

Apti Plus Academy for Civil Services Pvt. Ltd.

Jaydev Vihar, Bhubaneswar

(CSAT FULL LENGTH-IV)
OPSC PRELIMS TEST SERIES 2024
TEST- 42

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 answer 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

Directions for the following 5 (five) items: Read the following five passages and answer the items that follow. Your answer to these items should be based on the passages only.

Passage 1: With respect to what are called denominations of religion, if everyone is left to be a judge of his own religion, there is no such thing as religion that is wrong; but if they are to be a judge of each other's religion, there is no such thing as a religion that is right, and therefore all the world is right or all the world is wrong in the matter of religion.

Q.1. What is the most logical assumption that can be made from the passage given above?

- No man can live without adhering to some religious denomination.
- It is the duty of everyone to propagate one's religious denomination.
- Religious denominations tend to ignore the unity of man.
- Men do not understand their own religious denomination.

Passage 2: It is certain, that seditions, wars, and contempt or breach of the laws are not so much to be imputed to the wickedness of the subjects, as to the bad state of a dominion. For men are not born fit for citizenship but must be made so. Besides, men's natural passions are everywhere the same; and if wickedness more prevails, and more offences are committed in one commonwealth than in another, it is certain that the former has neither enough pursued the end of unity, nor framed its laws with sufficient forethought; and that, therefore, it has failed in making quite good its right as a commonwealth.

Q.2. Which among the following is the most logical and rational inference that can be made from the passage given above?

- Seditions, wars, and breach of the laws are inevitable in every dominion.
- It is not the people, but the sovereign who is responsible for all the problems of any dominion.
- That dominion is the best which pursues the aim of unity and has laws for good citizenship.
- It is impossible for men to establish a good dominion.

Passage 3:

Inequality violates a basic democratic norm: the

equal standing of citizens. Equality is a relation that obtains between persons in respect of some fundamental characteristic that they share in common. Equality is, morally speaking, a default principle. Therefore, persons should not be discriminated on grounds such as race, caste, gender, ethnicity, disability, or class. These features of human condition are morally irrelevant. The idea that one should treat persons with respect not only because some of these persons some special features or talent, for example skilled cricketers, gifted musicians, or literary giants, but because persons are human being, is by now part of commonsense morality.

Q.3. With reference to the above passage, the following assumptions have been made:

- Equality is a prerequisite for people to participate in the multiple transactions of society from a position of confidence.
- Occurrence of inequality is detrimental to the survival of democracy.
- Equal standing of all citizens is an idea that cannot actually be realised even in a democracy.
- Right to equality should be incorporated into our values and day-to-day political vocabulary.

Which of the above assumptions are valid?

- 1 and 2 only
- 2 and 3 only
- 1 and 4 only
- 3 and 4 only

Passage 4: Aristocratic government ruins itself by limiting too narrowly the circle within which power is confined; oligarchic government ruins itself by the incautious scramble for immediate wealth. But even democracy ruins itself by excess of democracy. Its basic principle is the equal right of all to hold office and determine public policy. This is, at first glance, a delightful arrangement; it becomes disastrous because the people are not properly equipped by education to select the best rulers and the wisest courses. The people have no understanding and only repeat what their rulers are pleased to tell them. Such a democracy is tyranny or autocracy. – Plato

Q.4. Which one of the following statements best reflects the crux of the passage given above?

- Human societies experiment with different forms of governments.

- (b) Any form of government tends to deteriorate by excess of its basic principle.
- (c) Education of all citizens ensures a perfect, functional and sustainable democracy.
- (d) Having a government is a necessary evil because tyranny is inherent in any form of government.

Passage 5: There are reports that some of the antibiotics sold in the market are fed to poultry and other livestock as growth promoters. Overusing these substances can create superbugs, pathogens that are resistant to multiple drugs and could be passed along humans. Mindful of that, some farming companies have stopped using the drugs to make chickens gain weight faster. Since Denmark banned antibiotic growth promoters in the 1990s, the major pork exporters says it is producing more pigs – and the animals get fewer diseases.

Q.5. Which one of the following statements best reflects the critical message conveyed by the passage given above ?

- (a) People should avoid consuming the products of animal farming.
- (b) Foods of animal origin should be replaced with foods of plant origin.
- (c) Using antibiotics on animals should be banned.
- (d) Antibiotics should only be used to treat diseases.

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

In recent years, online schooling has gained popularity as an alternative to traditional classroom-based education. With the rise of technology and internet connectivity, students can now access educational content and interact with teachers and classmates from virtually anywhere in the world. As a result, many are asking whether online schooling could be the future of education. One of the main advantages of online schooling is its flexibility. Students can learn at their own pace and on their own schedule, allowing them to balance their studies with other commitments such as work, family, or travel. This can be especially beneficial for non-traditional students such as adult learners or those who live in rural

areas without access to traditional educational institutions.

Another advantage of online schooling is its cost-effectiveness. Online programs can be less expensive than traditional classroom-based programs, as they require less infrastructure and resources to deliver. This can make education more accessible to a wider range of students, regardless of their financial situation.

However, there are also some concerns about the quality of online education. Some argue that online schooling may lack the personalized attention and support that students need to succeed. Others worry that online programs may not provide the same level of engagement and social interaction as traditional classroom-based programs, which can be an important part of the educational experience.

Despite these concerns, the popularity of online schooling continues to grow. Many educational institutions are now offering online programs in addition to their traditional classroom-based programs, and some are even shifting towards online-only models. It remains to be seen whether online schooling will become the dominant model of education in the future, but it is clear that it has the potential to transform the way we think about learning and access to education.

6. What is the main message of the passage regarding online schooling?

- (a) Online schooling is a cost-effective alternative to traditional education, but it lacks the personalized attention and support students need to succeed.
- (b) Online schooling is a flexible and accessible option for non-traditional students, but it does not provide the same level of engagement and social interaction as traditional education.
- (c) Online schooling has the potential to transform the way we think about learning and access to education, but concerns remain about its quality and effectiveness.
- (d) Online schooling is the future of education, as it provides a more efficient and convenient way for students to learn.

7. Which of the following statements best reflects the corollary to the passage regarding the potential of online schooling?

- (a) Online schooling is superior to traditional classroom-based education in terms of cost-effectiveness and accessibility.
- (b) The popularity of online schooling will eventually lead to the decline of traditional classroom-based education.
- (c) Online schooling has the potential to complement traditional classroom-based education, but it is not a replacement for it.
- (d) The concerns about the quality and effectiveness of online schooling are overblown and do not reflect the reality of modern technology.

8. What can be inferred from the passage about the potential impact of online schooling on education?

- (a) Online schooling will completely replace traditional classroom-based education in the near future.
- (b) Online schooling is the most effective and efficient form of education available.
- (c) Online schooling has the potential to increase access to education and transform the way we think about learning.
- (d) Online schooling is not a viable option for students who require personalized attention and support.

9. What is the tone of the author in the passage about online schooling?

- (a) Critical and dismissive of the potential of online schooling to transform education.
- (b) Optimistic and enthusiastic about the potential of online schooling to transform education.
- (c) Neutral and objective, presenting both the advantages and disadvantages of online schooling.
- (d) Biased and unbalanced, presenting only one side of the argument.

10. Which of the following statements is true according to the passage about online schooling?

- (a) Online schooling is the only viable option for students in remote or underserved areas.
- (b) Online schooling is not effective for hands-on or experiential learning.
- (c) Online schooling is always more cost-effective than traditional classroom-based education.
- (d) Online schooling is equally effective for all students, regardless of their learning needs or preferences.

Passage:

The Earth's magnetic field is generated by the motion of molten iron in the planet's core. This magnetic field is not static, and it can change in strength and direction over time. In fact, the Earth's magnetic field has reversed its polarity many times in the past, meaning that the magnetic north and south poles have switched places.

Recent studies suggest that the Earth's magnetic field is weakening, and it may be in the process of reversing its polarity again. This could have significant impacts on our planet. For example, the Earth's magnetic field helps protect us from harmful solar radiation, so a weakened or reversed field could increase our exposure to these rays. Additionally, the Earth's magnetic field plays a role in navigation for many animal species, and a sudden shift could disrupt their ability to navigate.

Scientists are closely monitoring changes in the Earth's magnetic field to better understand its effects on our planet and its inhabitants. While the exact timing and magnitude of any shifts are difficult to predict, ongoing research will continue to shed light on this fascinating and important phenomenon.

11. Which of the following is the most logical assumption that can be made based on the information provided in the passage?

- (a) The Earth's magnetic field is a constant and unchanging force.
- (b) Changes in the Earth's magnetic field have no impact on the planet or its inhabitants.
- (c) The Earth's magnetic field protects us from harmful solar radiation.
- (d) The Earth's magnetic field does not play a role in navigation for any animal species.

12. Which of the following could be a potential impact of a weakened or reversed magnetic field?

- (a) Increased ability to navigate for animal species
- (b) Decreased exposure to harmful solar radiation for humans
- (c) Disrupted navigation for animal species
- (d) Increased solar radiation for plant growth.

Passage:

Growing intolerance in the world refers to the increasing lack of acceptance and respect for people who have different beliefs, cultures, or

lifestyles. This trend is seen across the globe, and it can take many forms, including hate speech, discrimination, and even violence.

One of the main reasons for growing intolerance is fear and a lack of understanding of those who are different from oneself. This fear can be fueled by misinformation, stereotypes, and prejudice, which can lead to a cycle of intolerance and division. Growing intolerance can have severe consequences for individuals and society as a whole. It can lead to the marginalization of minority groups, the suppression of free speech, and the erosion of democratic values.

To combat growing intolerance, it is essential to promote education, empathy, and dialogue. We must strive to understand and appreciate our differences and celebrate the diversity that makes our world so rich. By fostering greater understanding and respect for one another, we can build a more inclusive and tolerant society.

13. What assumption can be made about the role of education in combating growing intolerance?

- (a) Education can increase fear and misunderstanding of other cultures
- (b) Education can foster greater understanding and respect for diversity
- (c) Education is not necessary to combat growing intolerance
- (d) Education is the only way to combat growing intolerance

14. What is the central idea of the passage on growing intolerance in the world?

- (a) Growing intolerance is a natural phenomenon that cannot be stopped
- (b) Fear and lack of understanding of different cultures is the main cause of growing intolerance
- (c) The consequences of growing intolerance are minimal and can be ignored
- (d) There are no solutions to combat growing intolerance

Read the following passages and answer the question that follows:

Passage: In recent years, there has been an increase in the number of people using bicycles for transportation. Bicycling is an environmentally friendly mode of transportation and offers

numerous health benefits. However, there are still some challenges that need to be addressed to encourage more people to choose cycling over other modes of transportation.

One of the main challenges is the lack of infrastructure for bicyclists, such as bike lanes and secure parking facilities. In many cities, bicyclists are forced to share the road with cars, which can be dangerous. Another challenge is the need for education and awareness among drivers to ensure they are sharing the road safely with bicyclists. Despite these challenges, there are some positive developments that suggest bicycling is becoming more popular. For example, many cities are starting to build more bike lanes and offer incentives for people to bike to work. Additionally, more and more employers are offering secure bike parking and shower facilities for their employees.

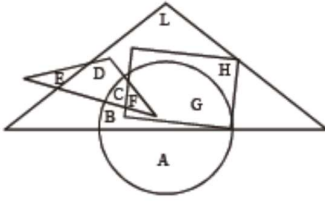
15. Which of the following assumptions can be made based on the information provided in the passage?

- (a) Bicycling is the most environmentally friendly mode of transportation.
- (b) There is no need for education and awareness among bicyclists.
- (c) There are no positive developments in the promotion of bicycling.
- (d) The lack of infrastructure for bicyclists is one of the main challenges to cycling.

16. What message is the author trying to convey in the passage?

- (a) Bicycling is the only mode of transportation that should be used.
- (b) Bicycling is a healthy and environmentally friendly mode of transportation, but there are challenges that need to be addressed.
- (c) Bicycling is not a practical mode of transportation.
- (d) Bicycling is a dangerous mode of transportation.

17. In the following figure, the smaller triangle represents teachers; the big triangle represents politicians; circle represents graduates and rectangle represents members of Parliament. Different regions are being represented by letters of English alphabet.

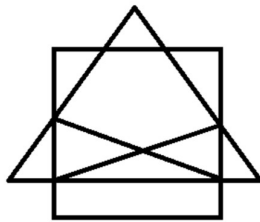


Which among the following regions represent the graduates or teachers but not politicians?

- (a) B, G
- (b) G, H
- (c) A, E
- (d) E, F

18. Find the number of triangles in the given figure:

- (a) 13
- (b) 10
- (c) 9
- (d) 12



19. When a certain amount is invested in a simple interest scheme, it increases by 40% in 4 years. What will be compound interest after 3 years on an amount of Rs. 12000, at the same interest rate, and annual compounding?

- (a) Rs. 3972
- (b) Rs. 3772
- (c) Rs. 3332
- (d) Rs. 3882

Directions for questions 20-23: Study the following information carefully and answer the questions given below:

A, B, C, D, E, F, G and H are sitting around a square table in such a way that four of them sit at four corners of the square while four sit in the middle of each of the four sides. The ones who sit at the four corners face the centre while those who sit in the middle of the sides face outside. Two females sit in the middle of the sides and two at the corners. A sits second to the left of G. G sits in the middle of one of the sides. C sits fourth to the right of his wife and his wife is not an immediate neighbour of A or G. B sits third to right of her husband. B does not sit at any of the corners. Only D sits between B and H. H is the husband of A. E is a male.

20. Which of the following statements must be false, given the arrangement?

- (a) At least two persons of the same gender are immediate neighbours.
- (b) Both E and G sit at the corners and face the same direction.
- (c) C and D sit adjacent to at least one female.
- (d) Among the immediate neighbours of H, one is female.

21. Suppose all the males exchange their seats with the females sitting opposite to them. After this swap, who will definitely face inward?

- (a) The one who was originally at the leftmost corner
- (b) The person who sits third to the left of B
- (c) Both A and D
- (d) The one sitting opposite to F

22. If E is swapped with the person sitting third to the right of C, and B is now seated directly opposite her husband, then how many immediate neighbours of C are male?

- (a) None
- (b) One
- (c) Two
- (d) Can not be determined

23. Assuming all persons sitting at the corners are asked to move one seat anti-clockwise and those at the sides move one clockwise, who will now be second to the right of H?

- (a) D
- (b) F
- (c) B
- (d) Can not be determined

24. Which of the following figures will correctly fit into the pattern on the left?



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

25. A man is facing west. He turns 45° in the anticlockwise direction and then another 180° in the same direction and then 270° in the clockwise direction. In Which direction is he facing now?

- (a) East
- (b) Northwest

- (c) Southeast
(d) South

26. In the following question, a figure marked (A) is followed by four figures a) , b) , c) and d) which show the possible water - images of figure (A) . Choose one out of these four figures which shows the correct water - image of the figure (A) in each case.



(A)



(A)



(B)



(C)



(D)

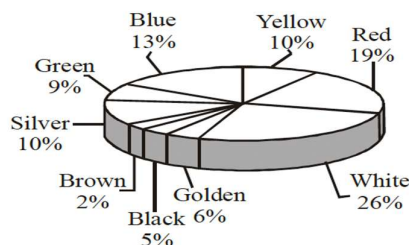
27. You are given:

FRANCE	→	104
GERMANY	→	130
FINLAND	→	410
NETHERLANDS	→	608

What is the code for SWEDEN?

- (a) 88
(b) 200
(c) 98
(d) 84

Directions (for Examples 28 to 31): Study the chart and give the answer of following questions
Selling of the car in UK according to the colours



28. 50% of all the cars consisted of which colours of car?

- (a) Black, Gloden, Blue, Red
(b) Blue, Black, Red, Silver
(c) White, Golden, Blue, Black
(d) White, Blue, Green, Black

29. Cars of which colour are 20% less popular than white coloured cars ?

- (a) Black
(b) Golden

- (c) Red
(d) Blue

30. Cars of which colour are 13% less popular than white cars?

- (a) Blue
(b) Green
(c) Silver
(d) Yellow

31. Cars of which colour when increased by two per cent and then combined with that of red cars will make 30 per cent of the total?

- (a) Golden
(b) Blue
(c) Black
(d) None of these

32. If in a certain period the total production of all cars was 95400 then how many more blue cars were sold than green?

- (a) 2580
(b) 3618
(c) 2850
(d) 3816

Direction (Question 33-35) Study the table and answer the question.

For each correct answer, 5 marks are awarded and for each wrong answer, 2 marks are reduced in an objective exam. In each paper, there are 100 questions. (There is no negative marking if the questions have not been attempted)

Subject	Mohit		Vivek		Rajesh		Neeru		Lata		Sumit	
	Right	Wrong	Right	Wrong	Right	Wrong	Right	Wrong	Right	Wrong	Right	Wrong
History	80	10	75	6	77	7	82	5	73	1	70	2
Political Science	82	7	8	12	79	8	65	0	95	15	76	4
Geography	65	3	7	4	71	7	68	5	45	2	69	5
Economics	92	12	90	7	86	2	91	7	82	7	87	7

33. The highest marks in history were secured by which student?

- (a) Neeru
(b) Sumit
(c) Rajesh
(d) Vivek

34. Who secured the lowest marks in Geography?

- (a) Sumit
- (b) Lata
- (c) Vivek
- (d) Rajesh

35. What is the ratio of marks reduced of Rajesh to that of Sumit?

- (a) 17:20
- (b) 29:24
- (c) 17:15
- (d) 4:3

36. If the digits of the following numbers are reversed then the numbers are arranged in ascending order then what will be the middle digit of the middle term?

375, 682, 315, 792, 865, 129, 875

- (a) 3
- (b) 6
- (c) 7
- (d) 8

37. In a queue, Mr X is fourteenth from the front and Mr Y is seventeenth from the end, while Mr Z is exactly in between Mr X and Mr Y. If Mr X is ahead of Mr Y and there are 48 persons in the queue, how many persons are there between Mr X and Mr Z?

- (a) 6
- (b) 7
- (c) 8
- (d) 9

Directions for the following 2 (two) items: Answer the following questions based on the information given below

A family has eight people across three generations. There are two couples in the family. B is the only child of C, who is the grandfather of D. A is the sister-in-law of B, who is the daughter of E. G is the only daughter of F.

38. If C is the brother of H, how is E related to H?

- (a) Sister
- (b) Brother
- (c) Sister-in-law
- (d) Niece

39. How is E related to G?

- (a) Aunt
- (b) Paternal Grandmother
- (c) Maternal Grandmother
- (d) None of the above

40. In a certain mathematical system, the basic mathematical operators are represented by symbols such that:

A \$ B means A + B

A @ B means A × B

A # B means A - B

A % B means A ÷ B

What does the expression 7 @ 4 \$ 5 # 6 % 3 evaluate, in this system?

- (a) 33
- (b) 37
- (c) 31
- (d) 38

41. Eight fruit trees – Mango, Guava, Papaya, Pomegranate, Lemon, Banana, Raspberry, Apple – are planted in two parallel rows of 4 trees each. The trees in one row face North and the trees in the opposite row face South, so each tree faces another tree directly opposite it.

The following conditions apply:

The Apple tree is somewhere to the left of the Raspberry tree in the same row.

The Lemon tree is opposite the Banana tree.

The Guava tree is immediately to the right of the Papaya tree in the same row.

The Pomegranate tree is at an end of a row and directly opposite the Mango tree.

The Raspberry tree is not adjacent to the Banana tree.

Which of the following statements can be true?

1. The Papaya tree is between Mango and Guava trees in one row.
2. The Lemon tree is diagonally opposite the Pomegranate tree.
3. The Banana tree is at one end of a row.
4. The Mango tree is immediately opposite the Pomegranate tree.
5. Choose the right options:
 - (a) 1 and 2 only
 - (b) 4 only
 - (c) 2 and 4 only
 - (d) All of the above

42. Pointing to a photograph, a man said to a woman, "She is one of the sisters of the son of the only son of your grandfather." If the woman in the photograph is the sister of the son of the man's father-in-law, then how is the man related to the woman (with whom the man was talking)?

- (a) Husband
- (b) Brother

- (c) Brother-in-law
(d) Either 1) or 3)

43. Find the number that should replace the question mark (?) in the following series:

5, 8, 28, 162, ?, 12,870

- (a) 1,288
(b) 1,738
(c) 2,318
(d) 2,224

44. The sequence below represents a coded message using the letters P, Q, and R where each letter corresponds to a number (P=1, Q=2, R=3). Decode the numerical sum of the next three letters that complete this sequence:

PQRPPQQRPPQQRPPQRRPQPQQRR _ _ _

- (a) 5
(b) 7
(c) 8
(d) 9

45. A cube is numbered 1 to 6, each number appearing on one face. Two opposite faces add up to 7. If faces with numbers 2, 3, and 6 meet at one vertex, which number is on the opposite face to 6?

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

46. If the following is true:

1. All mathematicians are logical thinkers.
2. Some logical thinkers are philosophers.
3. No philosophers are uncreative.

Which of the following conclusions Definitely follow from the statements above?

- (a) Some mathematicians are philosophers
(b) Some logical thinkers are uncreative.
(c) None follows.
(d) Some mathematicians may not be creative.

47. If the following is true:

1. All poets are dreamers.
2. Some dreamers are realists.
3. No realist is a pessimist.
4. All pessimists are overthinkers.
5. All overthinkers may be or may not be poets.

Which of the following conclusions definitely follow?

- (a) None follows.

- (b) Some overthinkers are not realists.
(c) No poet is a pessimist.
(d) Some dreamers are not overthinkers.

48. There are four numbers $A < B < C < D$, such that the weighted average of A , B , C , and D with weights 1, 2, 3, and 4 respectively is 60. What is the value of B ?

Statement I: The value of $D - A$ is 70.

Statement II: The arithmetic mean of B and C is 65.

Based on above, answer the following:

- (a) Can be answered by one statement alone
(b) Can be answered by either statement alone
(c) Can be answered using both statements together but not separately
(d) Cannot be answered even using both together

49. A password of 4 characters is to be formed using the digits 1, 2, 3, 4, 5. Digits can repeat, but no two adjacent digits can be the same. How many such passwords can be formed?

- (a) 500
(b) 320
(c) 540
(d) 625

50. 6 boys and 6 girls are to be seated around a round table. In how many ways can they be seated such that no two girls sit together?

- (a) 86400
(b) 460800
(c) 720×120
(d) 0 (Not possible)

51. A train runs from Station A to B at 60 km/h and returns at 90 km/h. If the total time taken is 5 hours, find the distance between A and B.

- (a) 150 km
(b) 180 km
(c) 200 km
(d) 210 km

52. What is the units digit of 7^{1001} ?

- (a) 3
(b) 7
(c) 9
(d) 1

53. In a survey of 120 people:

- 70 people like Tea (T)
- 60 like Coffee (C)
- 50 like Juice (J)

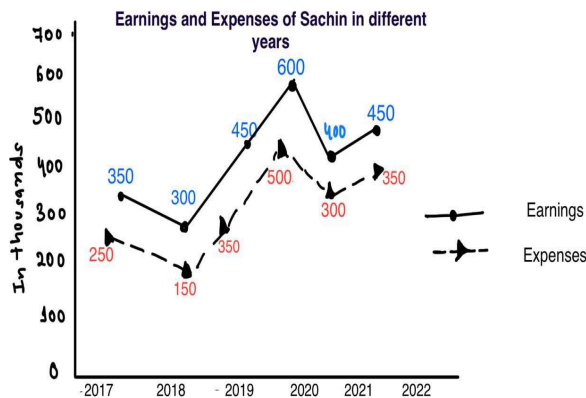
- 30 like both Tea and Coffee
- 25 like both Tea and Juice
- 20 like both Coffee and Juice
- 10 like all three

How many people like none of the three beverages?

- (a) 5
- (b) 10
- (c) 15
- (d) 20

Study the following data carefully and answer the questions given below:

The chart below shows the income and expenditure (in rupees) of the Union Ministry for different years from 2017 to 2022.



54. In which of the following years the percentage increase or decrease in income as compared to the previous year was the maximum?

- (a) 2022
- (b) 2020
- (c) 2021
- (d) 2019

55. What is the ratio of increase in income and expenditure in 2020 as compared to the previous year?

- (a) 6 : 5
- (b) 9 : 7
- (c) 1 : 2
- (d) None of the above

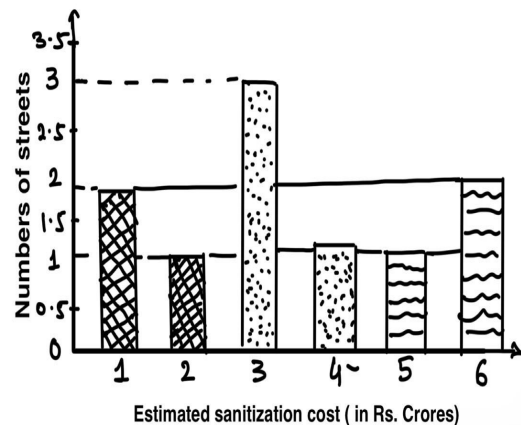
56. A sum becomes 16 times in 6 years and 81 times in 10 years. Find the rate of compound interest?

- (a) 30%
- (b) 40%

- (c) 60%
- (d) None of the above

Directions for the following two items:

The state government is planning to sanitize 10 streets in a local society due to the spread of a viral disease. These streets are numbered from 1 to 10. The diagram below shows the estimated sanitization costs (in Rs. crores) for each of the 10 streets. Costs are categorized as follows: Rs. 1 or 2 crores for light sanitization, Rs. 3 to 4 crores for moderate sanitization, and Rs. 5 to 6 crores for extensive sanitization.



57. What is the total estimated expenditure to sanitize the entire locality?

- (a) 24 crores
- (b) 34 crores
- (c) 29 crores
- (d) 31 crores

58. If it is given that the odd numbered streets need moderate sanitization, then what will be the estimated cost for sanitizing odd numbered streets only?

- (a) 9 crores
- (b) 13 crores
- (c) 10 crores
- (d) Data insufficient.

59. Find the missing term in the series given below

55, 28, 15, 9, ?

- (a) 6.5
- (b) 4.5
- (c) 6
- (d) 5

60. On adding up the first 14 terms of an

arithmetic progression we get the same result as we get on adding the first 22 terms. What will be the result of adding up the first 36 terms of the same arithmetic progression?

- (a) 0
- (b) 1
- (c) -1
- (d) 2

61. A society consists of two categories of people - atheists and theists. Two theists are always friends. An atheist and a theist are always enemies. Atheists are indifferent to one another. It is also known that A and B are enemies, C and D are friends, E and F are indifferent to each other, A and E are not enemies, while B and F are enemies. Which of the following statement is true?

- (a) A and F are in different categories.
- (b) B, C and E are theists.
- (c) B and D are in different categories.
- (d) A, E and F are in same category.

62. Consider the numbers of the form 4^n , where n is a natural number.

1. There is no natural number n such that 4^n ends with the digit zero.
2. The only prime factor in the factorization of 4^n is 2.

Which of the above statements is/are incorrect?

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

63. How many natural numbers less than 87 are not divisible by any perfect square of numbers greater than 1 and less than or equal to 7?

- (a) 56
- (b) 48
- (c) 60
- (d) 54

64. Two pipes, A and B, can fill a tank in 12 hours and 18 hours respectively. When both pipes are opened together, it is observed that a leakage at the bottom of the tank causes the filling process to take 48 minutes longer than usual.

Quantity I: The total time taken by both pipes to fill the tank with the leakage.

Quantity II: The time required for the leakage to empty 66.66% of the fully filled tank.

Select the correct option from the following:

- (a) Quantity I > Quantity II
- (b) Quantity I < Quantity II
- (c) Quantity I = Quantity II
- (d) Quantity I $\leq$ Quantity II

65. In the number 75986342, the first and fifth digits are swapped. Similarly, the second and sixth, third and seventh, and fourth and eighth digits are also interchanged.

What will be the third digit from the right end after this rearrangement?

- (a) 7
- (b) 5
- (c) 4
- (d) 3

66. When a number is divided by 13 the quotient is 167 and the difference between quotient and remainder is 159. Find the number.

- (a) 2171
- (b) 2180
- (c) 2091
- (d) 2179

67. In a restaurant, 30 people visited on a particular day. 60% people ordered non-veg food and 9 people ordered both veg and non-veg food. Which of the following conclusions cannot be drawn from the above data?

1. 18 people ordered only non-veg food.
2. More than 20 people ordered veg food.
3. Customers who ordered veg food did not order non-veg food.

Select the incorrect statement(s) using the code given below:

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

68. X's salary is 15% higher than Y's salary & Y's salary is 10% higher than Z's salary. By what percentage is X's salary more than Z's salary?

- (a) 25.5%
- (b) 26.25%
- (c) 27.5%
- (d) 26.5%

69. A number is mistakenly divided by 2 instead of multiplied by 2. What is percentage change in result due to this mistake?

- (a) 100%
- (b) 200%
- (c) 75%
- (d) 320%

70. In an examination 60% of students passed in Math 50% of students passed in Science & 25% failed in both subjects. What is percentage of students who passed in only one subject?

- (a) 10%
- (b) 15%
- (c) 20%
- (d) 40%

71. A father says to his son, "n years ago, I was twice as old as you are now. My present age is four times your age n years ago. In addition, sum of ages of both of us is 150 years." What is appx difference between their ages?

- (a) 50 years
- (b) 60 years
- (c) 70 years
- (d) 80 years

72. Consider the following:

- 1. 1 acre = 4046.86 m²
- 2. 1 mile = 1760 yards
- 3. 1 kilogram = 2.20462 pounds
- 4. 1 liter = 0.264172 gallons

Which of above are correct?

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

73. Let X be a two-digit number & Y be another two digit number formed by reversing digits of X. If (X - Y) is a two digit number & divisible by 9 then what is number of possible values of X?

- (a) 34
- (b) 35
- (c) 36
- (d) 37

74. In a particular match, Rishabh scored x runs while Kohli scored y runs. Both scored more than 1 run and Kohli scored twice as many runs as Rishabh. Which of the following equations represents the largest number?

- (a) $(x^2 + y^2)/xy$
- (b) xy/y
- (c) $(x + y)y/x$
- (d) $2x - y$

75. Consider the following:

Statements:

- 1. Some cards are pens
- 2. All pens are vans
- 3. Some vans are trams

Conclusions:

- 1. Some cards are trams
- 2. Some pens are trams
- 3. Some trams are pens
- 4. Some vans are cards

Which of the following is correct?

- (a) 1 and 3 follow
- (b) 1 and 4 follow
- (c) Only 4 follows
- (d) 2, 3 and 4 follow

76. A person noticed that calendar for a certain year is identical to calendar of year 2089 in terms of weekdays & dates. Which of following could be that year?

- (a) 2095
- (b) 2101
- (c) 2100
- (d) 2094

77. Let a,b,c, d be distinct positive integers where:

- a & b are prime numbers,
- c is a composite number,
- d is a perfect square.

Consider following statements:

- 1. $(a+c)^2 - bd$ is always even.
- 2. $a(b+c) + d^2$ is always odd.
- 3. $(a^c + b^d)$ is always composite.

Which of above statements are always incorrect?

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

78. A malfunctioning clock gains 4 minutes every hour. If it was set correctly at 12:00 noon, what is actual time when clock shows 6:00 PM on same day?

- (a) 5:36 PM
- (b) 5:40 PM
- (c) 5:44 PM
- (d) 5:48 PM

79. The table shows the most preferred game of students of different schools. Answer the question by studying the table:

School	Tennis	Football	Hockey	Basketball	Cricket
RKM	210	300	180	150	340
DPS	500	350	270	100	270
APS	330	210	260	380	300
DAV	240	360	300	220	400
BPS	320	390	160	330	400
LMS	210	250	320	240	360

The percentage of students of LMS who prefer to play hockey is?

- (a) 18.66%
- (b) 21.25%
- (c) 23.18%
- (d) 15.56%

80. In a set $S = \{2, 4, 6, 8, 10, 12\}$, how many subsets of S exist such that the sum of the elements in the subset is divisible by 6?

- (a) 16
- (b) 32
- (c) 21
- (d) 24



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42

1. Answer: B

Explanation:

The passage is trying to understand how the meaning of religion changes based on the perspective of the looker. It contrasts how we tend to see one's religious denomination as the most correct one and tend to disregard the religious beliefs of others.

The passage does not assume that an individual cannot survive without following any religious denomination.

The passage is concerned only with the interpretation of religion from different perspectives but not with the propagation of religion.

When we consider our religion to be the correct one and all others as false, we are assuming that all men are not united by any shared common values or principles. Option (c) is correct as people believe that they understand their own religion and on the basis of this understanding only then they tend to discard and disapprove of the other denominations.

Passage 2: It is certain, that seditions, wars, and contempt or breach of the laws are not so much to be imputed to the wickedness of the subjects, as to the bad state of a dominion. For men are not born fit for citizenship but must be made so. Besides, men's natural passions are everywhere the same; and if wickedness more prevails, and more offences are committed in one commonwealth than in another, it is certain that the former has neither enough pursued the end of unity, nor framed its laws with sufficient forethought; and that, therefore, it has failed in making quite good its right as a commonwealth.

2. Answer: C

Explanation:

The option is an assumption that issues of sedition, wars, etc. are inevitable and they should not be amputated to the wickedness of the subjects. So, it can not be an inference drawn based on the passage.

As it lays the responsibility for all the issues on the sovereign, which is not the most rational inference that can be drawn based on the information provided.

It has been mentioned that if there are more crimes in dominion in comparison to another, it is due to laws which lack foresight, and the sovereign has not pursued unity. But if the State does so, it becomes the best State. Option (c) is correct.

This is not the most rational and logical inference as the ability of men or sovereign to establish good dominion is not being discussed and cannot be inferred as well.

Passage 3: Inequality violates a basic democratic norm: the equal standing of citizens. Equality is a relation that obtains between persons in respect of some fundamental characteristic that they share in common. Equality is, morally speaking, a default principle. Therefore, persons should not be discriminated on grounds such as race, caste, gender, ethnicity, disability, or class. These features of human condition are morally irrelevant. The idea that one should treat persons with respect not only because some of these persons some special features or talent, for example skilled cricketers, gifted musicians, or literary giants, but because persons are human being, is by now part of commonsense morality.

3. Answer: A

Explanation:

Since the passage is talking about the removal of inequalities, we are assuming that equalities are prerequisites for people to participate in social transactions and interactions with confidence. Statement 1 is correct.

Since the passage talks about the violation of democratic norms when inequality is present, it is being assumed that the occurrence of inequality can threaten the survival of democracy itself and therefore we should strive to remove it. Statement 2 is Correct.

This is counterintuitive to the theme of the discussion of the passage. Also, the effort of the passage is the removal of inequalities.

This statement is more like a recommendation for the future and cannot be an assumption.

Hence, Option (a) is correct.

4. Answer: B

Explanation:

Although this is reflected in the passage, it is not the most important or decisive point or issue.

Option (b) is correct because two forms of government-oligarchies and democracy have been discussed and it has been shown how they can turn into tyrannies due to their excesses.

The author is not advocating that democracy is more desirable and not providing any recommendations to achieve it. Although the author gives lack of proper education as one of the reasons as to why democracy does not serve its intended purpose, it is not the crux of the passage. The reason being that such a conclusion would ignore the first part of the discussion on oligarchy.

Although it has been posited that any form of government can be tyrannical, the author does not support the existence of any form of government.

Passage 5: There are reports that some of the antibiotics sold in the market are fed to poultry and other livestock as growth promoters. Overusing these substances can create superbugs, pathogens that are resistant to multiple drugs and could be passed along humans. Mindful of that, some farming companies have stopped using the drugs to make chickens gain weight faster. Since Denmark banned antibiotic growth promoters in the 1990s, the major pork exporters says it is producing more pigs – and the animals get fewer diseases.

5. Answer: D

Explanation:

Passage suggests nothing about what and what not to be consumed by the people.

Passage nowhere talks about replacing animal origin foods with plant origin foods. It merely reflects the side effects of using antibiotics for other purposes than treating disease.

Passage nowhere talks about banning antibiotics on animals. It only mentions the trend of minimizing the use of antibiotics on animals given their ill effects on human health.

Passage mentions the ill effects of antibiotics as growth promoters and how some farming companies and also, Denmark -a major pork exporter, banned antibiotic growth promoters but not its use as a drug to treat diseases. Option (d) is correct.

6. Answer: C

Explanation: The main message of the passage is that online schooling has the potential to transform the way we think about learning and access to education, but concerns remain about its quality and effectiveness. The passage discusses the advantages of online schooling, such as its flexibility and cost-effectiveness, but also acknowledges concerns about its ability to provide personalized attention and support, as well as social interaction. Option A is incorrect because it only focuses on the cost-effectiveness of online schooling and ignores the concerns about its quality. Option B is also incorrect because it only focuses on the benefits of online schooling for non-traditional students and ignores the concerns about its effectiveness. Option D is incorrect because it presents a biased view that online schooling is the future of education, without acknowledging the concerns and challenges that need to be addressed.

7. Answer: C

Explanation: A corollary to the passage is a logical consequence or conclusion that can be drawn from it. In this case, the corollary is that online schooling has the potential to complement traditional classroom-based education, but it is not a replacement for it. The passage discusses the advantages and disadvantages of online schooling and acknowledges that concerns remain about its quality and effectiveness. Therefore, it is unlikely that online schooling will completely replace traditional classroom-based education, but it could be used in conjunction with it to enhance and expand access to education. Option A is incorrect because it presents a biased view that online schooling is superior to traditional education, without acknowledging the benefits and limitations of each approach. Option B is also incorrect because it presents a biased view that online schooling will eventually lead to the decline of

traditional education, without acknowledging the complexities of the educational landscape. Option D is incorrect because it presents a biased view that concerns about the quality and effectiveness of online schooling are overblown, without acknowledging the need for ongoing evaluation and improvement.

8. Answer: C

Explanation: A logical inference is a conclusion that can be drawn based on the information presented in the passage. In this case, the passage discusses the potential benefits and challenges of online schooling, and suggests that it has the potential to transform the way we think about learning and access to education. Therefore, it can be inferred that online schooling has the potential to increase access to education and transform the way we think about learning. Option A is incorrect because the passage does not suggest that online schooling will completely replace traditional classroom-based education. Option B is incorrect because the passage acknowledges concerns about the quality and effectiveness of online schooling, and does not present it as the most effective and efficient form of education. Option D is incorrect because the passage acknowledges concerns about the personalized attention and support provided by online schooling, but does not suggest that it is not a viable option for all students.

9. Answer: C

Explanation: The tone of the author is the attitude or feeling conveyed by the language used in the passage. In this case, the author presents both the advantages and disadvantages of online schooling, and acknowledges concerns about its quality and effectiveness, indicating a neutral and objective tone. The author does not express an overly critical or dismissive attitude towards online schooling, nor do they express an overly optimistic or enthusiastic attitude. The author presents a balanced perspective on the potential of online schooling to transform education. Option A is incorrect because the author is not dismissive of the potential of online schooling, but rather presents a balanced perspective. Option B is incorrect because the author is not overly optimistic or enthusiastic, but rather presents a balanced perspective. Option D is incorrect because the author presents both sides of the argument, indicating a balanced perspective, rather than a biased or unbalanced one.

10. Answer: B

Explanation: The question asks for the statement that is true according to the passage, and only one of the options is supported by the information presented. Option B is true according to the passage, as it is mentioned that online schooling may not be effective for hands-on or experiential learning, which require physical interaction and practical application. The passage does not support option A, as it acknowledges that concerns remain about the quality and effectiveness of online schooling, and that it may not be accessible or suitable for all students, including those in remote or underserved areas. The passage also does not support option C, as it acknowledges that the cost-effectiveness of online schooling depends on various factors, including the quality of technology and instructional design, and that it may not always be more cost-effective than traditional classroom-based education. Finally, the passage does not support option D, as it acknowledges concerns about the personalized attention and support provided by online schooling, and suggests that it may not be equally effective for all students, depending on their learning needs and preferences.

11. Answer: C

Explanation: The passage states that the Earth's magnetic field helps protect us from harmful solar radiation. This is a direct piece of information and is therefore a logical assumption that can be made based on the passage. Option A is incorrect as the passage mentions that the Earth's magnetic field can change in strength and direction over time. Option B is also incorrect as the passage specifically mentions that changes in the Earth's magnetic field could have significant impacts on our planet and its inhabitants. Option D is also incorrect as the passage mentions that the Earth's magnetic field plays a role in navigation for many animal species.

12. Answer: C

Explanation: The passage states that the Earth's magnetic field plays a role in navigation for many animal species, and a sudden shift could disrupt their ability to navigate. Therefore, a weakened or reversed magnetic field could potentially lead to disrupted navigation for these animals. Option A is incorrect as a weakened or reversed magnetic field could actually decrease the ability of animals to navigate. Option B is also incorrect as a weakened or reversed magnetic field could increase exposure to harmful solar radiation, not decrease it. Option D is unrelated to the topic of the passage and is therefore incorrect.

13. Answer: B

The assumption that can be made about the role of education in combating growing intolerance is that education can foster greater understanding and respect for diversity. The passage mentions that promoting education, empathy, and dialogue is essential in combating growing intolerance. By educating ourselves and others about different cultures, beliefs, and lifestyles, we can break down the barriers of fear and ignorance that lead to intolerance. Option A is incorrect, as education is meant to dispel fear and misunderstanding, not increase it. Option C is also incorrect, as the passage highlights the importance of education in combating growing intolerance. Option D is too extreme and not mentioned in the passage.

14. Answer: B

The central idea of the passage on growing intolerance in the world is that fear and lack of understanding of different cultures is the main cause of growing intolerance, and it can have severe consequences for individuals and society as a whole. The passage suggests that to combat growing intolerance, we must promote education, empathy, and dialogue to foster greater understanding and respect for one another. Options A, C, and D are incorrect, as they do not reflect the main idea of the passage.

15. Answer: D

The correct answer is D) The lack of infrastructure for bicyclists is one of the main challenges to cycling. This assumption can be made based on the information provided in the passage, which states that one of the main challenges to encouraging more people to choose cycling over other modes of transportation is the lack of infrastructure for bicyclists, such as bike lanes and secure parking facilities. The passage also mentions that many cities are starting to build more bike lanes and offer incentives for people to bike to work, which suggests that addressing this infrastructure challenge can have a positive impact on the popularity of cycling.

Option A) is incorrect because the passage does not state that bicycling is the most environmentally friendly mode of transportation, only that it is environmentally friendly. Option B) is incorrect because the passage suggests that education and awareness among drivers is needed to ensure safe sharing of the road with bicyclists, but it does not suggest that there is no need for education and awareness among bicyclists. Option C) is incorrect because the passage mentions positive developments in the promotion of bicycling, such as the building of more bike lanes and incentives for people to bike to work.

16. Answer: B

Explanation:

The correct answer is B) Bicycling is a healthy and environmentally friendly mode of transportation, but there are challenges that need to be addressed.

The passage conveys the message that bicycling is a mode of transportation that offers numerous health benefits and is environmentally friendly, but there are still challenges that need to be addressed to encourage more people to choose cycling over other modes of transportation. The passage mentions the lack of infrastructure for bicyclists, such as bike lanes and secure parking facilities, as well as the need for education and awareness among drivers to ensure safe sharing of the road with bicyclists.

Option A) is incorrect because the passage does not suggest that bicycling is the only mode of transportation that should be used. Option C) is incorrect because the passage does not suggest that bicycling is not a practical mode of transportation. In fact, the passage mentions positive **developments**,

such as the building of more bike lanes and incentives for people to bike to work, which suggest that bicycling is becoming a more practical mode of transportation. Option D) is incorrect because the passage does not suggest that bicycling is a dangerous mode of transportation. Rather, it suggests that the lack of infrastructure and education for bicyclists and drivers can make bicycling a dangerous mode of transportation.

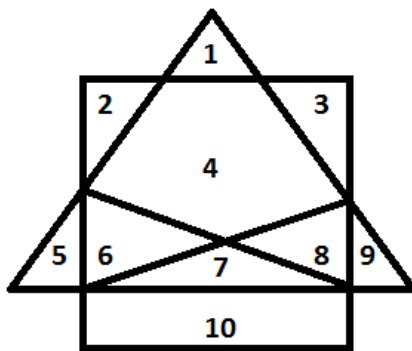
17. Answer: C

Explanation:

The persons satisfying the given conditions are denoted by regions which lie inside the smaller triangle or the circle but outside the bigger triangle i.e. A and E.

18. Answer: A

Explanation:



Single triangle 1, 2, 3, 5, 6, 7, 8 and 9 (8 triangles)

Triangle made by two small triangles 6 + 7, 7 + 8 (2 triangles)

Triangles made by three small triangles 5 + 6 + 7, 7 + 8 + 9 (2 triangles)

Triangle made by all five small triangles 1+4+5 + 6 + 7 + 8 + 9 (1 Triangle)

19. Answer: A

Explanation:

Simple interest on Rs. 100 in 4 years is Rs. 40, so rate is $40/4 = 10\%$.

Compound interest for 3 years = $12000 \times \left(1 + \frac{1}{100}\right)^3 = 12000 \times \left(\frac{11}{10}\right)^3$

= $\frac{(12000 \times 11 \times 11 \times 11)}{1000}$

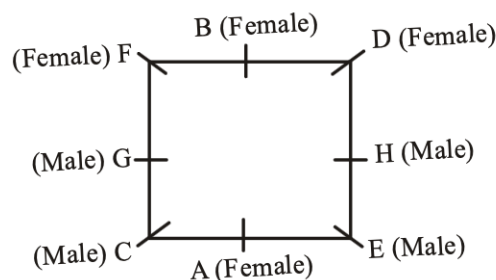
= Rs. 15972

Interest = A- 15972 - 12000 = Rs. 3972

Hence option A is correct.

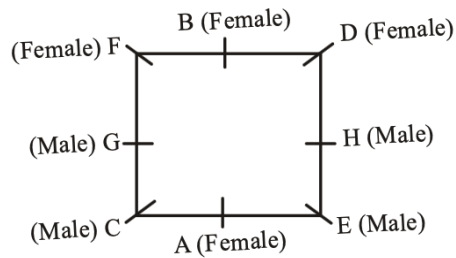
20. Answer: B

Explanation:



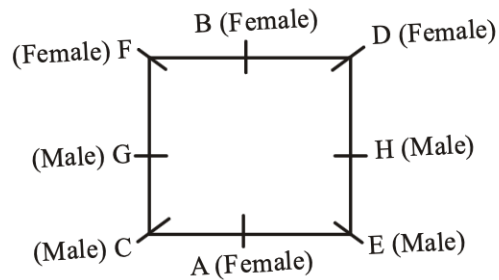
21. Answer: C

Explanation:



22. Answer: A

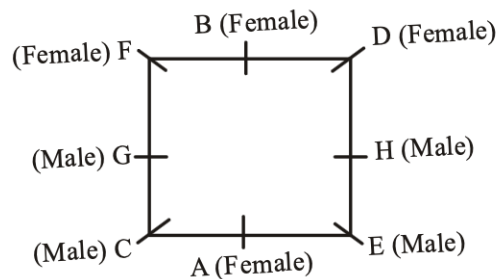
Explanation:



E is swapped with H and B sits opposite to H. Both B and A will be females and neighbours of C after the swap.

23. Answer: C

Explanation:



After movement

Corners (Anti-clockwise movement):

C moves to F's spot (Top left)

F moves to D's spot (Top right)

D moves to E's spot (Bottom right)

E moves to C's spot (Bottom left)

Sides (Clockwise movement):

G moves to B's spot (Top)

B moves to H's spot (Right)

H moves to A's spot (Bottom)

A moves to G's spot (Left)

Final Arrangement

Position	Person
Bottom left	E (Male)
Left	A (Female)
Top left	C (Male)
Top	G (Male)
Top right	F (Female)
Right	B (Female)
Bottom right	D (Female)
Bottom	H (Male)

24. Answer: D

Explanation:

The 4th figure completes the square and the rhombus.

25. Answer: B

Explanation:

Total movement in Anti - Clockwise direction = $45 + 180 = 225$ degrees

Total movement in Clockwise direction = 270 degrees

The difference = $270 - 225 = 45$ degrees (towards clockwise because the total degrees in clockwise is more than that of anticlockwise direction)

So, 45 degrees in clockwise direction from the West will be: North-West.

26. Answer: C

Explanation:

The reflection of an object into the water is its water image. It appears by inverting an object vertically i.e. upside down. The water image of the figure looks like the mirror image of the figure in case the mirror is horizontally at the bottom of the figure. From the given arrangements, clearly the answer is C.

27. Answer: B

Explanation:

The code is the sum of the squares of the position values of the vowels in the country name (A=1, E=5, I=9, O=15, U=21), multiplied by the number of consonants.

SWEDEN vowel positions are: E = 5, Sum of squares = $5^2 + 5^2 = 25 + 25 = 50$ Number of consonants: S, W, D, N = 4

Code = $50 \times 4 = 200$

FRANCE

Vowels: A=1, E=5

Vowel squares: 1 and 25 Sum = $1 + 25 = 26$

Consonants: F, R, N, C = 4

Code: $26 \times 4 = 104$

GERMANY

Vowels: E=5, A=1

Vowel squares: 25, 1 ; Sum = $25 + 1 = 26$

Consonants: G, R, M, N, Y = 5

Code: $26 \times 5 = 130$

FINLAND

Vowels: I=9, A=1

Vowel squares: 81, 1; Sum = $81 + 1 = 82$

Consonants: F, N, L, N, D = 5

Code: $82 \times 5 = 410$

NETHERLANDS

Vowels: E=5, E=5, E=5, A=1

Vowel squares: 25, 25, 25, 1; Sum = $25 + 25 + 25 + 1 = 76$

Consonants: N, T, H, R, L, N, D, S = 8

Code: $76 \times 8 = 608$

28. Answer: C

Explanation:

Option (a) : Black + Golden + Blue + Red = $5 + 6 + 13 + 19 = 43\%$

Option (b) : Blue + Black + Red + Silver = $13 + 5 + 19 + 10 = 47\%$

Option (c) : White + Golden + Blue + Black = $26 + 6 + 13 + 5 = 50\%$

29. Answer: B

Explanation:

% of White cars = 26% and $26 - 20 = 6\%$ i.e. Golden cars

30. Answer: A

Explanation:

% of White cars = 26% and $26 - 13 = 13\%$ i.e. Blue cars

31. Answer: D

Explanation:

% of Red cars = 19%

Then, $30 - 19 = 11\%$ and $11 - 2 = 9\%$ i.e. Green

32. Answer: D

Explanation:

Required numbers = $(13 - 19)\%$ of 95400 = 4% of 95400 = 3816

33. Answer: A

Sumit: 346 marks

Vivek: 363 marks

Neeru: 400 marks

Rajesh: 371 marks

34. Answer: C

Sumit: 335 marks

Vivek: 28 marks

Lata: 221 marks

Rajesh: 341 marks

35. Answer: D

Rajesh attempted 24 as incorrect. So reduced marks are 48.

Sumit attempted 18 as incorrect. So reduced marks are 36.

Ratio is 4:3

36. Answer: B

Explanation:

On reversing the digits of the given numbers, we get 573, 286, 513, 297, 568, 921, and 578. After arranging the above numbers in ascending order, we get 286, 297, 513, 568, 573, 578, and 921. The middle term is 568 whose middle digit is 6.

37. Answer: C

Explanation:

Total number of persons in the queue = 48

Position of Mr X from the front = 14

Position of Mr Y from the end = 17

Position of Mr Y from the front = $48 - 17 + 1 = 32$

The rank of Mr Z from the front = $(14+32)/2=23$

Thus, the total number of persons between Mr X and Mr Z = $23 - 14 - 1 = 8$

38. Answer: C

Explanation:

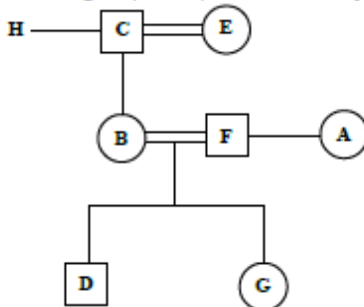
B is the only child of C and is also the daughter of E. Hence, C and E are the parents of B.

Since C is a grandfather, c is the husband and E is the wife.

A is the sister-in-law of B. Since B is the only child, this statement can be true only if A is the sister of B's husband.

G is the only daughter of F. Since there are two couples, F has to be the husband of B and G has to be their daughter.

Also, C is the grandfather of D. Hence, D has to be the son of B and F (as they have only one daughter). Thus, the entire family tree is as shown:



Based on the above family tree, E has to be the sister-on-law of H. Hence, option c.

39. Answer: C

Explanation:

Consider the family tree obtained in the solution to the previous question

E is the maternal grandmother of G.

Hence, option c.

40. Answer: C

Explanation:

Based on the given representation for the operators, the expression becomes:

$$7 \times 4 + 5 - 6 \div 3 = 28 + 5 - 2 = 31$$

41. Answer: C

Explanation:

42. Answer: D

Explanation:

"The son of the only son of woman's grandfather" implies the brother of the woman. Hence the woman in the photograph is the woman's sister or the woman herself with whom the man is talking. Again "the sister of the son of man's father-in-law" implies either wife or sister-in-law of the man. Still we are uncertain that who is the wife of the man but it is certain that the man is either husband or brother-in-law of the woman.

43. Answer: A

Explanation:

$$5 \times 2 - 2 = 10 - 2 = 8$$

$$8 \times 4 - 4 = 32 - 4 = 28$$

$$28 \times 6 - 6 = 168 - 6 = 162$$

$$162 \times 8 - 8 = 1,296 - 8 = 1,288$$

$$1,288 \times 10 - 10 = 12,880 - 10 = 12,870$$

44. Answer: A

Explanation:

Pattern:

- PQR
- PQQR
- PPQQR
- PPQQRR
- PPQQQRR

So, next: PPPQQQRR

Calculations:

$$P = 1$$

$$Q = 2$$

$$Q = 2$$

$$\text{Sum} = 1 + 2 + 2 = 5$$

45. Answer: A

Explanation:

Since 2, 3, and 6 meet at a single vertex none of them are on opposite faces from each other.

Opposite of 2 is 5 → 5 cannot be touching the same vertex.

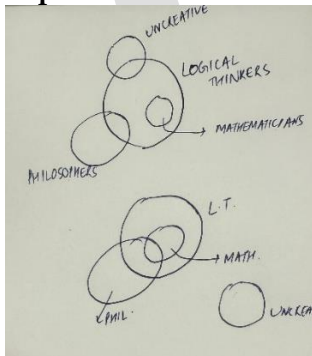
Opposite of 3 is 4 → 4 cannot be touching the same vertex.

Opposite of 6 is 1 → 1 cannot be touching the same vertex.

So the faces 2, 3, and 6 meet at a corner, and their opposites 5, 4, and 1, respectively are on the faces **not** touching that vertex. Hence, the number opposite to 6 is: 1

46. Answer: C

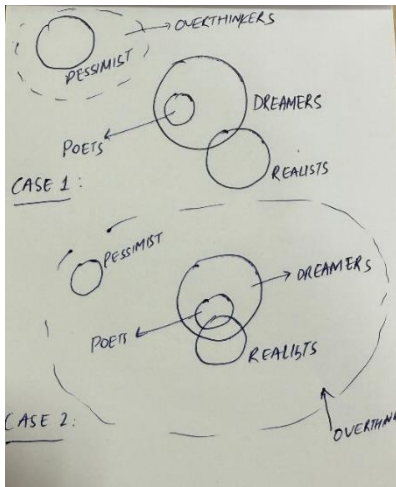
Explanation:



The above image shows 2 of the many scenarios possible. It can be seen that none of the statements follow.

47. Answer: A

Explanation:



48. Answer: D

Explanation:

$$A < B < C < D$$

$$\text{Weighted average: } (A(1)+B(2)+C(3)+D(4))/10=60$$

$$\text{i.e., } A+2B+3C+4D=600$$

$$\text{Statement I: } D - A = 70$$

Many combinations of A and D satisfy this, but without knowing more, cannot uniquely determine B.

Statement I alone - insufficient

$$\text{Statement II: Mean of B and C is 65} \Rightarrow B+C=130$$

Still not enough alone: we still have 4 variables in one equation, and B + C alone can't isolate B unless more is known. Statement II alone - insufficient

I and II:

1. $A+2B+3C+4D=600$
2. $D-A=70 \Rightarrow D=A+70$
3. $B+C=130$

$$\text{Substitute (2) into (1): } A+2B+3C+4(A+70)=600 \Rightarrow A+2B+3C+4A+280=600 \Rightarrow 5A+2B+3C=320$$

$$\text{Now use (3): } C=130-B$$

$$\text{Plug into above: } 5A+2B+3(130-B)=320 \Rightarrow 5A+2B+390-3B=320 \Rightarrow 5A-B=-70 \Rightarrow B=5A+70$$

Now we have expressions for B, C, and D all in terms of A:

$$B = 5A + 70$$

$$C = 130 - (5A + 70) = 60 - 5A$$

$$D = A + 70$$

Again unsolvable.

49. Answer: B

Explanation:

- 5 choices for each digit
- But adjacent digits $\neq$ same

Let's break:

- First digit: 5 options
- Second: can't be same as first $\rightarrow$ 4 options
- Third: can't be same as second $\rightarrow$ 4

- Fourth: can't be same as third $\rightarrow 4$

$$\text{Total} = 5 \times 4 \times 4 \times 4 = 320$$

50. Answer: A

Explanation:

Fix circular symmetry $\rightarrow$ fix 1 boy's seat

$\rightarrow$ Remaining 5 boys can be arranged in $5!$ ways

Now, place 6 girls in the 6 gaps between boys — so that no two girls sit together

$\rightarrow$ These 6 positions = fixed

$\rightarrow$ Girls can be arranged in $6!$ ways

$$\text{Total} = 5! \times 6! = 120 \times 720 = 86400$$

51. Answer: B

Explanation:

Let distance = D

Then:

- Time from A to B = $D / 60$
- Time from B to A = $D / 90$
- Total = 5

$$D/60 + D/90 = 5 \Rightarrow D(1/60 + 1/90) = 5 \Rightarrow D \cdot 5/180 = 5 \Rightarrow D = 5 \times 180/5 = 180$$

52. Answer: B

Explanation:

To find the units digit of large powers, observe the cyclic pattern of the base's units digit.

- Powers of 7:

$$7^1 = 7 \Rightarrow 7$$

$$7^2 = 49 \Rightarrow 9$$

$$7^3 = 343 \Rightarrow 3$$

$$7^4 = 2401 \Rightarrow 1$$

$$7^5 = 16807 \Rightarrow 7 \rightarrow \text{cycle repeats}$$

- Units digits form a cycle of 4: 7, 9, 3, 1

Now:

$$1001 \bmod 4 = 1 \Rightarrow 1\text{st digit in cycle} = 7$$

53. Answer: A

Explanation:

using Inclusion-Exclusion:

Let total = 120

We use the formula:

$$|T \cup C \cup J| = T + C + J - (T \cap C + T \cap J + C \cap J) + (T \cap C \cap J)$$

$$= 70 + 60 + 50 - (30 + 25 + 20) + 10 = 180 - 75 + 10 = 115$$

So:

$$\text{People who like none} = 120 - 115 = 5$$

54. Answer: D

Explanation:

Examining option (a):

$$\text{Percentage increase in income in 2022 over 2021} = [(450 - 400)/400] \times 100 = 12.5\%$$

Examining option (b):

$$\text{Percentage increase in income in 2020 over 2019} = [(600 - 450)/450] \times 100 = 33.33\%$$

Examining option (c):

$$\text{Percentage decrease in income in 2021 over 2020} = [(600 - 400)/600] \times 100 = 33.33\%$$

Examining option (d):

Percentage increase in income in 2019 over 2018 Percentage increase in income = $[(450 - 300)/300] \times 100$
= 50%

Hence option (d) is the correct answer.

55. Answer: D

Explanation:

Increase in income in 2020 as compared to 2019 = $600 - 450 = 150$ thousand

Increase in expenditure in 2020 as compared to 2019 = $500 - 350 = 150$ thousand

The desired ratio will be = $150/150 = 1 : 1$

Therefore option (d) is the correct answer.

56. Answer: D

Explanation:

A sum becomes 16 times in 6 years and 81 times in 10 years.

Mixture = Million $\times (1 + \text{Interest rate}/100)^{\text{Time period}}$

Let the million be ₹ P.

So, $16P = P (1 + \text{interest rate}/100)^6$ (i)

$81P = P (1 + \text{interest rate}/100)^{10}$ (ii)

Substituting equation (ii) with equation (i), we get:

$81/16 = (1 + \text{interest rate}/100)^{10-6}$

or $81/16 = (1 + \text{interest rate}/100)^4$

or $(1 + \text{interest rate}/100) = (81/16)^{1/4}$

or $(1 + \text{interest rate}/100) = 3/2$

or Rate of interest = $(3/2 - 1) \times 100 = 50\%$

Hence, option (d) is the correct answer.

57. Answer: B

Explanation:

Number of streets with estimated cost for sanitization of Rs. 1 crore = 2

Estimated cost for these 2 streets = $2 \times 1 = 2$ crores

Number of streets with estimated cost for sanitization of Rs. 2 crores = 1

Estimated cost for this 1 street = $2 \times 1 = 2$ crores

Number of streets with estimated cost for sanitization of Rs. 3 crores = 3

Estimated cost for these 3 streets = $3 \times 3 = 9$ crores

Number of streets with estimated cost for sanitization of Rs. 4 crores = 1

Estimated cost for this 1 street = $4 \times 1 = 4$ crores

Number of streets with estimated cost for sanitization of Rs. 5 crores = 1

Estimated cost for this 1 street = $5 \times 1 = 5$ crores

Number of streets with estimated cost for sanitization of Rs. 6 crores = 2

Estimated cost for these 2 streets = $6 \times 2 = 12$ crores

Total estimated expenditure to sanitize the entire locality = $2 + 2 + 9 + 4 + 5 + 12 = 34$ crores.

58. Answer: D

Explanation:

Data represented by the given graph does not provides any bifurcation between odd numbered streets and even numbered streets. Therefore, we can conclude that the given data is insufficient.

59. Answer: A

Explanation:

$$\begin{array}{ccccccc}
 55 & 28 & 15 & 9 & 6.5 \\
 \swarrow & \swarrow & \swarrow & \swarrow & \\
 +1 \div 2 & +2 \div 2 & +3 \div 2 & +4 \div 2 &
 \end{array}$$

$$? = (9 + 4) \div 2 = 13 \div 2 = 6.5$$

Hence, option (a) is the correct answer.

60. Answer: A

Explanation:

Let 1st term of an arithmetic progression (AP) be "a" and common difference be "d".

Sum of n terms of AP = $(n/2) [2a + (n-1)d]$

Sum of first 14 terms of AP = $(14/2) (2a + 13d)$

Sum of first 22 terms of AP = $(22/2) (2a + 21d)$

According to the question,

$$(14/2) (2a + 13d) = (22/2) (2a + 21d)$$

$$\Rightarrow 14a + 91d = 22a + 231d$$

$$\Rightarrow 8a = -140d$$

$$\Rightarrow 2a = -(140d)/4$$

$$\Rightarrow 2a = -35d$$

$$\text{Sum of first 36 terms} = (36/2) (2a + 35d) = 18(2a + 35d)$$

Putting the value of 2a from above, we get

$$\text{Sum of first 36 terms} = 18(-35d + 35d) = 0$$

61. Answer: D

Explanation:

From the given information, we get:

Two theists are always friends. C and D are friends. Thus, C and D are theists.

Atheists are indifferent to one another. E and F are indifferent to each other. Thus, E and F are atheists.

An atheist and a theist are always enemies. A and E are not enemies, so they must either be friends or indifferent. But, E is atheist. So, A must also be an atheist.

A and B are enemies. Here, A is atheist. So, B must be a theist.

Theists: B, C, D

Atheists: A, E, F

Thus, A, E and F are in same category.

62. Answer: D

Explanation:

If the number 4^n , for any n, were to end with the digit zero, then it would be divisible by 5. That is, the prime factorisation of 4^n would contain the prime number 5. This is not possible because $4^n = (2)^{2n}$. So, the only prime in the factorisation of 4^n is 2.

Therefore, statements 1 and 2 both are correct.

63. Answer: D

Explanation:

The given solution aims to find how many natural numbers less than 87 are not multiples of any perfect square of numbers greater than 1 and up to 7

List of perfect squares of numbers greater than 1 and up to 7 is 4, 9, 16, 25, 36 and 49.

Multiples of 4 = 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84

There are 21 multiples of 4.

Multiples of 9 = 9, 18, 27, 36, 45, 54, 63, 72, 81

There are 9 multiples of 9.

Multiples of 16 = 16, 32, 48, 64, 80

There are 5 multiples of 16.

Multiples of 25 = 25, 50, 75

There are 3 multiples of 25.

Multiples of 36 = 36, 72

There are 2 multiples of 36.

Multiples of 49 = 49

There is 1 multiple of 49.

Common multiples of 4, 9 and 36 = 36, 72, i.e. 36 and 72 are repeated thrice.

Common multiples of 4 and 16 = 16, 32, 48, 64, 80, i.e. 16, 32, 48, 64, 80 are repeated twice.

So, total distinct multiples of given perfect squares = $(21 + 9 + 5 + 3 + 2 + 1) - (4 + 5) = 41 - 9 = 32$

There are 86 natural numbers less than 87.

So, there are $86 - 32$, i.e. 54 natural numbers that are not multiple of any perfect square of numbers greater than 1 and up to 7.

64. Answer: B

Explanation:

Work done by the two pipes in 1 hour = $(1/12) + (1/18) = (5/36)$

Time taken by these pipes to fill the tank = $(36/5)$ hours = 7 hours 12 min.

Due to leakage, time taken to fill the tank, i.e. Quantity I = 7 hours 12 min + 48 min = 8 hours

Work done by two pipes and leak in 1 hour = $1/8$

Work done by the leak in 1 hour = $(5/36) - (1/8) = (1/72)$

Leak will empty the full tank in $1/(1/72)$ i.e. 72 hours.

So, Leak will empty the 66.66% i.e. $2/3$ of the filled tank in $72 \times (2/3) = 48$ hours

Thus, Quantity I = 8 hours and Quantity II = 48 hours

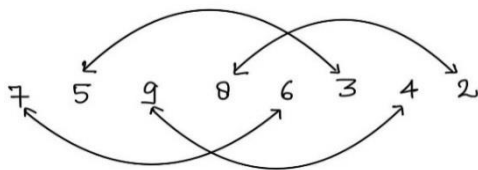
Hence, Quantity I < Quantity II

65. Answer: B

Explanation:

Let us consider the number: 75986342.

Now as per the question, the numbers have to be interchanged.



As a result of interchanging the numbers, the figure will be 6 3 4 2 7 5 9 8. It may be interpreted that the third from last digit will be the '5' number.

So, the correct option is (b).

66. Answer: D

Explanation:

Let the number be x.

Quotient - Remainder = 159 (given)

or $167 - \text{Remainder} = 159$

$\therefore \text{Remainder} = 167 - 159 = 8$

We, know that

Dividend = divisor $\times$ quotient + Remainder

$\therefore x = 13 \times 167 + 8$

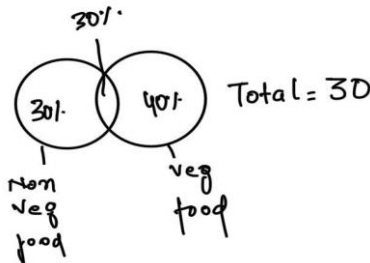
or $x = 2171 + 8$
or $x = 2179$

67. Answer: C

Explanation:

People who ordered both veg and non-veg food = 9

Percentage of people who ordered both veg and non-veg food = $(9/30) \times 100 = 30\%$



By looking at the above venn diagram we can infer that:

(i) Only 30% i.e. $(30 \times 30)/100 = 9$ people ordered only non-veg food.

(ii) Only 40% i.e. $(30 \times 40)/100 = 12$ people ordered only veg food.

(iii) 30% i.e. $(30 \times 30)/100 = 9$ people ordered both types of food.

(iv) 70% i.e. $(30 \times 70)/100 = 21$ people ordered veg food.

Conclusion 1 is incorrect because 9 people ordered only non-veg food.

Conclusion 2 is correct because 70% i.e. 21 people ordered veg food, which is more than 20 people.

Conclusion 3 is incorrect because 30% of people are those who ordered both types of food.

Hence, option (c) is correct.

68. Answer: D

Explanation:

Let us assume Z salary is S.

- Y salary = $S + 10\% \text{ of } S = S + 0.10S = 1.10S$
- X salary = $1.10S + 15\% \text{ of } 1.10S = 1.10S + 0.15(1.10S) = 1.10S \times 1.15 = 1.265S$

Thus X salary is $1.265S$ & Z salary is S.

The difference in salary between X & Z is:

$$1.265S - S = 0.265S$$

Now percentage increase in X salary over Z salary is:

$$0.265S \times 100 = 26.5\%S$$

69. Answer: C

Explanation:

Let original number be x.

- The correct operation is to multiply number by 2 so correct result should be: $2x$
- However number was mistakenly divided by 2 so incorrect result is: $x/2$

$$\text{Percentage change} = (x/2 - 2x) / 2x \times 100$$

Simplifying numerator:

$$\text{Percentage change} = (x/2 - 4x/2) / 2x = -3x/2 / 2x \text{ Percentage change} = -3/4 \times 100 = -75\%$$

70. Answer: D

Explanation:

Let total number of students be N.

1. Percent who passed Math: 60% of students passed Math so number of students who passed Math is: $0.60N$
2. Percent who passed Science: 50% of students passed Science so number of students who passed Science is: $0.50N$

3. Percent who failed both subjects: 25% of students failed both subjects so number of students who failed both is: $0.25N$

Therefore number of students who passed in at least one subject is: $1 - 0.25 = 0.75N$

So 75% of students passed in at least one of two subjects.

4. Using principle of inclusion-exclusion:

To find number of students who passed both subjects (Math & Science) we use inclusion exclusion principle:

Students who passed Math or Science = (Students who passed Math) + (Students who passed Science) - (Students who passed both)

$0.75N = 0.60N + 0.50N - (\text{Students who passed both})$ Solving for students who passed both subjects:

$0.75N = 1.10N - (\text{Students who passed both})$

Students who passed both = $1.10N - 0.75N = 0.35N$

5. Students who passed only Math: These are students who passed Math but did not pass Science.
So:

Students who passed only Math = $0.60N - 0.35N = 0.25N$

6. Students who passed only Science: These are students who passed Science but did not pass Math.
So: Students who passed only Science = $0.50N - 0.35N = 0.15N$

7. Total students who passed only one subject: This is sum of students who passed only Math & students who passed only Science:

Total students who passed only one subject = $0.25N + 0.15N = 0.40N$

8. Percentage of students who passed only one subject: The percentage of students who passed only one subject is: $0.40N \times 100 = 40\%$

71. Answer: A

Explanation:

Let present age of father be F & present age of son be S .

From given statements:

- Statement 1: n years ago I was twice as old as you are now. This implies: $F - n = 2S$ (1)
- Statement 2: My present age is four times your age n years ago. This implies: $F = 4(S - n)$ (2)
- Sum of their present ages: The sum of our ages is 150 years.

$F + S = 150$ (3)

From Equation (2):

$F = 4(S - n) = 4S - 4n$

Substitute $F = 4S - 4n$ into $F + S = 150$:

$(4S - 4n) + S = 150$

$5S - 4n = 150$

From Equation (1):

$F = 2S + n$

Substitute $F = 2S + n$ into $5S - 4n = 150$: $(2S + n) + S = 150$

$3S + n = 150$ (5)

From Equation (5):

$n = 150 - 3S$ (6)

Now substitute $n = 150 - 3S$ into Equation (4):

$5S - 4(150 - 3S) = 150$

$5S - 600 + 12S = 150$

$17S = 750$

$S = 44.12$

$F = 105.88$

Difference is approx. 62 years.

72. Answer: D

Explanation:

1. 1 acre = 4046.86 m²
 - 1 acre is a unit of area that equals 4046.86 square meters (exactly).
This statement is correct.
2. 1 mile = 1760 yards
 - By definition 1 mile is exactly 1760 yards.
This statement is correct.
3. 1 kilogram = 2.20462 pounds
 - 1 kilogram is approximately 2.20462 pounds.
This statement is correct.
4. 1 liter = 0.264172 gallons
 - 1 liter is approximately 0.264172 US gallons.
This statement is correct.

73. Answer: C

Explanation:

Let $X=10a+b$ (where a is tens digit & b is units digit of X) & $Y=10b+a$ (where a is tens digit & b is units digit of Y).

Now we know:

$$X-Y=(10a+b)-(10b+a)=9a-9b=9(a-b)$$

For $X-Y$ to be divisible by 9, $a-b$ must be an integer (which it always is since a & b are integers), but we want it to be a two-digit number.

Thus we need $9(a-b)$ to be a two-digit number, meaning:

$$10 \leq 9(a-b) \leq 99$$

Dividing by 9:

This simplifies to:

$$1.11 \leq a-b \leq 11$$

So, $a-b$ must be an integer between 2 & 11, inclusive. Hence, possible values for $a-b$ are 2, 3, 4, 5, 6, 7, 8, 9, 10 & 11.

The total number of values for $a-b$ is 10. However we need to check which values of a & b satisfy condition that both X & Y are two-digit numbers.

Let us calculate possible pairs of a & b that fit these criteria. We know that both a & b must be between 1 & 9 (inclusive) for X & Y to be two-digit numbers. Thus valid pairs for $a-b$ that satisfy both conditions are:

- For $a-b=2$, possible values for (a,b) are $(2,0),(3,1),(4,2),\dots,(9,7)$ – 8 values.
- For $a-b=3$, possible values for (a,b) are $(3,0),(4,1),(5,2),\dots,(9,6)$ – 7 values.
- For $a-b=4$, possible values for (a,b) are $(4,0),(5,1),(6,2),\dots,(9,5)$ – 6 values.
- For $a-b=5$, possible values for (a,b) are $(5,0),(6,1),(7,2),\dots,(9,4)$ – 5 values.
- For $a-b=6$, possible values for (a,b) are $(6,0),(7,1),(8,2),(9,3)$ – 4 values.
- For $a-b=7$, possible values for (a,b) are $(7,0),(8,1),(9,2)$ – 3 values.
- For $a-b=8$, possible values for (a,b) are $(8,0),(9,1)$ – 2 values.
- For $a-b=9$, possible values for (a,b) is $(9,0)$ – 1 value.

Total number of valid pairs is $8+7+6+5+4+3+2+1=36$.

74. Answer: C

Explanation:

Since $y = 2x$ and $x > 1$, $y > 2$.

Let $y = 4$ and $x = 2$

Option a: $(x^2 + y^2)/xy = (4 + 16)/(2 \times 4) = 20/8 = 2.5$

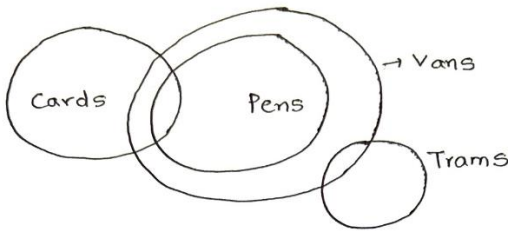
Option b: $xy/y = x = 2$

Option c: $(x + y)y/x = (2 + 4) \times 4/2 = 6 \times 2 = 12$

Option d: $2x - y = 2(2) - 4 = 0$
Hence, option c.

75. Answer: C

Explanation:



76. Answer: A

Explanation:

Two calendars are identical if:

1. Both are either leap years or non-leap years.
2. The number of odd days between the two years is a multiple of 7 (i.e., net shift in weekday is 0).

2089 is not a leap year (not divisible by 4). So, we're looking for another non-leap year after 2089

For most years, the calendar repeats every 6, 11, or 28 years, depending on leap year effects.

So we can do a quick check:

- Add 6 $\rightarrow 2089 + 6 = 2095$
- Is 2095 a non-leap year?

Yes because 2095 is not divisible by 4.

Try checking number of odd days between 2089 and 2095.

From 2089 to 2095 = 6 years

Number of leap years between = 1 (2092 is leap year)

So, number of odd days =

$$= (5 \text{ normal years} \times 1) + (1 \text{ leap year} \times 2) = 5 + 2 = 7$$

$\rightarrow 7 \text{ odd days} = 0 \text{ shift in weekday}$

So calendar repeats

77. Answer: D

Explanation:

Statement 1: $(a+c)^2 - bd$ is always even.

- Since a is prime, it could be 2 (even) or another prime (odd).
- c is composite so it is always even (except for 9, 15, etc., but mostly even).
- $(a+c)^2$ will be even.
- bd depends on whether d (a perfect square) & b (prime) create an odd or even product.

This is mostly true if b is odd & d is even.

Statement 2: $a(b+c) + d^2$ is always odd.

- $b+c$ (odd + even) is odd.
- d^2 (perfect square) could be even or odd.
- If d is odd, then d^2 is odd, making $a(b+c) + d^2$ even.
- If d is even, expression is odd.
- Not always true.

Statement 3: $(a^c + b^d)$ is always composite.

- $a=2, b=3, c=4$, and $d=1$. Answer becomes 19.
- This makes sum composite in almost all cases but not all.

78. Answer: A

Explanation:

1. The clock gains 4 minutes per hour.
2. In 6 hours, clock gains: $6 \times 4 = 24$ minutes
3. So, when faulty clock shows 6:00 PM, actual time is: $6:00 \text{ PM} - 24 \text{ minutes} = 5:36 \text{ PM}$

79. Answer: C

Explanation:

Total number of students of LMS = 1380

Percentage of students who play hockey = $320/1380 \times 100 = 23.18\%$ **80. Answer: B**

Explanation:

- Total subsets of $\{2,4,6,8,10,12\} = 64$.
- Group $\{6,12\}$ separately (both divisible by 6), rest are $\{2,4,8,10\}$.
- In $\{2,4,8,10\}$, only 6 subsets have a sum divisible by 6.
- Whether you pick 6, 12, both, or none — their sum is already divisible by 6.
- So, for each case (none, 6 only, 12 only, both), you get 6 good subsets.

Thus,

 $6 \times 4 = 24$ subsets.