Directions of Test

Test Name	2016 Bull CAT 05	Total Questions	100	Total Time	180 Mins

Section Name	No. of Questions	Time limit	Marks per Question	Negative Marking
Verbal	34	1:0(h:m)	3	1/3
DI & Reasoning	32	1:0(h:m)	3	1/3
Quantitative Ability	34	1:0(h:m)	3	1/3

Section : Verbal

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

Question No. : 1

1. Wait, though. Rub your eyes, refocus your gaze, and really, is there any real reason why this ought to be weird?
2. Earlier this year, the 17-year-old son of Will Smith and Jada Pinkett Smith, brother of Willow, appeared in a Louis Vuitton womenswear campaign.
3. If you wanted to choose a celebrity avatar for everything supposedly weird about The Youth, you could do worse than Jaden Smith: a gnomic tweeter, sometime crystal devotee, self-described "Future of Music, Photography, and Filmmaking," who has little attachment to the gender binary.
4. Jaden Smith, quasar of contemporary teen behaviors, wears a fringed white top and an embellished, knee-length black skirt.
5. The impulse to re examine assumptions has had practical consequences — gender-neutral college dorms and high-school bathrooms — and cultural ripples.

A) 5   B)   C)   D)

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

Question No. : 2

1. Life on the rebel side—the only side I had access to—was perilous and miserable.
2. At the time, Aleppo was divided roughly in half, one side held by the rebels, the other by the regime.
3. There was a river that snaked through Aleppo from the regime side to the rebel side, and occasionally bodies dumped in the former would wash up in the latter.
4. In the spring of 2013, I spent a month in the Syrian city of Aleppo, reporting an article about the protests that had become an uprising that had become a war.
5. Almost every day, regime jets and mortars and missiles randomly obliterated civilian targets: homes, markets, hospitals, and schools.

A) 3   B)   C)   D)

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

Question No. : 3

1. You're not invited to attend a meeting.
2. A co-worker gets coffee — for everyone but you. Your input is laughed at or ignored.
3. Workplace rudeness is not limited to one industry, but has been observed in a wide variety of settings in a variety of countries with different cultures
4. You wonder: where did this come from? Did I do something? Why would he treat me that way?
5. Most people can relate to the experience of having a colleague inexplicably treat them rudely at work.

A) 3   B)   C)   D)

Question No. : 4

1. This is nothing unusual.
2. It implies intense appreciation on behalf of the reader, and suggests that books in themselves are enjoyable and delicious, like warm pastries.
3. Last year, a reporter in the Guardian described how the Man Booker Prize judges spent â€˜a summerâ€¦ devouring novel after magnificent novelâ€™, culminating in their selection of â€˜a (bakerâ€™s) dozenâ€™.
4. The language of eating is often used to describe reading habits.
5. If pressed for an explanation, one might say that to â€˜devourâ€™ books is to do something positive.

A) 31452   B)   C)   D)

Question No. : 5

Sport is interesting because people take sport more seriously than religion. Sport is the last bastion of our nature as human animals. Itâ€™s a combat between human animals displaying their genetic fitness. And people donâ€™t like cheating because it goes against everything that we needed as animals, that was an accurate display of peopleâ€™s genetic potential. Thatâ€™s why you want to find out who is naturally the fastest runner in the world, not the person who can run the fastest with the assistance of technology, but who was just born with the best genes. So in fact, itâ€™s profoundly just what the Nazis wouldâ€™ve admiredâ€”the strongest, the fittest, the most beautiful.

1. sports is the driver of our genetic instincts
2. sports is the gateway to our genetic ancestry
3. sports defines our genetic connect and potential
4. sports allows us to connect with our deeper genetic responses

A) 4   B)   C)   D)

Question No. : 6

Tall people have lower life expectancies, on average, than short people: Theyâ€™re at increased risk for Alzheimerâ€™s, heart disease, diabetes, and cancerâ€”the latter because higher levels of growth hormone increases cell division rates and thus the likelihood for genetic mistakes. Though it was good for our ancestors to be largeâ€”outrunning predators and conserving thermal energy in cold winters was crucial for survival in their dayâ€”growing in the presence of good nutrition may be a vestigial response, given that those threats no longer persist.

1. Being bigger is no longer feasible
2. Being bigger is no longer advisable
3. Being bigger is no longer relevant
4. Being bigger is no longer better

A) 4   B)   C)   D)

Question No. : 7

1. Too often you fail until you succeed, and then you are expected to stop failing.
2. But that is not the way of science.
3. Once you have succeeded you supposedly know something that helps you to avoid further failure.
4. Success can lead only to more failure.
5. Failing is good as long as it doesnâ€™t become a habit

A) 5   B)   C)   D)

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

Question No. : 8

1. The first method to attack the issue is to crunch numbers, and reduce the statistics of hungry people
2. While hasty techno-fixes to deal with the crisis in the farming community are afoot, malnutrition and genuine problems in the agricultural sector in the country fail to be seriously addressed
3. Increasing production is not the only solution to hunger in an unequal society
4. Farmers committing suicide are linked to the commercial pressures of tech dependent agriculture, along with the controls of companies, the market, and credit agencies

A) 1   B)   C)   D)

DIRECTIONS for the question: *The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.*

Question No. : 9

1. They say that because the turbines are usually seen from some way away, their size would not be noticed because of the scale of the countryside.
2. The National Wind Power Company wants to develop a huge wind farm on the top of Flaight Hill, an extremely beautiful area of Northern England.
3. Such allegations are dismissed out of hand by the company.
4. If they are given the go-ahead, the company will erect 44 rotors there.
5. Local residents are determined to fight this plan and they complain that the 60 metre turbines will spoil one of Britain's last remaining areas of natural beauty.
(in numerical value)

A) 24531   B)   C)   D)

DIRECTIONS for the question: *The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.*

Question No. : 10

1. That's a very high price to pay for getting rid of Greece, and much more expensive than letting it stay.
2. It would be costly for the rest of Europe, too.
3. Rationally, then, this standoff should end with a compromise—relaxing some austerity measures, and giving Greece a little more aid and time to reform. And we may still end up there.
4. Even though a devalued currency would make Greece's exports cheaper and attract tourists, it would do so at a terrible price, destroying huge amounts of wealth and seriously harming the country's G.D.P.
5. Greece owes almost half a trillion euros, and containing the damage would likely require the recapitalization of banks, continent-wide deposit insurance (to prevent bank runs), and more aid to Portugal, Spain, and Italy, which seem to be the next countries in line to default.
(in numerical value)

A) 42513   B)   C)   D)

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 11

When we think about the past and the way our society was constructed, it is difficult not to marvel at how well managed it was to contain the potentially disruptive power of money. First, we constructed a social framework where the highest echelons lived a lifestyle that was conspicuously demonetized. They lived in official quarters, and drove official cars, either officially or otherwise. They went to clubs that served food and beverages at a price that was, notionally, a notch above free, holidayed in guest houses and circuit houses available only to them and got land allotted at throwaway prices to build their own houses.

Then we made sure that money could buy very little. High taxes on goods, low access to the best the world had to offer and overall shortages, reduced avenues for expenditure. This process was aided considerably by making the use of money very

difficult. Withdrawing and depositing money was a one-day outing, booking tickets a well orchestrated nightmare, travelling from one place to another an adventure and so on. The government was deviously stingy not only in giving its citizens any facilities but even more so in collecting its dues. Whether it was about paying taxes, remitting the electricity bill or renewing one's train pass, every effort to pay the government any money was met with heroic resistance on its part.

And we closed the loop by limiting money-making avenues. Private enterprise was placed under house arrest and stared at with unblinking hostility by several watchdogs as it fretted listlessly in its confined quarters. In effect, our economy disowned its fundament unit, money. We were an access economy, where power was the deity and access its currency. If god had an ambition, it would be one day to become a joint secretary. The queue in front of one's door became more valuable than one's bank balance. An access economy became the fertile ground for the agent, who whispered hot promises of access in our ears. Middlemen brokered everything - be it a driving license, a manufacturing license, a school admission, a railway reservation, or a cinema ticket.

Ironically, money became a potent force. It became everything we feared about it — it became an instrument of illegitimate access. People with money bought power and used it to precise personal effect. A license guaranteed profits; there was no reason to worry about the quality of goods. Capitation fees allowed the unworthy unfettered access to coveted degrees.

But at its heart, the idea of money is inherently a democratic one. When set free, it allows for uniform access universally. When things operate on the basis of money, they become more transparent and available to all. In a society as fragmented as ours, with as intricate a system for discriminating between people, money can be a real force of democracy. If in an access economy, there is an in-built mechanism that fosters scarcity as a source of power, here the mechanism drives us towards more availability. Where power was the speed-breaker, money is the accelerator. Money liberates us from the cavernous mysteries of the corridors of power but in doing so, it perhaps sets in motion its own set of distortions.

The above reading selection is organized like which of the following?

A) A critique of how historically, money was deliberately underplayed vis-à -vis access to power and the subsequent changes.
B) A summary of the relative importance of money power in the past and the present.
C) An argument against making money the medium of day-today economic transactions.
D) Views and counter-views on how the demonetized society of the past gave way to the present-day society.

Question No. : 12

The author's expression .....*we closed the loop* in the third paragraph most likely **IMPLIES**

A) gave the process a leg up   B) completed the process   C) worsened the situation   D) plugged the gap

Question No. : 13

Which of the following can serve as a suitable title for the above passage?

A) Money Makes the Mare Go   B) It's All About Money, Honey   C) From Power To Money   D) Money: Now and Then

DIRECTIONS for the question: *Read the passage and answer the question based on it.*

Question No. : 14

Until I was 35 years old I thought talking about the weather was for losers. A waste of time, insulting even. No one can do anything about the weather anyway. I believed that any comment that does not offer new insight or otherwise advance the cause of humanity is just so much hot air. I might make an exception for intimate friends, but I sure did not want that kind of intimacy with the man on the street, or the one in my office.

Then something happened. Alone for the first time in a long time, living in challenging circumstances, experiencing a cold winter in New England, I noticed the weather. It affected me deeply and directly, every single day. Slowly it dawned on me that the weather affected everyone else, too. Maybe talking about it wasn't totally vacuous after all.

I started with the cashier at a gas station. I figured I'd never see her again, so it was pretty safe. She has no clue that I was a smart person with a lot of potential. Years of cynicism made me almost laugh as I said. "Sure got a lot of snow this year so far." "Yep", was her reply. Then she said, "I could barely get my car out of the lot, be careful driving." Talking about the weather was easy, even effortless. An entree to at least one person on the planet who apparently cared about me, at least enough to share her small challenge and want me safe on the road.

Next time I tried it at work. It turned out to be even more effective with people I already knew. Talking about the weather acted as a little bridge, sometimes to further conversation and sometimes just to the mutual acknowledgment of shared experience. Whether it was rainy or snowy or sunny or damp for everyone, each had their own relationship with the weather. They might be

achy, delighted, burdened, grumpy, relieved or simply cold or hot. Like anything of personal importance, most were grateful for the opportunity to talk about it.

Then something else happened. As talking about the weather became more natural, I found myself talking about a whole lot more. I found out about people's families, their frustrations at work, their plans and aspirations. Plus, I found out that the weather is not the same for everyone! And it's only one of many factors dependent on location that you'll never know about without engaging in casual conversation.

For a businessperson, there may be no better way to make a connection, continue a thread, or open a deeper dialogue. Honoring the simple reality of another person's experience is an instant link to the bigger world outside one's self. It's the seed of empathy, and it's free.

Excerpted from 'The Big Moo' edited by Seth Godin.

As used in the third paragraph, the word *entree* most likely stands for -

A) An ice-breaker   B) An example   C) An accompaniment   D) A critical comment

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Question No. : 15

What is the main theme of the passage?

A) Weather is the most important aspect of everyday conversation for all sections of society
B) Talking about the weather leads to increased sales and increased commissions
C) Casual conversation can often lead to profound insights
D) Weather is a topic which can be talked about with the most vacuous of minds

Question No. : 16

In the fourth paragraph, what is meant by the phrase 'each had their own relationship with the weather'?

A) Though everyone experiences the same things, their reactions are different
B) Weather was a metaphor for the varied reactions that the author encountered
C) Though weather meant different things to different people, all handled the situation analogously
D) The reaction to the weather decided the extent of involvement of the person in his surroundings

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DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 17

The way book authors get paid these days is pretty straightforward: publishers keep careful track of how many books they sell and pay authors a royalty — agreed upon when the contract is signed — of each sale. Authors can check sales figures using resources like Bookscan or their own accountants. Royalty rates are well established throughout much of the industry. Everyone is protected by copyright. Easy peasy.

The playing field hasn't always been so level. As **Johann Wolfgang von Goethe** observed in 1797, "the publisher always knows the profit to himself and his family whereas the author is totally in the dark." This problem of lopsided information was aggravated by the near-absence of copyright protection in the 18th and 19th century. A bestseller could be expected to spawn an abundance of pirated versions. **Charles Dickens**, on his first trip to the United States in 1842, complained endlessly about the pirating of his works for the U.S. market. This lack of intellectual property protection led to further conflicts of interest and opinion between authors and publishers: it was standard practice among publishers — even respectable ones — to have multiple print runs without an author's permission, and writers sometimes tried to sell near-identical editions of the same title to multiple publishers. Because authors couldn't trust the sales numbers if and when their publishers provided them, 19th-century book contracts were for a fixed fee rather than per-copy royalty payments.

All of this drove Goethe nuts. Like many artists, Goethe had an uneasy relationship with money in the first place. He was on the one hand disdainful of the profit motive (he once wrote to a publisher, "I look odd to myself when I pronounce the word Profit"), and yet he referred to the asymmetry of information as "the main evil" of publishing. He wanted to ensure that he got his fair share of the fruits of his labors, and to this end he employed various ruses and strategies to ensure that his more materialistically minded publishers didn't exploit him. Among the most intriguing of these schemes was the peculiar auction he devised for the sale of the manuscript for his epic poem, *Hermann and Dorothea*.

Goethe wasn't planning on awarding the manuscript to the highest bidder — the kind of auction you might picture at Sotheby's for fine art, where the auctioneer raises the price with each bid until the sale price is reached (what's known as an "open ascending price" or "English auction"). Instead, Goethe engineered the following mechanism, as he

explained to Mr. **Vieweg**, his publisher, in a letter dated January 16, 1797:

*I am inclined to offer Mr. Vieweg from Berlin an epic poem, Hermann and Dorothea, which will have approximately 2000 hexameters. â€¦Concerning the royalty we will proceed as follows: I will hand over to Mr. Counsel **BÃ¶ttiger** [Goetheâ€™s lawyer] a sealed note which contains my demand, and I wait for what Mr. Vieweg will suggest to offer for my work. If his offer is lower than my demand, then I take my note back, unopened, and the negotiation is broken. If, however, his offer is higher, then I will not ask for more than what is written in the note to be opened by Mr. BÃ¶ttiger.*

Whatâ€™s going on here?According to Moldovanu and Tietzel, scholars had treated Goetheâ€™s proposition as one of the enigmas left behind by one of historyâ€™s greatest literary figures. But the economists argue that thereâ€™s no mystery to Goetheâ€™s choice of mechanism. The author wanted to know how much he was worth to Vieweg (perhaps with an eye to extracting higher royalties from his publishers over the longer run), and he devised this peculiar â€œauctionâ€ to get Vieweg to tell him.

It can be inferred from the passage that:

A) selling of books was not an easy proposition in the 18th and 19th century
B) piracy was more rampant in the 18th and 19th century that it is today
C) auditing of sales was more cumbersome in the 18th and 19th century that it is today   D) both (1) and (3)

Question No. : 18

It can be deduced from the passage that:

A) Goethe abhorred commercial transactions.   B) Goethe devalued profit based transactions.
C) Goethe underestimated of profit-based ventures.   D) Goethe did not appreciate profit-driven enterprises.

Question No. : 19

From the information given in the passage, it can be figured out:
I. Intellectual property rights were not stringent in the 18th century.
II. The desired levels of transparency between authors and publishers did not exist in the 18th century.
III. It was not given that publishers would keep authors in the dark with respect to their actions.

A) I & II   B) II & III   C) I & III   D) All of the above

Question No. : 20

The mechanism adopted by Goethe for awarding his manuscript to the highest bidder:

A) was a enigmatic mechanism adopted by Goethe to confuse his buyers.
B) was a clever mechanism adopted by Goethe to derive the maximum value for this work.
C) was a clever manoeuvre adopted by Goethe to establish his worth.
D) was a clever subterfuge adopted by Goethe to trick publishers.

Question No. : 21

From the information provided in the passage, how many of the following character traits can be ascribed with certainty to Goethe:

1. reclusive and reticent
2. commercially astute
3. intellectually driven
4. monetarily covetous

A) Only one out of four   B) Only two out of four   C) Only three out of four   D) All four

Question No. : 22

The tone of the author of the passage can be said to be:

A) descriptive   B) analytical   C) critical   D) subjective

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 23

For centuries, philosophers have been using moral intuitions to reason about ethics. Today, some scientists think theyâ€™ve

found a way to use psychology and neuroscience to undermine many of these intuitions and advance better moral arguments of their own. If these scientists are right, philosophers need to leave the armchair and head to the lab â€" or go into retirement.

The thing is, theyâ€™re wrong. There are certainly problems with the way philosophers use intuitions in ethics, but the real challenge to moral intuitions comes from philosophy, not from science.

How do ethicists use intuitions? To assess whether a moral theory is true, philosophers formulate cases that call for particular moral choices and ask which choice seems, intuitively, like the right one. When the choice that seems right is the choice the theory calls for, this is a reason to accept the theory. If it seems like the right choice is one the theory doesnâ€™t endorse (or even condemns), thatâ€™s a reason to reject the theory.

The â€˜trolley problemâ€™ is the best, most ubiquitous example of this kind of philosophy. Philosophers have invited readers to imagine that a trolley is speeding down a track. Unimpeded, the trolley will hit five people ahead of it, killing them, but an innocent person nearby could stop it. In one version, she could stop the trolley and save the five people by pulling a lever to divert it to another track, but this would kill one person who happens to be on that track. In another, she can only stop the trolley from killing the five by pushing someone off a bridge into the trolleyâ€™s path. Whatever the details, the moral question is what the person should do.

Ethicists will then cite peopleâ€™s intuitions about the problem as evidence in the debate between the two most popular types of moral theories, consequentialist and deontological. Consequentialist moral theories hold that whatâ€™s right is a function of whatâ€™s good: the right thing to do is whatever would produce the best consequences. In contrast, deontological moral theories hold that the right has priority over the good: it could well be wrong to perform the action that has the â€œbestâ€ consequences when that action breaks the moral rules. In trolley cases, consequentialists typically say that you should be willing to kill one to save five, but deontologists say that you shouldnâ€™t.

In the past few years, scientists have argued that there is a fatal problem with this approach. Recent research, they say, suggests that many of our moral intuitions come from neural processes responsive to morally irrelevant factors â€" and hence are unlikely to track the moral truth.

The psychologist Joshua Greene at Harvard led studies that asked subjects to decide whether a particular action in a hypothetical case was appropriate or not. He found that typically, when responding to cases in which the agent harms someone personally (say, trolley cases in which the agent pushes an innocent bystander over a bridge to stop the trolley from killing five other people), the subjects showed more brain activity in regions associated with emotions than when responding to cases in which the agent harmed someone relatively impersonally (like trolley cases in which the agent diverts the trolley to a track on which it will kill one innocent bystander to stop the trolley from killing five other people). They also found that the minority of subjects who said the agent acted appropriately in doing harm in the personal cases took longer to give this verdict, and experienced greater brain activity in regions associated with reasoning than the majority who said otherwise.

According to Greene, this indicates that our moral intuitions in favour of deontological verdicts about cases â€" that you should not harm one to save five â€" are generated by more emotional brain processes responding to morally irrelevant factors, such as whether you cause the harm directly, up close and personal, or indirectly. And our moral intuitions in favour of consequentialist verdicts â€" that you should harm one to save five â€" are generated by more rational processes responsive to morally relevant factors, such as how much harm is done for how much good.

As a result, we should apparently be suspicious of deontological intuitions and deferential to our consequentialist intuitions. This research thereby also provides evidence for a particular moral theory: consequentialism.

Greeneâ€™s results, however, donâ€™t offer any scientific support for consequentialism. Nor do they say anything philosophically significant about moral intuitions. The philosopher Selim Berker at Harvard has offered a decisive argument why. Greeneâ€™s argument just assumes that the factors that make a case personal â€" the factors that engage relatively emotional brain processes and typically lead to deontological intuitions â€" are morally irrelevant. He also assumes that the factors the brain responds to in the relatively impersonal cases â€" the factors that engage reasoning capacities and yield consequentialist intuitions â€" are morally relevant. But these assumptions are themselves moral intuitions of precisely the kind that the argument is supposed to challenge.

In the given context, the word 'ubiquitous' means:

A) well-formed   B) pervasive   C) effective   D) comprehensive

Question No. : 24

From the information provided for the consequentialist approach, we can say which of the following about this approach?

A) it is the theory about the maximum good delivered at the lowest cost possible
B) it is the theory about the maximum good delivered irrespective of cost
C) it is the theory about the maximum good delivered at the highest cost possible

D) it is the theory about delivering the maximum costs required for the maximum good

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Question No. : 25

According to SelimBerker, Greene:

A) uses circular reasoning to prove his points   B) uses specious reasoning to prove his points
C) employs ad hominem to prove his argument   D) employees butterfly logic to prove his point

Question No. : 26

Assuming the information provided by Greene's experiment to be correct, one of the following is driven by reasoning and one by emotions. Identify the two in the respective order.

A) consequentialist moral theories and deontological moral theories
B) deontological moral theories and consequentialist moral theories   C) both of the above adhere to the given criteria
D) none of the above adhere to the given criteria

Question No. : 27

In the given context, the author of the passage is clearly:

A) supportive of the view offered by science on the subject under consideration.
B) against the view offered by science on the subject under consideration
C) sympathetic of the view offered by science on the subject under consideration
D) empathizes with the view offered by science on the subject under consideration

Question No. : 28

Which of the following is an apt title for the passage?

A) Science just cannot seem to have enough to say about moral intuitions
B) Science has the last laugh when it comes to moral intuitions
C) Science has always been the enfant terrible when it comes moral intuitions
D) Science has next to nothing to say about moral intuitions

DIRECTIONS for the question : *Read the passage and answer the question based on it.*

Question No. : 29

Stop me if you've heard this one before. On 19 December 1984, The New York Times ran a story about parents who feared the risks of routine vaccinations. The parent quoted in the article was a lawyer who blamed vaccines for the death of his daughter. The story was framed as a conflict between parents such as him and medical experts, who pointed out that serious side-effects of vaccines were extremely rare, and that the diseases vaccines prevented were far worse.

On 27 April 1999, The New York Times ran a story about parents who feared the risks of routine vaccinations. The parent quoted in the article was college-educated, an author and professional activist, who blamed vaccines for her son's brain damage.

On 21 March 2008, The New York Times ran a story about parents who feared the risks of routine vaccinations. The article noted that parents who refused vaccines for their children were often 'well-educated and financially stable'.

These stories were framed as a conflict between those parents and medical experts, who worried that geographical pockets of vaccine refusal could help spread preventable diseases, such as measles. Parents today just haven't seen the devastation vaccine-preventable diseases can cause, the scientists said.

For more than 30 years now, we journalists have been telling the same story, with the same actors, playing the same roles, and speaking the same lines. The authors change, but the news doesn't. It barely even counts as 'new'.

There are two groups of people you can blame for this pattern of repetitive storytelling. Maybe it's them: maybe the problem is parents whose anti-science proclivities have carried them so far away from the facts that journalists have no choice but to repeat ourselves ad nauseum. The story doesn't change because the story hasn't changed.

That could be true. But there's also another option. Maybe it's us: maybe journalists aren't listening. The story never changes because we stopped looking for the other stories we could tell.

If that's true, it's a big deal. And not just for journalists. Vaccination is a deeply important part of public health. Whether

to vaccinate or not isn't simply a decision you make for yourself or your family, independent of the choices of everyone else. Vaccines work in two ways. They decrease your personal risk of contracting a disease, and they reduce the number of potential hosts and carriers in the population. That means the more vaccinated people there are, the harder it is for a disease to spread. Vaccines can stop an outbreak before it happens. This so-called 'herd immunity' protects children who are too young to get a vaccine, people who are too sick to get one, and anybody whose vaccination isn't working as well as it should.

That's why medical experts really care about vaccination and why they're worried about vaccine rejection, even though, nationwide in the United States, children are vaccinated at rates of 90 per cent or better for most vaccines. In specific places, and for specific vaccines, uptake can be a lot lower, enough to give diseases a foothold. Measles, for instance, is highly contagious. To prevent its spread, you need at least a 96 per cent vaccination rate. In California, where a measles outbreak last year infected nearly 200 people and spread to 23 other states, the measles vaccination rate is about 92 per cent — and scientists have estimated that regions near where the outbreak began could have rates as low as 50 per cent and certainly no higher than 86 per cent.

We still seem to be pretty clueless when it comes to why those people fear vaccines and what could be done to change their minds. Case in point, a paper published in 2014 tested different strategies for improving the likelihood that skeptical parents would vaccinate their kids. None of the tested techniques worked. When the researchers tried debunking vaccine misinformation, they succeeded in convincing more parents that vaccines don't cause autism. But those same parents were actually more likely to reject vaccines afterwards.

Clearly, something is amiss here, and it matters to all of us. What I hadn't done, at least until recently, was question whether those stories were accurate. I don't mean in the sense that I'd published incorrect information. Instead, I've come to believe that I haven't been asking the right people the right questions, and that's leading me to write stories that are factually correct, but don't accurately reflect what's really happening. What if scientists are wrong about the reasons parents don't vaccinate? What if, as a journalist, I've been steering the national conversation in the wrong direction by not questioning the reasons put forth? Herd immunity matters a lot, and there's good reason to think we aren't listening well enough to what the herd has to say.

The author of the passage uses the news stories at the start of the passage:

A) to establish a conjecture   B) to highlight an incongruity   C) to establish a narrative   D) to point out pattern

Question No. : 30

The author of the passage clearly believes that:

A) parents can do more to educate themselves about the benefits of vaccination
B) journalists can do more to steer the debate on vaccination in the right direction
C) scientists can do more to effectively convey the benefits of vaccination   D) none of the above

Question No. : 31

In the given context of the passage, the phrase 'ad nauseum' means:

A) To a resounding extent   B) To a niggling extent   C) To a deafening extent   D) To a sickening extent

Question No. : 32

It can be inferred from the passage that the author of the passage is suggesting:

   I. Parents who reject vaccination prefer to put the public good below their children
   II. Parents who reject vaccination prefer to put their children below the public good
   III. Parents who reject vaccination prefer to put the public good above their children
   IV. Parents who reject vaccination prefer to put their children above the public good

A) I & III   B) II & III   C) I & III   D) I & IV

Question No. : 33

According to the author of the passage:

A) the decision to vaccinate your child has wider implications.
B) herd immunity has an impact on those who are not vaccinated.
C) one can contract a disease even if one has taken the vaccination for the same.   D) all of the above

Question No. : 34

The primary purpose of the author of the passage is:

A) to provide an explanation for a certain set of actions   B) to explain a contentious issue and its widespread implications
C) to highlight an oversight on part of a specific set of people
D) to stir a debate over an issue that deserves deeper understanding


Section : DI & Reasoning

DIRECTIONS for the question: *Analyse the graph/s given below and answer the question that follows.*

Question No. : 35

KC Hygiene Products Ltd. manufactures and sells Toothpaste, Detergent, Toilet Soap and other hygiene products. The table below shows the sales of different products of the company from 2008 to 2011.

	Sales (million units)			
	2008	2009	2010	2011
Toothpaste	150	225	210	170
Detergent	90	100	150	95
Toilet Soap	18	15	30	16
Total	1200	1350	1460	1320

KC Hygiene Products Ltd. manufactures 10 different brands of Toilet Soap. Of these 10 brands, the four largest selling brands are Freshness, Glory, Unviel and AquaSprings. The chart below shows the percent breakup of the total number of Toilet Soap sold from 2008 to 2011.
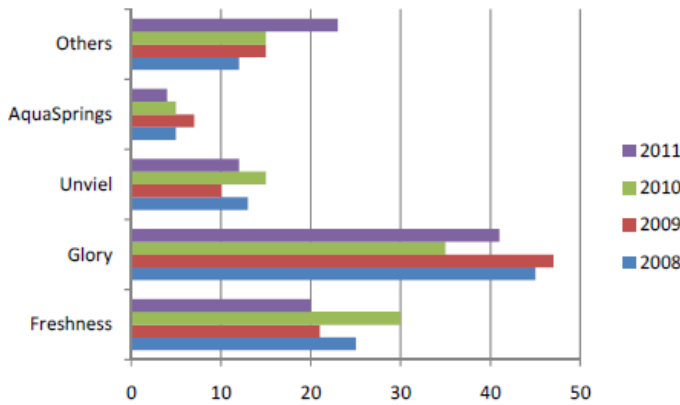
What is the approximate percentage change in the number of units of Glory sold from 2008 to 2011?

A) 4% decrease   B) 25% decrease   C) 20% decrease   D) 12% decrease

Question No. : 36

In which year did the sales of Unviel show the greatest percentage increase over the previous year? (in numerical value)

A) 2010   B)   C)   D)

Question No. : 37

Which of the following statements is / are true?

I. From 2008 to 2011, the sales of Other Toilet Soap increased by approximately 92%.
II. As compared to the previous year, the combined sales of Freshness and AquaSprings showed the maximum percentage increase in 2009.

A) I only   B) II only   C) Both I and II   D) Neither I nor II

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 38

In a telecommunication cable assembly plant, cables are assembled by twisting plastic coated wires together. There are wires of exactly six different solid colours - red, yellow, violet, green, white and black. Wires must be assembled into single cables according to the following rules.

1. Each cable must contain at least three wires and wires of at least three different colours.
2. At most two wires in a single cable can be black.
3. At most two wires in a single cable can be white.
4. There can be at most one wire of each of the other colours in a single cable.
5. If one wire is red, then one wire must be yellow.
6. If one wire is violet, then no wire can be green.

Which of the following could be the complete set of wires in an acceptable cable assembly?

A) A green wire, a white wire and a violet wire   B) A violet wire, a black wire and a white wire
C) A red wire, a black wire and a green wire   D) A yellow wire and exactly two black wires

---

DIRECTIONS for the question: Read the information given below and answer the question that follows.

Question No. : 39

In a telecommunication cable assembly plant, cables are assembled by twisting plastic coated wires together. There are wires of exactly six different solid colours - red, yellow, violet, green, white and black. Wires must be assembled into single cables according to the following rules.

1. Each cable must contain at least three wires and wires of at least three different colours.
2. At most two wires in a single cable can be black.
3. At most two wires in a single cable can be white.
4. There can be at most one wire of each of the other colours in a single cable.
5. If one wire is red, then one wire must be yellow.
6. If one wire is violet, then no wire can be green.

The maximum number of wires that can be used in an acceptable cable assembly is (in numerical value)

A) 7   B)   C)   D)

DIRECTIONS for the question: Read the information given below and answer the question that follows.

Question No. : 40

In a telecommunication cable assembly plant, cables are assembled by twisting plastic coated wires together. There are wires of exactly six different solid colours - red, yellow, violet, green, white and black. Wires must be assembled into single cables according to the following rules.

1. Each cable must contain at least three wires and wires of at least three different colours.
2. At most two wires in a single cable can be black.
3. At most two wires in a single cable can be white.
4. There can be at most one wire of each of the other colours in a single cable.
5. If one wire is red, then one wire must be yellow.
6. If one wire is violet, then no wire can be green.

If exactly one black wire and exactly one white wire is used in an assembled cable, then which of the following must be true?

A) The cable contains not more than five wires   B) The cable contains exactly six wires   C) The cable contains a yellow wire
D) The cable does not contain a red wire

DIRECTIONS for the question: Go through the following graph/information and answer the question that follows.

Question No. : 41

In order to repay his debt, A decides to try his luck at betting. He bets with B, C and D and doubles his money. He then repays a quarter of his loan and bets the remaining money. In all he bets four times, each time doubling his money and paying off a quarter of his debt. B loses half as much as D. C loses Rs. 7,000 more than $1/4^{th}$ the amount lost by D. C loses Rs. 22,000 less than the average amount lost by B, C, and D. In the end A is left with no money.

How much money does B lose?

A) Rs. 27000   B) Rs. 35000   C) Rs. 40000   D) Rs. 45000

Question No. : 42

In order to repay his debt, A decides to try his luck at betting. He bets with B, C and D and doubles his money. He then repays a quarter of his loan and bets the remaining money. In all he bets four times, each time doubling his money and paying off a quarter of his debt. B loses half as much as D. C loses Rs. 7,000 more than $1/4^{th}$ the amount lost by D. C loses Rs. 22,000 less than the average amount lost by B, C, and D. In the end A is left with no money.

How much money does A win in round 2?

A) Rs. 42000   B) Rs. 45000   C) Rs. 84000   D) Rs. 51000

Question No. : 43

In order to repay his debt, A decides to try his luck at betting. He bets with B, C and D and doubles his money. He then repays a quarter of his loan and bets the remaining money. In all he bets four times, each time doubling his money and paying off a quarter of his debt. B loses half as much as D. C loses Rs. 7,000 more than $1/4^{th}$ the amount lost by D. C loses Rs. 22,000 less than the average amount lost by B, C, and D. In the end A is left with no money.

How much money did A start with?

A) Rs. 42000   B) Rs. 45000   C) Rs. 48000   D) Rs. 51000

Question No. : 44

In order to repay his debt, A decides to try his luck at betting. He bets with B, C and D and doubles his money. He then repays a quarter of his loan and bets the remaining money. In all he bets four times, each time doubling his money and paying off a quarter of his debt. B loses half as much as D. C loses Rs. 7,000 more than $1/4^{th}$ the amount lost by D. C loses Rs. 22,000 less than the average amount lost by B, C, and D. In the end A is left with no money.

What is A's debt?

A) Rs. 45000   B) Rs. 48000   C) Rs. 150000   D) Rs. 192000

Question No. : 45

In order to repay his debt, A decides to try his luck at betting. He bets with B, C and D and doubles his money. He then repays a quarter of his loan and bets the remaining money. In all he bets four times, each time doubling his money and paying off a quarter of his debt. B loses half as much as D. C loses Rs. 7,000 more than $1/4^{th}$ the amount lost by D. C loses Rs. 22,000 less than the average amount lost by B, C, and D. In the end A is left with no money.

How much money does A win in the 4th round?

A) Rs. 24000   B) Rs. 48000   C) Rs. 55000   D) Rs. 96000

Question No. : 46

Four friends, Ali, Salu, Kadu and Madu, who could not get tickets to a football match decided to watch the match from the hills surrounding the stadium. They carried a bottle of water with them. While climbing up the hill, they came across a rickety old bridge strong enough to hold at most two people at a time. Ali, Salu, Kadu and Madu can cross the bridge in 2 min, 3 min, 6 mins and 9 min respectively. Two people crossing the bridge together can move only as fast as the slower of the two and the bottle of water must be carried while crossing the bridge.

What is the minimum time taken to cross the bridge? (in min)

A) 20   B)   C)   D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 47

Four friends, Ali, Salu, Kadu and Madu, who could not get tickets to a football match decided to watch the match from the hills surrounding the stadium. They carried a bottle of water with them. While climbing up the hill, they came across a rickety old bridge strong enough to hold at most two people at a time. Ali, Salu, Kadu and Madu can cross the bridge in 2 min, 3 min, 6 mins and 9 min respectively. Two people crossing the bridge together can move only as fast as the slower of the two and the bottle of water must be carried while crossing the bridge.

Who are the last two persons to cross the bridge?

A) Ali, Madu   B) Kadu, Madu   C) Ali, Salu   D) Kadu, Salu

DIRECTIONS for the question: *Go through the graph and the information given below and answer the question that follows.*

Question No. : 48

The following diagram shows a square area, 10 km Ã— 10 km. The grid lines show a road network where the roads are spaced 1 km apart. The shaded region P is a pond that can be crossed by boat from and at only the three points shown. Roads around the pond cannot be walked upon. People can walk through as well as along the sides of the garden shown by the shaded region G. The paths around the shaded regions X, Y and Z cannot be walked upon; however the corners of each of these regions can be traversed.
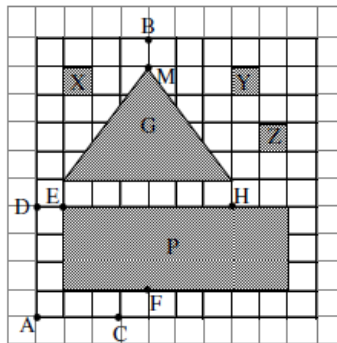
What is the minimum distance that a person has to walk to reach point B from point A?

A) 11 km   B) 12 km   C) 16 km   D) 14 km

Question No. : 49

If the paths along the sides of the garden cannot be walked upon, how many different paths of minimum length can a person take to travel from point A to point B?

A) less than 5   B) 5   C) 6   D) more than 6

Question No. : 50

If it cost Rs. 2.25, Rs. 3.25 and Rs. 2.00 respectively to travel 1 km by road, along the garden and by boat across the pond respectively, what is the minimum cost incurred in travelling from point A to point B?

A) Rs. 31.50   B) Rs. 32.00   C) Rs. 39.90   D) Rs. 24.23

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 51

In a college every student, except physically handicapped students, has to participate in at least one sport. There are 1200 students in the college, of which 40% are girls. The table below gives the number of boys and girls participating in a sport.

	Boys	Girls

Cricket	120	80
Football	240	100
Hockey	160	120
Chess	320	240
Volley Ball	100	50
Table tennis	200	60
Badminton	160	150

Cricket, Football, Hockey and Volley ball are outdoor games and rest are indoor games. 30 boys and 10 girls do not participate in any of the games.
Note:*One student can participate in at most one outdoor and one indoor game.*

How many boys participate in only one game? (in numerical value)

A) 80   B)   C)   D)

Question No. : 52

6 % of the girls participating in indoor games are physically handicapped. Also, the number of physically handicapped boys participating in indoor games is twice that of the physically handicapped girls participating in indoor games. If no physically handicapped person participates in outdoor games, then how many students are physically handicapped?

A) 121   B)   C)   D)

Question No. : 53

A chess tournament was organized and all students who participated in the college chess competition took part in it. It was arranged in the following pattern**:** Pairs of randomly selected players play against each other. The winners proceed to the next round. In case there are an odd number of players in a round, one player plays with one of the winners in the same round. Then depending on who wins either one (the earlier winner) or both proceed to the next round. There is no draw possible and the player winning a game gets one point. Then after how many rounds can we surely find out a winner? (in numerical value)

A) 10   B)   C)   D)

Question No. : 54

If only mixed doubles and doubles games are possible in badminton and every student who participated in badminton participated in at least one doubles game and one mixed doubles game, then what is the minimum number of students who formed more than two teams?(*Ignoring the note given in the information: for this question only*)

A) 1   B)   C)   D)

DIRECTIONS for the question: *Go through the graph and the information given below and answer the question that follows.*

Question No. : 55

Each year, the Meteorological Department of Maharashtra predicts the rainfall for the coming year and compares it with the actual rainfall recorded during the year. The predicted rainfall in any year is calculated as:
$P_{n + 1} = (1 + \alpha)A_n + P_n$, where,

$P_{n + 1}$ = predicted rainfall for the $(n + 1)^{th}$ year,

A_n = actual rainfall recorded during the nth year,

P_n = predicted rainfall for the nth year, and,

α = a constant term based on the quality of the nth year as described below .

- If the actual rainfall recorded during any year is less than 50% of the predicted rainfall for that year, the year is described as a *Poor* year, and $\alpha = -0.6$.
- If the actual rainfall recorded during any year is 50% or more, but less than 90% of the predicted rainfall for that year, the year is described as an *Average* year, and $\alpha = -0.2$.
- If the actual rainfall recorded during any year is 90% or more, but not more than 100% of the predicted rainfall for that year, the year is described as a *Good* year, and $\alpha = 0.3$.
- If the actual rainfall recorded during any year is more than 100% of the predicted rainfall for that year, the year is described as an *Exceptional* year, and $\alpha = 0.1$.

The chart below shows the actual rainfall recorded in Maharashtra, in mm, during the years 2005 to 2010.
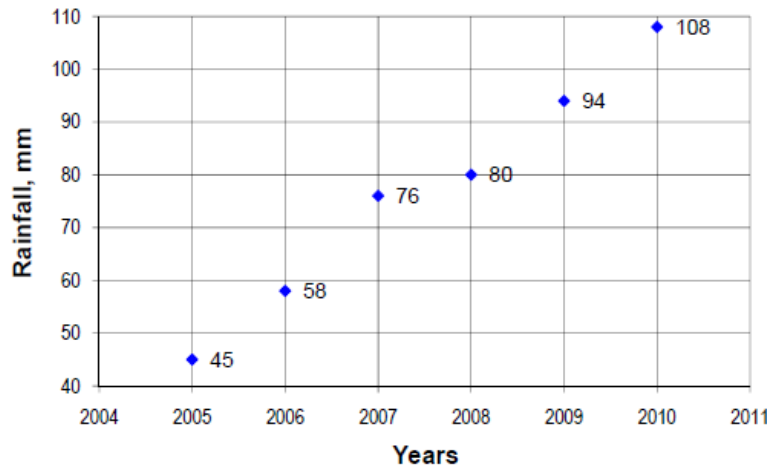
If the predicted rainfall for 2005 was 48 mm, what could the year 2007 be described as?

A) Poor   B) Average   C) Good   D) Exceptional

Question No. : 56

If 2009 was described as a Good year, what could the year 2010 be described as?

A) Good   B) Average   C) Poor   D) Cannot be determined

Question No. : 57

If 2008 was described as a *Good* year, what could have been the predicted rainfall for 2010?

A) 310 mm   B) 240 mm   C) 295 mm   D) 215 mm

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 58

In a family with four generations, A is the oldest male with age 80 years. There are four married couples in the family and all husbands are 3 years older than their respective wives. In the family there are two brothers and two sisters and difference between the two brothers is 2 years and also the difference between the two sisters is 2 years. Q is R's sister-in-law and she has two girls. E is the mother of two sons and P is one of them. Q and S are daughters-in-law of D. Age of Q is 27 years. R is the younger grandson of C. D is 25 years older than his elder son. J and Z are granddaughters of E, sum of their ages is 8 and J is older.

What is the age of P's grandmother? (in years)

A) 77   B)   C)   D)

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 59

In a family with four generations, A is the oldest male with age 80 years. There are four married couples in the family and all husbands are 3 years older than their respective wives. In the family there are two brothers and two sisters and difference between the two brothers is 2 years and also the difference between the two sisters is 2 years. Q is R's sister-in-law and she has two girls. E is the mother of two sons and P is one of them. Q and S are daughters-in-law of D. Age of Q is 27 years. R is the younger grandson of C. D is 25 years older than his elder son. J and Z are granddaughters of E, sum of their ages is 8 and J is older.

What is the relationship between S and J?

A) Aunt – Niece   B) Uncle – Niece   C) Father – Daughter   D) None of these

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 60

At the recent Cricket Premier League, four owners of teams, all males – Mukesh, Raj, Shashi and Vijay – and three of their wives – Neeta, Preeti and Shilpa – made speeches. Each of the wives made her speech immediately after her husband. The first two owners to speak were Vijay and Raj respectively.

Which of the following statements must be true?

A) In case the second speaker was a male, the seventh speaker was a female
B) In case the second speaker was a female, the seventh speaker was a male
C) In case the third speaker was a male, the seventh speaker was a female
D) In case the seventh speaker was a female, the first and third speakers were males

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DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 61

At the recent Cricket Premier League, four owners of teams, all males – Mukesh, Raj, Shashi and Vijay – and three of their wives – Neeta, Preeti and Shilpa – made speeches. Each of the wives made her speech immediately after her husband. The first two owners to speak were Vijay and Raj respectively.

If Preeti is the third wife to speak, and Shashi is the owner whose wife is not present, which of the following statements must be true?

A) Preeti spoke sometime before Shashi   B) Mukesh spoke sometime before Raj
C) Shilpa spoke sometime before Mukesh   D) Mukesh spoke sometime before Shashi

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 62

At the recent Cricket Premier League, four owners of teams, all males – Mukesh, Raj, Shashi and Vijay – and three of their wives – Neeta, Preeti and Shilpa – made speeches. Each of the wives made her speech immediately after her husband. The first two owners to speak were Vijay and Raj respectively.

The addition of which of the following statements to the original information would ensure that the only possible order of speakers is Vijay, Shilpa, Raj, Neeta, Shashi, Mukesh and Preeti?

A) The order of the first four speakers was Vijay, Shilpa, Raj and Neeta
B) Shilpa is Vijay's wife, Neeta is Raj's wife and Preeti is Mukesh's wife
C) The order in which the males spoke was Vijay, Raj, Shashi and Mukesh
D) Shilpa is Vijay's wife, Neeta is Raj's wife and Preeti was the second to speak after Shashi

DIRECTIONS for the question: *Read the information given below and answer the question that follows.*

Question No. : 63

5 friends - Prachi, Rupali, Sayali, Tanu and Roopam - are college students and share an apartment. Each one of them must take responsibility for one chore - sweeping, dusting, mopping, laundry and shopping - on any one day from Monday to Friday.

- Laundry must be done on Fridays so that the clothes would dry over the weekend.
- Dusting must happen before sweeping and sweeping must happen before mopping.
- Sayali is fond of shopping and agrees to shoulder the responsibility, but not on Mondays or Wednesdays as she has extra classes on these days.
- Roopam completes her chore on the day immediately after sweeping, but before the day that Rupali completes her chore.
- Tanu is free only on Tuesdays and agrees to take care of sweeping.

Which of the following is true?

A) Roopam completes her chore on Thursday   B) Rupali agrees to take care of mopping
C) Sayali completes her chore on Tuesday   D) Prachi agrees to take care of dusting

Question No. : 64

5 friends - Prachi, Rupali, Sayali, Tanu and Roopam - are college students and share an apartment. Each one of them must take responsibility for one chore - sweeping, dusting, mopping, laundry and shopping - on any one day from Monday to Friday.

- Laundry must be done on Fridays so that the clothes would dry over the weekend.
- Dusting must happen before sweeping and sweeping must happen before mopping.
- Sayali is fond of shopping and agrees to shoulder the responsibility, but not on Mondays or Wednesdays as she has extra classes on these days.
- Roopam completes her chore on the day immediately after sweeping, but before the day that Rupali completes her chore.
- Tanu is free only on Tuesdays and agrees to take care of sweeping.

Which of the following *name – chore – day* matches is true?

A) Rupali – Dusting – Monday   B) Prachi – Dusting – Thursday   C) Roopam – Mopping – Wednesday
D) Sayali – Shopping – Tuesday

DIRECTIONS for the question: Read the information given below and answer the question that follows.

Question No. : 65

A factory uses 3 machines, M1, M2 and M3 to manufacture 3 products, X, Y and Z. Each of the machines is operated in a single shift of 12 hours each day. The table below indicates the time taken in minutes to manufcture one unit each of X, Y and Z on machines M1, M2 and M3 respectively. Irrespective of the machine on which it is manufactured, one unit each of X, Y and Z costs Rs. 8, Rs. 10 and Rs. 15 respectively and is sold for Rs. 12, Rs. 15 and Rs. 20 respectively.

	M1	M2	M3
X	15	28	24
Y	20	18	25
Z	35	24	30

On a particular day, the factory had an order of 50 units each of X and Z. What is the maximum number of units of Y that can be manufactured on that day?

A) 2   B) 0   C) 4   D) 1

Question No. : 66

On a particular day, the factory had an order of 100 units of X, 100 units of Y and 25 units of Z. Since the factory was forced to run a second shift of 12 hours, the manufacturing cost of each unit of X, Y and Z increased by 25%, 20% and 20% respectively. What is the profit earned from the sale of all the units of X, Y and Z manufactured on that day (in second shift)?
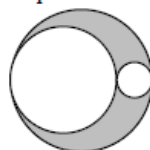
A) 1025   B) 550   C) 625   D) 525

Section : Quantitative Ability

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 67

The figure below shows three circles tangent to each other. If the diameter of the large un-shaded circle is 300% of the diameter of the small un-shaded circle, what portion of the sum of the areas of the three circles is shaded?

A) $\dfrac{3}{13}$ B) $\dfrac{4}{21}$ C) $\dfrac{9}{16}$ D) $\dfrac{3}{8}$

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 68

What is the value of $\dfrac{q-m}{p-k}$ if $(x+a)$ is the HCF of $x^2 + px + q$ and $x^2 + kx + m$?

A) a B) $\dfrac{1}{a}$ C) a^2 D) $\dfrac{1}{a^2}$

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 69

135,000 Arabs were lined up to face 90,000 Spartans in battle. When the call for battle goes on, the Arabs and the Spartans fire arrows on each other. An observer of the battle realises that 1 out of every 3 arrows shot finds its mark. What is the absolute difference between the percentage of Arabs alive and the percentage of Spartans alive after two rounds of arrows have been fired?

A) 27.77   B) 55.55   C) 35.72   D) 0

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 70

A and C together can complete a piece of work in 12 days, which C and D together can complete in 24 days. If B and D work together, they can complete the same work in 15 $^{5}/_{13}$ days. A worked at the job for 4 days, then D took over and worked at it for 12 days; C then took over and worked at it for 14 days before B completed the job in 5 days. How long will they take to complete the job if all four of them work together?

A) 14 $^{6}/_{13}$ days   B) 4 $^{2}/_{7}$ days   C) 2 $^{17}/_{29}$ days   D) 6 $^{66}/_{89}$ days

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DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 71

Let a, b, and c be natural numbers such that a> b> c â‰¥ 3 and abc = 3003. Let X and Y be the maximum and minimum values, respectively, of a + b + c, find X - Y. (in numerical value)

A) 108   B)   C)   D)

DIRECTIONS for the question: Solve the following question and mark the best possible option.
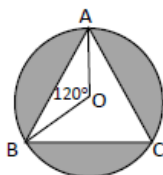
Question No. : 72

A shopkeeper bought 4 pens for Rs. 1250 each and sold them at an overall profit of 25%. If he sold two of the pens at a profit of 65% and a loss of 23% respectively, which of the following cannot be the percentage profit (%P) and / or percentage loss (%L) that the other two pens were sold for?

A) 80%P, 22%L   B) 40%P, 18%P   C) 54%P, 12%L   D) 78%P, 20%L

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 73

In the figure below, O is the circum-centre of $\triangle$ ABC, such that $\angle$ AOB = 120°. If AC = BC and area of $\triangle$ AOB is $12\sqrt{3}$ cm², what is the area of the shaded region?

A) $36(3\pi - \sqrt{3})$ cm²   B) $4(4\pi - 3\sqrt{3})$ cm²   C) $12(\pi - \sqrt{3})$ cm²   D) $12(4\pi - 3\sqrt{3})$ cm²

Question No. : 74

Moody's, a modelling agency, was on the lookout for new models. It had called 150 candidates for the purpose of recruiting models who were tall, dark and handsome. The break-up of the candidates with different attributes in that group of 150 was:

- Tall and handsome but not dark = 9
- Dark and handsome but not tall = 12
- Tall or dark but not handsome = 107

Each candidate had at least one of the three attributes that the agency was looking for. The agency could find only one person who satisfied its criteria and so was considering relaxing the requirements a little. It was also found that, for any attribute, the number of candidates who had that attribute alone did not exceed one-third of the total number of candidates called.

What is the minimum number of candidates who had at least two of the three attributes? (in numerical value)

A) 29   B)   C)   D)

Question No. : 75

Moody's, a modelling agency, was on the lookout for new models. It had called 150 candidates for the purpose of recruiting models who were tall, dark and handsome. The break-up of the candidates with different attributes in that group of 150 was:

- Tall and handsome but not dark = 9
- Dark and handsome but not tall = 12
- Tall or dark but not handsome = 107

Each candidate had at least one of the three attributes that the agency was looking for. The agency could find only one person who satisfied its criteria and so was considering relaxing the requirements a little. It was also found that, for any attribute, the number of candidates who had that attribute alone did not exceed one-third of the total number of candidates called.

If the number of candidates who were dark is less than those who were tall, then at least how many candidates were dark as well as tall? (in numerical value)

A) 12   B)   C)   D)

Question No. : 76

Moody's, a modelling agency, was on the lookout for new models. It had called 150 candidates for the purpose of recruiting models who were tall, dark and handsome. The break-up of the candidates with different attributes in that group of 150 was:

- Tall and handsome but not dark = 9
- Dark and handsome but not tall = 12
- Tall or dark but not handsome = 107

Each candidate had at least one of the three attributes that the agency was looking for. The agency could find only one person who satisfied its criteria and so was considering relaxing the requirements a little. It was also found that, for any attribute, the number of candidates who had that attribute alone did not exceed one-third of the total number of candidates called.

If exactly half of the candidates who were tall were also dark and exactly half of the candidates who were dark were also tall, then how many candidates were only tall? (in numerical value)

A) 34   B)   C)   D)

Question No. : 77

Moody's, a modelling agency, was on the lookout for new models. It had called 150 candidates for the purpose of recruiting models who were tall, dark and handsome. The break-up of the candidates with different attributes in that group of 150 was:

- Tall and handsome but not dark = 9
- Dark and handsome but not tall = 12
- Tall or dark but not handsome = 107

Each candidate had at least one of the three attributes that the agency was looking for. The agency could find only one person who satisfied its criteria and so was considering relaxing the requirements a little. It was also found that, for any attribute, the number of candidates who had that attribute alone did not exceed one-third of the total number of candidates called.

If the number of candidates who were tall is twice the number who had at least two attributes, then at least how many candidates were only dark? (in numerical value)

A) 41   B)   C)   D)

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 78

In how many ways 2050 can be written as the sum of two or more consecutive positive integers? (in numerical value)

A) 5   B)   C)   D)

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 79

For what values of x is $3|x| - |x - 3| > 0$?

A) $x > 3$ B) $x > 0$ C) $x > 3/4$ D) $x < 3/2$

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 80

Six persons, A, B, C, D, E and F, have made it to the final round of a chess tournament. In the final round, each player plays against the other players only once and the player with the highest points in this round is declared the winner. In case of ties in the number of points, all the players tied for the highest points are declared winners of the tournament. A player gets 5 for a win, 3 points for a draw, and loses 2 points for a loss. The number of wins, draws and losses, in that order, for A, B, C and D are A(2, 2, 1), B(2, 1, 2), C(0, 4, 1) and D(1, 3, 1). Based on this information, what is the maximum number of winners the tournament could possibly have? (in numerical value)

A) 2   B)   C)   D)

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 81

The line joining the points A(2, 0) and B(4, 2) is rotated in the anti-clockwise direction about A through 15° to form the line AC. What is the area of Δ ABC?

A) 4   B) 1.03   C) 3.46   D) 0.58

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 82

There is a clock hanging on the wall. The reflection of the clock in a mirror shows exactly the same time as the clock. How many times does this happen in 6 days? (in numerical value)

A) 24   B)   C)   D)

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 83

Bhanwar's Restaurant buys equal quantities of milk from three milkmen – Gokudas, Shyamsunder and Kishenlal. The milk bought from these three milkmen contain water, such that the percentages of water form a geometric progression respectively. For making milkshakes, Bhanwar mixes the milk bought from the milkmen in the ratio 2 : 3 : 4 respectively, so that the mixture contains 52% water. For making faludas, Bhanwar mixes the milk bought from the milkmen in the ratio 6 : 5 : 4 respectively, so that the mixture contains 36% water.

What is the percentage of water in the total quantity of milk bought from the three milkmen?

A) 64%   B) 42%   C) 48%   D) 56%

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 84

Bhanwar's Restaurant buys equal quantities of milk from three milkmen – Gokudas, Shyamsunder and Kishenlal. The milk bought from these three milkmen contain water, such that the percentages of water form a geometric progression respectively. For making milkshakes, Bhanwar mixes the milk bought from the milkmen in the ratio 2 : 3 : 4 respectively, so that the mixture contains 52% water. For making faludas, Bhanwar mixes the milk bought from the milkmen in the ratio 6 : 5 : 4 respectively, so that the mixture contains 36% water.

For making kulfi, Bhanwar mixed the milk bought from the milkmen in the ratio 3 : 2 : 1 respectively. What was the percentage of pure milk in the mixture?

A) 27%   B) 36%   C) 73%   D) 48%

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 85

3 circles with centres A, B and C and radii R_1, R_2 and R_3 respectively are tangent to each other. If the in-radius of ΔABC is 4", what is the ratio of the product of the radii to the sum of the radii?

A) 4 : 1   B) 16 : 1   C) 8 : 3   D) Cannot be determined

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 86

A man takes 80 days to circumnavigate the globe along the equator. He can carry food only enough for 60 days. His servant, also carrying enough food for 60 days, accompanies him for part of the journey. When the servant turns back, he transfers part of the food to the man. If the man and his servant completed their respective journeys, for how many days did the servant accompany the man? (in numerical value)

A) 20   B)   C)   D)

DIRECTIONS for the question: Solve the following question and mark the best possible option.
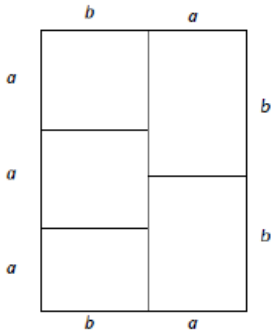
Question No. : 87

A grasshopper hops 1 meter in four directions – north, south, east and west – and leaves a blot wherever it lands, and returns to the original position before hopping again. In the first stage, the grasshopper starts from a point S and hops in all four directions. In the second stage, the grasshopper uses the previous blots as starting points and hops in all four directions. In the third stage, the grasshopper uses the new blots left in the second stage as starting points and hops in all four directions. If the grasshopper continues this pattern of hopping from new starting points and leaving blots where ever it lands, which of the following cannot be the total number of distinct blots, other than S, left by the grass hopper after any stage?

A) 112   B) 312   C) 480   D) 860

DIRECTIONS for the question: Solve the following question and mark the best possible option.

Question No. : 88

My house is in the shape of a rectangle with a perimeter of 88m and has 5 rooms which are also by chance congruent rectangles (as shown in the diagram). What is the perimeter of each of the rooms? (in meter)

A) 40   B)   C)   D)

Question No. : 89

If s is the semi-perimeter of triangle ABC with sides a, b and c, what is the value of $(s - a)^3 + (s - b)^3 + 3c(s - a)(s - b)$?

A) a^3 B) b^3 C) abc D) c^3

Question No. : 90

N is a three-digit natural number formed by using the digits from 1 to 9 such that the ten's place of N is a perfect square. What is the sum of all possible values of N? (in numerical value)

A) 134055   B)   C)   D)

Question No. : 91

Which of the following equations represents the reflection of the graph $2x - y + 4 = 0$ about the y-axis?

A) $2x - y - 4 = 0$ B) $2x + y - 4 = 0$ C) $4x - y - 2 = 0$ D) None of these

Question No. : 92

What is the value of the infinite series $S = \dfrac{2}{5} + \dfrac{6}{25} + \dfrac{12}{125} + \dfrac{20}{625} + \dfrac{30}{3125} + ...?$

1. $\dfrac{13}{16}$
2. $\dfrac{4}{5}$
3. $\dfrac{25}{32}$
4. $\dfrac{39}{50}$

(write the answer key)

A) 3   B)   C)   D)

Question No. : 93

What values of x will satisfy the inequality $x^2 - 18x - 646 > 2$?

A) $x < -24$, $x > 27$ B) $x < -18$, $x > 36$ C) $-15 < x < 24$ D) $-36 < x < 18$

Question No. : 94

A projectile is fired upwards from an initial height of 10 m at time $t = 0$. Its height after t seconds is defined by the function $h(t) = p - 10(q - t)^2$, where, p and q are positive constants. If the projectile attains its maximum height of 100 m after 3 seconds, what is its height after 4 seconds? (in m)

A) 90   B)   C)   D)

Question No. : 95

If k and n are positive integers such that k is odd and $n \geq 1$, then $1^k + 2^k + 3^k + \text{---} + n^k$ is divisible by

1. $n(n + 1)$
2. $n(n + 1)/2$
3. $n(n + 1)(2n + 1)/6$
4. $n(n + 1)(n + 2)/6$

(write the ans key)

A) 2   B)   C)   D)

Question No. : 96

Ramlal was towing a rubber dinghy by motorboat from town A to town B, located x km upstream. At the half way mark, the tow line snapped and the dinghy started drifting downstream. Ramlal realised this when he reached town B. He immediately turned back and travelling at 125% of his former speed, caught up with the dinghy 10 km before town A. The motorboat's speed in still water was what percent greater than the speed of the stream?

A) 800%   B) 500%   C) 900%   D) Cannot be determined

Question No. : 97

The figure below shows a six-pointed star formed by placing two equilateral triangles symmetrically one over the other. If the sides of the triangles are 21 cm each, what is the ratio of the numerical value of the area of the shaded region to the numerical value of the perimeter of the six-pointed star?
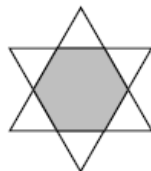
A) $3 : 2$ B) $7\sqrt{3} : 8$ C) $1 : 4\sqrt{3}$ D) $1 : 1$

Question No. : 98

What is the sum up to n terms of the series $\dfrac{43}{8}, \dfrac{137}{16}, \dfrac{379}{32}, \dfrac{977}{64}, \dfrac{2419}{128}, \dfrac{5849}{256}, \text{.....}?$

A) $\dfrac{3^n - 1}{2^n} + \dfrac{3n^2 + 7n}{2}$ B) $\dfrac{3}{8} \times \dfrac{3^n - 1}{2^n} + \dfrac{n(3n+7)}{2}$ C) $\dfrac{3^n - 1}{2^{n+3}}$ D) $\dfrac{3^{n+1} - 3.2^n}{2^{n+2}} + \dfrac{n(3n+7)}{2}$

DIRECTIONS for the question: *Solve the following question and mark the best possible option.*

Question No. : 99

Δ ABC is a right angled triangle of area 20. If the legs of the right angle are x and y and the hypotenuse is 10, what is the value of $(x + y)^2$? (in numerical value)

A) 180   B)   C)   D)

DIRECTIONS for the question: *Mark the best option:*
Question No. : 100

How many integers between 100 and 10,000 contain exactly two 9s?

A) 434   B) 485   C) 459   D) 405

QNo:- 1 ,Correct Answer:- 5

Explanation:- *Statements 3-2-4-1 form the set of connected statements. These four statements are based on the common subject of Jaden Smith. Only statement 5 is the odd one out here as it is not directly based on this subject.*

QNo:- 2 ,Correct Answer:- 3

Explanation:- *Solution: In this case, you need to follow the flow of information to identify the correct answer. Statement 4 introduces the given subject; statement 2 takes the subject forward and provides greater detail for it; statement 1 then describes life on the rebel side and statement 5 completes the information. Statement 3 is the odd one out here as it does not directly connect with the other statements.*

QNo:- 3 ,Correct Answer:- 3

Explanation:- *Statements 5-1-2-4 form the connected set in the given case. Statement 3 is the odd one out. Statements 5-1-2-4 are built around the same subject and explain particular instances for a given situation. Statement 3 is a generalization which does not fit the given sequence of information.*

QNo:- 4 ,Correct Answer:- 31452

Explanation:- *Statement 3 introduces the subject of the passage. Statement 1 then provides a comment on the subject. Statements 4, 5 and 2 then take this forward. Statements 4, 5 and 2 are a connected set. Statement 4 describes the general state of the language of eating is often used to describe reading habits and statements 5 and 2 further describe this.*

QNo:- 5 ,Correct Answer:- 4

Explanation:-
The author of the paragraph illustrates how sports is actually of our past and how it reflects the combat that used to take place between human animals. It is a reflection out of genetic fitness. Keeping these sentiments in mind, we can see that option 4 is the best fit in the given case.

QNo:- 6 ,Correct Answer:- 4

Explanation:-
In the given question, the author is comparing the relative merits of being big and small. He clearly points out that being big no

longer offers any special advantage and this helps us identify option 4 as the correct answer.

QNo:- 7 ,Correct Answer:- 5

Explanation:-
In this case, statements 1-3-2-4 form the connected set. Statement 1 is the generic opening sentence; statement 3 takes the sentiment forward; statement 2 introduces a contradiction and statement 4 elaborates on that contradiction. Statement 5 does not fit in this context

QNo:- 8 ,Correct Answer:- 1

Explanation:-
Option 1. The paragraph talks about technology and agriculture and their effect on farmers€™ lives. 2-4-3 is the sequence.
1 is not only out of scope, but is also a very fallacious way to attack the problem.

QNo:- 9 ,Correct Answer:- 24531

Explanation:-
'Such allegation' in 3 means the allegations made by the local residents in 5. The word company, committee, family etc can be singular or plural depending on how you use it. The they in 1 refers to the company â€" taken as plural.

QNo:- 10 ,Correct Answer:- 42513

Explanation:-
We can rule out 3 as the first sentence because of the word â€œthisâ€, which tells us that there are to be something mentioned earlier which we are referring to.
4 states that devaluing the Greek currency will lead to harming the country. This would be followed by2 which states that that devaluation will be costly for Europe too.
How is this so is mentioned in 5.

QNo:- 11 ,Correct Answer:- A

Explanation:-
Option 3 is irrelevant as nowhere does the writer oppose the use of money as a medium of exchange.
Option 4 is wrong as there is no mention of how the process came about. In fact, the author does not even talk of the period in which this transition happened.
Option 2 is correct in parts only the passage speaks of the importance of money only in modern times.
The first three paragraphs talk of the demonetized society we had wherein the creation and of money was strictly discouraged while the last two talk of its emergence as an economic accelerator. Therefore option 1 fits the bill perfectly.

QNo:- 12 ,Correct Answer:- C

Explanation:-
Look at the lines following the idiom. They all speak of the negatives that unfolded after it happened.
The rest of the options convey literal meanings of the idiom in question.

QNo:- 13 ,Correct Answer:- D

Explanation:-
Options 1 and 2 represent general, folk truth but they bear no relevance to the ideas contained in the passage.
Option 3 is irrelevant as the writer has not discussed power at all. Rather, it is the access to power which has been talked about.

QNo:- 14 ,Correct Answer:- A

Explanation:-
The author started to put his realisation that talking about the weather was not after all a vacuous job into practice for the first time with the cashier at the gas station. It was like a conversation starter.
It was not an example and neither a critical comment, just an opening sentence. He uses the weather to start the conversation and hence we cannot call it an accompaniment.

QNo:- 15 ,Correct Answer:- C

Explanation:-
The author states that speaking of the weather leads to information on a lot of other things â€" like family, ambitions, frustrations and plans. Talking of the weather gives the author insight into the lives of others, but that does not mean the weather is the most important aspect for all sections of the society. Money and weather are not related in the passage. The author realises that talking about the weather is not vacuous and not that the people have vacuous minds.

QNo:- 16 ,Correct Answer:- A

Explanation:-
The way every person looked at the weather was different and the way they reacted to the weather was also different. The environment affects every person differently. People looked at weather from different perspectives and hence option 3 is incorrect. There is no talk of the involvement of people with their surroundings.

QNo:- 17 ,Correct Answer:- C

Explanation:- Option 3 can be established from the lines: The way book authors get paid these days is pretty straightforward: publishers keep careful track of how many books they sell and pay authors a royalty â€" agreed upon when the contract is signed â€" of each sale. Authors can check sales figures using resources like Bookscan or their own accountants. Royalty rates are well established throughout much of the industry. Everyone is protected by copyright. Easy peasy.
Option 1 is ruled out as 'selling of books' is not the subject of the passage and we do not know how easy or tough it is to sell books,
Option 2 is ruled out as there is no accurate measure for comparing the level of piracy for the two given time references.

QNo:- 18 ,Correct Answer:- D

Explanation:- The answer can be derived from the lines: All of this drove Goethe nuts. Like many artists, Goethe had an uneasy relationship with money in the first place. He was on the one hand disdainful of the profit motive (he once wrote to a publisher, â€œI look odd to myself when I pronounce the word Profitâ€), and yet he referred to the asymmetry of information as â€œthe main evilâ€ of publishing.
We can see that option 4 is the best answer in this case.

QNo:- 19 ,Correct Answer:- A

Explanation:- In this case, statement III is incorrect. It cleverly uses a double negative and negates the original sentiment of the author of the passage.
Statements I & II are direct derivations from the passage.

QNo:- 20 ,Correct Answer:- C

Explanation:- The answer to this question can be derived from the lines: The author wanted to know how much he was worth to Vieweg (perhaps with an eye to extracting higher royalties from his publishers over the longer run), and he devised this peculiar â€œauctionâ€ to get Vieweg to tell him.
Remember, the intent of the action was not necessarily to adopt a win the highest amount (for which he would held an open auction) but to rather establish his worth.

QNo:- 21 ,Correct Answer:- A

Explanation:- From the given options, only 'intellectually driven' is an option that can be used to describe Goethe. 1 finds no mention in the passage.
2 is tough to conclude as we cannot say with certainty that Goethe's strategies were successful.
4 goes against the information of the passage.

QNo:- 22 ,Correct Answer:- A

Explanation:- In this case, the best option is 1. We can only safely say that the author is describing a certain piece of history here. His views on the subject or his analysis is something that is missing from the given context.

QNo:- 23 ,Correct Answer:- B

Explanation:- Ubiquitous means 'being present everywhere at once'. In the given context, the author of the passage has used the given word to imply that this is the universal or common example for the given situation. Keeping this in mind, we see that option 2 is the best answer in the given case.

QNo:- 24 ,Correct Answer:- A

Explanation:- The answer to this question can be derived from the lines: Consequentialist moral theories hold that what's right is a function of what's good: the right thing to do is whatever would produce the best consequences...In trolley cases, consequentialists typically say that you should be willing to kill one to save five, but deontologists say that you shouldn't. Remember, the costs will be minimum in all cases.

QNo:- 25 ,Correct Answer:- B

Explanation:- Let us look at the meanings of the various options to identify the correct answer.
Specious reasoning: Seemingly well-reasoned, plausible or true, but actually fallacious. This idea that we must see through what we have started is specious, however good it may sound.

Circular reasoning: Circular reasoning (Latin: circulus in probando, "circle in proving"; also known as circular logic) is a logical fallacy in which the reasoner begins with what they are trying to end with.

Ad hominem:.
(of an argument or reaction) directed against a person rather than the position they are maintaining.

Butterfly logic: A makes me think of B, so B causes A. Or vice versa.
What seems to be connected is connected. Connection implies causality, with the earlier event being the sole cause.

We can see that option 2 is the best answer in the given case.

QNo:- 26 ,Correct Answer:- A

Explanation:- The answer can be directly derived from the lines: And our moral intuitions in favour of consequentialist verdicts — that you should harm one to save five — are generated by more rational processes responsive to morally relevant factors, such as how much harm is done for how much good.

As a result, we should apparently be suspicious of deontological intuitions and deferential to our consequentialist intuitions. This research thereby also provides evidence for a particular moral theory: consequentialism.

QNo:- 27 ,Correct Answer:- B

Explanation:- This is an easy question. The answer can be directly derived from the lines: Greene's results, however, don't offer any scientific support for consequentialism. Nor do they say anything philosophically significant about moral intuitions.

QNo:- 28 ,Correct Answer:- D

Explanation:- 'Enfant terrible' means 'a person whose unconventional behaviour embarrasses others'. Clearly, option 3 is an illogical choice built to confuse you.
Options 1 and 2 go against the primary argument of the author of the passage.
Option 4 is the best choice in the given case.

QNo:- 29 ,Correct Answer:- D

Explanation:- In the given case, the author of the passage uses the given example to point out a repetitive pattern in news reporting. He wishes to highlight how a certain event is happening over and over and we are not doing enough to reach the logical conclusion. Keeping this in mind, we can see that option 4 is the best answer.

QNo:- 30 ,Correct Answer:- B

Explanation:- The answer can be directly derived from the lines: That could be true. But there's also another option. Maybe it's us: maybe journalists aren't listening. The story never changes because we stopped looking for the other stories we could tell...What if, as a journalist, I've been steering the national conversation in the wrong direction by not questioning the reasons put forth? Herd immunity matters a lot, and there's good reason to think we aren't listening well enough to what the herd has to say.

QNo:- 31 ,Correct Answer:- D

Explanation:- Ad nauseum is used to refer to the fact that something has been done or repeated so often that it has become annoying or tiresome to a great degree i.e sickening extent.

QNo:- 32 ,Correct Answer:- D

Explanation:- In the given passage, the author suggests that by choosing not to vaccinate their kids, these parents are putting the general public at risk. In other words, they place the welfare of their children above public good. Now statements I and IV refer to this.

QNo:- 33 ,Correct Answer:- D

Explanation:- All of the options can be derived from the lines: That means the more vaccinated people there are, the harder it is for a disease to spread. Vaccines can stop an outbreak before it happens. This so-called 'herd immunity' protects children who are too young to get a vaccine, people who are too sick to get one, and anybody whose vaccination isn't working as well as it should.

QNo:- 34 ,Correct Answer:- D

Explanation:- In the given case, the author of the passage wants us to explore a certain subject and wants deeper questions to be asked about the same. He goes on explain the urgent need to consider important points related to vaccinations and how our understanding of the subject might be incorrect. Considering this, option 4 is the apt answer.

QNo:- 35 ,Correct Answer:- C

Explanation:-
The sales of Glory in 2008 were 45% of 18 million = 8.1 million.

The sales of Glory in 2011 were 41% of 16 million = 6.56 million.

Sales of Glory decreased by $\frac{8.1-6.56}{8.1} \times 100 \approx 20\%$.

QNo:- 36 ,Correct Answer:- 2010

Explanation:-
The total number of Toilet Soap sold was maximum in 2010 and the percentage of Unviel sold was also maximum in 2010. So, the sales of Unviel showed the maximum percentage increase over the previous year in 2010.

QNo:- 37 ,Correct Answer:- D

Explanation:-
The sales of Other Toilet Soap in 2008 were 12% of 18 million = 2.16 million.
The sales of Other Toilet Soap in 2011 were 23% of 16 million = 3.68 million.
Since the number of Other Toilet Soap sold has increased by 3.68 – 2.16 = 1.52 million, the percentage increase is 1.52/2.16 ≈ 70%. So, statement I is false.
Freshness and AquaSprings together accounted for 30%, 28%, 35% and 24% of the total sales of Toilet Soap in 2008, 2009, 2010 and 2011 respectively. Since the percentage is highest in 2010 and the total number of Toilet Soap sold is the highest in 2010, the percentage increase in sales over the previous year will be maximum in 2010.
So, statement II is false.
Hence both the statements are false.

QNo:- 38 ,Correct Answer:- B

Explanation:-
Since each cable must contain at least three wires of different colours, option (4) is eliminated.
If one wire is violet, then no wire can be green.
So, option (1) is also eliminated.
If one wire is red then one wire must be yellow.
So, option (3) also is eliminated.
So the option left i.e. the second is the answer.

QNo:- 39 ,Correct Answer:- 7

Explanation:-
We can take 2 black, 2 white, 1 red, 1 yellow and either 1 violet or 1 green wire.
Thus the maximum number of wires is seven.

QNo:- 40 ,Correct Answer:- A

Explanation:-
As explained earlier, if we take 1 black, 1 white, then the maximum number of wires is 5. Thus first option is the answer.

QNo:- 41 ,Correct Answer:- C

Explanation:-
Let A's debt be Q and be started betting with money X. Therefore, after first round of winning and repaying money left with him = 2X - Q/4
Hence, after 4th round of winning and repaying money left with him is:

$$2(2(2(2x - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}$$

From question, we know that this amount is zero

$$\therefore X = \frac{15Q}{64} \text{ again,}$$

Let B, C, and D lost b, c and d amount of money.

$$\text{Therefore } b = \frac{d}{2} \text{ -----(I)}$$

$$c = 7000 + \frac{d}{4} \text{ ------(II) and } \frac{b+c+d}{3} = c + 22000 \text{ ------(III)}$$

Solving these three simultaneous linear equation we have d = 80000, b = 40000 and c = 27000.
Total money won by A = 80000+40000+27000 =147000 and total loan paid by A = Q = 147000 + X
⇒ Q = 192000 ∴ X = 45000

B loses Rs. 40000. Hence, [3]

QNo:- 42 ,Correct Answer:- A

Explanation:-
Let A's debt be Q and be started betting with money X. Therefore, after first round of winning and repaying money left with him = 2X - Q/4
Hence, after 4th round of winning and repaying money left with him is:

$$2(2(2(2x - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}$$

From question, we know that this amount is zero

$$\therefore X = \frac{15Q}{64} \text{ again,}$$

Let B, C, and D lost b, c and d amount of money.

Therefore $b = \frac{d}{2}$ -----(I)

$c = 7000 + \frac{d}{4}$ ------(II) and $\frac{b+c+d}{3} = c + 22000$ ------(III)

Solving these three simultaneous linear equation we have d = 80000, b = 40000 and c = 27000.
Total money won by A = 80000+40000+27000 =147000 and total loan paid by A = Q = 147000 + X
⇒ Q = 192000 ∴ X = 45000

A wins Rs. (2X - $\frac{Q}{4}$) in round 2 i.e., (90000-48000) = Rs. 42000.

Hence, [1]

QNo:- 43 ,Correct Answer:- B

Explanation:-
Let A's debt be Q and be started betting with money X. Therefore, after first round of winning and repaying money left with him = 2X - Q/4
Hence, after 4th round of winning and repaying money left with him is:

$$2(2(2(2x - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}$$

From question, we know that this amount is zero

$$\therefore X = \frac{15Q}{64} \text{ again,}$$

Let B, C, and D lost b, c and d amount of money.

Therefore $b = \frac{d}{2}$ -----(I)

$c = 7000 + \frac{d}{4}$ ------(II) and $\frac{b+c+d}{3} = c + 22000$ ------(III)

Solving these three simultaneous linear equation we have d = 80000, b = 40000 and c = 27000.
Total money won by A = 80000+40000+27000 =147000 and total loan paid by A = Q = 147000 + X
⇒ Q = 192000 ∴ X = 45000
A starts with Rs. X = Rs. 45000. Hence, [2]

QNo:- 44 ,Correct Answer:- D

Explanation:-
Let A's debt be Q and be started betting with money X. Therefore, after first round of winning and repaying money left with him = 2X - Q/4
Hence, after 4th round of winning and repaying money left with him is:

$$2(2(2(2x - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}$$

From question, we know that this amount is zero

$$\therefore X = \frac{15Q}{64} \text{ again,}$$

Let B, C, and D lost b, c and d amount of money.

Therefore $b = \frac{d}{2}$ -----(I)

$c = 7000 + \frac{d}{4}$ ------(II) and $\frac{b+c+d}{3} = c + 22000$ ------(III)

Solving these three simultaneous linear equation we have d = 80000, b = 40000 and c = 27000.
Total money won by A = 80000+40000+27000 =147000 and total loan paid by A = Q = 147000 + X
⇒ Q = 192000 ∴ X = 45000

A's debt = Q = Rs. 192000. Hence, [4]

QNo:- 45 ,Correct Answer:- A

Explanation:-
Let A's debt be Q and be started betting with money X. Therefore, after first round of winning and repaying money left with him =
2X - Q/4
Hence, after 4th round of winning and repaying money left with him is:

$$2(2(2(2x - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}) - \frac{Q}{4}$$

From question, we know that this amount is zero

$$\therefore X = \frac{15Q}{64} \text{ again,}$$

Let B, C, and D lost b, c and d amount of money.

$$\text{Therefore } b = \frac{d}{2} \text{-----(I)}$$

$$c = 7000 + \frac{d}{4} \text{------(II) and } \frac{b+c+d}{3} = c + 22000 \text{ ------(III)}$$

Solving these three simultaneous linear equation we have d = 80000, b = 40000 and c = 27000.
Total money won by A = 80000+40000+27000 =147000 and total loan paid by A = Q = 147000 + X
⇒ Q = 192000 ∴ X = 45000

$$\text{In fourth round A wins amount equal to } \frac{1}{2}\left(\frac{Q}{4}\right) = \frac{48000}{2} = 24000. \text{ Hence, [1]}$$

QNo:- 46 ,Correct Answer:- 20

Explanation:-
Since 2 people can cross at a time, they would carry the bottle of water with them.
One of them would return with the bottle and the next pair would carry it with them.
Since Madu and Kadu take 9 min and 6 min respectively to cross the bridge, they must cross the bridge together so that the time taken is only 9 minutes. Based on this, we have the following possibility for minimum time.

Journey	Men	Time
1st trip	Ali, Salu	3 min
Return	Ali/ Salu	2/3 min
2nd trip	Kadu, Madu	9 min
Return	Salu/Ali	3/2 min
Final trip	Salu, Ali	3 min

The minimum time taken to cross the bridge is 20 minutes.

QNo:- 47 ,Correct Answer:- C

Explanation:-
Since 2 people can cross at a time, they would carry the bottle of water with them.
One of them would return with the bottle and the next pair would carry it with them.
Since Madu and Kadu take 9 min and 6 min respectively to cross the bridge, they must cross the bridge together so that the time taken is only 9 minutes. Based on this, we have the following possibility for minimum time.

Journey	Men	Time
1st trip	Ali, Salu	3 min
Return	Ali/ Salu	2/3 min
2nd trip	Kadu, Madu	9 min
Return	Salu/Ali	3/2 min
Final trip	Salu, Ali	3 min

Salu and Ali are the last two persons to cross the bridge.

QNo:- 48 ,Correct Answer:- B

Explanation:-
Starting from A and going straight up and then right to B is 14 km.
This seems to be the most obvious answer.
However, a person could walk straight up from A and take a right turn to reach the corner of the garden near point E, then walk along the garden to reach the corner of the garden M and then walk straight up to reach point B.
From the figure, if we drop a perpendicular from point M to the base of the triangular garden, we will get a (3, 4, 5) triangle.
In this case, the minimum distance from point A to point B will be 6 + 5 + 1 = 12 km.

QNo:- 49 ,Correct Answer:- D

Explanation:-
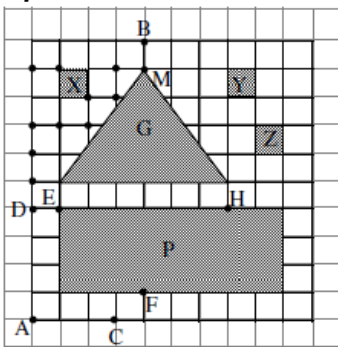
Since the paths along the garden cannot be walked upon, the minimum distance from A to be will be 14 km. This distance can be covered by moving up 10 km and right 4 km.
A person has a choice of moving up or moving right at each of the additional points (un-labelled points) shown in the figure above.
Each such choice will result in a different path.
It is easy to verify that the total number of paths will be greater than 6.

QNo:- 50 ,Correct Answer:- A

Explanation:-
Referring to the previous solutions, we know that if a person walks along the garden, he would save 2 km.
However, the 5 km that he would have to walk along the garden would cost him a total of Rs. 5 more as compared to walking 5 km along the road.
So, though he saves the Rs. 4 that he would have to pay if he walks a total of 14 km, he would end up paying an additional Rs. 5 if he walks along the garden.
If the person decides to use the boat, then the total distance travelled would definitely be more than 14 km. So, in order to minimise his cost, the person should walk 14 km by road.
Thus the minimum cost incurred in travelling from A to B would be 14 Ã— 2.25 = Rs. 31.50.

QNo:- 51 ,Correct Answer:- 80

Explanation:-
There are total of 1200 Ã— 0.6 = 720 boys; out of these 30 do not play any game.
Hence total number of boys playing at least one game = 690
Now by the given condition one can participate at most in two games, one outdoor and one indoor.
Now total number of boys playing = 120 + 240 + 160 + 320 + 100 + 200 + 160 = 1,300
Now as 690 boys play and they can play at most two games, then number of boys playing more than one game = 1,300 - 690 = 610. Hence, number of students playing only one game = 690 - 610 = 80.

Note: Answer = 2 Ã— 690 - 1,300 = 80

QNo:- 52 ,Correct Answer:- 121

Explanation:-
No. of girls participating in indoor games = 450.
Σο 6 % of 450 = 27 are physically handicapped girls
Hence, 54 are boys, who are physically handicapped students.
Total = 27 + 54 + 40 = 121

QNo:- 53 ,Correct Answer:- 10

Explanation:-
There are 560 players in the first round.
Σο τhere are 280 matches.
Thus we have

Round	Players	Winners
1	560	280
2	280	140
3	140	70
4	70	35
5	35	17 or 18
6	17 or 18	8 or 9
7	8 or 9	4 or 5
8	4 or 5	2 or 3
9	2 or 3	1 or 2

Thus, in 10 rounds one winner can be clearly determined

QNo:- 54 ,Correct Answer:- 1

Explanation:-
There are 160 boys and 150 girls who play badminton.
Hence, 150 mixed doubles teams can be easily formed.
But 10 boys are left with no girl partner.
Hence at least 1 girl has to form more than two â€" mixed doubles teams i.e., she will participate in 11 mixed doubles apart from one doubles team.
Hence, minimum number of students participating in more than two teams is one.

QNo:- 55 ,Correct Answer:- A

Explanation:-
Since the predicted rainfall for 2005 was 48 mm and the actual rainfall in 2005 was 45 mm, we have A_{2005} / P_{2005} = 45/48 = 93.75%.
So, 2005 was a Good year and therefore α = 0.3.
P_{2006} = (1 + 0.3)A_{2005} + P_{2005} = 1.3 × 45 + 48 = 106.5 mm.
A_{2006} / P_{2006} = 58/106.5 = 54.46%.
So, 2005 was a Average year and therefore α = –0.2.
P_{2007} = (1 – 0.2)A_{2006} + P_{2006} = 0.8 × 58 + 106.5 = 152.9 mm. A_{2007} / P_{2007} = 76/152.9 = 49.7%.
Thus, 2007 can be described as a Poor year.

QNo:- 56 ,Correct Answer:- C

Explanation:-
Since 2009 was a Good year, we know that 0.9 P_{2009} < A_{2009} < P_{2009} and α = 0.3.
If 0.9P_{2009} = A_{2009} = 94, we get P_{2009} = 104.44 mm and if P_{2009} = A_{2009}, we get P_{2009} = 94 mm; in other words, P_{2009} ranges

from 94 mm to 104.44 mm.

If P_{2009} = 94, then P_{2010} = 1.3 × 94 + 94 = 216.2 mm and A_{2010} / P_{2010} = 108/216.2 = 49.95% and 2010 will be described as a Poor year.

If P_{2009} = 104.44, then P_{2010} = 1.3 × 94 + 104.44 = 226.64 mm and A_{2010} / P_{2010} = 108/226.64 = 47.65% and 2010 will be described as a Poor year.

Thus, even though we do not know the exact value of the predicted rainfall for 2010, we are sure that in the entire range, 2010 will still be described as a Poor year.

QNo:- 57 ,Correct Answer:- B

Explanation:-

Since 2008 was a Good year, we know that 0.9 P_{2008} < A_{2008} < P_{2008} and α = 0.3.

If 0.9P_{2008} = A_{2008} = 80, we get P_{2008} = 88.88 mm and if P_{2008} = A_{2008}, we get P_{2008} = 80 mm; in other words, P_{2008} ranges from 80 mm to 88.88 mm.

If P_{2008} = 80 mm, then P_{2009} = 1.3 × 80 + 80 = 184 mm and A_{2009} / P_{2009} = 94/184 = 51.08% and 2009 will be described as an Average year so that α = –0.2.

In this case, P_{2010} = 0.8 × 94 + 184 = 259.2 mm.

If P_{2008} = 88.88 mm, then P_{2009} = 1.3 × 80 + 88.88 = 192.88 mm and A_{2009} / P_{2009} = 94/192.88 = 48.7% and 2009 will be described as a Poor year so that α = –0.6.

In this case, P_{2010} = 0.4 × 94 + 192.88 = 230.48 mm.

So, the predicted rainfall for 2010 must lie between 230.48 mm and 259.2 mm.

The best answer is option 2.

QNo:- 58 ,Correct Answer:- 77

Explanation:-

Generation I	A male 80 Years		Wife→			C Female 77years		
Generation II	D Male 55 Year		Wife→			E Female 52 years		
Generation III	P Male 30 years	Wife→	Q Female 27 year	P and R are Brothers	R Male 28 years	Wife→	S Female 25years	
Generation IV	J Female 5 years	J and Z are sister	Z Female 3 years					

C is P's grandmother and she is 77 years old.

QNo:- 59 ,Correct Answer:- A

Explanation:-

Generation I	A male 80 Years	Wife→	C Female 77years

Generation II	D Male 55 Year	Wife→					E Female 52 years
Generation III	P Male 30 years	Wife→	Q Female 27 year	P and R are Brothers	R Male 28 years	Wife→	S Female 25years
Generation IV	J Female 5 years	J and Z are sister	Z Female 3 years				

Relation between S and J is aunt-niece.

QNo:- 60 ,Correct Answer:- A

Explanation:-
If the 2nd speaker was a male, then the 1st speaker was also a male and this speaker would be the owner whose wife is not present. So, after the 1st speaker, the remaining speakers will follow the order owner-wife. So, the 7th speaker must be the wife of the owner who spoke 6th. Thus first option is the answer.

QNo:- 61 ,Correct Answer:- C

Explanation:-
Since Vijay and Raj were the 1st and the 2nd males to speak, their wives, Neeta and Shilpa, in some order will speak before Mukesh and Shashi. Hence third option is the answer.

QNo:- 62 ,Correct Answer:- D

Explanation:-
Comparing the information contained in each of the options with the required order of speakers, it is easy to verify that option 4 is correct.

QNo:- 63 ,Correct Answer:- D

Explanation:-
From the 1st clue, we know that laundry will happen on Friday. From the 2nd clue, since dusting has to happen before sweeping and mopping, dusting cannot happen on Wednesday or Thursday. Also, since sweeping must happen before mopping, sweeping cannot happen on Thursday. Similarly, mopping cannot happen on Monday or Tuesday. So, dusting can happen on Monday or Tuesday, sweeping can happen on Tuesday or Wednesday and mopping can happen on Wednesday or Thursday.From the 5th clue, Tanu does sweeping on Tuesday. Combining this with the 2nd clue, we know that dusting happens on Monday. From the 3rd clue, Sayali will do shopping on Tuesday or Thursday. Since sweeping is done on Tuesday, Sayali must do shopping on Thursday. Therefore, mopping must be done on Wednesday. From the 4th clue, Roopam does her chore on Wednesday and Rupali does her chore on Friday. Thus, Monday's chore must be done by Prachi. The correct order of Day – Name – Chore is:
Monday – Prachi – Dusting;
Tuesday – Tanu – Sweeping;
Wednesday – Roopam - Mopping;
Thursday – Sayali – Shopping;
Friday – Rupali – Laundry.

Prachi agrees to take care of dusting.

QNo:- 64 ,Correct Answer:- C

Explanation:-

From the 1st clue, we know that laundry will happen on Friday. From the 2nd clue, since dusting has to happen before sweeping and mopping, dusting cannot happen on Wednesday or Thursday. Also, since sweeping must happen before mopping, sweeping cannot happen on Thursday. Similarly, mopping cannot happen on Monday or Tuesday. So, dusting can happen on Monday or Tuesday, sweeping can happen on Tuesday or Wednesday and mopping can happen on Wednesday or Thursday.From the 5th clue, Tanu does sweeping on Tuesday. Combining this with the 2nd clue, we know that dusting happens on Monday. From the 3rd clue, Sayali will do shopping on Tuesday or Thursday. Since sweeping is done on Tuesday, Sayali must do shopping on Thursday. Therefore, mopping must be done on Wednesday. From the 4th clue, Roopam does her chore on Wednesday and Rupali does her chore on Friday. Thus, Monday's chore must be done by Prachi. The correct order of Day – Name – Chore is:
Monday – Prachi – Dusting;
Tuesday – Tanu – Sweeping;
Wednesday – Roopam - Mopping;
Thursday – Sayali – Shopping;
Friday – Rupali – Laundry.

Roopam takes care of mopping on Wednesday.

QNo:- 65 ,Correct Answer:- A

Explanation:-

To find the maximum number of units of Y, we need to have maximum time left after 50 units each of X and Z have been manufactured. In other words, the 50 units each of X and Z must be manufactured in the minimum possible time.
The number of units of X manufactured on M1 is (12 × 60)/15 = 48. Another 2 units of X can be manufactured on M3 in 48 minutes so that 672 minutes are still available on M3. The number of units of Z manufactured on M2 is (12 × 60)/24 = 30. Another 20 units of Z can be manufactured on M3 in 600 minutes so that 72 minutes are still available on M3. Since one unit of Y can be manufactured on M3 in 25 minutes, we can manufacture 2 units of Y in the available time.

QNo:- 66 ,Correct Answer:- B

Explanation:-

The cost of manufacturing one unit of X is 1.25 Ã— 8 = Rs. 10. So the profit from the sale of 1 unit of X is 12 - 10 = Rs. 2. The cost of manufacturing one unit of Y is 1.2 Ã— 10 = Rs. 12. So the profit from the sale of 1 unit of Y is 15 - 12 = Rs. 3. The cost of manufacturing one unit of Z is 1.2 Ã— 15 = Rs. 18. So the profit from the sale of 1 unit of Z is 20 - 18 = Rs. 2. Thus the profit from the sale of 100 units of X, 100 units of Y and 25 units of Z is (100 Ã— 2) + (100 Ã— 3) + (25 Ã— 2) = Rs. 550.

QNo:- 67 ,Correct Answer:- A

Explanation:-

The ratio of the diameters is the same as the ratio of radii. Suppose the radii of the large and small un-shaded circles are 3 and 1 respectively. The radius of the largest circle will be 4 and its area will be 16π.

The sum of the un-shaded areas is $9\pi + \pi = 10\pi$. So, the shaded region is $16\pi - 10\pi = 6\pi$.

Since the sum of the areas of the 3 circles is $16\pi + 9\pi + \pi = 26\pi$, the required fraction is $\frac{6\pi}{26\pi} = \frac{3}{13}$.

QNo:- 68 ,Correct Answer:- A

Explanation:-

(x + a) is the HCF of P(x) = x^2 + px + q and
G(x) = x^2 + kx + m
So, (x + a) is a factor of P(x) and G(x)
⇒ P(–a) = G (–a) = 0

$\Rightarrow (-a)^2 + p(-a) + q = (-a)^2 + k(-a) + m$

$\Rightarrow a^2 - pa + q = a^2 - ka + m$

$\Rightarrow q - m = a(p - k) => (q - m)/(p - k) = a.$

Alternate solution:

Take a = 3 and find values of p, q, k and m, such that - 3 is a factor in the 2 quadratic equations.

Then check the fraction with the options.

QNo:- 69 ,Correct Answer:- B

Explanation:-

In the 1st round, 45000 of the 135000 arrows fired by the Arabs will find their mark while 30000 of the 90000 arrows fired by the Spartans will find their mark.

So, there are 135000 – 30000 = 105000 Arabs alive after the 1st round.

Also, there are 90000 – 45000 = 45000 Spartans alive after the 1st round. In the 2nd round, 35000 of the 105000 arrows fired by the Arabs will find their mark while 15000 of the 45000 arrows fired by the Spartans will find their mark.

So, there are 105000 – 15000 = 90000 Arabs alive after the 2nd round.

Also, there are 45000 – 35000 = 10000 Spartans alive after the 2nd round. So, the %age of Arabs alive after the 2nd round is (90000/135000) × 100 = 66.66% and the %age of Spartans alive after the 2nd round is (10000/90000) × 100 = 11.11%.

The required difference in percentages is 55.55.

QNo:- 70 ,Correct Answer:- D

Explanation:-

From the given information, we have $\frac{1}{A}+\frac{1}{C}=\frac{1}{12}$, $\frac{1}{C}+\frac{1}{D}=\frac{1}{24}$, $\frac{1}{B}+\frac{1}{D}=\frac{13}{200}$ and $\frac{4}{A}+\frac{5}{B}+\frac{14}{C}+\frac{12}{D}=1$. The last equation can be rewritten as $4\left(\frac{1}{A}+\frac{1}{C}\right)+10\left(\frac{1}{C}+\frac{1}{D}\right)+2\left(\frac{1}{B}+\frac{1}{D}\right)+3\frac{1}{B}=1$. Solving these equations yields A = 15 days, B = 25 days, C = 60 days and D = 40 days.

So, in 1 day, the 4 of them will complete $\frac{1}{15}+\frac{1}{25}+\frac{1}{60}+\frac{1}{40}=\frac{89}{600}$ of the work.

Thus they will take 600/89 = $6\,^{66}/_{89}$ days to finish the job.

QNo:- 71 ,Correct Answer:- 108

Explanation:-

a > b > c ≥ 3, abc = 3003

Now 3003 = 3 x 7 x 11 x 13

If product of 3 numbers is given their sum would be least when they are equal. So to make the sum minimum the numbers are

a = 21, b = 13, c = 11≠Y = 21 + 13 + 11 = 45

To make the sum maximum

a = 143, b = 7, c = 3≠X = 143 + 7 + 3 = 153

So, X-Y = 153 – 45 = 108

QNo:- 72 ,Correct Answer:- C

Explanation:-

Suppose each pen is bought for Rs. 100.

The total cost is Rs. 400.

Since the pens are sold at an overall profit of 25%, the total selling price must be Rs. 500, i.e., the overall profit is Rs. 100.

One pen is sold at a profit of Rs. 65 and one is sold at a loss of Rs. 23. So, these 2 pens are sold at an effective profit of Rs. 42. So, the remaining 2 pens must be sold for an effective profit of Rs. 58. Since all answer choices except option 3 add up to 58, the other 2 pens cannot be sold at a 54%P and 12% loss respectively.

QNo:- 73 ,Correct Answer:- D

Explanation:-
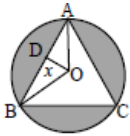
Since ∠ AOB = 120°, we know that ∠ ACB = 60°. Since AC = BC, we can conclude that

∠ CAB = ∠ ABC = 60°.

In other words, Δ ABC is an equilateral triangle and O is the centroid.

If OD = x, then AB = $2x\sqrt{3}$.

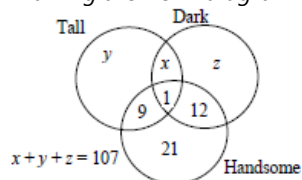So, area of Δ AOB = ½ × AB × OD

= ½ × x × $2x\sqrt{3}$ = $12\sqrt{3}$

⇒ $x = 2\sqrt{3}$.

So, the radius of the circle = OA = $4\sqrt{3}$ and its area is 48π cm^2.

The area of Δ ABC is 3 × area Δ AOB = $36\sqrt{3}$ cm^2. Thus the shaded area is $48\pi - 36\sqrt{3}$

= $12(4\pi - 3\sqrt{3})$ cm^2.

QNo:- 74 ,Correct Answer:- 29

Explanation:-

Drawing the Venn diagram with the given conditions:

Only handsome = 150 – (107 + 9 + 1 + 12) = 21.
To find the minimum number of candidates who had at least two of the three attributes, we have to maximize the number of candidates with just one single attribute.
But as it is mentioned that at most fifty candidates (i.e., one-third of 150) had any one single attribute, there must be at least seven people who were both tall and dark.
Required value = 7 + 9 + 1 + 12 = 29.

QNo:- 75 ,Correct Answer:- 12

Explanation:-
Drawing the Venn diagram with the given conditions:
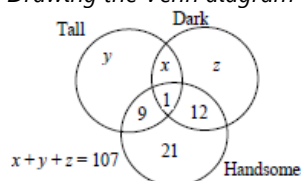
Only handsome = 150 – (107 + 9 + 1 + 12) = 21.
Here x + z +13 < 10 + x + y
⇒ y – z > 3.
To get least number of candidates who were dark as well as tall take y = 50 and z = 46 such that
50 – 46 = 4 > 3.
Now x + y + z = 107
⇒ 50 + 46 + x = 107
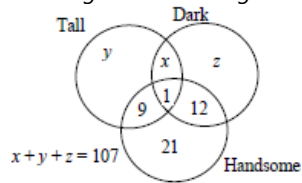*⇒ x = 11.*
So least number of candidates = 11 + 1 = 12.

QNo:- 76 ,Correct Answer:- 34

Explanation:-

Drawing the Venn diagram with the given conditions:

Only handsome = 150 â€" (107 + 9 + 1 + 12) = 21.

Given, 50% of tall are also dark, 50% of dark are also tall â‡' 9 + y = 1 + x_____ (i)
and also z + 12 = x + 1_____ (ii)
(i) + (ii)
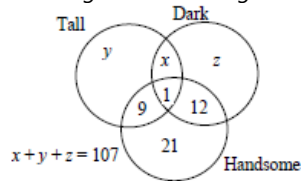*21 + y + z = 2x + 2, 21 + (107 â€" x) = 2x + 2*
128 â€" 2 = 3x, x = 126/3 = 42
Only tall = y = x â€" 8 (from (i)) = 34.

QNo:- 77 ,Correct Answer:- 41

Explanation:-
Drawing the Venn diagram with the given conditions:

Only handsome = 150 – (107 + 9 + 1 + 12) = 21.
The number of persons who were only dark (i.e., z) should be as minimum as possible.
∴(x + y) should be the maximum.
The maximum possible value of y is 50.
Given, tall = 2 (candidates with at least two attributes
(60 + x) = 2 (22 + x) => x = 16.
z = 107 – (x + y) = 107 – (16 + 50) = 41.

QNo:- 78 ,Correct Answer:- 5

Explanation:-
Suppose the n consecutive positive integers are a + 1, a + 2, .., a + n
Sum = n(n + 2a + 1)/2 = N
n(n + 2a + 1) = 2N
Now, one of n and (n + 2a + 1) will be odd, so we just have to find the number of odd factors of 2N or N (as number of odd factors of N and 2N are same). But n canâ€™t be 1
So, number of ways in which a number N can be written as sum of two or more consecutive positive integers is one less than number of odd factors of N
Here answer will be one less than number of odd factors of 2050.
Now 2050 = 2 Ã— 5² Ã— 41
So the number of odd factors are 3 Ã— 2 = 6 and the number of ways = 6 - 1 = 5.

QNo:- 79 ,Correct Answer:- C

Explanation:-
3 |x| – |x – 3| > 0
If x > 3 ⇒ 3x – (x – 3) > 0 or 2x + 3 > 0 is true.
If 0 < x < 3 ⇒3x – [– (x – 3)] > 0 OR 3x + x – 3 > 0 OR 4x – 3 > 0 ⇒ x > ¾ .
If x < 0 ⇒ – 3x + (x – 3) > 0
OR –3x + x – 3 > 0 OR – 2x – 3 > 0
⇒ x < –3/2
Thus x < – 3 /2 and x > 3/4.
Hence x > 3/4.

Explanation:-
The total number of matches played is 15.
Since each team either wins, draws or loses the match, the total of wins, draws and losses will be 30.
Also, the number of wins equals the number of losses and the number of draws must be an even number.
Among A, B, C and D, A has the maximum of 14 points.
Now, E and F could both score 14 points in which case there would be 3 winners.
If E and F get 14 points each, their wins, draws and losses must be (2, 2, 1) each, which is not possible as total wins must equal total losses.
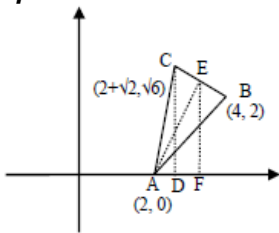*So, there cannot be 3 winners.*
One of E and F could score 14 points, so that there are 2 winners.
If one of them has wins, draws and losses as (2, 2, 1) and the other has (1, 2, 2), then there will be 2 winners.
In case it is possible that both E and F score an equal number of points but higher than A, the maximum number of winners will still be 2.

Explanation:-

From the given information, we know that the slope of AB = 1, i.e., $\angle BAD = 45°$ and $AB = 2\sqrt{2}$.
Since $\angle BAC = 15°$, we know that $\angle CAD = 60°$. Also, $AC = AB = 2\sqrt{2}$.
Now, $\triangle CAD$ is a 30°-60°-90° triangle
$\Rightarrow AC = 2\sqrt{2}$, $AD = \sqrt{2}$ and $CD = \sqrt{6}$.
Using these values, we get the co-ordinates of C as
$(2 + \sqrt{2}, \sqrt{6})$.
So, $BC = \sqrt{(\sqrt{6}-2)^2 + (4-2-\sqrt{2})^2}$
$= \sqrt{16 - 4\sqrt{6} - 4\sqrt{2}}$.
$\triangle ABC$ is an isosceles triangle.
So, the height AE passes through the mid-point of BC. So, we have $E\left(\frac{6+\sqrt{2}}{2}, \frac{2+\sqrt{6}}{2}\right)$.

In $\triangle AEF$, $AE^2 = EF^2 + AF^2$
$= \left(\frac{2+\sqrt{6}}{2}\right)^2 + \left(\frac{6+\sqrt{2}}{2} - 2\right)^2$
$= 4 + \sqrt{6} + \sqrt{2}$.
Now, area $\triangle ABC = \frac{1}{2} \times BC \times AE$
$= \frac{1}{2}\sqrt{16 - 4\sqrt{6} - 4\sqrt{2}} \times \sqrt{\frac{16 + 4\sqrt{6} + 4\sqrt{2}}{4}}$
$= \frac{1}{2} \times \frac{1}{2}\sqrt{16 - (4\sqrt{6} + 4\sqrt{2})} \times \sqrt{16 + (4\sqrt{6} + 4\sqrt{2})}$
$= \frac{1}{4}\sqrt{16^2 - (4\sqrt{6} + 4\sqrt{2})^2}$
$= 2\sqrt{2 - \sqrt{3}}$
$= 2\sqrt{0.268} = 1.034$.

QNo:- 82 ,Correct Answer:- 24

Explanation:-
The reflection of the clock will show the same time as the clock 4 times in a day, i.e., at 6 a.m., 6 p.m., 12 noon and 12 midnight. So in 6 days the reflection will show the same time as the clock 24 times.

QNo:- 83 ,Correct Answer:- B

Explanation:-
Suppose the percentages of water in the milk bought from the 3 milkmen are a, ar and ar^2 respectively. When making milkshakes, we get

$2a + 3ar + 4ar^2 = 52 \times 9 = 468$.

When making faludas, we get

$6a + 5ar + 4ar^2 = 36 \times 15 = 540$.

Subtracting the 2 equations, we get

$2(2a + ar) = 72$

$\Rightarrow 2a + ar = 36$

$\Rightarrow a = \dfrac{36}{r+2}$.

Adding the 2 equations, we get $8(a + ar + ar^2) = 1008 \Rightarrow (a + ar + ar^2) = 126$.

Substituting the value of a in this equation, we get $\dfrac{36}{r+2} + \dfrac{36}{r+2}r + \dfrac{36}{r+2}r^2 = 126$

$\Rightarrow 6 + 6r + 6r^2 = 21(r + 2)$

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

$\Rightarrow r = 4$ or $r = -3/2$.

r cannot be negative as the percentage of water can be at the minimum 0. We can conclude that $r = 4$.

Substituting this value, we get $a = 6$.

Thus the quantities of milk bought from the 3 milkmen contain 6%, 24% and 96% water respectively.

Suppose 100 litres of mixture are bought from each of the milkmen.
Then, the quantity of water in these 300 litres is 6 + 24 + 96 = 126 litres which is 42% of the total mixture bought.

QNo:- 84 ,Correct Answer:- C

Explanation:-

Suppose the percentages of water in the milk bought from the 3 milkmen are a, ar and ar^2 respectively. When making milkshakes, we get

$2a + 3ar + 4ar^2 = 52 \times 9 = 468$.

When making faludas, we get

$6a + 5ar + 4ar^2 = 36 \times 15 = 540$.

Subtracting the 2 equations, we get

$2(2a + ar) = 72$

$\Rightarrow 2a + ar = 36$

$\Rightarrow a = \dfrac{36}{r+2}$.

Adding the 2 equations, we get $8(a + ar + ar^2) = 1008 \Rightarrow (a + ar + ar^2) = 126$.

Substituting the value of a in this equation, we get $\dfrac{36}{r+2} + \dfrac{36}{r+2}r + \dfrac{36}{r+2}r^2 = 126$

$\Rightarrow 6 + 6r + 6r^2 = 21(r + 2)$

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

$\Rightarrow r = 4$ or $r = -3/2$.

r cannot be negative as the percentage of water can be at the minimum 0. We can conclude that $r = 4$.

Substituting this value, we get $a = 6$.

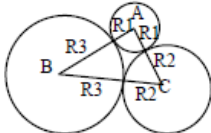Thus the quantities of milk bought from the 3 milkmen contain 6%, 24% and 96% water respectively.

Suppose he mixes 300 l, 200l and 100l of milk for making kulfi.
The amount of water will be 6% × 300 + 24% × 200 + 96% × 100 = 18 + 48 + 96 = 162 litres.
In other words, 27% of the mixture will be water. Thus the mixture contains 73% pure milk.

QNo:- 85 ,Correct Answer:- B

Explanation:-

In $\triangle$ ABC, AB = $R_1 + R_3$, AC = $R_1 + R_2$ and

BC = $R_2 + R_3$.

Area of $\triangle$ ABC = rs, where r, the in-radius = 4 and s, the semi-perimeter = $R_1 + R_2 + R_3$.

So, the area of $\triangle$ ABC = $4(R_1 + R_2 + R_3)$.

The area of $\triangle$ ABC can also be calculated by using Heron's formula. So, the area will be $\sqrt{s(s-a)(s-b)(s-c)} = \sqrt{(R_1 + R_2 + R_3)(R_1)(R_2)(R_3)}$. Equating the areas, we get

$4(R_1 + R_2 + R_3) = \sqrt{(R_1 + R_2 + R_3)(R_1)(R_2)(R_3)}$. Squaring both sides, we get

$16(R_1 + R_2 + R_3)^2 = (R_1 + R_2 + R_3)(R_1 R_2 R_3)$

$\Rightarrow \dfrac{R_1 R_2 R_3}{(R_1 + R_2 + R_3)} = \dfrac{16}{1}$.

Alternate solution:

Take a case where all radii are equal and then solve.
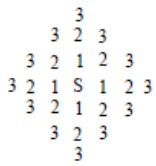
You get the ratio as 16 : 1.

Explanation:-
Suppose the servant accompanies the man for x days. Then, he would need enough food for 2x days.
The man would need food for an additional 20 days. So, 2x + 20 = 60
⇒ x = 20 days.

Explanation:-

```
        3
      3 2 3
    3 2 1 2 3
  3 2 1 S 1 2 3
    3 2 1 2 3
      3 2 3
        3
```

Refer to the diagram above. The grasshopper starts from point S and leaves 4 blots labelled 1.
Then, with the 1's as starting points, the grasshopper hops in all 4 directions to leave new blots labelled 2. So, the total number of distinct blots is now 12.
Then, with the 2's as starting points, the grasshopper hops in all 4 directions to leave new blots labelled 3. So, the total number of distinct blots is now 24.
If we continue in this fashion, then, with the 3's as starting points, the grasshopper will hop in all 4 directions to leave new blots labelled 4.
The number of distinct blots will now be 40.
So, the series defining the total number of blots is 4, 12, 24, 40, ... The terms in this series can be defined as (1×4), (2×6), (3×8), (4×10), ..., where 1, 2, 3, ... represent the number of the term and the multiplication factors form an AP with $a = 4$ & $d = 2$. So, the nth term of this series can be defined as
$T_n = n[4 + 2(n - 1)]$.
In option 1, $112 = n[4 + 2(n - 1)]$
$\Rightarrow 112 = n(2n + 2) \Rightarrow 2n^2 + 2n - 112 = 0$
$\Rightarrow n^2 + n - 56 = 0 \, n = 7, -8$.
Since n is 7, the total number of distinct blots at the end of the 7th stage will be 112.
In option 2, $312 = n[4 + 2(n - 1)]$
$\Rightarrow 312 = n(2n + 2) \Rightarrow n^2 + n - 156 = 0$
$\Rightarrow n = 12$ or -13.
Since n is 12, the total number of distinct blots at the end of the 12th stage will be 312.
In option 3, $480 = n[4 + 2(n - 1)]$
$\Rightarrow 480 = n(2n + 2) \Rightarrow n^2 + n - 240 = 0$
$\Rightarrow n = 15$ or -16.
Since n is 15, the total number of distinct blots at the end of the 15th stage will be 480.
In option 4, $860 = n[4 + 2(n - 1)] \Rightarrow 860 = n(2n + 2) \Rightarrow n^2 + n - 430 = 0$.
Since it is not possible to find a value of n that is a natural number, the total number of distinct blots at the end of any stage cannot be 860.
Alternately, if we take 4 common, we can write the series as $4 \times (1, 3, 6, 10, ..)$.
The differences between these numbers are 2, 3, 4, ... and are consecutive natural numbers.
So, the nth term of the original series can be defined as 4 times the sum of the 1st n natural numbers.

QNo:- 88 ,Correct Answer:- 40

Explanation:-

Let the lengths and breadths of each of the small rectangles be b m and a m respectively.
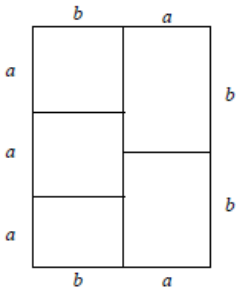
$\therefore\ 5a + 4b = 88$ and $3a = 2b \Rightarrow a = 8$ and $b = 12$

Perimeter of each small rectangle $= 2(a + b) = 40$ m

QNo:- 89 ,Correct Answer:- D

Explanation:-

$s = \frac{1}{2}(a + b + c) \Rightarrow c = 2s - a - b = (s - a) + (s - b)$. Suppose $(s - a) = x$ and $(s - b) = y$.

The given expression can now be rewritten as $x^3 + y^3 + 3(x + y)(xy) = (x + y)^3$.

But, $(x + y) = c$. So, the value of the expression is c^3.

QNo:- 90 ,Correct Answer:- 134055

Explanation:-

The 10's digit can only be 1, 4 or 9.

The 100's and the unit's digits can be chosen in 9 ways each.

So, there are $9 \times 3 \times 9 = 243$ different values of N.

In these 243 values, the digits 1 to 9 will appear in the 100's and in the unit's place $243/9 = 27$ times each and the digits 1, 4 and 9 will appear in the 10's place $243/3 = 81$ times each.

So, the required sum is $[100 \times 27 (1 + 2 + \dots + 9)] + [10 \times 81 \times (1 + 4 + 9)] + [27 (1 + 2 + \dots + 9)]$

$= (2700 \times 45) + (810 \times 14) + (27 \times 45) = 134055$.

QNo:- 91 ,Correct Answer:- B

Explanation:-

The given graph is $y = 2x + 4$.

Since we are interested in the reflection about the Y-axis, only the values of the x co-ordinates will be reversed.

So the new equation is $y = -2x + 4$

$\Rightarrow 2x + y - 4 = 0$.

QNo:- 92 ,Correct Answer:- 3

Explanation:-

$$S = \frac{2}{5} + \frac{6}{25} + \frac{12}{125} + \frac{20}{625} + \frac{30}{3125} + \ldots$$

Now, $\frac{S}{5} = \frac{2}{25} + \frac{6}{125} + \frac{12}{625} + \frac{20}{3125} + \ldots\ldots$

$\Rightarrow S - \frac{S}{5} = \frac{4S}{5} = \frac{2}{5} + \frac{4}{25} + \frac{6}{125} + \frac{8}{625} + \frac{10}{3125} + \ldots$

Now, $\frac{4S}{25} = \frac{2}{25} + \frac{4}{125} + \frac{6}{625} + \frac{8}{3125} + \ldots$

So, $\frac{4S}{5} - \frac{4S}{25} = \frac{16S}{25} = \frac{2}{5} + \frac{2}{25} + \frac{2}{125} + \frac{2}{625} + \frac{2}{3125} + \ldots$

This is a GP with $a = 2/5$ and $r = 1/5$. The sum of this GP is $\dfrac{\frac{2}{5}}{\left(1 - \frac{1}{5}\right)} = \dfrac{\frac{2}{5}}{\frac{4}{5}} = \frac{1}{2}$.

Thus, $\frac{16S}{25} = \frac{1}{2} \Rightarrow S = \frac{25}{32}$.

QNo:- 93 ,Correct Answer:- B

Explanation:-

$x^2 - 18x - 646 > 2$. So, $x^2 - 18x - 648 > 0$

$\Rightarrow x^2 - 36x + 18x - 648 > 0 \Rightarrow x(x - 36) + 18(x - 36) > 0$

$\Rightarrow (x - 36)(x + 18) > 0 \Rightarrow x > 36$ or $x < -18$.

QNo:- 94 ,Correct Answer:- 90

Explanation:-

At $t = 0$, $h(0) = 10 = p - 10q^2 \Rightarrow p = 10 + 10q^2$.
At $t = 3$, $h(3) = 100 = p - 10(q - 3)^2 \Rightarrow p = 100 + 10(q - 3)^2$.
Equating the values of p, we get $60q = 180 \Rightarrow q = 3$.
From this, we get $p = 100$. So, the height after 4 seconds is $h(4) = 100 - 10(3 - 4)^2 = 90$ m.

QNo:- 95 ,Correct Answer:- 2

Explanation:-

Solve this question by substitution. $1^3 + 2^3 + 3^3 = 36$. Here n = 3. From the answer choices, 36 is divisible by option 1, 2. Consider $1^3 + 2^3 = 9$. Here n = 2. Substituting n = 2 in options 1, 2 it is easy to verify that only option 2 will divide 9.

QNo:- 96 ,Correct Answer:- A

Explanation:-

Since the distance between towns A and B is not known, it seems that the answer is Cannot be determined.
However, it is not so! The upstream speed is (x − y) and the downstream speed is (x + y). From the question, (x + y) = 1.25(x − y) ⇒ 4(x + y) = 5(x − y) ⇒ x/y = 9/1. Thus, the speed in still water is 8 times more, i.e., 800% more than the speed of the stream.

QNo:- 97 ,Correct Answer:- B

Explanation:-

The un-shaded region is made up of 6 equilateral triangles of side 7 each. So, the perimeter of the star is $6 \times 14 = 84$. The shaded region is made up of 6 equilateral triangles of side 7 each. So, the area of the shaded region is $6 \times (\sqrt{3}/4)7 \times 7 = 147\sqrt{3}/2$. So, the ratio is $147\sqrt{3}/2 : 84 = 7\sqrt{3} : 8$.

QNo:- 98 ,Correct Answer:- D

Explanation:-

The given series can be rewritten as $\frac{3}{8}+5, \frac{9}{16}+8, \frac{27}{32}+11, \frac{81}{64}+14, \frac{243}{128}+17, \frac{729}{256}+20, \cdots$

It is clear that the series is a combination of a GP with 1st term 3/8 and common ratio 3/2 and an AP with 1st term 5 and common difference 3.

The sum of the GP is $\dfrac{\frac{3}{8}\left[\left(\frac{3}{2}\right)^n - 1\right]}{\left(\frac{3}{2}-1\right)} = \dfrac{3}{8} \times \dfrac{\left(\frac{3}{2}\right)^n - 1}{\frac{1}{2}} = \dfrac{3}{4} \times \dfrac{3^n - 2^n}{2^n} = \dfrac{3^{n+1} - 3.2^n}{2^{n+2}}$.

The sum of the AP is $\frac{n}{2}[(2\times5)+(n-1)\times3] = \frac{n}{2}(3n+7)$.

Thus the sum of the series is $\dfrac{3^{n+1}-3.2^n}{2^{n+2}} + \dfrac{n(3n+7)}{2}$.

QNo:- 99 ,Correct Answer:- 180

Explanation:-
$(x+y)^2 = x^2 + y^2 + 2xy$. Since $\triangle$ ABC is right-angled, $x^2 + y^2 = 10^2 = 100$. Area $\triangle$ ABC $= \frac{1}{2} \times xy = 20$
$\Rightarrow xy = 40 \Rightarrow 2xy = 80$. Thus, $(x+y)^2 = 100 + 80 = 180$.

QNo:- 100 ,Correct Answer:- B

Explanation:-
Consider 3-digit integers.
Suppose the 1st digit takes 8 values from 1 to 8 and the other two digits are 9 each.
We get 8 such numbers.
Now, suppose the integers starts with 9.
Then one of the other digits is a 9 and the other digit takes 9 values from 0 to 8.
Since these digits can be arranged in 2 different ways, there are 2 × 9 = 18 such integers.
So, there are 8 + 18 = 26 three-digit integers which contain exactly two 9s.
Consider 4-digit integers.
The first digit can take 8 values from 1 to 8. Two of the remaining three digits are 9 each and the third digit can take 9 values from 0 to 8. These 3 digits can be arranged in 3 ways.
So, there are 8 × 3 × 9 = 216 such integers.
Suppose the 1st digit is 9. Then one of the remaining digits is a 9 and the other two digits can take 9 values from 0 to 8 each. These 3 digits can be arranged in 3 different ways.
So there are 3 × 9 × 9 = 243 such integers.
So there are 216 + 243 = 459 four-digit integers which contain exactly two 9s.
Thus there are 26 + 459 = 485 integers between 100 and 10000 which contain exactly two 9s.