



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 (16-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.

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CBT

1. P 3 R I M J 3 Q % W @ / N \$ E 5 X Y 1 # 8

(+1, -0.33)

Which is the 6th term to the right of 15th from the right end in the above series?

- a. \$
- b. P
- c. 3
- d. N

2. Read the given statements and conclusions carefully and choose which of the conclusions logically follows from the statement.

(+1, -0.33)

Statement:

During the promotion of the film, the producer team presents the highlights of the film in front of the media.

Conclusion:

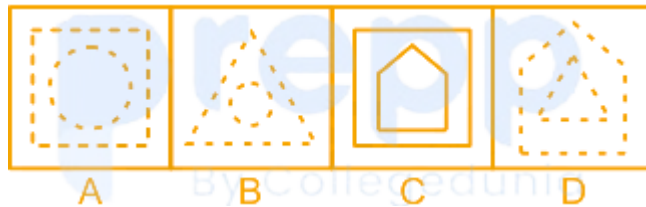
I. The producer team is keen on what the media should be told about the film, so they create the right hype.

II. The producer team hopes that the film is a success.

- a. Only conclusion II follows.
- b. Only conclusion I follows.
- c. Neither conclusion follows.
- d. Both conclusions follow.

3. Identify the odd one from the given figures.

(+1, -0.33)



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

4. The ratio of sand and scree in a mixture is 41 : 30, while that of scree and cement is in the ratio 6 : 7. What is the ratio of sand and cement in the mixture?

(+1, -0.33)

- a. 8 : 6
- b. 11 : 7
- c. 77 : 48
- d. 41 : 35

5. Read the statement and identify the logically correct conclusions from the given information.

(+1, -0.33)

Statement:

Madhuri Dixit is a very good dancer. She is very flexible.

Conclusion :

I. All dancers are mostly flexible.

II. Not all dancers are flexible.

a. Only conclusion I is correct.

b. Neither I nor II is correct.

c. Only conclusion II is correct.

d. Both I and II are correct.

6. If the number of digits in a perfect square number is 3 or 4, then the number of digits in the square root of that number will be _____. (+1, -0.33)

a. 1

b. 3

c. 2

d. 4

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7. A solution contains 41 g of common salt in 320 g of water. Calculate its concentration as a mass by the mass percentage of the solution. (+1, -0.33)

a. 12.36%

b. 11.35g

c. 10.36%

d. 11.36%

8. Which contingent of the Indian Army has completed 250 years of its inception in 2018? (+1, -0.33)

- a. Rajput Regiment
 - b. Punjab Regiment
 - c. Maratha Light Infantry
 - d. Jat Regiment
-

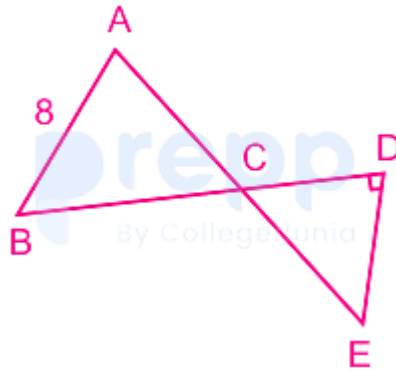
9. If an object is pulled by holding it from both ends, then the force applied on it is called _____. (+1, -0.33)

- a. Impulse
 - b. Friction
 - c. Momentum
 - d. Tension
-

10. Which movement in India was led by Ali brothers Shaukat and Muhammad Ali? (+1, -0.33)

- a. Quit India Movement
 - b. Delhi Chalo Movement
 - c. Boycott Movement
 - d. Khilafat Movement
-

11. In the following figure, triangle ABC is an equilateral triangle and triangle CDE is a right angled triangle. If the length of side AE is 20 units, then what will be the length of side DB? (+1, -0.33)



- a. 13 units
- b. 15 units
- c. 14 units
- d. 12 units

12. Consider the given statement and decide which of the given assumption(s) is/are implicit in the statement. (+1, -0.33)

Statement:

There is an advertisement of a pharma company in a newspaper -
"Diabetes is cured in 6 months by taking one capsule every day after dinner."

Assumption:

- I. Reader is interested in curing diabetes.
 - II. The company is a pharmaceutical manufacturer.
- a. Neither I nor II is implicit.

- b. Only II is implicit.
 - c. Only I is implicit.
 - d. Both I and II are implicit.
-

13. What is the molecular mass of ozone?

(+1, -0.33)

- a. 32u
 - b. 48u
 - c. 8u
 - d. 16u
-

14. Parimal and his sister together can paint the walls of their house in 54 days. If only Parimal does this work, he would have taken 81 days. If both started the work of painting together, but Parimal's sister left 9 days before the completion of the work, then how many days did both of them take to paint their house?

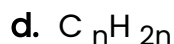
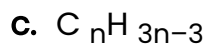
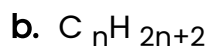
(+1, -0.33)

- a. 60
 - b. 57
 - c. 58
 - d. 56
-

15. The general formula of alkane is-

(+1, -0.33)

- a. C_nH_{2n-2}



16. Which of the following is incorrect about rhizoids? (+1, -0.33)

- a. Their structure and function are similar to the root hairs of vascular land plants.
- b. These are bulges growing from the lower epidermal cells of bryophytes.
- c. They have fully developed stem, root and leaves.
- d. They are multicellular structures made up of different tissues.

17. The interest rates of banks are determined and regulated by which of the following organizations? (+1, -0.33)

- a. Reserve Bank of India
- b. Finance Ministry
- c. SEBI
- d. State Bank of India

18. Who was honored with the 53rd Jnanpith Award for the year 2017? (+1, -0.33)

- a. Akhlaq Mohammad Khan 'Shahryar'
- b. Kedarnath Singh

- c. Shankha Ghosh
- d. Krishna Sobti

19. Which option figure will be formed by rotating the following figure? (+1, -0.33)



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

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20. How is Varun's sister related to his only brother's mother's brother? (+1, -0.33)

- a. Brother
- b. Maternal uncle
- c. Son
- d. Cousin

21. Meghalaya, a mountainous belt in eastern India, was originally a part of ----- (+1, -0.33)

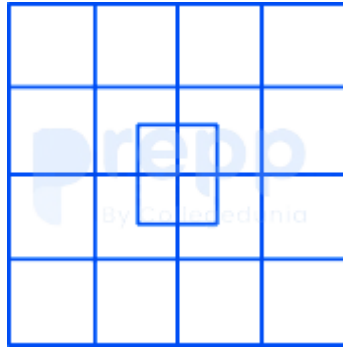
- a. Manipur
- b. West Bengal
- c. Assam
- d. Sikkim

22. On using anti bacterial drug it has been observed that (+1, -0.33)

- (i) The number of bacteria decreases by 4% in the first hour.
- (ii) The number increases by 5% in the second hour. The number has increased by 10% in the third hour.
- (iii) If the number of bacteria is 500,000, then what is the % increase in the number of bacteria at the end of 3 hours.

- a. 11.08%
- b. 10.88%
- c. 9.58%
- d. 10.02%

23. What is the total number of squares in the following figure. (+1, -0.33)



- a. 35
- b. 38
- c. 36
- d. 37

24. On an average Meenu uses 15% of her monthly salary for shopping, going to restaurants and malls. The remaining 40% goes towards household expenses, and 45% goes to his savings. If in a month, she spends Rs.40,000 on the house, what is her annual income? (+1, -0.33)

- a. Rs. 1020000
- b. Rs. 1400000
- c. Rs. 12,00,000
- d. Rs. 1000000

25. Jeevan and Jyoti can do a certain work in 6 and 8 days respectively. However, they decided to do the same thing for Rs 3,200. They sought Panu's help to complete the work in 3 days and completed the work in 3 days. How much did Panu earn? (+1, -0.33)

- a. Rs. 400

- b. Rs. 1,600
- c. Rs. 899
- d. Rs. 1,200

26. Which alphanumeric term will be next in the given series? (+1, -0.33)

10D, 13E, 16F, 19G, ?

- a. 22H
- b. 15B
- c. 22C
- d. 20G

27. The name India is derived from the _____ river. (+1, -0.33)

- a. Indus
- b. Irrawaddy
- c. Brahmaputra
- d. Ganges

28. What does that symbol represent? (+1, -0.33)



- a. unconnected wire crossing

- b. a voltmeter
 - c. Variable Resistance or Current Controller
 - d. a resistance of resistance R
-

29. What is the new repo rate announced by the Reserve Bank of India (RBI) on 1st August 2018? (+1, -0.33)

- a. 6.5%
 - b. 6%
 - c. 6.26%
 - d. 5.75%
-

30. 45 people can make 40,000 bulbs in 12 days. How many additional people would be needed to be employed for work to make 100,000 bulbs in 9 days? (+1, -0.33)

- a. 100
 - b. 105
 - c. 110
 - d. 120
-

31. The sides of a hexagon are extended three times. Find the ratio of the areas of the new and the old (original) hexagon so formed. (+1, -0.33)

- a. 5 : 23

b. 2 : 7

c. 3 : 9

d. 9 : 1

32. Identify the odd one from the following-

(+1, -0.33)



a. C

b. D

c. B

d. A

33. Geeta bakes cakes for events. For a birthday party, he made a cake and sold it for Rs 700. The cost price of the ingredients for making the cake was Rs 350. What is the percentage of his profit margin? (+1, -0.33)

a. 200%

b. 50%

c. 100%

d. 150%

34. Suresh is standing facing east. It rotates 45° anticlockwise and then 270° clockwise. In which direction is he facing now? **(+1, -0.33)**

- a. Northeast
 - b. Southeast
 - c. Northwest
 - d. Southwest
-

35. The difference between the ages of two persons is 7 years. If the ratio of their ages is 7 : 9, then find the age of the younger one. **(+1, -0.33)**

- a. 25.5 year
 - b. 24.5 year
 - c. 26.5 year
 - d. 24 year
-

36. The spermatic cord joins with the duct leading through the bladder to form a common passageway, which is called _____. **(+1, -0.33)**

- a. Spermatic cord
 - b. Urethra
 - c. Testis
 - d. Ureter
-

37. The population of a city is increasing at the rate of 5% per annum. If the present population of the city is 1,85,220, then what was the population of that city a year ago? (+1, -0.33)

- a. 1,76,000
- b. 1,70,500
- c. 1,76,400
- d. 1,76,200

38. E. Madhusudanan leads which of the following state level political party? (+1, -0.33)

- a. Pattali Makkal kachchi
- b. All India N. R. Congress
- c. Rashtriya Janata Dal
- d. All India Anna Dravida Munnetra Kazhagam

39. If $a + b + c = 16$ and $ab + bc + ca = 78$, find the value of $a^3 + b^3 + c^3 - 3abc$? (+1, -0.33)

- a. 218
- b. 352
- c. 320
- d. 220

40. Identify the odd one from the given figures.

(+1, -0.33)



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

41. Which country has recently declared yoga as a sporting activity?

(+1, -0.33)

- a. France
- b. Iraq
- c. Pakistan
- d. Saudi Arabia

42. In each of the questions below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions are implicit in the statement.

(+1, -0.33)

Statement:

X said to Y, 'I want to conduct a survey on the effectiveness of advertising for male beautification creams.'

Assumptions:

I. The impact of advertisements of beautifying creams for men can be ascertained through surveys.

II. X has the skill and ability to conduct such surveys.

- 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.

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

Statement:

I. All pictures are beautiful.

II. All beautiful is wonderful.

Conclusion:

1. All pictures are wonderful.

2. Some wonderful are beautiful.

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

44. What is the estimated growth of Indian labour force by 2020? (+1, -0.33)
- a. 175-185 million
 - b. 125-130 million
 - c. 60-70 million
 - d. 160-170 million
-

45. A container contains 990 liters of oil. How much more oil should be added (+1, -0.33) so that the volume of the oil is the smallest 4-digit perfect square number?
- a. 124 liters
 - b. 104 liters
 - c. 166 litres
 - d. 130 liters
-

46. In which tournament was held in Riyadh, Saudi Arabia, in 2017, (+1, -0.33) Grandmaster Viswanathan Anand won the Chess Championship title?
- a. Chess world cup
 - b. World Rapid Chess Championship
 - c. Candidate Tournament
 - d. World Senior Chess Championship
-

47. Who has been appointed as the private banking head of the HDFC bank? (+1, -0.33)

- a. Ramesh Singh
- b. Ratnesh Singh
- c. Rakesh Singh
- d. Rajesh Singh

48. Who was the lead actor in the recent movie 'Sanju'? (+1, -0.33)

- a. Ranbir Kapoor
- b. Ranveer singh
- c. Akshay Kumar
- d. Sanjay Dutt

49. Shrinesh wants to renovate the floor of his office which is made of 2,800 marble tiles. Each tile is 3 cm long and 5 cm wide. Calculate the cost of polishing the floor at the rate of Rs 25 per sqm. (+1, -0.33)

- a. Rs. 100
- b. Rs. 115
- c. Rs. 125
- d. Rs. 105

50. Which of the following is the smallest fraction number? (+1, -0.33)

$$\frac{1}{8}, \frac{2}{12}, \frac{3}{16}, \frac{4}{20}$$

a. $\frac{4}{20}$

b. $\frac{3}{16}$

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

d. $\frac{2}{12}$

51. _____ is not a transition metal. (+1, -0.33)

a. Np

b. Zr

c. Tc

d. Re

52. The formula unit mass of CaO is- (+1, -0.33)

a. 39

b. 46

c. 60

d. 56

53. Compounds of which of the following metals are used in black and white photography? (+1, -0.33)

a. Ag

b. Cu

c. Au

d. Al

54. What is the property of a metal due to which it can be cast into wire? (+1, -0.33)

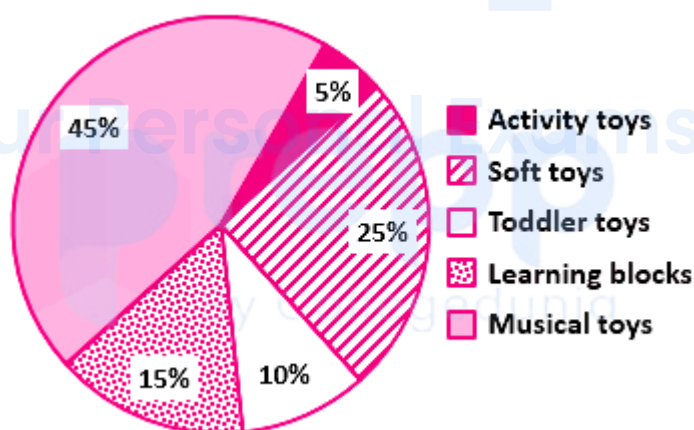
a. Conductance

b. Porosity

c. Tensility

d. Malleability

55. The following pie chart shows the sales of toys manufactured by the company during the year 2017-18. (+1, -0.33)



The total income received from the sale of all types of toys is Rs. 38,72,000/-.

Find the income earned by Company "XYZ" from Activity Toys?

a. 3,87,200

b. 2,96,600

c. 1,93,600

d. 1,52,719

56. What is the energy contained in an object of 11 kg when it is at a height of 8 m above the ground? (given that $g = 9.8 \text{ ms}^{-2}$) (+1, -0.33)

a. 520J

b. 539J

c. 588J

d. 862.4J

57. The sum of the ages of Sindu and Bindu is 30 years. And the product of their ages is 221. How old are they? (+1, -0.33)

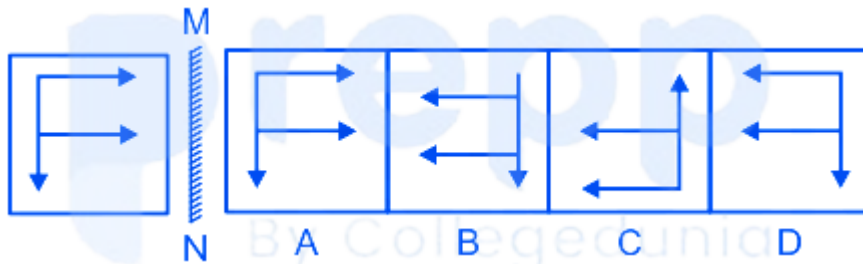
a. 17 years, 13 years

b. 16 years, 14 years

c. 15 years, 15 years

d. 18 years, 12 years

58. Select the mirror image of the figure given below: (+1, -0.33)



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

59. A mixture of 35 liters contains milk and water in the ratio 4 : 1. Find the ratio of milk and water when 7 liters of water is added to this mixture? (+1, -0.33)

- a. 2 : 7
- b. 2 : 1
- c. 2 : 3
- d. 1 : 3

60. Which of the following statement(s) is/are true with respect to the speed of sound at 25°C in different mediums? (+1, -0.33)

- A. In steel, the speed of sound is 5960 m/s.
- B. In nickel, the speed of sound is 6040 m/s.
- a. Both A and B are true.
- b. Only B is true.

- c. Neither A nor B is true.
 - d. Only A is true.
-

61. In general, a neutralization reaction can be written as: (+1, -0.33)

- a. $\text{Base} + \text{Acid} \rightarrow \text{Water} + \text{Gas}$
 - b. $\text{Base} + \text{Acid} \rightarrow \text{Salt} + \text{Water}$
 - c. $\text{Base} + \text{Acid} \rightarrow \text{Salt} + \text{Gas}$
 - d. $\text{Base} + \text{Acid} \rightarrow \text{Salt} + \text{Precipitation}$
-

62. 15 bought a black dress, 15 bought a red dress, 20 bought a blue dress, 2 bought a dress of all three colors and 8 bought at least two of these from a clothing store. How many customers bought only one color dress? (+1, -0.33)

- a. 25
 - b. 32
 - c. 40
 - d. 45
-

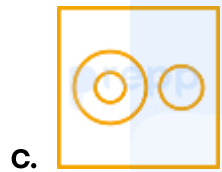
63. Which state government has launched the "Anandam" program to help needy people? (+1, -0.33)

- a. Madhya Pradesh
- b. Kerala
- c. Bihar

d. Tamil Nadu

64. Select the appropriate Venn diagram for the following groups. (+1, -0.33)

Clothes, Shirt, Lock



65. Each neuron is made up of a cyton (cell body), from which many small branches emerge, which are called- (+1, -0.33)

- a. Axon
- b. Sensory branches
- c. Reflex action
- d. Dendrite

66. Which of the two conclusions can be drawn based on the given statements? (+1, -0.33)

Statement:

Some drops are jam. Some bottles are drops.

Conclusion :

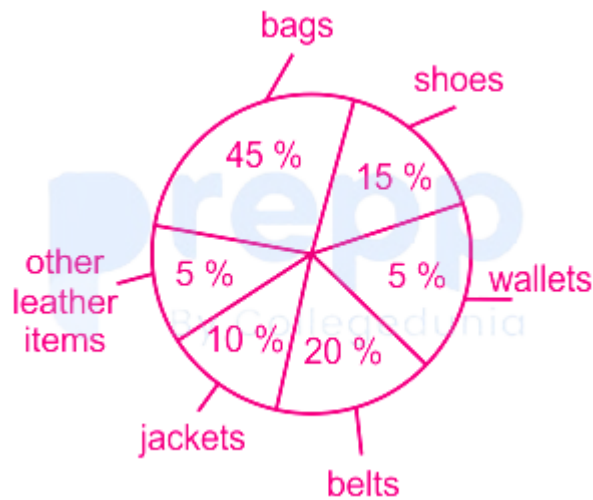
1. Some drops are empty.
 2. Bottles are jams.
- a. Only (1) follows.
 - b. Only (2) follows.
 - c. Either (1) or (2) follows.
 - d. Neither (1) nor (2) follows.

67. Name the British businessman of Indian origin who has been appointed by Prince Charles as the official ambassador of the Industrial Cadet Program, which aims to nurture manufacturing skills. (+1, -0.33)

- a. Swaraj Paul
- b. Prakash Lohia
- c. Sanjeev Gupta
- d. Lakshmi Mittal

68. The following pie chart shows the revenue of ABC, a company manufacturing leather products. The total revenue of the company in the (+1, -0.33)

year 2015 was Rs. 36,28,000.



What is the total revenue earned by the company from the sale of other leather products?

- a. Rs. 90,700
- b. Rs. 1,81,400
- c. Rs. 7,25,000
- d. Rs. 3,62,800

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69. In Mendeleev's periodic table, which of the following elements found a place in the table later? (+1, -0.33)

- a. Sc, Ga and Ca
- b. Sc, Ga and Ge
- c. Sc, Ga and Mg
- d. Scm Ga and Na

70. Find the number that comes in place of question mark (?) in the following series- 7, 14, 42, 168,?, 5040 (+1, -0.33)

- a. 850
- b. 840
- c. 860
- d. 800

71. If $x^2 + \frac{2x}{5} + \frac{1}{25} = 0$, then $(x - \frac{2}{3})^2 = ?$ (+1, -0.33)

- a. $\frac{1}{3}$
- b. $\frac{169}{225}$
- c. $\frac{44}{169}$
- d. $\frac{225}{256}$

72. Find the value of x in the following equation- (+1, -0.33)

$$\frac{144}{0.144} = \frac{14.4}{x}$$

- a. 0.0001
- b. 0.0144
- c. 0.1
- d. 0.01

73. The epics 'Silappadikaram' and 'Manimekalai' of the Sangam period were written in _____ language. (+1, -0.33)

- a. Pali
- b. Demoniac
- c. Sanskrit
- d. Tamil

74. The work done between two points having the potential of 12 V is 36 J. The electric charge flowing between those points is _____. (+1, -0.33)

- a. 432 C
- b. 0.3 C
- c. 3 C
- d. 5 C

75. Between which of the following is the value of inertia maximum? (+1, -0.33)

- a. Between a rubber ball and a stone of the same size
- b. Scooter and Buses
- c. Ten rupee coins and Five rupee coins
- d. Trains and Airplanes

76. If a shot is fired from a gun and the gun comes backwards, what will be the kinetic energy of the gun? (+1, -0.33)

- a. Equal to a bullet
- b. Zero
- c. More than bullet
- d. Less than bullet

77. Find the smallest number which when subtracted from 20000, the difference obtained is divisible by 15, 16 and 25. (+1, -0.33)

- a. 400
- b. 800
- c. 300
- d. 600

78. Pressure = ? (+1, -0.33)

- a. Upthrust/Area
- b. Upthrust/Volume
- c. Work/Area
- d. Upthrust/Mass

79. Lehar introduces Ayaan as the only son of her father. Ayan and Lehar are ----- (+1, -0.33)

- a. Brother-Sister
- b. Brother-Brother
- c. Sister-Sister
- d. Cousin Brother-Sister

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

Primate : Gorilla :: Marsupial : ?

- a. Kangaroo
- b. Ape
- c. Gorilla
- d. Lemur

81. Which of the following team was the winner of Hero I-League Football in 2017? (+1, -0.33)

- a. Aizawl F. C.
- b. Kingfisher East Bengal
- c. Mohun Bagan
- d. Minerva Punjab F.C.

82. The ability of an object to do work, or the energy contained in an object, depends on _____. (+1, -0.33)

- a. Mass and volume of the object
- b. Motion of an object in a certain direction
- c. Position and condition of the object doing the work
- d. Magnitude and direction of the object

83. What can be the probability of drawing an ace from a deck of cards? (+1, -0.33)

- a. $\frac{12}{13}$
- b. $\frac{15}{26}$
- c. $\frac{9}{13}$
- d. $\frac{1}{13}$

84. Find the different image from the following: (+1, -0.33)



- a. a
- b. b
- c. c
- d. d

85. The 14 m long rope was divided into three parts. In which the length of the first two parts was 4.58m and 4.96m respectively. Find the length of the third part of the rope. (+1, -0.33)

- a. 4.54 m
- b. 4.56 m
- c. 4.36 m
- d. 4.46 m

86. Who is the sitting MP representing Varanasi Lok Sabha constituency who is serving for that constituency since 2014? (+1, -0.33)

- a. Narendra Modi
- b. Murli Manohar Joshi
- c. Rajesh Kumar Mishra
- d. Shankar Prasad Jaiswal

87. Who was awarded the 2017 Padma Bhushan Award in the category of Literature and Education-Journalism? (+1, -0.33)

- a. Vikram Chandra
- b. Sudhir Chaudhary
- c. Cho Ramaswamy
- d. Rajdeep Sardesai

88. In which of the following convex mirror is used? (+1, -0.33)

- a. Shaving Mirror
- b. Dentist's Mirror
- c. Vehicle's headlight
- d. Rear-view mirror

89. Which of the following is an example of permanent tissue? (+1, -0.33)

- a. Blood
- b. Xylem
- c. Bone
- d. Skin

90. Pipes A and B can fill a tank in 7 hours and 10 hours respectively while pipe C can empty the tank in 14 hours. If all the pipes are started simultaneously, how much time will be taken to fill the tank? (+1, -0.33)

- a. $6 \frac{1}{6}$ hours
- b. $6 \frac{2}{3}$ hours
- c. $5 \frac{1}{2}$ hours
- d. $5 \frac{5}{6}$ hours

91. Sagar is the brother of Vanaja. How is Vanaja's daughter related to Sagar? (+1, -0.33)

- a. Sister
 - b. Aunt
 - c. Daughter
 - d. Niece
-

92. An object moves with a constant speed when the value of _____ is negligible. (+1, -0.33)

- a. Pressure
 - b. Velocity
 - c. Force
 - d. Mass
-

93. _____ is a 20 cm long tube, which carries urine from the bladder. (+1, -0.33)

- a. Ureters
 - b. Urethra
 - c. Kidney
 - d. Testis
-

94. Solve the following equation: (+1, -0.33)

$$17.3 \times 17.3 - 2.7 \times 2.7 = ?$$

- a. 272

b. 290

c. 292

d. 282

95. The three sides of a triangle are 5 cm, 12 cm and 13 cm. A small triangle is formed by joining the midpoints of the three sides of this triangle. The area of the smaller triangle is _____ cm². (+1, -0.33)

a. 15

b. 30

c. 7.5

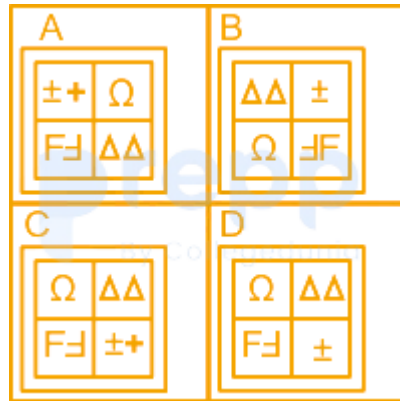
d. 32.5

96. Select the option image that will complete the series of question figures. (+1, -0.33)

Question image:



Option Figures:



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

97. The idea of passing the Fundamental Rights in the Constitution of India was inspired by the Constitution of which country? (+1, -0.33)

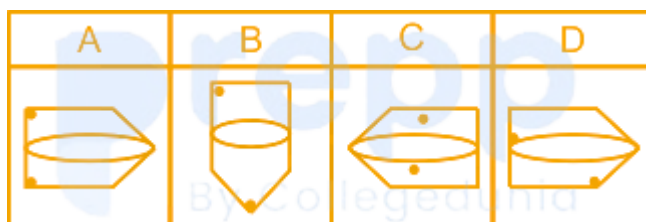
- a. Canada
- b. Australia
- c. England
- d. America

98. Which option image has the closest resemblance to the question figure? (+1, -0.33)

Question image:



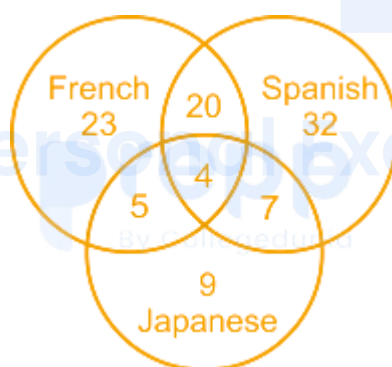
Option images:



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

99. The number of students studying 3 languages is shown in this diagram. (+1, -0.33)

The number of students studying two languages is:



- a. 45
- b. 100
- c. 64
- d. 32

100. What day of the week was 25 May 1666?

(+1, -0.33)

- a. Tuesday
- b. Thursday
- c. Monday
- d. Wednesday

Prepp

Your Personal Exams Guide

Answers

1. Answer: d

Explanation:

Given series:-

P 3 R I M J 3 Q % W @ / N \$ E 5 X Y 1 # 8

15th term from the right end = 3

P 3 R I M J 3 Q % W @ / N \$ E 5 X Y 1 # 8

6th term to the right of 3 = N

P 3 R I M J 3 Q % W @ / N \$ E 5 X Y 1 # 8

Hence, "option 4" is the correct answer.

★ Shortcut Trick

To find the element on either of the sides in the given series:

1) If both elements are given from the same side:

- Left - Left = Left (Counting element from Left side)
- Right - Right = Right (Counting element from Right side)

2) If both elements are given from different side:

- Left + Right = Right (Counting element from Right side)
- Right + Left = Left (Counting element from Left side)

TRICK:

Right - Right = Right (Counting element from Right side)

15 - 6 = 9th element from right side.

9th element from right side = N.

Hence, "N" is the correct answer.

2. Answer: d

Explanation:

- By presenting the highlights of the film, the producer team expects the media to understand the concept of the film and then create the right hype, that is the right advertisement. Thus, conclusion I logically follows the statement.
- Since the producer team is promoting the film, it is obvious that they expect it to be successful. thus, conclusion II also follows.

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

3. Answer: c

Explanation:

The logic followed here is:-

In Figures A, B, and D all outer and inner lines are dotted lines but in figure C all outer and inner lines are dark.

So, figure C is different from others.

Hence, "**option 3**" is the correct answer.

4. Answer: d

Explanation:

Given:

The ratio of the sand and scree = 41 : 30

The ratio of scree and cements = 6 : 7

Calculation:

Sand : Scree : Cement

41 : 30 :

6 × 5 : 7 × 5

41 : 30 : 35

∴ The required ratio is 41 : 35

★ Alternate Method

According to the question

The sand in the mixture = (41 × 6)

⇒ 246

The cement in the mixture = (30 × 7)

⇒ 210

The ratio of sand and cement in the mixture

= (246 : 210)

⇒ 41 : 35

5. Answer: b

Explanation:

The given statement only talks about 1 particular dancer, who is flexible.

- So, nothing can be said about all other dancers from the given statement.
- Thus, all other dancers being mostly flexible cannot be a logical conclusion.
- Similarly, it cannot be said that not all of the dancers are flexible.

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

6. Answer: c

Explanation:

Concept used:

If n is odd number then, square root will contain $(n + 1)/2$ digits

If n is even number then, square root will contain $n/2$ digits

Calculation:

Let the number be n

According to the question

$\Rightarrow n = 3$ which is odd

Then,

$$\Rightarrow (n + 1)/2 = (3 + 1)/2$$

$$\Rightarrow 4/2 = 2$$

Now,

$\Rightarrow n = 4$ which is even

Then,

$$\Rightarrow n/2 = 4/2$$

$\Rightarrow 2$

$\therefore$ The required number is 2

7. Answer: d

Explanation:

Given:

Mass of common salt (solute) = 41 g

Mass of water (solute) = 320 g

Formula Used:

Concentration of solution = $(\text{mass of solute} / \text{mass of solution}) \times 100$

calculation:

according to the question

mass of solution = mass of solute + mass of solvent

$\Rightarrow (41 + 320) \text{ g}$

$\Rightarrow 361 \text{ g}$

Now,

Concentration of solution = $(\text{mass of solute} / \text{mass of solution}) \times 100$

$(41 / 361 \times 100)\%$

$\Rightarrow 11.357\% \sim 11.36\%$

The required solution is 11.36%

8. Answer: c

Explanation:

The correct answer is Maratha Light Infantry.

- Maratha Light Infantry of the Indian Army has completed 250 years of its inception in 2018.

★ Key Points

- **Maratha Light Infantry:**
 - It was established in the year **1768**.
 - The infantry traces its lineage to the **Bombay Sepoys**.
 - It is the **senior-most light infantry regiment** in the Indian Army.
 - The **regimental centre** is located in **Belgaum, Karnataka**.
 - The motto of the regiment is ***Bola Shri Chhatrapati Shivaji Maharaj Ki Jai*** (*Say Victory To King Shivaji*).

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★ Additional Information

- The **Punjab regiment** was established in the year **1947**.
- The **Rajput regiment** was founded in the year **1778**.
- The **Jat Regiment** was founded in the year **1795**.

9. Answer: d

Explanation:

The correct answer is Tension.

- If an object is pulled by holding it from both ends, then the force applied on it is called tension.

★ Key Points

- If an object is pulled by holding it from both ends, then the force applied to it is called tension.
- **Tension** : It refers to the force transmitted when a rope, wire, cable or string is tethered by forces acting on opposite ends.
- It is given by the formula $T = mg$
 - where, m = mass(kg) and g = gravitational force.

10. Answer: d

Explanation:

The correct answer is Khilafat Movement.

- Khilafat Movement in India was led by Ali brothers Shaukat and Muhammad Ali.

★ Key Points

- **Khilafat Movement (1920 AD–1924 AD):**
 - The Ali Brothers– **Mohammad Ali and Shaukat Ali** launched an anti-British movement in **1920 AD**.
 - The movement for the restoration of the **Khilafat Movement**.
 - Maulana Abul Kalam Azad also led the movement.
 - It was supported by Mahatma Gandhi and Indian National Congress.
 - On **October 17, 1919**, '**Khilafat Day**' was celebrated.

★ Additional Information

- **Quit India Movement (1942 AD)**
 - The All India Congress Committee met at Bombay on **8th August 1942 AD**.
 - The committee passed the famous Quit India resolution and proposed the starting of a non-violent mass struggle under **Mahatma Gandhi's leadership**.
 - The movement was also called *Vardha Proposal and Leaderless Revolt*.

- Gandhi's message was '*Do or Die*.'
- The repressive policy of the government and indiscriminate arrest of the leaders provoked people to violence.
- **Boycott and Swadeshi Movement** took place in the year **1905 AD–1908 AD**.

11. Answer: c

Explanation:

Given:

$AB = 8$ units and $AE = 20$ units

$\triangle ABC$ is Equilateral triangle

Concept Used:

An equilateral triangle is a triangle in which all three sides have the same length & all three internal angles are also congruent to each other and are each 60°

Vertical angles are formed when two lines meet each other at a point. They are always equal to each other.

Calculation:

Now in $\triangle ABC$,

$AB = 8$ units, so, $BC = AC = 8$ units (Equilateral Triangle)

Now, $\angle ACB = 60^\circ$ as all three internal angles are equal and of 60° each

Now, $\angle ACB = \angle DCE = 60^\circ$ (Vertically Opposite angle)

Now, in $\triangle DCE$,

$CE = AE - AC$

$\Rightarrow CE = 20 - 8 = 12$ units

Now, as $\angle DCE = 60^\circ$,

So, $\cos 60^\circ = 1/2$

And, $\cos 60^\circ = DC/CE$ (Base/Hypotenuse)

So, $DC/CE = 1/2$

$\Rightarrow DC/12 = 1/2$

$\Rightarrow DC = 6$ units

Now, $BD = BC + DC$

$\Rightarrow BD = (8 + 6)$ units

$\Rightarrow BD = 14$ units

$\therefore$ Length of side DB is 14 units

12. Answer: d

Explanation:

- Since the advertisement is talking about curing diabetes, the readers of that advertisement must be interested in curing diabetes. So, assumption I is implicit.
- The advertisement is from a pharma company which is stating that their capsule can cure diabetes. A pharma or pharmaceutical company is one that manufactures medical products. Thus, conclusion II is also implicit.

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

13. Answer: b

Explanation:

The correct answer is 48u.

- The molecular mass of ozone is 48u.

★ Key Points

- **Ozone (O_3)**
 - It is an allotrope of oxygen.
 - It is used as an **insecticide**, in the purification of water to preserve food, to synthesis artificial silk and camphor and as a bleaching agent.
 - The chemical formula of ozone is given by O_3 .
 - The molecular weight of oxygen is 16.
 - Hence, the molecular weight of ozone = $16 \times 3 = 48 \text{ u}$.

14. Answer: b

Explanation:

Given:

Parimal and his sister paint the walls of their house = 54 days

Parimal alone paint the wall = 81 days

His sister left the work before the completion = 9 days

Formula used:

Work = Efficiency $\times$ Time

Calculation:

LCM of 54 and 81 is 162

Efficiency of Parimal and his sister = $(162/54) = 3 \text{ units/day}$

Efficiency of Parimal = $(162/81) = 2 \text{ units/day}$

His sister left the work 9 days before = $(162 + 9) \text{ days}$

⇒ 171 days

Now,

Number of days to paint the walls of the house by both = $(171/3)$ days

⇒ 57 days

∴ The required answer is 57 days.

Given:

★ Alternate Method

Parimal and his sister paint the walls of their house = 54 days

Parimal alone paint the wall = 81 days

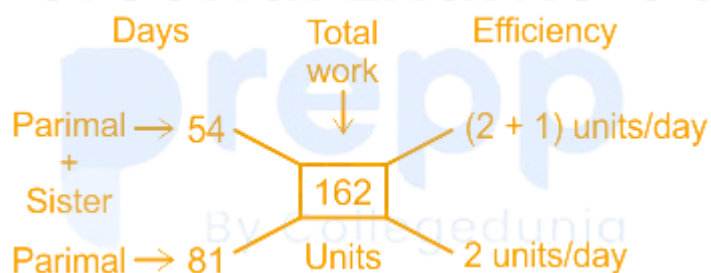
His sister left the work before the completion = 9 days

Formula used:

Work = Efficiency × Time

Calculation:

Using LCM method, we get



According to the question, Parimal's sister left 9 days before the completion of the work.

Hence, work done in 9 days by Parimal = Efficiency × Time

⇒ $2 \times 9 = 18$ units

Remaining work = Total work – Work done

$$\Rightarrow 162 - 18 = 144 \text{ units}$$

Now, number of days in which 144 units work was done by Parimal and his sister =
Work done/Efficiency of Parimal and his sister

$$\Rightarrow 144/3 = 48 \text{ days}$$

Total time taken to paint the house = 48 + 9 = 57 days.

$\therefore$ The required answer is 57 days.

15. Answer: b

Explanation:

The correct answer is C_nH_{2n+2} .

- The general formula of an alkane is C_nH_{2n+2} .

★ Key Points

- **Hydrocarbons**
 - Compounds made of carbon and hydrogen atoms only are called hydrocarbons.
 - **Saturated hydrocarbons:**
 - The hydrocarbons in which carbon atoms are singly bonded are called saturated hydrocarbons.
 - Saturated hydrocarbons are also called **alkanes or paraffin** .
 - The general formula of alkane– C_nH_{2n+2} .
 - **Unsaturated hydrocarbons:**
 - The hydrocarbons in which carbon atoms are either doubly or triply bonded are called unsaturated hydrocarbons.
 - Doubly bonded (carbon atoms) hydrocarbons are called **alkenes** .
 - The general formula of alkene is C_nH_{2n} .
 - **Triply-bonded carbon:**

- Hydrocarbons containing at least one carbon-carbon triple bond between two carbon atoms are called **alkynes**.
- The general formula of alkynes is $C_n H_{2n-2}$.

16. Answer: c

Explanation:

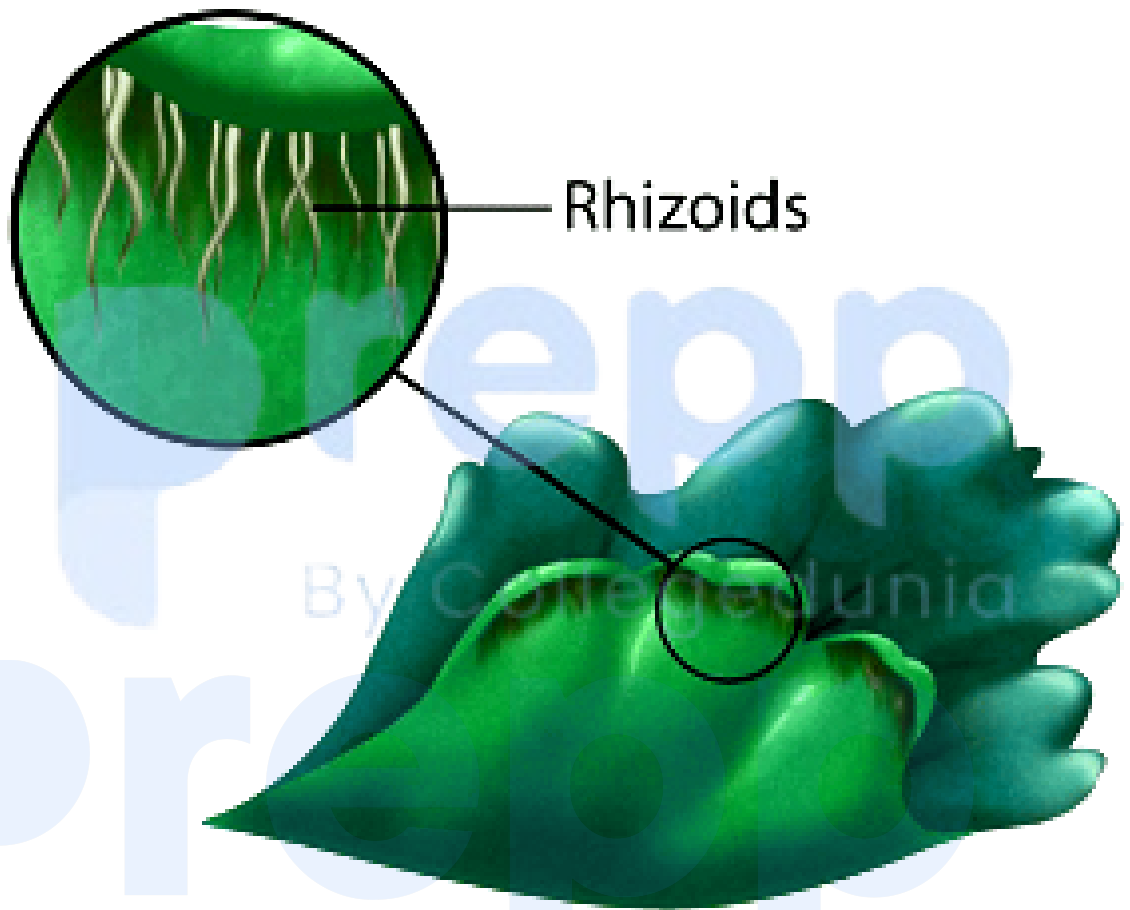
The correct answer is They have fully developed stem, root and leaves.

★ Key Points

- **Rhizoids:**

- These are a structure in **plants and fungi** that functions as a root in support or absorption.
- Its structure is similar to that of the root hairs of vascular land plants. Hence option 3 is incorrect
- In bryophytes, they are bulges growing from the lower epidermal cells.
- In the liverworts, they are absent or unicellular, but multicelled in mosses.
- The function of rhizoids are:
 - To perform the function of roots.
 - They serve either as a feeding organ (in Rhizopus) or anchor the thallus to its substratum (in Chytridium).

○



17. Answer: a

Explanation:

The correct answer is the Reserve Bank of India.

- The interest rates of banks are determined and regulated by the Reserve Bank of India.

★ Key Points

- **Reserve Bank of India (RBI):**
 - RBI was set up on the basis of the **Hilton Young Commission** recommendation in April **1935** , with the enactment of the **RBI Act, 1934** .
 - Its **first Governor** was **C.D. Deshmukh** .

- The **headquarters** of RBI is in **Mumbai** .
- Current **Governor is Shaktikanta Das**.
- It is the supreme monetary and banking authority in the country and has the responsibility to control the banking system in the country.
- It keeps the reserves of all commercial banks and hence is known as the '**Reserve Bank**' .

18. Answer: d

Explanation:

The correct answer is Krishna Sobti.

- Krishna Sobti was honoured with the 53rd Jnanpith Award for the year 2017.

★ Key Points

- **Krishna Sobti**
 - She was a Hindi-language writer.
 - She was born in Gujrat, India.
 - Her pen name is ***Hashmat***.
 - She was awarded the **53rd Jnanpith Award in 2017**.
 - She was honoured with the **Sahitya Akademi Award in 1980**.
 - Some of her notable works are:
 - Zindaginama.
 - Jaini Meharban Singh.
 - Mitro Marajani.
 - Daar Se Bichchuri.
 - Tin Pahad.
 - Surajmukhi Andhere Ke.

★ Additional Information

- **Jnanpith Award:**
 - The Jnanpith Award is a literary award in India.
 - The award was instituted in **1961**.

- The first recipient of the award was the Malayalam writer **G. Sankara Kurup** who received the award in 1965.
- **Akhlaq Mohammad Khan 'Shahryar'** won the Jnanpith Award in the year **2008**.
- **Kedarnath Singh** won the Jnanpith Award in the year **2013**.

19. Answer: b

Explanation:

The option figure formed by rotating 90° clockwise direction of the following figure is given below:-



Hence, "option 2" is the correct answer.

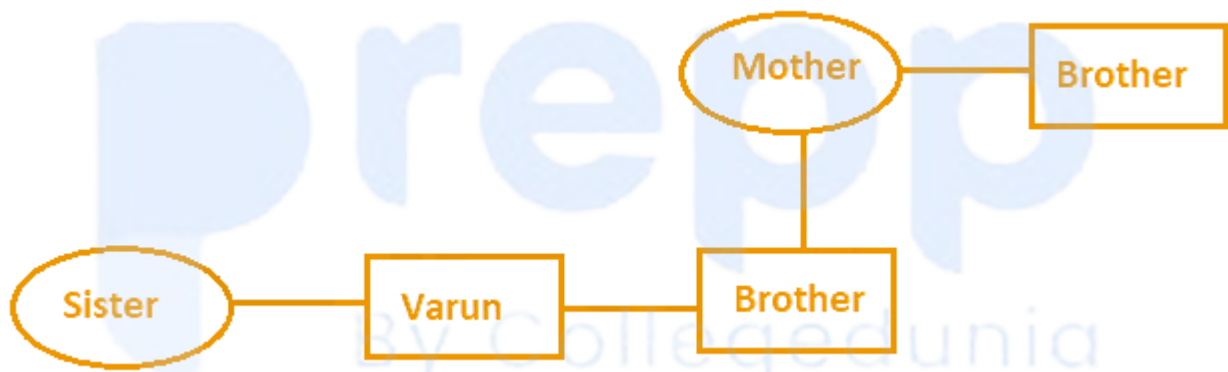
20. Answer: b

Explanation:

Given that:-

Varun is only brother's mother's brother.

The family tree is given below:-



Varun only brother's mother's brother is the maternal uncle of Varun's sister.

Hence, "option 2" is the correct answer.

21. Answer: c

Explanation:

The correct answer is Assam.

★ Key Points

- Meghalaya, a mountainous belt in eastern India, was originally a part of Assam.
- Meghalaya was given special protection in the Indian constitution in 1947, along with other tribal areas, and it preserved a large measure of autonomy while being part of the state of Assam.
- When Assamese was made the official language of the state in 1960, demand for autonomy and self-rule grew.
- Unlike many other hill regions in northeastern India, this was a mostly peaceful and constitutional movement.
- In 1970, Meghalaya was established as an autonomous state inside Assam.
- Meghalaya achieved full statehood on **January 21, 1972**.
- Meghalaya is bounded by:
 - **Assam** to the north and northeast.
 - **Bangladesh** to the south and southwest.

★ Additional Information

- **Manipur** became a part of India in October 1949.
 - In 1956, it was designated as a Union Territory.
 - The North-Eastern Areas (Reorganisation) Act of 1971 made Manipur a full-fledged state in 1972.
- **Bengal** was partitioned along religious lines after India attained independence in 1947.
 - The western section of the country was given to the Dominion of India and given the name West Bengal.
 - The eastern section became part of Pakistan's Dominion as the province of East Bengal (later renamed East Pakistan in 1956),
- In 1975, the Prime Minister of **Sikkim** petitioned the Indian Parliament to make Sikkim a state.
 - Sikkim became the 22nd state of the Indian Union on May 16, 1975, and the monarchy was abolished.

22. Answer: b

Explanation:

Given: **Your Personal Exams Guide**

The number of bacteria decreases in first hour = 4%

The number of bacteria increases in second hour = 5%

The number of bacteria increases in third hour = 10%

Total number of bacteria = 500,000

Time = 3 hours

Calculation:

According to the question

$$\Rightarrow (500,000 \times 96/100 \times 105/100 \times 110/100)$$

$$\Rightarrow (500,000 \times 24/25 \times 21/20 \times 11/10)$$

$$\Rightarrow 554,400$$

Now,

$$\Rightarrow (554,400 - 500,000)$$

$$\Rightarrow 54,400$$

$$\text{Required percentage} = (54,400/500,000 \times 100)$$

$$\Rightarrow (272/25)\%$$

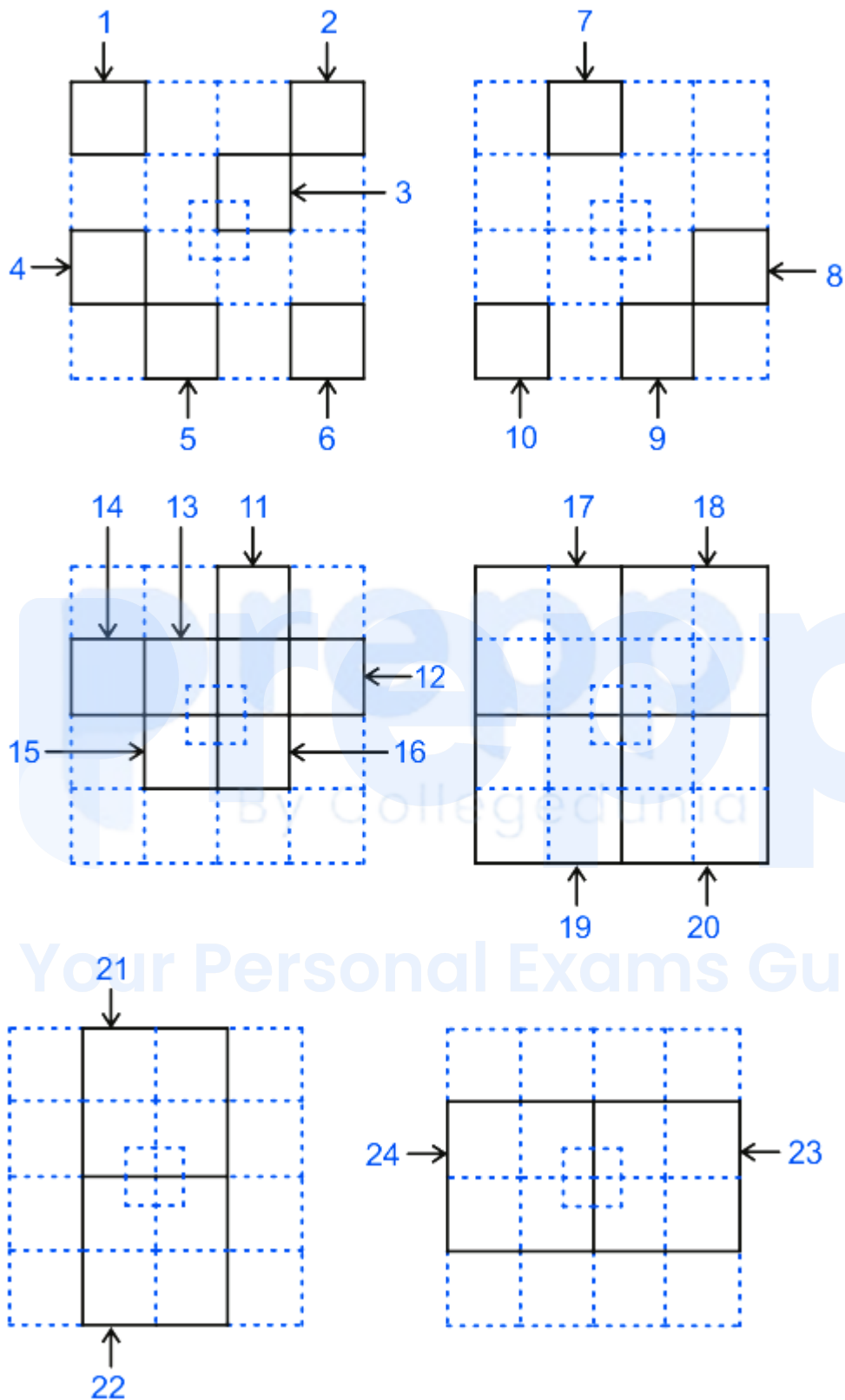
$$\Rightarrow 10.88\%$$

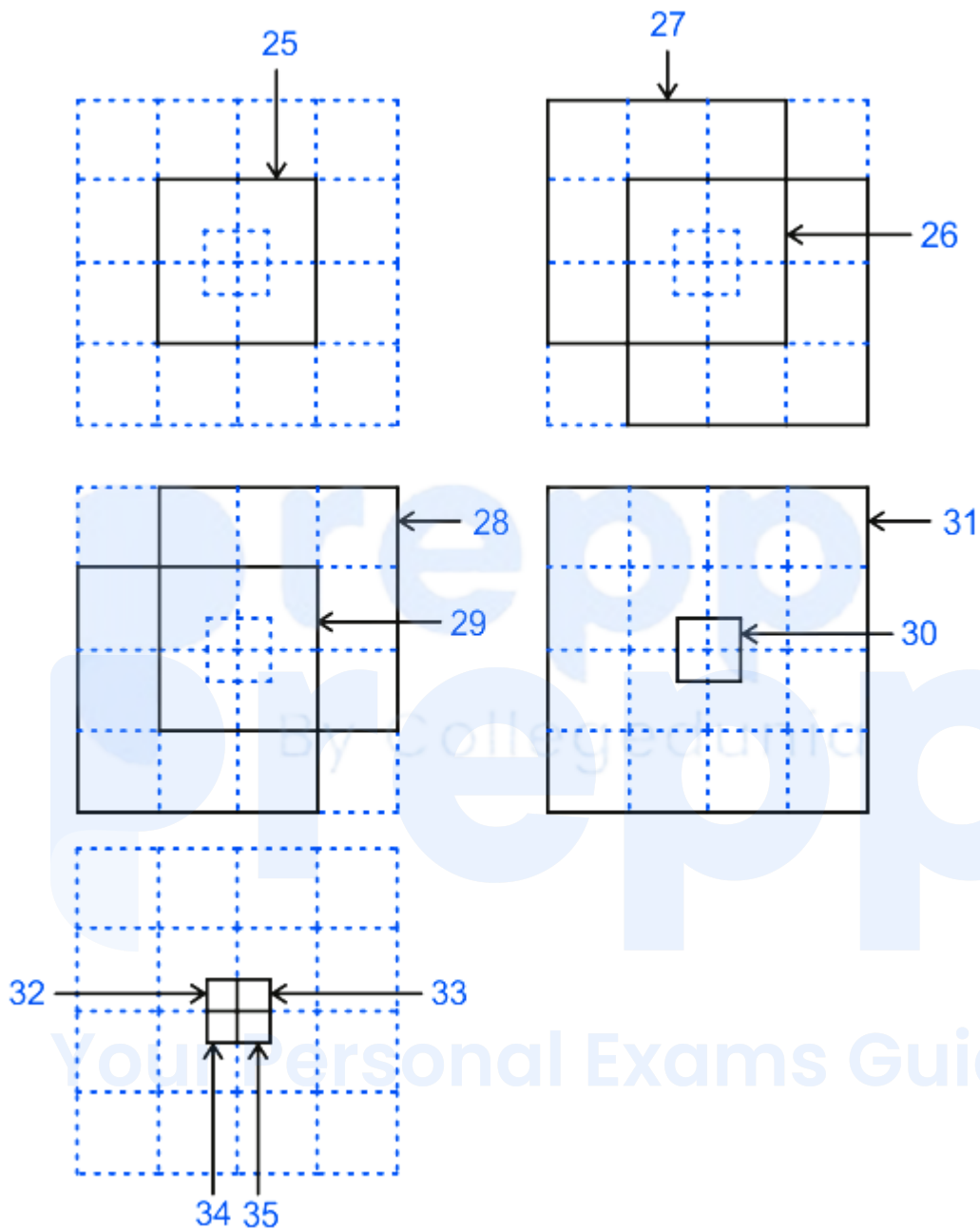
$\therefore$ Required percentage increase is 10.88%

23. Answer: a

Explanation:

Given figure:-





So, the total number of squares is 35.

Hence, "option 1" is the correct answer.

★ Shortcut Trick

Total number of squares = $4 \times 4 + 3 \times 3 + 2 \times 2 + 1 + 5$ (middle square)

$$= 16 + 9 + 4 + 1 + 5$$

= 35

Hence, the correct answer is "35".

24. Answer: c

Explanation:

Given:

Salary spent on shopping, going to restaurants and malls = 15%

Remaining salary on household expenses = 40%

Salary goes to savings = 45%

Salary spent on the house = Rs. 40,000

Concept used:

1 year = 12 months

Calculation:

According to the question

$\Rightarrow 40\% = 40,000$

$\Rightarrow 100\% = (40,000 \times 100/40)$

$\Rightarrow \text{Rs. } 100,000$

Now,

Her annual income = Rs. $(100,000 \times 12)$

$\Rightarrow \text{Rs. } 12,00,000$

$\therefore$ The required annual income is Rs. 12,00,000

25. Answer: a

Explanation:

Given:

Number of work completed by Jeevan = 6 days

Number of work completed by Jyoti = 8 days

He decided to the same thing = Rs. 3200

Number of work completed with the help of Panu = 3 days

Formula used:

Work = Efficiency $\times$ Time

Calculation:

LCM of 6, 8 and 3 is 24

Efficiency of Jeevan = $(24/6) = 4$ units/day

Efficiency of Jyoti = $(24/8) = 3$ units/day

Efficiency of Jeevan, Jyoti and Panu = $(24/3) = 8$ units/day

Now,

Efficiency of Panu = $[8 - (4 + 3)]$ units/day

$\Rightarrow 1$ unit/day

According to the question

$\Rightarrow 8$ units = 3200

$\Rightarrow 1$ unit = $(3200/8)$

⇒ 400

Now,

Panu earned =Rs. (1×400)

⇒ Rs. 400

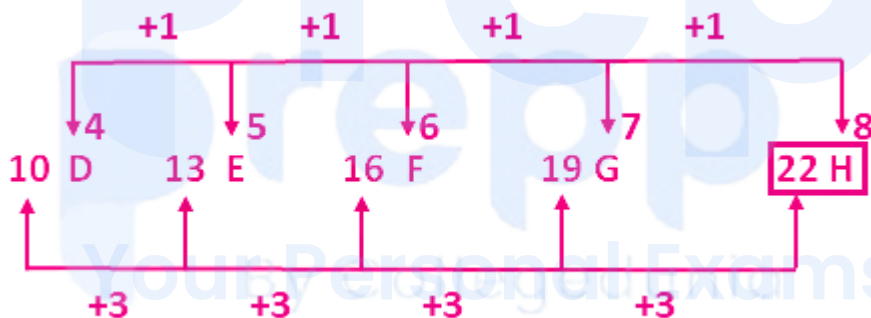
∴ Required amount earned by Panu is Rs. 400

26. Answer: a

Explanation:

The logic followed here is:-

We add 1 in each alphabet and add 3 in each number.



Hence, "option 1" is the correct answer.

27. Answer: a

Explanation:

The correct answer is Indus.

- The name India is derived from the Indus river.

★ Key Points

- **The Indus River System**

- It is also known as *Sindhu*.
- It is the westernmost Himalayan river in India.
- The name India is derived from this river.
- It originates in the Tibetan region from a glacier near Bokhar Chu near **Mansarovar Lake**.
- In Tibet, it is known as Singi Khamban or Lion's mouth.
- In Jammu and Kashmir, its Himalayan tributaries are Zaskar, Dras, Gilgit, etc.
- The tributaries which join Indus at various places are Jhelum, Chenab, Ravi, Beas and Sutlej.
- According to **Indus Water Treaty** signed between India and Pakistan in **1960**, India can utilise only 20% of the total discharge of Indus, Jhelum and Chenab.

28. Answer: b

Explanation:

The correct answer is a voltmeter.

- The symbol represents a voltmeter.

★ Key Points

- **Voltmeter:**

- A voltmeter is a device **used to measure the potential difference between two points in a circuit.**
- It is **connected in parallel** to the circuit.
- The **resistance of an ideal voltmeter is infinite.**

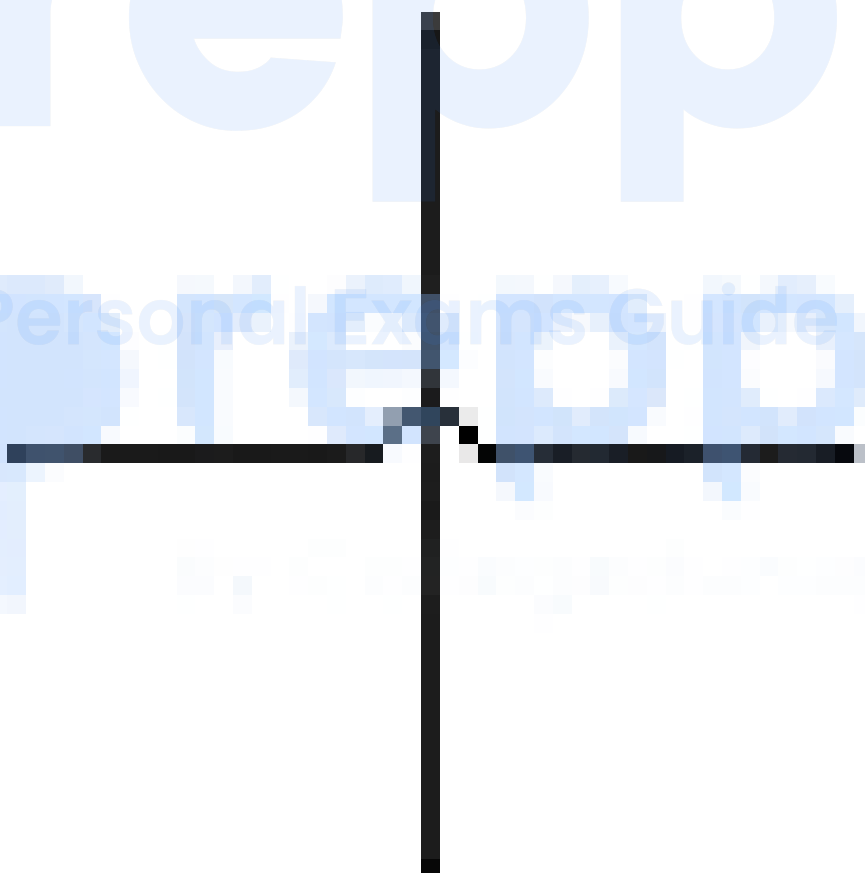
○



★ Additional Information

- The symbol for unconnected wire crossing

○



- The symbol for Variable Resistance or Current Controller:



- The symbol for resistance of resistance R:



○

29. Answer: a

Explanation:

The correct answer is 6.5%.

- The new repo rate announced by the Reserve Bank of India (RBI) on 1st August 2018 is 6.5%.

★ Key Points

- **Repo Rate:**
 - It is the rate, at which RBI lends short-term money to the bank against securities.
 - The new repo rate announced by the Reserve Bank of India (RBI) on 1st August 2018 is 6.5%.
- In December 2021, the **repo rate** stands at **4 %**.

★ Additional Information

- **Bank Rate:**
 - It is also called the rediscount rate.
 - It is the rate, at which the RBI gives finance to commercial banks.
 - **Cash Reserve Ratio (CRR):** The RBI (Amendment) Bill, 2006, empowers RBI to prescribe CRR–Cash that banks deposit with the RBI without any floor

rate or ceiling rate.

- In December 2021, the CRR rate is 4%.
- **Statutory Liquidity Ratio (SLR):**
 - It is the ratio of liquid assets, which all commercial banks have to keep in the form of cash, gold and unencumbered approved securities equal to not more than 40% of their total demand and time deposit liabilities (ranges is 25-40%).
 - In December 2021, the SLR is 18.00%.
- **Reverse Repo Rate:**
 - It is the rate, at which banks park short-term excess liquidity with the RBI.
 - In December 2021, the reverse repo rate is 3.35%.
- **Open Market Operations (OMOs):**
 - Under OMOs, the RBI sells G-securities in the market.

30. Answer: b

Explanation:

Given:

Number of people can make 40,000 bulbs = 12 days

Formula used:

$$M_1 D_1 / W_1 = M_2 D_2 / W_2$$

Calculation:

Let x additional people will be required to making 100,000 bulbs in 9 days

$$\Rightarrow M_1 = 45$$

$$\Rightarrow D_1 = 12$$

$$\Rightarrow W_1 = 40,000$$

$$\Rightarrow M_2 = (45 + x)$$

$$\Rightarrow D_2 = 9$$

$$\Rightarrow W_2 = 100,000$$

Now,

$$M_1 D_1 / W_1 = M_2 D_2 / W_2$$

$$\Rightarrow (45 \times 12) / 40,000 = (45 + x) \times 9 / 100,000$$

$$\Rightarrow 150 = 45 + x$$

$$\Rightarrow x = (150 - 45)$$

$$\Rightarrow x = 105$$

$\therefore$ The required people will be required is 105

31. Answer: d

Explanation:

Given:

The sides of a hexagon are extended three times.

Formula used:

The Area of hexagon = $(3\sqrt{3}/2) \times \text{side}^2$

Calculation:

Let the side of the old hexagon be a

The Side of a new hexagon is 3a

The Ratio of the areas of new and old hexagon

$$\Rightarrow (3\sqrt{3}(3a)^2/2)/(3\sqrt{3}a^2/2)$$

$$\Rightarrow 9a^2/a^2$$

$$\Rightarrow 9 : 1$$

$\therefore$ The ratio of the areas of the new and the old (original) hexagon so formed is 9 : 1.

32. Answer: b

Explanation:

The logic followed here is:-

Figures A, B, and C are not completely squares that cut one line but figure D is a complete square.

So, figure D is different from others.

Hence, "option 2" is the correct answer.

33. Answer: c

Explanation:

Given:

CP of the cake = Rs. 350

SP of the cake = Rs. 700

Formula used:

Profit = SP – CP

Profit% = Profit/CP × 100

Calculation:

$$\text{Profit} = (700 - 350)$$

$$\Rightarrow 350$$

$$\text{Profit\%} = (350/350 \times 100)$$

$$\Rightarrow 100\%$$

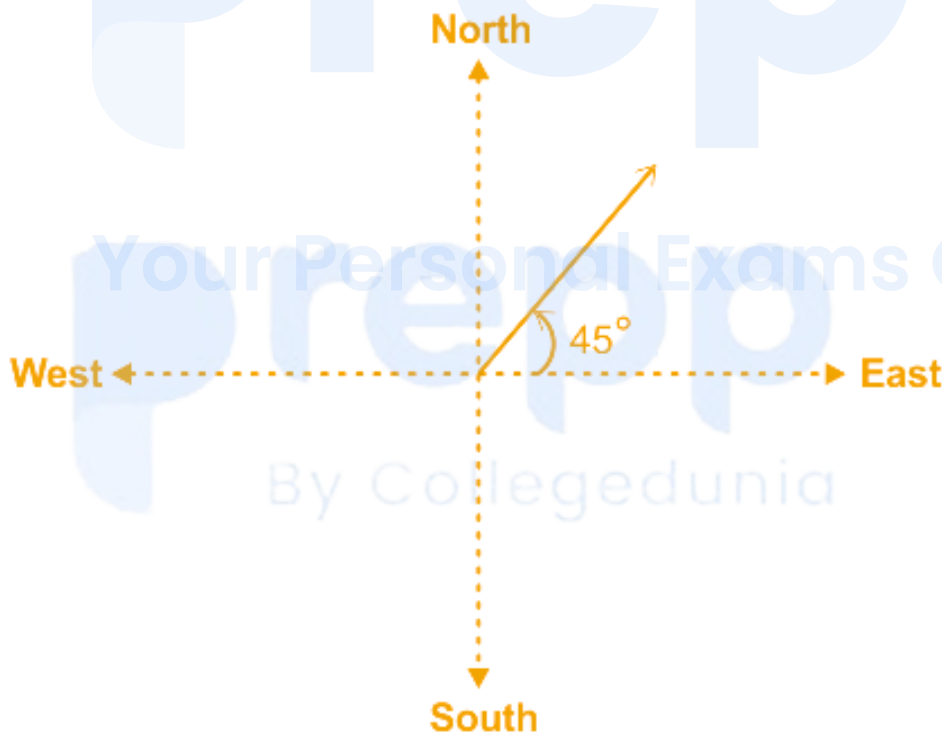
$\therefore$ Required percentage of his profit margin is 100%

34. Answer: c

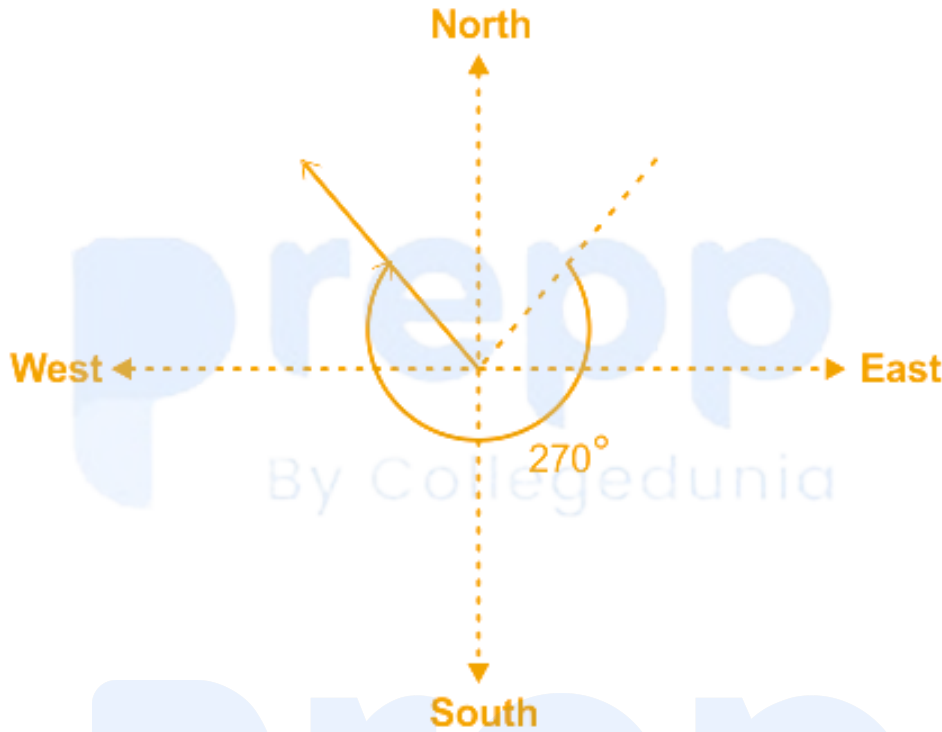
Explanation:

Given that:-

Suresh is standing facing east. It rotates 45° anticlockwise:-



Then 270° clockwise. Then:-



Suresh is now facing Northwest.
Hence, "option 3" is the correct answer.

35. Answer: b

Explanation:

Given:

The difference between the ages of two persons = 7 years

The ratio of their ages = 7 : 9

Calculation:

Let the ratio of ages be $7x$ and $9x$ respectively

According to the question

$$\Rightarrow (9x - 7x) = 7$$

$$\Rightarrow 2x = 7$$

$$\Rightarrow x = 3.5$$

Now,

The age of the younger one = $7x = (7 \times 3.5)$ years

$$\Rightarrow 24.5 \text{ years}$$

$\therefore$ The required age of the younger one is 24.5 years

36. Answer: b

Explanation:

The correct answer is Urethra.

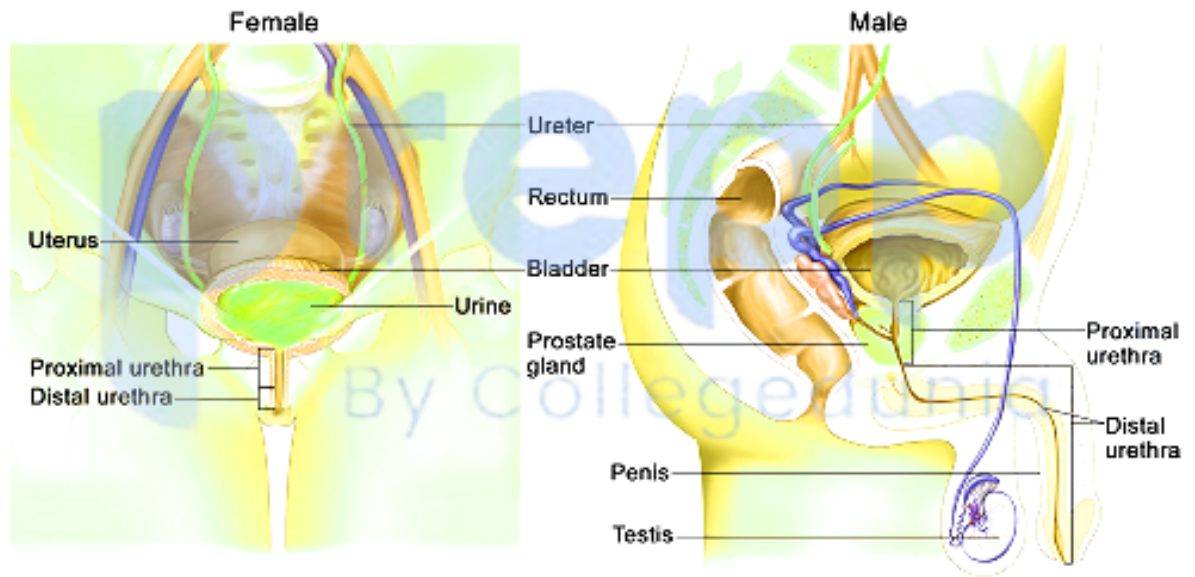
- The spermatic cord joins with the duct leading through the bladder to form a common passageway, which is called Urethra.

★ Key Points

- Urethra:
 - It is a 20 cm tube that allows urine to pass out of the body.
 - In men, it's a long tube that runs through the penis.
 - It also carries semen.

○

Distal and Proximal Urethra



★ Additional Information

- Ureters:
 - These bring the urine downwards and open into the urinary bladder.
- Testis:
 - The **testis is the male sex gland**.
 - They are the site of **sperm production** and are also responsible for the production of testosterone.

Your Personal Exams Guide

37. Answer: c

Explanation:

Given:

Rate = 5%

Present population of the city = 1,85,220

Time = 1 year

Formula used:

Population n years ago = $P/(1 + R/100)^n$

Calculation:

According to the question

$$\Rightarrow P/(1 + R/100)^n$$

$$\Rightarrow 1,85,220/(1 + 5/100)^1$$

$$\Rightarrow 1,85,220/(21/20)$$

$$\Rightarrow (1,85,220 \times 20/21)$$

$$\Rightarrow 1,76,400$$

$\therefore$ The required of the city a year ago is 1,76,400

38. Answer: d

Explanation:

The correct answer is All India Anna Dravida Munnetra Kazhagam.

- E. Madhusudan leads All India Anna Dravida Munnetra Kazhagam.

★ Key Points

- **All India Anna Dravida Munnetra Kazhagam:**
 - It is a regional political party in this state of Tamil Nadu and the union territory of Puducherry.
 - **E. Madhusudan** is the president of the party.
 - **M. G. Ramachandran** was the founder of the party.
 - The party is a part of the India-ruling **National Democratic Alliance**.

★ Additional Information

- **S. Ramadoss** is the leader of the **Pattali Makkal Kachchi** party.
- **N. Rangaswamy** is the leader of the **All India N. R. Congress**.

- Lalu Prasad Yadav is the leader of the Rashtriya Janata Dal.

39. Answer: b

Explanation:

Given:

$$a + b + c = 16$$

$$ab + bc + ca = 78$$

Formula used:

$$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$$

$$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2) - (ab + bc + ca)$$

Calculation:

According to the question

$$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$$

$$\Rightarrow (16)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$$

$$\Rightarrow (16)^2 - 2(ab + bc + ca) = a^2 + b^2 + c^2$$

$$\Rightarrow 256 - 2 \times 78 = a^2 + b^2 + c^2$$

$$\Rightarrow 256 - 156 = a^2 + b^2 + c^2$$

$$\Rightarrow 100 = a^2 + b^2 + c^2$$

Now,

$$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2) - (ab + bc + ca)$$

$$\Rightarrow (a + b + c)[(a^2 + b^2 + c^2) - (ab + bc + ca)]$$

$$\Rightarrow 16 \times (100 - 78)$$

$$\Rightarrow 16 \times 22$$

$$\Rightarrow 352$$

$\therefore$ The required value is 352

40. Answer: b

Explanation:

The logic followed here is:-

In Figures A, B, and C all the three arrows are in the same direction but in figure D all three arrows are in different directions.

Hence, "option 2" is the correct answer.

41. Answer: d

Explanation:

The correct answer is Saudi Arabia.

- Saudi Arabia has recently declared yoga as a sporting activity.

★ **Key Points**

- The government of **Saudi Arabia** declared Yoga as a Sports Activity.
- With this move, Yoga is now an official sport practised under the Saudi Ministry of trade and industry.
- This means that anyone in Saudi Arabia who wants to practice yoga can practice **by getting a license** and the person shall not be disapproved or face any consequences for the same.

- **Nouf Al Marwaai** became the first Saudi woman to teach yoga. and has been recognized as the driving force behind the development of yoga in Saudi Arabia.

42. Answer: c

Explanation:

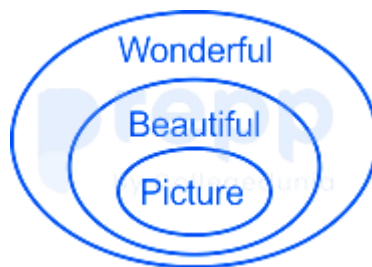
- Since X states that s/he wants to conduct a survey to find the 'effectiveness' of advertisement, it can be safely assumed that the impact of advertisements can be analyzed (ascertained) through surveys. So, assumption I is implicit.
- As X states that s/he wants to conduct a survey on the given type of case, it is safe to assume that s/he has the ability or skill to do it. Thus, assumption II is also implicit.

Hence the correct answer is **option 3**.

43. Answer: c

Explanation:

The Venn diagram is given below:-



Conclusion:

1. All pictures are wonderful. → True (All pictures are beautiful, and all beautiful is wonderful. So, all pictures are wonderful.)

2. Some wonderful are beautiful. → True (All beautiful is wonderful. So, we can say that some wonderful are beautiful.)

Hence, "option 3" is the correct answer.

★ Additional Information

Statement	Conclusion		
	Definite (100% true)	Can't Say	Incorrect (100% false)
All A are B 	Some A are B Some B are A	Some B are not A All B are A	Some A are not B No A is B No B is A
Some A are B 	Some B are A	Some A are not B All B are A Some B are not A All A are B	No A is B No B is A
No A is B 	No B is A Some A are not B Some B are not A		Some A are B Some B are A All A are B All B are A
Some A are not B 		Some B are not A Some A are B Some B are A All B are A No A is B No B is A	All A are B

44. Answer: d

Explanation:

The correct answer is 160-170 million.

- The estimated growth of the Indian labour force by 2020 is 160-170 million.

★ Key Points

- India's labour force is expected to expand by **160-170 million** in **2020**.
- It mostly depends on various factors which include labour force participation, population growth rate, education enrolment at higher levels etc.

- As per the joint study done by **ASSOCHAM-Thought Arbitrage** on 'Employment Generation and Rebooting India', it is said that employment in India witnessed an increase to 470-million in 2013 as compared to 323-million in 1991.

★ Additional Information

- International Labour Organization was established in 1919.
- Its headquarters are in Geneva, Switzerland.
- It is a member of the UN since 1945.
- **Labour Day:**
 - It is celebrated every year on the **1st of May**.
 - It is also known as **May Day**.
 - Labour Day was first celebrated on **May 1, 1890**.

45. Answer: c

Explanation:

Given:

A container contains oil = 990 litres

Calculation:

According to the given option

$$\Rightarrow (990 + 124) = 1114$$

It is not the 4-digit perfect square number

$$\Rightarrow (990 + 104) = 1094$$

It is not the 4-digit perfect square number

$$\Rightarrow (990 + 166) = 1156$$

It is the 4-digit perfect square number of 34

$$\Rightarrow (990 + 130) = 1120$$

It is not the 4-digit perfect square number

$\therefore$ The smallest 4-digit perfect square number is 166 litres

46. Answer: b

Explanation:

The correct answer is World Rapid Chess Championship.

- Grandmaster Viswanathan Anand won the Chess Championship title World Rapid Chess Championship held in Riyadh, Saudi Arabia, in 2017.

★ Key Points

- Viswanathan Anand won the **World Rapid Chess Championship** in the year **2017** in Riyadh.
- He defeated **Vladimir Fedoseev** by 2-0 in the finals.
- He is an Indian chess grandmaster and a former world chess champion.
- He became the **first grandmaster from India in the year 1988**.
- He is one of the few players to have surpassed the **Elo rating of 2800**, a feat he first achieved in **2006**.
- Anand is a **five-time world chess champion**.

★ Additional Information

- **The International Chess Federation (FIDE):**
 - It was founded on **20 July 1924** in **Paris, France**.
 - Its headquarter is in **Lausanne, Switzerland**.
 - **Arkady Dvorkovich** is the **current president**.

47. Answer: c

Explanation:

The correct answer is Rakesh Singh.

- Rakesh Singh has been appointed as the private banking head of the HDFC bank.

★ Key Points

- **Housing Development Finance Corporation (HDFC):**
 - It was founded in the year **1977**.
 - Its headquarters are located in **Mumbai, Maharashtra**.
 - **Deepak Parekh** is the current **chairman**.
 - It was the **first private bank** to receive a license after **1993 economic reforms**.
 - In the year 2017, **Rakesh Singh** was appointed as the private banking head of the bank.
 - He is currently the **Head of Investment Banking & Products**, HDFC.

48. Answer: a

Explanation:

The correct answer is Ranbir Kapoor.

- Ranbir Kapoor was the lead actor in the recent movie 'Sanju'.

★ Key Points

- **Sanju movie:**
 - The movie was released in the year **2018**.
 - The movie was directed by **Raj Kumar Hirani**.
 - **Vicky Kaushal and the Dia Mirza** were in the supporting role.

49. Answer: d

Explanation:

Given:

Shrinesh office floor made up of 2800 marbles

Length of floor = 3 cm = 0.03 m

Breadth of floor = 5 cm = 0.05 m

Formula used:

Area of rectangle = length $\times$ breadth

Calculation:

Area of rectangle = $(0.03 \times 0.05) \text{ m}^2$

$\Rightarrow 0.0015 \text{ m}^2$

Now,

$\Rightarrow (0.0015 \times 2800) \text{ m}^2$

$\Rightarrow 4.2 \text{ m}^2$

Cost of polishing the floor = Rs. (25×4.2)

$\Rightarrow \text{Rs. } 105$

$\therefore$ The cost of polishing the floor is Rs. 105

50. Answer: c

Explanation:

Calculation:

$$\Rightarrow 1/8 = 0.125$$

$$\Rightarrow 2/12 = 0.166$$

$$\Rightarrow 3/16 = 0.1875$$

$$\Rightarrow 4/20 = 0.2$$

$\therefore$ The smallest fraction is $1/8$

51. Answer: a

Explanation:

The correct answer is Np.

- Np is not a transition metal.

★ Key Points

- **D-Block**
 - It comprises **10 groups (3 to 12)**.
 - These elements are called **transition elements**.
 - General electronic configuration of d-block elements is $(n-1)d^{1-10} ns^{0-2}$
 - **Hg, Zn, Cu, Sc** etc. are d-block elements but not the transition elements.
- **Neptunium (Np)** is not a d-block element.
- It is a radioactive chemical element of the actinoid series of the periodic table.
- The atomic number of **Np is 93**.
- The element was named after the planet **Neptune**.
- **Zirconium (Zr), Technetium (Tc) and Rhenium (Re)** are all transition elements.

The image shows a periodic table of elements. The transition elements (d-block) are highlighted in green and labeled 'Transition elements'. The inner transition elements (f-block) are also highlighted in green and labeled 'Inner transition elements'. The elements are arranged in rows and columns, with their atomic numbers, symbols, and names listed.

52. Answer: d

Explanation:

The correct answer is 56.

- The formula unit mass of CaO is 56.

★ Key Points

- Calcium Oxide (CaO):.
 - Its unit mass is 56 .
 - The weight of Calcium is 40.
 - The weight of Oxygen is 16.
 - Hence, $\text{Ca} + \text{O} = 40 + 16 = 56$

★ Additional Information

- Uses of CaO:

- **Calcium Oxide** is widely used in making **porcelain and glass**, purifying **sugar**, making **bleaching powder**, in making **calcium carbide**, and **calcium cyanamide**.
- It is also used in **water softeners, mortars and cement**.
- In agriculture, it is used for treating **acidic soils**.

53. Answer: a

Explanation:

The correct answer is **Ag**.

- Compounds of Ag are used in black and white photography.

★ Key Points

- **Silver :**
 - **Symbol :** Ag (Latin word: Argentums)
 - **Atomic mass :** 107.8682 u
 - **Atomic number :** 47
- The compounds of **Silver(Ag)**, **silver bromide and silver chloride** are used in black and white photography.
- These two are **photosensitive compounds**.
- They get easily **decomposed on exposure to light**.
- Hence, they are used in black and white photography and films.

★ Additional Information

Compound	Symbol
Copper	Cu
Gold	Au
Aluminium	Al

54. Answer: c

Explanation:

The correct answer is Tensility.

★ Key Points

- **Metals :**
 - These are the elements that are hard, lustrous, ductile, malleable, sonorous and conductor of heat and electricity in their solid as well as the molten state.
 - These evolve hydrogen gas when react with water and acids. Mercury (metal) is liquid at room temperature.
 - Ti is called strategic metal.

Ductility:

- Ductility (Tensility) is the ability of metal by which it can be drawn into wires.
- **Gold and Copper** are the most ductile metals.

★ Additional Information

Malleability:

- Malleability is the ability of metals by which they can be beaten into thin sheets.

55. Answer: c

Explanation:

Calculation:

The total income received from toys = Rs. 38,72,000

The sales of activity toys manufactured by the company = 5%

$$\Rightarrow \text{Rs. } (38,72,000 \times 5/100)$$

$$\Rightarrow \text{Rs. } 1,93,600$$

$\therefore$ The income earned by company XYZ from activity toys is Rs. 1,93,600

56. Answer: d

Explanation:

The correct option is **862.4J**.

★ **Key Points**

- **Potential Energy**
 - It is the energy possessed by a body by virtue of its position.
- The Potential Energy of a body in the gravitational field of the earth is **mgh** .
- where m = mass, g = acceleration due to gravity, h = height of the body from the surface of the earth.
- When a body is falling downwards, then its potential energy goes on changing to kinetic energy.
- Given,

- $\text{mass} = 11\text{kg}$

- $\text{height} = 8\text{m}$

- $g = 9.8 \text{ m/s}$

- $\text{PE} = mgh$

$$= 11 \times 8 \times 9.8$$

$$= 862.4\text{J}$$

57. Answer: a

Explanation:

Given:

The sum of the ages of Sindu and Bindu = 30 years

The product of their ages = 221

Calculation:

Let the age of Sindu be x years and Bindu be $(30 - x)$ years respectively

According to the question

$$\Rightarrow x \times (30 - x) = 221$$

$$\Rightarrow 30x - x^2 = 221$$

$$\Rightarrow x^2 - 30x + 221 = 0$$

$$\Rightarrow x^2 - 17x - 13x + 221 = 0$$

$$\Rightarrow x(x - 17) - 13(x - 17) = 0$$

$$\Rightarrow (x - 17)(x - 13) = 0$$

$$\Rightarrow x = 17 \text{ or } 13$$

Now,

$$\Rightarrow x = 13$$

Then,

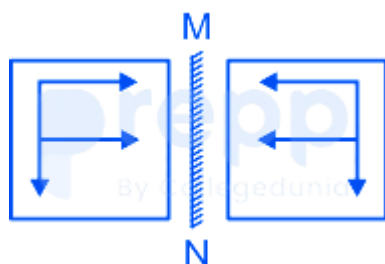
$$\Rightarrow (30 - x) = (30 - 17) = 13 \text{ years}$$

$\therefore$ The required ages is 17 years and 13 years

58. Answer: d

Explanation:

The mirror image of the figure is given below:-



Hence, "option 4" is the correct answer.

59. Answer: b

Explanation:

Given:

Total mixture of milk and water = 35 litres

The ratio of milk and water = 4 : 1

Water added in the mixture = 7 litres

Calculation:

Quantity of milk in the mixture = $(\frac{4}{5} \times 35)$ litres

$\Rightarrow$ 28 litres

Quantity of water in the mixture = $(\frac{1}{5} \times 35)$ litres

$\Rightarrow$ 7 litres

If 7 litres of water is added, the new mixture of water = $(7 + 7)$ litres

$\Rightarrow$ 14 litres

Now,

New ratio of milk and water = (28 : 14)

⇒ 2 : 1

∴ The required ratio of milk and water is 2 : 1

60. Answer: a

Explanation:

The correct answer is **Both A and B are true.**

★ Key Points

- **Speed of Sound**
 - In a medium, the speed of sound depends **upon the elasticity and density of the medium.**
 - When sound enters from one medium to another medium, its speed and wavelength change but frequency remains unchanged.
 - In a medium, the speed of sound is independent of frequency.
 - Speed of sound is maximum in solids and minimum in gases.
 - The speed of sound is more in humid air than in dry air because the density of humid air is less than the density of dry air.
 - The unit of loudness is the decibel (dB).
 - **Effect of pressure on the speed of sound:**
 - The speed of sound is independent of pressure.
 - **Effect of temperature on the speed of sound:**
 - The speed of sound increases with the increase of the temperature of the medium.
 - In **steel**, the speed of sound is **5960 m/s**. Hence, option A is correct
 - In **nickel**, the speed of sound is **6040 m/s**. Hence, option B is correct.

★ Important Points

In any medium, if the temperature increases, the speed of sound also increases and vice versa.

Speed of sound in different media at 25 °C		
State	Medium	Speed of sound (m/s)
Solid	Solids Aluminium	6420
	Nickel	6040
	Steel	5960
	Iron	5950
	Brass	4700
	Glass (Flint)	3980
liquid	Liquids Water (Sea)	1531
	Water (distilled)	1498
	Ethanol	1207
	Methanol	1103
gas	Gases Hydrogen	1284
	Helium	965
	Air	346
	Oxygen	316
	Sulfur dioxide	213

<https://ncert.nic.in/ncerts/l/iesc112.pdf>

61. Answer: b

Explanation:

The correct answer is Base + Acid → Salt + Water.

- In general, a neutralization reaction can be written as $\text{Base} + \text{Acid} \rightarrow \text{Salt} + \text{Water}$.

★ Key Points

- **Neutralization Reaction:**

- It is a chemical reaction in which an acid and base react together to form salt and water as products.
- The formation of Sodium Chloride is an example of the neutralization reaction.
 - $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

★ Additional Information

- **Acid :**

- An acid is a substance which:
- Is sour in taste.
- Turns blue litmus paper into red.
- Contains replaceable hydrogen.
- Gives hydrogen ion (H^+) in an aqueous solution.
- Can donate a proton.
- Can accept an electron

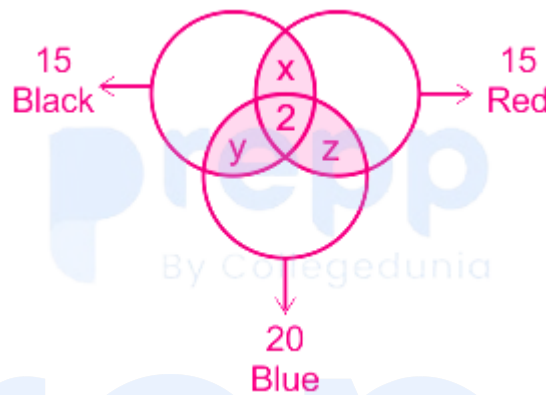
- **Bases:**

- A Base is a substance which:
- Is bitter in taste.
- Turns red litmus paper into the blue.
- Gives hydroxyl ions (OH^-) in an aqueous solution.
- Can accept a proton.
- Can donate electrons.

62. Answer: c

Explanation:

Calculation:



The shaded portion represent customer who bought atleast two dresses.

Customers who bought exactly two dresses

$$\Rightarrow 8 - (2 \times 2) = 4$$

Thus, we have

$$\Rightarrow n(\text{Black}) = 15, n(\text{Red}) = 15, n(\text{Blue}) = 20$$

$$\Rightarrow n(\text{Black} \cap \text{Red} \cap \text{Blue}) = 2$$

$$\Rightarrow n(\text{Black} \cap \text{Red}) = n(\text{Red} \cap \text{Blue}) = n(\text{Blue} \cap \text{Black}) = 4$$

$$\therefore n(\text{Black} \cup \text{Red} \cup \text{Blue}) = n(\text{Black}) + n(\text{Red}) + n(\text{Blue}) - n(\text{Black} \cap \text{Red}) - n(\text{Red} \cap \text{Blue}) - n(\text{Blue} \cap \text{Black}) + n(\text{Black} \cap \text{Red} \cap \text{Blue})$$

$$\Rightarrow 15 + 15 + 20 - 4 - 4 - 4 + 2$$

$$\Rightarrow (50 - 10)$$

$$\Rightarrow 40$$

$\therefore$ Customers bought only one color dress is 40.

★ Alternate Method

Total customers who bought atleast two colors = $(8 + 2) = 10$

Customers bought clothes of atleast one color from the store

$$\Rightarrow (15 + 15 + 20) - 10$$

$$\Rightarrow (50 - 10)$$

$$\Rightarrow 40$$

$\therefore$ Customers bought only one color dress is 40.

63. Answer: a

Explanation:

The correct answer is Madhya Pradesh.

- Madhya Pradesh has launched the "Anandam" program to help needy people.

★ Key Points

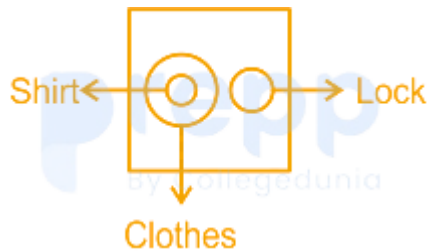
- **Anandam Scheme:**
 - The scheme was launched by **Chief Minister Shivraj Singh Chouhan**.
 - The programme comes under the newly-formed **Aanand Department**.
 - The **programme aims to help needy persons and to increase the happiness per cent of the citizen**.
 - The scheme has also been launched at the **panchayat level**.

64. Answer: c

Explanation:

The Venn diagram is given below:-

Shirts are made of cloth and Lock is different.



Hence, "option 3" is the correct answer.

65. Answer: d

Explanation:

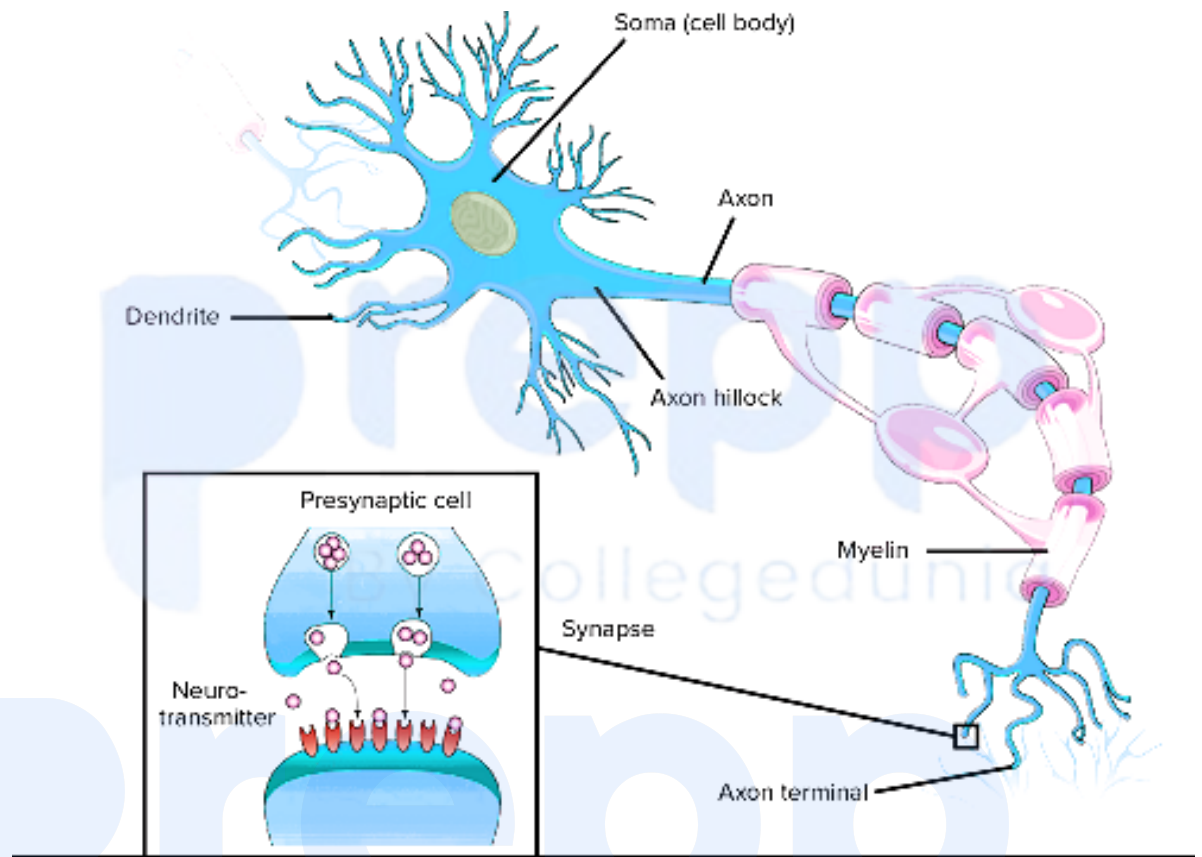
The correct answer is Dendrite.

- Each neuron is made up of a cyton (cell body), from which many small branches emerge, which are called a dendrite.

★ Key Points

- **Structure of Neuron:**
 - **Dendrites**
 - Dendrites are branch-like structures that receive signals from other neurons and allow the transmission of signals to the cell body.
 - **Cell Body:**
 - The cell body of a neuron consists of a nucleus, Golgi body, endoplasmic reticulum, mitochondria and other components.
 - **Axon:**
 - It is a tube-like structure that carries an electrical impulse from the cell body of a neuron to the axon terminals that transmits the impulse to another neuron.
 - **Synapse:**
 - It is the junction between the terminal of one neuron and the dendrites of another neuron.

○



66. Answer: d

Explanation:

The Venn diagram is given below:-



Conclusion :

1. Some drops are empty. → False (Empty word is not present in statement. So, some drops are empty is wrong.)
2. Bottles are jams. → False (There is no direction relation given between Jam and Bottle so, bottles are jams it can be possible but not definite, hence, false)

Hence, "option 4" is the correct answer.

★ Additional Information

Statement	Conclusion		
	Definite (100% true)	Can't Say	Incorrect (100% false)
All A are B 	Some A are B Some B are A	Some B are not A All B are A	Some A are not B No A is B No B is A
Some A are B 	Some B are A	Some A are not B All B are A Some B are not A All A are B	No A is B No B is A
No A is B 	No B is A Some A are not B Some B are not A		Some A are B Some B are A All A are B All B are A
Some A are not B 		Some B are not A Some A are B Some B are A All B are A No A is B No B is A	All A are B

67. Answer: c

Explanation:

The correct answer is Sanjeev Gupta.

★ Key Points

- **Sanjeev Gupta** is a British businessman of Indian origin.
- He is a **steel tycoon in Britain**.
- He has been appointed by Prince Charles as the official ambassador of the Industrial Cadet Program, which aims to nurture manufacturing skills.
- The aim of the program is to give children and young people the direct structured experience of industry while still at school or college.

68. Answer: b

Explanation:

Given:

Total revenue of the company ABC in 2015 = Rs.3628000

Percentage of manufacturing of other leather items = 5%

Calculation:

Revenue generated by manufacturing other leather items:

$$\Rightarrow \text{Total Revenue} \times 5/100$$

$$\Rightarrow 3628000 \times 5/100$$

$$\Rightarrow \text{Rs.181400}$$

$\therefore$ The required result is Rs.181400.

69. Answer: b

Explanation:

The correct answer is Sc, Ga and Ge.

★ Key Points

- Mendeleev's periodic table is an arrangement of elements in an increasing **atomic mass**.
- **Chlorine, oxygen, and silicon** were included in Mendeleev's periodic table.
- In Mendeleev's periodic table, Sc, Ga and Ge found a place in the table later.
 - **Germanium** was discovered, and it filled in the gaps left by Mendeleev while also possessing the desired qualities.

- Unnamed elements were given the names EKA- Boron, EKA- Aluminum, and EKA Silicon by Mendeleev, which were eventually replaced by Scandium, Gallium, and Germanium.
- Elements are, arranged in an increasing order atomic mass, in a horizontal line.
 - This horizontal arrangement of elements is a 'period'.

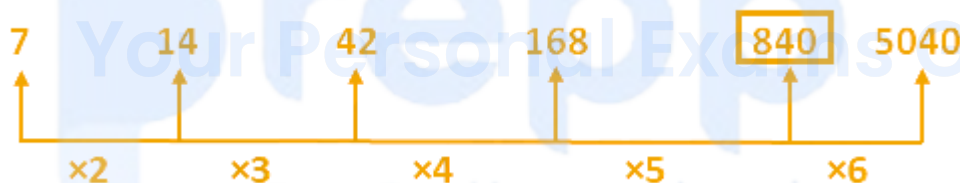
★ Additional Information

- The metallic property of an element in the **modern periodic table** decreases from left to right in a period but increases from top to bottom in a group.
- Elements of the same group in the modern periodic table have the **same valence electrons**.
- The atomic mass of an element is the average mass of the atoms of an element measured in the **atomic mass unit** (AMU, also known as daltons, D).

70. Answer: b

Explanation:

The logic followed here is:-



Hence, "option 2" is the correct answer.

71. Answer: b

Explanation:

Given:

$$x^2 + \frac{2x}{5} + \frac{1}{25} = 0$$

Formula used:

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

Calculation:

$$x^2 + \frac{2x}{5} + \frac{1}{25} = 0$$

$$\Rightarrow x^2 + 1/(5^2) + 2 \times x \times 1/5 = 0$$

$$\Rightarrow (x + 1/5)^2 = 0$$

$$\Rightarrow x = -1/5$$

$$\text{Now, } (x - \frac{2}{3})^2 = (-1/5 - 2/3)^2$$

$$\Rightarrow (-13/15)^2$$

$$\Rightarrow 169/225$$

$\therefore$ The required result is 169/225.

72. Answer: b

Explanation:

Given:

$$144/0.144 = 14.4/x$$

Calculation:

$$144/0.144 = 14.4/x$$

$$\Rightarrow 144 \times x = 14.4 \times 0.144$$

$$\Rightarrow x = 144/10 \times 144/1000 \times 1/144$$

$$\Rightarrow x = 144/10000$$

$$\Rightarrow x = 0.0144$$

$\therefore$ The value of $\frac{144}{0.144} = \frac{14.4}{x}$ is 0.0144

73. Answer: d

Explanation:

The correct answer is Tamil.

- The epics 'Silappadikaram' and 'Manimekalai' of the Sangam period were written in the Tamil language.

★ Key Points

- **The Sangam Age:**
 - It is a period between the **3rd century B.C. and 3rd century A.D.** in South India.
 - The period is named after the **Sangam academies** which were held during that period and flourished under the royal patronage of the Pandya kings of Madurai.
 - The Sangam Age was ruled by three dynasties namely the **Cheras, Cholas and Pandyas**.
 - **Silappathikaram** was written by **Elango Adigal**.
 - **Manimekalai** was written by **Sittalai Sattanar**.

74. Answer: c

Explanation:

The correct answer is 3 C.

- The work done between two points having the potential of 12 V is 36 J. The electric charge flowing between those points is 3 C.

★ Key Points

- **Work:**
 - When a body is displaced by applying a force on it, then work is said to be done.
 - **Work = Force × displacement.**
 - Its **SI unit** is **joule**.
- In electricity,
 - **Work done = Potential Difference × Charge**
- Given,
 - Work = 36 J,
 - Potential difference = 12 V
 - Charge = ?
- By Formula,
 - Work = potential difference × charge
 - Charge = Work / potential difference
 - Charge = 36 J / 12 V
 - Charge = **3 Coulomb**

75. Answer: d

Explanation:

The correct answer is Trains and Airplanes.

★ Key Points

- **Inertia** is the tendency of undisturbed objects to remain at rest or to continue moving at the same speed.
- The quantity of **mass in a body determines its inertia**.
- A body of larger mass has more inertia; hence Trains and Airplanes has more inertia than the other examples given.
- The **first law of motion** (Newton's first law) is also known as the law of inertia.

- When a motorcar makes a sharp turn at a high speed, we tend to get thrown to one side due to the effect of inertia.
- The natural tendency of an object to resist a change in its state of motion or rest is known as **inertia**.
- An object's mass is a measure of its inertia.

76. Answer: d

Explanation:

The correct answer is Less than the bullet.

- If a shot is fired from a gun and the gun comes backwards, then the kinetic energy of the gun will be Less than the bullet.

★ Key Points

- The relation between kinetic energy and momentum is given by
- $K = \frac{P^2}{2m}$
- $P = mv$
- As we see the kinetic energy is inversely proportional to the mass keeping momentum constant.
- Hence, **the kinetic energy of the gun is lesser than the kinetic energy of the bullet.**

★ Additional Information

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

77. Answer: b

Explanation:

Given:

Number = 20000

Concept used:

Lowest Common Multiple

Dividend = Divisor $\times$ Quotient + Remainder

Calculation:

By Prime Factorization, 15, 16 and 25 can be written as:

$$15 = 3 \times 5$$

$$16 = 2^4$$

$$25 = 5^2$$

$$\text{LCM}(15, 16, 25) = 2^4 \times 3 \times 5^2 = 1200$$

By dividing 20000 by 1200, we get:

$$20000 = 1200 \times 16 + 800$$

$\therefore$ The smallest number which is 800.

78. Answer: a

Explanation:

The correct answer is Upthrust/Area.

★ Key Points

• **Pressure:**

- Pressure is defined as a force acting normally on the unit area on the surface.
- **SI unit** of pressure is **N/m^2**
- It is also called **Pascal (Pa)**.
- Pressure is a scalar quantity.
- Atmospheric pressure of **1 atm = $1.01 \times 10^{-5} \text{ N/m}^2 = 760 \text{ torr}$** .

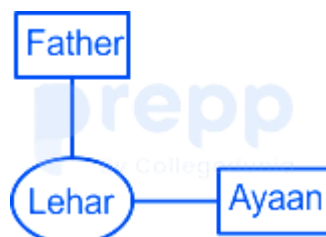
79. Answer: a

Explanation:

Symbol in Diagram	Meaning
○	Female
□	Male
==	Married Couple
—	Siblings
	Difference of A Generation

Lehar introduces Ayaan as the only son of his father.

The family tree is given below:-



Ayaan and Lehar are Brother-Sister.

Hence, "option 1" is the correct answer.

80. Answer: a

Explanation:

The logic followed here is:

A Gorilla is an example of a primate.

Similarly,

Kangaroo is an example of a marsupial.

Hence, "option 1" is the correct answer.

81. Answer: a

Explanation:

The correct answer is Aizawl F. C.

★ Key Points

- **Hero I-League:**
 - it was founded in the year **1996** as **National Football League**.
 - The **league was established** in the year **2007** as **I-League**.
 - It is organized by the **All India Football Federation (AIFF)**.
 - A total of **13 teams** participates in the tournament.
 - **Aizawl F. C.** was the winner of Hero I-League Football in **2017**.
 - They **defeated the Shillong Lajong** team in the finals.

★ 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 **Zurich, 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 organized in **Uruguay** in **1930**.
- In India, Indian Football Association (IFA) organizes **National Football Championship**.
- The trophy awarded in their competition is called Santosh Trophy.

82. Answer: c

Explanation:

The correct answer is the Position and condition of the object doing the work.

★ Key Points

- **Energy:**
 - The capacity of doing work by a body is called its **energy**.
 - It is a **scalar quantity**.
 - Its **SI unit** is **joule** and **CGS** unit is **erg**.
 - Energy developed in a body due to work done is called **mechanical energy**.
 - The ability of an object to do work, or the energy contained in an object, depends on the position and condition of the object doing the work.

83. Answer: d

Explanation:

Given:

A total playing card is 52, and the total Ace is 4

Concept used:

Probability = Number of favourable outcomes/Total number of Possible outcomes

Calculations:

The number of favourable outcomes is 4 Ace cards

The total number of playing cards is 52 cards

Probability = $(4/52)$

$\Rightarrow (1/13)$

$\therefore$ The probability of drawing an ace from a deck of cards is $1/13$.

84. Answer: b

Explanation:

The logic followed here is:-

Figure A, C, and D is the water image of the word but figure B is the mirror image of the word.

Figures a, c, and d, which is given below:-

TAN	MAN	VAN
171	171	171
a	c	d

Figure b is given below:-

$$\frac{\text{SAT}}{\text{TA}^2}$$

b

Hence, "option 2" is the correct answer.

85. Answer: d

Explanation:

Given:

Length of the rope = 14 m

Lengths of first two parts = 4.58 m & 4.96 m

Calculation:

Length of the third part of the rope = 14 m - 4.58 m - 4.96 m

⇒ 4.46 m

∴ The required result is 4.46 m.

86. Answer: a

Explanation:

The correct answer is Narendra Modi.

★ Key Points

- Prime Minister Narendra Modi is the sitting MP representing Varanasi Lok Sabha constituency and is serving for that constituency since 2014.

★ Additional Information

- **Lok Sabha:**

- It comes under **article 81**
- Its **maximum strength is 550 + 2** members of its Anglo-Indian Community, which includes **530 members from States** and **20 from Union Territories**.
- After coming into effect of **The Constitution (One Hundred and Fourth Amendment) Act, 2019**, the provision of special representation of the Anglo-Indian community in the House of the People by nomination has not been extended further.
- The **present strength of Lok Sabha is 545**.
- The representatives of the States are directly elected by the people of the States on the basis of adult suffrage.
- Every citizen who is **not less than 18 years** of age and is not otherwise disqualified is entitled to vote at such an election.
- The normal term of the Lok Sabha is 5 years, but it may be dissolved earlier by the President.

87. Answer: c

Explanation:

The correct answer is Cho Ramaswamy.

- Cho Ramaswamy was awarded the 2017 Padma Bhushan Award in the category of Literature and Education-Journalism.

★ Key Points

- Srinivasa Iyer Ramaswamy is famously known as Cho Ramaswamy.
- He was an **actor, comedian, character actor, editor, political satirist, playwright, dialogue writer, film director and lawyer** from Tamil Nadu.
- He was given **Padma Bhushan** award for his contribution towards **Literature & Education – Journalism**.
- 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

- **Bharat Ratna:**
 - The **highest civilian award** is given for exceptional service the advancement of art, literature and science, and in recognition of public service of the highest order.
 - **Khan Abdul Ghaffar Khan** was the **first foreigner to be honoured** with this award in 1987.
- **Padma Vibhushan:**
 - The award is given for exceptional and distinguished services in any field including service rendered by government servants.
 - It is the **second-highest civilian honour in India**.
- **Padma Shri:**
 - The award is given for distinguished service in any field including service rendered by government servants.
 - It is the **fourth-highest civilian honour in India**.

88. Answer: d

Explanation:

The correct answer is the Rear-view mirror.

- A convex mirror is used in the Rear-view mirror of cars

★ Key Points

- **Convex Mirror:**
 - Convex Mirror is a part of a spherical mirror where the reflective surface bulges out towards the light source.
 - Uses of Convex Mirror
 - In the **rearview mirror in vehicles** because it provides the **maximum rear field of view** and image formed is always erect.

- In **sodium reflector lamp**.

★ Additional Information

- A **concave mirror** is used in the **dentist's mirror and vehicle's headlight**.
-

89. Answer: b

Explanation:

The correct answer is Xylem.

- Xylem is an example of permanent tissue.

★ Key Points

- **Permanent tissue:**
 - Permanent tissues are made of those mature tissues that have lost their capacity of division and attain a definite form of various works.
 - These cells can be alive or dead.
 - **Xylem** : This is usually called wood and is a conducting tissue.
 - Its two main functions are—
 - Conduction of water and minerals.
 - To provide mechanical consistency.
 - **Phloem** :
 - This is a **conducting tissue** .
 - Its main function is to conduct foods prepared by the leaves to different parts of the plant.
-

90. Answer: d

Explanation:

Given:

Time taken by A to fill the tank = 7 hours

Time taken by B to fill the tank = 10 hours

Time taken by C to empty the tank = 14 hours

Formula used:

Total Work = Time Taken $\times$ Efficiency

Calculation:

Let the total capacity of the tank be 1 unit.

One hour work efficiency of A = $\frac{1}{7}$

One hour work efficiency of B = $\frac{1}{10}$

One hour work efficiency of C = $\frac{1}{14}$

$\Rightarrow$ One hour efficiency of A, B and C = $(\frac{1}{7} + \frac{1}{10} - \frac{1}{14})$

$\Rightarrow (10 + 7 - 5)/70 = \frac{6}{35}$

$\therefore$ Time taken by A, B and C by working simultaneously = $\frac{1}{(6/35)}$

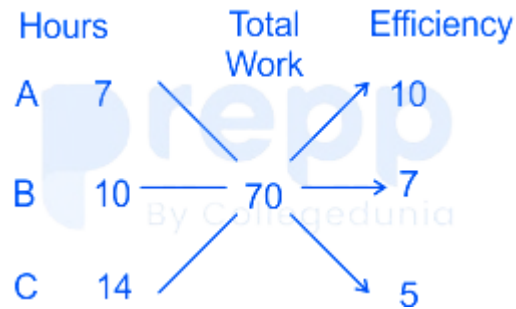
$\Rightarrow \frac{35}{6}$

$\Rightarrow 5 \frac{5}{6}$ hours

★ Alternate Method

By LCM Method

Let the capacity of tank be the LCM of 7, 10 and 14 respectively.



One hour work done by A, B and C = $(10 + 7 - 5)$

$\Rightarrow 12$

$\therefore$ Time taken by A, B and C = $70/12$

$\Rightarrow 5\frac{5}{6}$ hours

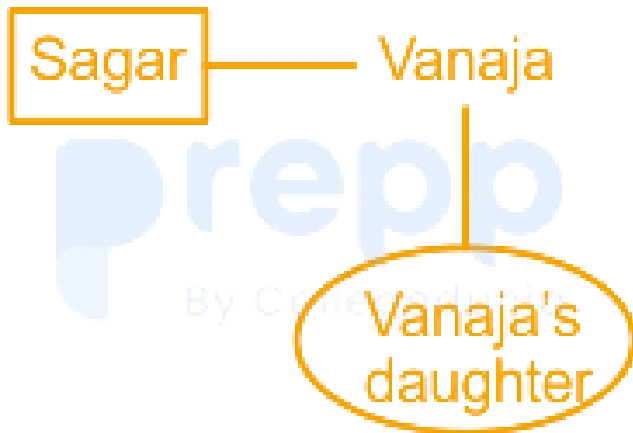
91. Answer: d

Explanation:

Symbol in Diagram	Meaning
○	Female
□	Male
==	Married Couple
—	Siblings
	Difference of A Generation

Sagar is the brother of Vanja.

The family tree is given below:-



Vanaja's daughter is the niece of Sagar.
Hence, "option 4" is the correct answer.

92. Answer: c

Explanation:

The correct answer is Force.

★ Key Points

- An object moves with a constant speed when the value of force is negligible.
- When an object moves with a constant speed there is no change in the value of acceleration hence the force remains constant.

★ Additional Information

- **Force:**
 - Force is that external cause that when acts on a body, changes or tries to change the initial state of the body.
 - **Force = mass × acceleration**
 - Its **S.I. unit is Newton (kg. ms^{-2}).**
- The **pressure** is thrust per unit area, hence it is directly proportional to thrust and inversely proportional to area.
- **Velocity** can be defined as the rate at which an object changes position in a certain direction.

93. Answer: b

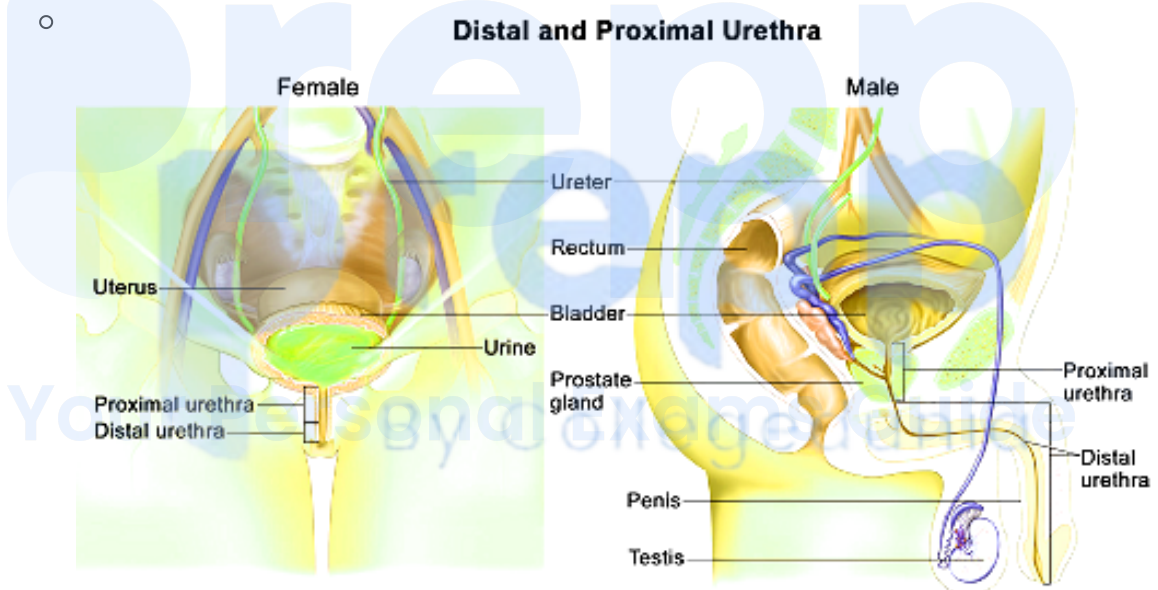
Explanation:

The correct answer is Urethra.

- The urethra is a 20 cm long tube, which carries urine from the bladder.

★ Key Points

- Urethra:
 - It is a **20 cm** tube that allows urine to pass out of the body.
 - In men, it's a long tube that runs through the penis.
 - It also carries semen.



★ Additional Information

- Ureters:
 - These bring the urine downwards and open into the urinary bladder.

94. Answer: c

Explanation:

Given:

$$17.3 \times 17.3 - 2.7 \times 2.7 = ?$$

Calculation:

$$17.3 \times 17.3 - 2.7 \times 2.7 = ?$$

$$\Rightarrow 299.29 - 7.29$$

$$\Rightarrow 292$$

$\therefore$ The required solution is 292.

95. Answer: c

Explanation:

Given:

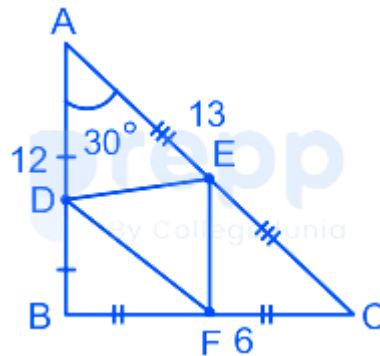
Sides of right - angle triangle = 5 cm, 12 cm & 13 cm

Concept:

The triangle formed by joining the midpoints of a triangle divides it into 4 equal parts of equal area.

Area of a triangle = $\frac{1}{2} \times \text{Base} \times \text{Height}$

Calculation:



Area of triangle ABC = $\frac{1}{2} \times 5 \times 12$

$\Rightarrow 30 \text{ cm}^2$

$\therefore$ The area of smaller triangle (DEF) = $\frac{1}{4} \times$ Area of triangle ABC

$\Rightarrow \frac{1}{4} \times 30 \text{ cm}^2$

$\Rightarrow 7.5 \text{ cm}^2$

96. Answer: d

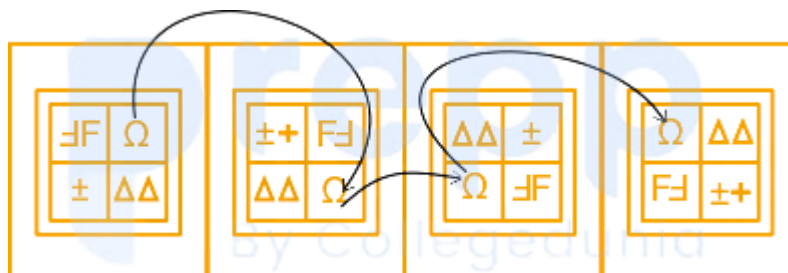
Explanation:

The logic followed here is:

Symbols are rotating one place to the **Clockwise Direction**.



- Rotation of one place in Clockwise Direction in each step.

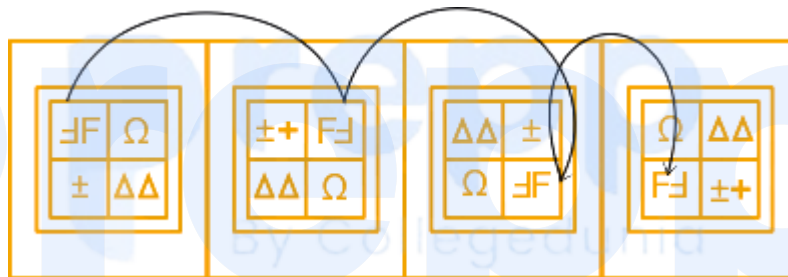




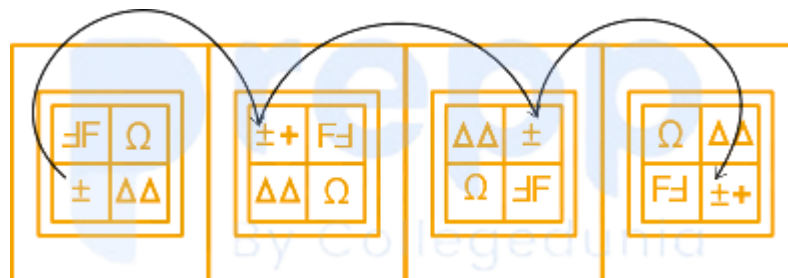
- Rotation of one place in Clockwise Direction in each step.



- Flip Vertically and Rotate one place in Clockwise Direction in each step.



- Rotation of one place in Clockwise Direction with Addition of + symbol in step I, and Remove the + symbol in step II.



So, the next image of the given series is.



Hence, the correct answer is "Option C".

97. Answer: d

Explanation:

The correct answer is America.

- The idea of passing the Fundamental Rights in the Constitution of India was inspired by the Constitution of the United States of America.

★ Key Points

- **Fundamental Rights:**
 - The Fundamental Rights have been described in **Articles 12–35 , Part III of the Indian Constitution.**
 - The **Right to Property (Article 31)** was deleted from the list of Fundamental Rights by the **44th Amendment Act (1978).**
 - By the **44th Amendment Act, 1978** , it is made a normal constitutional right under **Act 300A in Part XII** of the Constitution.
 - The **provision of fundamental rights** was borrowed from the **Constitution of the USA.**
 - Fundamental rights are:
 - Right to equality (Articles 14–18)
 - Right to freedom (Articles 19–22)
 - Right against exploitation (Articles 23–24)
 - Right to freedom of religion (Article 25–28)
 - Cultural and educational rights (Articles 29–30)
 - Right to constitutional remedies (Article 32).

★ Additional Information

- Features borrowed from other countries:

Country	Borrowed feature
Canada	Federation with strong Centre, to provide residuary powers to the Centre, Supreme Court's advisory jurisdiction.
Australia	Concurrent List, Provision Regarding Trade, Commerce and industry, Languages of the Preamble.
England	Law-making procedures, Rule of law, Single citizenship, Bi-cameral Parliamentary system, office of CAG.

98. Answer: d

Explanation:

The option figure that bears the closest resemblance to the question figure is shown below:-

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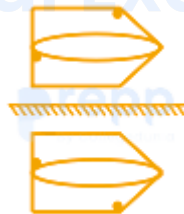


Figure D is the water image of the given figure.

Hence, "option 4" is the correct answer.

99. Answer: d

Explanation:

Given:

The number of students studying 3 languages.

Calculation:

Students studying French and Spanish = 20

Students studying Spanish and Japanese = 7

Students studying Japanese and French = 5

$\therefore$ Total number of students studying 2 languages = $20 + 7 + 5$

$\Rightarrow 32$

100. Answer: a

Explanation:

In an ordinary year, there are 365 days and on dividing 365 by 7, we get remainder = 1, so this extra one day is taken as an odd day.

Similarly, in a leap year, there are 366 days and on dividing 366 by 7, we get remainder = 2, so these extra days are taken as the odd days.

Thus, the remainder, which we get after dividing the number of days by 7 is considered as odd days.

1666 = we find out the odd days (the nearest leap year + completing year) = $1600 + 65$

In 1600 years the odd days = 0

In 65 years the odd days = $65/4 = 16$ leap years and 49 normal years.

In 16 leap years the odd days = 32, and 49 normal years = 49

So total = $32 + 49 = 81$ odd days i.e. $81/7 = 4$ odd days (remainder)

Odd days in May = 145 days i.e. 5 odd days.

Total = $4 + 5 = 9/7 = 2$ odd days.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0	1	2	3	4	5	6

Tuesday of the week was 25 May 1666.

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

★ Key Points

May 25, 1666 was the 145th day of the year 1666 in the Gregorian calendar. There were 220 days remaining until the end of the year. The day of the week was Tuesday.

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