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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
- UPTET
- IBPS RRB
- IBPS CLERK
- IES
- UPSC CAPF
- SSC Stenogr..
- RRB NTPC
- SSC GD
- RBI GRADE B
- RBI Assistant
- DSSSB

RRB Group D 2018 Prev. Yr. Paper (6 Dec 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.

CBT

1. 6 years ago, a mother's age was 6 times her daughter's age. Three years hence, the daughter will be one-third her mother's age. The current age (in years) of the mother is: **(+1, -0.33)**

   a. 45

   b. 39

   c. 36

   d. 42

---

2. A product reaches a buyer from the farmer through 3 middlemen with the intermediate profits of 10%, 20% and 30%, respectively. Finally, the seller keeps a profit of 15%. If the farmer has sold the product at Rs. X, then how much more percent did the buyer pay for it? **(+1, -0.33)**

   a. 100.67%

   b. 93.35%

   c. 97.34%

   d. 86.56%

---

3. Elements in the Modern Periodic Table are arranged in _____ periods. **(+1, -0.33)**

   a. 6

   b. 8

c. 5

d. 7

---

4. Plants that have lost their capacity to produce seeds reproduce by the method of _____. (+1, -0.33)

a. Fission

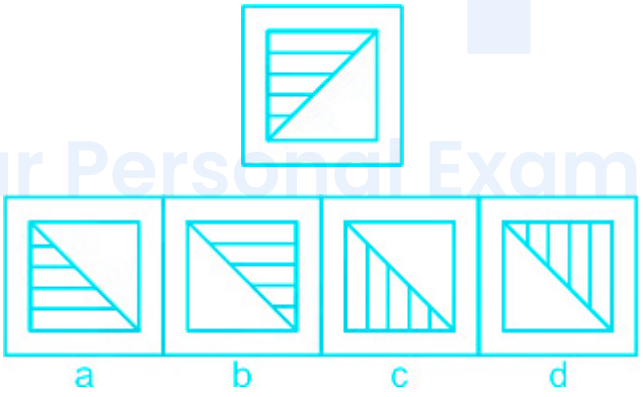
b. Vegetative Propagation

c. Multiple fission

d. Budding

---

5. Choose the option that closely resembles the mirror image of the given figure. If mirror is placed at right side of the given image. (+1, -0.33)



a. a

b. d

c. c

d. b

---

6. What are the organisms that eat other organisms called? **(+1, -0.33)**

a. Holotrophic organisms

b. Parasitic organisms

c. Chemotrophic organisms

d. Saprotrophic organisms

---

7. Muscle contains special proteins are called _____. **(+1, -0.33)**

a. Lipoproteins

b. Contractile proteins

c. Glycol-proteins

d. Nucleoproteins

---

8. Heating of ores in the absence of oxygen is called _____. **(+1, -0.33)**

a. Extraction

b. Calcination

c. Roasting

d. Corrosion

---

9. Who inaugurated the first edition of Khelo India School Games (KISG) that was held from 31 st January to 8 th February 2018 at Indira Gandhi Indoor Stadium? **(+1, -0.33)**

a. The Chief Minister of Delhi

b. The Prime Minister of India

c. The Sports Minister

d. The Home Minister

---

10. The resistors of values 3 Ω, 6 Ω and 15 Ω are connected in parallel. What will be equivalent resistance in the circuit? **(+1, -0.33)**

a. 0.8

b. 1.4

c. 2.1

d. 1.7

---

11. The total quantity of motion contained in the same body is called _____. **(+1, -0.33)**

a. Pressure

b. Force

c. Momentum

d. Inertia

---

12. Read the given statement(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s). **(+1, -0.33)**

Statement:

All vitamins are proteins. All proteins are fruits.

Conclusions:

1. Some vitamins are not fruits

2. Some fruits are vitamins

a. Either (1) or (2) follow

b. Only (1) follows

c. Both (1) & (2) follow

d. Only (2) follows

---

13. The momentum of an object is 50 kg ms $^{-1}$ and its mass is 10 kg. What is the velocity of the object? **(+1, -0.33)**

a. 5 ms $^{-2}$

b. 0.5 ms $^{-2}$

c. 0.5 ms ^{2}

d. 5 ms $^{-1}$

---

14. The book 'My music, My life' is the autobiography of: **(+1, -0.33)**

a. Anushka shankar

b. Ravi Shankar

c. Zakir Hussein

d. Shankar Mahadevan

15. Using the given information, answer the question that follows. **(+1, -0.33)**

Six friends are sitting around a circular table.

1. Soham is sitting adjacent to Nachiket.

2. Tushar is sitting opposite Pranav.

3. Swapnil is sitting equidistant to Soham and Pranav.

Who is sitting opposite Aniket?

a. Nachiket

b. Soham

c. Pranav

d. Swapnil

16. Which state of India is the leading producer of coarse cereals? **(+1, -0.33)**

a. Karnataka

b. Kerala

c. Tamil Nadu

d. West Bengal

17. A 173 m long train crosses a 727 m long bridge in 40.5 seconds. What is the speed of the train? **(+1, -0.33)**

a. 70 km/h

b. 85 km/h

c. 80 km/h

d. 75 km/h

---

18. _____ is the leading coffee producer state in India. (+1, -0.33)

a. Karnataka

b. Maharashtra

c. Telengana

d. Gujarat

---

19. The potential energy (P.E) of a body at a certain height is 200 J. The kinetic energy possessed by it when it just touches the surface of the earth is (Neglect any air friction): (+1, -0.33)

a. zero

b. = P.E.

c. < P.E.

d. > P.E.

---

20. The spinal cord originates from _____. (+1, -0.33)

a. Cerebellum

b. Medulla

c. Pons

d. Cerebrum

---

21. Read the given statement(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s). **(+1, -0.33)**

Statement:

Increased use of medicines puts down the innate healing sense of the body.

Conclusions:

I) There is an innate healing sense in the body.

II) Nowadays, we depend more on external medicine and do not allow the body to repair itself on its own.

a. Neither conclusion follows.

b. Both the conclusions follow.

c. Only conclusion I follows.

d. Only conclusion II follows.

---

22. The Swadesh Darshan Scheme is an initiative of which Ministry? **(+1, -0.33)**

a. Finance

b. HRD

c. Tourism

d. Defence

23. $3/5^{th}$ of Sarah's amount is equal to $6/7^{th}$ of Priya's amount. Between them the duo has Rs. 3,570. How much money does priya have? **(+1, -0.33)**

a. Rs. 1,540

b. Rs. 2,100

c. Rs. 1,470

d. Rs. 1,400

---

24. _____ meristem is present at the base of the leaves or internodes on twigs. **(+1, -0.33)**

a. Calary

b. Intercalary

c. Apical

d. Lateral

---

25. In a certain code, STAPLE is written as RSZOKD. How is DIGEST written in that code? **(+1, -0.33)**

a. CHRDFS

b. CHDFRS

c. CHFDRS

d. CHDRFS

---

26. The ratio of the five angles of a pentagon is 2 : 3 : 4 : 4 : 5. What would be the measure of the greatest angle? **(+1, -0.33)**

a. 120°

b. 125°

c. 140°

d. 150°

---

27. Three out of the four options given below are related in a particular way. Choose the option that is different or odd from the others. **(+1, -0.33)**

a. Cat

b. Neigh

c. Frog

d. Goat

---

28. The most commonly used indicator in laboratories is _____. **(+1, -0.33)**

a. Litmus

b. Phenolphthalein

c. universal Indicator

d. Methyl Orange

---

29. If $3x^2 + ax + 12$ is perfectly divisible by$(x - 3)$,then the value of 'a' is: **(+1, -0.33)**

a. -13

b. -12

c. -3

d. -9

---

30. What will be the mass of mercuric oxide if 92.6 g of mercury reacts with 7.4 g of oxygen? **(+1, -0.33)**

a. 100 g

b. 85.2 g

c. 92.5 g

d. 7.4 g

---

31. The LCM of 88 and 220 is: **(+1, -0.33)**

a. 220

b. 1100

c. 440

d. 880

---

32. Ages of two persons are in the ratio of 5 : 7. 18 years ago, their ages were in the ratio of 8 : 13. Their current ages are: **(+1, -0.33)**

a. 45 and 63 years

b. 50 and 70 years

c. 40 and 80 years

d. 45 and 75 years

---

33. Insert mathematical symbols in the place of '?' to get the result of the given equation as 87: **(+1, -0.33)**

((150 ? 2) ? 2) ? 10 = 87

a. +, ×, ×

b. +, ÷, ÷

c. -, ×, ÷

d. ÷, +, +

---

34. How many players were named for Sultan Azlan Shah Cup and Commonwealth Games by the Hockey India? **(+1, -0.33)**

a. 11

b. 25

c. 33

d. 22

---

35. P told Q, "Though I am the son of your father, you are NOT my brother". How is Q related to P? **(+1, -0.33)**

a. Sister

b. father

c. Daughter

d. Son

---

36. If PHONE is written as RJQPG, the WATER can be written as _____. **(+1, -0.33)**

a. YCVGT

b. YVCTG

c. YVCGT

d. YCVTG

---

37. The time period of a vibrating body is 0.05 s. The frequency of waves it emits will be: **(+1, -0.33)**

a. 200 H_z

b. 20 H_z

c. 2 H_z

d. 5 H_z

---

38. $132 \times 16 \div 2^3 + 4 = ?$ **(+1, -0.33)**

a. 792

b. 176

c. 264

d. 268

---

39. Let n be the number of different 5-digit numbers divisible by 4, with the digits 4, 5, 6, 7, 8 and 9, no digit being repeated in the numbers. What is the value of n? **(+1, -0.33)**

a. 8

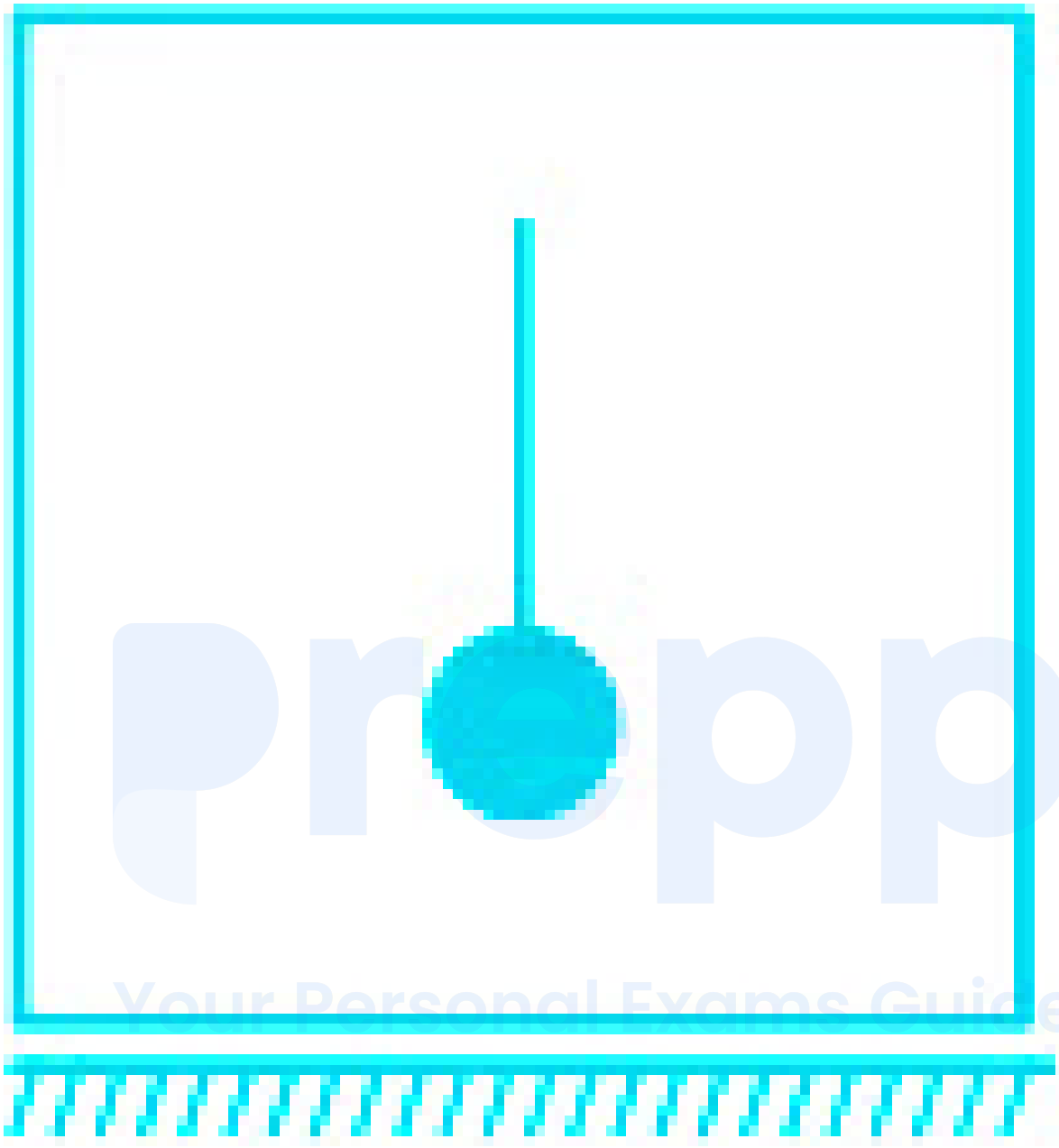
b. 24

c. 168

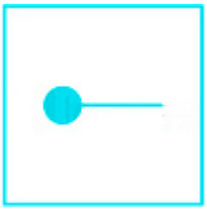
d. 192

---

40. Choose the mirror image of the following figure. **(+1, -0.33)**



a. 



b.

c. 

d. 

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41. **Directions:** Read the following table carefully and answer the question that Classification of 100 students based on the marks Obtained by them in English and Maths in an Examination. **(+1, -0.33)**

Mark out of 50 Subject	40 and Above	30 and Above	20 and Above	10 and Above	0 and Above
English	23	26	70	90	100
Maths	15	36	75	95	100
(Aggregate) Average	19	31	80	93	100

What is the difference between the number of students passed with 20 as cut-off marks in English and those passed with 20 as cut-off marks in aggregate?

a. 12

b. 5

c. 6

d. 10

---

42. What type of a bank is NABARD? **(+1, -0.33)**

a. Commercial Bank focused on Trade & Industry

b. Private Bank focused on Technological development

c. Cooperative Bank focused on Social and Urban Development

d. Development Bank focused on Agricultural and Rural Development

---

43. The Brihadesvara Temple was designed by the famous architect _____. **(+1, -0.33)**

a. Sama Varma

b. Ravi Varma

c. Rama Varma

d. Govinda

---

44. A body of mass 100 gm is rotating on a circular path of radius r with constant velocity. The work done in one complete revolution will be: **(+1, -0.33)**

a. zero

b. (100/r) J

c. 100 r J

d. (r/100) J

---

45. Read the statements and decide whether the conclusion is true or false. **(+1, -0.33)**

Statements:

1. Object A is bigger than Q.

2. Object C is bigger than S.

Conclusion:

The object S is smaller than Q.

a. Cannot say

b. Probably false

c. True

d. False

---

46. Who among the following has released the 'India 2018' book recently? **(+1, -0.33)**

a. Sushma Swaraj

b. Manohar Parrikar

c. Narendra Modi

d. Smriti Irani

---

47. If the direction of applied force and direction, in which an object moves, are perpendicular to each other, then _____. **(+1, -0.33)**

a. Positive work is done

b. No power is released

c. No energy is released

d. No work is done

---

48. An object moving with a deceleration of 2.5 ms^{-2} comes to rest after 20 s. What is its initial velocity? **(+1, -0.33)**

a. 20 ms^{1}

b. 50 ms^{-1}

c. 0 ms^{-1}

d. 10 ms^{-1}

---

49. Pillow is related to Rest in the same way as Shoes are related to? **(+1, -0.33)**

a. Run

b. Fly

c. Swim

d. Wear

---

50. Read the given statement(s) and conclusions carefully and select which of the conclusions logically follow(s) from the statement(s). **(+1, -0.33)**

Statements:

Due to the rapid increase in the population in developing countries, there is a huge depletion of resources.

Conclusions:

I. The population of developing countries will not continue to increase in future.

II. It will be very difficult for the governments of developing countries to provide its people with a decent quality of life.

a. Only conclusion II follows

b. Neither conclusion I nor II follows

c. Either conclusion I or II follows

d. Only conclusion I follows

---

51. $384 \div 2^5 \times 3 + 8 = ?$ **(+1, -0.33)**

a. 12

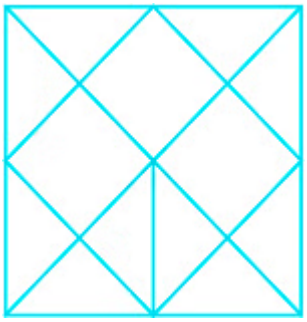
b. 132

c. 3

d. 44

---

52. Find the number of triangles in the given figure: **(+1, -0.33)**



a. 20

b. 28

c. 36

d. 24

---

53. From the given option which of the following is not correctly matched? **(+1, -0.33)**

a. Aldehyde:--------OH

b. Amides: --------$CONH_2$

c. Amines:--------NH_2

d. Carboxylic Acid::-------- COOH

---

54. A sum of money was divided between A and B in the ratio 17 : 25. If B gave Rs. 5 to A, the ratio would change to 3 : 4, what is the sum of money in question? **(+1, -0.33)**

a. 196

b. 203

c. 217

d. 210

---

55. What will be the next term in the below series? **(+1, -0.33)**

C3A1, G7E5, _____?

a. I8K10

b. I9K11

c. K11I9

d. K10I8

---

56. North-East becomes North, then what would West become? **(+1, -0.33)**

a. North-West

b. South-West

c. North-East

d. South-East

---

57. With which of the following sport Sultan Azlan Shah cup is associated? **(+1, -0.33)**

a. Kabaddi

b. Foot ball

c. Tennis

d. Hockey

---

58. Each question given below consists of a statement, followed by two arguments numbered I and II. You have to decide which of the arguments is a 'strong' argument. **(+1, -0.33)**

Statement:

Should speed driving be imposed heavy penalties?

Arguments:

I. Yes, speed driving is one of the major causes of road deaths as per statistics.

II. No, speed driving helps a person to reach his destination soon.

a. Both I and II are strong.

b. Neither I nor II is strong

c. Only argument I is strong

d. Only argument II is strong

---

59. Who is the Director of the movie "Bahubali-2", which was released in the year 2017? **(+1, -0.33)**

a. Rajkumar Hirani

b. Rajamouli

c. K.Vishwanath

d. Sanjay Leela Bhansali

---

60. A statement is followed by two arguments. Decide which of the arguments is/are strong with respect to the statement. **(+1, -0.33)**

Statement:

Government should implement price control on medicines and medical devices.

Arguments:

I. Yes, price control in healthcare have the noble intention of enhancing patient welfare for poor and middle-class people.

II. No, health care organisations will end up incurring losses or making less margin.

a. Only II is strong

b. Only I is strong

c. Neither I nor II is strong

d. Either I or II is strong

---

61. Which of the numbers given below is rational? **(+1, -0.33)**

a. $\sqrt[6]{49}$

b. $\sqrt[6]{81}$

c. $\sqrt[6]{64}$

d. $\sqrt[6]{36}$

---

62. Choose the Venn diagram that best represents the words: **(+1, -0.33)**

India, Telangana, Hyderabad

a. 

b. 

c. 

d. 

---

63. Which of the following quadrilaterals has four lines of symmetry? **(+1, -0.33)**

a. Rhombus

b. Rectangle

c. Parallelogram

d. Square

---

64. In a computer game a builder can build a wall in 10 hours while a destroyer can demolish such a wall completely in 14 hours. Both the builder and the destroyer were initially set to work together on level **(+1, -0.33)**

ground. But after 7 hours the destroyer was taken out. What was the total time (in hours) taken to build the wall?

a. 35

b. 17

c. 24

d. 15

---

65. Atomic number of an element is _____. **(+1, -0.33)**

a. Number of electrons

b. Total number of protons and neutrons

c. Total number of electrons and neutrons

d. Number of neutrons

---

66. Select the option that is related to the third term in the same way as the second term is related to the first term. **(+1, -0.33)**

Wall : Brick :: Fabric : ?

a. Brick

b. Milk

c. Yarn

d. Wood

---

67. Who among the following was elected as the Madhya Pradesh Governor in January 2018? (+1, -0.33)

a. Mamata Banerjee

b. Mayawati

c. Anandiben Patel

d. Aruna Jayanti

---

68. A Solid spherical metal ball of diameter 72 cm is melted is melted and recast into small solid cones of diameter 6 cm and height 6 cm. Find the number of cones that can be formed using this melted metal. (+1, -0.33)

a. 3,456 cones

b. 3,600 cones

c. 3,568 cones

d. 3,200 cones

---

69. Leela goes for a long drive towards the South. After some time she takes a 90° left turn and then takes a 45° left turn to enter a by-lane. Which direction is Leela heading towards? (+1, -0.33)

a. South-East

b. South-West

c. North-East

d. North-west

70. A rectangle with length 14 cm and width 3 cm is rotated along its length by 150°. What is the volume of the shape thus generated? (Use π = 22/7) **(+1, -0.33)**

a. 198 cm^3

b. 220 cm^3

c. 165 cm^3

d. 192.5 cm^3

71. Four words have been given of which three are alike in some way and one is different. Choose the odd one out. **(+1, -0.33)**

a. CHERISH

b. ABHORRED

c. DESPISE

d. LOATHE

72. The image formed by controlled rays of reflection that we get by extending the rays backwards: **(+1, -0.33)**

a. Convex

b. Real

c. Plain

d. Virtual

73. The average marks obtained by a group of 25 students was 29. One student left the group as a result of which the average of the remaining students rose to 29.5 Afterwards, another student came in as a result of which the average marks of the group dropped to 28.8 What is the average of the combined marks obtained by the students who left and the one who joined? **(+1, -0.33)**

a. 14

b. 14.5

c. 15

d. 13.5

---

74. Magnitude of displacement from initial position to final position is a _____. **(+1, -0.33)**

a. Curved line

b. Straight line

c. Semi circle

d. Circle

---

75. IPC Section 377, recently in the news deals about which of the following? **(+1, -0.33)**

a. Dowry

b. Divorce

c. Same sex marriages

d. Domestic Violence

---

76. Inlet Pipe A can fill can cistern is 35 hours while outlet Pipe B can drain the filled cistern in 40 hours. The two pipes are opened together when the cistern is empty, but the outlet pipe is closed when the cistern is three-fifths full. How many hours did it take in all to fill the cistern? **(+1, -0.33)**

a. 185

b. 182

c. 184

d. 180

---

77. Consider the following question and decide which of the statements is sufficient to answer the question. **(+1, -0.33)**

Find the value of n, if

Statements:

1. AB = A

2. $A\; = \;\left[{\begin{array}{*{20}{c}} n&9\\ 2&1 \end{array}} \right] , B\; = \;\left[{\begin{array}{*{20}{c}} 1&0\\ 0&1 \end{array}} \right]$

a. Only 1 is sufficient

b. Only 2 is sufficient

c. Either 1 or 2 is sufficient

d. Both 1 and 2 are not sufficient

---

78. A and B can do a piece of work together in 9 days while A alone can do it 15 days. They start working together but B leaves 3 days before the completion of the work. For how many days did A and B work together? **(+1, -0.33)**

a. 7.2

b. 7.5

c. 8.1

d. 8

---

79. 35 : 98 :: x : 140. What is the value of x? **(+1, -0.33)**

a. 60

b. 50

c. 55

d. 65

---

80. The following table shows the pass percentage of results of four schools in the past four years. **(+1, -0.33)**

School Name	2012-13	2013-14	2014-15	2015-16
XYZ	78	96	81	92
ABC	61	72	84	96
PQR	81	92	85	97
TUV	92	69	72	95

In which academic year did all the schools have pass percentage as more than 80?

a. 2012-13

b. 2014-15

c. 2015-16

d. 2013-14

---

81. Rabindranath Tagore received Nobel prize for Literature in 1913 for _____. **(+1, -0.33)**

a. Gora

b. Gitanjali

c. The Home and The world

d. Grain of Sand

82. Bahadur Shah, the last Mughal Emperor, was exiled to _____ for fear of another rebellion. **(+1, -0.33)**

a. Mysore

b. Carnatic

c. Awadh

d. Burma

83. Who is the author of the book "One Indian Girl"? **(+1, -0.33)**

a. Amit Chauduri

b. Chetan Bhagat

c. Vikram Chandra

d. Vikram Seth

84. Two friends enter a restaurant that has an entrance facing East. They were asked to take right and occupy a two-seater table. Which direction did they turn after entering the restaurant to occupy the seats? **(+1, -0.33)**

a. East

b. West

c. South

d. North

85. The LCM 76 and 57 is: **(+1, -0.33)**

a. 114

b. 171

c. 152

d. 228

---

86. If North becomes North-East then what will North-East become? **(+1, -0.33)**

a. East

b. West

c. North

d. South

---

87. Which of the following devices does ***not*** use Integrated Circuits? **(+1, -0.33)**

a. Mobile phones

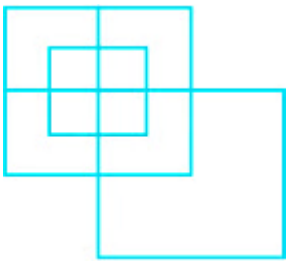
b. Computer

c. Camera

d. Television

---

88. Count the number of squares in the following figure. **(+1, -0.33)**



a. 9

b. 15

c. 11

d. 8

---

89. What is 'amu' in the context of atoms and molecules? (+1, -0.33)

a. Avegadro Mass Unit

b. Atomic Unified Mass Unit

c. Atomic Mass Unit

d. Atomic Molecule Unit

---

90. Bleaching powder is produced by the action of chlorine on dry slaked lime. Which of the following is appropriate equation for this? (+1, -0.33)

a. $Ca(OH)_2 + 2Cl = CaOCl_2 + H_2O$

b. $Ca(OH)_2 + Cl_2 = 2CaOCl_2 + H_2O$

c. $Ca(OH)_2 + Cl_2 = CaOCl_2 + H_2O$

d. $Ca(OH)_2 + Cl_2 = CaOCl_2 + 2H_2O$

91. Who is the present Comptroller and Auditor General of India? **(+1, -0.33)**

a. Rajiv Mehrishi

b. Amitabh Kant

c. Shashikanth Sharma

d. Mukul Rohatgi

---

92. Who among the following was the prime minister of India when Mandal Commission was constituted? **(+1, -0.33)**

a. Manmohan Singh

b. Atal Bihari Vajpayee

c. VP Singh

d. Morarji Desai

---

93. Find the remainder when 1 + a + a^2 + a^3 + ... + a^{2018} is divided by a – 1? **(+1, -0.33)**

a. 2018

b. 2017

c. 2019

d. 0

---

94. If $8^x = 4/x^{-x}$ then find x. **(+1, -0.33)**

a. 1

b. 2

c. 1/2

d. 2/3

---

95. Which of the following is NOT a Fundamental Right provided in the Indian Constitution? **(+1, -0.33)**

a. Right to Property

b. Right to Education

c. Right to Freedom

d. Right to Equality

---

96. We all know from our observation that water can exist in three states of matter. **(+1, -0.33)**

Statements:

A. Solid, as ice

B. Liquid, as petrol and

C. Gas as O_2

Which of the following statements is/are true?

a. Only A is true, B and C are false

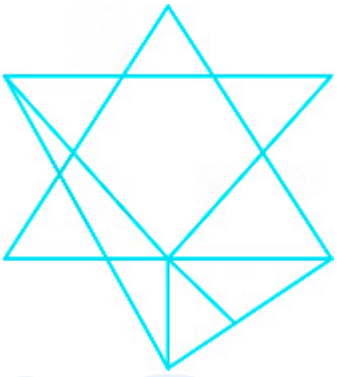
b. A and B are true, C is false

c. All are false

d. All are true

---

97. How many triangles are present in the figure given below? **(+1, -0.33)**



a. 17

b. 11

c. 14

d. 15

---

98. 5/7 of a number is 2/3. What is the number? **(+1, -0.33)**

a. 15/14

b. 15/7

c. 7/15

d. 14/15

---

99. What is the next term in this series? **(+1, -0.33)**

22, 18, 40, 48, 58, _____

a. 90

b. 70

c. 78

d. 68

---

100. There are _____ parallel ranges of the Himalayas. **(+1, -0.33)**

a. Three

b. Two

c. Five

d. Four

Answers

1. **Answer: d**

Explanation:

Let the age of daughter before 6 years be x

Mother's age before 6 years = 6x

Hence after 9 years, daughter's age = (x + 9) year

Mother's age after 9 year = (6x + 9) year

According to the question,

⇒ (x + 9) = (6x + 9)/3

⇒ 3x + 27 = 6x + 9

⇒ 3x = 18

⇒ x = 6 year

⇒ Present age of mother = (6x + 6) ⇒ (6 × 6 + 6) ⇒ 42 years

Alternative Method:

Ages of M and D 6 years ago = (12 × 3) = 36 year, (2 × 3) = 6 year

Current age of mother = (36 + 6) = 42 year

---

2. **Answer: c**

Explanation:

Given,

The successive profit of 3 middlemen = 10%, 20%, 30%

Let the cost price of product 100 Rs.

First middlemen sell this product on 10% profit

⇒ 100 × 110/100 = 110

Second middlemen sell this product on 20% profit

⇒ 110 × 120/100 = 132

Third middlemen sell this product on 30% profit

⇒ 132 × 130/100 = 171.6

According to question seller sell at 15% profit

⇒ 171.6 × 115/100 = 197.34

⇒ Required increased percentage = [(197.34 – 100)/100] × 100 = 97.34 %

---

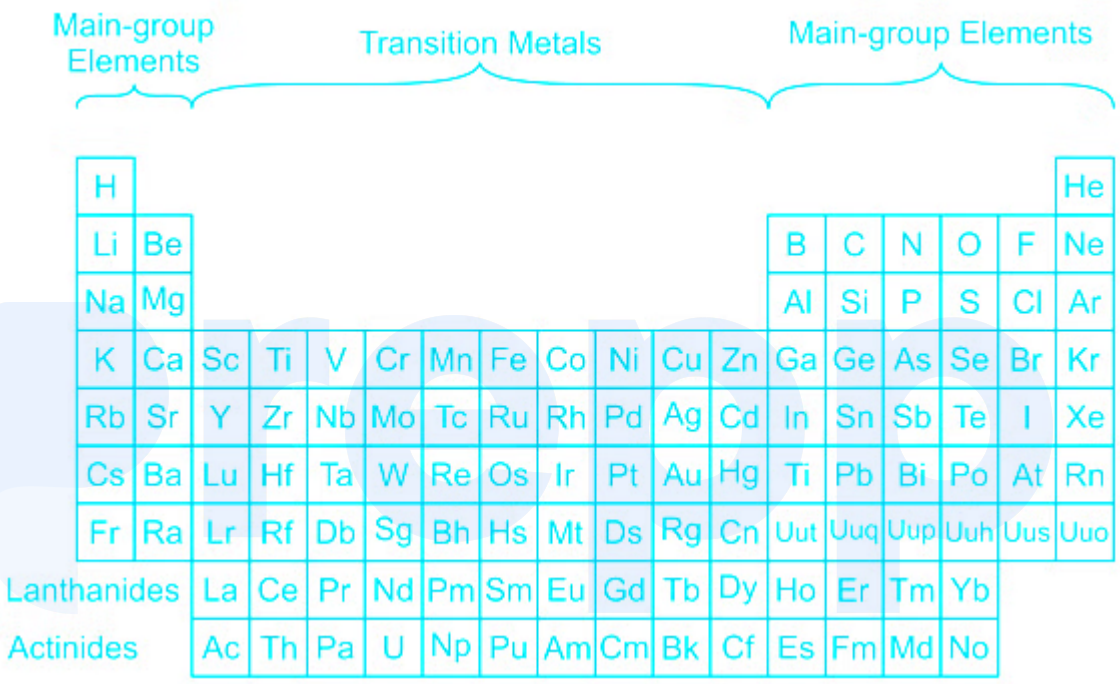
3. **Answer: d**

Explanation:

The correct answer is option 4 i.e7

- Elements are arranged in order of their increasing atomic numbers.

- The vertical columns are known as groups and horizontal columns are known as periods.
- There are 18 groups and7 periods in the modern periodic table.
- Period 1 has only two elements (hydrogen and helium).
- Periods 2 and 3 have 8 elements.
- Periods 4 and 5 have 18 elements.
- Periods 6 and 7 have 32 elements.



4. **Answer: b**

Explanation:

The correct answer is option 2 i.e**Vegetative Propagation.**

- Plants that have lost their capacity to produce seeds reproduce by the method of **Vegetative Propagation.**
- It is considered to be an **asexual method** of plant propagation
- Plants like **banana, jasmine and rose** that have lost their capacity to produce seeds can be easily propagated by vegetative propagation.

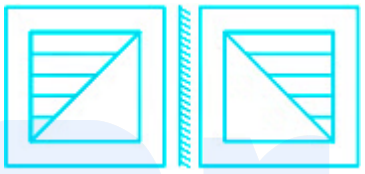
- **Fission** is the splitting of a cell into two or more cells.
  Fission can be of two types, namely, **binary fission** and **multiple fission.**
- **Budding** is a form of asexual reproduction in which a new individual develops from some generative anatomical point of the parent organism.

---

5. **Answer: d**

Explanation:

The mirror image of the given figure is,



Hence, option 4 is the correct answer.

---

6. **Answer: a**

Explanation:

⭐ Important Points

- In simple words, '**eating**' refers to the process of **taking the food inside the body** , breaking it into smaller parts and then digesting it.
- The digested forms of food are then absorbed by the body to obtain energy.
- This mode of nutrition is known as **holotrophic or holozoic** nutrition.
- It involves the process of **ingestion, digestion and egestion** .

⭐ Key Points

- Organisms are divided into autotrophs and heterotrophs based on their nutrition.
- **Autotrophs do not depend on other organisms** for food and are divided into 2 types:

- **Photosynthetic** - are those organisms that can **make their own food** in presence of sunlight. Example - Plants.
- **Chemosynthetic** - or chemotrophs can obtain their **energy from inorganic substances** . Example - Sulphur bacteria

- **Heterotrophs depend on other organisms** for food and can be divided into 3 types:
  - **Holotrophic** -Holotropic is that mode of nutrition in which the organism involves the internal processing of solid food particles are liquids and gaseous materials
    OR
  - holozoic organisms take the food inside their body, break it down into smaller parts and then it gets digested and absorbed by the body to get energy. **Example** - Humans
  - **Parasitic** - are those organisms which live on or in the body of other organisms called hosts, from where they obtain their food. **Example** - Lice, tapeworms.
  - **Saprotrophic** - obtain their food from dead and decaying organisms. **Example** - Fungi.

---

7. **Answer: b**

Explanation:

The correct answer is option 2 i.e **Contractile proteins**
Explanation:

- Muscle contains special proteins called Contractile proteins.

Contractile proteins:

- These are those proteins that mediate the sliding of contractile fibers (contraction) of a cell's cytoskeleton, and of cardiac and skeletal muscle.
- Contractile proteins are arranged into regular strands that account for the typical appearance of the sarcomere.

⭐ **Additional Information**

Lipoprotein:

- It is a heterogeneous particle-containing both lipids and proteins, which allows the transport of lipids through aqueous environments.

Polyethylene glycol protein:

- It is a biologically inert, non-immunogenic chemical that confers greater water solubility to proteins, labeling tags, and crosslinkers with which it is incorporated as a constituent chemical group.

Nucleoprotein:

- It is a conjugated protein consisting of a protein linked to a nucleic acid, either DNA or RNA.

---

8. **Answer: b**

Explanation:

The correct answer is option 2 i.e**Calcination.**

Process	Description
Calcination	• It is the process of heating the ore below its melting point absence of air to remove volatile impurities. • It is the process of converting ore into an oxide by heating it strongly. • In calcination, ores are heated strongly in the absence of air(Oxygen) to convert Metal Carbonates into Metal Oxides and Carbon Di Oxide.
Roasting	• It is the process in which the ore is heated below its melting point in the presence of air to oxidise the impurities.
Corrosion	• It is the process that converts a refined metal into a more chemically stable form.

9. **Answer: b**

Explanation:

- The Prime Minister of India Narendra Modi inauguratedthe first edition of Khelo India School Games (KISG) that was held from 31 st January to 8 th February 2018 at Indira Gandhi Indoor Stadium in **New Delhi.**
- The second edition of Khelo India Youth Games was held in Pune.
- Students from colleges and universities competed in the games.
- The Khelo India games are organised by the Ministry of Youth Affairs & Sports .
- 3rd edition of the Khelo India Youth Games will be held at Guwahati from January 18-30, 2020. The Games will see a participation of more than 10,000 athletes and officials. It will be conducted in partnership with IOA, SGFI, and Assam as a host state.

10. **Answer: d**

Explanation:

The correct answer is option 4 i.e **1.7**

Resistance:

- It is defined as the measure of the opposition to current flow in an electrical circuit.
- It is measured in ohms.

Let Equivalent Resistance in parallel be R_e

So, $\frac{1}{R_e} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

$\frac{1}{R_e} = \frac{1}{3} + \frac{1}{6} + \frac{1}{15}$

$\frac{1}{R_e} = 0.5667$

$R_e = 1.7647$

Therefore, Equivalent Resistance in parallel **R = 1.7**

---

11. **Answer: c**

Explanation:

CONCEPT :

Linear Momentum:

- **The linear momentum** of a body is the **quantity of motion contained in the body** .
- It is measured in terms of the **force required to stop the body in unit time** .
- It is also measured as the **product of the mass of the body and its velocity** i.e.,

Momentum = mass × velocity.

EXPLANATION :

- **Momentum** is the **total quantity of motion contained in the same body** . Therefore option 3 is correct.
- The **pressure** is the **perpendicular force applied to the surface of objects per unit area** . Therefore option 1 is incorrect.
- Force is defined as pushing or pulling of an object , due to which the motion of the body will be changed . It is equal to the **product of mass and acceleration** . Therefore option 2 is incorrect.
- The **inherent property of all the bodies** by virtue of which they **cannot change their state of rest or uniform motion along a straight line by their own** is called **inertia** . Therefore option 1 is incorrect.

---

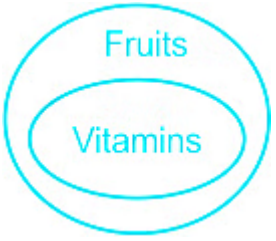
12. **Answer: d**

Explanation:

Drawing Venn diagram according to the given information,

Conclusion 1: Some vitamins are not fruits → False (This is definitely false)

Conclusion 2: Some fruits are vitamins → True (This is definitely true)



Hence, “only conclusion 2” follow.

---

13. **Answer: d**

Explanation:

CONCEPT :

Momentum:

- The **total quantity of motion** contained in the same body is called **momentum** .
- The **quantity of motion** possessed by a body **depends upon the mass and velocity of a body** .
- It is the **product of the mass and velocity of an object** i.e.,

p = m × v

CALCULATION :

Given - mass (m) = 10 kg and momentum (p) = 50 kg ms -1

As we know that momentum (p) is

⇒ p = m × v

$\Rightarrow v = \frac{p}{m} = \frac{50}{10} = 5\ ms^{-1}$

---

14. **Answer: b**

Explanation:

- "My music, My life" is the autobiography of Ravi Shankar.
- In this book, he has described his transformation from a young travelling dancer to a Grammy Award-winning.
- This autobiography includes the history of Indian classical music and a manual on how to play the sitar.

- This book is about music as both a lifestyle and an art.
- Ravi Shankar is the legendary sitarist and composer.
- He is also an honorary member of the American Academy of Arts and Letters and is a member of the United Nations International Rostrum of Composers.

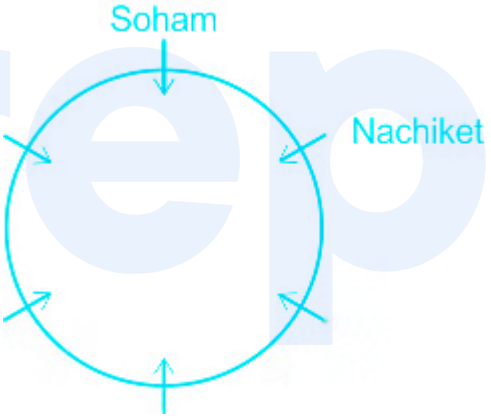
---

15. Answer: b

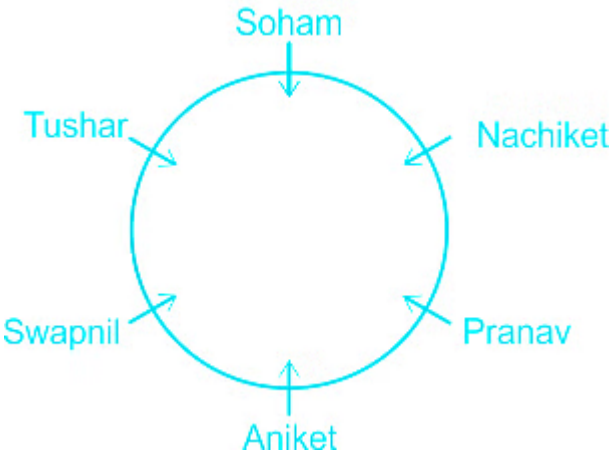
Explanation:

Arranging the given people according to the given information,

Soham is sitting adjacent to Nachiket



Tushar is sitting opposite Pranav and Swapnil is sitting equidistant to Soham and Pranav



Soham is sitting opposite Aniket.

Hence, “soham” is the correct answer.

---

16. **Answer: a**

Explanation:

- Karnataka is the leading producer of coarse cereals.
- Coarse cereals are used in food, fodder, fuel, etc.
- Jowar (Sorghum), Bajra (Pearl Millet), Maize, Ragi (Finger Millet) etc are the examples of Coarse cereals, a broad sub-group of several short-duration Kharif crops.
- In India, the coarse cereals are mainly grown in poor agroclimatic regions, particularly rainfed areas of the country.
- These crops are also called dryland crops as they are grown in areas with high temperature and less sensitive to soil deficiencies so can be easily grown in an inferior alluvial or loamy soil.
- Major Export Destinations for Cereal Crops (2018-19): Saudi Arab, United Arab Emirates, Kenya and Nepal.

---

17. **Answer: c**

Explanation:

Given,

Length of train = 173 m

Length of bridge = 727 m

The distance covered by train = (length of bridge + length of train) = (173 + 727) = 900 m

⇒ Speed of train = (900/40.5) × 18/5 = 80 km/hour

---

18. **Answer: a**

Explanation:

- The leading coffee producer state in India is**Karnataka.**
- It accounts for nearly 71 per cent of the total production of coffee.
- Chikmagalur, Kodagu and Hassan districts of Karnataka are major coffee producer regions of the state.
- Coffee is also produced in Kerala, Tamil Nadu, Andhra Pradesh and Odisha.
- Coffee can be cultivated on lots of soils but the ideal types are fertile volcanic red earth or deep sandy loam.

---

19. **Answer: b**

Explanation:

CONCEPT:

- **Law of the Conservation of energy: "** Energy can neither be created nor be destroyed. It just gets transfers in one form to another ."
- **Total energy (TE)** : The sum of the potential energy (PE) and kinetic energy (KE) is called total energy.

TE = KE + PE

- **Potential Energy: T** he stored energy of a body by the virtue of its position is called potential energy.
  - Example: A rock sitting at the edge of a cliff has potential energy.

PE = m g h

Where m is mass, g is the acceleration due to gravity and h is the height

- **Kinetic Energy:** The energy possessed by the body by virtue of being in motion is called kinetic energy.

KE = 1/2 m V^2 where V is the velocity of the body.

- Example: A ball thrown would have kinetic energy.

EXPLANATION:

- According to the **energy conservation principle** , the **sum of the kinetic energy and potential energy of the body always remains constant** .
- As the **body comes down** the height of the body decreases and hence the **potential energy decreases** . If the potential energy decreases the **kinetic energy will increase** .
- As soon as the **body touches the ground ,all the initial potential energy of the particle gets converted into kinetic energy** .
- The potential energy (P.E) of a body at a certain height is 200 J. The kinetic energy possessed by it when it just touches the surface of the earth is the same as the Potential Energy (= P.E.). **So the option 2 is correct.**

---

20. Answer: b

Explanation:

The correct answer is option 2 i.e Medulla

Spinal Cord:

- The spinal cord originates from Medulla.
- The spinal cord is a long, fragile tube-like structure that begins at the end of the brain stem and continues down almost to the bottom of the spine.
- The spinal cord is made up of nerves which supply information to think about.
- The brain and spinal cord constitute the central nervous system. They receive information from all parts of the body and integrate it.

---

21. Answer: c

Explanation:

Conclusion 1: It is given in the statement that "Increased use of medicines puts down the innate healing sense of the body".

So, it is true that there is an innate healing sense in the body.

Conclusion 2: Information about use of external medicine is not given in the statement.

So, this doesn't follow

Hence, "only conclusion 1" follow.

---

22. Answer: c

Explanation:

The correct answer is option 3 i.e**Tourism**

- Swadesh Darshan Scheme is a scheme of**Ministry of Tourism under Government of India.**
- The Scheme was launched by the **Union Ministry of Tourism in 2014-15.**
- The scheme is an integrated development of theme-based tourist circuits for development of tourism infrastructure.
- **Under the scheme, 13 thematic circuits** have been **identified, for development namely:** North-East India Circuit, Buddhist Circuit, Himalayan Circuit, Coastal Circuit, Krishna Circuit, Desert Circuit, Tribal Circuit, Eco Circuit, Wildlife Circuit, Rural Circuit, Spiritual Circuit, Ramayana Circuit and Heritage Circuit.

---

23. Answer: c

Explanation:

Given,

⇒ 3/5 × Sarah = 6/7 × Priya

⇒ Sarah / Priya = 10/7

Let, Sarah has Rs. 10x And Priya has Rs. 7x money

Given total amount of Sarah and Priya = 3570 Rs

⇒ (10x + 7x) = 17x = 3570

⇒ x = 210

⇒ 7x = 7 × 210 = Rs. 1470

---

24. Answer: b

Explanation:

- Meristem is the region of cells that has the capability of division and causes growth in plants.
- The meristem that is seen at the base of the leaves or internodes on twigs, known as **Intercalary meristem.**
- It helps in increasing the length of the internode and usually seen in monocotyledonous plants.
- The meristem that seen at the growing tips of stems and roots and increases the length of the stem and the root is known as **Apical meristem.**
- **Lateral meristem** is present on the lateral side of the stem and root of a plant. It helps in increasing the thickness of the plants.

---

25. Answer: c

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed is,

Similarly,

Hence, “CHFDRS” is the correct answer.

---

26. Answer: d

Explanation:

Given,

The ratio of angles of pentagon = 2 : 3 : 4 : 4 : 5

Let the angles of pentagon = 2x, 3x, 4x, 4x, 5x

As the sum of interior angles of pentagon = (n − 2) × 180 = 540

⇒ 2x + 3x + 4x + 4x + 5x = 540

⇒ x = 30.

Greatest angle of the Pentagon = 5x = 5 × 30 = 150

---

27. **Answer: b**

Explanation:

Cat, Frog and Goat are different kinds of animal species.

Whereas,

Neigh is a unique sound made by a Horse.

Hence, “neigh” is odd one out.

---

28. **Answer: a**

Explanation:

- Litmus is the most commonly used indicator in laboratories.
- Litmus indicator solution **turns red in acidic solutions** and blue in alkaline solutions.
- It turns purple in neutral solutions.
- Phenolphthalein is used in acid-base titrations.
- It dissociates in water to form pink anions.
- When phenolphthalein is mixed with an acid, the solution remains clear.
- When phenolphthalein is mixed with an alkali, the concentration of the anions becomes enough for their pink colour to be observable.

---

29. **Answer: a**

Explanation:

Given

$(x - 3)$ is divisible the quadratic equation $3x^2 + ax + 12$

⇒ put x = 3

⇒ 27 + 3a + 12 = 0

⇒ a = -13

---

30. Answer: a

Explanation:

- The law of conservation of mass states that the mass in an isolated system is neither created nor destroyed by chemical reactions.
- According to the law of conservation of mass, the mass of the products in a chemical reaction must equal the mass of the reactants.
- Since, Mercuric Oxide = HgO = 92.6 g + 7.4 g =100 g.
- The density of Mercury oxide is 11.14 g/cm³.
- The molar mass is 216.59 g/mol.
- The melting point is 500° C.

---

31. Answer: c

Explanation:

LCM is the smallest positive number that is a multiple of two or more number.

Factor of 88 = 2 × 2 × 2 × 11,

Factor of 220 = 2 × 2 × 5 × 11

LCM of 88 and 220 = 2 × 2 × 2 × 5 × 11 ⇒ 440

---

32. Answer: b

Explanation:

Given,

Ratio of ages of two person = 5 : 7

Let the ages of two persons are = 5x, 7x

⇒ (5x – 18)/(7x – 18) = 8/13

⇒ (5x – 18) × 13 = (7x – 18) × 8

⇒ 65x – 234 = 56x – 144

⇒ 9x = 90

⇒ x = 10

Therefore, present age of two person = 5x = 5 × 10 = 50 and 7x = 7 × 10 = 70

---

33. Answer: d

Explanation:

Verifying the equation by placing the given options and using BODMAS rule,

→ 1) +, ×, ×

((150 + 2) × 2) × 10 = 87

(152 × 2) × 10 = 87

302 × 2 is not equal to 87

→ 2) +, ÷, ÷

((150 + 2) ÷ 2) ÷ 10 = 87

((152 ÷ 2)) ÷ 10 = 87

76 ÷ 10 is not equal to 87

→ 3) −, ×, ÷

((150 - 2) × 2) ÷ 10 = 87

(148 × 2) ÷ 10 = 87

296 ÷ 10 is not equal to 87

→ **4) ÷, +, +**

((150 ÷ 2) + 2) + 10 = 87

(75 + 2) + 10 = 87

77 + 10 = 87

87 = 87

Hence, option 4 is the correct answer.

---

34. Answer: c

Explanation:

- One of the annual international men's fields hockey tournament is the Sultan Azlan Shah Cup.
- In 2019 Sultan Azlan Shah Cup, **India lost to Korea by 4-2** in the shoot-out to finish second best in the big final.
- In 2018, Hockey India named **33 players** for a national camp ahead of the Sultan Azlan Shah Cup and Commonwealth Games.

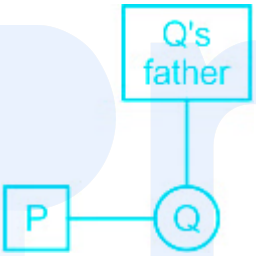
---

35. Answer: a

Explanation:

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

Drawing the family tree,



Q is the sister of P.

Hence, “sister” is the correct answer.

---

36. Answer: a

Explanation:

Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

The pattern followed is,

Similarly,

Hence, “YCVGT” is the correct answer.

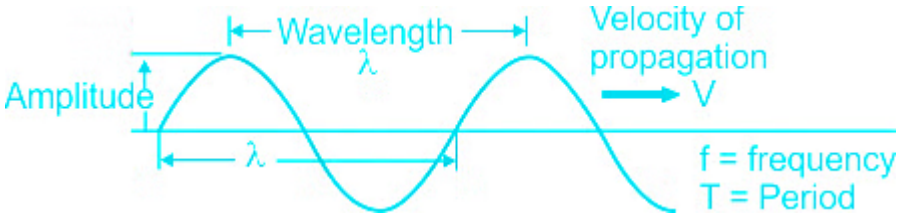
---

37. Answer: b

Explanation:

CONCEPT:

- Wave: It can be defined as the transport of energy without the transport of matter .
- The properties of waves are:
  - Wavelength (λ): The distance between two crests or troughs of a wave is known as wavelength. One wavelength equals the distance between two consecutive crests.
  - Frequency (f): The number of oscillations or the number of waves passes a given point in one sec. Its SI unit is Hertz.
  - Time period (T): The time taken by the wave to complete one cycle.
- The relation between velocity, wavelength and frequency and time period of a wave is



$\Rightarrow f = \frac{1}{T} = \frac{v}{\lambda}$

[where f = frequency, T = time period, v = velocity of wave, λ = wavelenght]

CALCULATION:

Given - Frequency (f) = 0.05 s

- The relationship between time period and frequency is given as:

$\Rightarrow f = \frac{1}{T}$

$\Rightarrow f = \frac{1}{0.05} = 20\,Hz$

---

38. Answer: d

Explanation:

⇒ 132 × 16 ÷ 2 3 + 4

⇒ 132 × 16/8 + 4

⇒ 132 × 2 + 4

⇒ 264 + 4

⇒ 268

---

39. Answer: c

Explanation:

We know that the number is divisible by 4 if the last two digits are divisible by 4.

Let the number be _ _ _ _ _

If the tens place (second digit from the right) is filled by 4 , then out of 4,5,6,7,8,9 only 8 can be in units place (Last Digit from right) as 48 are divisible by 4 , the remaining

3 places can be filled from other 4 digits in 4P3 = 4!/(4−3)! = 24 . So, with digit 4 in tens place we can have 24*1 = 24 numbers.

If the tens place is filled by 5, then the units place has to be only 6 and the other 3 places can be filled from other 4 digits, so we have 4P3 *1 = 24 numbers.

If the tens place is filled with 6 then we can have 4 or 8 in the unit's place and other 3 places can be filled in 24 ways so here we have 24*2 = 48 numbers

If the tens place is filled with 7 then the units place has to be only 6 which is divided by 4 as 76 is divisible 4 and the other 3 places can be filled from other 4 digits, so we have 4P3 *1 = 24 numbers.

If the tens place is filled with 8 then the units place has to be only 4 which is divided by 4 as 84 is divisible 4 and the other 3 places can be filled from other 4 digits, so we have 4P3 *1 = 24 numbers

Similarly, if the tens place is filled by 9 then the units place has to be only 6 which is divided by 4 as 96 is divisible 4 and the other 3 places can be filled from other 4 digits so we have 4P3 *1 = 24 numbers

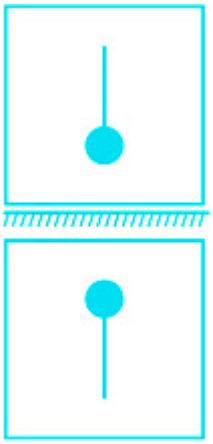
So, the total value of n is 24 + 24 + 48 + 24 + 24 + 24 = 168

---

40. Answer: c

Explanation:

The mirror image of the given image is,



Hence, option 3 is the correct answer.

---

41. Answer: d

Explanation:

Given,

From the table,

The number of students passed with 20 as cut-off marks in English = 70

Those passed with 20 as cut-off marks in aggregate = 80

The difference between the number of students passed with 20 as cut-off marks in English and those passed with 20 as cut-off marks in aggregate = (Those passed with 20 as cut-off marks in aggregate - The number of students passed with 20 as cut-off marks in English)

⇒ (80 – 70) = 10

---

42. Answer: d

Explanation:

- The full form of NABARD is the *National Bank for Agriculture and Rural Development.*
- NABARD is one type of **Development Bank focused on Agricultural and Rural Development.**
- NABARD came into existence on 12 July 1982.
- NABARD is now fully owned by the Government of India.
- **Dr. G.R. Chintala** is the Chairman of the National Bank for Agriculture and Rural Development (NABARD) since 2013.

---

43. Answer: a

Explanation:

- The Brihadesvara Temple was designed by the famous architect **Sama Varma.**
- It is situated at Thanjavur, Tamil Nadu which was also the ancient capital of the Chola kings.
- Rajaraja Chola I constructed the Brihadisvara Temple.
- It is also a World Heritage Site, declared by UNESCO in 1987.

---

44. Answer: a

Explanation:

CONCEPT:

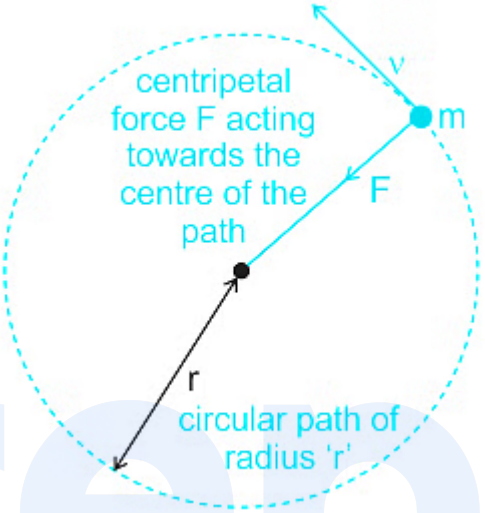
- Circular Motion : The movement of an object along a circumference of a circle or rotation along a circular path is called circular motion.
- Uniform circular motion : The circular motion in which the speed of the particle remains constant is called uniform circular motion. In a uniform circular motion , force supplies the centripetalacceleration .
    - The kinetic energy and the speed of the body remain constant.

If the Force F acts on a body and it gets displaced by a displacement of S , the work done in that case is given by:

Work done (W) = FS Cos θ

- Centripetal Force: It is a force required to move a body uniformly in a circle. This force acts along the radius and towards the center of the circle.

$\textbf{Centripetal Force } (\mathbf{F}) = \frac{mv^2}{r}$



- The centripetal force required for circular motion along the surface of the road , towards the center of the turn. The Static friction between tire and road provides the necessary centripetal force.

CALCULATION:

It is given that,

Mass = 100 gm, radius = r

- Now, here, please note that the movement is uniform circular in motion. The **angle between centripetal force and displacement is 90°.** The force and displacement are perpendicular to each other

⇒ cos 90° = 0

Work done (W) = FS Cos 90° = 0 J

- So, no matter what is the mass, radius, or velocity, the work done would be zero.

- Hence, the **work done in one complete revolution is Zero Joule** . So option 1 is correct.

---

45. Answer: a

Explanation:

According to the given information,

A > Q,

C > S

Comparison between Object S and Object Q is not possible, because the information is insufficient.

Hence, Conclusion cannot be determined.

---

46. Answer: d

Explanation:

- Smt. Smriti Zubin Irani(Union Minister at Ministry of Women and Child Development and Ministry of Textiles) released the 'India 2018' book.
- It is published by the "Publications Division".
- It is an annual Government publication on its policies and development programmes written in Hindi, English and also available online.
- This book is an exhaustive publication that includes all the aspects of our nation's development from rural to urban. It also contains information about industry, science and technology, human resources development, art and culture, polity, economy, health, defence, education and mass communication.

---

47. Answer: d

Explanation:

The correct answer is option 4 i.e **No work is done**

Force: It is defined as the push/pull which is required to change the state of the object.

Work: It is the amount of force required to move an object.

Work = Force × Displacement

- If the direction of applied force and direction, in which an object moves, are perpendicular to each other, then the work is done = 0 i.e no work is done.
- Work is done only when a certain force is applied on an object and the object moves a certain distance on the direction of the applied force. Hence work done is zero when the direction is perpendicular.

---

48. Answer: b

Explanation:

The correct answer is **50 ms -1**.

Explanation:

In the equation of motion v = u + at, 'u' represents the initial velocity of the body under consideration. 'v' represents final velocity, 'a' represents the acceleration, and 't' represents the total time taken. This is the equation of motion.

⇒ t = 20 s

⇒ It is stated that the body comes to rest: V = 0 ms -1

⇒ v = u + at

⇒ 0 = u + (−2.5) x 20 [deceleration = - 2.5]

⇒ u = 50 ms $^{-1}$

⇒ The **initial velocity = 50 ms -1** as given in the question.

---

49. Answer: a

Explanation:

Pillow is used when we take rest.

Similarly,

Shoes are used for running.

Hence, “run” is the correct answer.

---

50. Answer: a

Explanation:

Conclusion 1: It is not given about the population increase in the future.

Conclusion 2: It is given that there is a **huge** depletion of resources, So we can conclude that it will be difficult for the government to provide resources.

Hence, Only conclusion II follows

---

51. Answer: d

Explanation:

Given,

⇒ 384 ÷ 25 × 3 + 8 = ?

⇒ (384/32) × 3 + 8 = ?

⇒ 12 × 3 + 8 = ?

⇒ 36 + 8 = ?

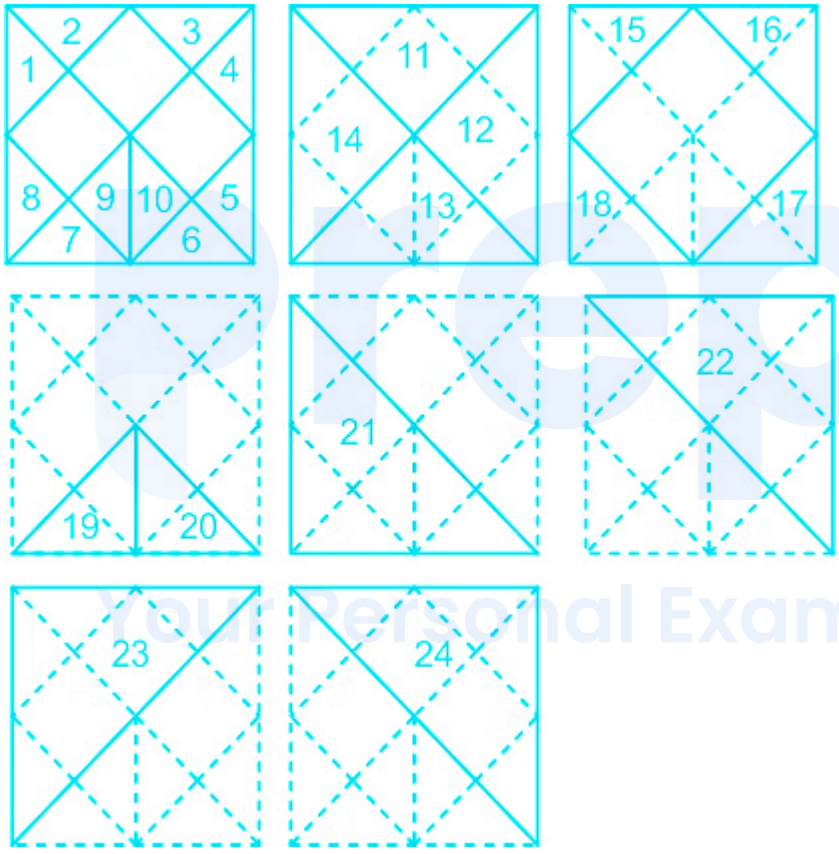
⇒ 44

---

52. Answer: d

Explanation:

The number of triangles in the given figure are,



Hence, “24” is the correct answer.

---

53. Answer: a

Explanation:

The correct answer is option 1 i.e Aldehyde:--------OH

- The-OH functional group is the hydroxyl group.OH is alcohol consisting of an oxygen atom bonded to a hydrogen atom.
- An **amide functional group** consists of a carbonyl group bonded to a nitrogen.
    - In amides, two hydrogen atoms are bonded to the nitrogen (-CONH2).
- **Amines** are compounds and functional groups that contain a basic nitrogen atom with a lone pair.
    - NH2 belongs to this group.
- **Carboxylic acid** is a homologous series in which the compounds contain a functional group called the carboxyl group (-COOH).

---

54. Answer: d

Explanation:

Given:

A and B have the money in the ratio of = 17 : 25

Concept used:

Basic concept of ratio.

Calculation:

Let A has the money 17x and B has the money 25x

According to question,

B gave Rs. 5 to A then,

The ratio of A and B = 3 : 4

⇒ (17x + 5)/(25x – 5) = 3/4

⇒ (17x + 5) × 4 = (25x – 5) × 3

⇒ 68x + 20 = 75x – 15

⇒ x = 5

sum of money = (17x + 25x) = 42x = 42 × 5 = 210

∴ sum of money is Rs 210.

---

55. Answer: c

Explanation:

The pattern followed is,

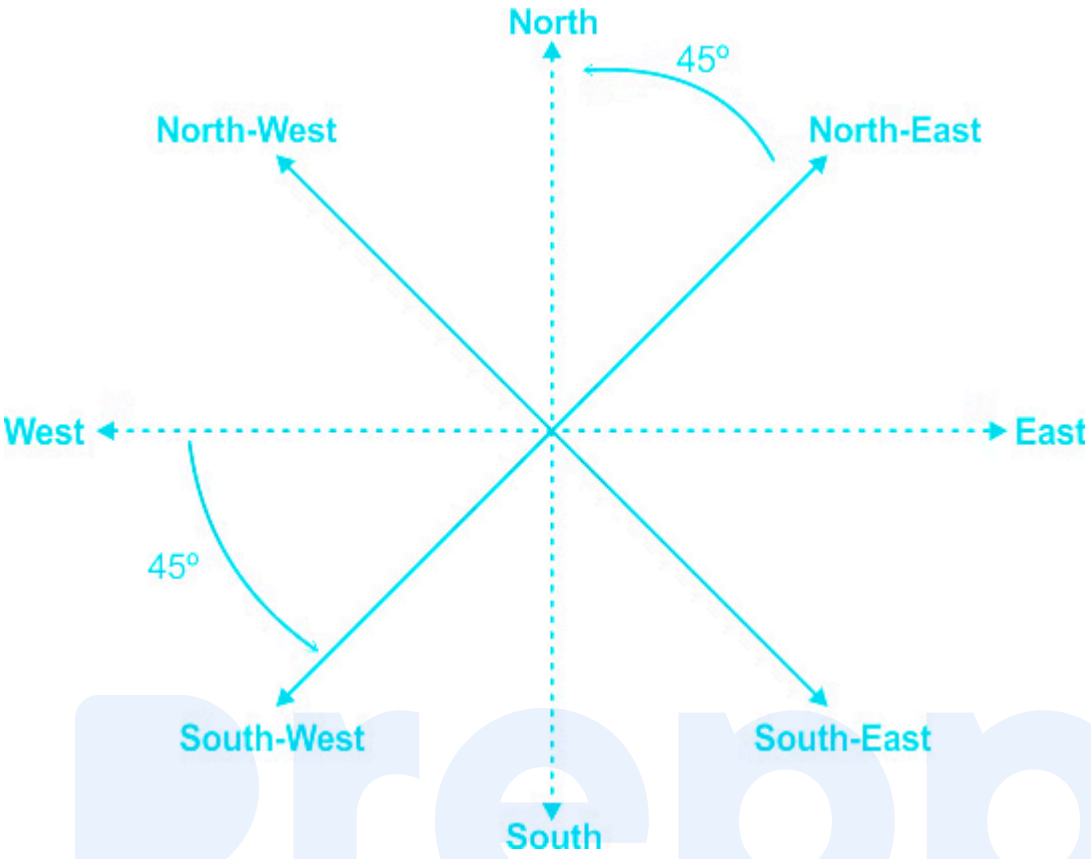
Hence, “K11I9” is the correct answer.

---

56. Answer: b

Explanation:

Drawing the diagram,



The direction is shifted 45° anti - clockwise.

If north – east becomes north, then west would become South – West.

Hence, "south – west" is the correct answer.

---

57. Answer: d

Explanation:

The correct answer is option 4 i.e **Hockey**

Sultan Azlan Shah Cup:

- The Sultan Azlan Shah Cup is an annual international men's**hockey tournament**.
- It began in 1983 as a biennial contest.
- The tournament became an annual event after 1998.

2019 Sultan Azlan Shah Cup:

- Host country: **Malaysia.**
- The 2019 Sultan Azlan Shah Cup was the **28th edition** of the **Sultan Azlan Shah Cup** , which was **held in Ipoh, Malaysia.**
- **South Korea** won the tournament **for the third** time after **defeating India.**

---

58. Answer: c

Explanation:

Argument 1: This is strong because speed driving is one of the major causes of road deaths as per statistics.

Argument 2: This is not strong because, speed driving is the cause of accidents.

Hence, “only argument 1” is strong.

---

59. Answer: b

Explanation:

The correct answer is option 2 i.e**Rajamouli**

Baahubali 2:

- The Conclusion is a 2017 Indian epic action film**directed by S. S. Rajamouli**and written by his father K. V. Vijayendra Prasad.
- He has garnered various honours including **3 National Film Awards ,4 Filmfare Awards South ,5 state Nandi Awards ,the IIFA Award ,2 SIIMA Awards ,the Star World India , " Entertainer of The Year" in 2012** , and the " **CNN-News18 Indian of the Year in Entertainment" for 2015** .
- In 2016, he was honoured with the **Padma Shri** for his contributions towards **the field of Art.**

---

60. **Answer: b**

Explanation:

Argument 1: This is strong because, price control in health care will be helpful for the middle-class people

Argument 2: This is not strong because, price control does not mean that there will be losses for health care organisations.

---

61. **Answer: c**

Explanation:

A rational number is a number that can be expressed as the quotient or fraction p/q of two integers, a numerator p and a non-zero denominator q. Since q may be equal to 1, every integer is a rational number.

⇒ √(6 and 64) = (26)1/6 = 2 (rational)

Therefore, √(6&64) will be the answer

---

62. **Answer: a**

Explanation:

India is a country.

Telangana is a state in India.

And,

Hyderabad is the capital of Telangana.

Telangana is a state in India.

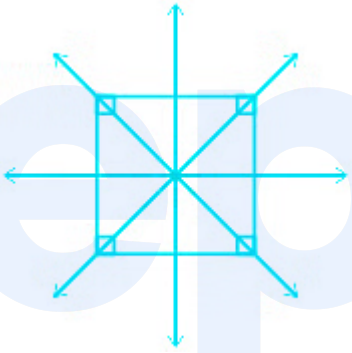
The correct Venn diagram representation is,

Hence, option 1 is the correct answer.

---

63. Answer: d

Explanation:



Property of symmetry:

When a geometric figure is folded about a line of symmetry, the two halves match up. A line of symmetry must either match two vertices on one side of the line with two vertices on the other or it must pass through two of the vertices and then the other two vertices pair up when folded over the line.

---

64. Answer: d

Explanation:

Given,

Builder build a wall in 10 hours

Wall built in 1 hour = 1/10 of the total work

Destroyer destroy the wall in 14 hours

Wall destroyed by destroyer in 1 hour = 1/14

Total work done by builder and destroyer in 1 hour = (1/10 – 1/14) = 1/35

As, they work for 7 hours

Work done by both builder and destroyer in 7 days = (1/35) × 7 = 1/5

Remaining work = 1-(1/5) = 4/5

According to question, after 7 days destroyer was taken out therefore remaining work will be done by the builder

Time taken by the builder for remaining wall = (4/5)/(1/10) = (4/5) × 10 = 8 hour

Total time to build the wall = (7 + 8) = 15 hour

---

65. **Answer: a**

Explanation:

The correct answer is option 1 i.e**Number of electrons.**

- The total number of electrons present in an atom represents the atomic number of a particular atom.
- The number of electrons = number of protons.
- **Atomic Number = Number of Protons = Number of Electrons.**
- The atomic number uniquely identifies a chemical element.

Mistake Point

Atomic number is most preferably counted on the number of protons, Since no such option is available we can go with the best possible option.

i.e. the**number of electrons in a neutral atom.**

---

66. Answer: c

Explanation:

Wall is constructed with the help of bricks.

Similarly,

Fabric is made of yarn.

Hence, “yarn” is the correct answer.

---

67. Answer: c

Explanation:

The correct answer is option 3 i.e**Anandiben Patel.**

- **Anandiben Patel** was elected as the **Madhya Pradesh Governor** in January 2018.
- She is the **current Governor** of **Uttar Pradesh** and former **Chief Minister of Gujarat** .
- She was the **first woman Chief Minister** of **Gujarat.**
- This is the first time that UP got a woman Governor since it’s inception in 1950. Sarojini Naidu was the first Governor in 1947 but of the United Provinces.
- **Lalji Tandon** is the **22nd** and **current Governor** of **Madhya Pradesh** .

⭐ **Additional Information**

- Madhya Pradesh:
  - Number of Districts - 52.

- Lok Sabha seats - 29.
- Rajya Sabha seats - 11.
  Dams - Bansagar Dam (Sone river), Bheemgarh dam (Wainganga river), Gandhi Sagar Dam (Chambal River), Indira Sagar Dam (Narmada River) and Omkareshwar Dam (Narmada River).
- Registered GI: Chanderi Fabric, Leather Toys of Indore, Bell Metal Ware of Datia and Tikamgarh, Ratlami Sev.
- Governor: Mangubhai C. Patel (2022)

---

68. Answer: a

Explanation:

Given,

Diameter of spherical ball = 72 cm

Radius of spherical ball = 36 cm

Diameter of cone = 6 cm

Radius of cone = 3 cm

Height of cone = 6 cm

Let the no of cones be N

Total volume of spherical ball = number of cones × volume of one cone

⇒ (4/3) π (radius of spherical ball) 3 = N × (1/3) π (radius of cone) 2(height of cone)

⇒ 4/3 × 22/7 × 36 × 36 × 36 = N × 1/3 × 22/7 × 3 × 3 × 6

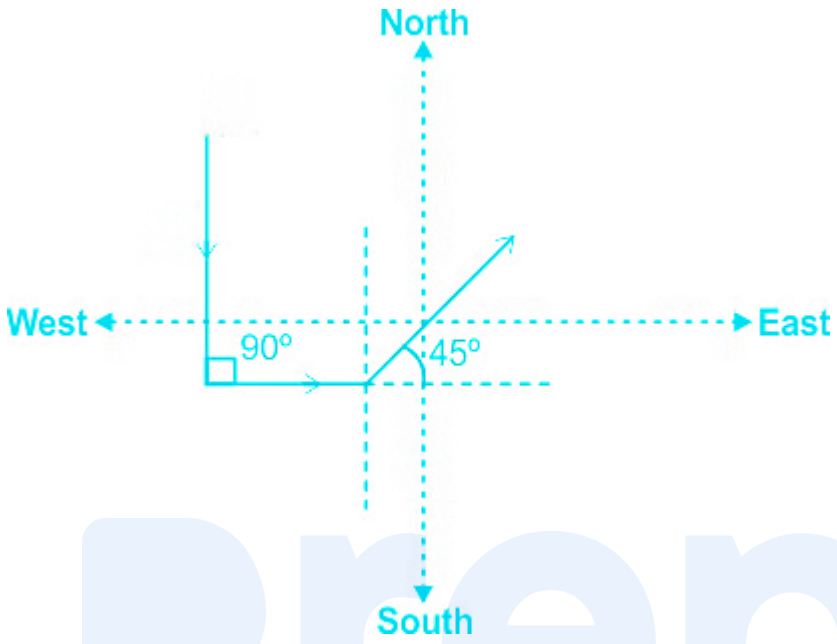
⇒ N = 3456 cones

---

69. Answer: c

Explanation:

Drawing diagram according to the given information,



Hence, North - East is the correct answer.

---

70. Answer: c

Explanation:

If rotated 360°, It will become cylinder

By rotating along its length by 150°.

Radius = width = 3 cm

Height = length = 14 cm

Volume = $\pi r^2 h \times 150/360$

$\Rightarrow 22/7 \times 3^2 \times 14 \times 150/360$

$\Rightarrow 165\ cm^3$

71. **Answer: a**

Explanation:

ABHORRED, DESPISE, LOATHE are synonyms to each other, but CHERISH is a antonym.

Hence, CHERISH is the odd one out.

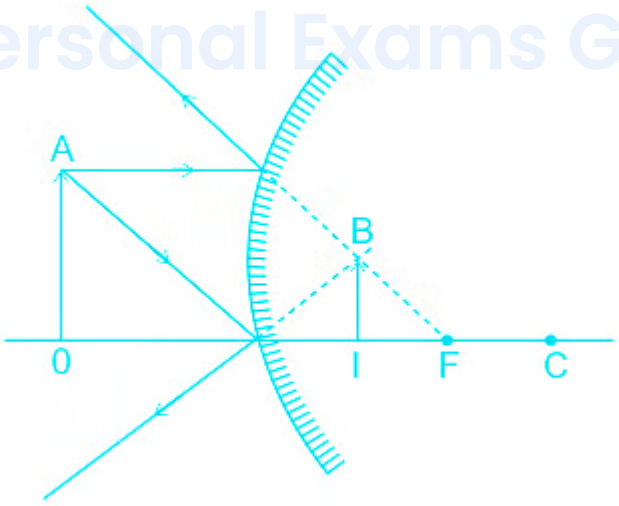
Note: For this question, discrepancy is found in question/answer. So, This, question is ignored

for all candidates.

72. **Answer: d**

Explanation:

- The image formed by controlled rays of reflection that we get by extending the rays backward is**Virtual.**
- The convex mirror always forms a virtual image, erect and a smaller image.



⭐ Additional Information

Real and Virtual Image

Real Image	Virtual Image
The image is formed by the real intersection of light.	The image is formed by the virtual intersection of Light.
The image formed is usually inverted.	The image formed is usually erect and laterally inverted.
The image can be obtained on the screen.	The image cannot be obtained on the screen
Examples are images formed by a concave mirror and convex lens at certain positions of the image	Examples are images formed by plane mirrors, simple magnifying glass, concave lenses, and convex mirrors.

73. **Answer: b**

Explanation:

Given ,

Average marks of 25 students = 29

As we know,

Total marks obtained by students = average marks obtained by student × total no.of students

Average of marks obtained by two students = (marks obtained by left student + marks obtained student who came)/2

CALCULATION:

Total marks obtained by 25 students = 25 × 29 = 725

According to the question,

One student left the group as a result of which the average of the remaining students rose to 29.5

Total marks obtained by 24 students = 24 × 29.5 = 708

Marks obtained by left student = 725 – 708 = **17**

According to the question,

Another student came in as a result of which the average marks of the group dropped to 28.8

Therefore,

Total marks obtained by the students after another student came = 25 × 28.8 = 720

⇒ Marks obtained by student who came = 720 – 708 = 12

The average of the combined marks obtained by the student who left and the one who joined

⇒ (17 + 12)/2

⇒ 14.5

---

74. Answer: b

Explanation:

The correct answer is option 2 i.e **St raight Line**

- The magnitude of the displacement from the initial position to the final position is a **straight line**.
- **Displacement:** It is the distance between an object's initial position and its final position.
- **It is usually measured or defined along a straight line.**
- **Displacement** is a **vector quantity** and thus has **both magnitude and direction.**
- The **magnitude of displacement** is equal to the **linear** distance between **initial and final positions** along the straight line joining two positions i.e. the **shortest distance between initial and final positions.**
- This value may or may not be equal to the distance along the actual path of motion.

---

75. **Answer: c**

Explanation:

The correct answer is option 3 i.e **Same-sex marriages**

- **Section 377** of the Indian Penal Code (IPC) is**an act that criminalises homosexuality**and was introduced in the year 1861 during the British rule of India.
- **Section 377** refers to 'unnatural offences' and says whoever voluntarily has carnal intercourse against the order of nature with any man, woman or animal, shall be punished with imprisonment for life, or with imprisonment of either description for a term which may extend to 10 years, and shall also be liable to pay a fine.

Why in news:

- The **Supreme Court of India on September 6, 2018, decriminalised Section 377 of the IPC** and allowed gay sex among consenting adults in private.
- The SC ruled that consensual adult gay sex is not a crime affirming that sexual orientation is natural and people have no voluntary control over it.

---

76. **Answer: b**

Explanation:

Given,

Inlet Pipe A can fill can cistern is 35 hours,

Therefore, A fill the tank in 1 hour = 1/35

B empty the tank in 1 hour = 1/40

A and B can fill the tank in 1 hour = (1/35) – (1/40) = 1/280

Let the two pipes are opened together for X hour till the cistern is three-fifths full

Therefore,

A and B together can fill the tank in X hour = X/280

⇒ X/280 = 3/5

⇒ X = 168 hour.

Now according to the question,

The outlet pipe is closed when the cistern is three-fifths full.

Therefore, remaining part (1 – 3/5) = 2/5 of the tank will be filled by the inlet pipe A,

Time taken by the inlet pipe to fill the remaining tank = (2/5)/ (1/35) = (2/5) × 35 = 14 hour.

Therefore, the total time to fill the tank = (168 + 14) = 182 hours.

---

77. **Answer: d**

Explanation:

Concept:

Multiplication of matrices:

- The number of columns of the 1st matrix must equal the number of rows of the 2nd matrix.
- The result will have the same number of rows as the 1st matrix, and the same number of columns as the 2nd matrix.
- To multiply an m × n matrix by an n × p matrix, the n must be the same, and the result is an m × p matrix.

Calculation:

From statement 1 :

AB = A

We cannot find anything from this statement.

From statement 2 :

$A\; = \;\left[{\begin{array}{*{20}{c}} n&9\\ 2&1 \end{array}} \right] , B\; = \;\left[{\begin{array}{*{20}{c}} 1&0\\ 0&1 \end{array}} \right]$

We cannot find anything from this statement.

Combining **statement 1 and 2** :

$AB\; = \;\left[{\begin{array}{*{20}{c}} (n\times 1+9\times0)& (n\times0+9\times1)\\ (2\times1+1\times0)&(2\times0+1\times1) \end{array}} \right]$

$AB = \left[{\begin{array}{*{20}{c}} n&9\\ 2&1 \end{array}} \right]$

Also, $A = \left[{\begin{array}{*{20}{c}} n&9\\ 2&1 \end{array}} \right]$

∴ We cannot find the value of n from both statements together.

---

78. Answer: a

Explanation:

Given,

A and B can do a piece of work together in 9 days

⇒ (A and B)'s 1 day work = 1/9

⇒ A's 1-day work = 1/15

As B left leaves before the completion of the work therefore A will work for last 3 days alone.

⇒ A's last 3 days work = (1/15) × 3 = 1/5

⇒ Remaining work = 1 – (1/5) = 4/5

A and B have to work of 4/5 together,

A and B will work together = (4/5)/(1/9) = (4/5) × 9 = 36/5 = 7.2 days.

---

79. Answer: b

Explanation:

The pattern followed is,

98 ÷ 35 = 2.8

Similarly,

140 ÷ 2.8 = 50

Hence, "50" is the correct answer.

---

80. Answer: c

Explanation:

From the Table,

In 2015-2016

Average percentage in 2015-2016 year = (92 + 96 + 97 + 95)/4

⇒ 380/4 = 95% Ans.

---

81. Answer: b

Explanation:

The correct answer is option **2**, i.e**Gitanjali**.

- **Rabindra Nath Tagore** received Nobel prize for Literature in **1913** for his book **Gitanjali** .
- He was the **first Indian** to **receive the Nobel prize.**
- Alfred B. Nobel, the Swedish chemist, and engineer who invented dynamite established the Nobel Prizes. These are awarded annually in six areas i.e peace, literature, physics, chemistry, physiology or medicine, and economic science.

Indians who won the Nobel prize:

Name	Field
C. V. R aman	Physics
Har Gobind Khorana	Medicine/Physiology
Mother Teresa	Peace
Subrahmanyan Chandrasekhar	Physics
Amartya Sen	Economics
Venkatraman Ramakrishnan	Chemistry
Kailash Satyarthi	Peace
Abhijit Banerjee	Economic

Winners of 2019 Nobel prize:

Winners	Field
i) Peter Handke	Literature
i) Akira Yoshino ii) M. Stanley Whittingham iii) John. B Goodenough	Chemistry
I) Jim Peebles ii) Didier Queloz iii) Michel Mayor	Physics
i) Michael Kremer ii) Abhijit Banerjee iii) Esther Duflo	Economics
i) Abiy Ahmed	Peace

---

82. **Answer: d**

Explanation:

The correct answer is option 4 i.e **Burma**

- **Bahadur Shah** , the last Mughal Emperor was exiled to**Burma**(Rangoon) for fear of another rebellion against the British army.

- The revolt of 1857 started from Meerut on **10th May 1857** and reached Delhi with the slogan **"Maro Firangi Ko"** .
- On 11th May 1857, the soldiers captured **Delhi** and announced Bahadur Shah Zafar as their leader and he was named as " **Shahenshah-i-Hindustan** ".
- British Army within a month again captured Delhi and Bahadur Shah Zafar was deported to Burma jail.

---

83. Answer: b

Explanation:

The correct answer is Option **2**.

- " **One Indian Girl** " is written by**Chetan Bhagat.**
- This book was **released in 2016.**

Some famous books written by authors are:

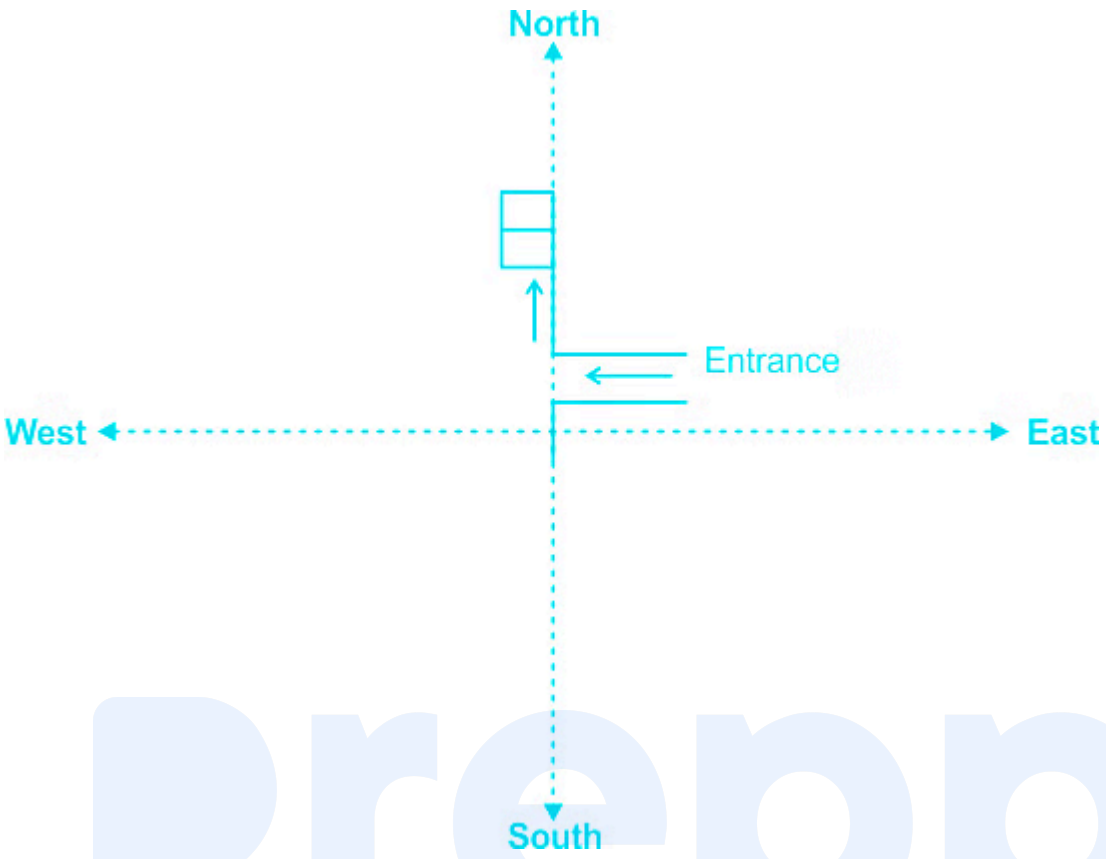
Author	Books
Chetan Bhagat	Five Point Someone, Two States, What Young India Wants
Amit Chaudhuri	Friend of my Youth, Odysseus Abroad
Vikram Chandra	Sacred Games, Red Earth, and Pouring
Vikram Seth	Two Lives, The Golden Gate

---

84. Answer: d

Explanation:

According to given information:



They turned towards north after entering the restaurant.

Hence, North is the correct answer.

---

85. Answer: d

Explanation:

LCM is the smallest positive number that is a multiple of two or more number.

⇒ Factors of 76 = 2 × 2 × 19

⇒ Factors of 57 = 3 × 19

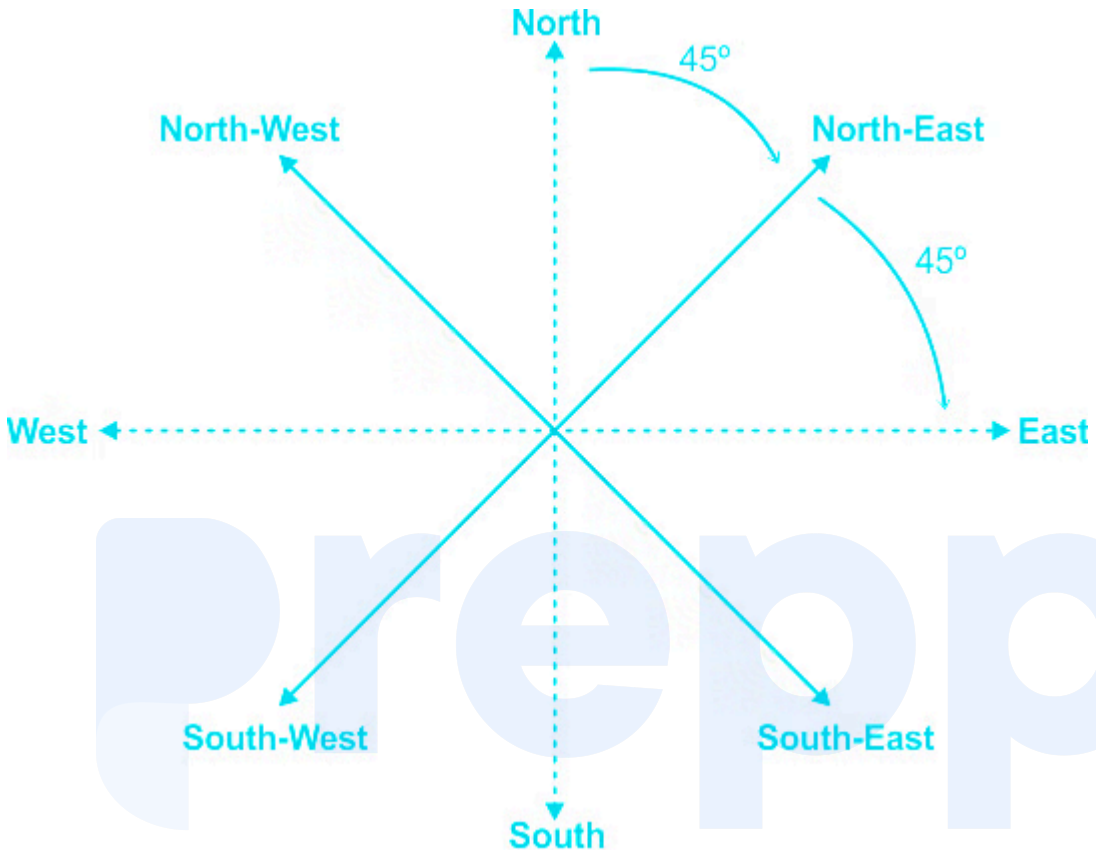
⇒ LCM 76 and 57 is = 2 × 2 × 3 × 19 = 228

---

86. Answer: a

Explanation:

Drawing the diagram,



The direction is shifted 45° clockwise.

If north will become north-east, north east will become east.

Hence, “east” is the correct answer.

---

87. **Answer: c**

Explanation:

The correct answer is option 3 i.e**Camera**.

- **Integrated Circuit or IC:** It is an Electronic Component made up of a combination of transistors, diode, resistor, capacitors in a tiny semiconductor

chip.

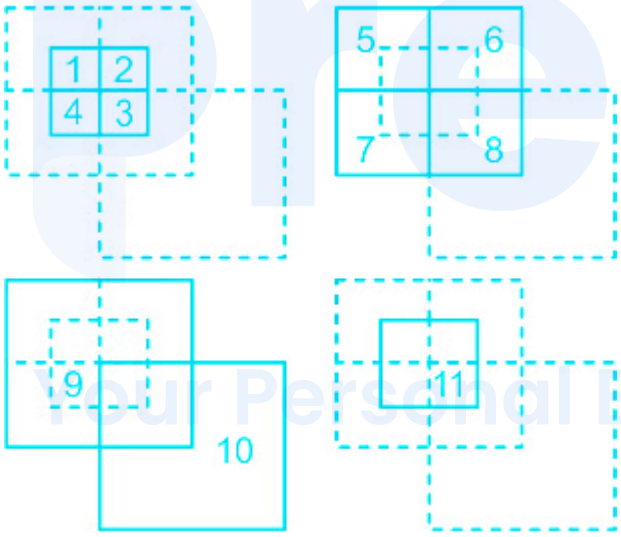
- Integrated Circuit Electronic Components are of small size and very lightweight.
- They produce excellent results at low power.
- Integrated circuits can be found in almost every electronic device like**Computers, Television, Mobile Phones, laptops, Microwaves etc.**
- One of the **major applications in computing.**

---

88. Answer: c

Explanation:

The number of squares in the given figure are,



Hence, “11” is the correct answer.

---

89. Answer: c

Explanation:

The correct answer is option 3 i.e **Atomic Mass Unit.**

- **Atomic Mass Unit**is the full form of "amu".

- **One Atomic Mass Unit:** It is defined as the mass equal to **one-twelfth** the mass of one **carbon- 12** atom.
- And 1 amu = 1.66056×10^{-24} g

Mass of an atom of hydrogen = 1.6736×10^{-24} g

Thus, in terms of amu, the mass of hydrogen atom = $(1.6736 \times 10^{-24}) / (1.66056 \times 10^{-24}) = 1.0078$ amu

---

90. Answer: c

Explanation:

The correct answer is option 3 i.e $Ca(OH)_2 + Cl_2 = CaOCl_2 + H_2O$

- The **Chlorine** which is produced on passing electricity through brine solution further reacts with **slaked lime** $[Ca(OH)_2]$ to produce bleaching powder.
- The reaction is as given below:

$Ca(OH)_2 + Cl_2 = CaOCl_2 + H_2O$

- Bleaching powder is also known as**Calcium Oxychloride ($CaOCl_2$).**

Uses of Bleaching powder:

- It is used to bleach washed clothes in the industry.
- Used as a disinfectant.
- Used as an oxidizing agent in many chemical industries.

---

91. Answer: a

Explanation:

Option 1is correct

- Rajiv Mehrishiis the present **Comptroller and Auditor General** of India.
- He was appointed as the **13th CAG** of India on 25th September 2017.
- Comptroller and Auditor General of India is described in **Article 148** of **the Indian Constitution.**
- **Shashikanth Sharma** was the former CAG of India appointed in July 2014.
- **Mukul Rohatgi** was the 14th **Attorney General** of India appointed from June 19, 2014, to June 18, 2017.

Some important Officeholders of India in the present

Departments	CEO/Chairman
NITI Aayog	Rajiv Kumar (vice-chairman)
National Highway Authority of India	Sukhbir Singh Sandhu (chairman)
UIDAI	Pankaj Kumar

⭐ Additional Information

- **The former Lt. Governor of UT of Jammu Kashmir G. C. Murmu is the current CAG of India. (2022)**

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92. Answer: d

Explanation:

The correct answer is option **4 i.e Morarji Desai**

- **Morarji Desai** Government appointed the Second **Backward Classes Commission** under the chairmanship of **B P Mandal** in the year **1979** to investigate the conditions of the educationally and socially backward classes.
- The commission submitted its report in 1980.
- The commission recommended the **27%** reservation for jobs.
- **V P Singh** Government declared reservation of 27% government jobs for the OBCs after 10 years.

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93. Answer: c

Explanation:

Given,

That $(1 + a + a^2 + a^3 + a^4 \ldots\ldots\ldots a^{2018})$ is divisible by $(a - 1)$

⇒ Put value of a = 1

⇒ (1 + 1 + 1 + 1 + ... 2019 times) = 2019

---

94. Answer: c

Explanation:

Given,

⇒ Put the value from options

⇒ x = 1/2 Answer

⇒ $8^x = \frac{4}{x^{-x}}$

⇒ $8^{1/2} = 4/(1/2)^{-1/2}$

⇒ $8^{1/2} = 4/(2)^{1/2}$

⇒ $2^{3/2} = 2^{2 - 1/2}$

⇒ $2^{3/2} = 2^{3/2}$ (it means x = ½ is correct option)

---

95. Answer: a

Explanation:

The correct answer is option 1 i.e**Right to Property**

- **Right to Property**is not a **Fundamental Right** provided in the Indian Constitution.
- **Right to Property** was removed from the Fundamental Rights in **1978** under the **44th Constitutional Amendment Act** and it was placed in the new **Article 300A** as an ordinary **legal right** .

Some important articles of the Indian Constitution.

Fundamental Rights	Articles associated with them
Right to Equality before the law	Article 14
Right to Freedom	Article 19 - Article 22
Right to Education	Article 21 A
Right against Exploitation	Article 23 - Article 24
Right to Freedom of Religion	Article 25 - Article 28

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96. Answer: a

Explanation:

The correct answer is **Only A is true, B and C are false.**

⭐ **Key Points**

- Water can exist in three states of matter as **solid, liquid,** and **gas.**

Solid water:

- When water freezes, its molecules move farther apart, making **ice** less dense than water.
- Hence, ice is lighter than the same volume of water, and so ice will float in water. Water freezes at **0°C, 32° F.**

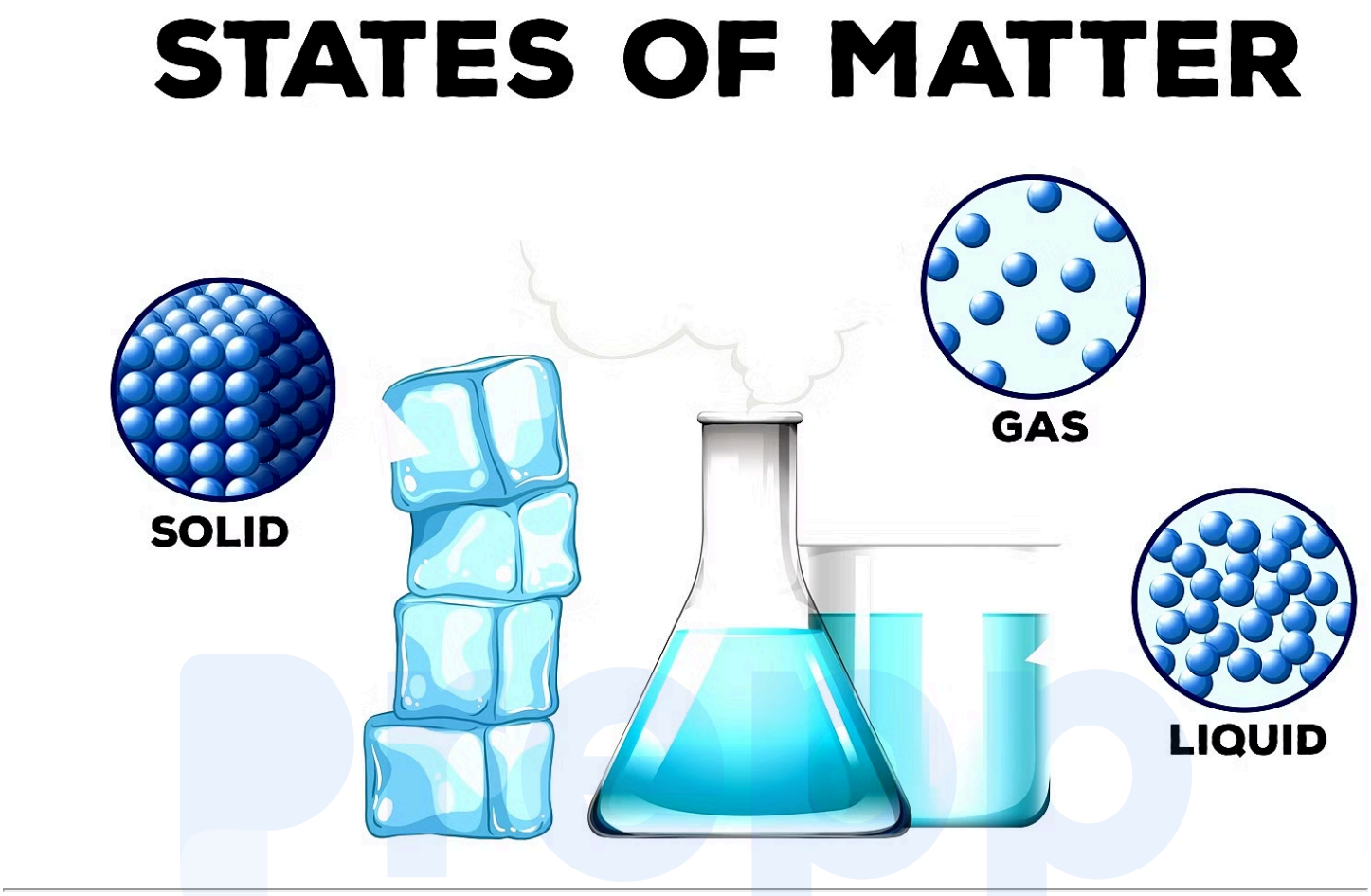
- **Ice, snow, and frost** are examples of water in the solid-state. Liquid water freezes at 0 degrees Celsius.
- Celsius is a scale that measures temperature.
- It is possible to solidify water without allowing it to crystallize.
- This has been demonstrated in laboratory conditions decades ago, using metal plates chilled with dry ice or liquid nitrogen and slamming them together to trap a falling water drop between.

Liquid water:

- It is the most familiar form of water which we use in drinking, bathing, washing clothes, etc.
- **Clouds, snow, and rain** are all made up of some form of water. A cloud is comprised of tiny water droplets and/or ice crystals, a snowflake is an aggregate of many ice crystals, and rain is just liquid water.
- The equation for the formation of liquid water is: $2H2(g)+O2(g)\rightarrow 2H2O(l)$ $2 H 2 (g) + O 2 (g) \rightarrow 2 H 2 O (l)$.

Gaseous water:

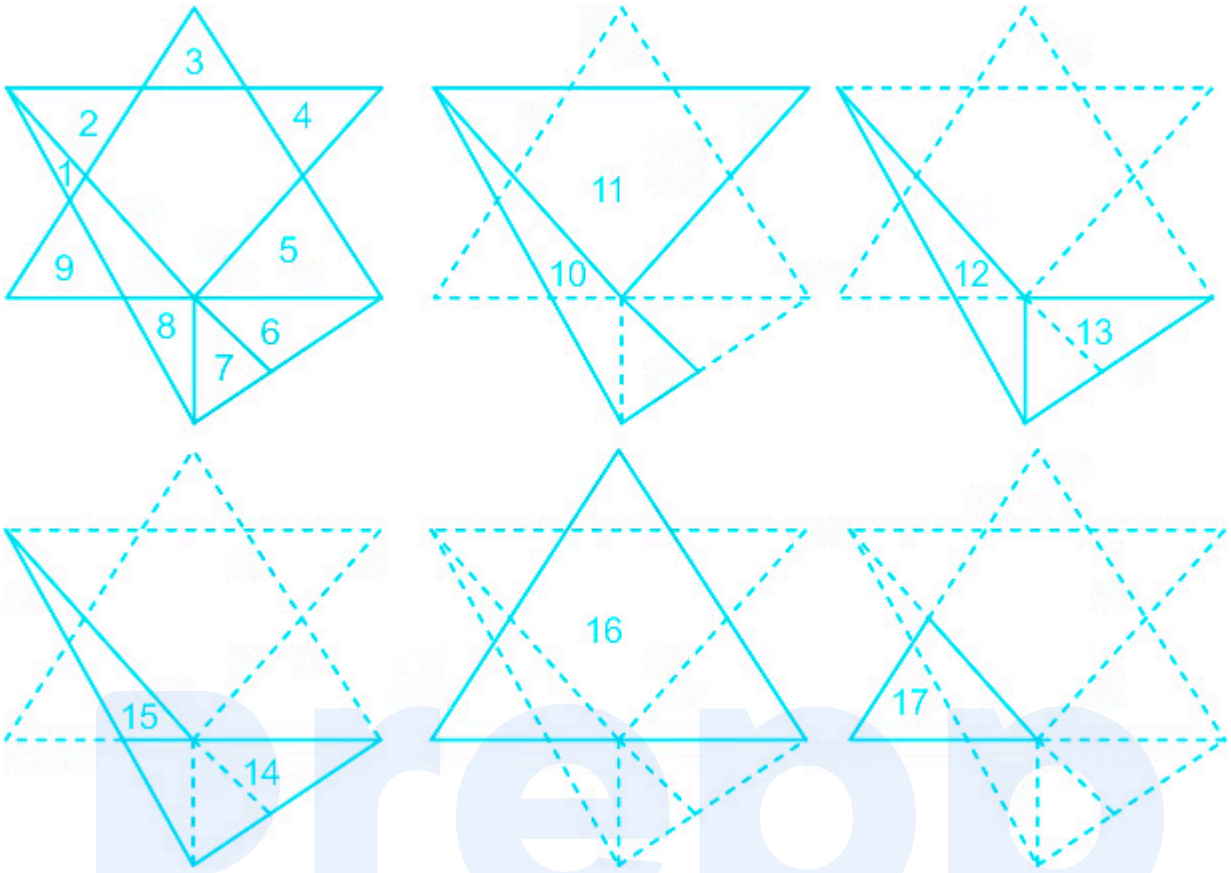
- Water vapors and steam are the gaseous forms of liquid.
- Steam is formed at **100°C, 212°F.**
- Water existing as gas is called **water vapor** .
- When referring to the amount of moisture in the air, we are actually referring to the amount of water vapor.



97. **Answer: a**

Explanation:

The triangles in the given figure are



Hence, "17" is the correct answer.

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98. Answer: d

Explanation:

Let the number be X

⇒ (5/7) × X = 2/3

⇒ X = 14/15

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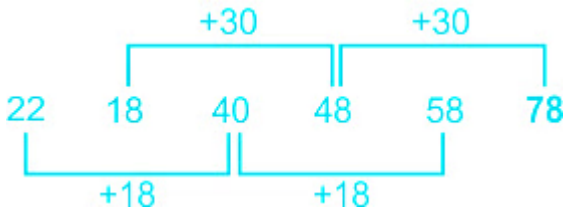
99. Answer: c

Explanation:

The pattern followed is,



Hence,"78" isthe correct answer.

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100. Answer: a

Explanation:

The correct answer is option 1 i.e**Three**

The **three** parallel ranges of Himalayas are:

Himadri (Great or Inner Himalayas)

- It is the most continuous range with an average height of **6000** meters.
- It remains covered with snow throughout the year.

Himachal (Lesser Himalayas)

- It lies to the south of Himadri.
- The average height of these mountains is between **3,700 to 4,500 meters.**
- Famous ranges are: **Pir Panjal range, Dhaula Dhar and Mahabharat ranges** .
- Famous valleys like **Kangra, Kullu, and Kashmir** are situated in this valley.

Shivalik (Outer Himalayas)

- These are outermost ranges of Himalayas and have an average height between **900 to 1100** meters.
- These ranges are mainly composed of unconsolidated rock material, so these ranges are prone to earthquakes and landslides.
- The longitudinal valleys lying between lesser Himalayas and Shiwaliks are called **'Duns'** like **Dehra Dun, Kotli Dun, and Patlin Dun,** etc.