. So, 32 is the better sequence.

So, 4132 is the correct sequence.

FeedBack

Q.26
Directions for question (26): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. It was like reading the first chapter of an intriguing book but then realizing it was out of the library on indefinite loan.
2. Mulligan did not 'look' like a man with his mainspring broken, but, then, it was impossible to tell.
3. It seemed belligerent, somehow, to give away so little of oneself.
4. And the facts of the case were so scant!

Solution:
Correct Answer : 2413
Sentences 1, 3, and 4 can't open the paragraph because of 'it', 'it', and 'and'.

Bookmark

Answer key/Solution

So, 2 is the best opening sentence. It introduces the main character Mulligan.

13 is a pair – 'First chapter of an intriguing book' and 'give away so little'. 3 explains 1.

4 has the word 'and'. It adds to the idea mentioned in 2. 'The case' refers to Mulligan's issue in 2.

So, 2413 is the correct sequence.

FeedBack

Q.27

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

1. Stellar growth last year prompted the US central bank, the Federal Reserve, to increase interest rates to calm things down.
2. Figures last week showed the US manufacturing sector in decline for the first time in a decade.
3. A combination of those higher borrowing costs, the end of the sugar rush and the tariff war with China has hit US industrial production.
4. Trump inherited a buoyant economy and then gave it a sugar rush of income tax cuts and corporate giveaways.

Solution:
Correct Answer : 4132
1 and 4 are positive in tone. 2 and 3 are negative.
4 introduces the topic: 'Buoyant economy' and 'stellar growth'.
3 has the phrase 'those higher…'. It refers to the steps mentioned in 1.
2 explains the problems mentioned in 3 by giving another example. So, 4132 is the correct sequence.

Bookmark

Answer key/Solution

FeedBack

Q.28

Directions for question (28): The four sentences (labelled 1, 2, 3, and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentences and key in this sequence of four numbers as your answer.

1. Walmart, Nestlé, and McDonald's have all publicly committed to reduce greenhouse gas emissions.
2. McDonald's have pledged to reduce antibiotics use in their beef supply chains.
3. But the vast majority of beef suppliers do not have a policy to avoid routine use of antibiotics; only one – Marfrig – does.
4. And while Walmart has previously said it wants to achieve zero net deforestation in its supply chain by 2020, the research shows that Walmart suppliers such as Cranswick in the UK have no comprehensive policy on deforestation.

Solution:
Correct Answer : 1423
1 is the opening sentence as it introduces the three companies that will be discussed later. The other sentences have linking words.

Bookmark

Answer key/Solution

14 is a pair – 'And' adds to the idea mentioned in 1.

23 is a pair – Both talk about 'beef' and the issue related to it. 3 gives a mildly contradicted view to the idea mentioned in 2.

So, 1423 is the correct sequence.

FeedBack

Q.29
Directions for question (29): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. The beautiful rhythm of his set-up and execution disappeared.
2. It is not often he lets us into his soul.
3. He looked to be shivering in the cloying embrace of Arthur Ashe Stadium.
4. He railed against his age, his injury, and his opponent.
5. But in his doomed denouement it was impossible to ignore the unravelling of his cool.

Solution:
Correct Answer : 4
The correct order is 2513. These sentences talk about the struggle of someone (Arthur Ashe indicates it's the US open – however it is not crucial) at a sporting event.

Bookmark

Answer key/Solution

4 gives a different version. It suggests bravery or courage to overcome the struggle. So, it is the odd one out due to its theme.

In case you are curious, this paragraph talks about Roger Federer.

FeedBack

Q.30

Directions for question (30): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. People very rarely lie in Westminster.
2. It's a little out of date, but some of the anecdotes are particularly useful.
3. The key is the verb: advisers will argue it doesn't cover a decision that has already been taken.
4. What they do is use their words so carefully that only a linguist experienced in 'politicalese' can translate what they actually mean.
5. This might sound absurd, but it's true.

Solution:
Correct Answer : 2
The correct order is 1543. We don't need to arrange the sentences. 2 is clearly out of context. 'It' refers to something which is out of date. It can't refer to the context of 'people not lying in Westminster'. So, 2 is the odd one out.

Bookmark

Answer key/Solution

FeedBack

Q.31

Directions for question (31): Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out.

1. Gay and lesbian activists have led the way popularising the idea that identity is biologically determined.
2. Throughout the struggle for marriage equality, supporters drew parallels with the oppression of African Americans, be that anti-miscegenation laws or legalised segregation.
3. Yet one stark difference between these civil rights movements has escaped notice.
4. The decision was a major achievement for a liberation movement that began nearly half a century ago.
5. Last month, the US Supreme Court affirmed the rights of same-sex couples to marry.

Solution:
Correct Answer : 1
The correct order is 5423. The other sentences talk about the struggle of the LGBT community and how their struggle is similar to other civil rights movements.

Bookmark

Answer key/Solution

1 talks about 'biology'. So, this has a different theme.

FeedBack

Q.32

Directions for question (32): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Working at Hengfeng Bank, an embattled Chinese lender, requires a thick skin these days. On August 30th the bank's Communist Party committee summoned its members, including top executives, for a self-criticism session, of the sort common in the Maoist era. "No one talked about their achievements. They talked only of their shortcomings and problems. They pointed the knife blade at themselves," the bank reported afterwards. "Blushing and sweating, they expelled their poison." The revival of self-criticism under Xi Jinping, China's president, has raised alarm about the direction in which he is steering the country. Other banks have also conducted similar sessions, a testament to Mr Xi's assertion of party control over the economy. But in the case of Hengfeng, ravaged by corruption scandals and bailed out last month by the government, the sight of its employees examining their misdeeds was, in a way, reassuring.

1 **The Chinese banking sector is undergoing troubled times and needs the government's bail-out packages.**

2 **Many Chinese banks are now ready to face the consequences of their misdeeds by ownership-oriented seminars.**

3 **Hengfeng Bank, and some others have taken the initiative to do self-exploration of their mistakes, a sign of a broader trend of self-criticism in China.**

4 **The Chinese government has embraced the culture of self-criticism under Xi Jinping, and many banks have followed suit by conducting seminars to find Xi's and their own mistakes.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
The main points of this paragraph are:
• Hengfeng Bank did some initiative to analyse the situation.

• Some other banks in China are doing a soul searching too which the author finds reassuring.

Option 1 – This doesn't capture the main idea of the paragraph.

Option 2 – The seminars are not the platform to 'face the consequences'. So, this is not the main point of the paragraph.

Option 4 – This talks about 'Chinese government' which is outside the scope of the paragraph.

Option 3 – This captures both the points of the paragraph.

FeedBack

Q.33
Directions for question (33): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Feminist scholars have long focused on men's violence against women, tackling issues such as rape, sexual harassment, stalking, online abuse, incest, domestic violence, and murder. They argue that behaviours associated with masculinity are not necessarily natural, but are learned. This has led to important theorising about the negative effects of "hegemonic masculinity", which pressures men to adopt a hyper-masculine, heterosexual, and anti-feminine gender identity and implies that they are not a real man if they do not. "Toxic masculinity", meanwhile, encourages men to resort to anger, aggression and violence against women, other men and children – and, indeed, the planet itself.

1 **As acquired behaviours, toxic masculinity differs from hegemonic masculinity, where the latter is propelled by a sense of identity and the former is shown through violent tendencies.**

2 **While 'hegemonic masculinity' encourages men to abhor anything feminine, 'toxic masculinity' stirs them to behave with anger and violence.**

3 **Scholars believe that men learn to behave violently towards women, and they can be trained to behave more sensitively.**

4 **As many scholars have studied the impact of acquired violent behaviour in men, they believe that hegemonic masculinity deals with the issue of male power, and toxic masculinity deals with the eagerness to project strength via violence.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 1
The paragraph has the following main points:

• What feminist scholars have focused on

• The difference between hegemonic masculinity and toxic masculinity

Option 1 – It captures both the points. So, it is the answer.

Option 2 – It distorts the facts mentioned in the paragraph. The description of hegemonic masculinity and its purpose is wrong.

Option 3 – This is a conclusion that can be derived from the paragraph. It's not the summary.

Option 4 – This is a long and twisted interpretation of the points given in the paragraph. The definition of 'toxic masculinity' is wrong. Secondly, the scholars have not given these interpretations. These are the author's observations.

FeedBack

Q.34
Directions for question (34): The passage given below is followed by four summaries. Choose the option that best captures the author's position.

Psychologists should bethink themselves before putting down the instinct of self-preservation as the cardinal instinct of an organic being. A living thing seeks above all to 'discharge' its strength – life itself is 'will to power', self-preservation is only of the indirect and most frequent 'results' thereof. In short, here, as everywhere else, let us beware of 'superfluous' teleological principles!

1 **Self-preservation is not the most important trait of an organic being.**

2 **The tendency to discharge strength is the main instinct of a living being, which has not been recognised properly.**

3 **One needs to look beyond redundant philosophical theories, as in case of self-preservation being held as the main instinct of a living being.**

4 **Psychologists and philosophers are wrong in the assumption that a tendency to self-preserve gives us the tag of being an organic living being.**

Bookmark

Answer key/Solution

Solution:
Correct Answer : 3
The main point of the author is that the psychologists are wrong in their opinion that self-preservation is the main instinct of a living being. Only option 3 talks about this point.

Option 1 – It doesn't mention the main intention of the author.

Option 2 – This misses the point about the psychologists or theorists being wrong.

Option 4 – 'The tag of being an organic living being' makes this option illogical.

FeedBack

Sec 2

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

In a 3 × 3 grid given below, each cell is represented by a_{ij} where i and j are the row number and column number respectively of that cell. Digit '1' is shown in cell a_{11} in the given grid as an example. Each cell of the grid is to be filled in by a natural number such that the number in each row, each column and each diagonal are in A.P. series, in the given order. e.g., if the first row has 1, 2, 3 in a_{11}, a_{12} and a_{13} respectively then they are in A.P. series but if these cells have 1, 3, 2 respectively then they will not be in A.P. series. Also, all 3 numbers cannot be equal in any row, column or diagonal.

	Column 1	Column 2	Column 3
Row 1	1		
Row 2			
Row 3			

Q.35
If a_{11} has 1 in it and the grid is filled using all the numbers from 1 to 9 for exactly once, then in how many ways can the grid be filled?

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

If a_{11} has 1 in it and the grid is filled using all the numbers from 1 to 9 for exactly once. The possible ways are given below

1	2	3
4	5	6
7	8	9

1	4	7
2	5	8
3	6	9

∴ The grid can be filled in 2 ways.

FeedBack

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

In a 3 × 3 grid given below, each cell is represented by a_{ij} where i and j are the row number and column number respectively of that cell. Digit '1' is shown in cell a_{11} in the given grid as an example. Each cell of the grid is to be filled in by a natural number such that the number in each row, each column and each diagonal are in A.P. series, in the given order. e.g., if the first row has 1, 2, 3 in a_{11}, a_{12} and a_{13} respectively then they are in A.P. series but if these cells have 1, 3, 2 respectively then they will not be in A.P. series. Also, all 3 numbers cannot be equal in any row, column or diagonal.

	Column 1	Column 2	Column 3
Row 1	1		
Row 2			
Row 3			

Q.36
If all the numbers used in the grid are odd numbers, then what is the least possible value of the highest number used in the grid?

Solution:
Correct Answer : 13

Bookmark

Answer key/Solution

1	5	9
3	7	11
5	9	13

The least possible value of the highest number used in the grid, if all the numbers used are odd numbers, is 13.

FeedBack

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

In a 3 × 3 grid given below, each cell is represented by a_{ij} where i and j are the row number and column number respectively of that cell. Digit '1' is shown in cell a_{11} in the given grid as an example. Each cell of the grid is to be filled in by a natural number such that the number in each row, each column and each diagonal are in A.P. series, in the given order. e.g., if the first row has 1, 2, 3 in a_{11}, a_{12} and a_{13} respectively then they are in A.P. series but if these cells have 1, 3, 2 respectively then they will not be in A.P. series. Also, all 3 numbers cannot be equal in any row, column or diagonal.

	Column 1	Column 2	Column 3
Row 1	1		
Row 2			
Row 3			

Q.37
What is the minimum possible number of distinct terms required to fill the grid?

Solution:
Correct Answer : 7

Bookmark

Answer key/Solution

1	5	9
3	7	11
5	9	13

The minimum possible number of distinct terms required to fill the grid is 7.

FeedBack

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

In a 3 × 3 grid given below, each cell is represented by a_{ij} where i and j are the row number and column number respectively of that cell. Digit '1' is shown in cell a_{11} in the given grid as an example. Each cell of the grid is to be filled in by a natural number such that the number in each row, each column and each diagonal are in A.P. series, in the given order. e.g., if the first row has 1, 2, 3 in a_{11}, a_{12} and a_{13} respectively then they are in A.P. series but if these cells have 1, 3, 2 respectively then they will not be in A.P. series. Also, all 3 numbers cannot be equal in any row, column or diagonal.

	Column 1	Column 2	Column 3
Row 1	1		
Row 2			
Row 3			

Q.38

Find the maximum possible number of distinct values of common differences in one such grid?

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

Consider the grid filled with the following values.

1	2	3
5	6	7
9	10	11

Here, we can see that 8 A.P. series are present in the given grid.

i) 1, 2, 3
ii) 5, 6, 7
iii) 9, 10, 11
} with common difference = 1

iv) 1, 5, 9
v) 2, 6, 10
vi) 3, 7, 11
} with common difference = 4

vii) 1, 6, 11 – with common difference = 5
viii) 3, 6, 9 – with common difference = 3
So, the maximum possible number of distinct values of common differences in one such grid is 4.

FeedBack

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

Students of class XI of XYZ school were offered three different streams based on their marks in class X. Students who had more than 80% marks were offered Non-Medical stream, who had between 70% and 80% were offered Commerce stream, and the rest of the students who passed the exam with less than 70% marks were offered Humanities stream. There were a total of 250 students who appeared for class X exams and 80% of them were able to pass the exam.

Further, each student, who was offered Non-Medical stream, has the option to take at least one of the three subjects - Physics, Chemistry and Maths. Each commerce student has the option to take at least one from - Accountancy, BST and Maths, and each Humanities student has the option to take at least one from - Economics, Political Science and Maths. Hence, Maths was the only subject which was offered to the students of all the three streams.

Further, equal number of students were there in Non-medical and Commerce stream. Number of students in Non-medical stream was 20 less than the number of students in Humanities stream.

In Non-medical, 31 students took Physics, 32 students took Chemistry and 29 students took Maths. There were 15 students who took Physics and Chemistry, 11 students took Maths and Chemistry and 14 students took Physics and Maths.

In Commerce, 31 students took Accountancy, 27 took BST and 29 students took Maths. 14 students took Accountancy and BST, 8 students took Accountancy and Maths and 11 students took Maths and BST.

In Humanities, 40 students took Economics, 27 took Political Science and 31 took Maths. Out of these, 7 students took Political Science and Economics, 2 students took Political Science and Maths only and 6 students took Maths and Economics only.

Q.39

Find the percentage of students in class XI who took only Maths in all the three streams taken together.

1 **24%**

2 **36%**

3 **44%**

4 **30%**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

From the information we can conclude that, out of 250 students only 200 students has been promoted to 11th standard. As the number of students in Non-Medical and Commerce are same and Humanities students are 20 more than Non-Medical stream, so we can find out that both Non-Medical Students and Commerce students will be 60 and Humanities students will be 80.

Among Non-Medical students, let the number of students who took all the three subjects be y.

$\therefore 31 + 6 + y + 11 - y + 4 + y = 60$
$\Rightarrow 52 + y = 60$
$\Rightarrow y = 8.$

Among Commerce students, let the number of students who took all the three subjects be p.

$\therefore 31 + 2 + p + 11 - p + 10 + p = 60$
$\Rightarrow p = 6.$

Among Humanities students, let the number of students who took all the three subjects be x.

$\therefore 40 + 18 + 2 + 23 - x = 80$
$\Rightarrow x = 3.$

Number of students who took Maths only = 12 + 16 + 20 = 48, which is 24% of 200.

FeedBack

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

Students of class XI of XYZ school were offered three different streams based on their marks in class X. Students who had more than 80% marks were offered Non-Medical stream, who had between 70% and 80% were offered Commerce stream, and the rest of the students who passed the exam with less than 70% marks were offered Humanities stream. There were a total of 250 students who appeared for class X exams and 80% of them were able to pass the exam.

Further, each student, who was offered Non-Medical stream, has the option to take at least one of the three subjects - Physics, Chemistry and Maths. Each commerce student has the option to take at least one from - Accountancy, BST and Maths, and each Humanities student has the option to take at least one from - Economics, Political Science and Maths. Hence, Maths was the only subject which was offered to the students of all the three streams.

Further, equal number of students were there in Non-medical and Commerce stream. Number of students in Non-medical stream was 20 less than the number of students in Humanities stream.

In Non-medical, 31 students took Physics, 32 students took Chemistry and 29 students took Maths. There were 15 students who took Physics and Chemistry, 11 students took Maths and Chemistry and 14 students took Physics and Maths.

In Commerce, 31 students took Accountancy, 27 took BST and 29 students took Maths. 14 students took Accountancy and BST, 8 students took Accountancy and Maths and 11 students took Maths and BST.

In Humanities, 40 students took Economics, 27 took Political Science and 31 took Maths. Out of these, 7 students took Political Science and Economics, 2 students took Political Science and Maths only and 6 students took Maths and Economics only.

Q.40

How many students took exactly two subjects in all the three streams taken together?

1 **48**

2 **38**

3 **43**

4 **60**

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

From the information we can conclude that, out of 250 students only 200 students has been promoted to 11th standard. As the number of students in Non-Medical and Commerce are same and Humanities students are 20 more than Non-Medical stream, so we can find out that both Non-Medical Students and Commerce students will be 60 and Humanities students will be 80.

Among Non-Medical students, let the number of students who took all the three subjects be y.

$\therefore 31 + 6 + y + 11 - y + 4 + y = 60$

$\Rightarrow 52 + y = 60$

$\Rightarrow y = 8.$

Among Commerce students, let the number of students who took all the three subjects be p.

$\therefore 31 + 2 + p + 11 - p + 10 + p = 60$

$\Rightarrow p = 6.$

Mathematics = 29

Among Humanities students, let the number of students who took all the three subjects be x.

Mathematics = 31

$\therefore 40 + 18 + 2 + 23 - x = 80$
$\Rightarrow x = 3.$

Mathematics = 31

16 students in Non-Medical stream, 15 students in Commerce stream and 12 students is Humanities stream took exactly two subjects. So, 16 + 15 + 12 = 43 students.

FeedBack

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

Students of class XI of XYZ school were offered three different streams based on their marks in class X. Students who had more than 80% marks were offered Non-Medical stream, who had between 70% and 80% were offered Commerce stream, and the rest of the students who passed the exam with less than 70% marks were offered Humanities stream. There were a total of 250 students who appeared for class X exams and 80% of them were able to pass the exam.

Further, each student, who was offered Non-Medical stream, has the option to take at least one of the three subjects - Physics, Chemistry and Maths. Each commerce student has the option to take at least one from - Accountancy, BST and Maths, and each Humanities student has the option to take at least one from - Economics, Political Science and Maths. Hence, Maths was the only subject which was offered to the students of all the three streams.

Further, equal number of students were there in Non-medical and Commerce stream. Number of students in Non-medical stream was 20 less than the number of students in Humanities stream.

In Non-medical, 31 students took Physics, 32 students took Chemistry and 29 students took Maths. There were 15 students who took Physics and Chemistry, 11 students took Maths and Chemistry and 14 students took Physics and Maths.

In Commerce, 31 students took Accountancy, 27 took BST and 29 students took Maths. 14 students took Accountancy and BST, 8 students took Accountancy and Maths and 11 students took Maths and BST.

In Humanities, 40 students took Economics, 27 took Political Science and 31 took Maths. Out of these, 7 students took Political Science and Economics, 2 students took Political Science and Maths only and 6 students took Maths and Economics only.

Q.41

What is the absolute difference between the number of students who took exactly one subject in Non-medical and who took exactly one subject in Commerce?

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

From the information we can conclude that, out of 250 students only 200 students has been promoted to 11th standard. As the number of students in Non-Medical and Commerce are same and Humanities students are 20 more than Non-Medical stream, so we can find out that both Non-Medical Students and Commerce students will be 60 and Humanities students will be 80.

Among Non-Medical students, let the number of students who took all the three subjects be y.

$\therefore 31 + 6 + y + 11 - y + 4 + y = 60$
$\Rightarrow 52 + y = 60$
$\Rightarrow y = 8.$

Among Commerce students, let the number of students who took all the three subjects be p.

$\therefore 31 + 2 + p + 11 - p + 10 + p = 60$
$\Rightarrow p = 6.$

Among Humanities students, let the number of students who took all the three subjects be x.

$\therefore 40 + 18 + 2 + 23 - x = 80$
$\Rightarrow x = 3.$

For Non-Medical stream, the number of students who took exactly one subject = (10 + 14 + 12) = 36.
For commerce stream, the number of students who took exactly one subject = (15 + 8 + 16) = 39.
So, difference is of 3 students.

FeedBack

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

Students of class XI of XYZ school were offered three different streams based on their marks in class X. Students who had more than 80% marks were offered Non-Medical stream, who had between 70% and 80% were offered Commerce stream, and the rest of the students who passed the exam with less than 70% marks were offered Humanities stream. There were a total of 250 students who appeared for class X exams and 80% of them were able to pass the exam.

Further, each student, who was offered Non-Medical stream, has the option to take at least one of the three subjects - Physics, Chemistry and Maths. Each commerce student has the option to take at least one from - Accountancy, BST and Maths, and each Humanities student has the option to take at least one from - Economics, Political Science and Maths. Hence, Maths was the only subject which was offered to the students of all the three streams.

Further, equal number of students were there in Non-medical and Commerce stream. Number of students in Non-medical stream was 20 less than the number of students in Humanities stream.

In Non-medical, 31 students took Physics, 32 students took Chemistry and 29 students took Maths. There were 15 students who took Physics and Chemistry, 11 students took Maths and Chemistry and 14 students took Physics and Maths.

In Commerce, 31 students took Accountancy, 27 took BST and 29 students took Maths. 14 students took Accountancy and BST, 8 students took Accountancy and Maths and 11 students took Maths and BST.

In Humanities, 40 students took Economics, 27 took Political Science and 31 took Maths. Out of these, 7 students took Political Science and Economics, 2 students took Political Science and Maths only and 6 students took Maths and Economics only.

Q.42
Find the total number of students who took only Chemistry, only BST and only Maths.

1 **42**

2 **70**

3 **50**

4 105

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

From the information we can conclude that, out of 250 students only 200 students has been promoted to 11th standard. As the number of students in Non-Medical and Commerce are same and Humanities students are 20 more than Non-Medical stream, so we can find out that both Non-Medical Students and Commerce students will be 60 and Humanities students will be 80.
Among Non-Medical students, let the number of students who took all the three subjects be y.

$\therefore 31 + 6 + y + 11 - y + 4 + y = 60$
$\Rightarrow 52 + y = 60$
$\Rightarrow y = 8.$

Among Commerce students, let the number of students who took all the three subjects be p.

$\therefore 31 + 2 + p + 11 - p + 10 + p = 60$
$\Rightarrow p = 6.$

Among Humanities students, let the number of students who took all the three subjects be x.

Mathematics = 31

$\therefore 40 + 18 + 2 + 23 - x = 80$
$\Rightarrow x = 3.$

Mathematics = 31

Students who took Chemistry only = 14
Students who took BST only = 8
Students who took Maths only = 12 + 16 + 20 = 48.
$\therefore$ Total number of students = 14 + 8 + 48 = 70.

FeedBack

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

A 'Number Pyramid' is defined as a pyramidal shape formed using numbers such that the top row consists of one number, the 2nd row consists of two numbers, 3rd row of three numbers and so on. The only number in the 1st row i.e., the top most row is also known as the apex. The figure shown below is an example of a number pyramid.

0

1 2

3 4 5

6 7 8 9

Lakshya, a curious student, decided to make a number pyramid using all the numbers in base 15 for exactly once. Also, in base 15, 10 is represented by a, 11 by b, 12 by c, 13 by d and 14 by e and 0-9 are represented as it is.
He formed the number pyramid, such that on converting every number into base 10, satisfies the following conditions:
1. The sum of the apex and the rightmost numbers of every row is equal to 38, when converted in base 10. Also, the same is true for the sum of the apex and the leftmost numbers of every row. The sum of all the numbers in 5th row is also equal to 38.
2. The numbers at the three vertices of the pyramid forms a Pythagorean triplet.
3. The sum of the numbers in the 2nd row is 27.
4. The difference of the apex digit with the leftmost and the rightmost numbers in the 2nd row is 11 and 10 respectively.
5. The sum of the numbers in the 4th row is half of the sum of the numbers of the 5th row.
6. The difference between the numbers placed at rightmost end in 3rd row and that in 4th row is 5.
7. The difference between the numbers placed at leftmost place in 4th row and that in 5th row is 6.

Q.43
How many such number pyramids are possible?

1 **6**

2 **8**

3 **10**

4 **12**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

From the information 2 we can conclude that the possible Pythagorean triples are (3, 4, 5), (6, 8, 10) and (5, 12, 13) are possible.
From statements 3 and 4 we can conclude that digits in 2nd row can be 'd' and 'e' only as their value in base 10 is 13 and 14 respectively.
From statements 2, 3 and 4 we can conclude that the apex digit of the pyramid is 3 and 'e' and 'd' are digits used in 2nd row respectively. Further we can conclude that the digits used at vertices are (3, 4, 5).
So after this the pyramid will have two possible ways to look like

Case 1

3
e d
P Q R
S T U V
4 W X Y 5

Case 2

3
e d
P Q R
S T U V
5 W X Y 4

In case 2, from statement 1,
$3 + e + P + S + 5 = 38$
$\therefore P + S = 16$
and from statement 7,
$S - 5 = 6$
$\therefore S = 11$ and $P = 5$
Similarly, $3 + d + R + V + 4 = 38$
$R + V = 18$
but $R - V = 5$

Therefore, $R = \frac{23}{2}$ which is not possible.
So, no further combinations are possible.
So case 2 cannot be proceeded.
For case 1, from statement 1 and 7, S will be a (10) and P will be 7, and with same logic the value of R and V will b(11) and 6 respectively.
Further the sum of digits of 4th row in base 10 is 19 from statement 5 and 1.
Therefore, the value of T and U be 1 and 2 only in some order.
Further the sum of digits of 5th row in base 10 is 38 from statement 1.
So, the value of W, X, Y will be 12, 8, 9 in some order.
So, the value of Q = 0.
So, the final pyramid is

3
e d
7 0 b
a T U 6
4 W X Y 5

W, X, Y can be arranged in 6 possible ways and T and U can be arranged in 2 possible ways. So total Pyramids possible are $6 \times 2 = 12$.

FeedBack

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

A 'Number Pyramid' is defined as a pyramidal shape formed using numbers such that the top row consists of one number, the 2nd row consists of two numbers, 3rd row of three numbers and so on. The only number in the 1st row i.e., the top most row is also known as the apex. The figure shown below is an example of a number pyramid.

0

1 2

3 4 5

6 7 8 9

Lakshya, a curious student, decided to make a number pyramid using all the numbers in base 15 for exactly once. Also, in base 15, 10 is represented by a, 11 by b, 12 by c, 13 by d and 14 by e and 0-9 are represented as it is.
He formed the number pyramid, such that on converting every number into base 10, satisfies the following conditions:
1. The sum of the apex and the rightmost numbers of every row is equal to 38, when converted in base 10. Also, the same is true for the sum of the apex and the leftmost numbers of every row. The sum of all the numbers in 5th row is also equal to 38.
2. The numbers at the three vertices of the pyramid forms a Pythagorean triplet.
3. The sum of the numbers in the 2nd row is 27.
4. The difference of the apex digit with the leftmost and the rightmost numbers in the 2nd row is 11 and 10 respectively.
5. The sum of the numbers in the 4th row is half of the sum of the numbers of the 5th row.
6. The difference between the numbers placed at rightmost end in 3rd row and that in 4th row is 5.
7. The difference between the numbers placed at leftmost place in 4th row and that in 5th row is 6.

Q.44
Which number will appear at the leftmost place of the 4th row?

1 **a**

2 **b**

3 **9**

4 **Cannot be determined**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

From the information 2 we can conclude that the possible Pythagorean triples are (3, 4, 5), (6, 8, 10) and (5, 12, 13) are possible.
From statements 3 and 4 we can conclude that digits in 2nd row can be 'd' and 'e' only as their value in base 10 is 13 and 14 respectively.
From statements 2, 3 and 4 we can conclude that the apex digit of the pyramid is 3 and 'e' and 'd' are digits used in 2nd row respectively. Further we can conclude that the digits used at vertices are (3, 4, 5).
So after this the pyramid will have two possible ways to look like

Case 1

3
e d
P Q R
S T U V
4 W X Y 5

Case 2

3
e d
P Q R
S T U V
5 W X Y 4

In case 2, from statement 1,
$3 + e + P + S + 5 = 38$
$\therefore P + S = 16$
and from statement 7,
$S - 5 = 6$
$\therefore S = 11$ and $P = 5$
Similarly, $3 + d + R + V + 4 = 38$
$R + V = 18$
but $R - V = 5$

Therefore, $R = \frac{23}{2}$ which is not possible.
So, no further combinations are possible.
So case 2 cannot be proceeded.
For case 1, from statement 1 and 7, S will be a (10) and P will be 7, and with same logic the value of R and V will b(11) and 6 respectively.
Further the sum of digits of 4th row in base 10 is 19 from statement 5 and 1.
Therefore, the value of T and U be 1 and 2 only in some order.
Further the sum of digits of 5th row in base 10 is 38 from statement 1.
So, the value of W, X, Y will be 12, 8, 9 in some order.
So, the value of Q = 0.
So, the final pyramid is

3
e d
7 0 b
a T U 6
4 W X Y 5

The value of S is 10 i.e., a.

FeedBack

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

A 'Number Pyramid' is defined as a pyramidal shape formed using numbers such that the top row consists of one number, the 2nd row consists of two numbers, 3rd row of three numbers and so on. The only number in the 1st row i.e., the top most row is also known as the apex. The figure shown below is an example of a number pyramid.

```
        0
    1       2
  3     4     5
6   7     8       9
```

Lakshya, a curious student, decided to make a number pyramid using all the numbers in base 15 for exactly once. Also, in base 15, 10 is represented by a, 11 by b, 12 by c, 13 by d and 14 by e and 0-9 are represented as it is.
He formed the number pyramid, such that on converting every number into base 10, satisfies the following conditions:
1. The sum of the apex and the rightmost numbers of every row is equal to 38, when converted in base 10. Also, the same is true for the sum of the apex and the leftmost numbers of every row. The sum of all the numbers in 5th row is also equal to 38.
2. The numbers at the three vertices of the pyramid forms a Pythagorean triplet.
3. The sum of the numbers in the 2nd row is 27.
4. The difference of the apex digit with the leftmost and the rightmost numbers in the 2nd row is 11 and 10 respectively.
5. The sum of the numbers in the 4th row is half of the sum of the numbers of the 5th row.
6. The difference between the numbers placed at rightmost end in 3rd row and that in 4th row is 5.
7. The difference between the numbers placed at leftmost place in 4th row and that in 5th row is 6.

Q.45
What can be the maximum possible sum of the numbers placed at the rightmost place in the 3rd row and the 2nd number from the left in the 5th row, when converted in base 10?

1 **19**

2 **24**

3 **23**

4 **Cannot be determined**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

From the information 2 we can conclude that the possible Pythagorean triples are (3, 4, 5), (6, 8, 10) and (5, 12, 13) are possible.
From statements 3 and 4 we can conclude that digits in 2nd row can be 'd' and 'e' only as their value in base 10 is 13 and 14 respectively.
From statements 2, 3 and 4 we can conclude that the apex digit of the pyramid is 3 and 'e' and 'd' are digits used in 2nd row respectively. Further we can conclude that the digits used at vertices are (3, 4, 5).
So after this the pyramid will have two possible ways to look like

Case 1

3
e d
P Q R
S T U V
4 W X Y 5

Case 2

3
e d
P Q R
S T U V
5 W X Y 4

In case 2, from statement 1,
3 + e + P + S + 5 = 38
∴ P + S = 16
and from statement 7,
S – 5 = 6
∴ S = 11 and P = 5
Similarly, 3 + d + R + V + 4 = 38
R + V = 18
but R – V = 5

Therefore, $R = \frac{23}{2}$ which is not possible.

So, no further combinations are possible.
So case 2 cannot be proceeded.
For case 1, from statement 1 and 7, S will be a (10) and P will be 7, and with same logic the value of R and V will b(11) and 6 respectively.
Further the sum of digits of 4th row in base 10 is 19 from statement 5 and 1.
Therefore, the value of T and U be 1 and 2 only in some order.
Further the sum of digits of 5th row in base 10 is 38 from statement 1.
So, the value of W, X, Y will be 12, 8, 9 in some order.
So, the value of Q = 0.
So, the final pyramid is

3
e d
7 0 b
a T U 6
4 W X Y 5

The maximum value of W is 12 and the digit in 3rd row is 11. So sum is 23.

FeedBack

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

A 'Number Pyramid' is defined as a pyramidal shape formed using numbers such that the top row consists of one number, the 2nd row consists of two numbers, 3rd row of three numbers and so on. The only number in the 1st row i.e., the top most row is also known as the apex. The figure shown below is an example of a number pyramid.

0

1 2

3 4 5

6 7 8 9

Lakshya, a curious student, decided to make a number pyramid using all the numbers in base 15 for exactly once. Also, in base 15, 10 is represented by a, 11 by b, 12 by c, 13 by d and 14 by e and 0-9 are represented as it is.
He formed the number pyramid, such that on converting every number into base 10, satisfies the following conditions:
1. The sum of the apex and the rightmost numbers of every row is equal to 38, when converted in base 10. Also, the same is true for the sum of the apex and the leftmost numbers of every row. The sum of all the numbers in 5th row is also equal to 38.
2. The numbers at the three vertices of the pyramid forms a Pythagorean triplet.
3. The sum of the numbers in the 2nd row is 27.
4. The difference of the apex digit with the leftmost and the rightmost numbers in the 2nd row is 11 and 10 respectively.
5. The sum of the numbers in the 4th row is half of the sum of the numbers of the 5th row.
6. The difference between the numbers placed at rightmost end in 3rd row and that in 4th row is 5.
7. The difference between the numbers placed at leftmost place in 4th row and that in 5th row is 6.

Q.46
Digits for how many places can be determined uniquely in the pyramid?

1 **12**

2 **9**

3 **10**

4 **8**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

From the information 2 we can conclude that the possible Pythagorean triples are (3, 4, 5), (6, 8, 10) and (5, 12, 13) are possible.
From statements 3 and 4 we can conclude that digits in 2nd row can be 'd' and 'e' only as their value in base 10 is 13 and 14 respectively.
From statements 2, 3 and 4 we can conclude that the apex digit of the pyramid is 3 and 'e' and 'd' are digits used in 2nd row respectively. Further we can conclude that the digits used at vertices are (3, 4, 5).
So after this the pyramid will have two possible ways to look like

Case 1

3
e d
P Q R
S T U V
4 W X Y 5

Case 2

3
e d
P Q R
S T U V
5 W X Y 4

In case 2, from statement 1,
3 + e + P + S + 5 = 38
∴ P + S = 16
and from statement 7,
S – 5 = 6
∴ S = 11 and P = 5
Similarly, 3 + d + R + V + 4 = 38
R + V = 18
but R – V = 5

Therefore, $R = \frac{23}{2}$ which is not possible.

So, no further combinations are possible.
So case 2 cannot be proceeded.
For case 1, from statement 1 and 7, S will be a (10) and P will be 7, and with same logic the value of R and V will b(11) and 6 respectively.
Further the sum of digits of 4th row in base 10 is 19 from statement 5 and 1.
Therefore, the value of T and U be 1 and 2 only in some order.
Further the sum of digits of 5th row in base 10 is 38 from statement 1.
So, the value of W, X, Y will be 12, 8, 9 in some order.
So, the value of Q = 0.
So, the final pyramid is

3
e d
7 0 b
a T U 6
4 W X Y 5

10 values can be determined uniquely, as T, U, W, X, Y cannot be uniquely determined.

FeedBack

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

Eight friends – Bholu, Keshaw, Neha, Richa, Mintu, Pintu, Chintu and Santu – were MBA aspirants. They were selected for eight different IIMs – A, B, C, K, L, S, T, U – in any order and opted to pursue degree in eight streams – HR, Finance, Sales & Marketing, Operations, IT, Business policy, Retails, and Communication – in any order. To reach their respective IIMs, they booked flight tickets having cost of Rs. 3800, Rs. 5600, Rs. 10800, Rs. 4800, Rs. 3600, Rs. 9200, Rs. 8400 and Rs. 9600, not necessarily in that order.
The additional information about them is as follows:
(I) The amount spent on flight ticket booking by Chintu, who was selected for IIM-K, was higher than that by Santu as well as by the friend who was selected for IIM-U but less than that by the friend who has opted Business policy.
(II) The friends who had opted for sales & marketing and for IT had spent the maximum and the minimum amount respectively for ticket booking.
(III) Mintu was not selected for IIM-T and the friend who was selected for IIM-T had opted Communication.
(IV) Pintu had spent Rs. 3800 and he had opted HR. The amount spent by Richa was equal to the sum of the amount spent by Bholu and the friend who was selected for IIM-L.
(V) The amount spent by Keshaw was less than that by the friend who had opted Operations and it is also known that the sum of amounts spent by these two friends was less than that by Neha, who was selected for IIM-S.
(VI) The friend who had spent the amount immediate less than that by the friend who had selected for IIM-L had opted Retail.
(VII) The positive difference between the amount spent by the friends who were selected for IIM-A and IIM-B respectively was the least among all other friends.

Q.47
How many of the following combinations of friend-IIM for which he/she was selected-opted stream–amount spent by each friend for flight ticket booking are correct?

(I) Mintu - IIMU - Communication - Rs.9600
(II) Chintu - IIMK - Finance - Rs.8400
(III) Pintu - IIML - HR - Rs.3800

1 **0**

2 **1**

3 **2**

4 **3**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

From the statement VII; we may conclude that the friends who had selected for IIM-A & IIM-B had spent Rs. 3800 & Rs. 3600 respectively.
From statement IV; We may conclude Pintu - 3800 - HR - IIM.A
From statement II; Sales & Marketing - Rs. 10800
IT - Rs. 3600
From statement IV; Richa might spend Rs. 8400 (3600 + 4800) or Rs. 9200 (3600 + 5600).
We can conclude that Bholu must spend Rs. 3600.
Let the amount spent by Richa be Rs. 8400.
Then, the amount spent by the friend who was selected for IIM-L was Rs. 4800. In this case; Rs. 3800 (just less than Rs. 4800) was spent by the friend who had opted HR. This contradicts statement VI.
Now, we concluded that Richa had spent Rs. 9200.
Also, the friend who selected for IIM-L must spend Rs. 5600 and the friend who had opted Retail must spend Rs. 4800.
Now; we have following information :-

Bholu	-	3600	-	IIM(B)	-	IT
Pintu	-	3800	-	IIM(A)	-	HR
Richa	-	9200	-	-	-	-
-	-	5600	-	IIM(L)	-	-
-	-	4800	-	-	-	Retail

From statement V; only possibility is 4800 + 5600 < 10800
Now; we can conclude that Neha had spent Rs. 10800.
Also; Keshaw had spent Rs. 4800 and the friend who opted operations had spent Rs. 5600.
From statement I; we may conclude that Chintu had spent Rs. 8400, Santu had spent Rs. 5600 and the friend who was selected for IIM-K had spent 8400. We also concluded that the friend who opted Business policy had spent Rs. 9600.
Further analysis leads to the following table:-

Friend	Amount Spent (in Rs.)	College	Stream
Bholu	3600	IIM-B	IT
Pintu	3800	IIM-A	HR
Keshaw	4800	IIM-U	Retail
Santu	5600	IIM-L	Operations
Chintu	8400	IIM-K	Finance
Richa	9200	IIM-T	Communication
Mintu	9600	IIM-C	Business policy
Neha	10800	IIM-S	Sales & Marketing

Only one statement is correct

FeedBack

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

Eight friends – Bholu, Keshaw, Neha, Richa, Mintu, Pintu, Chintu and Santu – were MBA aspirants. They were selected for eight different IIMs – A, B, C, K, L, S, T, U – in any order and opted to pursue degree in eight streams – HR, Finance, Sales & Marketing, Operations, IT, Business policy, Retails, and Communication – in any order. To reach their respective IIMs, they booked flight tickets having cost of Rs. 3800, Rs. 5600, Rs. 10800, Rs. 4800, Rs. 3600, Rs. 9200, Rs. 8400 and Rs. 9600, not necessarily in that order.
The additional information about them is as follows:
(I) The amount spent on flight ticket booking by Chintu, who was selected for IIM-K, was higher than that by Santu as well as by the friend who was selected for IIM-U but less than that by the friend who has opted Business policy.
(II) The friends who had opted for sales & marketing and for IT had spent the maximum and the minimum amount respectively for ticket booking.
(III) Mintu was not selected for IIM-T and the friend who was selected for IIM-T had opted Communication.
(IV) Pintu had spent Rs. 3800 and he had opted HR. The amount spent by Richa was equal to the sum of the amount spent by Bholu and the friend who was selected for IIM-L.
(V) The amount spent by Keshaw was less than that by the friend who had opted Operations and it is also known that the sum of amounts spent by these two friends was less than that by Neha, who was selected for IIM-S.
(VI) The friend who had spent the amount immediate less than that by the friend who had selected for IIM-L had opted Retail.
(VII) The positive difference between the amount spent by the friends who were selected for IIM-A and IIM-B respectively was the least among all other friends.

Q.48
Who was selected for IIM-C?

1 **Mintu**

2 **Richa**

3 **Santu**

4 **None of the above**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

From the statement VII; we may conclude that the friends who had selected for IIM-A & IIM-B had spent Rs. 3800 & Rs. 3600 respectively.
From statement IV; We may conclude Pintu - 3800 - HR - IIM.A
From statement II; Sales & Marketing - Rs. 10800
IT - Rs. 3600
From statement IV; Richa might spend Rs. 8400 (3600 + 4800) or Rs. 9200 (3600 + 5600).
We can conclude that Bholu must spend Rs. 3600.
Let the amount spent by Richa be Rs. 8400.
Then, the amount spent by the friend who was selected for IIM-L was Rs. 4800. In this case; Rs. 3800 (just less than Rs. 4800) was spent by the friend who had opted HR. This contradicts statement VI.
Now, we concluded that Richa had spent Rs. 9200.
Also, the friend who selected for IIM-L must spend Rs. 5600 and the friend who had opted Retail must spend Rs. 4800.
Now; we have following information :-

Bholu	-	3600	-	IIM(B)	-	IT
Pintu	-	3800	-	IIM(A)	-	HR
Richa	-	9200	-	-	-	-
-	-	5600	-	IIM(L)	-	-
-	-	4800	-	-	-	Retail

From statement V; only possibility is 4800 + 5600 < 10800
Now; we can conclude that Neha had spent Rs. 10800.
Also; Keshaw had spent Rs. 4800 and the friend who opted operations had spent Rs. 5600.
From statement I; we may conclude that Chintu had spent Rs. 8400, Santu had spent Rs. 5600 and the friend who was selected for IIM-K had spent 8400. We also concluded that the friend who opted Business policy had spent Rs. 9600.
Further analysis leads to the following table:-

Friend	Amount Spent (in Rs.)	College	Stream
Bholu	3600	IIM-B	IT
Pintu	3800	IIM-A	HR
Keshaw	4800	IIM-U	Retail
Santu	5600	IIM-L	Operations
Chintu	8400	IIM-K	Finance
Richa	9200	IIM-T	Communication
Mintu	9600	IIM-C	Business policy
Neha	10800	IIM-S	Sales & Marketing

Mintu was selected for IIM-C.

FeedBack

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

Eight friends – Bholu, Keshaw, Neha, Richa, Mintu, Pintu, Chintu and Santu – were MBA aspirants. They were selected for eight different IIMs – A, B, C, K, L, S, T, U – in any order and opted to pursue degree in eight streams – HR, Finance, Sales & Marketing, Operations, IT, Business policy, Retails, and Communication – in any order. To reach their respective IIMs, they booked flight tickets having cost of Rs. 3800, Rs. 5600, Rs. 10800, Rs. 4800, Rs. 3600, Rs. 9200, Rs. 8400 and Rs. 9600, not necessarily in that order.
The additional information about them is as follows:
(I) The amount spent on flight ticket booking by Chintu, who was selected for IIM-K, was higher than that by Santu as well as by the friend who was selected for IIM-U but less than that by the friend who has opted Business policy.
(II) The friends who had opted for sales & marketing and for IT had spent the maximum and the minimum amount respectively for ticket booking.
(III) Mintu was not selected for IIM-T and the friend who was selected for IIM-T had opted Communication.
(IV) Pintu had spent Rs. 3800 and he had opted HR. The amount spent by Richa was equal to the sum of the amount spent by Bholu and the friend who was selected for IIM-L.
(V) The amount spent by Keshaw was less than that by the friend who had opted Operations and it is also known that the sum of amounts spent by these two friends was less than that by Neha, who was selected for IIM-S.
(VI) The friend who had spent the amount immediate less than that by the friend who had selected for IIM-L had opted Retail.
(VII) The positive difference between the amount spent by the friends who were selected for IIM-A and IIM-B respectively was the least among all other friends.

Q.49
The amount spent by Chintu was equal to the sum of the amount spent by which two friends?

1 **Bholu and Pintu**

2 **Pintu and Keshaw**

3 **Bholu and Keshaw**

4 **Pintu and Mintu**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

From the statement VII; we may conclude that the friends who had selected for IIM-A & IIM-B had spent Rs. 3800 & Rs. 3600 respectively.
From statement IV; We may conclude Pintu - 3800 - HR - IIM.A
From statement II; Sales & Marketing - Rs. 10800
IT - Rs. 3600
From statement IV; Richa might spend Rs. 8400 (3600 + 4800) or Rs. 9200 (3600 + 5600).
We can conclude that Bholu must spend Rs. 3600.
Let the amount spent by Richa be Rs. 8400.
Then, the amount spent by the friend who was selected for IIM-L was Rs. 4800. In this case; Rs. 3800 (just less than Rs. 4800) was spent by the friend who had opted HR. This contradicts statement VI.
Now, we concluded that Richa had spent Rs. 9200.
Also, the friend who selected for IIM-L must spend Rs. 5600 and the friend who had opted Retail must spend Rs. 4800.
Now; we have following information :-

Bholu	-	3600	-	IIM(B)	-	IT
Pintu	-	3800	-	IIM(A)	-	HR
Richa	-	9200	-	-	-	-
-	-	5600	-	IIM(L)	-	-
-	-	4800	-	-	-	Retail

From statement V; only possibility is 4800 + 5600 < 10800
Now; we can conclude that Neha had spent Rs. 10800.
Also; Keshaw had spent Rs. 4800 and the friend who opted operations had spent Rs. 5600.
From statement I; we may conclude that Chintu had spent Rs. 8400, Santu had spent Rs. 5600 and the friend who was selected for IIM-K had spent 8400. We also concluded that the friend who opted Business policy had spent Rs. 9600.
Further analysis leads to the following table:-

Friend	Amount Spent (in Rs.)	College	Stream
Bholu	3600	IIM-B	IT
Pintu	3800	IIM-A	HR
Keshaw	4800	IIM-U	Retail
Santu	5600	IIM-L	Operations
Chintu	8400	IIM-K	Finance
Richa	9200	IIM-T	Communication
Mintu	9600	IIM-C	Business policy
Neha	10800	IIM-S	Sales & Marketing

Rs. 8400 = Rs. 3600 + Rs. 4800 i.e. Bholu & Keshaw.

FeedBack

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

Eight friends – Bholu, Keshaw, Neha, Richa, Mintu, Pintu, Chintu and Santu – were MBA aspirants. They were selected for eight different IIMs – A, B, C, K, L, S, T, U – in any order and opted to pursue degree in eight streams – HR, Finance, Sales & Marketing, Operations, IT, Business policy, Retails, and Communication – in any order. To reach their respective IIMs, they booked flight tickets having cost of Rs. 3800, Rs. 5600, Rs. 10800, Rs. 4800, Rs. 3600, Rs. 9200, Rs. 8400 and Rs. 9600, not necessarily in that order.
The additional information about them is as follows:
(I) The amount spent on flight ticket booking by Chintu, who was selected for IIM-K, was higher than that by Santu as well as by the friend who was selected for IIM-U but less than that by the friend who has opted Business policy.
(II) The friends who had opted for sales & marketing and for IT had spent the maximum and the minimum amount respectively for ticket booking.
(III) Mintu was not selected for IIM-T and the friend who was selected for IIM-T had opted Communication.
(IV) Pintu had spent Rs. 3800 and he had opted HR. The amount spent by Richa was equal to the sum of the amount spent by Bholu and the friend who was selected for IIM-L.
(V) The amount spent by Keshaw was less than that by the friend who had opted Operations and it is also known that the sum of amounts spent by these two friends was less than that by Neha, who was selected for IIM-S.
(VI) The friend who had spent the amount immediate less than that by the friend who had selected for IIM-L had opted Retail.
(VII) The positive difference between the amount spent by the friends who were selected for IIM-A and IIM-B respectively was the least among all other friends.

Q.50
Who had spent second highest amount on flight booking?

1 **Neha**

2 **Keshaw**

3 **Richa**

4 **Mintu**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

From the statement VII; we may conclude that the friends who had selected for IIM-A & IIM-B had spent Rs. 3800 & Rs. 3600 respectively.
From statement IV; We may conclude Pintu - 3800 - HR - IIM.A
From statement II; Sales & Marketing - Rs. 10800
IT - Rs. 3600
From statement IV; Richa might spend Rs. 8400 (3600 + 4800) or Rs. 9200 (3600 + 5600).
We can conclude that Bholu must spend Rs. 3600.
Let the amount spent by Richa be Rs. 8400.
Then, the amount spent by the friend who was selected for IIM-L was Rs. 4800. In this case; Rs. 3800 (just less than Rs. 4800) was spent by the friend who had opted HR. This contradicts statement VI.
Now, we concluded that Richa had spent Rs. 9200.
Also, the friend who selected for IIM-L must spend Rs. 5600 and the friend who had opted Retail must spend Rs. 4800.
Now; we have following information :-

Bholu	-	3600	-	IIM(B)	-	IT
Pintu	-	3800	-	IIM(A)	-	HR
Richa	-	9200	-	-	-	-
-	-	5600	-	IIM(L)	-	-
-	-	4800	-	-	-	Retail

From statement V; only possibility is 4800 + 5600 < 10800
Now; we can conclude that Neha had spent Rs. 10800.
Also; Keshaw had spent Rs. 4800 and the friend who opted operations had spent Rs. 5600.
From statement I; we may conclude that Chintu had spent Rs. 8400, Santu had spent Rs. 5600 and the friend who was selected for IIM-K had spent 8400. We also concluded that the friend who opted Business policy had spent Rs. 9600.
Further analysis leads to the following table:-

Friend	Amount Spent (in Rs.)	College	Stream
Bholu	3600	IIM-B	IT
Pintu	3800	IIM-A	HR
Keshaw	4800	IIM-U	Retail
Santu	5600	IIM-L	Operations
Chintu	8400	IIM-K	Finance
Richa	9200	IIM-T	Communication
Mintu	9600	IIM-C	Business policy
Neha	10800	IIM-S	Sales & Marketing

Mintu had spent Rs. 9600 i.e. Second highest amount.

FeedBack

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

Amit and Sanjeev were sitting idle at their home so they decided to play a game. Initially, Amit has to speak a number from 1 to 9. Now Sanjeev has to speak an integer from 1.5 times to 3 times of the number spoken by Amit. After that Amit will speak an integer from 1.5 times to 3 times of the number spoken by Sanjeev. They will continue doing this until one of them speaks a number above 10000 and that person will be a loser. Assume that both of them are playing intelligently.

Q.51
What is the probability that Amit will win this game?

1 **1/3**

2 **2/9**

3 **5/9**

4 **1**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let us say a person speaks 'a'. Now the 2nd person can speak anything from '1.5a' to '3a'. The first person now has a range of numbers to speak. In case of 1.5a, he can speak 2.25a to 4.5a whereas in case of 3a, he can speak 4.5a to 9a. Hence, after speaking 'a' in his turn, the first person can surely speak 4.5a in his next turn irrespective of what the 2nd person speaks. Now, as per the question, whoever speaks 10000 or more, loses the game. So, to win the game, one must speak a number from the range $\frac{10000}{1.5}$ to 9999 i.e., 6667 to 9999 so that the other person loses for sure.

Now as per the logic explained above, one can surely speak 4.5 times of the number irrespective of what the other person speaks. Hence, to speak a number in the range of 6667 to 9999, we must speak a number in the range $\frac{6667}{4.5}$ to $\frac{9999}{4.5}$ i.e., 1482 to 2222 in the turn before that.
Similarly, to win the game, the person must speak a number from the following ranges in the turns before these:
Last turn : 6667 to 9999
2nd last turn : 1482 to 2222
3rd last turn : 330 to 493
4th last turn : 74 to 109
5th last turn : 17 to 24
6th last turn : 4 to 5
7th last turn : 1

Amit will surely win if he speaks 1, 4 or 5 and as he is playing intelligently, so his probability to win becomes 1.

FeedBack

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

Amit and Sanjeev were sitting idle at their home so they decided to play a game. Initially, Amit has to speak a number from 1 to 9. Now Sanjeev has to speak an integer from 1.5 times to 3 times of the number spoken by Amit. After that Amit will speak an integer from 1.5 times to 3 times of the number spoken by Sanjeev. They will continue doing this until one of them speaks a number above 10000 and that person will be a loser. Assume that both of them are playing intelligently.

Q.52
If in his second term, Amit speaks 20, then what should Sanjeev speak next?

1 **32**

2 **38**

3 **40**

4 **He cannot win**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let us say a person speaks 'a'. Now the 2nd person can speak anything from '1.5a' to '3a'. The first person now has a range of numbers to speak. In case of 1.5a, he can speak 2.25a to 4.5a whereas in case of 3a, he can speak 4.5a to 9a. Hence, after speaking 'a' in his turn, the first person can surely speak 4.5a in his next turn irrespective of what the 2nd person speaks.
Now, as per the question, whoever speaks 10000 or more, loses the game. So, to win the game, one must speak a number from the range $\frac{10000}{1.5}$ to 9999 i.e., 6667 to 9999 so that the other person loses for sure.
Now as per the logic explained above, one can surely speak 4.5 times of the number irrespective of what the other person speaks. Hence, to speak a number in the range of 6667 to 9999, we must speak a number in the range $\frac{6667}{4.5}$ to $\frac{9999}{4.5}$ i.e., 1482 to 2222 in the turn before that.
Similarly, to win the game, the person must speak a number from the following ranges in the turns before these:
Last turn : 6667 to 9999
2nd last turn : 1482 to 2222
3rd last turn : 330 to 493
4th last turn : 74 to 109
5th last turn : 17 to 24
6th last turn : 4 to 5
7th last turn : 1

As Amit has spoken a number in the range 17 to 24, he will surely win and Sanjeev will surely lose.

FeedBack

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

Amit and Sanjeev were sitting idle at their home so they decided to play a game. Initially, Amit has to speak a number from 1 to 9. Now Sanjeev has to speak an integer from 1.5 times to 3 times of the number spoken by Amit. After that Amit will speak an integer from 1.5 times to 3 times of the number spoken by Sanjeev. They will continue doing this until one of them speaks a number above 10000 and that person will be a loser. Assume that both of them are playing intelligently.

Q.53
If Sanjeev speaks 50 in his second turn, then how many numbers can Amit speak such that he always wins?

Solution:
Correct Answer : 35

Bookmark

Answer key/Solution

Let us say a person speaks 'a'. Now the 2nd person can speak anything from '1.5a' to '3a'. The first person now has a range of numbers to speak. In case of 1.5a, he can speak 2.25a to 4.5a whereas in case of 3a, he can speak 4.5a to 9a. Hence, after speaking 'a' in his turn, the first person can surely speak 4.5a in his next turn irrespective of what the 2nd person speaks. Now, as per the question, whoever speaks 10000 or more, loses the game. So, to win the game, one must speak a number from the range $\frac{10000}{1.5}$ to 9999 i.e., 6667 to 9999 so that the other person loses for sure.

Now as per the logic explained above, one can surely speak 4.5 times of the number irrespective of what the other person speaks. Hence, to speak a number in the range of 6667 to 9999, we must speak a number in the range $\frac{6667}{4.5}$ to $\frac{9999}{4.5}$ i.e., 1482 to 2222 in the turn before that.

Similarly, to win the game, the person must speak a number from the following ranges in the turns before these:
Last turn : 6667 to 9999
2nd last turn : 1482 to 2222
3rd last turn : 330 to 493
4th last turn : 74 to 109
5th last turn : 17 to 24
6th last turn : 4 to 5
7th last turn : 1

If Sanjeev speaks 50, then Amit must speak from 1.5 times to 3 times of 50 i.e., from 75 to 150 but in order to win, he must speak in the range of 74 to 109. So he can speak any number from 75 to 109 i.e., 35.

FeedBack

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

Amit and Sanjeev were sitting idle at their home so they decided to play a game. Initially, Amit has to speak a number from 1 to 9. Now Sanjeev has to speak an integer from 1.5 times to 3 times of the number spoken by Amit. After that Amit will speak an integer from 1.5 times to 3 times of the number spoken by Sanjeev. They will continue doing this until one of them speaks a number above 10000 and that person will be a loser. Assume that both of them are playing intelligently.

Q.54
If the person speaking 10000 or more wins, then how many numbers can Amit speak first in order to win?

1 **1**

2 **2**

3 **3**

4 **4**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Let us say a person speaks 'a'. Now the 2nd person can speak anything from '1.5a' to '3a'. The first person now has a range of numbers to speak. In case of 1.5a, he can speak 2.25a to 4.5a whereas in case of 3a, he can speak 4.5a to 9a. Hence, after speaking 'a' in his turn, the first person can surely speak 4.5a in his next turn irrespective of what the 2nd person speaks.
Now, as per the question, whoever speaks 10000 or more, loses the game. So, to win the game, one must speak a number from the range $\frac{10000}{1.5}$ to 9999 i.e., 6667 to 9999 so that the other person loses for sure.
Now as per the logic explained above, one can surely speak 4.5 times of the number irrespective of what the other person speaks. Hence, to speak a number in the range of 6667 to 9999, we must speak a number in the range $\frac{6667}{4.5}$ to $\frac{9999}{4.5}$ i.e., 1482 to 2222 in the turn before that.
Similarly, to win the game, the person must speak a number from the following ranges in the turns before these:
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4th last turn : 74 to 109
5th last turn : 17 to 24
6th last turn : 4 to 5
7th last turn : 1

Going like in solution
Last turn : 10000 or more
2nd last turn : 2223 to 3333 (above 3333 will be multiplied by 3 by the other player and he will win)
3rd last turn : 494 to 740
4th last turn : 110 to 164
5th last turn : 25 to 36
6th last turn : 6 to 8
7th last turn : 1
Hence, he must speak 6, 7, 8 or 1.

FeedBack

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

Janhvi, new HR of CL, joined recently as an HR Executive and one her first day in the office she met HODs of marketing department, finance department, operations department and HR department. She came to know that every employee in CL is assigned a four digit employee code (E-code) and she tried to remember the employee code of all the HODs and tried to write that information in such a way that no ordinary person would be able to decipher. Deepshikha, her friend who was preparing for CAT, tried to find out the code of each person from the information Janhvi wrote on the paper.
Janhvi has also mentioned the following clues to Deepshikha in the following format:
1. The digits used in writing all the four codes are 0, 1, 2, 3, 5, 6, 7, 8 which appeared for 2, 4, 3, 1, 1, 1, 2 and 2 times respectively.
2. All the digits used in each code are distinct and all the E-codes ends with an even number.
3. The E-code of head of finance department is 4 times the E-code of head of marketing department.
4. One digit is common and appeared in all the four E-codes of HODs.
5. The E-code of head of HR is 1/5th of the E-code of the one of the other department head.
6. The E-codes of head of finance and head of marketing consists of the same four digits.
7. The absolute difference between the two numerically smaller E-codes is less than 500.

Q.55
What is the sum of the digits of E-code of head of marketing department?

1 **18**

2 **20**

3 **22**

4 **Cannot be determined**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

From the statement 1, we can conclude that 0, 1, 2, 7 and 8 has been used at least 2 times and from statement 6 we can conclude any four of these digits are used for the E-code of finance head and marketing head. From statement 3 we can conclude the E-code of finance head is 4 times of marketing head. So if abcd × 4 = (abcd in some order)

E-code of head of HR is $\frac{1}{5}$th of the E-code of one of the other department and all the E-codes are even numbers. So, E-code of that other department must end with 0.
So the digits must be used in the E-codes of marketing and HR Head must be 1, 2, 7, 8. So, from statement 3, E-code must start with either 1 or 2 for marketing Head.
Further from this we get 2 possibilities as 1782 × 4 = 7128 and 2178 × 4 = 8712.
So the left over digits are 0, 0, 1, 1, 2, 3, 5, 6. From statement 7 we can conclude that 2178 is not possible.
As in this case, the absolute difference between the two numerically smaller E-codes comes out to be greater than 500. So this case is not possible.
So, only possibility left over is 1782 for marketing Head and 7128 for finance head and the only possible E-code left for HR Head is 1302 and for operations head is 6510.

E-code of Marketing department is 1782. Sum of digits = 1 + 7 + 8 + 2 = 18

FeedBack

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1. The digits used in writing all the four codes are 0, 1, 2, 3, 5, 6, 7, 8 which appeared for 2, 4, 3, 1, 1, 1, 2 and 2 times respectively.
2. All the digits used in each code are distinct and all the E-codes ends with an even number.
3. The E-code of head of finance department is 4 times the E-code of head of marketing department.
4. One digit is common and appeared in all the four E-codes of HODs.
5. The E-code of head of HR is 1/5th of the E-code of the one of the other department head.
6. The E-codes of head of finance and head of marketing consists of the same four digits.
7. The absolute difference between the two numerically smaller E-codes is less than 500.

Q.56
How many E-codes Deepshikha would have been able to identify correctly?

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

From the statement 1, we can conclude that 0, 1, 2, 7 and 8 has been used at least 2 times and from statement 6 we can conclude any four of these digits are used for the E-code of finance head and marketing head. From statement 3 we can conclude the E-code of finance head is 4 times of marketing head. So if abcd × 4 = (abcd in some order)

E-code of head of HR is $\frac{1}{5}$th of the E-code of one of the other department and all the E-codes are even numbers. So, E-code of that other department must end with 0.
So the digits must be used in the E-codes of marketing and HR Head must be 1, 2, 7, 8. So, from statement 3, E-code must start with either 1 or 2 for marketing Head.
Further from this we get 2 possibilities as 1782 × 4 = 7128 and 2178 × 4 = 8712.
So the left over digits are 0, 0, 1, 1, 2, 3, 5, 6. From statement 7 we can conclude that 2178 is not possible.
As in this case, the absolute difference between the two numerically smaller E-codes comes out to be greater than 500. So this case is not possible.
So, only possibility left over is 1782 for marketing Head and 7128 for finance head and the only possible E-code left for HR Head is 1302 and for operations head is 6510.

All the 4 E-codes Deepshikha identified correctly. So, answer is 4.

FeedBack

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

Janhvi, new HR of CL, joined recently as an HR Executive and one her first day in the office she met HODs of marketing department, finance department, operations department and HR department. She came to know that every employee in CL is assigned a four digit employee code (E-code) and she tried to remember the employee code of all the HODs and tried to write that information in such a way that no ordinary person would be able to decipher. Deepshikha, her friend who was preparing for CAT, tried to find out the code of each person from the information Janhvi wrote on the paper.
Janhvi has also mentioned the following clues to Deepshikha in the following format:
1. The digits used in writing all the four codes are 0, 1, 2, 3, 5, 6, 7, 8 which appeared for 2, 4, 3, 1, 1, 1, 2 and 2 times respectively.
2. All the digits used in each code are distinct and all the E-codes ends with an even number.
3. The E-code of head of finance department is 4 times the E-code of head of marketing department.
4. One digit is common and appeared in all the four E-codes of HODs.
5. The E-code of head of HR is 1/5th of the E-code of the one of the other department head.
6. The E-codes of head of finance and head of marketing consists of the same four digits.
7. The absolute difference between the two numerically smaller E-codes is less than 500.

Q.57
What is the absolute difference between the code of finance head and operations head?

1 **2202**

2 **618**

3 **1048**

4 **Cannot be determined**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

From the statement 1, we can conclude that 0, 1, 2, 7 and 8 has been used at least 2 times and from statement 6 we can conclude any four of these digits are used for the E-code of finance head and marketing head. From statement 3 we can conclude the E-code of finance head is 4 times of marketing head. So if abcd × 4 = (abcd in some order)

E-code of head of HR is $\frac{1}{5}$th of the E-code of one of the other department and all the E-codes are even numbers. So, E-code of that other department must end with 0.
So the digits must be used in the E-codes of marketing and HR Head must be 1, 2, 7, 8. So, from statement 3, E-code must start with either 1 or 2 for marketing Head.
Further from this we get 2 possibilities as 1782 × 4 = 7128 and 2178 × 4 = 8712.
So the left over digits are 0, 0, 1, 1, 2, 3, 5, 6. From statement 7 we can conclude that 2178 is not possible.
As in this case, the absolute difference between the two numerically smaller E-codes comes out to be greater than 500. So this case is not possible.
So, only possibility left over is 1782 for marketing Head and 7128 for finance head and the only possible E-code left for HR Head is 1302 and for operations head is 6510.

The absolute difference between the code of finance head and operations head is equal to 7128 – 6510 = 618.

FeedBack

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

Janhvi, new HR of CL, joined recently as an HR Executive and one her first day in the office she met HODs of marketing department, finance department, operations department and HR department. She came to know that every employee in CL is assigned a four digit employee code (E-code) and she tried to remember the employee code of all the HODs and tried to write that information in such a way that no ordinary person would be able to decipher. Deepshikha, her friend who was preparing for CAT, tried to find out the code of each person from the information Janhvi wrote on the paper.
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1. The digits used in writing all the four codes are 0, 1, 2, 3, 5, 6, 7, 8 which appeared for 2, 4, 3, 1, 1, 1, 2 and 2 times respectively.
2. All the digits used in each code are distinct and all the E-codes ends with an even number.
3. The E-code of head of finance department is 4 times the E-code of head of marketing department.
4. One digit is common and appeared in all the four E-codes of HODs.
5. The E-code of head of HR is 1/5th of the E-code of the one of the other department head.
6. The E-codes of head of finance and head of marketing consists of the same four digits.
7. The absolute difference between the two numerically smaller E-codes is less than 500.

Q.58

What is the E-code of operations head?

Solution:

Correct Answer : 6510

Bookmark

Answer key/Solution

From the statement 1, we can conclude that 0, 1, 2, 7 and 8 has been used at least 2 times and from statement 6 we can conclude any four of these digits are used for the E-code of finance head and marketing head. From statement 3 we can conclude the E-code of finance head is 4 times of marketing head. So if abcd × 4 = (abcd in some order)

E-code of head of HR is $\frac{1}{5}$th of the E-code of one of the other department and all the E-codes are even numbers. So, E-code of that other department must end with 0.

So the digits must be used in the E-codes of marketing and HR Head must be 1, 2, 7, 8. So, from statement 3, E-code must start with either 1 or 2 for marketing Head.

Further from this we get 2 possibilities as 1782 × 4 = 7128 and 2178 × 4 = 8712.

So the left over digits are 0, 0, 1, 1, 2, 3, 5, 6. From statement 7 we can conclude that 2178 is not possible.

As in this case, the absolute difference between the two numerically smaller E-codes comes out to be greater than 500. So this case is not possible.

So, only possibility left over is 1782 for marketing Head and 7128 for finance head and the only possible E-code left for HR Head is 1302 and for operations head is 6510.

The E-code of operations head is 6510.

FeedBack

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

A company provides services to its 100 clients each having each having a unique code from 1 to 100 respectively. At most 10 clients may give order to the company in a day and the company fulfill the orders in the sequence of their receival. The company works on only one order at any given point of time. The time taken by the company in order to complete an order given by the client with unique code 'n' is described as below:-

Time taken (in days) = $\text{Rem}\left[\frac{n}{N}\right]$ i.e., the remainder we get, on dividing 'n' by 'N', where, 'N' is the number of prime numbers less than or equal to 'n'.

For example, order given by client with code number '5' will be completed in $\text{Rem}\left[\frac{5}{3}\right]$ i.e. 2 days after the company starts to work on this order.

And, order given by client with code number '4' will be completed in $\text{Rem}\left[\frac{4}{2}\right]$ = 0 day i.e. on the same day on which the company starts to work on this order and this time may be neglected or treated as NIL.

[**Note:-** The company fulfills the order of client with code number '1' in 1 day after the company starts to work on this order.]

Q.59

If the employees of the company take rest of 1 day on completion of each order, then what could be the maximum time taken by the company to fulfill the orders received in a particular day? (Note:- Clients having successive unique code had ordered on that day.)

1 **192 days**

2 **199 days**

3 **201 days**

4 **203 days**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Client's code	Days taken in Completion	Code	Days	Code	Days	Code	Days
1	1	26	8	51	6	76	13
2	0	27	0	52	7	77	14
3	1	28	1	53	5	78	15
4	0	29	9	54	6	79	13
5	2	30	0	55	7	80	14
6	0	31	9	56	8	81	15
7	3	32	10	57	9	82	16
8	0	33	0	58	10	83	14
9	1	34	1	59	8	84	15
10	2	35	2	60	9	85	16
11	1	36	3	61	7	86	17
12	2	37	1	62	8	87	18
13	1	38	2	63	9	88	19
14	2	39	3	64	10	89	17
15	3	40	4	65	11	90	18
16	4	41	2	66	12	91	19
17	3	42	3	67	10	92	20
18	4	43	1	68	11	93	21
19	3	44	2	69	12	94	22
20	4	45	3	70	13	95	23
21	5	46	4	71	11	96	0
22	6	47	2	72	12	97	22
23	5	48	3	73	10	98	23
24	6	49	4	74	11	99	24
25	7	50	5	75	12	100	0

Since, the number of days should be maximum, it can be assumed that clients with code from 86 to 95 would have ordered on that particular day.
As, company works on only one order at a time, total time taken in completion = 17 + 18 + 19 + 17 + 18 + 19 + 20 + 21 + 22 + 23 = 194.
Total time taken would also include 9 days of rest.
∴ Total time = 194 + 9 = 203 days.

FeedBack

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

A company provides services to its 100 clients each having each having a unique code from 1 to 100 respectively. At most 10 clients may give order to the company in a day and the company fulfill the orders in the sequence of their receival. The company works on only one order at any given point of time. The time taken by the company in order to complete an order given by the client with unique code 'n' is described as below:-

Time taken (in days) = $\text{Rem}\left[\frac{n}{N}\right]$ i.e., the remainder we get, on dividing 'n' by 'N', where, 'N' is the number of prime numbers less than or equal to 'n'.

For example, order given by client with code number '5' will be completed in $\text{Rem}\left[\frac{5}{3}\right]$ i.e. 2 days after the company starts to work on this order.

And, order given by client with code number '4' will be completed in $\text{Rem}\left[\frac{4}{2}\right]$ = 0 day i.e. on the same day on which the company starts to work on this order and this time may be neglected or treated as NIL.
[**Note:-** The company fulfills the order of client with code number '1' in 1 day after the company starts to work on this order.]

Q.60

What could be the minimum possible number of days (greater than 10) in which the company fulfills the orders given by 9 clients in a day?

1 **11**

2 **13**

3 **14**

4 **17**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Client's code	Days taken in Completion	Code	Days	Code	Days	Code	Days
1	1	26	8	51	6	76	13
2	0	27	0	52	7	77	14
3	1	28	1	53	5	78	15
4	0	29	9	54	6	79	13
5	2	30	0	55	7	80	14
6	0	31	9	56	8	81	15
7	3	32	10	57	9	82	16
8	0	33	0	58	10	83	14
9	1	34	1	59	8	84	15
10	2	35	2	60	9	85	16
11	1	36	3	61	7	86	17
12	2	37	1	62	8	87	18
13	1	38	2	63	9	88	19
14	2	39	3	64	10	89	17
15	3	40	4	65	11	90	18
16	4	41	2	66	12	91	19
17	3	42	3	67	10	92	20
18	4	43	1	68	11	93	21
19	3	44	2	69	12	94	22
20	4	45	3	70	13	95	23
21	5	46	4	71	11	96	0
22	6	47	2	72	12	97	22
23	5	48	3	73	10	98	23
24	6	49	4	74	11	99	24
25	7	50	5	75	12	100	0

There are 8 clients whose order can be completed in 1 day each and there is 1 client whose order can be completed in 3 days. Therefore, the minimum possible number of days (greater than 10) in which the company fulfills the order given by 9 clients in a day could be 8 + 3 = 11.

FeedBack

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

A company provides services to its 100 clients each having each having a unique code from 1 to 100 respectively. At most 10 clients may give order to the company in a day and the company fulfill the orders in the sequence of their receival. The company works on only one order at any given point of time. The time taken by the company in order to complete an order given by the client with unique code 'n' is described as below:-

Time taken (in days) = $\text{Rem}\left[\frac{n}{N}\right]$ i.e., the remainder we get, on dividing 'n' by 'N', where, 'N' is the number of prime numbers less than or equal to 'n'.

For example, order given by client with code number '5' will be completed in $\text{Rem}\left[\frac{5}{3}\right]$ i.e. 2 days after the company starts to work on this order.

And, order given by client with code number '4' will be completed in $\text{Rem}\left[\frac{4}{2}\right]$ = 0 day i.e. on the same day on which the company starts to work on this order and this time may be neglected or treated as NIL.
[**Note:-** The company fulfills the order of client with code number '1' in 1 day after the company starts to work on this order.]

Q.61

The minimum possible time, in which the company fulfills the orders given by maximum number of clients in a day is

1 **4**

2 **3**

3 **2**

4 **1**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

Client's code	Days taken in Completion	Code	Days	Code	Days	Code	Days
1	1	26	8	51	6	76	13
2	0	27	0	52	7	77	14
3	1	28	1	53	5	78	15
4	0	29	9	54	6	79	13
5	2	30	0	55	7	80	14
6	0	31	9	56	8	81	15
7	3	32	10	57	9	82	16
8	0	33	0	58	10	83	14
9	1	34	1	59	8	84	15
10	2	35	2	60	9	85	16
11	1	36	3	61	7	86	17
12	2	37	1	62	8	87	18
13	1	38	2	63	9	88	19
14	2	39	3	64	10	89	17
15	3	40	4	65	11	90	18
16	4	41	2	66	12	91	19
17	3	42	3	67	10	92	20
18	4	43	1	68	11	93	21
19	3	44	2	69	12	94	22
20	4	45	3	70	13	95	23
21	5	46	4	71	11	96	0
22	6	47	2	72	12	97	22
23	5	48	3	73	10	98	23
24	6	49	4	74	11	99	24
25	7	50	5	75	12	100	0

There are 9 clients whose order can be completed in zero day.
Since the time must be minimum, we can assume that on that particular day 9 clients with zero day completion and one client with one day completion would have ordered.

FeedBack

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

A company provides services to its 100 clients each having each having a unique code from 1 to 100 respectively. At most 10 clients may give order to the company in a day and the company fulfill the orders in the sequence of their receival. The company works on only one order at any given point of time. The time taken by the company in order to complete an order given by the client with unique code 'n' is described as below:-

Time taken (in days) = $\text{Rem}\left[\frac{n}{N}\right]$ i.e., the remainder we get, on dividing 'n' by 'N', where, 'N' is the number of prime numbers less than or equal to 'n'.

For example, order given by client with code number '5' will be completed in $\text{Rem}\left[\frac{5}{3}\right]$ i.e. 2 days after the company starts to work on this order.

And, order given by client with code number '4' will be completed in $\text{Rem}\left[\frac{4}{2}\right]$ = 0 day i.e. on the same day on which the company starts to work on this order and this time may be neglected or treated as NIL.
[**Note:-** The company fulfills the order of client with code number '1' in 1 day after the company starts to work on this order.]

Q.62

In minimum how many days, all hundred orders can be completed by the company, if company works on more than one order at any point of time? (in this case, the number of days taken in order to fulfill any order is assumed to be unaltered.)

1 **24**

2 **425**

3 **387**

4 **37**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Client's code	Days taken in Completion	Code	Days	Code	Days	Code	Days
1	1	26	8	51	6	76	13
2	0	27	0	52	7	77	14
3	1	28	1	53	5	78	15
4	0	29	9	54	6	79	13
5	2	30	0	55	7	80	14
6	0	31	9	56	8	81	15
7	3	32	10	57	9	82	16
8	0	33	0	58	10	83	14
9	1	34	1	59	8	84	15
10	2	35	2	60	9	85	16
11	1	36	3	61	7	86	17
12	2	37	1	62	8	87	18
13	1	38	2	63	9	88	19
14	2	39	3	64	10	89	17
15	3	40	4	65	11	90	18
16	4	41	2	66	12	91	19
17	3	42	3	67	10	92	20
18	4	43	1	68	11	93	21
19	3	44	2	69	12	94	22
20	4	45	3	70	13	95	23
21	5	46	4	71	11	96	0
22	6	47	2	72	12	97	22
23	5	48	3	73	10	98	23
24	6	49	4	74	11	99	24
25	7	50	5	75	12	100	0

In this case company can work on any number of orders at a time.
Let clients with code 99 orders 24 days before the completion day and client with code 98 orders 23 days before the completion day. Similarly, we can see that in this pattern, all orders may be completed on a particular day within these 24 days.

FeedBack

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

Due to economics slowdown, eight investors - Anil, Bimal, Chetan, Dhiru, Eshan, Farukh, George and Hiten - withdrew some amounts from three different companies - ABC Pvt. Ltd., PQR Pvt. Ltd. and XYZ Pvt. Ltd. All eight investors had invested some amount in each of the these three companies. The withdrawn amount by any investors from any of these companies were Rs. 1 crore, 2 crores, 3 crores, ..., 7 crores and 8 crores, in any order. No investor withdrew same amount from two or more companies. No two or more investors had withdrawn same amount from a company.
Some additional information known to us was as follows:
(I) The amount withdrawn by Hiten from PQR Pvt. Ltd. was lower than that withdrawn by him from XYZ Pvt. Ltd. but higher than that from ABC Pvt. Ltd.
(II) Eshan withdrew Rs. 6 crores from ABC Pvt. Ltd. and Rs. 4 crores from XYZ Pvt. Ltd. Chetan withdrew Rs. 3 crores from PQR Pvt. Ltd.
(III) The total amount withdrawn from all three companies was equal for Bimal and Chetan. Dhiru withdrew Rs 1 crore and Rs. 2 crore from XYZ Pvt. Ltd. and PQR Pvt. Ltd. respectively.
(IV) The amount withdrawn by Bimal, Farukh and George from each of the three companies were consecutive amount (in Rs. crores) in increasing order. For example, if Bimal withdrew Rs. n crores from a company, then amount (in crores) withdrawn by Farukh and George from that company were Rs. (n + 1) and (n + 2) respectively.
(V) Anil had not withdrawn Rs. 4 crore from ABC Pvt. Ltd. The number of investor(s) who had withdrawn lower amount than that of Anil from ABC Pvt. Ltd. was equal to the number of investor(s) who had withdrawn higher amount than that of Anil from PQR Pvt. Ltd.

Q.63
Which of the following investors had definitely not withdrawn Rs. 8 crore from any company?

1 **Bimal**

2 **Anil**

3 **Dhiru**

4 **Chetan**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

First of all arrange the direct information, given in the question, in tabular form:

Amount Withdrawn (in crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	
3		Chetan	
4			Eshan
5			
6	Eshan		

6	Eshan		
7			
8			

From statement IV, Bimal, Farukh and George may withdraw Rs. 5 crores, Rs. 6 crores and Rs. 7 crores respectively or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from XYZ Pvt. Ltd.

CASE 1:

First let us assume the case where Bimal, Farukh and George had withdrawn Rs. 5 crores, Rs 6 crores and Rs. 7 crores from XYZ Pvt. Ltd.

In this case, Hiten must withdraw Rs. 8 crores from XYZ Pvt. Ltd. using statement I.

It is also given that "No investor withdrew same amount from two or more companies", So we may conclude that Chetan and Anil had withdrawn Rs. 2 crores and Rs. 3 crores respectively from XYZ Pvt. Ltd.

Now we have the following information:

Amount Withdrawn	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	Chetan
3		Chetan	Anil
4			Eshan
5			Bimal
6	Eshan		Farukh
7			George
8			Hiten

Now, we can observe that Bimal, Farukh and George had withdrawn either Rs. 4 crores, 5 crores and Rs. 6 crores or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores from PQR Pvt. Ltd.

Sub-case 1:

Assume Bimal, Farukh and George had withdrawn Rs. 4 crores, Rs. 5 crores and Rs. 6 crores from PQR Pvt. Ltd. In this case Hiten would have withdrawn Rs. 7 crores from PQR Pvt. Ltd. Anil and Eshan may withdrawn Rs. 1 crore or Rs. 8 crores from PQR Pvt. Ltd. in any order.

Now we should focus on ABC Pvt. Ltd.

If In PQR Pvt. Ltd., Anil had withdrawn Rs. 1 crore then he must have withdrawn Rs. 8 crores from ABC Pvt. Ltd., using statement V.

From statement III, total amount withdrawn by Chetan from PQR Pvt. Ltd. and XYZ Pvt. Ltd. together = 2 + 3 = 5 crores.

and for Bimal, this is equal to 5 + 4 = 9 crores.

As Bimal and Chetan had withdrawn equal amount from three companies together, therefore, only possible amount withdrawn by Bimal and Chetan from ABC Pvt. Ltd. was Rs. 1 crore and Rs. 5 crores respectively.

In this case, Hiten must withdraw Rs. 4 crores from ABC Pvt. Ltd.

Now we have the following table:

Following table is for the case when Anil had withdrawn Rs. 1 crore from PQR Pvt. Ltd.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Anil	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Bimal	Eshan
5	Chetan	Farukh	Bimal
6	Eshan	George	Farukh
7	Dhiru	Hiten	George
8	Anil	Eshan	Hiten

Now, assume the case where Anil had withdrawn Rs. 8 crores from PQR Pvt. Ltd.

In that table to identify the places of investors, statement III has been used.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Anil	Eshan	Dhiru
2	Hiten	Dhiru	Chetan
3	Bimal	Chetan	Anil
4	Farukh	Bimal	Eshan
5	George	Farukh	Bimal
6	Eshan	George	Farukh
7	Chetan	Hiten	George

8	Dhiru	Anil	Hiten

Sub-case-2:

When Bimal, Farukh and George had withdrawn Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from PQR Pvt. Ltd. So, consider this case:-

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Eshan	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Chetan	Farukh	George
8	Dhiru	George	Hiten

and another possibility is as below;

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Hiten	Eshan	Dhiru
2	Bimal	Dhiru	Chetan
3	Farukh	Chetan	Anil
4	George	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Dhiru	Farukh	George
8	Chetan	George	Hiten

In above case, it can be seen that there is no possible case if Hiten withdraws Rs. 4 crores from PQR Pvt. Ltd..

CASE - 2:

No case will satisfy all conditions when Bimal withdraws Rs. 6 crores from XYZ Pvt. Ltd.

From all the cases written above, Bimal had not withdrawn Rs. 8 crores from any company.

FeedBack

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

Due to economics slowdown, eight investors - Anil, Bimal, Chetan, Dhiru, Eshan, Farukh, George and Hiten - withdrew some amounts from three different companies - ABC Pvt. Ltd., PQR Pvt. Ltd. and XYZ Pvt. Ltd. All eight investors had invested some amount in each of the these three companies. The withdrawn amount by any investors from any of these companies were Rs. 1 crore, 2 crores, 3 crores, ..., 7 crores and 8 crores, in any order. No investor withdrew same amount from two or more companies. No two or more investors had withdrawn same amount from a company.
Some additional information known to us was as follows:
(I) The amount withdrawn by Hiten from PQR Pvt. Ltd. was lower than that withdrawn by him from XYZ Pvt. Ltd. but higher than that from ABC Pvt. Ltd.
(II) Eshan withdrew Rs. 6 crores from ABC Pvt. Ltd. and Rs. 4 crores from XYZ Pvt. Ltd. Chetan withdrew Rs. 3 crores from PQR Pvt. Ltd.
(III) The total amount withdrawn from all three companies was equal for Bimal and Chetan. Dhiru withdrew Rs 1 crore and Rs. 2 crore from XYZ Pvt. Ltd. and PQR Pvt. Ltd. respectively.
(IV) The amount withdrawn by Bimal, Farukh and George from each of the three companies were consecutive amount (in Rs. crores) in increasing order. For example, if Bimal withdrew Rs. n crores from a company, then amount (in crores) withdrawn by Farukh and George from that company were Rs. (n + 1) and (n + 2) respectively.
(V) Anil had not withdrawn Rs. 4 crore from ABC Pvt. Ltd. The number of investor(s) who had withdrawn lower amount than that of Anil from ABC Pvt. Ltd. was equal to the number of investor(s) who had withdrawn higher amount than that of Anil from PQR Pvt. Ltd.

Q.64
The maximum amount withdrawn by an investor from all three companies taken together may be equal to

1 **Rs. 19 crore**

2 **Rs. 20 crore**

3 **Rs. 21 crore**

4 **Rs. 18 crore**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

First of all arrange the direct information, given in the question, in tabular form:

Amount Withdrawn (in crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	
3		Chetan	
4			Eshan

5			
6	Eshan		
7			
8			

From statement IV, Bimal, Farukh and George may withdraw Rs. 5 crores, Rs. 6 crores and Rs. 7 crores respectively or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from XYZ Pvt. Ltd.

CASE 1:

First let us assume the case where Bimal, Farukh and George had withdrawn Rs. 5 crores, Rs 6 crores and Rs. 7 crores from XYZ Pvt. Ltd.

In this case, Hiten must withdraw Rs. 8 crores from XYZ Pvt. Ltd. using statement I.

It is also given that "No investor withdrew same amount from two or more companies", So we may conclude that Chetan and Anil had withdrawn Rs. 2 crores and Rs. 3 crores respectively from XYZ Pvt. Ltd.

Now we have the following information:

Amount Withdrawn	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	Chetan
3		Chetan	Anil
4			Eshan
5			Bimal
6	Eshan		Farukh
7			George
8			Hiten

Now, we can observe that Bimal, Farukh and George had withdrawn either Rs. 4 crores, 5 crores and Rs. 6 crores or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores from PQR Pvt. Ltd.

Sub-case 1:

Assume Bimal, Farukh and George had withdrawn Rs. 4 crores, Rs. 5 crores and Rs. 6 crores from PQR Pvt. Ltd. In this case Hiten would have withdrawn Rs. 7 crores from PQR Pvt. Ltd. Anil and Eshan may withdrawn Rs. 1 crore or Rs. 8 crores from PQR Pvt. Ltd. in any order.

Now we should focus on ABC Pvt. Ltd.

If In PQR Pvt. Ltd., Anil had withdrawn Rs. 1 crore then he must have withdrawn Rs. 8 crores from ABC Pvt. Ltd., using statement V.

From statement III, total amount withdrawn by Chetan from PQR Pvt. Ltd. and XYZ Pvt. Ltd. together = 2 + 3 = 5 crores.

and for Bimal, this is equal to 5 + 4 = 9 crores.

As Bimal and Chetan had withdrawn equal amount from three companies together, therefore, only possible amount withdrawn by Bimal and Chetan from ABC Pvt. Ltd. was Rs. 1 crore and Rs. 5 crores respectively.

In this case, Hiten must withdraw Rs. 4 crores from ABC Pvt. Ltd.

Now we have the following table:

Following table is for the case when Anil had withdrawn Rs. 1 crore from PQR Pvt. Ltd.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Anil	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Bimal	Eshan
5	Chetan	Farukh	Bimal
6	Eshan	George	Farukh
7	Dhiru	Hiten	George
8	Anil	Eshan	Hiten

Now, assume the case where Anil had withdrawn Rs. 8 crores from PQR Pvt. Ltd.

In that table to identify the places of investors, statement III has been used.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Anil	Eshan	Dhiru
2	Hiten	Dhiru	Chetan
3	Bimal	Chetan	Anil
4	Farukh	Bimal	Eshan
5	George	Farukh	Bimal
6	Eshan	George	Farukh

7	Chetan	Hiten	George
8	Dhiru	Anil	Hiten

Sub-case-2:
When Bimal, Farukh and George had withdrawn Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from PQR Pvt. Ltd. So, consider this case:-

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Eshan	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Chetan	Farukh	George
8	Dhiru	George	Hiten

and another possibility is as below;

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Hiten	Eshan	Dhiru
2	Bimal	Dhiru	Chetan
3	Farukh	Chetan	Anil
4	George	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Dhiru	Farukh	George
8	Chetan	George	Hiten

In above case, it can be seen that there is no possible case if Hiten withdraws Rs. 4 crores from PQR Pvt. Ltd..
CASE - 2:
No case will satisfy all conditions when Bimal withdraws Rs. 6 crores from XYZ Pvt. Ltd.

Additional information for questions 64 and 65:
The amount withdrawn (in crore) by each investor in each case is as tabulated below:

	Case I	Case II	Case III	Case IV
Anil	12	12	12	12
Bimal	10	12	12	13
Chetan	10	12	12	13
Dhiru	10	11	11	10
Eshan	18	11	11	11
Farukh	13	15	16	16
George	16	18	18	19
Hiten	19	17	17	14

Maximum amount withdrawn by a friend from all companies together may be Rs. 19 crores.

FeedBack

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

Due to economics slowdown, eight investors - Anil, Bimal, Chetan, Dhiru, Eshan, Farukh, George and Hiten - withdrew some amounts from three different companies - ABC Pvt. Ltd., PQR Pvt. Ltd. and XYZ Pvt. Ltd. All eight investors had invested some amount in each of the these three companies. The withdrawn amount by any investors from any of these companies were Rs. 1 crore, 2 crores, 3 crores, ..., 7 crores and 8 crores, in any order. No investor withdrew same amount from two or more companies. No two or more investors had withdrawn same amount from a company.
Some additional information known to us was as follows:
(I) The amount withdrawn by Hiten from PQR Pvt. Ltd. was lower than that withdrawn by him from XYZ Pvt. Ltd. but higher than that from ABC Pvt. Ltd.
(II) Eshan withdrew Rs. 6 crores from ABC Pvt. Ltd. and Rs. 4 crores from XYZ Pvt. Ltd. Chetan withdrew Rs. 3 crores from PQR Pvt. Ltd.
(III) The total amount withdrawn from all three companies was equal for Bimal and Chetan. Dhiru withdrew Rs 1 crore and Rs. 2 crore from XYZ Pvt. Ltd. and PQR Pvt. Ltd. respectively.
(IV) The amount withdrawn by Bimal, Farukh and George from each of the three companies were consecutive amount (in Rs. crores) in increasing order. For example, if Bimal withdrew Rs. n crores from a company, then amount (in crores) withdrawn by Farukh and George from that company were Rs. (n + 1) and (n + 2) respectively.
(V) Anil had not withdrawn Rs. 4 crore from ABC Pvt. Ltd. The number of investor(s) who had withdrawn lower amount than that of Anil from ABC Pvt. Ltd. was equal to the number of investor(s) who had withdrawn higher amount than that of Anil from PQR Pvt. Ltd.

Q.65
Which of the following investors cannot withdraw minimum possible amount from all the companies taken together?

1 **Bimal**

2 **Chetan**

3 **Dhiru**

4 **George**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

First of all arrange the direct information, given in the question, in tabular form:

Amount Withdrawn (in crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	
3		Chetan	
4			Eshan

5			
6	Eshan		
7			
8			

From statement IV, Bimal, Farukh and George may withdraw Rs. 5 crores, Rs. 6 crores and Rs. 7 crores respectively or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from XYZ Pvt. Ltd.

CASE 1:

First let us assume the case where Bimal, Farukh and George had withdrawn Rs. 5 crores, Rs 6 crores and Rs. 7 crores from XYZ Pvt. Ltd.

In this case, Hiten must withdraw Rs. 8 crores from XYZ Pvt. Ltd. using statement I.

It is also given that "No investor withdrew same amount from two or more companies", So we may conclude that Chetan and Anil had withdrawn Rs. 2 crores and Rs. 3 crores respectively from XYZ Pvt. Ltd.

Now we have the following information:

Amount Withdrawn	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	Chetan
3		Chetan	Anil
4			Eshan
5			Bimal
6	Eshan		Farukh
7			George
8			Hiten

Now, we can observe that Bimal, Farukh and George had withdrawn either Rs. 4 crores, 5 crores and Rs. 6 crores or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores from PQR Pvt. Ltd.

Sub-case 1:

Assume Bimal, Farukh and George had withdrawn Rs. 4 crores, Rs. 5 crores and Rs. 6 crores from PQR Pvt. Ltd. In this case Hiten would have withdrawn Rs. 7 crores from PQR Pvt. Ltd. Anil and Eshan may withdrawn Rs. 1 crore or Rs. 8 crores from PQR Pvt. Ltd. in any order.

Now we should focus on ABC Pvt. Ltd.

If In PQR Pvt. Ltd., Anil had withdrawn Rs. 1 crore then he must have withdrawn Rs. 8 crores from ABC Pvt. Ltd., using statement V.

From statement III, total amount withdrawn by Chetan from PQR Pvt. Ltd. and XYZ Pvt. Ltd. together = 2 + 3 = 5 crores.

and for Bimal, this is equal to 5 + 4 = 9 crores.

As Bimal and Chetan had withdrawn equal amount from three companies together, therefore, only possible amount withdrawn by Bimal and Chetan from ABC Pvt. Ltd. was Rs. 1 crore and Rs. 5 crores respectively.

In this case, Hiten must withdraw Rs. 4 crores from ABC Pvt. Ltd.

Now we have the following table:

Following table is for the case when Anil had withdrawn Rs. 1 crore from PQR Pvt. Ltd.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Anil	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Bimal	Eshan
5	Chetan	Farukh	Bimal
6	Eshan	George	Farukh
7	Dhiru	Hiten	George
8	Anil	Eshan	Hiten

Now, assume the case where Anil had withdrawn Rs. 8 crores from PQR Pvt. Ltd.

In that table to identify the places of investors, statement III has been used.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Anil	Eshan	Dhiru
2	Hiten	Dhiru	Chetan
3	Bimal	Chetan	Anil
4	Farukh	Bimal	Eshan
5	George	Farukh	Bimal
6	Eshan	George	Farukh

7	Chetan	Hiten	George
8	Dhiru	Anil	Hiten

Sub-case-2:
When Bimal, Farukh and George had withdrawn Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from PQR Pvt. Ltd. So, consider this case:-

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Eshan	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Chetan	Farukh	George
8	Dhiru	George	Hiten

and another possibility is as below;

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Hiten	Eshan	Dhiru
2	Bimal	Dhiru	Chetan
3	Farukh	Chetan	Anil
4	George	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Dhiru	Farukh	George
8	Chetan	George	Hiten

In above case, it can be seen that there is no possible case if Hiten withdraws Rs. 4 crores from PQR Pvt. Ltd..
CASE - 2:
No case will satisfy all conditions when Bimal withdraws Rs. 6 crores from XYZ Pvt. Ltd.

Additional information for questions 64 and 65:
The amount withdrawn (in crore) by each investor in each case is as tabulated below:

	Case I	Case II	Case III	Case IV
Anil	12	12	12	12
Bimal	10	12	12	13
Chetan	10	12	12	13
Dhiru	10	11	11	10
Eshan	18	11	11	11
Farukh	13	15	16	16
George	16	18	18	19
Hiten	19	17	17	14

George had not withdrawn minimum total amount in any case.

FeedBack

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

Due to economics slowdown, eight investors - Anil, Bimal, Chetan, Dhiru, Eshan, Farukh, George and Hiten - withdrew some amounts from three different companies - ABC Pvt. Ltd., PQR Pvt. Ltd. and XYZ Pvt. Ltd. All eight investors had invested some amount in each of the these three companies. The withdrawn amount by any investors from any of these companies were Rs. 1 crore, 2 crores, 3 crores, ..., 7 crores and 8 crores, in any order. No investor withdrew same amount from two or more companies. No two or more investors had withdrawn same amount from a company.
Some additional information known to us was as follows:
(I) The amount withdrawn by Hiten from PQR Pvt. Ltd. was lower than that withdrawn by him from XYZ Pvt. Ltd. but higher than that from ABC Pvt. Ltd.
(II) Eshan withdrew Rs. 6 crores from ABC Pvt. Ltd. and Rs. 4 crores from XYZ Pvt. Ltd. Chetan withdrew Rs. 3 crores from PQR Pvt. Ltd.
(III) The total amount withdrawn from all three companies was equal for Bimal and Chetan. Dhiru withdrew Rs 1 crore and Rs. 2 crore from XYZ Pvt. Ltd. and PQR Pvt. Ltd. respectively.
(IV) The amount withdrawn by Bimal, Farukh and George from each of the three companies were consecutive amount (in Rs. crores) in increasing order. For example, if Bimal withdrew Rs. n crores from a company, then amount (in crores) withdrawn by Farukh and George from that company were Rs. (n + 1) and (n + 2) respectively.
(V) Anil had not withdrawn Rs. 4 crore from ABC Pvt. Ltd. The number of investor(s) who had withdrawn lower amount than that of Anil from ABC Pvt. Ltd. was equal to the number of investor(s) who had withdrawn higher amount than that of Anil from PQR Pvt. Ltd.

Q.66
Who had withdrawn the maximum amount from XYZ Pvt. Ltd.?

1 **Anil**

2 **George**

3 **Chetan**

4 **Hiten**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

First of all arrange the direct information, given in the question, in tabular form:

Amount Withdrawn (in crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	
3		Chetan	
4			Eshan
5			
6	Eshan		

6	Eshan		
7			
8			

From statement IV, Bimal, Farukh and George may withdraw Rs. 5 crores, Rs. 6 crores and Rs. 7 crores respectively or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from XYZ Pvt. Ltd.

CASE 1:

First let us assume the case where Bimal, Farukh and George had withdrawn Rs. 5 crores, Rs 6 crores and Rs. 7 crores from XYZ Pvt. Ltd.

In this case, Hiten must withdraw Rs. 8 crores from XYZ Pvt. Ltd. using statement I.

It is also given that "No investor withdrew same amount from two or more companies", So we may conclude that Chetan and Anil had withdrawn Rs. 2 crores and Rs. 3 crores respectively from XYZ Pvt. Ltd.

Now we have the following information:

Amount Withdrawn	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1			Dhiru
2		Dhiru	Chetan
3		Chetan	Anil
4			Eshan
5			Bimal
6	Eshan		Farukh
7			George
8			Hiten

Now, we can observe that Bimal, Farukh and George had withdrawn either Rs. 4 crores, 5 crores and Rs. 6 crores or Rs. 6 crores, Rs. 7 crores and Rs. 8 crores from PQR Pvt. Ltd.

Sub-case 1:

Assume Bimal, Farukh and George had withdrawn Rs. 4 crores, Rs. 5 crores and Rs. 6 crores from PQR Pvt. Ltd. In this case Hiten would have withdrawn Rs. 7 crores from PQR Pvt. Ltd. Anil and Eshan may withdrawn Rs. 1 crore or Rs. 8 crores from PQR Pvt. Ltd. in any order.

Now we should focus on ABC Pvt. Ltd.

If In PQR Pvt. Ltd., Anil had withdrawn Rs. 1 crore then he must have withdrawn Rs. 8 crores from ABC Pvt. Ltd., using statement V.

From statement III, total amount withdrawn by Chetan from PQR Pvt. Ltd. and XYZ Pvt. Ltd. together = 2 + 3 = 5 crores.

and for Bimal, this is equal to 5 + 4 = 9 crores.

As Bimal and Chetan had withdrawn equal amount from three companies together, therefore, only possible amount withdrawn by Bimal and Chetan from ABC Pvt. Ltd. was Rs. 1 crore and Rs. 5 crores respectively.

In this case, Hiten must withdraw Rs. 4 crores from ABC Pvt. Ltd.

Now we have the following table:

Following table is for the case when Anil had withdrawn Rs. 1 crore from PQR Pvt. Ltd.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Anil	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Bimal	Eshan
5	Chetan	Farukh	Bimal
6	Eshan	George	Farukh
7	Dhiru	Hiten	George
8	Anil	Eshan	Hiten

Now, assume the case where Anil had withdrawn Rs. 8 crores from PQR Pvt. Ltd.

In that table to identify the places of investors, statement III has been used.

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Anil	Eshan	Dhiru
2	Hiten	Dhiru	Chetan
3	Bimal	Chetan	Anil
4	Farukh	Bimal	Eshan
5	George	Farukh	Bimal
6	Eshan	George	Farukh
7	Chetan	Hiten	George

8	Dhiru	Anil	Hiten

Sub-case-2:

When Bimal, Farukh and George had withdrawn Rs. 6 crores, Rs. 7 crores and Rs. 8 crores respectively from PQR Pvt. Ltd. So, consider this case:-

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Bimal	Eshan	Dhiru
2	Farukh	Dhiru	Chetan
3	George	Chetan	Anil
4	Hiten	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Chetan	Farukh	George
8	Dhiru	George	Hiten

and another possibility is as below;

Amount Withdrawn (in Rs. Crores)	ABC Pvt. Ltd.	PQR Pvt. Ltd.	XYZ Pvt. Ltd.
1	Hiten	Eshan	Dhiru
2	Bimal	Dhiru	Chetan
3	Farukh	Chetan	Anil
4	George	Anil	Eshan
5	Anil	Hiten	Bimal
6	Eshan	Bimal	Farukh
7	Dhiru	Farukh	George
8	Chetan	George	Hiten

In above case, it can be seen that there is no possible case if Hiten withdraws Rs. 4 crores from PQR Pvt. Ltd..

CASE - 2:

No case will satisfy all conditions when Bimal withdraws Rs. 6 crores from XYZ Pvt. Ltd.

Hiten had withdrawn the maximum amount i.e. Rs. 8 crores from XYZ Pvt. Ltd.

FeedBack

Sec 3

Q.67

In the country ABC, in the year 2015, the price of petrol increased by $33\frac{1}{3}\%$ in the first quarter, increased by 25% in the second quarter, fell by $16\frac{2}{3}\%$ in the third quarter and then again fell by x% in the fourth quarter. If the price of petrol at the end of the fourth quarter was the same as it was at the beginning of the first quarter, find the value of x.

Solution:
Correct Answer : 28

Bookmark

Answer key/Solution

Let, the price of petrol at the beginning of the first quarter in 2015 be P.
It is given that,

$$P \times \frac{4}{3} \times \frac{5}{4} \times \frac{5}{6} \times \left[1 - \frac{x}{100}\right] = P \Rightarrow \left[1 - \frac{x}{100}\right] = \frac{18}{25} = 1 - \frac{7}{25} \Rightarrow 1 - \frac{x}{100} = 1 - \frac{7}{25} \Rightarrow \frac{x}{100} = \frac{7}{25} \Rightarrow x = 28\%.$$

FeedBack

Q.68

Two men, A and B, are walking along a railway track, parallel to them. Both the men are walking at a speed of 5 m/sec, in the same direction. A train travelling on this track, at a speed of 108 km/h., in the same direction as the men, starts to cross A at 8 : 37 : 40 a.m. and crosses him completely at 8 : 37 : 50 a.m. If the train crosses B completely at 8 : 38 : 05 a.m., then find the distance (in meters) between A and B.

Solution:
Correct Answer : 375

Bookmark

Answer key/Solution

As A and B travel with equal speed, the time taken by the train to overtake A and B is the same. Also, as it takes 10 seconds to overtake A, the same time it will take to overtake B. So, the extra 15 seconds taken by it is to cover the distance between A and B.
But as A and B are also moving along with the train, relative speed = 30 – 5 = 25 m/s (108 kmph = 30 m/sec)
Hence, it travel 25 × 15 = 375 m, which is the distance between A and B.

FeedBack

Q.69

In a rectangle PQRS, points L and M lie on PQ such that PL = LM = MQ and K is the midpoint of SR. Also, PR intersects KL at N and KM at O. If the area of rectangle PQRS is 35, then find the area of triangle KNO.

1 **5/2**

2 **3/2**

3 **7/4**

4 **35/4**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

The area of triangle KLM = (1/6)(35) = 35/6.
Triangles PLN and RKN are similar, so 3/2 = KR/PL = KN/NL and KN/KL = 3/5. Triangles PMO and RKO are similar, so 3/4 = KR/PM = KO/OM and KO/KM = 3/7.
Since the areas of triangles that have a common altitude are proportional to their bases, the ratio of the area of triangle KNO to the area of triangle KNM = 3/7, and the ratio of the area of triangle KNM to that of triangle KLM = 3/5.
Therefore, the ratio of the area of triangle KNO to the area of triangle KLM = (3/5)(3/7) = 9/35
Hence, the area of triangle KNO = (9/35)(35/6) = 3/2.

FeedBack

Q.70

In a group of children, each child has a certain number of pencils from 1 to n. If the number of children who have i or more pencils is 2^{n-i}, for i = 1, 2, ..., n, and the total number of pencils is 511, find the maximum number of pencils with any child.

1 **5**

2 **9**

3 **12**

4 **15**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

The number of children with 1 or more pencils is $2^{(n-1)}$, this number can be considered to represent all the first pencils that the children have, (i.e. those children who have one or more pencils)
The number of children with 2 or more pencils is $2^{(n-2)}$. Similarly, this number can be considered to represent all the second pencils that the children have, (i.e. those children who have 2 or more pencils) and so on.
Finally, the number of children with n (nobody has more) pencils is $2^{(n-n)}$, thus the total of all pencils that the children have is
$2^{(n-1)} + 2^{(n-2)} + \ldots + 2^{(n-n)} = 2^n - 1 \Rightarrow 511 = 2^n - 1 \Rightarrow n = 9$
i.e., the maximum number of pencils with any child (n) is 9.

FeedBack

Q.71

If $\left(\sqrt[3]{\frac{16}{81}}\right)^{2x-5} = \left(\frac{27}{8}\right)^{x-11}$, then the value of x is equal to

Solution:
Correct Answer : 7

Bookmark

Answer key/Solution

$$\left(\sqrt[3]{\frac{16}{81}}\right)^{2x-5} = \left(\frac{27}{8}\right)^{x-11} \Rightarrow \left[\left(\frac{2}{3}\right)^{\frac{4}{3}}\right]^{2x-5} = \left[\left(\frac{3}{2}\right)^{3}\right]^{x-11} \Rightarrow \left[\frac{2}{3}\right]^{\frac{4}{3}(2x-5)} = \left[\frac{2}{3}\right]^{3(11-x)}$$

Comparing the power, we get

$\frac{4}{3}(2x-5) = 3(11-x) \Rightarrow 8x - 20 = 99 - 9x \Rightarrow x = 7.$

FeedBack

Q.72

To complete a certain piece of work, Z would take two-third times as long as X and Y together and Y would take thrice as long as X and Z together. The three men working together can complete the work in 15 days. How long would X alone take to complete a half of the same piece of work?

1 **25 days**

2 **60 days**

3 **100 days**

4 **50 days**

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

Two-third times of Z's daily work = (X + Y)'s daily work
⇒ 5/3 times of Z's daily work = (X + Y + Z)'s daily work = 1/15,
⇒ Z's daily work = 1/25
Three times of Y's daily work = (X + Z)'s daily work
⇒ Four times of Y's daily work = (X + Y + Z)'s daily work = 1/15
⇒ Y's daily work = = 1/60
Therefore, X's daily work = 1/15 – 1/60 – 1/25 = 3/300 = 1/100
Hence, X alone can complete a half of the same piece of work in 50 days.

FeedBack

Q.73

When Chinna asked his Math's teacher about the number of members in his family, the teacher told him that the answer to his question was the solution to the equation $\sqrt{2x^2 - x + 36} + \sqrt{2x^2 - x - 36}$ = 36. Find the number of members in the teacher's family.

1 **13**

2 **15**

3 **17**

4 **21**

Solution:

Correct Answer : 1

Bookmark

Answer key/Solution

It is given that, $\sqrt{2x^2 - x + 36} + \sqrt{2x^2 - x - 36} = 36$ ... (i)

Now multiplying both sides by $\sqrt{2x^2 - x + 36} - \sqrt{2x^2 - x - 36}$, we get

$\sqrt{2x^2 - x + 36} - \sqrt{2x^2 - x - 36} = 2$ ... (ii)

Adding equations (i) and (ii), we get

$2\sqrt{2x^2 - x + 36} = 38 \Rightarrow \sqrt{2x^2 - x + 36} = 19 \Rightarrow 2x^2 - x + 36 = 361$

$\Rightarrow 2x^2 - x - 325 = 0 \Rightarrow (x - 13)(2x + 25) = 0 \Rightarrow x = 13$ or $\frac{-25}{2}$

As the number of members in the family cannot be fraction, so it will be 13.

FeedBack

Q.74

In the figure given below, if AF : FD = 3 : 2 and BF : FE = 9 : 4, then the percentage by which the area of triangle BFD is more than that of triangle AFE is

Solution:

Correct Answer : 50

Bookmark

Answer key/Solution

As, BF : FE = 9 : 4

$$\frac{\text{Area of } \Delta AFB}{\text{Area of } \Delta AFE} = \frac{BF}{FE} = \frac{9}{4}$$

(As both the triangles have equal height)

Let $\Delta AFB = 9x$

$\therefore AFE = 4x$

Similarly, $\frac{AF}{FD} = \frac{\text{area of } \Delta AFB}{\text{area of } \Delta BFD} = \frac{3}{2} = \frac{9x}{6x}$

Therefore, the area of triangles BFD and AFE are 6x and 4x respectively.

Thus, the area of ΔBFD is more than ΔAFE BY 50%.

FeedBack

Q.75

In the beginning of the year 2014, a person lends some amount on compound interest. That amount became Rs. 27,000 and Rs. 60,750 in the beginning of the year 2016 and 2018. The amount invested will become more than Rs. 3 lakh for the first time in the beginning of which year?

1 **2021**

2 **2022**

3 **2023**

4 **Data insufficient**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Rs. 27,000 becomes Rs. 60,750 in 2 years let the rate of interest i.e., r%

$$\therefore 60750 = 27000\left(\frac{1+r}{100}\right)^2 \Rightarrow \left(\frac{1+r}{100}\right)^2 = \frac{6075}{2700} = \frac{243}{108} = \frac{9}{4} \Rightarrow \left(\frac{1+r}{100}\right) = \frac{3}{2}$$

Amount at the beginning of the year 2022 = $60750\left(\frac{1+r}{100}\right)^4 = 60750 \times \left(\frac{3}{2}\right)^4$ Rs. 307546.875

We can see that amount become more than Rs. 3 lakh for the first time in the beginning of the year 2022.

FeedBack

Q.76

If f(x) = $2x^2 - 1$ and g(x) = $x^2 - x + 1$, then for how many integral values of x is f(x – 1) = g(x + 1)?

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

It is given that,
$f(x - 1) = g(x + 1)$
$f(x - 1) = 2(x - 1)^2 - 1$
$g(x + 1) = (x + 1)^2 - (x + 1) + 1$
Hence, $2(x - 1)^2 - 1 = (x + 1)^2 - (x + 1) + 1$
$\Rightarrow 2(x^2 - 2x + 1) - 1 = x^2 + 2x + 1 - x - 1 + 1$
$\Rightarrow 2x^2 - 4x + 1 = x^2 + x + 1$
$\Rightarrow x(x - 5) = 0 \Rightarrow x = 0$ or $x = 5$
Therefore, for two integral values of x, the given criterion is satisfied.

FeedBack

Q.77

The ratio of milk and water in a mixture of the two is 3 : 1. First, the volume of the mixture is increased by 50% by adding water. Next, 25 liters of the mixture is replaced with water. If the final ratio of milk and water in the resultant mixture is 1 : 3, find the initial quantity of mixture present (in liters).

1 $16\frac{2}{3}$

2 $33\frac{1}{3}$

3 **40**

4 **80**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

Let the initial quantities of milk and water be 3x and x.

The volume of water added to increase the total volume by 50% will be $\frac{(3x+x)}{2} = 2x$

Now, quantities of milk and water will be 3x and (x + 2x). i.e., the ratio = 3x : 3x, i.e., 1 : 1. Hence, any volume of mixture removed will have equal quantities of milk and water. That is 25 liters of mixture that was removed must have had 12.5 liters each of milk and water.
Therefore, Ratio of final quantities after replacing 25 liters with water:

$= \frac{3x-12.5}{(3x-12.5)+25} = \frac{3x-12.5}{3x+12.5} = \frac{1}{3}$ (given) $\Rightarrow$ 3x = 25

Now initial quantities of mixture was 3x + x = 4x

Therefore, the required quantities $= \frac{25 \times 4}{3} = 33\frac{1}{3}$

FeedBack

Q.78

If a circle is inscribed in an isosceles trapezium, whose parallel sides measure 32 cm and 18 cm, such that the circle touches all four sides of the trapezium, find the radius (in cm) of the circle.

Solution:
Correct Answer : 12

Bookmark

Answer key/Solution

Let ABCD be the trapezium.
Where AB || CD and P and R are the midpoints of AB and CD respectively.
Now, BP = BQ = 9, CQ = CR = 16 (tangents from the same point)
$\Rightarrow$ BC = BQ + QC = 25

We drop a perpendicular from B to side CD which meets CD at T
Now, PB = RT = 9
$\Rightarrow$ TC = CR – RT = 16 – 9 = 7

In triangle BTC, BT $= \sqrt{BC^2 - TC^2} = \sqrt{25^2 - 7^2} = 24$ cm
Since, BT = PR = diameter of circle.

The diameter of circle = $\frac{BT}{2}$ = 12 cm.

FeedBack

Q.79

If 1, $\log_4(2^{5-x}+1)$ and $\log_2(2^x-1)$ are in A.P., then x is equal to

1 **$2+\log_2 3$**

2 **$4+\log_2 3$**

3 **$\log_2 4.81$**

4 **$\log_2 5.12$**

Solution:

Correct Answer : 3

Bookmark

Answer key/Solution

Since the numbers are in A.P.

$1+\log_2(2^x-1)=2\log_4(2^{5-x}+1)$

$\Rightarrow \log_2 2+\log_2(2^x-1)=\log_2(2^{5-x}+1)$

$\Rightarrow \log_2[(2)(2^x-1)]=\log_2(2^{5-x}+1)$

Equating the log with same base,

$\Rightarrow 2\times 2^x-2=2^{5-x}+1$

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

Let $2^x=t$

$2t-\frac{32}{t}-3=0$

$\Rightarrow 2t^2-3t-32=0$

$t=\frac{3\pm\sqrt{9+4\times2\times32}}{4}=\frac{3\pm\sqrt{265}}{4}$

$=4.81$ and -3.32 (But $t-1$ cannot be negative)

So, $t=4.81$

$2^x=4.81\Rightarrow x=\log_2 4.81$.

FeedBack

Q.80

A student bought 38 pens of two brands viz. Reynolds and Luxor to gift these pens to his teachers on Teacher's day. Due to some urgent work on that day, he could not attend the school, therefore, sold these pens i.e., Reynolds at 10% profit and Luxor at 10% loss. He had purchased Reynolds pens at Rs. 24 each and Luxor at Rs. 39 each. If he had spent Rs. 1,107, then his profit / loss % in this whole transaction was

1 **Profit of less than 1%**

2 **Loss of less than 1%**

3 **Profit of more than 1%**

4 **Loss of more than 1%**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Suppose the student had bought x and y number of pens of Reynolds and Luxor brand respectively.
According to the question;
24x + 39y = 1107
We can observe that x = 25 and y = 13 (for total pens = 38)

Selling price of pen of Reynolds = $24 \times \frac{110}{100} = \text{Rs.}26.40.$

Selling price of pen of Luxor = $39 \times \frac{90}{100} = \text{Rs.}35.10.$

Total selling price = (25 ×26.40) + (13 × 35.10) = 660 + 456.3 = Rs. 1116.30

Profit percentage = $\frac{1116.30 - 1107}{1107} \times 100 = \frac{9.30}{117} \times 100 = 0.84\% < 1\%.$

FeedBack

Q.81
How many ordered pairs (x, y), where x and y are distinct integers, are possible, such that the product of x and y is equal to the product of the numbers 3, 13, 23 and 33?

Solution:
Correct Answer : 48

Bookmark

Answer key/Solution

The problem basically involves denoting 3 × 13 × 23 × 33 as a product of two integers.
Now number of factors of $3^2 \times 11 \times 13^1 \times 23^1$ is (2 + 1)(1 + 1)(1 + 1)(1 + 1) i.e. 24
It can be expressed as ordered pair of two natural numbers in 24 ways
Now, considering the negative values, we will get another 24 solutions
For e.g.
$(1) \times (3^2 \times 11 \times 13^1 \times 23^1)$ can also be expressed as $(-1) \times (-3^2 \times 11 \times 13^1 \times 23^1)$
Hence a total of 24 + 24 = 48 such sets are possible.

FeedBack

Q.82
Integers p, q, r, and s, not necessarily distinct, are chosen independently and at random from 0 to 2015, inclusive. Find the probability that ps - qr is even.

1 **9/16**

2 **7/16**

3 **5/8**

4 ○ **3/8**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

The number ps - qr is even if and only if ps and qr are both odd or are both even. Each of ps and qr is odd if both the numbers p and s or q and r are odd, and even otherwise. Exactly half of the integers from 0 to 2015 are odd.

In case I, when ps and qr are odd, the probability $=\frac{1}{2}\times\frac{1}{2}\times\frac{1}{2}\times\frac{1}{2}=\frac{1}{2^4}$

In case I, when both ps and q are even then, p – s could be even - even, even - odd or odd - even. Similarly there are three possibility for q - r.

The probability is $=\frac{1}{2}\times\frac{1}{2}\times 3\times\frac{1}{2}\times\frac{1}{2}\times 3=\frac{9}{2^4}$.

Hence, the total probability that ps - qr is even = $\frac{1}{2^4}+\frac{9}{2^4}=\frac{5}{8}$

FeedBack

Q.83

If the lengths of the sides of a right-angled triangle are in G.P., the length of the hypotenuse is how many times the length of the shortest side?

1 ○ $\frac{3+\sqrt{5}}{2}$

2 ○ $\sqrt{\frac{1+\sqrt{5}}{2}}$

3 ○ $\frac{1+\sqrt{5}}{2}$

4 ○ $\frac{\sqrt{5}}{2}$

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let the sides of the triangle be a, ar, ar^2
Since it is a right angle triangle, $a^2 + (ar)^2 = (ar^2)^2$ (By Pythagoras Theorem)
$\Rightarrow 1 + r^2 = r^4 \Rightarrow r^4 - r^2 - 1 = 0$

$\Rightarrow r^2 = \frac{1 \pm \sqrt{5}}{2}$

Now, since $r^2 > 0$

$r^2 = \frac{\sqrt{5}+1}{2}$

Now, the ratio of the length of the hypotenuse to that of the shortest side is nothing but r^2 $\left(\text{i.e.,} \frac{ar^2}{a} = r^2\right)$

Hence required ratio = $\frac{1+\sqrt{5}}{2}$.

FeedBack

Q.84

A group of men decided to complete a job in 10 days. But, since 20 men dropped out at the end of each day, the job was completed in 15 days. How many men were there at the end of the 5th day?

Solution:
Correct Answer : 340

Bookmark

Answer key/Solution

Let there be x men in the beginning
According to the question,
$x \times 10 = x + (x - 20) + (x - 40) + \ldots + (x - 260) + (x - 280)$
$\Rightarrow 15x - 10x = 20 + 40 + 60 + 80 + \ldots + 240 + 260 + 280$

$\Rightarrow 5x = \left(\frac{20+280}{2}\right) \times 14 = 2100 \Rightarrow x = 420.$

Number of men at the end of 5th day = x – 80 = 420 – 80 = 340.

FeedBack

Q.85

Total 280 students took admission in batch 2019-21 in IIM-A. Out of these, 70% students joined sports committee, 80% joined cultural and 85% joined placement committee. If each student must join atleast one committee, then what can be the minimum number of students who joined exactly two committees?

1 **98**

2 **49**

3 **0**

4 **21**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Total surplus = (70 + 80 + 85) – 100 = 135%
Since, we have to minimize the number of students who joined exactly two committees, we must maximize the number of students who joined all three committees.

Surplus of 135% can be settled in inter section of all three committees i.e., $\frac{135}{2} = 67.5\%$.

[∵ if we increase the intersection of all three committees by 1% the total increase will be of 2% more due to counting thrice.]
∴ We can see that the minimum percentage of students who had joined exactly two committees will be zero.

FeedBack

Q.86

In the figure below, PA, PB and CD are tangents to the circle with center at O. Find the measure (in degrees) of ∠MON, if ∠APB = 50°.

Solution:
Correct Answer : 65

Bookmark

Answer key/Solution

We join AO and BO
Now, ∠AOB = 180° – 50° = 130° (Since, PADB is a quadrilateral)
As, tangents are drawn from the points M and N to the circle,
∴ ∠AMO = ∠NMO = a and ∠MNO = ∠BNO = b
∴ 2a + 2b + 90 + ∠AOB + 90 = 3(180) (Sum of all the interior angles in a pentagon)
2(a + b) + 130 = 360 ⇒ a + b = 115
In ΔMON, ∠MON = 180° – (a + b) = 180° – 115° = 65°.

FeedBack

Q.87

In a town with 12000 voters, two persons, A and B, contested for the position of the mayor, which ultimately was won by A. Had 50% of the voters who voted for B changed their minds and voted for A instead, then A would have won by a majority 1.5 times that with which he actually won. If A and B were the only contestant for the position, and all the eligible voters voted, how many votes were cast in favor of B?

Solution:
Correct Answer : 3000

Bookmark

Answer key/Solution

Let the numbers of votes polled in favor of B be denoted by 2k.
Let us tabulate the number of votes polled in favor of the two candidates and majority by which A won in the following two cases:

	A	B	Majority by which A wins
Case -1	12000 – 2k	2k	12000-4k
Case -2	12000-k	k	12000-2k

It is given that,
12000 – 2k = 1.5(12000-4k)
⇒ 24000 – 4k = 36000 – 12k
⇒ 8k = 12000 ⇒ k = 1500
Number of votes cast in favor of B = 2k = 3000.

FeedBack

Q.88

A vegetable seller sells potatoes and onions in packets of three sizes: A, B, and C. The numbers of A, B, and C packets in his stock are in the ratio 9 : 19 : 17 for potatoes and 8 : 13 : 14 for onions. If the total number of potato packets in his stock is the same as that of onion packets, then find the ratio of the number of size B potato packets and that of size C onion packets.

1 **19/18**

2 **9/7**

3 **1 : 1**

4 **Cannot be determined**

Solution:

Correct Answer : 1

Let the total number of potato packets be 45x and that of onion packets be 35y.

Then, $45x = 35y \Rightarrow \frac{x}{y} = \frac{7}{9}$

Hence, required ratio = $\frac{19x}{14y} = \frac{19}{14} \times \frac{7}{9} = \frac{19}{18}$.

FeedBack

Bookmark

Answer key/Solution

Q.89

In a particular number system 12, 20, 24 are in an arithmetic progression. What is the base of that number system?

1 **6**

2 **7**

3 **4**

4 **5**

Solution:

Correct Answer : 1

Let the base be x

$(20)_x - (12)_x = (24)_x - (20)_x$

$\Rightarrow 2x + 0 - [x + 2] = 2x + 4 - [2x + 0]$

Solving, x = 6. Thus, the base number of the system is 6.

FeedBack

Bookmark

Answer key/Solution

Q.90

In a triangle PQR, there are two points S and T on the sides PR and PQ such that QS and RT are the bisectors of angles PQR and PRQ respectively. If QS and RT intersect at U, and PQ, QR and PR measure 9 cm, 6 cm, and 5 cm respectively, find the ratio of QU and US.

1 **2 : 1**

2 **4 : 3**

3 **5 : 2**

4 **3 : 1**

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

By angle bisector theorem,

$\frac{PQ}{QR} = \frac{PS}{SR} \Rightarrow \frac{9}{6} = \frac{PS}{SR}$

$\therefore \frac{PS}{SR} = \frac{3}{2}$

It is given that PR = 5 cm.

$\Rightarrow$ SR = 2 cm and PS = 3 cm.

$\therefore \frac{QR}{RS} = \frac{QU}{US} \Rightarrow \frac{QU}{US} = \frac{6}{2} = \frac{3}{1}$ i.e., 3 : 1

FeedBack

Q.91

The average age of class X is 24 years and that of class Y is 28 years. If a student aged 'a' years is transferred from X to Y, the average age of only one class would not increase. Which of the following specifies the exact set of all the possible values of 'a'?

1 **a ≤ 24**

2 **a ≥ 28**

3 **a < 24 or a > 28**

4 **None of the above**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

The effect on the average ages of class X and class Y for different values of 'a' are below:
When a > 28,
average age of class X will Decrease, average age of class Y will increase
When a = 28
average age of class X will Decrease, average age of class Y will not change
When 24 < a < 28
average age of class X will Decrease, average age of class Y will decrease
When a = 24
average age of class X will not change, average age of class Y will decrease
When a < 24
average age of class X will increase, average age of class Y will decrease
Hence, average age of only one class would not increase, if a < 24or a > 28.

FeedBack

Q.92

If $x^2 - 3x + p = 0$ has exactly one root lying between – 1 and 2 (excluding – 1 and 2), then which of the following is true regarding the range of p?

1 **(–8, –5)**

2 **(–4, 2)**

3 **(3, 8)**

4 **(3, 11)**

Solution:
Correct Answer : 2

Bookmark

Answer key/Solution

As the quadratic equation has exactly one root between –1 and 2, the value of the quadratic expression $x^2 - 3x + p$ will have opposite signs at x = –1 and x = 2
Let $f(x) = x^2 - 3x + p$
$f(-1) = 1 + 3 + p$ and $f(2) = 4 - 6 + p$
$f(-1)f(2) < 0$
$(4 + p)(p - 2) < 0$
The critical points are p = –4 and p = 2
The range of p satisfying the inequality –4 < p < 2 i.e., (–4, 2).

FeedBack

Q.93

While adding N consecutive numbers starting from 1, Bulu, by mistake, added a number twice and arrived at a sum of 2000. Which number did he add twice?

1 **40**

2 **43**

3 **47**

4 **51**

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

$1 + 2 + 3 + \ldots + N = \frac{N(N+1)}{2}$

We see that, $\frac{N(N+1)}{2}$ is close to 2000.

$\frac{N(N+1)}{2} = 2000 \Rightarrow N(N + 1) = 4000 \Rightarrow N^2 + N = 4000$

A perfect square less than or equal to 4000 is $62^2 = 3844$

If, N = 62, $\frac{N(N+1)}{2} = 1953$

Say, Bulu added the number denoted by k twice

Therefore, his sum = $\frac{N(N+1)}{2} + k = 2000$

For, N = 62, we get k = 47.

FeedBack

Q.94

If one straight line named L passing through the points (1, 1) and (2, 0) meets the y-axis at A. The line through the point (1/2, 0) perpendicular to L meets the y-axis at B and L at C. Find area of the triangle ABC.

1 **25/16**

2 **15/8**

3 **23/16**

4 **40/23**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Equation of the line L is $y - 1 = \frac{0-1}{2-1}(x-1)$

i.e., $x + y = 2$ ... (i)

Equation of line through $\left(\frac{1}{2}, 0\right)$ and perpendicular to line L with slope a negative inverse of slope of Line L is

$y = 1 \times \left(x - \frac{1}{2}\right) \Rightarrow y = x - \frac{1}{2}$ ... (ii)

This line intersect y axis at $B\left(0, -\frac{1}{2}\right)$ and Line L at $C\left(\frac{5}{4}, \frac{3}{4}\right)$

Therefore, area of triangle = $\frac{1}{2}\left(\frac{5}{4}\right)\left(2 + \frac{1}{2}\right) = \frac{25}{16}$.

FeedBack

Q.95
How many distinct values of x satisfy the equation |3x + 2| − |2x − 3| = 5?

1 **0**

2 **3**

3 **4**

4 **2**

Solution:

Correct Answer : 4

Bookmark

Answer key/Solution

$3x + 2 \geq 0 \Rightarrow x \geq -2/3$
And $2x - 3 \geq 0 \Rightarrow x \geq 3/2$
Hence, we consider the three ranges

$\left(-\infty, -\frac{2}{3}\right), \left[-\frac{2}{3}, \frac{3}{2}\right)$ and $\left[\frac{3}{2}, \infty\right)$

In the range $\left(-\infty, -\frac{2}{3}\right)$ we get,

$-(3x + 2) + (2x - 3) = 5$
$\Rightarrow x = -10$, (which lies in the given range)

In the range, $\left[-\frac{2}{3}, \frac{3}{2}\right)$ we get,

$(3x + 2) + (2x - 3) = 5$

$\Rightarrow x = \frac{6}{5}$, (which lies in the given range)

In the range, $\left[\frac{3}{2}, \infty\right)$ we get,

$(3x + 2) - (2x - 3) = 5 \Rightarrow x + 5 = 5$
$\Rightarrow x = 0$, (Not admissible as it does not lie in the given range)

Therefore, the equation holds true for $x = -10$ and $x = \frac{6}{5}$ i.e., two values of x.

FeedBack

Q.96

In a 6 km long race, A beats B by 20 seconds, B beats D by 70 seconds and C beats D by 40 seconds. If the speed of A is 54 km/hour, then by what distance (in meters) does B beat C?

Solution:

Correct Answer : 400

Bookmark

Answer key/Solution

Speed of A in m/s = $54 \times \frac{5}{18} = 15$ m/s

Therefore, time taken by A to complete the race = $\frac{6000}{15} = 400$ sec

Time taken by A to complete the race = (400 + 20) sec = 420 sec
Time taken by D to complete the race = (420 + 70) sec = 490 sec
Time taken by C to complete the race = (490 – 40) sec = 450 sec

Now, the ratio of speed of C and B = $\frac{450}{420} = \frac{15}{14}$

Therefore, when B completes the race, C in that time covers $\frac{14}{15}(6000)$m = 5600m

Therefore, B beats C by 6000 – 5600 = 400 m.

FeedBack

Q.97

The minimum possible value of $\log_a ab^2 + \log_b a^2b$ is equal to (where $a \geq b > 1001$)

1 **1001**

2 **1002**

3 **4**

4 **6**

Solution:
Correct Answer : 4

Bookmark

Answer key/Solution

$\log_a ab^2 + \log_b a^2b$

$= \log_a a + 2\log_a b + \log_b b + 2\log_b a$

$= 1 + 2(\log_a b + \log_b a) + 1$

$= 2 + 2\left(x + \frac{1}{x}\right)$ [let $\log_a b = x$]

$= 2 + 2 \times 2 = 6$ ($\because$ minimum value of $\frac{x+1}{x}$ is 2 when a = b).

FeedBack

Q.98

A cloth merchant offers a discount of 25% and gives $1\frac{1}{3}$ meters for price of 1 meter cloth and still makes a profit of 20% by selling to the customers. By how much percentage was the price of cloth marked up?

1 $111\frac{1}{9}\%$

2 **100%**

3 $113\frac{1}{3}\%$

4 $105\frac{5}{9}\%$

Solution:
Correct Answer : 3

Bookmark

Answer key/Solution

Let the cost price of 1 meter of cloth be Rs. 100.
As he makes a profit of 20%; selling price = Rs. 120.

Merchant gives $\frac{4}{3}$ meters for each meter of cloth, he will make loss of $\frac{\frac{4}{3}-1}{\frac{4}{3}} \times 100 = 25\%$.

$\therefore$ Actual selling price (without discount) = $\frac{120 \times 4}{3} = \text{Rs.}160$.

Since, discount is 25%, therefore, marked price = $\frac{160 \times 4}{3} = \frac{\text{Rs.}640}{3}$.

Marked up percentage $= \frac{\frac{640}{3} - 100}{100} \times 100 = \frac{340}{3}\% = 113\frac{1}{3}\%$.

FeedBack

Q.99

All the possible five-digit numbers are formed using only the digits 4, 5 and 6. How many of them will have at least two fives?

Solution:
Correct Answer : 131

Bookmark

Answer key/Solution

The total number of five digit number that can be formed using only the digits 4,5 and 6 is $3^5 = 243$
(Each of the 5 places can be filled by 4, 5 or 6 i.e. in 3 ways)
The number of five digit having only one 5 = ${}^5c_1$ $(2^4) = 5(16) = 80$
The number of 5 – digit number having no 5's = $2^5 = 32$
Therefore, the number of ways in which 5 occurs at least twice = 243 – (80 + 32) = 131.

FeedBack

Q.100

If a copper wire of diameter 1.5 cm and length 80 m is melted completely and recast to form a solid spherical ball of radius R cm, then find the value of R (in cm).

1 **15**

2 **12**

3 **20**

4 **25**

Solution:
Correct Answer : 1

Bookmark

Answer key/Solution

Total volume of metal used in the copper wire = $\pi(r)^2 t$ where, $r = \frac{1.5}{2} = 0.75$ and $l = 8000$ cm

Volume of the spherical ball = $\frac{4}{3}\pi R^3$ cu.cm

As the ball is obtained by melting the wire, their volume will be equal

$$\frac{4}{3}\pi R^3 = \pi\left(\frac{3}{4}\right)^2 8000 \Rightarrow R^3 = \frac{3^3}{4^3} \times 8000 = \left(\frac{3}{4} \times 20\right)^3 \Rightarrow R = \frac{3}{4} \times 20 = 15 \text{ cm.}$$

FeedBack