

OPSC Prelims Test Series 2023

TEST ID **50**

OPSC PRELIMS TEST SERIES 2023
TEST- 50

Time Allowed: 2Hrs

Maximum Marks: 200

INSTRUCTIONS

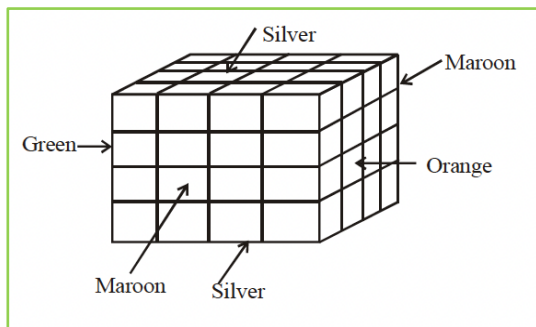
1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES NOT HAVE ANY UNPRINTED OR TURN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. Do NOT write anything else on the Test Booklet.
3. This Test Booklet contains 80 items (Questions). Each item is printed in English. Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response with you consider the best. In any case, choose ONLY ONE response for each item.
4. You have to mark all your responses ONLY on the separate Answer Sheet provided. See direction in the answers sheet.
5. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of correct responses marked by you in the answer sheet. For every incorrect response 1/3rd of the allotted marks will be deducted.
6. Before you proceed to mark in the Answer sheet the response to various items in the Test booklet, you have to fill in some particulars in the answer sheets as per instruction sent to you with your Admission Certificate.
7. After you have completed filling in all responses on the answer sheet and the examination has concluded, you should hand over to Invigilator only the answer sheet. You are permitted to take away with you the Test Booklet.
8. Sheet for rough work are appended in the Test Booklet at the end.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO

1. Images of consonants of the English alphabet (Capitals) are observed in a mirror. What is the number of images of these which do not look like their original shapes?

- (a) 13
- (b) 14
- (c) 15
- (d) 16

2. A wooden cube of side 4 cm has been painted with different colours. The opposite two surfaces are painted with different colours. The opposite two surfaces are painted maroon, the other two with silver colour. Out of the remaining two surfaces one is painted orange and the other is painted green. The cube is cut into 64 equal cubes. Answer the following questions. How many cubes have three colours maroon, silver and orange?



- (a) 4
- (b) 8
- (c) 12
- (d) 16

3. The mean of all 3 digit even natural numbers of the form 'abb', where $a > 0$, is

- (a) 544
- (b) 644
- (c) 444
- (d) 744

4. I have a certain number of beads which lie between 600 and 900. If 2 beads are taken away the remainder can be equally divided among 3, 4, 5, 6, 7 or 12 boys. The number of beads I have

- (a) 729
- (b) 842
- (c) 576
- (d) 961

5. Find the exact time between 7 am and 8 am when the two hands of a watch meet ?

- (a) 7 hrs 35 min
- (b) 7 hrs 36.99 min
- (c) 7 hrs 38.18 min

(d) 7 hrs 42.6 min

6. How many times does the 29th day of a month occur in any given 400 consecutive years?

- (a) 4497
- (b) 97
- (c) 4500
- (d) 4800

7. With a reduction of 25% in the price of detergent cake, a person is able to purchase 15 more pieces of detergent cake for Rs. 400. What was the original price of a piece of detergent cake?

- (a) Rs. 5.16
- (b) Rs. 8.89
- (c) Rs. 5.56
- (d) Rs. 4.93

8. A contractor has to complete a renovation work, for which he can hire labourers from a pool of labourers, each of whom have the same efficiency. At the start, he hires 5 labourers who can complete the task in 9 days. On the third day, he hires two more labourers. What is the total number of days required to complete the work?

- (a) 18 days
- (b) 8 days
- (c) 7 days
- (d) 9 days

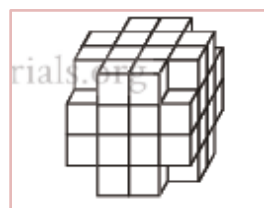
9. What are the last two digits of 107^{67} ?

- (a) 07
- (b) 49
- (c) 43
- (d) 01

10. A watch gains 15 seconds in 10 minutes and was set right at 12 AM (midnight). How much more time will it show at 9 PM on the same day?

- (a) 27 minutes 30 seconds.
- (b) 29 minutes 30 seconds.
- (c) 31 minutes 30 seconds.
- (d) 32 minutes

Directions (Qs. 11- 13): In the following figure, the solid cube is painted on all sides by a single colour. Observe the given solid and choose the correct alternative for the following questions.



11. Find the total number of blocks whose three surfaces are coloured.

- (a) 8
- (b) 12
- (c) 18
- (d) 24

12. Find total number of blocks whose two surfaces are coloured.

- (a) 0
- (b) 8
- (c) 16
- (d) 24

13. Find total number of blocks whose only one surface is coloured.

- (a) 8
- (b) 12
- (c) 16
- (d) 24

Direction for the following 2 (two) questions:

In a group of 100 persons, 62 like cricket and 48 like basketball. 8 do not like either cricket or basketball.

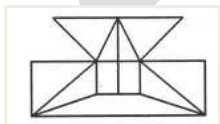
14. Find the number of persons who like both cricket and basketball.

- (a) 16
- (b) 17
- (c) 18
- (d) 15

15. Find the number of persons who like either cricket or basketball.

- (a) 87
- (b) 92
- (c) 85
- (d) 83

16. Find the minimum number of straight lines required to make the given figure.



- (a) 16
- (b) 17
- (c) 18
- (d) 19

17. A person bought an ipad and an iphone for a total of Rs 60,000. Afterward, the person sold the

ipad at a 20% profit and the iphone at a 10% loss. Despite these individual gains and losses, the person managed to achieve an overall profit of 10%. What was the purchase price, in rupees, of the ipad?

- (a) Rs 20,000
- (b) Rs 30,000
- (c) Rs 40,000
- (d) Rs 50,000

18. A right circular cone with a height of 24 cm is divided into two parts using a plane parallel to its base at a height of 16 cm from the base. The difference in volume between the two resulting pieces is 500 cc. What is the original volume, in cubic centimeters (cc), of the cone?

- (a) 520 cc
- (b) 560 cc
- (c) 600 cc
- (d) 540 cc

Passage:

Everything is made of atoms. That is the key hypothesis. The most important hypothesis in all of biology, for example, is that everything that animals do, atoms do. In other words, there is nothing that living things do that cannot be understood from the point of view that they are made of atoms acting according to the laws of physics. This was not known from the beginning: it took some experimenting and theorizing to suggest this hypothesis, but now it is accepted, and it is the most useful theory for producing new ideas in the field of biology. If a piece of steel or a piece of salt, consisting of atoms one next to the other, can have such interesting properties; if water—which is nothing but these little blobs, mile upon mile of the same thing over the earth—can form waves and foam, and make rushing noises and strange patterns as it runs over cement; if all of this, all the life of a stream of water, can be nothing but a pile of atoms, how much more is possible? If instead of arranging the atoms in some definite pattern, again and again repeated, on and on, or even forming little lumps of complexity like the odor of violets, we make an arrangement which is always different from place to place, with different kinds of atoms arranged in many ways, continually changing, not repeating, how much more marvelously is it possible that this thing might behave? Is it possible that that "thing"

walking back and forth in front of you, talking to you, is a great glob of these atoms in a very complex arrangement, such that the sheer complexity of it staggers the imagination as to what it can do? When we say we are a pile of

atoms, we do not mean we are merely a pile of atoms, because a pile of atoms which is not repeated from one to the other might not have the possibilities which you see before you in the mirror.

19. With reference to the passage, the following assumptions have been made:

1. Experimentation and theory precede hypothesis
2. There are endless possibilities of recombination of atoms
3. There are multiple levels of complexity of atomic arrangement found in nature
4. Physics explains various phenomena occurring in the universe

Which of these assumptions are valid?

- (a) 1 and 2 only
- (b) 1 and 4 only
- (c) 1, 2 and 3 only
- (d) 2, 3 and 4

20. What is the crux of the passage?

- (a) The discovery of atoms transformed our understanding of the world
- (b) Despite the dazzling array of variety in the world, atoms are its building blocks
- (c) We should look at the world around us with a scientific temperament
- (d) The complexity of the world is staggering to the mind

21. What is the most rational inference that can be made from the passage?

- (a) The existence of atoms is proven scientific fact
- (b) There are infinite possible arrangements of atoms
- (c) The behaviour of atoms in biological systems is not the same as in physical systems
- (d) Our perspective defines how we see the world around us

22. Which of the following statements best indicates the motivation of the author of the passage?

- (a) To simplify a complex concept
- (b) To demonstrate the application of a theory
- (c) To arouse interest in the reader's mind about a scientific fact
- (d) To propose a hypothesis

Directions for the following 3 (Three) items:

Read the following passage and answer the items that

follow. Your answers to these items should be based on the passage only.

Passage:

The use of social responsible reasoning and of ideas of justice relates closely to the centrality of individual freedom. This is not to claim that people invariably invoke their ideas of justice, or utilize their powers of socially sensitive reasoning, in deciding on how to exercise their freedom. But a sense of justice is among the concerns that can move people and often do. Social values can play—and have played—an important part in success of various forms of social organization, including the market mechanism, democratic politics, elementary civil and political rights, provision of basic public goods, and institutions of public action and protest. Different persons have different ways of interpreting ethical ideas including those of social justice, and they may even be far from certain about how to organize their thoughts about it. But the basic idea of justice are not alien to social beings, who worry about their own interests but are also able to think about the family members, neighbors, fellow citizens and about other people in the world. Space does not have to be artificially created in human mind for the ideas of justice and fairness—through moral bombardment or ethical haranguing. That space already exists, and it is a question of making systematic, cogent and effective use of the general concerns that people do have.

23. Consider the following assumptions:

1. **People are socially sensitive but do not always act like one.**
2. **It is possible to persuade people in the support of a social cause.**

According to the passage, which of the above assumptions is/are correct?

- (a) Only 1
- (b) Only 2
- (c) Both 1 and 2
- (d) Neither 1 nor 2

24. With reference to the passage which of the following forms of social organization would not be successful without social values?

1. Free market
2. Welfare policies
3. Right to equality

Choose the correct answer using the code given below.

- (a) 1 and 2
- (b) 2 and 3

- (c) 1 only
- (d) 1, 2 and 3

25. What is the central message of this passage?

- (a) Individual freedom is central to the idea of social justice.
- (b) Sense of social justice is a natural part of individual conscience.
- (c) Social values are central to various forms of social organization.
- (d) It is possible to create a space for ideas of social justice artificially in individual conscience.

Directions for the following 2 (Two) items: Read the following passage and answer the items that follow. Your answers to these items should be based on the passage only.

Passage: The idea that environmental protection and economic progress are at odds is widely held among India's elite. It is shared by newspaper editors, economists, businessmen, and, not least, politicians.

This conventional wisdom has been challenged by scholars and activists who have field experience in different parts of the country. They make two central arguments. First, that industrialization and economic growth in Europe and North America was enabled in part by the access to the land and resources of the colonies that those countries controlled. Developing countries like India have no such colonies; and they have far higher population densities. Therefore, they must in fact be even more environmentally conscious than Europe or North America were at a comparable stage of their development experience.

The second argument focuses on the social consequences of unregulated economic growth. For, in countries like India, it is the poor who most directly bear the burden of environmental degradation. Depleting forests deprive peasants of fuel and fodder. Polluted rivers deprive them of irrigation water (and sometimes of drinking water too). Open-cast mining brings debris to fields and dries up springs. Meanwhile, in the cities, air pollution makes the urban poor—badly housed, over-worked, and under-nourished—more vulnerable to respiratory and other diseases than their richer (and better-fed, better-protected) counterparts.

These two arguments were first made in the 1970s, by popular movements such as the Chipko

Andolan, by scientists such as Madhav Gadgil (of the Centre for Ecological Sciences in Bangalore), and by campaigning journalists such as the late Anil Agarwal (of the Centre for Science and Environment in New Delhi).

26. Which of the following statements can be inferred from the passage given above?

- 1. Politicians are among the Indian elites who believe that environmental protection and economic progress cannot go hand in hand.
- 2. India should acquire land in order to have access to resources for economic growth.
- 3. Poor people are more vulnerable to diseases caused by environmental pollution.
- 4. Chipko Andolan pitched for economic progress with environmental protection.

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 1 and 2 only
- (c) 2, 3 and 4 only
- (d) 1, 3 and 4 only

27. According to the passage, India should be environmentally more conscious than Europe or North America because:

- 1. India is not rich in resources needed for economic growth.
- 2. India does not have colonies, which will provide it access to resources for industrialization.

Choose the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Passage:

That the doctrines connected with the name of Mr. Darwin are altering our principles has become a sort of commonplace thing to say. And moral principles are said to share in this general transformation. Now, to pass by other subjects, I do not see why Darwinism need change our ultimate moral ideas. It will not modify our conception of the end, either for the community of the individual, unless we have been holding views which long before Darwin were out of date. As to the principles of ethics I perceive, in short, no sign of revolution. Darwinism has indeed helped many to truer conception of the end, but I cannot admit that it has either originated or modified that conception.

And yet in ethics Darwinism after all may perhaps be revolutionary. I may lead not to another view about the end, but to a different way regarding the relatively importance of the means. For in the ordinary moral creed those means seem estimated on no rational principle. Our creed appears rather to be an irrational mixture of jarring elements. We have the moral code of Christianity, accepted in part; rejected practically by all save a few fanatics. But we do not realise how in its very principle the Christian ideals is false. And when we reject this code for another and in part a sounder morality, we are in the same condition of blindness and of practical confusion. It is here that Darwinism, with all the tendencies we may group under that name, seems destined to intervene. It will make itself felt, I believe, more and more effectually. It may force on us in some points a correction of our moral views, and a return to a non-Christian and perhaps a Hellenic ideal. I propose to illustrate here these general statements by some remarks on Punishment.

Darwinism, I have said, has not even modified our ideas of the Chief Good. We may take that as - the welfare of the community realised in its members. There is, of course, a question as to meaning to be given to welfare. We may identify that with mere pleasure, or gain with mere system, or may rather view both as inseparable aspects of perfection and individuality. And the extent and nature of the community would once more be a subject for some discussion. But we are forced to enter on these controversies here. We may leave welfare undefined, and for present purpose need not distinguish the community from the state. The welfare of this whole exists, or course, nowhere outside the individuals, and the individuals again have rights and duties only as members in the whole. This is the revived Hellenism--- or we may call it the organic view of things --- urged by German idealism early in the present century.

28. According to the author, the doctrines of Mr. Darwin.....

- (a) have changed our physical and moral principles
- (b) have to be reevaluate to correct the faults endemic in them
- (c) do not have to change our moral ideas
- (d) are actually new versions of old moral rules

29. What is most probably the author's opinion of the existing moral principles of the people?

- (a) He thinks they have to be revamped in the light of Darwinism
- (b) He thinks that they are okay as they are and do not need any major change
- (c) He thinks that it may be a good idea to have modicum of the immoral Darwinism in us
- (d) Cannot be determined from the passage

30. According to the author, the moral code of Christianity.....

- (a) is not followed by most people
- (b) is in danger due to opposition to Darwinism
- (c) is followed by a vast majority of people
- (d) is totally ignored by all true Christians

31. It is implied in the passage that.....

- (a) a Hellenic ideal is not a proper substitute of the Christian ideal
- (b) what mankind needs is a Hellenic rather than a Christian One
- (c) Darwinism is more Christian than Hellenic
- (d) fanatics do not understand what Darwinism really is

32. What, according to the passage, is the Chief Good?

- (a) Being good and kind to all fellow human beings
- (b) The greatest good of the greatest number
- (c) The welfare of the community realised its members
- (d) Cannot be determine from the passage

Passage:

Discussions on drug addiction should also be concerned with the vast majority of people who are not addicts. Their homes and lives are insecure because our narcotics laws drive such people to crime. The drug addict is almost never dangerous when he is under the influence of drugs. What makes him dangerous is the desperate need for money to buy the next dose. Drugs are available only in an illegal black market. The costs are stupendous, and this is what drives the addict to steal, rob and even kill.

33. According to the author, discussions of drug addiction are generally concerned with

- (a) addicts
- (b) non-addicts
- (c) criminals
- (d) black marketers

34. Addicts take to criminal acts because

- (a) drugs make them lose self-control

- (b) the habit of robbing and stealing is hard to break
- (c) they need large sums of money to buy drugs
- (d) law is powerless against them

35. The author seems to criticize the narcotics laws for

- (a) being too lenient
- (b) being too complicated
- (c) being ineffective
- (d) driving addicts to crime

36. With reference to the passage, consider the following statements

1. Addiction to drugs is a criminal act.
2. Drug addicts cannot be rehabilitated.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Passage:

For fourteen and a half months I lived in my little cell or room in the Dehradun jail, and I began to feel as if I was almost a part of it. I was familiar with every bit of it, I knew every mark and dent on the whitewashed walls and on the uneven floor and the ceiling with its moth-eaten rafters. In the little yard outside I greeted little tufts of grass and odd bits of stone as old friends. I was not alone in my cell, for several colonies of wasp and hornets lived there, and many lizards found a home behind the rafters, emerging in the evenings in search of prey.

37. The passage attempts to describe

- (a) the general conditions of the country's jails.
- (b) the prisoner's capacity to notice the minute details of his surroundings.
- (c) the prisoner's conscious efforts to overcome the loneliness.
- (d) the prisoner's ability to live happily with other creatures.

38. The author of the passage seems to suggest that

- (a) it is possible to adjust oneself to uncongenial surroundings.
- (b) the conditions in Indian prisons are not bad.
- (c) it is not difficult to spend one's time in a prison.

- (d) there is a need to improve the conditions in our jails.

39. There is a shortage of sugar in your District where you are the District Magistrate. The Government has ordered that only a maximum amount of 30 kg sugar is to be released for wedding celebrations. A son of your close friend is getting married and your friend requests you to release at least 50 kg sugar for his son's wedding. He expresses annoyance when you tell him about the Government's restrictions on this matter. He feels that since you are the District Magistrate you can release any amount/ You do not want to spoil your friendship with him. In such circumstances, how would you deal with the situation?

- (a) Releases the extra amount of sugar which your friend has requested for.
- (b) Refuse your friend the extra amount and strictly follow the rules.
- (c) Show your friend the copy of the Government instructions and then persuade him to accept the lower amount as prescribed in the rules.
- (d) Advise him to directly apply to the allotting authority and inform him that you do not interfere in this matter.

40. Vandana's birthday was on Sunday 22nd March. If Sachin was born on the second Tuesday of October month of the same year, then on which date of the October month will be Sachin's birthday?

- (a) 16th October
- (b) 18th October
- (c) 15th October
- (d) 13th October

41. There are 6 members of a family in which there are two married couples. Sudharshan, a teacher, is married to a doctor who is the mother of Mahesh and Srinija. Ramu, the lawyer, is married to Suguna, who has one son and one grandson. Of the two married ladies, one is a housewife. There is also one student and one male engineer in the family. Which of the following is true about the grand-daughter of the family?

- (a) She is a lawyer
- (b) She is an engineer
- (c) She is a doctor
- (d) She is a student

42. In a company, there are 75% skilled workers and the remaining ones are unskilled. 80% of skilled workers and 20% of unskilled workers

are permanent. If the number of temporary workers is 126, then what is the number of total workers?

- (a) 480
- (b) 360
- (c) 510
- (d) 420

43. Three numbers 2811, 3981 and 5151 when divided by a certain divisor, leave the common remainder. The sum of the digits of the divisor is:

- (a) 6
- (b) 8
- (c) 9
- (d) 11

44. 4800 chocolates were distributed among the children of a class VI. Each child got thrice as many chocolates as the number of children in the class. The number of children in the class is:

- (a) 35
- (b) 40
- (c) 50
- (d) 45

45. The average weight of four persons sitting in a car and driver is 55kg. The average weight of the car and the all persons sitting in the car is 440kg. What is the weight of the car?

- (a) 2365 kg
- (b) 2565 kg
- (c) 2415 kg
- (d) 2405 kg

46. The average of marks obtained by a class is 70 in English, where girls got average of 75 and boys got 68. In Mathematics, if boys have got an average of 70 marks and girls got 77, then what is the average mark of the class in Mathematics?

- (a) 74
- (b) 73.5
- (c) 72
- (d) 71

47. A box contains some chocolates of either red or black colors. A boy was asked to pick 2 chocolates from the box at a time. What is the probability that both the chocolates are of different colors?

- 1) Total number of chocolates in a box is a prime number less than 15.
- 2) Probability of drawing 1 chocolate of red color from the box is $\frac{3}{7}$.

Which one of the following is correct with respect to the above question in the statements?

- (a) If the data in Statement I alone is sufficient to answer the question.
- (b) If the data in Statement II alone is sufficient to answer the question.
- (c) If the data even in both Statements I and II together are not sufficient.
- (d) If the data in both Statements I and II together are necessary.

48. Consider the following statements:

1. P,Q,R,S,T and U are travelling in a bus.
2. There are two reporters, two technicians, one photographer and one writer in the group.
3. The photographer P is married to S, who is a reporter.
4. The writer is married to Q who has the profession as that of U.
5. P, R, Q, S are two married couples and nobody in the group has the same profession.
6. U is the brother of R.

Which of the following is a pair of technicians?

- (a) RT
- (b) RU
- (c) QT
- (d) QU

49. In a mixture of spirit and water, there is only 30% water. After replacing the mixture with 6 litres of pure spirit, the percentage of spirit in the mixture becomes 80%. The quantity of the mixture is:

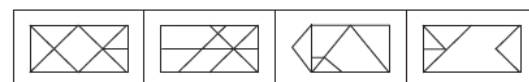
- (a) 10 litre
- (b) 14 litre
- (c) 18 litre
- (d) 22 litre

50. In this question, from the given answer figures, select the one in which the question figure is embedded.

Question figure



Answer figure



- (a)
- (b)
- (c)
- (d)

51. Out of a total 85 children playing badminton or table tennis or both, total number of girls in the group is 70% of the total number of boys in the group. The number of boys playing only badminton is 50% of the number of boys and the total number of boys playing badminton is 60% of the total number of boys. The number of children playing only table tennis is 40% of the total number of children and a total of 12 children play badminton and table tennis both. What is the number of girls playing only badminton?

- (a) 17
- (b) 14
- (c) 16
- (d) 18

52. Examine the information given below. Some officers are responsible persons. No responsible person is rich. Which of the following is a valid conclusion regarding the above arguments?

- (a) Some responsible persons are officers
- (b) Some officers are rich
- (c) No responsible person is an officer
- (d) No officer is rich

53. The average number of visitors to a Museum on every Monday is 96, whereas it is 156 on other days of the month. What will be the average number of visitors for the entire month if it has 30 days and begins on Monday?

- (a) 144
- (b) 145
- (c) 146
- (d) 147

54. Statements:

(A) Some pads are mats.

(B) Some mouse are pads.

Conclusions: I. Some mats are pads.

II. Some mouse are mats.

- (a) if only conclusion I follows
- (b) if only conclusion II follows
- (c) if both follow
- (d) if neither I nor II follows

55. In an ancient language:

'claysamat chao' means 'red and ripe';

'soi chao kapat' means 'papaya is red' and

'plu clay kapat' means 'fruit is ripe'.

Which of the following means 'papaya is ripe' in that code?

- (a) clay samatkapat
- (b) soi kapat chao
- (c) kapat clay soi
- (d) None of these

56. A small kid is asked to form a three digit number using the numbers 1, 2, 3, 4, 5 and 0 without repetition. What is the probability that the number he forms is divisible by 5?

- (a) $1/5$
- (b) $9/25$
- (c) $10/33$
- (d) $1/4$

57. Nine different hamlets namely L, M, N, O, P, Q, R, S and T not necessarily in the same order, lie on the left bank of a river that passes through a jungle. The distance between two adjacent hamlets is 1 km. P is 4 km east from L and T is 4 km east from P. Distance between N and T is 3 km. What is the distance between L and N?

- (a) 1km.
- (b) 2km
- (c) 4km
- (d) 5 km.

58. A cricketer whose bowling average is 18.6 runs per wicket takes 6 wickets for 39 runs and thereby decreases his average by 0.6. The number of wickets taken by him till the last match (the match, previous to the match in which he takes 6 wickets for 39 runs) was:

- (a) 125
- (b) 105
- (c) 115
- (d) None of these

59. A certain bacteria divides into two every two minutes. If the growth of one single bacterium continues uninterrupted for twenty minutes, how many bacteria would be there at the end of twenty minutes?

- (a) 513
- (b) 512
- (c) 1024
- (d) None of the above

60. Let AB4C and D2EF be four-digit numbers where each letter represents a different digit greater than 2. If the sum of the numbers is 10,835, then what is the sum of the value of B and E?

- (a) 12
- (b) 18
- (c) 13
- (d) 14

61. If $P < Q$, which of the following is always true?

- (a) $P < (P + Q) / 2 < Q$
- (b) $P < PQ/2 < Q$

- (c) $P < Q^2 - P^2 < Q$
(d) $P < PQ < Q$

62. What is the remainder when 3^{236} is divided by 8?

- (a) 1
(b) 2
(c) 5
(d) 7

63. Raju buys 55 kg of honey and 60 kg of sugar, honey being 20% less costly than sugar, per kg. He sells 5 kg of honey at 10% profit and 10 kg of sugar at 20% profit. Mixing the remaining sugar and honey, Raju sells the mixture at ₹ 308.32 per kg and makes an overall profit of 64%. Then, Raju's cost price for honey, in rupees per kg, is

- (a) 180 rupees
(b) 200 rupees
(c) 230 rupees
(d) 160 rupees

64. The average weight of the students in a class increases by 1 kg when a group of new students is added. The average weight of these new students is 5 kg more than the average weight of the original students. Find the ratio of the number of original students to the number of new students.

- (a) 1 : 4
(b) 4 : 1
(c) 2 : 3
(d) 4 : 7

65. Consider the following arrangement that had some missing letters

aabcd_ee_bc_d_eabccc_eabbbcdea.

The missing letters which complete the arrangement are:

- (a) e, a, d, d, d
(b) e, a, a, b, c
(c) a, b, c, d, e
(d) e, d, c, b, a

66. A simple mathematical operation in each number of sequence 1, 19, 109, 271, 505, 929, ___ results in a sequence with respect to prime numbers. Which one of the following is the next number in the sequence?

- (a) 1424
(b) 1534
(c) 1482
(d) 1639

67. The mean of the marks scored by 50 students was found to be 39. Later it was discovered that a

score 43 was misread as 23. The correct mean marks are:

- (a) 39
(b) 39.4
(c) 38.4
(d) 39.7

68. Rohan cuts a sheet of paper into two pieces. Length of first piece is equal to the average of the first three odd prime numbers. Length of the second piece is equal to sum of square of first three natural number. The length of the original sheet of paper is approx.:

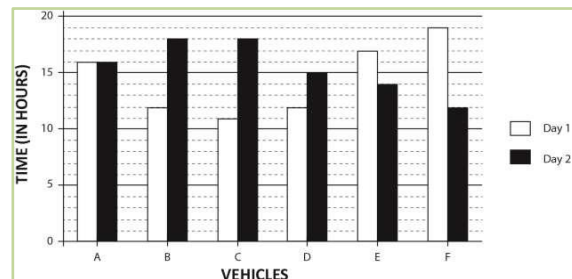
- (a) 13 units
(b) 15 units
(c) 16 units
(d) 19 units

69. In the following question letters are placed in figure on the basis of some rules. One place in the figure is indicated by the interrogation sign (?). Find out the correct alternative to replace the question mark and indicate your answer.

4	12	4	8
9	3	10	5
9	?	8	5
8	6	10	16

- (a) 14
(b) 12
(c) 11
(d) 6

DIRECTIONS for Questions 70- Study the following graph and table carefully and answer the questions given below: Time Taken to Travel (in hours) by six vehicles on two different days.



Distance covered (in kms) by 6 vehicles on each day

Vehicle	Day 1	Day 2
A	832	864
B	516	774
C	693	810
D	552	765
E	935	546
F	703	636

70. Which of the following vehicles travelled at the same speed on both the days?

- (a) Vehicle A
- (b) Vehicle C
- (c) Vehicle F
- (d) Vehicle B

Directions for the following 4 (four) items:

Read the following information and answer the four items that follow:

11 students- A, B, C, D, E, F, G, H, I, J and K of a hostel go to gym at different times of a day. Only two students go between A and B. C goes just after B and only five students go before C. H goes before B. Only two students go after D and only two students go before F. Number of students who go after J and before K is same. K goes before C but after H. Three students go between C and E. G went before I.

71. The number of students before G is the same as the number of students after ____.

- (a) D
- (b) B
- (c) K
- (d) C

72. Who is the first student to go to gym?

- (a) A
- (b) E
- (c) H
- (d) I

73. How many students go to gym after J?

- (a) Two
- (b) Three
- (c) Four
- (d) One

74. Which of the following is correct?

- (a) B goes to gym before F.

- (b) Two students go to gym between G and I.
- (c) K goes just before F.
- (d) None is correct.

75. Consider the following Statements and Conclusions:

Statements:

1. Some Astronomers are Astrologers.
2. Some Astrologers are Scientists.
3. No Scientist is a Physicist.
4. No Physicist is an Astronomer.

Conclusions:

- I. No Physicist is an Astrologer.
- II. No Scientist is an Astronomer.
- III. Some Astrologers are Astronomers.

Which of the above conclusion(s) can be drawn from the given statements?

- (a) I, II and III
- (b) Only I and II
- (c) Only III
- (d) Only II and III

76. What was the difference between the speed of vehicle A on day 1 and the speed of vehicle C on the same day?

- (a) 7 km/hr
- (b) 12 km/hr
- (c) 11 km/hr
- (d) 8 km/hr

77. What was the speed of vehicle C on day 2 in terms of meters per second?

- (a) 15.3
- (b) 12.8
- (c) 11.5
- (d) 12.5

78. Aruna, Tanuja, and Manju are tasked with completing a job individually, with their time ratios being 5 : 8 : 10. When they collaborate and work together for 8 hours a day, they can finish a job in 4 days. However, in a specific scenario, Aruna and Tanuja partner up and work together for 6 days, putting in 6 hours and 40 minutes each day. Manju will need how many hours to complete the remaining portion of the job working alone ?

- (a) 10 hours
- (b) 8 hours
- (c) 6 hours
- (d) 12 hours

79. Adil's monthly earnings amount to ₹4500, and he aims to maintain an average monthly savings of ₹600 over the course of a year. During

the initial seven months, his monthly expenses stood at ₹3950, but he anticipates that starting from the eighth month, his expenses will rise to ₹4200 per month. What has to be his rise in monthly earnings, expressed in rupees, beginning from the tenth month onward, in order to meet his annual savings goal?

- (a) 310 rupees
- (b) 200 rupees
- (c) 350 rupees
- (d) 370 rupees

80. The number of integers greater than 5000 that can be formed with the digits 0, 1, 2, 5, 7, 9, using each digit at most once, is

- (a) 1360
- (b) 1220
- (c) 1320
- (d) 1380

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1. Answer: b

Explanation:

All the consonants of the english alphabet are:

B, C, D, F, G, H, J, K, L, M, N, P, Q, R, S, T, V, W, X, Y, Z

So, there are a total of 21 consonants.

The number of consonants whose images look like them are:

H, M, T, V, W, X and Y

Therefore, there are a total of 7 such consonants.

2. Answer: b

Explanation:

All such cubes are at 8 corners, so 8 cubes of three colours formed.

3. Answer: a

Explanation:

Even numbers so $b = 0$

100 122 144 166 188

200 222 244

.

.

.

900

By adding $[5(100+\dots+900)+9(22+44+66+88)]/45$ {Since the term is common 5 times and 9 times}

$$= [(5 \times 100 \times 45) + 9 \times 22(1+2+3+4)]/45$$

$$= 544$$

4. Answer: b

Explanation:

LCM of the numbers = 420.

Hence there must be $(420 \times 2) + 2 = 842$ beads.

5. Answer: c

Explanation:

55 min spaces are gained in 60 min

35 min spaces will be gained in 38.18 min.

Answer = 7 hrs 38.18 min.

6. Answer: a

Explanation:

In 400 consecutive years there are 97 leap years. Hence, in 400 consecutive years,

February has the 29th day 97 times.

The remaining eleven months will have the 29th day 400×11 or 4400 times.

Therefore, the 29th day of a month occurs $(4400 + 97) = 4497$ times.

7. Answer: b

Explanation:

Let the original price of a piece of detergent cake be Rs. x.

So for Rs. 400, $400/x$ pieces of detergent cakes can be bought.

Now, the price has been reduced by 25%.

So, number of pieces of detergent cakes bought = $400/(x \times 75/100) = 400 \times (4/3x) = 1600/3x$ According to the question,

$$\text{Or, } 1600/3x - 400/x = 15$$

$$\text{Or, } 1600 - 1200 = 15 \times 3x$$

$$\text{Or, } 400 = 15 \times 3x$$

$$\text{Or, } x = 400/(15 \times 3)$$

$$x = 8.89$$

Hence, the original price of a piece of detergent cake is Rs. 8.89.

8. Answer: c

Explanation:

Let the rate of work of one labour be x units per day.

The renovation work will be completed in 9 days by 5 labourers.

$$\text{Hence, total work} = 9 \times 5 \times x = 45x$$

It is given that, for two days, five labourers work.

Hence, the work done in first 2 days by five labours = $10x$

$$\text{So, work left} = 45x - 10x = 35x$$

Work done per day when 7 labours will work = $7x$

So, number of days needed by 7 labours to complete the rest of the work = $35x/7x = 5$ days So, total days required to complete the work = $2 + 5 = 7$ days

9. Answer: c

Explanation:

Cyclicity of 7:

$$7^1 = 07, 7^2 = 49, 7^3 = 343, 7^4 = 2401$$

The last two digits of powers of 7 go in a cycle of 07, 49, 43 and 01. After dividing 67 by 4, we get a remainder of 3.

$$\text{Hence the last two digits of } 107^{67} = 7^3 = 43$$

Hence, the correct answer is option (c).

10. Answer: c

Explanation:

The watch gains 15 seconds in 10 minutes. So, it gains 90 seconds in 1 hour.

Time from 12 AM to 9 PM on the same day = $12 + 9 = 21$ hours.

Time gained in 21 hours = 21×90 seconds = 1890 seconds = 31 minutes 30 seconds. Thus, the watch will show 31 minutes 30 seconds more.

Hence, option (c) is the correct answer.

11. Answer: d

Explanation:

The cubes at all the corners have three coloured surfaces. Therefore, there are 24 such cubes having three surfaces coloured.

12. Answer: a

Explanation:

There is no such cube having two surface coloured.

13. Answer: d

Explanation:

The cubes which are located at central of every surface having one face coloured. Therefore, in each layer there are 4 such cubes. Hence, 24 blocks have one face coloured.

14. Answer: c

Explanation:

Total Persons = 100
Persons who like cricket = 62
Persons who like basketball = 48
Persons who do not like either cricket or basketball = 8
Total number of persons = Persons who like cricket + Persons who like basketball - Persons who like both cricket and basketball + Persons who like neither cricket nor basketball
Or $100 = 62 + 48 - \text{Persons who like both cricket and basketball} + 8$
Or $100 = 110 - \text{Persons who like both cricket and basketball} + 8$
Or Persons who like both cricket and basketball = $118 - 100 = 18$
Hence, option (c) is the correct answer.

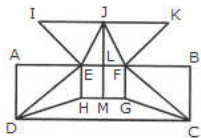
15. Answer: b

Explanation:

Persons who like either cricket or basketball = Total students - Persons who do not like either cricket or basketball = $100 - 8 = 92$
Hence, option (b) is the correct answer

16. Answer: b

Explanation:



The figure may be labelled as shown.
The horizontal lines are IK, AB, HG and DC i.e. 4 in number.
The vertical lines are AD, EH, JM, FG and BC i.e. 5 in number.
The slanting lines are IE, JE, JF, KF, DE, DH, FC and GC i.e. 8 is number.
Thus, there are $4 + 5 + 8 = 17$ straight lines in the figure

17. Answer: c

Explanation:

Let's denote the purchase price of the iPad as "x" rupees and the purchase price of the iPhone as "y" rupees.
According to the given information, we have two equations:
 $x + y = 60,000$ (Total purchase cost)
 $0.20x - 0.10y = 0.10 * 60,000$ (Overall profit)

The first equation represents the total amount spent on buying the iPad and iPhone, which is Rs 60,000.

The second equation accounts for the overall profit achieved by selling the devices. The left-hand side of the equation represents the difference between the profit from selling the iPad (20% profit) and the loss from selling the iPhone (10% loss), while the right-hand side is 10% of the total purchase cost (which is the desired overall profit).

Now we can solve this system of equations to find the values of "x" and "y."

From the first equation, we can express y in terms of x:

$$y = 60,000 - x$$

Substitute this expression for y into the second equation:

$$0.20x - 0.10(60,000 - x) = 0.10 * 60,000$$

Simplify the equation:

$$0.20x - 6,000 + 0.10x = 6,000$$

Combine like terms:

$$0.30x = 12,000$$

Divide by 0.30:

$$x = 12,000 / 0.30$$

$$x = 40,000$$

So, the purchase price of the iPad was Rs 40,000.

18. Answer: d

Explanation:

Since the cone is divided into two parts, when we consider top part of the cone, its height is (1/3)rd of the original height which is equal to 8cm.

If height becomes (1/3)rd, then radius also becomes (1/3)rd. If both height and radius become (1/3)rd, Volume will be (1/27)th

So, if we consider top part's volume = V

Volume of remaining part = 26V

Total volume = 27V

Given $26V - V = 500$

$25V = 500 \Rightarrow V = 20$

Total volume = $27V = 27 * 20 = 540$ cc

Answers and Explanations:

19. Answer: c

Explanation:

Statement 1 is correct: The statement:

"This was not known from the beginning: it took some experimenting and theorizing to suggest this hypothesis, but now it is accepted, and it is the most useful theory for producing new ideas in the field of biology." Indicates that experimentation and theory precede hypothesis.

Statement 2 and 3 are correct. It can be verified by the sentence- " If instead of arranging the atoms in some definite pattern, again and again repeated, on and on, or even forming little lumps of complexity like the odor of violets, we make an arrangement which is always

different from place to place, with different kinds of atoms arranged in many ways, continually changing, not repeating, how much more marvelously is it possible that this thing might behave?"

Statement 4 is incorrect as the sentence "In other words, there is nothing that living things do that cannot be understood from the point of view that they are made of atoms acting according to the laws of physics." Only means that atoms can help us understand the living world.

20. Answer: b

Explanation:

The author is substantiating the view that atoms are the fundamental unit of the world with various examples.

21. Answer: a

Explanation:

Since the author says that ". This was not known from the beginning: it took some experimenting and theorizing to suggest this hypothesis, but now it is accepted, and it is the most useful theory for producing new ideas in the field of biology." Thus (a) can be safely inferred.

22. Answer: c

Explanation:

The passage does not simplify the atomic hypothesis, neither does it offer applications of atoms. Further, there is no proposal of a new theory. The passage does help the reader imagine various scenarios in which atoms as a constituent of matter would be interesting and engaging. Thus, (c) is the correct option

23. Answer: c

Explanation:

Assumption 1 is correct as the lines "or utilize their powers of socially sensitive reasoning", "but a sense of justice is among the concerns that can move people and often do" and "That space already exists" suggests that people do have social values and concerns which means people are socially sensitive. The lines like "it is a question of making systematic, cogent and effective use of the general concerns that people do have" and "This is not to claim that people invariably invoke their ideas of justice" suggest that they do not always act in a socially sensitive manner. Thus assumption 1 is correct. Assumption 2 is correct as can be seen from the lines "but a sense of justice is among the concerns that can move people and often do" and "Space does not have to be artificially created in human mind for the ideas of justice and fairness" through moral bombardment or ethical haranguing. That space already exists, and it is a question of making systematic, cogent and effective use of the general concerns that people do have". Hence correct option is (c).

24. Answer: a

Explanation:

The line "an important part in success of various forms of social organization, including the market mechanism, democratic politics, elementary civil and political rights, provision of basic public goods, and institutions of public action and protest" make 1 and 2 correct. But right to equality is not mentioned in the passage; only elementary civil and political rights are mentioned. Thus we cannot assume that they contain right to equality or not. Thus correct option is (a).

25. Answer: b

Explanation:

The paragraph 1 suggests that sense of justice is an important concern for individual. The line "But a sense of justice is among the concerns that can move people and often do. Social values can play" and have played – an important part in success of various forms of social organization" proves it.

The paragraph 2 suggests that sense of social justice is a natural part of individual conscience. The lines "But the basic idea of justice are not alien to social beings" and "That space already exists" proves this. Thus the central message of the passage can only be option (b). All other options are just individual ideas presented in the passage. Thus the correct answer is option (b).

26. Answer: d

Explanation:

Statement 1 is correct as can be inferred from first two lines of paragraph 1. Statement 3 is also correct as given in paragraph 3. Passage says in countries like India, it is the poor who most directly bear the burden of environmental degradation. Author further says air pollution makes the urban poor more vulnerable to respiratory and other diseases than their rich. Statement 4 is also correct. See paragraph 4, line 1 in conjunction with paragraph 2, line 1. Statement 2 is incorrect. While paragraph 2 suggests that "industrialization and economic growth in Europe and North America was enabled....by....access to....colonies", it will not be correct to infer that India should acquire land.

27. Answer: b

Explanation:

Statement 1 is incorrect as paragraph 2 does not mention that India is not rich in resources. Statement 2 is correct. paragraph 2, last 2 lines indicate that India should be environmentally more conscious than Europe or North America because of two reasons: one, India does not have colonies. Two, India has much higher population density.

28. Answer: c

Explanation:

is the correct option. The author states that Darwinism does not need to alter our ultimate moral ideas. He suggests that while Darwinism has brought about a truer conception of the end, it has not fundamentally changed our moral principles or the ultimate moral ideas. The author emphasizes that any change in moral views due to Darwinism is more about the methods or means rather than the ultimate moral ends.

29. Answer: b

Explanation:

is the correct choice, as is given in first paragraph. Where author says that he does not find any sign of revolution.

30. Answer: a

Explanation:

is the correct option. The author mentions that the Christian moral code is "accepted in part" and "rejected practically by all save a few fanatics," indicating that the majority of people do not follow the Christian moral code fully. This partial acceptance and rejection lead to a state of moral confusion and inconsistency among the people.

31. Answer: b

Explanation:

is the best choice. The author contrasts the Christian ideal with what he refers to as a "Hellenic ideal" and suggests that Darwinism might lead to a return to this Hellenic ideal. The passage implies that the Hellenic ideal, possibly representing a more rational and balanced view of ethics, is preferable to the Christian ideal. The mention of a "return to a non-Christian and perhaps a Hellenic ideal" suggests that the author believes this would be a beneficial shift for humanity.

32. Answer: c

Explanation:

is the correct option. The author defines the Chief Good as the "welfare of the community realized in its members." This concept reflects a holistic view where the well-being of the community is intrinsically tied to the well-being of its individual members. The passage emphasizes that this welfare is the ultimate goal and that individuals have rights and duties only as part of the community, aligning with a Hellenic or organic view of ethics.

33. Answer: a

Explanation:

The first sentence of the passage gives the answer. The passage begins by stating that discussions on drug addiction are often focused on addicts themselves. The author then argues that these discussions should also include the impact on non-addicts. This suggests that

the primary concern in such discussions is typically the addicts.

34. Answer: c

Explanation:

The last sentence of the passage gives the answer. The author clearly states that the addict is driven to crime due to the "desperate need for money to buy the next dose" because drugs are only available in an illegal and expensive black market. This financial desperation, rather than the drugs themselves causing loss of self-control, is what leads to criminal behavior.

35. Answer: d

Explanation:

The passage criticizes narcotics laws for creating a situation where addicts have to turn to crime to support their addiction. The author implies that these laws, by making drugs expensive and only available through illegal means, force addicts into criminal activities.

36. Answer: a

Explanation:

Answer can be inferred from the second last sentence of the passage.

37. Answer: c

Explanation:

The impression that comes across through the narrator's description is his untiring efforts to adjust to extreme loneliness. It is quite obvious that he was very lonely and that he was making friends with various types of insects, flowers, etc. to retain his sanity. (a) The general condition of the country jails is revealed in the passage but this is not the central idea of this passage. The same is true of options (b) and (d).

38. Answer: a

Explanation:

- (a) Since the central idea of the passage is loneliness and the author's struggle to adjust himself to rather difficult circumstances option (a) is the right answer.
- (b) This obviously not correct.
- (c) This is true but it is not the central idea.
- (d) This is also true but that is not just what the author wants to suggest

39. Answer: d

Explanation:

This will make it very clear to him that doing small favours are not part of job. You are far more responsible for the position. The advise will show that you care for him and a direct approach approach to the allotting authority may work for him. This gives a lasting impression that you follow the rules

40. Answer: d

Explanation:

Whenever any number is divided by 7 then the remainder obtained is termed as odd days. For example, January has 31 days. So, number of odd days in January = $31/7 = 3$ odd days

Given: 22nd March was Sunday and Sachin was born on second Tuesday of October.

So, number of odd days between 22nd March and 30th September
= $(9 + 30 + 31 + 30 + 31 + 31 + 30)/7 = 192/7 = 3$ odd days (Remainder)

Hence, day on 30th September = Sunday + 3 days = Wednesday

1st October will be Thursday and 1st Tuesday will be on (Thursday + 5), i.e., 6th October.

2nd Tuesday will be on (6th October + 7 days) i.e., 13th October.

Hence, option (d) is correct.

41. Answer: d

Explanation:

Sudharshan is a teacher. He is the father of Mahesh and Srinija.

Sudharshan is the husband of Pushpa, who is a doctor.

Ramu is the husband of Suguna. Suguna is a housewife.

Ramu is the father of Sudharshan

Grandson of the family is an engineer.

Granddaughter of the family is a student.

42. Answer: b

Explanation:

Let's break down the problem step by step:

- There are 75% skilled workers, so 25% are unskilled.
- Among skilled workers, 80% are permanent, so 20% are temporary.
- Among unskilled workers, 20% are permanent, so 80% are temporary.

Now, let's calculate the number of temporary workers:

- For skilled workers, 20% are temporary, which is $(20/100) * (75\% \text{ of the total workers}) = (1/5) * (75/100) * \text{Total workers} = (3/20) * \text{Total workers}$.
- For unskilled workers, 80% are temporary, which is $(80/100) * (25\% \text{ of the total workers}) = (4/5) * (25/100) * \text{Total workers} = (1/5) * \text{Total workers}$.

So, the total number of temporary workers is $(3/20 + 1/5) * \text{Total workers} = (15/100 + 20/100) * \text{Total workers} = (35/100) * \text{Total workers} = (7/20) * \text{Total workers}$.

Now, we know that the number of temporary workers is 126, so we can set up the equation:

$$(7/20) * \text{Total workers} = 126$$

To solve for Total workers, multiply both sides by (20/7):

$$\text{Total workers} = (126 * 20) / 7 \text{ Total workers} = 360$$

So, the number of total workers in the company is 360.

Therefore, the answer is (b) 360.

43. Answer: c

Explanation:

$$\text{HCF}(2811, 3981, 5151) = \text{HCF}[(5151 - 3981), (3981 - 2811)] = \text{HCF}(1170, 1170) = 1170$$

Sum of the digits = $1 + 1 + 7 + 0 = 9$

44. Answer: b

Explanation:

Let the numbers of children = n

Then the chocolates to each child = 3n

Total numbers of chocolates = n x 3n

$$3n^2 = 4800$$

$$n = 40$$

45. Answer: a

Explanation:

Including driver, there are 5 persons in the car.

Total weight of the five persons = $55 * 5 = 275$

Total weight of the five persons and car = $440 * 6 = 2640$

Weight of the car = $2640 - 275 = 2365$

46. Answer: c

Explanation:

Number of girls = x

Number of boys = y

Total number of students = x + y

Average marks of the whole class in English = $(75x + 68y)/x+y$

$$70(x+y) = 75x + 68y \dots (1)$$

Average marks of the whole class in Mathematics = $(77x + 70y)/x+y$

$$= [(75x+68y)+(2x+2y)]/x+y$$

$$= [(75x+68y)+2(x+y)]/x+y \dots (2)$$

Using (1) in (2), we get

$$= [70(x+y)+2(x+y)]/x+y$$

$$= [72(x+y)]/x+y$$

$$= 72$$

47. Answer: d

Explanation:

From statement I

Total number of chocolates in the bag is a prime number less than 15.

Possible number of chocolates are 2 or 3 or 5 or 7 or 11 or 13.

But we cannot find the number of red and number of black color chocolates from statement I alone. Hence, statement I alone cannot answer the question.

From statement II

Given, probability of drawing 1 chocolate of red color from the box is $\frac{3}{7}$. From II alone, we cannot find the number of red and number of black color chocolates. Hence, statement II alone cannot answer the question.

Combining both statements,

Given, total number of chocolates are prime number less than 15 and probability of drawing 1 chocolate of red color from the box is $\frac{3}{7}$.

Which is only possible when there is total 7 chocolates and 3 of them are red.

No. of red chocolates in box = 3

No. of black chocolates in box = $7 - 3 = 4$

Probability of drawing 2 chocolates of different colors = $\frac{(3C1 \times 4C1)}{7C2} = \frac{4}{7}$.

Therefore, question can be answered by combining both statements together.

48. Answer: d

Explanation:

	Reporter -1	Reporter -2	Tech-1	Tech-2	Photo	writer
P					Yes	
Q			Yes			
R						
S	Yes					
T						
U				Yes		

49. Answer: c

Explanation:

Spirit Water
70% 30% (initially)
80% 20%. (After replacement)

Let x litre be the total quantity of the mixture.

Left amount of water = Initial amount of water (1-replaced amount/total amount) or $20 = 30(1 - \frac{6}{x})$

or $\frac{20}{30} = 1 - \frac{6}{x}$

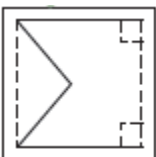
or $\frac{2}{3} = 1 - \frac{6}{x}$

or $\frac{6}{x} = \frac{1}{3}$

or $x = 18$ litre.

50. Answer: a

Explanation:



51. Answer: b

Explanation:



52. Answer: a

Explanation:

- From statement 1, we know that there is an overlap between the groups of "officers" and "responsible persons." This means some officers are also responsible persons.
- From statement 2, we know that "no responsible person is rich." This implies that if someone is a responsible person, they cannot be rich.

53. Answer: c

Explanation:

The month begins on a Monday, so there will be 5 Mondays.

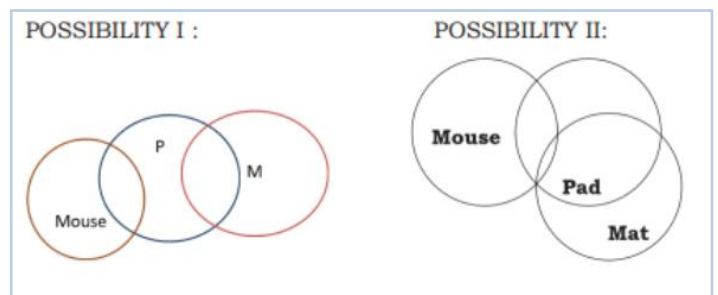
$$\text{The average} = \frac{(5 \times 96) + (25 \times 156)}{30}$$

$$= \frac{480 + 3900}{30} = 146$$

Hence option C is Correct.

54. Answer: a

Explanation:



55. Answer: c

Explanation:

"clay" stands for "ripe" and "kapat" stands for "is." There is no option that includes both the codes. "chao" stands for "red," which means that "soi" must mean

“papaya.” Therefore, “papaya is ripe” must have the words clay, kapat and soi.

56. Answer: b

Explanation:

Total three digit numbers that can be formed using the given digits = $5 \times 5 \times 4 = 100$ The units place can have either 0 or 5 for the number to be divisible by 5.

Total numbers having 0 as units digit = $5 \times 4 = 20$

Total numbers having 5 as units digit = $4 \times 4 = 16$

So, total numbers divisible by 5 = $20 + 16 = 36$ Hence, required probability = $36/100 = 9/25$

57. Answer: d

Explanation:

Each of the nine hamlets is along the bank of a river and the distance between two adjacent hamlets is 1 km. So, it is clear that all the hamlets lie along the same line. P is 4 km east from L and T is 4 km east from P. Thus, L and T are at the two ends and P is the middle hamlet.

Thus, the nine hamlets lie on the bank of the river as below:

L _ _ _ P _ _ _ T

N is 3 km from T. So, N has to come in the position as shown in the above picture. Distance between L and N = Distance between L and P + Distance between P and N

= $4 \text{ km} + 1 \text{ km} = 5 \text{ km}$. Hence, option D is the correct answer.

58. Answer: c

Explanation:

Bowling Average of cricketer = 18.6 runs per wicket
Bowling Figure in the last match = 6 wickets for 39 runs
Decrease in bowling Average = 0.6

So, new average = $18.6 - 0.6 = 18$ runs per wicket

Let the total number of wickets taken till the last match be x. Then,

Total number of Runs before last match = Average \times

Total number of wickets = $18.6 \times$ Therefore, $(18.6x + 39)/(x + 6) = 18$

Or $18.6x + 39 = 18(x + 6)$

Or $18.6x + 39 = 18x + 108$

Or $18.6x - 18x = 108 - 39$

Or $x(18.6 - 18) = 69$

Or $0.6x = 69$

Or $x = 69/0.6$

Or $x = 115$

59. Answer: c

Explanation:

The number of bacteria increases as per the series: 1, 2, 4, 8, 16

Clearly, this is a geometric progression with the common ratio,

$r = 2$.

The number of bacteria at the end of twenty minutes will be given by the eleventh term of the GP. [Because, the number of bacteria doubles every two minutes and initially there was already one bacterium].

Eleventh Term, $T_n = a \times r^{(n-1)} = 1 \times 2^{(n-1)} = 2^{10} = 1024$

Hence, option C is the correct answer.

60. Answer: c

Explanation:

Option c is the correct answer.

Given, each letter represents a different digit greater than 2, so we can replace the letters with 3,5,6,7,8,9.

The numbers are AB4C and D2EF and sum is 10,835 --- (1)

Step 1: Unit digit: Sum of unit digit can't be 5, as the digits have to be greater than 2, so sum of unit digits is 15, then only we will get 5 at the unit place of sum in equation (1),

So the combination of C and F can be (9,6) or (8,7) --- (2)

Step 2: Tens digit:

We got a carry of 1 from 15, and in the sum the tens digit is 3, \Rightarrow Implies the sum of tens digit is 13.

$1(\text{carry}) + 4 + E = 13 \Rightarrow E = 8$ --- (3)

Since all digits are distinct, hence when E is 8, so in equation (2), combination of C and F will be (9,6)

Step 3: Hundreds digit:

We got a carry of 1 from 13, and in the sum the hundreds digit is 8,

$1(\text{carry}) + B + 2 = 8 \Rightarrow B = 5$ --- (4)

So now we are left with two digits 3, 7 so combination of A and D is (3,7) or (7,3)

The sum of the value of B and E = $8 + 5 = 13$

61. Answer: a

Explanation:

We are given that $P < Q$. Let's break down each option and see if it holds true based on this inequality:

$P < (P + Q) / 2 < Q$:

This is true. If P is less than Q, then the average of P and Q $[(P + Q) / 2]$ will be greater than P and less than Q.

$P < PQ/2 < Q$:

This is not necessarily true. If both P and Q are positive, then $P < PQ/2 < Q$ might hold. However, if either P or Q is negative, this inequality might not hold.

$P < Q^2 - P^2 < Q$:

This is not necessarily true. It depends on the values of P and Q. The right-hand side of the inequality involves a difference of squares, which doesn't always ensure that the inequality holds.

$P < PQ < Q$:

This is not necessarily true. If both P and Q are positive, then $P < PQ < Q$ might hold. However, if either P or Q is negative, this inequality might not hold.

So, the only option that is always true based on the given inequality $P < Q$ is:

$P < (P + Q) / 2 < Q$

62. Answer: a

Explanation:

3^{236} can be written as 9^{118}

The remainder when 9 is divided by 8 is 1.

So the remainder when $(9 * 9 * 9 \dots \dots 118 \text{ times})/8$ is also 1

63. Answer: d

Explanation:

Let's calculate the cost price for honey:

Let the cost price of sugar per kg be "x" rupees.

Then, the cost price of honey per kg would be 0.8x (20% less costly).

Raju sells 5 kg of honey at a 10% profit, so the selling price of 5 kg of honey is 110% of the cost price of 5 kg of honey:

Selling price of 5 kg of honey = $1.10 * 5 * 0.8x = 4.4x$

Similarly, he sells 10 kg of sugar at a 20% profit, so the selling price of 10 kg of sugar is 120% of the cost price of 10 kg of sugar:

Selling price of 10 kg of sugar = $1.20 * 10 * x = 12x$

After 5 kg of honey and 10 kg of sugar is sold there is 50 kg of honey and 50 kg of sugar which is left. These are mixed and sold at 308.32 rupees. So the cost of 100 kg of mixture of honey and sugar is $100 * 308.32 = 30832$

Total selling price = $1.64 * \text{Total cost price}$

$\Rightarrow 12x + 4.4x + 30832 = 1.64 * (0.8x * 55 + x * 60)$

$\Rightarrow 16.4x + 30832 = 1.64 (44x + 60x) = 1.64 (104x)$

$\Rightarrow 30832 = 170.56x - 16.4x = 154.16x$

$\Rightarrow x = \text{Rs } 200$

So the cost price of honey = $0.8x = 0.8(200) = 160$ rupees

64. Answer: b

Explanation:

Let there be 'a' number of students originally in the class and their average weight be 'n' kgs.

Sum of the weights of original students = $n * a$

Let 'b' be the new number of students who join the class having an average weight of 'n + 5' kgs.

Sum of the weights of new students = $(n+5) * b$

Since it is given that the average weight of the students in a class increases by 1 kg when a group of new students is added, we can write

$(an)/a + 1 = [an + (n+5)b]/(a+b)$

Simplifying the above equation we get

$\Rightarrow a+b = 5b$

$\Rightarrow a = 4b$

$\Rightarrow a/b = 4/1$

65. Answer: a

Explanation:

Option a is the correct answer.

The given sequence begins with aabcde \Rightarrow last term going to the first place and becoming double and rest terms moving one place ahead.

aabcde \Rightarrow eeabcd \Rightarrow ddeabc \Rightarrow ccdeab \Rightarrow bbcdca.

66. Answer: d

Explanation:

Option d is the correct answer.

The given expression has the following relation:

$n^2 - n - 1$

Where n is the alternative prime number beginning from 2.

List of prime numbers for our utility: 2,5,11,17,23,31,41

$(2^2) - 2 - 1 = 1$

$(5^2) - 5 - 1 = 19$

$(11^2) - 11 - 1 = 109$

$(17^2) - 17 - 1 = 271$

$(23^2) - 23 - 1 = 505$

$(31^2) - 31 - 1 = 929$

Next term is $(41^2) - 41 - 1 = 1639$.

67. Answer: b

Explanation:

Mean score = 39

Since, mean = sum of observation / no of observations

Therefore, sum of observations = mean x no of observations

That is $39 * 50$

= 1950

After replacement, sum of new observation

= $1950 + 43 - 23$

= 1970

Mean of new observation = $1970/50 = 39.4$

68. Answer: d

Explanation:

Length of first paper: $(3+5+7)/3 = 5$

Length of second paper: 1

$\text{sqr} + 2\text{sqr} + 3\text{sqr} = 1 + 4 + 9 = 14$

So, length of original sheet : $5 + 14 = 19$

69. Answer: b

Explanation:

In the squares on the corners: Product of left two numbers = product of right two numbers.

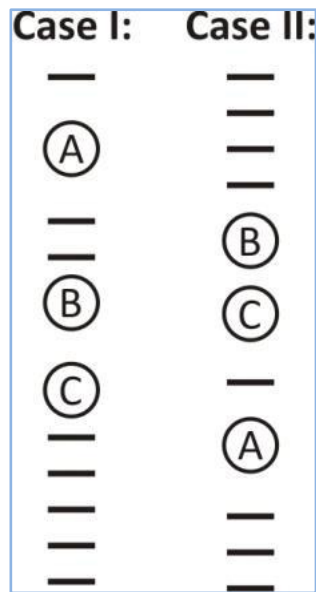
i.e., $4 \times 9 = 12 \times 3$, $8 \times 5 = 4 \times 10$
 $5 \times 16 = 8 \times 10$, $9 \times 8 = 6 \times ?$

70. Answer: d

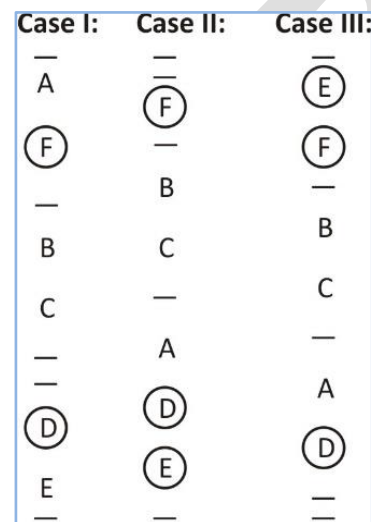
Explanation:

Speed of vehicle A on two days, $832/16$, $864/16$
Speed of vehicle C on two days, $693/11$, $810/18$
Speed of vehicle F on two days, $703/19$, $638/12$
Speed of vehicle B on two days, $516/12 = 774/18 = 43$

Only two students go between A and B and C goes just after B. As five students go before C, five students will go after C because there are 11 students in hostel. So, possible arrangements will be-



Now, 2 students go after D and only two students go before F. Since three students go between C and E, so there will be two possible cases for case (II) -



Since, number of students who go after J and before K is same and K went before C but after H. So, in

cases (II) and (III), do not satisfy this criteria. Hence, case (II) and (III) will be eliminated. So the final arrangement where G goes before I will be -



Note: The information that H goes before B is redundant. The puzzle can be solved without this information.

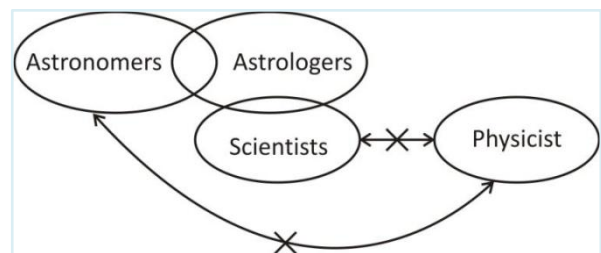
- 71. Answer: b
- 72. Answer: c
- 73. Answer: b
- 74. Answer: d

75. Answer: c

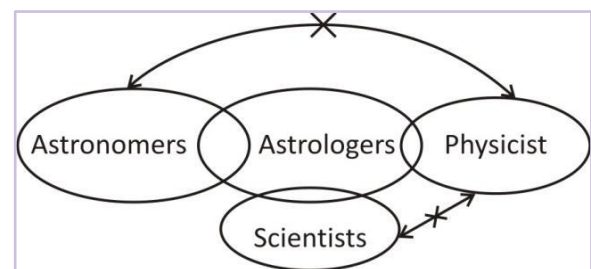
Explanation:

From the given statements we can draw following possible diagrams.

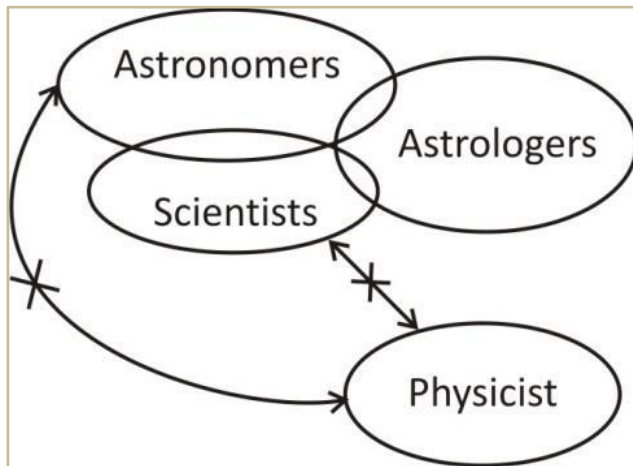
Case 1:



Case 2:



Case 3:



By looking at the diagrams in the above three cases we can say that only conclusion III is true.
Hence, only conclusion 3 is true

76. Answer: c

Explanation:

Speed of vehicle A on Day 1 = $832/16 = 52$ km/hr

Speed of vehicle C on Day 1 = $693/11 = 63$ km/hr

Difference in speed = $63 - 52$ km/hr = 11 km/hr

77. Answer: d

Explanation:

Speed of vehicle C on Day 2 = $810/18 = 45$ km/hr
 $45 \times 5/18 = 12.5$ m/s

78. Answer: c

Explanation:

The ratio of times taken by Aruna, Tanuja and Manju to complete a job is 5 : 8 : 10.

This means that their efficiencies are in the ratio $\frac{1}{5} : \frac{1}{8} : \frac{1}{10}$

Or, their efficiencies are in the ratios 8 : 5 : 4

This means Aruna, Tanuja and Manju together can complete $8+5+4 = 17$ units of work per hour in a day

Working 8 hours per day for 4 days they complete $17 \times 8 \times 4 = 544$ units = total work

When Aruna and Tanuja work together for 6 days putting 6 hours 40 minutes per day, the total work done by them = $(8+5) \times 6 \times \frac{20}{3} = 13 \times 2 \times 20 = 520$ units

The remaining amount of work to be completed by Manju = $544-520 = 24$ units

Manju completes 4 units in 1 hour, so manju takes $24/4 = 6$ hours to complete the remaining work

79. Answer: d

Explanation:

Adil aims to have an average monthly savings of ₹600 over the entire year.

Annual Savings = ₹600 × 12 months

Annual Savings = ₹7200

For the first seven months, Adil's monthly expenses were ₹3950.

During the first seven months Adil's savings were $4500-3950 = 550$ per month

Savings for 7 months = $550 \times 7 = 3850$

Savings to be made in the remaining 5 months = $7200 - 3850 = 3350$

To make a savings of 3350 in 5 months, per month savings should be $3350/5 = 670$

Since the expenses from the eighth month will be 4200 and 670 has to be savings, the total earning earnings per month have to be $4200+670 = 4870$

So the rise in earnings have to $4870-4500 = \text{Rs } 370$

80. Answer: d

Explanation:

If the first digit is 5:

There is 1 choice for the first digit (5).

For the remaining 3 digits, we have 5 choices (0, 1, 2, 7, 9) for each digit.

Total numbers = 1 (first digit) $\times 5 \times 4 \times 3 = 60$

If the first digit is 7 or 9:

There are two choices for first digit and for the remaining 3 digits there are 5 choices

Total numbers = 2 (first digit) $\times 5 \times 4 \times 3 = 120$

The number of cases for 5 digit numbers are:

5 (for first digit since zero cannot be places) $\times 5 \times 4 \times 3 \times 2 = 600$

The number of cases for 6 digit numbers are:

5 (for first digit since zero cannot be places) $\times 5 \times 4 \times 3 \times 2 \times 1 = 600$

So the total number of cases = $60 + 120 + 600 + 600 = 1380$

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