



Your Personal Exams Guide



NDA



CDS



SSC CGL



CBSE UGC NET



IAS



SSC CHSL



CTET



MPSC



AFCAT



CSIR UDC NET



IBPS PO



UP POLICE



SSC MTS



SBI PO



BPSC



UP TET



IBPS RRB



IBPS CLERK



IES



UPSC CAPF



SSC Stenogr..



RRB NTPC



SSC GD



RBI GRADE B



RBI Assistant



DSSSB

RRB Group D 2018 Previous Year Paper (09-Oct-2018) (Shift 1)

Total Time: 1 Hour : 30 Minute

Total Marks: 100

Instructions

Sl No.	Section Name	No. of Question	Maximum Marks	Negative Marks	Positive Marks
1	CBT	100	100	0.33	1

- 1.) A total of 90 minutes is allotted for the examination.
- 2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.
- 3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

Your Personal Exams Guide

CBT

1. Which of the following sport is related to Bembem Devi? (+1, -0.33)
- a. Athletics
 - b. Football
 - c. Archery
 - d. Table Tennis
-
2. If $\sin \theta + \operatorname{cosec} \theta = 2$, then find the value of $\sin^{2018} \theta + \operatorname{cosec}^{2018} \theta$. (+1, -0.33)
- a. 2018
 - b. 2
 - c. 1
 - d. 0
-
3. 48 men can complete a work in 30 days. After working for 6 days, 12 men left the work. Remaining work was completed by remaining workers in how many days? (+1, -0.33)
- a. 28
 - b. 32
 - c. 30
 - d. 34
-

4. Read given statement and conclusions carefully and choose which of the conclusions logically follows from the given statements. (+1, -0.33)

Statement:

No paper is a book. All books are bag.

Conclusion:

I. No bag is a paper.

II. Some bags are paper.

- a. Both I and II follows.
- b. Either I or II follows.
- c. Neither I nor II follows.
- d. Only I follows.

5. A number x is written as 15.84 correct to two decimal places. Which of the given statement is true? (+1, -0.33)

- a. $15.835 < x \leq 15.845$
- b. $15.835 < x < 15.845$
- c. $15.835 \leq x \leq 15.845$
- d. $15.835 \leq x < 15.845$

6. Which of the following characteristics is recessive in a pea plant? (+1, -0.33)

- a. Green bean

- b. Wrinkled seed
 - c. Round seed
 - d. Yellow seed
-

7. All the four angles of a quadrilateral are same. Find there measure. (+1, -0.33)

- a. 110°
 - b. 80°
 - c. 75°
 - d. 90°
-

8. Name the activist fighting hunger and malnutrition, who won the Queen's Young Leader Award for 2017 at a ceremony held at Buckingham Palace? (+1, -0.33)

- a. Palbinder Kaur Shergill
 - b. Srinivas Gokulnath
 - c. Ankit Kawatra
 - d. Tanmanjit Singh Dhesi
-

9. Universal law of gravitation applies to _____. (+1, -0.33)

- a. Sun and Planets
- b. Earth and Sun
- c. Earth and Moon

d. Any pair of objects

10. The rise of Jainism and Buddhism saw religious unrest in India in the _____ century BC. (+1, -0.33)

a. 5th

b. 4th

c. 6th

d. 7th

11. There are two taps in a tank. One tap fills the tank in 8 hours and another tap empties it in 10 hours. If both the taps are opened simultaneously, then in how much time will the tank be filled? (+1, -0.33)

a. 40

b. 20

c. 30

d. 50

12. A bullet of 40 gm is fired horizontally with a velocity of 160 ms^{-1} from a pistol weighing 2 kg. What is the rebound velocity of the pistol? (+1, -0.33)

a. -1.5 ms^{-1}

b. -3.2 ms^{-1}

c. -1.25 ms^{-1}

d. -2.0 ms^{-1}

13. The chemical formula of unextinguished lime is _____. (+1, -0.33)

a. CaCO_3

b. CaCl_2

c. CaSO_4

d. CaO

14. Square of $1\frac{3}{11}$ is: (+1, -0.33)

a. $\frac{16}{111}$

b. $\frac{225}{112}$

c. $\frac{196}{121}$

d. $\frac{9}{121}$

15. Who among the following was honoured with the 2018 Padma Bhushan award in the field of art-music? (+1, -0.33)

a. Sharda Sinha

b. Kaifi Azmi

c. Gulzar

d. Javed Akhtar

16. Select the odd one:

(+1, -0.33)



- a. D
- b. A
- c. B
- d. C

17. If $A : B = 5 : 8$ and $B : C = 18 : 25$, then find $A : C$.

(+1, -0.33)

- a. 8 : 5
- b. 9 : 20
- c. 5 : 8
- d. 20 : 9

18. What is the position of Indian Railways among the world's largest railways?

(+1, -0.33)

- a. 4
- b. 5
- c. 3
- d. 1

19. Which party has won majority of seats in Gujarat Assembly Election 2017? (+1, -0.33)

- a. Indian National Congress
- b. Aam Aadmi Party
- c. Rashtriya Janata Party
- d. Bhartiya Janata Party

20. The sides of a triangle are 16 m, 12 m and 20 m respectively. Find the altitude to its longest side. (+1, -0.33)

- a. 9.2 m
- b. 9.6 m
- c. 9.4 m
- d. 9.8 m

21. $(-4)[20 \div \{(-2) \times (-8)\}] = ?$ (+1, -0.33)

- a. 40
- b. -5
- c. -40
- d. 20

22. Which of the following materials has the highest resistivity? (+1, -0.33)

- a. Ebonite
 - b. Copper
 - c. Nichrome
 - d. Glass
-

23. What is the square root of 519841? (+1, -0.33)

- a. 721
 - b. 629
 - c. 631
 - d. 731
-

24. To maintain the current in a given electrical circuit, the cell has to expend (+1, -0.33)
----- energy stored in it.

- a. Electrical
 - b. Kinetic
 - c. Chemical
 - d. Potential
-

25. By selling an article for Rs. 420, the seller gains 5%. How much profit or (+1, -0.33)
loss will he make by selling that article for Rs. 380?

- a. P = 10%

b. $P = 5\%$

c. $L = 10\%$

d. $L = 5\%$

-
- 26.** Read given statement and conclusions carefully and choose which of the conclusions logically follows from the given statements. **(+1, -0.33)**

Statement

The local municipality issued a notice to vendors in the newspaper saying, "Sealed tenders are invited from local contractors for the construction of the bridge in Mohalla 3."

Conclusion:

- I. The municipality is planning to build a bridge.
II. They want to know, how many contractors would be interested.

a. Only conclusion I follows.

b. Both the conclusions follow.

c. No conclusion follows.

d. Only conclusion II follows

-
- 27.** Alternating current was invented by _____. **(+1, -0.33)**

a. Isaac Newton

b. Thomas Edison

c. Nikola Tesla

d. Albert Einstein

28. Select the option that is related to third word in the same way as second letter is related to first word. (+1, -0.33)

Eat : Ate :: Buy : ?

- a. Bought
- b. Brings
- c. Buys
- d. Bring

29. The clock is showing 9:00 am. If the minute hand points toward north, then in which direction does the hour hand point? (+1, -0.33)

- a. South
- b. East
- c. North
- d. West

30. Find the odd one out. (+1, -0.33)



- a. D

b. A

c. C

d. B

31. On the basis of the following statement, which of the two conclusion(s) given below follows? (+1, -0.33)

Statement:

Some lions are tigers. Some tigers are donkeys.

Conclusion:

1. Some lions are donkeys.

2. All tigers are donkeys.

a. Either 1 or 2 follows.

b. Only 1 follows.

c. Neither 1 nor 2 follows.

d. Only 2 follows.

32. Select mirror image of following figure. (+1, -0.33)



a. B

b. A

c. D

d. C

33. Find mode of the following data:

(+1, -0.33)

25, 45, 58, 87, 45, 54, 65, 12, 25, 59, 42, 60

a. 25

b. 45

c. 45, 54

d. 45, 25

34. In which of the following processes, the cell is involved in the generation of an exact copy of another living part or a complete organism?

(+1, -0.33)

a. Cloning

b. In vitro fertilization (IVF)

c. Fructification

d. Regeneration

35. Sum of three fractions is 6. If one of them is $1\frac{1}{4}$, while the ratio of other two is 9 : 10. Then largest fraction among the three fractions is:

(+1, -0.33)

a. $2\frac{1}{4}$

b. $2\frac{3}{4}$

c. $2\frac{1}{8}$

d. $2\frac{1}{2}$

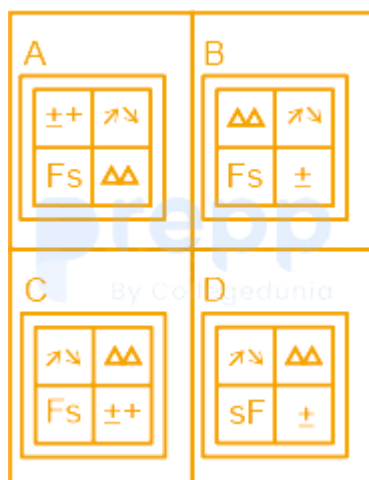
36. Select the option which is related to the third word in same way as second word is related to the first word. (+1, -0.33)

Smell : Rose :: Wisdom : ?

- a. Reading
- b. Information
- c. Experience
- d. Money

37. Select the option that comes next in the following series. (+1, -0.33)



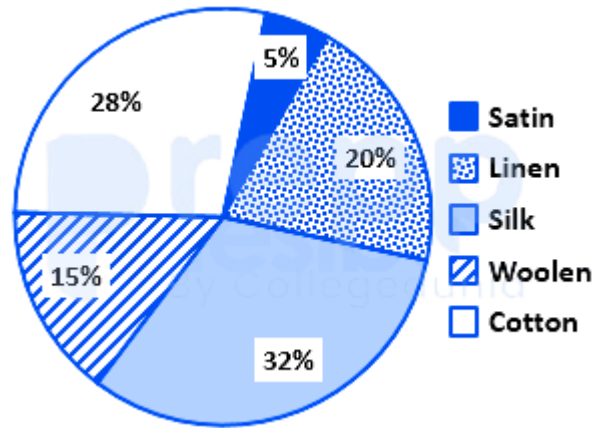


- a. C
- b. A
- c. B
- d. D

38. _____ is probably the largest group of creatures. (+1, -0.33)

- a. Arthropoda
- b. Echinodermata
- c. Annelida
- d. Mollusca

39. The following pie chart shows the production of different types of garments in Company XYZ in 2014. (+1, -0.33)



If a total of 150,000 tonnes of textiles were produced in 2014, then what was the production of woolen garments (in tonnes) in 2014?

- a. 22500
- b. 60000
- c. 15000
- d. 7500

40. The least common multiple of 112, 24 and 48 will be : (+1, -0.33)

- a. 240
- b. 336
- c. 8
- d. 224

41. Whose portrait/statue was unveiled by Maharashtra Chief Minister Devendra Fadnavis at the headquarters of the Greater Mumbai Municipal Corporation? (+1, -0.33)

- a. Bal Thackeray
- b. Ajay Mehta
- c. Uddhav Thackeray
- d. Prabodhankar Thackeray

42. In 2018, the population of a colony became 54000, which is increasing at the rate of 5 percent per annum. Find the population of the colony 2 years ago. (+1, -0.33)

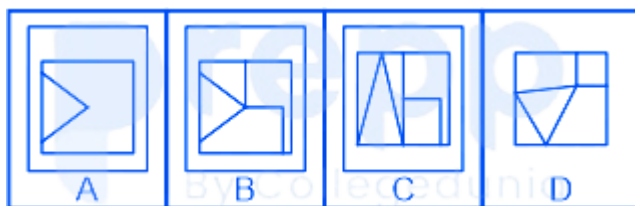
- a. 45980
- b. 48980
- c. 49500
- d. 50000

43. Which answer figure is formed from the shapes given in the question figure? (+1, -0.33)

Question figure:



Answer figures:



- a. C
- b. D
- c. A
- d. B

44. A force of 125 N is acting on an object. The object moves 5 m in the direction of the force. The work done by the force will be _____. (+1, -0.33)

- a. 625 W
- b. 625 Pa
- c. 625 N
- d. 625 J

45. In _____, each carbon atom is bonded to three other carbon atoms in the same plane giving a hexagonal array. (+1, -0.33)

- a. Propene
- b. Graphite
- c. Diamonds
- d. Benzene

46. A car falls from the edge of the road to the ground in 0.5 s. Let $g = 10\text{ms}^{-2}$. (+1, -0.33)
How high is the edge of the road above the ground?

- a. 1.5 m
- b. 2 m
- c. 1.25 m
- d. 1 m

47. Sudha is twice as old as Radha. If 6 years is subtracted from Radha's age and Sudha's age is increased by 4 years, then Sudha's age will be four times that of Radha. What will be the ages of Sudha and Radha, 2 years ago from today? (+1, -0.33)

- a. 30 years and 14 years
- b. 26 years and 12 years
- c. 34 years and 20 years
- d. 30 years and 16 years

48. In $4\frac{1}{2}$ hours, Jack can cover a distance of 6 km more than the distance covered by Jill in 3 hours. In 6 hours, Jack can cover 5 km less than the distance covered by Jill in 5 hours. What is the average speed of Jack in km/hr? (+1, -0.33)

- a. 10
- b. 9
- c. 11

d. 12

49. Lime $\text{Ca}(\text{OH})_2$ reacts slowly with _____ in air to form a thin layer of CaCO_3 on the walls. (+1, -0.33)

a. O_2

b. CO

c. CO_2

d. SO_2

50. Which letter will come in place of question mark in the following series? (+1, -0.33)

V, S, P, M, ?, G

a. T

b. P

c. L

d. J

51. Radioactive elements are placed in _____. (+1, -0.33)

a. Actinide

b. Lanthanide

c. Period 6

d. Period 7

52. Which of the following cannot travel in vacuum?

(+1, -0.33)

- a. Heat
- b. Sound
- c. Light
- d. UV rays

53. _____ atoms are present in sodium carbonate molecule.

(+1, -0.33)

- a. 6
- b. 8
- c. 5
- d. 7

54. The maximum number of bonds a covalent bond can have between two atoms is _____.

(+1, -0.33)

- a. 1
- b. 3
- c. 2
- d. 4

55. Where is Cape of Good Hope located?

(+1, -0.33)

- a. Russia
- b. South Africa
- c. Argentina
- d. Germany

56. If the equations $8x + 5y + 11 = 0$ and $20x - ky - 9 = 0$ have no solution, (+1, -0.33)
then what is the value of k ?

- a. -12.5
- b. 12.5
- c. -18
- d. 18

57. Sheikh Hasina is the Prime Minister of which of the following countries? (+1, -0.33)

- a. Malaysia
- b. Bangladesh
- c. Saudi Arabia
- d. Pakistan

58. Consider the following question and the statements that follow and (+1, -0.33)
decide which of the statements are sufficient to answer the question?

Question:

E, F, G, H and I are standing in a row. On the basis of the information given in the statements, if we arrange in the order from smallest to largest, then find out who stands second.

Statements:

1. G is the longest.
 2. E is taller than F.
 3. H is the smallest.
 4. F is taller than I.
- a. Statements 1, 2, 3 all together are sufficient.
 - b. Statements 1 and 2 are sufficient.
 - c. Statements 1, 2, 3 and 4 all together are sufficient.
 - d. Every statement is sufficient

59. What is the name of the person who has been awarded the 'Yeraringan Award'? (+1, -0.33)

- a. S. M. Swaminathan
- b. M. S. Swaminathan
- c. S. V. Swaminathan
- d. V. S. Swaminathan

60. Read the given statement and conclusions carefully and choose which of the conclusions logically follows from the statement. (+1, -0.33)

Statements:

- I. No gates are sticks.
- II. Some sticks are windows.

Conclusion:

- 1. All doors are windows.
 - 2. Some sticks are gates.
- a. Both 1 and 2 follow.
 - b. Only conclusion 2 follows.
 - c. Neither 1 nor 2 follows.
 - d. Only conclusion 1 follows.

61. _____ was established in 1982 to support the outstanding sportspersons of the past year, sportspersons living in poverty conditions who brought glory to the country in sports. (+1, -0.33)

- a. National Welfare Fund for Sportspersons
- b. National Promotion Scheme for Sportspersons
- c. National Pension Scheme for Sportspersons
- d. National Welfare Club for Sports

62. If in a code language BOOK is written as DQQM, then PEN should be written as? (+1, -0.33)

- a. MNP

b. RGP

c. PLN

d. PAN

63. If the side of an equilateral triangle is 19 cm, then what is its area? (+1, -0.33)

a. 167.76 cm^2

b. 177.87 cm^2

c. 134.87 cm^2

d. 156.31 cm^2

64. Which is the largest lake in South America? (+1, -0.33)

a. Lake Poopo

b. Lake Titicaca

c. Lake Valencia

d. Lake Janin

65. Mammalian animals have _____. (+1, -0.33)

a. Single chambered heart

b. Four chambered heart

c. Two chambered heart

d. Three chambered heart

66. Select the most appropriate Venn diagram for the following words. (+1, -0.33)

"Wool, Sweater, Hat"



67. Name the world champion who won five-time gold medals in the Asian Women's Boxing Championship in the light flyweight (48kg) category? (+1, -0.33)

a. Ritu Phogat

b. Geeta Phogat

c. Karnam Malleswari

d. Mary Kom

68. If the potential difference and current through a circuit are doubled, then the resistance of the circuit: (+1, -0.33)

- a. Increases
- b. Goes to zero
- c. Remains the same
- d. Decreases

69. Which of the following statement(s) is/are true?

(+1, -0.33)

A: Compressibility: The property of matter due to which its shape does not change after applying external force. Solids show this property.

B: Fluidity: It is a property of matter to flow easily and change shape under external force. This property is exhibited by both liquid and gas.

- a. Only A is true.
- b. Both A and B are true.
- c. Only B is true.
- d. Both A and B are false.

70. The atomic number of lanthanide is in the _____ range.

(+1, -0.33)

- a. 90-103
- b. 89-102
- c. 57-71
- d. 57-70

71. Which of the following steel plants in India won the Prime Minister's Trophy for Best Performing Integrated Steel Plant for the assessment years 2014-15 and 2015-16, on 8 December 2017. (+1, -0.33)

- a. Durgapur Steel Plant
- b. Bhilai Steel Plant
- c. Jindal Steel Plant
- d. Tata Steel Ltd

72. Choose the odd one. (+1, -0.33)



- a. D
- b. A
- c. B
- d. C

73. On which date did India organize the cultural festival in Egypt to commemorate the 156th birth anniversary of Rabindranath Tagore? (+1, -0.33)

- a. 6 - 10 May, 2017
- b. 8 - 12 June, 2017
- c. 6 - 10 June, 2017

d. 8 – 12 May, 2017

74. The hands of a clock are _____ perpendicular to each other in a day. (+1, -0.33)

- a. 22 times
 - b. 88 times
 - c. 11 times
 - d. 44 times
-

75. A question and two statements are given below. Select the statement which is necessary/sufficient to answer the question. (+1, -0.33)

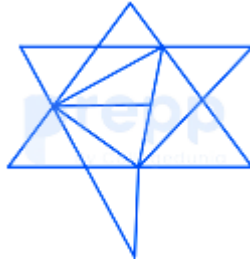
Question:

X is taller than Y and Z is shorter than W, who is the shortest?

Statements:

- 1. Z is shorter than X.
 - 2. W is shorter than Y.
- a. Only 2 is sufficient while only 1 is not sufficient .
 - b. Only 1 is sufficient , while only 2 is not sufficient .
 - c. Either 1 or only 2 is sufficient .
 - d. 1 and 2 together are sufficient.
-

76. How many triangles are there in the following figure? (+1, -0.33)



- a. 21
- b. 17
- c. 19
- d. 20

77. What is the birth name of Yogi Adityanath, the current Chief Minister of Uttar Pradesh? (+1, -0.33)

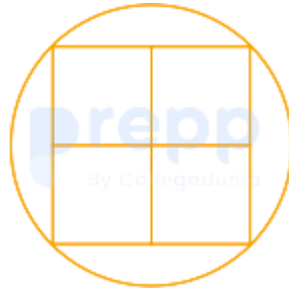
- a. Arjun Singh Visht
- b. Ajay singh Bisht
- c. Abhay Singh Visht
- d. Arjun Singh Biku

78. Who among the following is one of the Trinity of Carnatic Music? (+1, -0.33)

- a. Meera Bai
- b. Annamayya
- c. Tyagaraja
- d. Kalidas

79. How many squares are there in the following figure?

(+1, -0.33)



- a. 4
- b. 5
- c. 6
- d. 3

80. The number of books sold by the seller is given in the following table. In which month has he sold the least number of books?

(+1, -0.33)

Your Personal Exams Guide

Month	No. of books sold
January	2,000
February	1,500
March	2,500
April	3,000
May	2,000
June	1,000
July	1,500
August	2,000
September	5,000
October	2,000
November	150
December	6,000

- a. May
- b. June
- c. February
- d. November

81. An estate where a cash crop is grown for sale is known as _____. (+1, -0.33)

- a. Kitchen garden
- b. Horticulture Farming

- c. Slash and burn farming
 - d. Subsistence farming
-

82. The year _____ had the same calendar year as 2011. (+1, -0.33)

- a. 2004
 - b. 2008
 - c. 2005
 - d. 2009
-

83. If compound interest is compounded annually at about 12% per annum in the interest. After 2 years what will be the amount of Rs. 3,000, ? (+1, -0.33)

- a. Rs. 3,763
 - b. Rs. 3,773
 - c. Rs. 3,873
 - d. Rs. 3,766
-

84. Find the value of the equation: (+1, -0.33)

$$\frac{(496+54)^2 - (496-54)^2}{2(496 \times 54)}$$

- a. -2
- b. 2
- c. 1

d. -1

85. The Opium War was fought between two countries. One of those countries was China. Which is the second country? (+1, -0.33)

- a. Britain
 - b. United States
 - c. India
 - d. France
-

86. Who is the present CEO of ICICI Bank? (+1, -0.33)

- a. Chanda Kochhar
 - b. Shikha Sharma
 - c. Naina Lal Kidwai
 - d. Arundhati Bhattacharya
-

87. An object of mass 15 kg is moving with a single velocity of 6 ms^{-1} . How much kinetic energy has that object held? (+1, -0.33)

- a. 187.5J
 - b. 270 J
 - c. 187.5 ms
 - d. 270 ms
-

88. Consider the given statement and decide which of the given assumptions is implicit in the statement (+1, -0.33)

Statement:

Eat fruits and vegetables for a healthy life.

Assumption:

I. Fruits and vegetables provide essential nutrients for a healthy life.

II. Soybeans are beneficial for health.

- a. Both I and II are implicit.
- b. Only assumption I is implicit.
- c. Neither I nor II is implicit.
- d. Only II is implicit.

-
89. A group of children are playing a word game. In the game, they were given a word 'CORPORATION' which needs to be rearranged, so that the vowels are always together. Find out in what ways the word can be rearranged. (+1, -0.33)

- a. 1540
 - b. 2086
 - c. 50400
 - d. 8905
-

90. If \$ means +, # means −, @ means $\times$ and * means $\div$ then what will be the value of $24\$3@8\#45*5$? (+1, -0.33)

- a. 39
- b. 37
- c. 43
- d. 40

91. If $\times$ means +, + means $\div$, − means $\times$ and $\div$ means −, then what is the value of $6 \times 5 - 4 + 80 \div 2$? (+1, -0.33)

- a. 101
- b. 108
- c. 100
- d. 4.25

92. The basic unit of classification of living organisms is _____. (+1, -0.33)

- a. World
- b. Species
- c. Genus
- d. Family

93. If the angle between force and displacement is _____, then the work done is negative. (+1, -0.33)

- a. 45°
- b. 0
- c. 90°
- d. 180°

-
94. The statement given below is followed by Assumptions I and II given below. You have to consider the statement followed by the assumptions and decide which of the assumptions are implicit in the statement. (+1, -0.33)

Statement:

The government has decided to increase the public transport charges.

Assumption:

- I. People are able to pay the increased rent.
 - II. Many people use public transport as an alternative.
- a. Only Assumption II is implicit.
 - b. Neither I nor II is implicit.
 - c. Both I and II are implicit.
 - d. Only Assumption I is implicit.

-
95. Average speed and average velocity represent the speed of the object: (+1, -0.33)
- a. At a particular point in time
 - b. In long distance

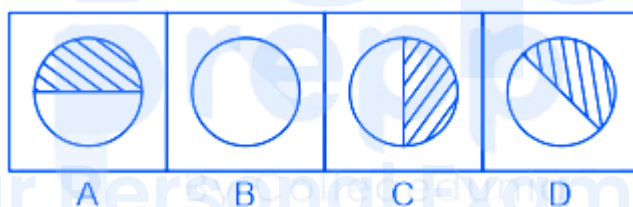
- c. In short distance
- d. During the given interval

96. Select the most appropriate option to fill in the blanks. (+1, -0.33)

$$395 - 39.5 - 3.95 - 0.395 = \text{-----}$$

- a. 351.055
- b. 351.145
- c. 351.155
- d. 351.045

97. Choose the odd one. (+1, -0.33)



- a. C
- b. A
- c. B
- d. D

98. The distance between the two stations is 340 km. Both trains start simultaneously from these stations on parallel tracks to cross each other. The speed of one of them is 5 km/h more than the other. If the distance (+1, -0.33)

between the two trains after 2 hours from their start is 30 km then find the speed of each train.

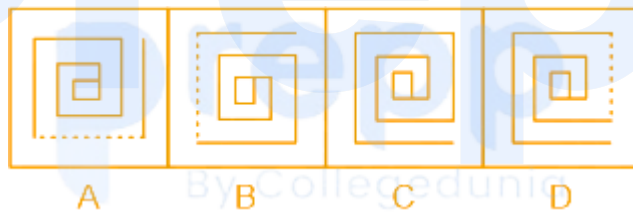
- a. 75 km/h, 80 km/h
- b. 70 km/h, 75 km/h
- c. 75 km/h, 60 km/h
- d. 85 km/h, 80 km/h

99.



(+1, -0.33)

Find the missing figure in the above sequence.



- a. A
- b. C
- c. B
- d. D

100. Read the given statement(s) and the subsequent course of action carefully and choose which of the following logically follows from the statement(s) for implementation.

(+1, -0.33)

Statements:

The African government had decided to declare Ebola as pandemic disease. People are liable to be punished if they do not report Ebola occurring in the family or neighbourhood to the authority.

Course of action:

1. The government should plan to effectively enact laws to control Ebola.

2. Mass media should be used to spread the message about punishment. So that people know about the proceedings.

- a. Only 1 follows.
- b. Only 2 follows.
- c. Neither 1 nor 2 follows
- d. Both 1 and 2 follows.

Prepp

Your Personal Exams Guide

Answers

1. Answer: b

Explanation:

The correct answer is Football.

- **Bembem Devi** is associated with the sport of Football.

★ Key Points

- **Oinam Bembem Devi:**
 - She is a **football player**.
 - She plays as the Midfielder in the Women's Football Team of India.
 - She is also called the **Durga of Indian Football**.
 - She was awarded the **Arjuna Award** in the year **2017**.
 - She was given the **Padma Shri** award in **2020**.
 - =

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★ Additional Information

- Football :

- The first football club in the world ' **Sheffield Football Club** ' was founded in the year 1857 in England.
- The first Football club in India was ' **Dalhousie Club** '.
- The apex institution of football is the ' **Federation of International Football Association** ' (**FIFA**) was formed on **May 21, 1904**.
- The **headquarters** of FIFA is in **Zürich, Switzerland** .
- Football was included as a competitive game in Olympic Games officially in **1908** .
- India took part in the **World Olympic Football Competition** in **1948** in **London** .
- The **first World Cup** was organised in **Uruguay** in **1930** .
- In India, **Indian Football Association (IFA)** organises **National Football Championship**.
- The trophy awarded in their competition is called Santosh Trophy.

2. Answer: b

Explanation:

Given:

$$\sin \theta + \operatorname{cosec} \theta = 2$$

Concept used:

$$\text{If } a + 1/a = 2$$

$$a = 1$$

Calculation:

$$\sin \theta + \operatorname{cosec} \theta = 2$$

$$\Rightarrow \sin \theta + \frac{1}{\sin \theta} = 2$$

$$\Rightarrow \sin \theta = 1$$

$$\Rightarrow \operatorname{cosec} \theta \text{ or } 1/\sin = 1$$

$$\Rightarrow \sin^{2018} \theta + \operatorname{cosec}^{2018} \theta$$

$$\Rightarrow 1^{2018} + 1^{2018}$$

$$\Rightarrow 1 + 1 = 2$$

$\therefore$ Required answer is 2

3. Answer: b

Explanation:

Given:

48 men can complete the work in 30 days

Concept used:

Total work = Time $\times$ Workers

Calculation:

$$\text{Total work} = 48 \times 30$$

$$\Rightarrow 1440$$

$$\text{Work remaining after 6 days} = 1440 - 6 \times 48$$

$$\Rightarrow 1152$$

$$\text{Time} = 1152/36 = 32 \text{ days}$$

$\therefore$ The remaining work was completed by the remaining workers in 32 days

4. Answer: b

Explanation:

Given,

Statements:

- No paper is a book.
- All books are bag.

Conclusions:

I. No bag is a paper.

II. Some bags are paper.

The least possible Venn diagram for the given statements is as follows:



Conclusions:

I. No bag is a paper. → **False** (It is possible but not definite)

II. Some bags are paper. → **False** (It is possible but not definite)

- Here, conclusions I and II form a complementary pair.
- Therefore, either I or II follows.

Hence, the correct answer is "Either I or II follows."

Note: The official answer key is "Neither I nor II follows." However, this is incorrect. Because this is an either-or case. So, we have changed the answer accordingly.

5. Answer: d

Explanation:

In the given question x is written as 15.84

We know in decimal place if a number 5 or more than that is present we take it as it 1 and add it with the previous decimal number,

Example = 5.5367 can be written as 5.54 [two decimal places]

So, According to that only option 4 is satisfying

∴ **Correct answer is option 4**

6. Answer: b

Explanation:

The correct answer is Wrinkled seed.

- **Wrinkled seed is a recessive characteristic in a pea plant.**

★ Key Points

- **Mendel experiments of inheritance:**
 - **Pea plant** was used by Mendel for this experiment.
 - It was chosen because this plant has many contrasting characters like a dwarf and tall or wrinkled or round seeds.
 - Gregor Mendel, through his experiments on pea plants, discovered the fundamental laws of inheritance.
 - His breeding experiments in pea plants revealed that hereditary characteristics are determined by discrete factors (genes) that are transmitted to the next generation.
 - He deduced three laws from his experiments and these laws are applicable when parents are pure breeding.
 - The three laws of inheritance proposed by Mendel include:
 - **Law of Dominance**
 - **Law of Segregation**
 - **Law of Independent Assortment**

- Mendel coined terms '**dominant**' and '**recessive**' in terms of the characters studied by him.
- A **dominant trait** is one that expresses itself in the presence of other contrasting trait and dominates it. eg: tallness.
- A **recessive trait** is one that is not expressed when present along with the contrasting trait in the hybrid. eg: dwarfness.

Pea trait	Dominant trait	Recessive trait
Seeds		
Seed shape	Round 	Wrinkled 
Seed colour	Yellow 	Green 
Flower colour	Purple 	White 
Flower position	Axial 	Terminal 
Plant height	Tall 	Short 
Pod shape	Inflated 	Constricted 
Pod colour	Green 	Yellow 

7. Answer: d

Explanation:

Given:

All the four angles of a quadrilateral are same

Calculation:

We all know that Sum of all the angles of a quadrilateral is 360°

So, Each angle = $360/4 = 90^\circ$

$\therefore$ Required answer is 90°

8. Answer: c

Explanation:

The correct answer is Ankit Kawatra.

- Ankit Kawatra won the Queen's Young Leader Award for 2017 at a ceremony held at Buckingham Palace.

★ Key Points

- **Ankit Kawatra:**
 - He is an **activist**, fighting hunger and malnutrition.
 - He is the **founder of Feeding India**.
 - He received the award from **Queen Elizabeth II** for doing exceptional work solving hunger and malnutrition in India.

★ Additional Information

- **Palbinder Kaur Shergill** is the **first turbaned Sikh woman** to be appointed Canada SC judge.
 - **Srinivas Gokulnath** is the **first solo Indian** to **complete Race Around Austria**.
 - **Tanmanjeet Singh Dhesi** is a **Member of the Parliament** of the United Kingdom.
-

9. Answer: d

Explanation:

The correct answer is A ny pair of objects.

- The universal law of gravitation applies to a ny pair of objects.

★ Key Points

- **Gravitational Force:**
 - Mathematically, it is represented as:
 - $F = \frac{GMm}{r^2}$
 - Where,
 - F is the gravitational force
 - G is gravitational constant
 - M is the mass of the first particle
 - m is the mass of the second particle
 - r is the distance between them
 - This is called **Newton's universal law of gravitation.**
 - The value of G is $6.67 \times 10^{-11} \text{ N m}^2/\text{kg}^2$.

★ Additional Information

- **Gravity:**
 - The acceleration due to gravity is the rate of increase of velocity of a body falling freely towards the earth.
 - It is represented by $g = \frac{GM_e}{R_e^2}$
- Where M_e is the mass of the earth and R_e is the radius of the earth.
- The value of g at the surface of the earth is 9.8 m/s^2 .
- Variation in g:
 - The value of g decreases with height or depth from the earth's surface.
 - g is **maximum at poles** . Hence, it will be maximum at the Camp in Antarctica.
 - g is **minimum at the equator**.
 - g **decreases due to the rotation of the earth** .
 - g decreases if the angular speed of the earth increases and increases if the angular speed of the earth decreases.

10. Answer: c

Explanation:

The correct answer is 6th.

★ Key Points

- The rise of Jainism and Buddhism saw religious unrest in India in the 6th century BC.
- **Jainism :**
 - It was founded by **Rishabhath** .
 - According to Jain tradition, there were 24 Tirthankaras, the first being **Rishabhadeva/Adinatha** and the last being Mahavira.
 - The **Vishnu Purana and the Bhagavat Purana** describes Rishabh as an **incarnation of Narayana**.
 - The name of two Jain Tirthankaras– **Rishabha and Arishtanemi** is found in **Rigveda**.
 - **Parshvnath** : His four main teachings (Chaturthi) were:
 - **Ahimsa (non-injury);**
 - **Satya (non-lying);**
 - **Asteya (non-stealing);**
 - **Aparigraha (non-possession).**
 - Mahavira adopted all these four teachings and added one more, i.e., **Brahmacharya (chastity)** to it.
- **Buddhism :**
 - Gautama Buddha was the **founder of Buddhism** , was born in **563 BC**.
 - He renounced home at the age of 29, this was his **Mahabhiniskramana** .
 - At the age of 35, under a peepal tree at **Uruvell (Bodh Gaya)** on the bank of river **Niranjana** , he attained **Nirvana** (enlightenment) after 49 days of continuous meditation.
 - Buddha delivered his **first sermon at Sarnath** to his five disciples.
 - It is known as **Dharmachakra Pravartana**(turning of the wheel of law).
 - He died at the age of 80 in **483 BC** at **Kushinagar**.
 - This is known as **Mahaparinirvana**(final blowing out).

11. Answer: a

Explanation:

Given:

A tap fills a cistern in 8 hours and another tap empties it in 10 hours

Concept used:

If a pipe can fill a tank alone in x hours, then the efficiency (part of the work completed in one hour) = $1/x$

Calculation:

Time taken to fill the cistern = 8 h

Part of cistern filled in 1 hour = $1/8$

Time taken to empty the cistern = 10 h

Part of cistern emptied in 1 hour = $1/10$

When both taps are opened simultaneously,

Part of cistern filled in 1 h = $1/8 - 1/10$

$$\Rightarrow (5 - 4)/40$$

$$\Rightarrow 1/40$$

Time taken by both taps to fill the cistern = 40 hours

$\therefore$ Required time is 40 hours

★ Alternate Method



$$\text{Effective efficiency} = 5 - 4 = 1$$

$$\text{So, time taken by both taps to fill the cistern} = 40/1 = 40 \text{ hours}$$

12. Answer: b

Explanation:

The correct answer is -3.2 ms^{-1} .

★ Key Points

- Given,
 - Mass of bullet, $m_1 = 40\text{g} (= 0.04 \text{ kg})$
 - Mass of pistol, $m_2 = 2 \text{ kg}$
 - The initial velocity of the bullet (u_1) and pistol (u_2) = 0
 - Final velocity of the bullet, $v_1 = +160 \text{ m s}^{-1}$
 - Let, v_2 be the recoil velocity of the pistol.
 - The total momentum of the pistol and bullet is zero before the fire because both are at rest.
 - The total momentum of the pistol and bullet after it is fired is

$$= (0.04 \text{ kg} \times 160 \text{ m s}^{-1}) + (2 \text{ kg} \times v_2 \text{ m s}^{-1})$$

$$= (6.4 + 2v_2) \text{ kg m s}^{-1}$$

- Total momentum after the fire = Total momentum before the fire
- $6.4 + 2v_2 = 0$
- $\rightarrow v_2 = -3.2 \text{ m/s}$
- Thus, the recoil velocity of the pistol is **3.2 m/s** .

13. Answer: d

Explanation:

The correct answer is CaO.

- The chemical formula of unextinguished lime is CaO.

★ Key Points

- **Lime:**
 - It is also known as **unextinguished lime, quick lime or burnt lime**.
 - It is chemically **calcium oxide**.
 - It is a white, caustic, alkaline, crystalline solid at room temperature.
 - It is used in the manufacture of glass, cement, etc. and for drying ammonia and alcohol.

★ Additional Information

- CaCO_3 is the chemical formula of **calcium carbonate**.
- CaSO_4 is the chemical formula of **calcium sulfate**.
- CaCl_2 is the chemical formula of **Calcium chloride**.

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14. Answer: c

Explanation:

Given:

$$1 \frac{3}{11}$$

Calculation:

$$1 \frac{3}{11} = 14/11$$

$$\text{Square} = (14/11)^2$$

$$\Rightarrow 196/121$$

$\therefore$ Required answer is 196/121

15. Answer: a

Explanation:

The correct answer is Sharda Sinha.

- Sharda Sinha was honoured with the 2018 Padma Bhushan award in the field of art-music.

★ Key Points

- **Sharda Sinha:**
 - She is a **Maithili-language folk-singer**.
 - She sings in Bhojpuri and Magahi languages too.
 - She was honoured with the **Padma Bhushan award** in the year **2018** in the **field of art-music**.
 - She was honoured with the **Padma Shri** in the year **1991**.
- **Padma Bhushan:**
 - The award is given for distinguished service of a high order in any field, including service rendered by government servants.
 - It is the **third-highest civilian** honour in India.
 - It was **first awarded in 1954**.

★ Additional Information

- **Kaifi Azmi** was an **urdu poet**.
- **Gulzar** was a lyricist, poet, author, screenwriter, and film director.
 - His real name was **Sampoorn Singh Kalra**.
 - He was awarded the **Padma Bhushan award** in the year **2004**.
- **Javed Akhtar** is a poet, lyricist, screenwriter and political activist.
 - He was awarded the **Padma Bhushan award** in the year **2007**.

16. Answer: a

Explanation:

The logic followed here is as follows:

- The option figure D is the odd one out as it represents two perpendicular lines.
- Option figure A, option figure B and option figure C represents two parallel lines.

Hence, **option figure D** is the correct answer.

17. Answer: b

Explanation:

Given:

$$A : B = 5 : 8$$

$$B : C = 18 : 25$$

Calculation:

$$A : B = 5 : 8 \quad \text{-----(i)}$$

$$B : C = 18 : 25 \quad \text{-----(ii)}$$

By Multiplying 9 with (i) and 4 with (ii)

$$A : B : C = 45 : 72 : 100$$

$$\text{So, } A : C = 45 : 100$$

$$\Rightarrow 9 : 20$$

$$\therefore A : C \text{ is } 9 : 20$$

18. Answer: a

Explanation:

The correct answer is 4.

- The Indian Railways is ranked 4th among the world's largest railways.

★ Key Points

- Indian Railways:
 - Indian Railway Board was established in March 1905.
 - Indian Railway was nationalised in 1951.
 - Railways have been divided into 18th zones.
 - Southern Coast Railway was the 18th zone.
 - The first Indian railway line in India was operated for public traffic in 1853 between Mumbai and Thane over a distance of 34 km.
 - Ashwini Vaishnaw is the current Minister of Railways. (As per Jan 2022)
 - The first electric train ran in India with the inauguration of services between Bombay VT and Kurla Harbour on 3rd Feb 1925 on ex-GIP Railway system.
 - It is ranked 4th among the world's largest railways.

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19. Answer: d

Explanation:

The correct answer is Bhartiya Janata Party.

- Bhartiya Janata Party has won a majority of seats in the Gujarat Assembly Election 2017.

★ Key Points

- Gujarat Assembly Election 2017:

- It has a total of 182 seats in the assembly.
- Out of these 182, BJP won 99 seats.
- Congress won 77 seats.
- 1 seat was won by NCP.
- Bhartiya Tribal Party and Independent won 2 and 3 seats respectively.

★ Additional Information

- **Gujarat:**
 - **Capital:** Gandhinagar
 - **Governor:** Acharya Devvrat
 - **Chief minister:** Bhupendrabhai Patel
 - **Gujarat** shares its borders with **Madhya Pradesh, Maharashtra and Rajasthan.**
 - It shares its **international border with Pakistan.**

20. Answer: b

Explanation:

Given:

The sides of a triangle are 16 m, 12 m, and 20 m

Concept used:

Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{height}$

Pythagoras theorem:

In an right-angled triangle,

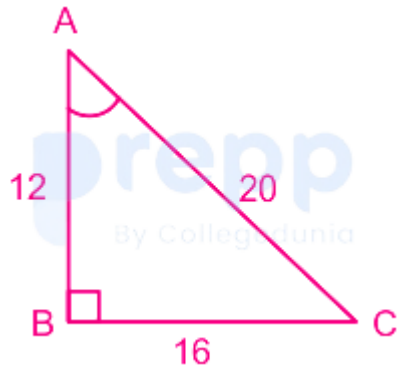
$$\text{Hypotenuse}^2 = \text{Base}^2 + \text{Perpendicular}^2$$

Calculation:

Length of given sides are 12m, 16 m and 20 m

Since, $12^2 + 16^2 = 20^2$

Hence, ΔABC is a right-angle triangle.



Area of the triangle = $\frac{1}{2} \times 16 \times 12$

$\Rightarrow \text{Area} = 96 \text{ m}^2$ ----- (1)

Hence, the longest side is AC which is 20 m.

Let the length of perpendicular on it be h.

Again using the above formula

$\Rightarrow \text{Area} = \left(\frac{1}{2}\right) \text{ base} \times \text{height}$

$\Rightarrow 96 = \left(\frac{1}{2}\right) 20 \times h$ [From equation (1)]

$\Rightarrow h = 96/10 = 9.6 \text{ m}$

$\therefore$ The length of its longest side 9.6 m

21. Answer: b

Explanation:

Given:

$$(-4)[20 \div \{(-2) \times (-8)\}]$$

Concept used:

B	Brackets in order (), {}, []	ब्रैकेट (), {}, [] क्रम में
O	of	का
D	Division (÷)	विभाजन (÷)
M	Multiplication (×)	गुणा (×)
A	Addition (+)	जोड़ (+)
S	Subtraction (-)	घटाव (-)

Calculation:

$$(-4)[20 \div \{(-2) \times (-8)\}]$$

$$\Rightarrow (-4)[20 \div 16]$$

$$\Rightarrow -4 \times 20/16$$

$$\Rightarrow 20/-4$$

$$\Rightarrow -5$$

∴ Required answer is - 5

22. Answer: a

Explanation:

The correct answer is Ebonite.

Concept:

- Resistivity (ρ) : The property of a conductor that opposes the flow of electric current through them and is independent of the shape and size of the

materials but depends on the nature and temperature of the materials is called resistivity.

- The unit for resistivity is the ohm-meter ($\Omega\text{-m}$).
- The resistivity of a material depends on its nature and the temperature of the conductor.
- The resistivity of a material doesn't depend on its shape and size (length and area).
- Materials that conduct electrical current easily are called conductors and have a low resistivity.
- Materials that do not conduct electricity easily are called insulators and these materials have a high resistivity.
- Resistivity is inversely proportional to the number of free electrons per unit volume of the conductor and to the average relaxation time of the free electrons in the conductor.

Resistivity is numerically equal to the resistance of a substance having a unit area of cross-section and unit length.

- The formula of resistivity is $\rho = \frac{m}{ne^2\tau}$
- Where, m = mass of an electron, n = number of electrons per unit volume of the conductor, τ = relaxation time.

Explanation:

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Material	Resistivity ($\Omega \text{ m}$)	
Conductors	Silver	1.60×10^{-8}
	Copper	1.62×10^{-8}
	Aluminium	2.63×10^{-8}
	Tungsten	5.20×10^{-8}
	Nickel	6.84×10^{-8}
	Iron	10.0×10^{-8}
	Chromium	12.9×10^{-8}
	Mercury	94.0×10^{-8}
	Manganese	1.84×10^{-6}
	Constantan (alloy of Cu and Ni)	49×10^{-6}
Alloys	Manganin (alloy of Cu, Mn and Ni)	44×10^{-6}
	Nichrome (alloy of Ni, Cr, Mn and Fe)	100×10^{-6}
Insulators	Glass	$10^{10} - 10^{14}$
	Hard rubber	$10^{13} - 10^{16}$
	Ebonite	$10^{15} - 10^{17}$
	Diamond	$10^{12} - 10^{13}$
	Paper (dry)	10^{12}

Hence the correct answer is Ebonite.

23. Answer: a

Explanation:

Given:

519841

Concept used:

Long division method

Calculation:

$$\begin{array}{r}
 7 \overline{) 519841} \\
 \underline{7 49} \\
 142 \\
 \underline{2 284} \\
 1441 \\
 \underline{1441} \\
 1441
 \end{array}$$

∴ Required answer is 721

24. Answer: c

Explanation:

The correct answer is chemical.

- To maintain the current in a given electrical circuit, the cell has to expend chemical energy stored in it.

★ Key Points

- When the cell is connected to a circuit, the potential difference sets the charges in motion and produces an electric current.
- In order to maintain the current in a given electric circuit, the cell has to expend the **chemical energy** stored in it.
- By this, the cell helps maintain a potential difference across the ends of a circuit and current starts to flow across the circuit from higher potential end to

lower.

- **Electrochemical Cell**

- An electrochemical cell is a device that converts chemical energy into electrical energy.

- **Primary Cell:**

- In a primary cell, electrical energy is obtained from the irreversible chemical reaction taking place inside the cell.
- Examples: Voltaic Cell, Leclanche Cell, Daniel Cell, Dry Cell, etc.

25. Answer: d

Explanation:

Given:

$$SP = \text{Rs. } 420$$

$$\text{Gain \%} = 5\%$$

Concept used:

$$CP = SP \times 100 / (100 + \text{Profit})$$

$$CP = SP \times 100 / (100 - \text{loss})$$

Calculation:

$$CP = 420 \times 20 / 21 = 400$$

$$\text{New SP} = \text{Rs. } 380$$

$$\text{So, loss} = \text{Rs. } 20$$

$$\% \text{ of loss} = 20 / 400 \times 100$$

$$\Rightarrow 5\%$$

∴ He will make 5% loss on selling

26. Answer: a

Explanation:

The notice in the newspaper is inviting tenders from contractors for the building of the said bridge.

- Thus, it is clear that the municipality is planning to build a bridge. So, conclusion I follows.
- The invitation for tenders implies that the municipality is looking for a contractor who would be interested in building the bridge, it does not mean that the municipality wants to know how many people are interested. Thus, conclusion II does not follow.

Hence the correct answer is **option 1**.

27. Answer: c

Explanation:

The correct answer is Nikola Tesla.

- Alternating current was invented by Nikola Tesla.

★ Key Points

- Alternating current :
 - It is an electric current that periodically reverses direction and changes its magnitude continuously with time in contrast to direct current (DC) which flows only in one direction.
 - It was invented by **Nikola Tesla**.

★ Additional Information

- A **rectifier** is a device that converts **alternating voltage (current)** into **direct voltage (current)**.
- An **inverter** is a device that converts **direct voltage (current)** into **alternating voltage (current)**.

28. Answer: a

Explanation:

The logic followed here is:

- Ate is the past tense of Eat.

Similarly,

- Bought is the past tense of Buy.

Hence, "**Bought**" is the correct answer.

29. Answer: d

Explanation:

At 9 am a general clock looks as follows:



The minute hand faces towards the north and the hour hand faces towards the west.

Hence, " **west** " is the correct answer.

30. **Answer: d**

Explanation:

The logic followed here is:

- The arrows in option figure A, option figure C and option figure D are moving in the clockwise direction
- The arrow in option figure B is moving in the anticlockwise direction.

Hence, "**option figure B**" is the correct answer.

31. **Answer: c**

Explanation:

Given,

Statements:

- Some lions are tigers.
- Some tigers are donkeys.

Conclusions:

1. Some lions are donkeys.
2. All tigers are donkeys.

The least possible Venn diagram for the given statements is as follows:



Conclusions:

I. Some lions are donkeys . $\rightarrow$ False (It is possible but not definite)

II. All tigers are donkeys . $\rightarrow$ False (It is possible but not definite)

Hence, the correct answer is " Neither I nor II follows ."

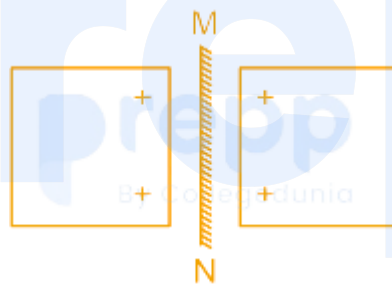
32. Answer: b

Explanation:

In mirror images,

- The left side becomes the right side and vice versa.

So, the mirror image of the question figure will appear as follows:



Hence, "option figure A" is the correct answer.

33. Answer: d

Explanation:

Given:

Data is 25, 45, 58, 87, 45, 54, 65, 12, 25, 59, 42, 60

Concept used:

Mode refers to the most frequently occurred value in the data set

Calculation:

Here in the given data,

Only 45 and 25 appear most of the time i.e 2 times

∴ **Mode of the data is 45 and 25**

34. Answer: a

Explanation:

The correct answer is Cloning.

- In the process of cloning, the cell is involved in the generation of an exact copy of another living part of a complete organism.

★ Key Points

- **Cloning:**
 - The process of generating a genetically identical copy of a cell or an organism.
 - The cell is involved in the generation of an exact copy of another living part of a complete organism.
 - Cloning happens often in nature—for example when a cell replicates itself asexually without any genetic alteration or recombination.

★ Additional Information

- **IVF**
 - In **vitro fertilization (IVF)** is a type of assistive reproductive technology (ART).
 - It involves recovering eggs from a woman's ovaries and fertilizing them with sperm.
 - This fertilized egg is known as an embryo.
- **Fructification** is a process of fructifying.

- **Regeneration** is the process of restoring damaged or missing cells, tissues, organs sometimes even entire body parts to full function in plants and animals.
-

35. Answer: d

Explanation:

Given:

Sum of three fractions is 6

Ratio of other two is 9 : 10

Calculation:

Let two numbers be $9x$ and $10x$

According to the question,

$$6 - \frac{5}{4} = 19x$$

$$\Rightarrow \frac{19}{4} = 19x$$

$$\Rightarrow x = \frac{1}{4}$$

$$10x = 10 \times \frac{1}{4}$$

$$\Rightarrow 2 \frac{1}{2}$$

$\therefore$ The largest fraction among the three is $2 \frac{1}{2}$

36. Answer: c

Explanation:

The logic followed here is:

- Smell(fragrance) comes from Rose.

Similarly,

- Wisdom comes from experience.

Hence, "**Experience**" is the correct answer.

37. Answer: a

Explanation:

The logic followed here is:

All the elements are moving in a clockwise direction.





- The arrows are changing their direction alternately.
- The letters sF and Fs are changing their positions alternately.
- The signs ± + and ± are also changing their positions alternately.

Hence, option figure C is the correct answer.

38. Answer: a

Explanation:

The correct answer is Arthropoda.

- Arthropoda is probably the largest group of creatures.

★ Key Points

- Main features of Arthropoda:
 - The body is divided into three parts– Head, Thorax and Abdomen.
 - The body is covered with a **thick chitinous exoskeleton**.
 - Jointed leg.
 - The **circulatory system is of open type**.
 - Its **body cavities** are called **haemocoels**.
 - The trachea, book lungs, body surface are respiratory parts.
 - These are mainly unisexual and fertilization takes place inside the body.
 - Example: Cockroach and Prawn.

39. Answer: a

Explanation:

Total production of the year is 150000 tonnes

Woolen garments = 15%

So, $150000 \times 15/100$

$\Rightarrow 22500$

$\therefore$ The production of woolen garments (in tonnes) in 2014 is 22500

40. Answer: b

Explanation:

Given:

Numbers are 112, 24 and 48

Concept used:

Step 1. Find the prime factorization of each number.

Step 2. Write each number as a product of primes, matching primes vertically when possible.

Step 3. Bring down the primes in each column.

Step 4. Multiply the factors to get the LCM.

Calculation:

$$112 = 2^4 \times 7$$

$$24 = 2^3 \times 3$$

$$48 = 2^4 \times 3$$

$$\text{So, LCM} = 2^4 \times 3 \times 7$$

$$\Rightarrow 336$$

$\therefore$ LCM of the numbers is 336

41. Answer: d

Explanation:

The correct answer is Prabodhankar Thackeray.

- The statue of Prabodhankar Thackeray was unveiled by Maharashtra Chief Minister Devendra Fadnavis at the headquarters of the Greater Mumbai Municipal Corporation.

★ Key Points

- Keshav Sitaram Thackeray:
 - Prabodhankar Thackeray was his pen name .
 - He rosed his voice against **superstitions, untouchability, child marriage and dowry**.
 - He was the **leader of Samyukta Maharashtra Samiti**.
 - He was the father of Bal Thackeray, the founder of Shiv Sena.
 - His statue wasunveiled by Maharashtra Chief Minister Devendra Fadnavis at the headquarters of the Greater Mumbai Municipal Corporation.

★ Additional Information

- Maharashtra:
 - Chief Minister – Eknath Shinde
 - Governor – Bhagat Singh Koshiyari.
 - Number of Districts – 36.

- Lok Sabha seats – 48.
 - Rajya Sabha seats – 19.
 - Founded: 1 May 1960
-

42. Answer: b

Explanation:

Given:

Total population in 2018 = 54000

Increment = 5%

Concept used:

Final Population = Initial $(1 + R/100)^t$

R = Rate

t = No. of years

Calculation:

Let population 2 years back be x

According to the question,

$$x \times \frac{21}{20} \times \frac{21}{20} = 54000$$

$$\Rightarrow x = 54000 \times \frac{400}{441}$$

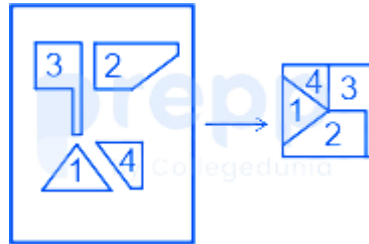
$$\Rightarrow x = 48980 \text{ (Approx)}$$

$\therefore$ The population of the colony 2 years ago 48980

43. Answer: d

Explanation:

The parts given in the question figure can together make the options figure B as follows:



- Option figures A, C, and D have either additional parts or fewer parts as given in the question figure.

Hence, **option figure B** is the correct answer.

Note: This question was ignored in the official exam due to a discrepancy. We have modified the question to make it logical.

44. Answer: d

Explanation:

The correct answer is 625 J.

★ Key Points

- Given,
 - Force, $F = 125 \text{ N}$
 - Displacement, $S = 5\text{m}$
 - Work done = Force x Displacement
 - $= 125 \times 5$
 - $= 625 \text{ J.}$

45. Answer: b

Explanation:

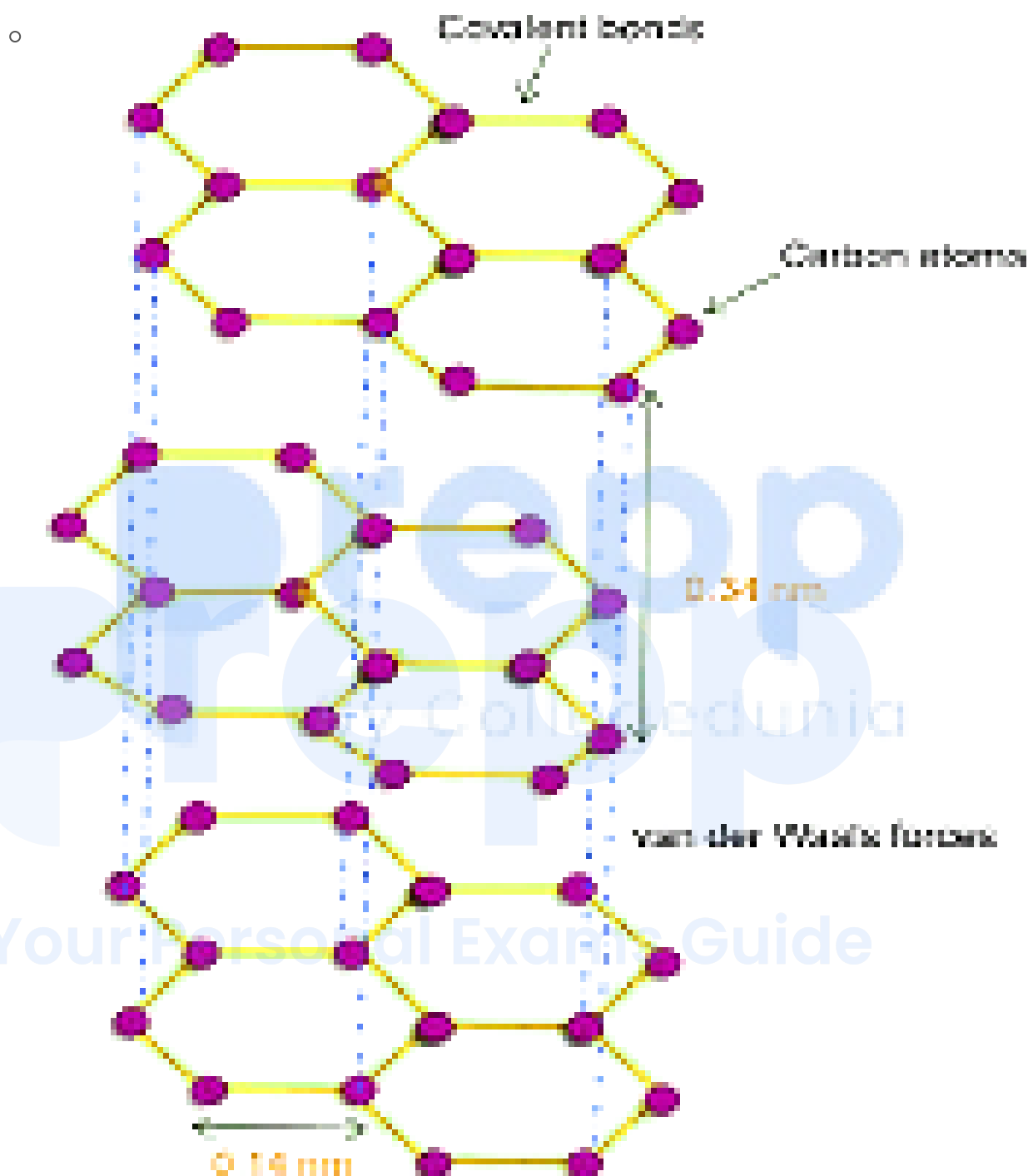
The correct answer is graphite.

- In graphite, each carbon atom is bonded to three other carbon atoms in the same plane giving a hexagonal array.

★ Key Points

- Graphite:
 - It is also known as **plumbago** or **black lead**.
 - It is **soft, greasy, dark greyish coloured crystalline solid**.
 - It is a **good conductor of heat and electricity**.
 - It is chemically more reactive than diamond.
 - Its layer structure is **headed by weak van der Waal's forces**.
 - Each carbon atom is bonded to three other carbon atoms in the same plane giving a hexagonal array.

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★ Additional Information

- In the structure of a diamond, each carbon atom joins four other carbon atoms in regular tetrahedrons.
- In the structure of **propene**, each carbon atom joins four other carbon atoms.
- In the structure of **Benzene**, each carbon atom joins four other carbon atoms.

46. Answer: c

Explanation:

The correct answer is 1.25 m.

- Given,
 - $t = 0.5 \text{ sec}$
 - $g = a = 10 \text{ m/s}^2$.
 - $u = 0 \text{ m/s}$
 - Using first law of motion
 - $v = u + at$
 - $v = 0 + 10 \times 0.5$
 - $v = 5 \text{ m/s}$
 - By the second law of motion to compute distance travelled:
 - $s = ut + \frac{1}{2}(at^2)$
 - $s = 0 + 0.5 \times 10 \times 0.5^2$
 - $s = 1.25 \text{ m}$

47. Answer: b

Explanation:

Given:

Sudha is twice as old as Radha

Calculation:

Let Radha's age be 'x' years

and Sudha's age be 'y' years

$$y = 2x$$

$$\Rightarrow 4(x - 6) = (y + 4)$$

$$\Rightarrow 4(x - 6) = 2(2x + 4)$$

$$\Rightarrow 4x - 24 = 2x + 4$$

$$\Rightarrow 2x = 28$$

$$\Rightarrow x = 14 \text{ years}$$

$$y = 2x = 28 \text{ years}$$

2 years ago Radha was 12 years & Sudha was 26 years.

$\therefore$ The ages of Sudha and Radha, 2 years ago from today were 12 years and 26 years

48. Answer: a

Explanation:

Given:

In $4\frac{1}{2}$ hours, Jack can cover a distance of 6 km more than the distance covered by Jill in 3 hours

In 6 hours, Jack can cover 5 km less than the distance covered by Jill in 5 hours

Concept used:

linear equations in two variables

Calculation:

Let the speed of Jack be x km/h and Jill be y km/h

$$9x/2 - 3y = 6 \quad \text{-----(i) } \times 4$$

$$\Rightarrow 18x - 12y = 24 \quad \text{-----(iii)}$$

$$5y - 6x = 5 \quad \text{-----(ii) } \times 3$$

$$\Rightarrow 15y - 18x = 15 \quad \text{-----(iv)}$$

By (iii) + (iv) we get

$$3y = 39$$

$$\Rightarrow y = 13$$

$$9x/2 = 6 + 3 \times 13$$

$$\Rightarrow 9x = 45 \times 2$$

$$\Rightarrow x = 10$$

$\therefore$ Average speed of Jack is 10 km/h

49. Answer: c

Explanation:

The correct answer is CO₂.

★ Key Points

- Calcium hydroxide (Ca(OH)₂) reacts slowly with the carbon dioxide (CO₂) in the air to form a thin layer of calcium carbonate (CaCO₃).
- The layer is formed after two to three days of whitewashing and gives a shiny finish to the walls.
- Calcium carbonate is the chemical name of limestone.

50. Answer: d

Explanation:

The logic followed here is as follows:



Hence, "J" is the correct answer.

51. Answer: a

Explanation:

The correct answer is Actinide.

- Radioactive elements are placed in actinides.

★ Key Points

- **Actinides :**
 - It is a series of 15 consecutive chemical elements in the periodic table from **actinium (Ac)** to **lawrencium (Lr)**.
 - From **atomic numbers 89–103**.
 - All the elements are **radioactive**.
- **Radioactivity**
 - Radioactivity was discovered by **Henry Becquerel, Madame Curie and Pierre Curie** for which they jointly won Nobel Prize.
 - γ -rays are emitted after the emission of α and β rays.
 - Alpha rays are positively charged helium nuclei ($1/2 \text{ He}$), beta rays are negatively charged electrons and gamma rays are chargeless photons.
 - The end product of all-natural radioactive elements after the emission of radioactive rays is lead.

★ Additional Information

- **Lanthanides** are a series of **15 naturally occurring metallic chemical elements**.
 - Their atomic numbers fall between **57 (Lanthanum)** and **71 (Lutetium)**.

52. Answer: b

Explanation:

The correct answer is Sound.

- Sound cannot travel in a vacuum.

★ Key Points

- Sound Wave:
 - It is a **longitudinal mechanical wave**.
 - The longitudinal mechanical waves which lie in the range of **20 Hz to 20,000 Hz** are called audible or sound waves.
 - **It cannot travel in a vacuum.**
 - The longitudinal mechanical waves having frequencies **less than 20 Hz are called infrasonic**. These are produced by earthquakes, volcanic, eruptions, Ocean waves, elephants, and whales.
 - The longitudinal mechanical waves having frequencies greater than 20,000 Hz are called **ultrasonic waves**.

★ Additional Information

- Heat, Light and UV rays can travel in a vacuum.

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53. Answer: a

Explanation:

The correct answer is 6.

- 6 atoms are present in the sodium carbonate molecule.

★ Key Points

- The formula of sodium-carbonate is **Na_2CO_3** .
- It contains **2 sodium atoms, 3 oxygen atoms and one carbon atom**.
 - Hence, the total number of atoms is 6.

★ Additional Information

- **Uses of sodium carbonate:**
 - It is used in the **production of detergents and soaps** .
 - It is used in the **manufacturing of glass**.
 - It is used in the **production of rayon polymers**.
 - It is used in **water softening**.
 - It is used as **araising agent, food additive as an anticaking agent, stabilizer etc** .

54. Answer: b

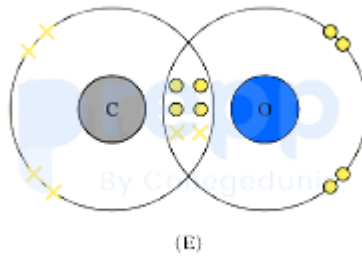
Explanation:

The correct answer is 3.

- The maximum number of bonds a covalent bond can have between two atoms is 3.

★ Key Points

- **Covalent bond:**
 - A bond formed between two same or different atoms by mutual contribution and sharing of electrons is called a covalent bond.
 - **Co-ordinate bond (or Dative bond):** Coordinate bond is a special type of covalent bond in which one atom donates electrons to other atoms.
 - The bonding between donor to acceptor atom is called co-ordinate bond.
 - The maximum number of bonds a covalent bond can have between two atoms is **3**.



55. Answer: b

Explanation:

The correct answer is South Africa.

★ Key Points

- The Cape of Good Hope is located in **South Africa**.
- It is a rocky point on the **Atlantic coast** of the **Cape Peninsula** in South Africa.
- The **Cape of Good Hope** is a section of the **Table Mountain National Park**.
- It was earlier known as **Cape Colony** established by the **Dutch** in 1652.

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★ Additional Information

- South Africa:
 - **Capitals** : Cape Town, Pretoria, Bloemfontein
 - **President** : Cyril Ramaphosa
 - **Currency**: South African rand

56. Answer: a

Explanation:

Concept used:

Consider a system of equations

$$a_1x + b_1y = c_1$$

$$a_2x + b_2y = c_2$$

The system of linear equations has no solution if,

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

Calculation:

Given that, $8x + 5y + 11 = 0$

$$\Rightarrow 8x + 5y = -11 \quad \text{-----(1)}$$

Also, $20x - ky - 9 = 0$

$$\Rightarrow 20x - ky = 9 \quad \text{-----(2)}$$

Comparing the equation 1) & (2) with system of equation, we get

$$a_1 = 8, b_1 = 5, c_1 = -11$$

$$a_2 = 20, b_2 = k, c_2 = 9$$

$$\Rightarrow \frac{8}{20} = -\frac{5}{k} \neq -\frac{11}{9}$$

Taking first two terms only,

$$\Rightarrow k = -100/8$$

$$\Rightarrow k = -12.5$$

$\therefore$ The required result will be -12.5 .

★ Additional Information

1. The system of linear equations has a unique solution if,

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$$

2. The system of linear equations has an infinite solution if,

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

57. Answer: b

Explanation:

The correct answer is Bangladesh.

- Sheikh Hasina is the Prime Minister of Bangladesh.

★ Key Points

- **Bangladesh:**
 - **Capital** : Dhaka.
 - **President** : Abdul Hamid
 - **Prime Minister** : Sheikh Hasina
- The Indian states of Assam, Mizoram, Tripura, Meghalaya, and West Bengal share their borders with Bangladesh.

★ Additional Information

- Ismail Sabri Yaakob is the Prime Minister of Malaysia.
- Salman bin Abdulaziz Al Saud is the King of Saudi Arabia .

58. Answer: c

Explanation:

To arrange the people from smallest to largest, we need all the four statements as follows:

Statement 1: G is the longest.

$_ < _ < _ < _ < G$

Statement 2: E is taller than F.

$F < E$

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- Statements 1 and 2 when combined together are not sufficient to answer the question because there is no information about H and I.

Statement 3: H is the smallest.

$$H < _ < _ < _ < _$$

- Statements 1, 2, and 3 are not sufficient when taken together because there is no information about the size of I

Statement 4: F is taller than I.

$$I < F$$

- On combining statements 1, 2, 3, and 4, we get:
- $H < I < F < E < G$

Hence, "Statements 1, 2, 3 and 4 all together are sufficient" is the correct answer.

★ Confusion Points

- The fourth option "Every statement is sufficient" implies that we can determine the answer from any of the statements 1, 2, 3, and 4. Therefore, the fourth option is incorrect.

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59. Answer: b

Explanation:

The correct answer is M. S. Swaminathan.

- M. S. Swaminathan has been awarded the 'Yeraringan Award'.

★ Key Points

- Green Revolution:
 - It was launched in the year **1966** and was the brainchild of **Norman Borlaug**, though, in India, it was made successful by **Dr M.S.**

Swaminathan.

- The term '**Green Revolution**' was coined by **Dr William Gide**.
- The achievements of the Green Revolution were the rise in cereal production especially wheat.
- **Dr M.S. Swaminathan** was awarded the '**Yeraringan Award**' by the Vice President of India.
- **Prof. M.S. Swaminathan** was the **first recipient of the Prize** which was started by **Norman Borlaug**.

60. Answer: c

Explanation:

Given,

Statements:

- I. No gates are sticks.
- II. Some sticks are windows.

Conclusions:

- 1. All doors are windows.
- 2. Some sticks are gates.

The least possible Venn diagram for the given statements is as follows:



Conclusions:

I. All doors are windows. → **False** (It is not possible as the information about doors is not given)

II. Some sticks are gates. → **False** (It is not possible as no gates are sticks)

Hence, the correct answer is "**Neither I nor II follows.**"

61. Answer: a

Explanation:

The correct answer is National Welfare Fund for Sportspersons.

- National Welfare Fund for Sportspersons was established in 1982 to support the outstanding sportspersons of the past year, sportspersons living in poverty conditions who brought glory to the country in sports.

★ Key Points

- National Welfare Fund for Sportspersons:
 - It is also known as Pandit Deendayal Upadhyay National Welfare Fund For Sportspersons (PDUNWFS).
 - It was set up in the year 1982.
 - The motive of the scheme was to assist outstanding Sportspersons of past years, living in poverty circumstances who had brought glory to the country in sports.
 - The scheme was revised in **May 2016**.
 - The revised provisions contained to provide for lump sum ex-gratia assistance to outstanding Sportspersons of yesteryears.
 - **The scheme provides assistance for:**
 - injuries sustained during training for and participation in sports competitions.
 - Assistance to Families of deceased Outstanding Sportspersons.
 - Medical Treatment
 - Assistance to coaches, support personnel, umpires, referees and match officials.

62. Answer: b

Explanation:

The logic used here is as follows:

$$\begin{array}{lcl} B & \xrightarrow{+2} & D \\ O & \xrightarrow{+2} & Q \\ O & \xrightarrow{+2} & Q \\ K & \xrightarrow{+2} & M \end{array}$$

Similarly,

$$\begin{array}{lcl} P & \xrightarrow{+2} & R \\ E & \xrightarrow{+2} & G \\ N & \xrightarrow{+2} & P \end{array}$$

Hence, " RGP " is the correct answer.

63. Answer: d

Explanation:

Given:

Side of an equilateral triangle is 19 cm

Concept used:

$$\text{Area} = \frac{\sqrt{3}}{4} \times a^2$$

Calculation:

$$\text{Area} = \frac{\sqrt{3}}{4} \times 19^2$$

$$\Rightarrow 361 \times \sqrt{3}/4$$

$$\Rightarrow 156.31 \text{ cm}^2 \quad [\sqrt{3} = 1.73]$$

$\therefore$ The area is 1 56.31 cm²

64. Answer: b

Explanation:

The correct answer is Lake Titicaca.

- Lake Titicaca is the largest lake in South America.

★ Key Points

- Lake Titicaca:
 - It is the **largest lake** in South America.
 - It is also the **world's highest lake navigable to large vessels**.
 - The lake is situated **3,810 m** above **sea level**.
 - It is situated between Peru to the west and Bolivia to the east.

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★ Additional Information

- Lake Poopo is a large saline water lake situated in Bolivia .
- Lake Valencia is the third largest lake in Venezuela
- Lake Janin is a lake in Quebec, Canada.

65. Answer: b

Explanation:

The correct answer is Four chambered hearts.

- Mammalian animals have four-chambered hearts.

★ Key Points

- Mammalia:
 - Main features
 - These are **warm-blooded animals**.
 - There is **no nucleus in their red blood cells** (except in camel and lama).
 - Mammalia is divided into three subclasses:
 - **Prototheria**: It lays eggs, e.g., Echidna.
 - **Metatheria**: It bears the immature child, e.g., Kangaroo.
 - **Eutheria**: It bears the well-developed child, e.g., humans.
 - They have a **four-chambered heart**.

★ Additional Information

- A **fish** has only a **two-chambered heart**.
- In **amphibians**, the **heart is three-chambered**.
- **Crocodiles and birds'** heart is also divided into **four chambers**.

66. Answer: a

Explanation:

The most appropriate Venn diagram for the word "Wool, Sweater, Hat" is as follows:



- Some sweaters and some hats are made up of wool.

Hence, **option figure A** is the correct answer.

★ Additional Information

- Sweaters were traditionally made from wool but can now be made of cotton, synthetic fibers, or any combination of these.
-

67. Answer: d

Explanation:

The correct answer is Mary Kom.

- Mary Kom won five-time gold medals in the Asian Women's Boxing Championship in the light flyweight (48kg) category.

★ Key Points

- MC Mary Kom:
 - Her full name is Mangte Chungneijang Mary Kom.
 - She is the only woman in the world to win the World Amateur Boxing Championship six times.
 - She also won five-time gold medals in the Asian Women's Boxing Championship in the light flyweight (48kg) category.
 - She is nicknamed Magnificent Mary.
- She is also a Member of Parliament, Rajya Sabha.

★ Important Points

- Karnam Malleswari is the first Indian woman to win a medal in an Olympic event.
-

68. Answer: c

Explanation:

The correct answer is Remains the same.

- If the potential difference and current through a circuit are doubled, then the resistance of the circuit r remains the same.

★ Key Points

- **Potential Difference:**
 - Work done in bringing a unit positive charge from one point to another point is the potential difference between the two points.
 - Its SI unit is **volt**.
 - It is a **scalar quantity**.
- **Ohm's Law**
 - The electric current flowing through a conductor is directly proportional to the potential difference across its ends.
 - It is given by the formula:
 - $V=IR$
 - Given,
 - $V_1 = 2V$
 - $I_1 = 2I$
 - hence, $R_1 = \frac{V_1}{I_1}$
 - $R_1 = \frac{2V}{2I}$
 - Hence, the remains unchanged.

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69. Answer: c

Explanation:

The correct answer is Only B is true.

★ Key Points

- **Compressibility:**
 - It is the property by which a substance or matter can be reduced to a smaller space by pressure. Hence, statement A is false.
- **Fluidity:**

- It is a property of matter to flow easily and change shape under external force.
- This property is exhibited by both liquid and gas. **Hence, statement B is true.**

70. Answer: c

Explanation:

The correct answer is 57-71.

- The atomic number of lanthanide is in the 5-71 range.

★ Key Points

- **Lanthanide:**
 - It is also called **lanthanoid**.
 - It is any of the series of 14 consecutive chemical elements in the periodic table from lanthanum to lutetium i.e. atomic numbers **57-71** with **57 (Lanthanum) and 71 (Lutetium)**.
 - **Scandium and yttrium** are rare-earth metals.

★ Additional Information

- **Modern Periodic Table:**
 - It is a graphical representation of the **Aufbau principle**.
 - It is based on the electronic configuration of elements and contains **118 elements**.
 - There are **7 periods and 18 groups**.
 - Modern periodic table is classified as:
 - i. **s-block**;
 - ii. **p-block**;
 - iii. **d-block**;
 - iv. **f-block**.

71. Answer: d

Explanation:

The correct answer is Tata Steel Ltd.

- Tata Steel Ltd won the Prime Minister's Trophy for Best Performing Integrated Steel Plant for the assessment years 2014-15 and 2015-16, on 8 December 2017.

★ Key Points

- **Tata Steel Ltd.:**
 - It was earlier known as the Tata Iron and Steel Company Limited (TISCO).
 - It was founded in the year 1907.
 - **Jamsetji Tata** was the founder.
 - Its **headquarters** are located in **Mumbai, Maharashtra.**

72. Answer: b

Explanation:

The logic used here is as follows:

- In option figures B, C, and D, the lines are equidistant.
- But in option A one of the lines is placed far from the remaining 3 lines.

Hence, **option figure A** is the correct answer.

73. Answer: d

Explanation:

The correct answer is 8 – 12 May 2017.

★ Key Points

- From 8th – 12th May 2017, India organized the **Cultural Festival in Egypt** to mark the 156th birth anniversary of **Rabindranath Tagore**.
- The event was organised by the **cultural wing Indian Embassy in Egypt**.

★ Important Points

- **Rabindranath Tagore:**
 - His first poem was published in the **Amrita Bazar Patrika** and then he wrote '**Banaphul**' and '**Bhanusinher Padavali**'.
 - He founded **Shantiniketan** near Bolpore in December 1901.
 - He wrote **Gitanjali**, for which he was awarded the **Nobel Prize in 1913**.
 - He also founded the **Vishwa Bharati University**.
 - In **1919, he renounced the knighthood** granted by the British crown after the Jallianwala Bagh Massacre.
 - His composed National Anthem of two nations
 - **India**–Jana Gana Mana
 - **Bangladesh**–Amar Sonar Bangla

74. Answer: d

Explanation:

The correct answer is **44 times**.

★ Key Points

- The hands of a clock are **44 times** perpendicular to each other in a day.
- After 1 hour, hour hands travels a space of 5 minutes or 30° .
- On the clock, hands are **11 times opposite to each other in 12 hours** and **22 times opposite in a day**.
- The hands in the clock are perpendicular **22 times in 12 hours** and **44 times in one day**.

75. Answer: a

Explanation:

Given that,

X is taller than Y and Z is shorter than W.

$\Rightarrow X > Y$ and $W > Z$

We need to determine who is the shortest one.

Statement 1: Z is shorter than X.

$\Rightarrow X > Y$ and $W > Z$

$\Rightarrow X > Y, Z$

- This statement alone is not sufficient as the shortest person can be Z or Y.

Statement 2: W is shorter than Y.

$\Rightarrow X > Y > W > Z$

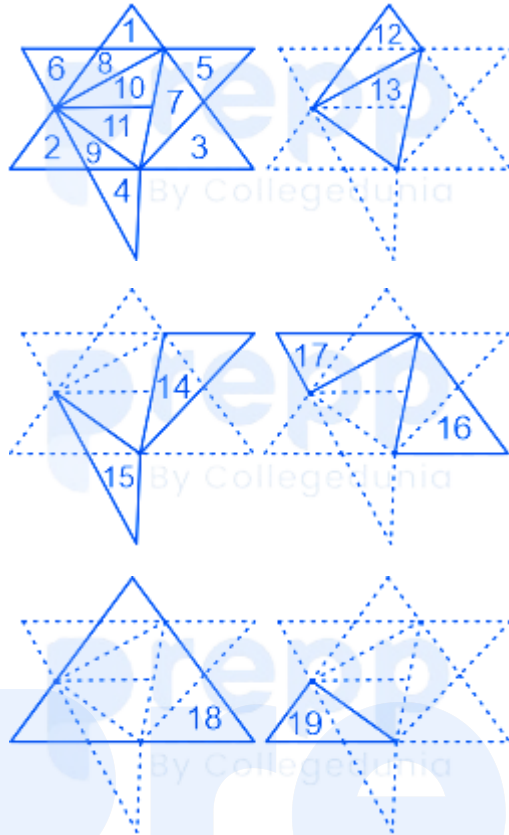
- Therefore, Z is the shortest person.
- Thus, statement 2 is sufficient to determine the shortest person.

Hence, "Only 2 is sufficient while only 1 is not sufficient" is the correct answer.

76. Answer: c

Explanation:

The triangles in the figure given below are as follows:



Hence, "19" is the correct answer.

77. Answer: b

Explanation:

The correct answer is Ajay Singh Bisht.

★ Key Points

- The birth name of Yogi Adityanath is Ajay Bisht.
- He is also the mahant of the Gorakhnath Math, Gorakhpur.
- He is the founder of Hindu Yuva Vahini.
- **Uttar Pradesh:**
 - **Capital:** Lucknow
 - **Governor:** Anandiben Patel
 - **Chief Minister:** Yogi Adityanath.

- It shares its borders with the states of Rajasthan, Haryana, Delhi, Madhya Pradesh, Chattisgarh, Bihar, Jharkhand, Uttarakhand, Himachal Pradesh.
- It shares its international border with Nepal.

78. Answer: c

Explanation:

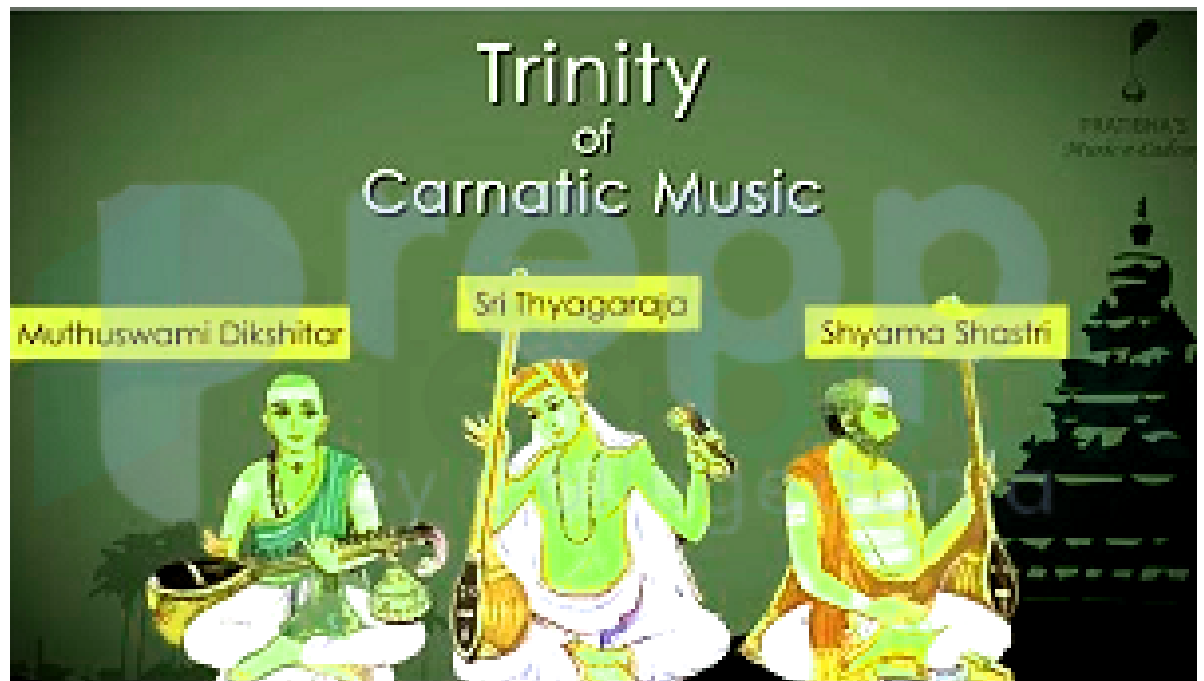
The correct answer is Tyagaraja.

- Tyagaraja is one of the Trinity of Carnatic Music.

★ Key Points

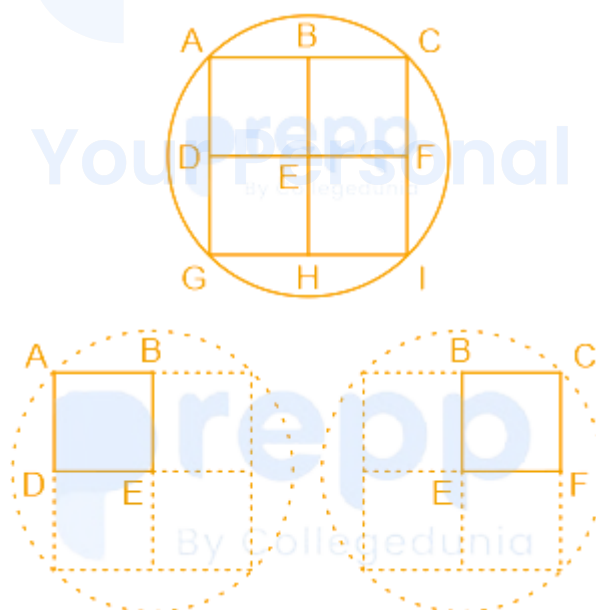
- **Carnatic Music**
 - The Tamil classic of the 2nd century AD. titled '**Silappadhikaram**' contains a vivid description of the music of that period.
 - The Tolkappiyam, Kalladam and the contributions of the Saivite and Vaishnavite saints of the 7th and 8th centuries AD.
 - It also serves as resource material for studying musical history.
- **Trinity of Carnatic music:**
 - It is a trio of **composer-musicians of Carnatic music in the 18th century**.
 - The trio consisted of **Tyagaraja, Muthuswami Dikshitar and Shyama Sastri**.
 - Tyagaraja was a Telugu composer.
 - He is known for Pancharatna Kritis.
 - Muthuswami Dikshitar was a Sanskrit and Manipravalam composer.
 - Shyama Sastri was a Telugu, Sanskrit composer.

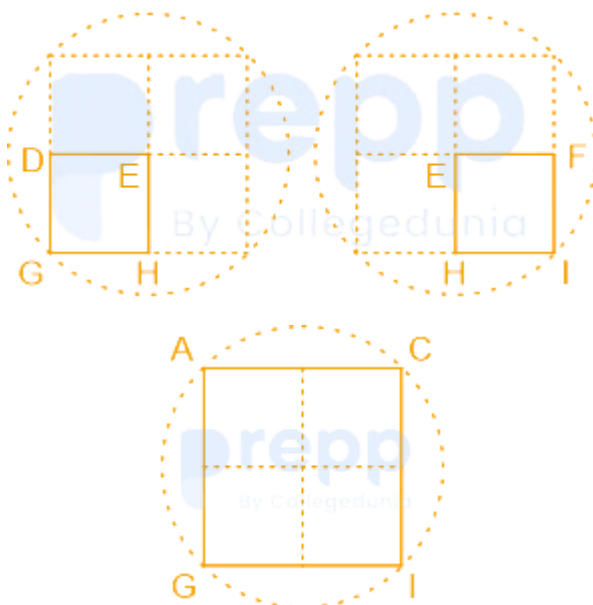
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79. Answer: b

Explanation:





In the figure above, the squares are as follows:

- ABED, BCFE, DEHG, EFIH, and ACIG

Hence, "5" is the correct answer.

80. Answer: d

Explanation:

According to the table,

In the month of November the least number of books were sold

∴ Required answer is November

81. Answer: b

Explanation:

The correct answer is Horticulture Farming.

- An estate where a cash crop is grown for sale is known as Horticulture Farming.

★ Key Points

- Horticulture farming is cultivating plants in an estate to produce food and medicinal ingredients as a cash crop.
- The horticulture includes a wide range of cash crops namely **fruits, vegetables, flowers medicinal and aromatic plants mushrooms, plantation crops and spices.**

★ Additional Information

- A **kitchen garden** is a small farming garden growing fruits and vegetables in the backyard of the house by using kitchen wastewater.
- **Slash and burn farming** is a farming method that involves the cutting and burning of plants in a forest or woodland.
- **Subsistence farming** is the practice of growing crops and raising livestock adequate only for one's own use, without any excess for trade.

82. Answer: c

Explanation:

To find a year with the same calendar, we add 6 to the given year if the given year is a leap year + 1.

- 2004 is a leap year.
- **2005** = leap year + 1
- So we add 6.
- **2005 + 6 = 2011**

Hence, " **2005** " is the correct answer.

83. Answer: a

Explanation:

Given:

Sum = Rs. 3000

Time = 2 years

Rate = 12%

Concept used:

$$A = P(1 + R/100)^t$$

A = Amount

P = Principal

R = Rate

t = time

Calculation:

$$3000(1 + 12/100)^2$$

$$\Rightarrow 3000(28/25)^2$$

$$\Rightarrow 3000 \times 784/625$$

$$\Rightarrow \text{Rs. } 3763.2 \approx \text{Rs. } 3763$$

$\therefore$ After 2 years the amount will be Rs. 3763

84. Answer: b

Explanation:

Given:

$$\frac{(496+54)^2 - (496-54)^2}{2(496 \times 54)}$$

Concept used:

$$(a + b)^2 - (a - b)^2 = 4ab$$

Calculation:

$$\frac{(496+54)^2 - (496-54)^2}{2(496 \times 54)}$$

Let 496 be a and 54 be b

So,

$$[(a + b)^2 - (a - b)^2] / 2ab$$

$$\Rightarrow 4ab / 2ab$$

$$\Rightarrow 2$$

∴ The Required answer is 2

85. Answer: a

Explanation: Your Personal Exams Guide

The correct answer is Britain.

- The Opium War was fought between China and Britain

★ Key Points

- Opium Wars:
 - Opium War was fought from 1839 to 1842.
 - It was fought between China and Britain.
 - China was represented by the Qing dynasty.
 - The First Opium War was fought between 1839–42 .
 - It was fought between China and Britain.
 - The Second Opium War was fought between 1856–60 .

- It is also known as the **Arrow War** or the **Anglo-French War**.
- It was fought by **Britain and France** against **China**.

86. Answer: a

Explanation:

The correct answer is Chanda Kochhar.

★ Key Points

- **ICICI Bank:**
 - Its full form is **Industrial Credit and Investment Corporation of India (ICICI)**.
 - It was founded in the year **1995**.
 - Its headquarter is located in **Vadodara, Gujarat**.
 - **Sir Arcot Ramasamy Mudaliar** was the **first Chairman** of **ICICI bank**.
 - **Chanda Kochhar** was then **CEO** of **ICICI bank**. (As of 2018).

★ Important Points

- **Girish Chandra Chaturvedi** is the current **chairperson** of **ICICI bank**.
- **Sandeep Bakshi** is the current **CEO** of **ICICI bank**. (As of 2022).

★ Additional Information

- **Shikha Sharma** was the **CEO** of **Axis Bank**.
- **Naina Lal Kidwai** was the **Group General Manager** and the **Country Head** of **HSBC India**.
- **Arundhati Bhattacharya** was the **chairperson** of the **State Bank of India**.

87. Answer: b

Explanation:

The correct answer is 270 J.

- Given.
- mass, $m = 15 \text{ kg}$.
- Velocity, $v = 6 \text{ ms}^{-1}$.
- $\text{Kinetic energy} = \frac{1}{2}mv^2$

$$= 0.5 \times 15 \times 6^2$$

$$= 270 \text{ J}$$

Kinetic Energy

- If a body of mass m is moving with velocity v , then kinetic energy KE:
 - $\text{Kinetic energy} = \frac{1}{2}mv^2 = \frac{P^2}{2m}$
 - where p is the linear momentum.
 - When **momentum is doubled, kinetic energy becomes four times.**
 - If a body is moving in a horizontal circle then its kinetic energy is the same at all points, but if it is moving in a vertical circle, then the kinetic energy is different at a different point

88. Answer: b

Explanation:

- From the given statement, **healthy life** is possible only if there is proper nourishment. As eating fruits and vegetables lead to a healthy life, the assumption that they provide the essential nutrients is implicit. So, assumption I is implicit.
- Only based on the given statement, it cannot be decided whether soybeans are beneficial for health, firstly because soybeans are beans or grains and secondly because the statement does not specify about soybeans or pulses or grains. Thus, assumption II is not implicit.

Hence the correct answer is **option 2**.

89. Answer: c

Explanation:

CORPORATION

In these words, following are the vowels: O,O,A,I,O

In rearrangement of these words, If all the vowels must come together, we treat all the vowels as one super letter.

Also, R is repeated 2 times.

⇒ [6 consonant + 1 super letter (Vowels together) factorial]/Repeat consonant factorial

⇒ $7!/2!$

⇒ $7 \times 6 \times 5 \times 4 \times 3 \times 2!/2!$

⇒ 2520

Now, from the given vowels, 5 of 3 repeat themselves, i.e. the ways they can be rearranged will be:

⇒ $5!/3!$

⇒ $5 \times 4 \times 3!/3!$

⇒ 20

∴ The number of ways the given word can be rearranged will be:

⇒ 2520×20

⇒ 50400 ways

∴ 50400 ways the word can be rearranged.

90. Answer: a

Explanation:

Given: $24\$3@8\#45*5$

After replacing the symbols we get:

$$24 + 3 \times 8 - \underline{45 \div 5}$$

$$= 24 + \underline{3 \times 8} - 9$$

$$= \underline{24 + 24} - 9$$

$$= 48 - 9$$

$$= 39$$

Hence, **39** is the correct answer.

91. Answer: d

Explanation:

Given: $6 \times 5 - 4 + 80 \div 2$

After replacing the symbols, we get:

$$6 + 5 \times \underline{4 \div 80} - 2$$

$$= 6 + \underline{5 \times 0.05} - 2$$

$$= \underline{6 + 0.25} - 2$$

$$= 6.25 - 2$$

$$= 4.25$$

Hence, "4.25" is the correct answer.

92. Answer: b

Explanation:

The correct answer is Species.

★ Key Points

- The basic unit of classification of living organisms is **species**.
 - **Species diversity**:
 - The number of species of plants and animals that are present in a particular place or region constitutes its species diversity.
 - The same diversity is seen both in natural ecosystems and in agricultural ecosystems.
-

93. Answer: d

Explanation:

The correct answer is 180°.

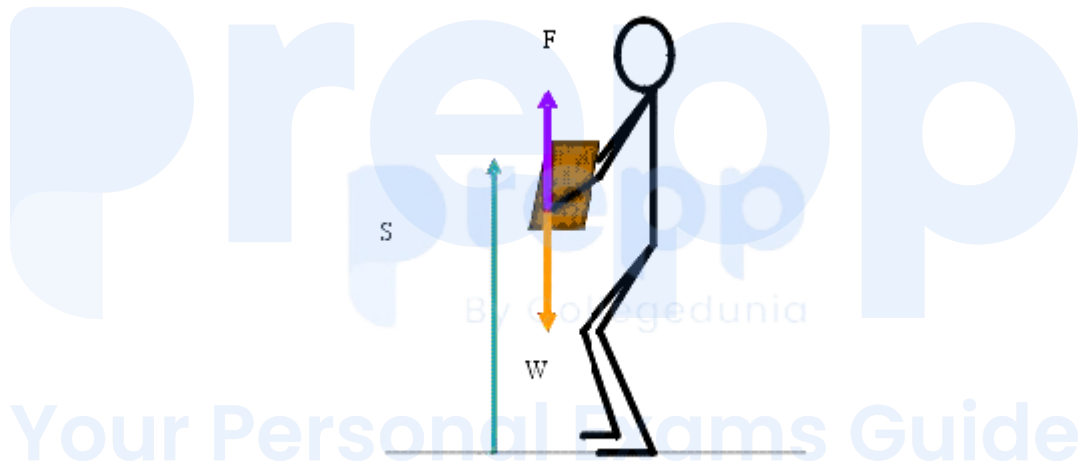
★ Key Points

- **Work done** can be **positive, negative, or zero**. When a body is being lifted in the **upward direction**, the **force of gravity** is acting in the **downward direction**.
- But, the **displacement of the body** is in the **upward direction**. Since the angle between the force and displacement is **180 degrees**, the work done by the **gravitational force** on the body is **negative**.
- Hence for **negative work done**, the angle between force and displacement is **180°**.

★ Additional Information

- Work is a **scalar quantity**. It is calculated as $W = F \times s \cos \theta$, where θ is the angle between the force applied and the displacement.
- F and s are the **force applied** and the **displacement** respectively.
- When $0^\circ < \theta < 90^\circ$, the value of $\cos \theta$ is greater than 0 and less than 1, the work done is **positive**.
- When $90^\circ < \theta < 270^\circ$, the value of $\cos \theta$ is **negative**. So work done becomes **negative**.
- When $\cos \theta = 90^\circ$, the value of $\cos \theta$ is **zero** and so the work done is always **zero**.

★ Important Points



94. Answer: d

Explanation:

- Since the government has decided to increase the fair, it is safe to think that they are under the assumption that people can afford to pay it. So, assumption I is implicit.

- Just because the government has increased the fair, it cannot be assumed whether many people use public transport or not. Thus, assumption II is not implicit.

Hence the correct answer is **option 4**.

95. Answer: d

Explanation:

The correct answer is During the given interval.

- Average speed and average velocity represent the speed of the object during the given interval.

★ Key Points

- **Average speed**
 - The average speed of a particle for a given interval of time is defined as the ratio of total distance travelled to the total time taken.
 - $Average\ speed = \frac{Total\ distance}{total\ time\ taken}$
 - It is a **scalar quantity**.
- **Average velocity:**
 - It is defined as the ratio of total displacement to the total time taken in a given interval of time.
 - It is a **vector quantity**.

96. Answer: c

Explanation:

Calculation:

$$395 - 39.5 - 3.95 - 0.395$$

$$\Rightarrow 1000[395 - 39.5 - 3.95 - 0.395]$$

$$\Rightarrow 395000 - 39500 - 3950 - 395$$

$$\Rightarrow 351155$$

$$\Rightarrow 351155/1000 = 351.155$$

$\therefore$ Required answer is 351.155

97. Answer: c

Explanation:

The logic followed here is:

- All the option figures except option figure B has exactly half of the circle shaded with strips,
- Option figure B has the shaded part less than half in solid colour.

Hence, **option figure B** is the correct answer.

98. Answer: a

Explanation:

Given:

Total distance = 340 km

Concept used:

Distance = Speed $\times$ time

Calculation:

Let the 'r' be the speed of the first train.

Similarly, the speed of the second train is ' $r + 5$ '.

The distance travelled by first train in 2 hours = $2r$

The distance travelled by second train in 2 hours = $2(r + 5)$

Now, we know that the distance the first train travels i.e. ' $2r$ ' plus the distance the other train travels i.e. ' $2(r + 5)$ ' is equal to

According to the question,

$$2r + 2(r + 5) = 310$$

$$\Rightarrow 2r + 2r + 10 = 310$$

$$\Rightarrow 4r = 300$$

$$\Rightarrow r = 75$$

So, the speed of the first train is 75 km/h.

Speed of other train = 80 km/h

$\therefore$ The speed of the two trains is 75 km/h and 80 km/h

99. Answer: d

Explanation:

The logic followed here is as follows:



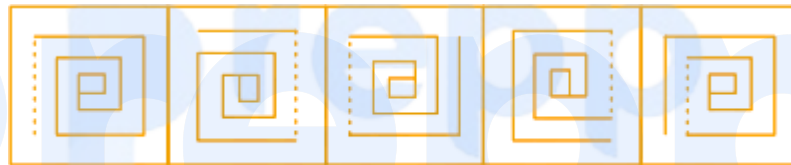
- After every clockwise rotation, alternately the left and the right side appears dotted.

Similarly,



- The figure is rotated by 180 degrees in the clockwise direction.
- In the answer figure, the right part should be dotted. This condition is only satisfied by option figure D.

Hence, **option figure D** is the correct answer.



100. Answer: d

Explanation:

The statement highlights the decision of the African Government towards the disease Ebola and to punish people if they do not report it.

- Action 1 talks about planning to enact laws to control Ebola which agrees with the given statement. So, it follows.
- Action 2 suggests that the proceedings of the punishment be made public through mass media so that people become more responsible, so action 2 also follows.

Hence the correct answer is **option 4**.