



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 (04-Dec-2018) (Shift 2)

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. A train travels at a constant speed and crosses two persons moving in the same direction in 10.8 seconds and 11.4 seconds respectively. The first one was running at the speed of 4.8 km/h while the second one was running at the speed of 6.6 km/h. What is the speed of the train in km/h? (+1, -0.33)
- a. 39.6
 - b. 40.2
 - c. 38.4
 - d. 39.0
-
2. What will be the next term in the following series? (+1, -0.33)
- 126, 132, 142, 148, ---
- a. 162
 - b. 158
 - c. 152
 - d. 168
-
3. _____ was the summer capital of the British. (+1, -0.33)
- a. Dalhousie
 - b. Ooty
 - c. Shimla
 - d. Darjeeling

4. The second equation of motion shows the relationship between position and _____. (+1, -0.33)

- a. Velocity
- b. Time
- c. Displacement
- d. Momentum

5. A ladder leads to a window which is 48 feet above the ground on one side of the street (one side). From that place, the ladder reaches the window on the other side of the street (second side) 55 feet above the ground. If the length of that ladder is 73 feet, find the width of the street. (+1, -0.33)

- a. 103 ft
- b. 110 ft
- c. 92 ft
- d. 100 ft

6. Consider the following question and decide which statement is sufficient to answer the question. (+1, -0.33)

Question:

Find the value of p.

Statement:

1. $p : p^2 :: p^2 : 1000$

2. $p^2 + 2pn + n^2 = 21$

- a. Either 1 or 2 is sufficient.
 - b. Only 1 is sufficient.
 - c. Neither 1 nor 2 is sufficient.
 - d. Only 2 is sufficient.
-

7. Three pipes A, B and C can fill an empty tank in 15, 10 and 5 minutes respectively. When the tank is empty, the three pipes are opened simultaneously. What is the part of work done by B and C? (+1, -0.33)

- a. $\frac{9}{11}$
 - b. $\frac{12}{11}$
 - c. $\frac{6}{11}$
 - d. $\frac{2}{11}$
-

8. What is an international (SI) unit of electric current? (+1, -0.33)

- a. Ohm
 - b. Volt
 - c. Ohm-meter
 - d. Ampere
-

9. Which state of India is the leading producer of rubber? (+1, -0.33)

- a. Kerala
- b. Telangana
- c. Himachal Pradesh
- d. Tamil Nadu

10. The mean of the four numbers is 22. The mean of the three smallest numbers is 19. If the data range is 15, what will be the mean of the largest three numbers? (+1, -0.33)

- a. 24
- b. 23
- c. 25
- d. 26

11. The height and oblique height of a perpendicular circular cone are $\sqrt{429}$ cm, 25 cm respectively. Find the curve surface area of the cone, assuming the value of π is $\frac{22}{7}$. (+1, -0.33)

- a. 1056 cm^2
- b. 1100 cm^2
- c. 1078 cm^2
- d. 1144 cm^2

12. In which sport Saurabh Chaudhary has recently won a gold medal? (+1, -0.33)

- a. Wrestling
- b. Boxing
- c. Shooting
- d. Swimming

13. Select the mirror image for the following image:

(+1, -0.33)

Question Image:



Option Image:



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

14. Nida is the son of Fazil. Fazil is Meher's brother. Khaif is Mehar's husband. Meher is _____ of Nida.

(+1, -0.33)

- a. Cousin sister
 - b. Brother
 - c. Uncle
 - d. Aunt
-

15. The meaning of positive acceleration is _____. (+1, -0.33)

- a. The velocity of the object is low.
 - b. The velocity of the object is constant.
 - c. The velocity of an object is zero.
 - d. The velocity of the object increases.
-

16. 5.5 kwh = ? (+1, -0.33)

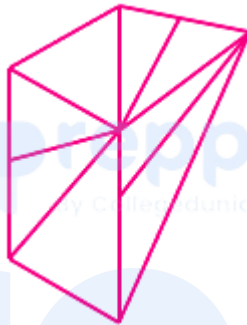
- a. 14.0×10^6 J
 - b. 19.8×10^6 J
 - c. 14.4×10^8 J
 - d. 14.4×10^5 J
-

17. A bacteria has the ability to tolerate excess heat, dryness and toxic chemical substances. This suggests that he may possibly make _____.

- a. Endogenous buds

- b. A wide peptidoglycan wall
 - c. Endotoxins
 - d. Endospores
-

18. How many triangles are present in the picture below? (+1, -0.33)



- a. 12
- b. 9
- c. 10
- d. 13

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19. In which country was the World City Summit 2018 organized? (+1, -0.33)

- a. Japan
 - b. Singapore
 - c. China
 - d. Korea
-

20. In a code language, (+1, -0.33)

Biscuit = 83

Cake = 20

Cookie = 58

In that code language Coffee = ?

- a. 34
- b. 40
- c. 33
- d. 44

21. Who was appointed as the Chief Justice of the Madras High Court in March 2017? (+1, -0.33)

- a. Indira Banerjee
- b. Satish. K. Agnihotri
- c. Rajesh Kumar Aggarwal
- d. Sanjay Kishan Kaul

22. Consider the statement and the following assumptions and decide which of the assumptions is/are implicit in the statement. (+1, -0.33)

Statement:

As part of the city's beautification campaign, the local municipal body plans to clean up the old lake in the city centre.

Assumptions:

1. If the lakes are well maintained, then add to the beauty of the city and check the water level of that area.

2. The lake is full of dirt.

- a. Only 1 is implicit.
- b. Only 2 is implicit.
- c. Neither 1 nor 2 is implicit.
- d. Both 1 and 2 are implicit.

23. When is National Hindi Day celebrated in India? (+1, -0.33)

- a. 14 December
- b. 14 June
- c. 14 September
- d. 14 November

24. What will be the value of $96 \div 2^3 \times 3 + 8$? (+1, -0.33)

- a. 132
- b. 3
- c. 44
- d. 12

25. Please select the odd :

(+1, -0.33)

Σ	ϕ	δ	#
A	B	C	D

a. Σ

b. δ

c. #

d. ϕ

26. Consider the following question and decide which statement is sufficient to answer the question. (+1, -0.33)

Question:

Find the value of X.

Statement:

I. The sum of squares of two consecutive positive even numbers is 52.

II. The difference of numbers is 2.

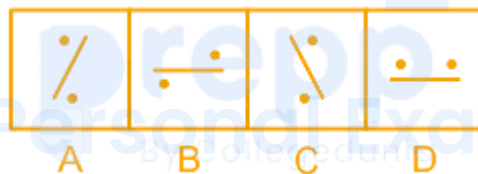
a. Only statement I is sufficient, while statement II alone is not sufficient.

- b. Only statement II is sufficient, whereas statement I alone is not sufficient.
- c. Neither statement I nor II is sufficient.
- d. Statements I and II are both sufficient.

27. Who among the following was awarded the Bharat Ratna in 2015? (+1, -0.33)

- a. Rahul Gandhi
- b. Bezwada Wilson
- c. Lal Krishna Advani
- d. Atal Bihari Vajpayee

28. Select the odd shape in the given figures. (+1, -0.33)



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

29. When you compress a coil spring, you work on it. The latent potential energy is -----.

- a. Zero
- b. Decreased
- c. Unchanged
- d. Increased

30. Which of the following states **does NOT** share its border with Nepal? (+1, -0.33)

- a. Uttarakhand
- b. Himachal Pradesh
- c. Bihar
- d. Uttar Pradesh

31. Which of the following metals are stored in kerosene? (+1, -0.33)

- a. Potassium (K) and Sodium (Na)
- b. Gold (Au) and Silver (Ag)
- c. Silicon (Si) and Mercury (Hg)
- d. Aluminum (Al) and Calcium (Ca)

32. Read the given question and decide which of the following statements is sufficient to answer the question. (+1, -0.33)

Question:

Who is the oldest among T, V and W?

Statement:

1. T is older than W.
 2. W is the elder sister of V.
- a. Statements 1 and 2 are sufficient.
 - b. Only statement 1 is sufficient.
 - c. Statements 1 and 2 are both insufficient.
 - d. Statement 2 alone is sufficient.
-

33. Which of the following is **not** a characteristic of a sound wave? (+1, -0.33)

- a. Amplitude
 - b. Time period and frequency
 - c. Density
 - d. Speed
-

34. Based on the electrical conductivity, select the odd one from the following options. (+1, -0.33)

- a. Rubber
 - b. Copper
 - c. Human Body
 - d. Graphite
-

35. If we move the tree branch fast, some leaves are separated from the tree. (+1, -0.33)
It is caused by _____.

- a. Velocity
- b. Free fall
- c. Impulse
- d. Inertia

36. If NYLON is written as 1425121514, then how will COTTON be written? (+1, -0.33)

- a. 315010623
- b. 5019234
- c. 31520201514
- d. 516891012

37. Which of the following quantities specifies its speed with direction? (+1, -0.33)

- a. Displacement
- b. Momentum
- c. Velocity
- d. Force

38. In which Indian city is the 'Sahitya Akademi' headquarters located? (+1, -0.33)

- a. Nagpur
- b. Bengaluru
- c. Varanasi
- d. New Delhi

-
39. According to one statement, two arguments are given. Decide which argument is stronger with respect to the statement. (+1, -0.33)

Statement:

Should the Indian government stop spending large amounts of money on border security?

Argument:

- I. Yes, it is a waste of public money
- II. No, it is a national security issue

- a. Either I or II is strong.
- b. Only II is strong.
- c. Neither I nor II are strong.
- d. Only I is strong.

-
40. Three of the figures given below are similar in a certain way. However, one of these figures is not the same as the other three. Select the figure which is different from others. (+1, -0.33)



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

41. The metal is _____ in its original state.: (+1, -0.33)

- a. As a mixture with gourd-metal
- b. As a mixture with other metals
- c. In a free state
- d. As a mixture with compound

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42. Which of the following is the famous swimming champion? (+1, -0.33)

- a. Gagan Narang
- b. Mirabai Chanu
- c. Deepika Kumari
- d. Sandeep Sejwal

43. Which of the following is **not** an alkali property? (+1, -0.33)

- a. They produce hydrogen ions in water.
- b. They decompose the thick material.
- c. These turn the red litmus blue.
- d. They are slippery, soapy.

44. Which one of the following is an polyatomic?

(+1, -0.33)

- a. Hydrogen
- b. Argon
- c. Sulfur
- d. Oxygen

45. You are given a question and two statements. State which statement is necessary/sufficient to answer the question.

(+1, -0.33)

Question:

Nayan has 6 boards of 3 different shapes. Find how many rectangular boards it has?

Statement:

- 1. The number of rectangular and circular boards is the same.
 - 2. Board is circular.
- a. Statements 1 and 2 are both sufficient.
 - b. Statement 2 alone is sufficient.

- c. Statements 1 and 2 are not sufficient.
- d. Only statement 1 is sufficient.

46. Sanjay was going in the southeast direction. He suddenly turns 90° right. (+1, -0.33)
Which direction is he facing now?

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

47. Which of the following is closest to $\sqrt{2}$? (+1, -0.33)

- a. 1.41421354
- b. 1.41421357
- c. 1.41421356
- d. 1.41421355

48. What figure will come in place of (?) In the given series? (+1, -0.33)

Question figure:

Question figure:



Answer figure:

Answer figure:



A

B

C

D

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

49. Which of the following does not form part of the periodic table? (+1, -0.33)

- a. Halogen
- b. Carcinogenic
- c. Lanthanide
- d. Actinide

50. Plants contain cytokine, that _____. (+1, -0.33)

- a. Causes the cells to grow perpendicularly.
- b. Aids in cell division
- c. Hinders growth

d. Help with stem growth

51. In $\triangle ABC$, $AB = AC$, $\angle C = x$ and the angle $A = (5x - 30)^\circ$: find the angle B (in degrees). (+1, -0.33)

- a. 30°
 - b. 60°
 - c. 80°
 - d. 120°
-

52. What will be the interest of 1 year 6 months (in an absolute number of rupees) at 8% annual interest on an amount of ₹ 84,500 (compounded number of rupees) if compounding interest is compounded half-yearly? (+1, -0.33)

- a. ₹ 8,457
 - b. ₹ 10,551
 - c. ₹ 10,410
 - d. ₹ 7,030
-

53. Identify the unequal or different (+1, -0.33)

- a. Odissi
- b. Kathakali
- c. Hip hop
- d. Bharatanatyam

54. _____ is the Meridian on which the Indian Standard Time is based. (+1, -0.33)

- a. 81 and 1/2 Degree east longitude
- b. 82 and 1/2 Degree east longitude
- c. 84 and 1/2 Degree east longitude
- d. 83 and 1/2 Degree east longitude

55. Which of the following numbers is not a perfect square? (+1, -0.33)

- a. 30625
- b. 38416
- c. 34967
- d. 40804

56. The Pyongyang Winter Olympic Games 2018 was held in which country? (+1, -0.33)

- a. South Korea
- b. Greenland
- c. Alaska
- d. Switzerland

57. Notice the equation $\text{PbO} + \text{HCl} \rightarrow \text{PbCl}_2 + \text{H}_2\text{O}$. (+1, -0.33)

The balance of the above equation requires _____ moles of HCl.

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

58. A alone can do a piece of work in 20 days while B takes 16 days to do it by himself. It takes them 8 days to complete the work together with C. If C and D can work in 60 days, then how many days will D need to complete the work by himself? (+1, -0.33)

- a. 252
 - b. 225
 - c. 240
 - d. 270
-

59. 15 months ago Tuhin's age was equal to three times the age of Sambit, who is 6 months older than Soumik. After 5 months from today Tuhin's age will be equal to 2.5 times Soumik's age. What is the sum of their present age? (+1, -0.33)

- a. 15 years 5 months
 - b. 15 years 11 months
 - c. 15 years 7 months
 - d. 15 years 9 months
-

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

Arrangement : _____ :: Selection : Combination

- a. Simulation
- b. Manipulation
- c. Permutation
- d. Inclusion

61. Square root of which of the following numbers will be an irrational number? (+1, -0.33)

- a. 4235
- b. 7225
- c. 8464
- d. 3136

62. The arithmetic mean of the four different natural numbers is 110. If the largest of these four numbers is 135, then what is the maximum possible value of the range of the set of these four numbers? (+1, -0.33)

- a. 97
- b. 96
- c. 98
- d. 95

63. A is cleaning a rectangular hall whose entrance is to the east. After entering the room, A starts cleaning to his left. At one stroke, A makes an angle of 180° with the sweep. Which direction is the broom facing now? (+1, -0.33)

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

64. What is the wavelength of a sound wave in a medium with a frequency of 840 Hz and a speed of 380 m/s seconds? (+1, -0.33)

- a. 5.45 m
- b. 1.45 m
- c. 0.45 m
- d. 2.45 m

65. Find the next letter in the series. (+1, -0.33)

KB, LD, MG, NK, ?

- a. PU
- b. OG
- c. OP
- d. PG

66. What is the below poverty line (BPL) percentage in India as per the 2011 census? (+1, -0.33)
- a. 32%
 - b. 22%
 - c. 42%
 - d. 35%
-

67. To improve internal control of banks, Reserve Bank of India has asked all banks to do what till 30 April 2018? (+1, -0.33)
- a. To connect SWIFT with its Basic Banking Solution (CBS)
 - b. To connect RTGS with their Core Banking Solution (CBS)
 - c. To connect NEFT with its Basic Banking Solution (CBS)
 - d. To connect MICR to their Basic Banking Solution (CBS)
-

68. Which of the following is the square root of 21316? (+1, -0.33)
- a. 154
 - b. 136
 - c. 146
 - d. 134
-

69. Consider the given statements, even if they are at variance with commonly known facts and decide which of the given conclusions logically follows the given statements. (+1, -0.33)

Statement:

No jockey is an ace.

No Ace is a Queen.

Conclusions:

1. No jockey is queen.
 2. All queens are jockeys.
- a. Only conclusion 2 follows.
 - b. Only conclusion 1 follows.
 - c. Neither conclusion 1 nor 2 follows.
 - d. Either conclusion 1 or 2 follows.

-
70. Which of the following is not related to the phylum Churnapravara (Mollusca) ? (+1, -0.33)

- a. Snail
- b. Chiton
- c. Octopus
- d. Antidone

-
71. What is the expected molecular mass of sulfur dioxide [SO_2]? (+1, -0.33)

- a. 6.4 u
 - b. 65 u
 - c. 64 u
 - d. 6.5 u
-

72. Shakti Sthal is a solar power park, which was recently inaugurated in the following state? (+1, -0.33)

- a. Odisha
 - b. Assam
 - c. Chhattisgarh
 - d. Karnataka
-

73. Who is the first Indian woman to be elected as a judge of the International Tribunal for the Law of the Sea (ITLOS)? (+1, -0.33)

- a. Gyan Sudha Mishra
 - b. Ruma Pal
 - c. Sujata Manohar
 - d. Dr. Neeru Chadha
-

74. What is the capital of Nagaland? (+1, -0.33)

- a. Dispur

- b. Kohima
 - c. Gangtok
 - d. Imphal
-

75. The ratio of boys to girls in a school is 8 : 11. If the number of students in the school is 399, then how many boys are there? (+1, -0.33)

- a. 184
 - b. 168
 - c. 176
 - d. 160
-

76. Which is the next term in the given series? (+1, -0.33)

2J, 8M, 26P, -----

- a. 80S
 - b. 80T
 - c. 81S
 - d. 81T
-

77. $1.42 \times 0.005 = ?$ (+1, -0.33)

- a. 0.071
- b. 0.71

c. 0.00071

d. 0.0071

78. In which year was the glorious Dhyan Chand Award instituted by the Government of India? (+1, -0.33)

a. 2002

b. 2010

c. 2005

d. 2000

79. If $x^2 + 4x - 12 < 0$, which of the following specifies all possible values of 'x'? (+1, -0.33)

a. $-6 < x < 2$

b. $x < -6$

c. $x > 2$

d. $-2 < x < 6$

80. The reproductive parts of _____ are located in the flower. (+1, -0.33)

a. Pteridophyta

b. Thalophyta

c. Angiosperms

d. Bryophyta

81. If immediately before hitting the earth the kinetic energy of a mass of 2 kg is 400 J. At what height was it dropped? ($g = 10 \text{ m/s}^2$, friction is negligible) (+1, -0.33)

- a. 10 m
- b. 15 m
- c. 20 m
- d. 25 m

82. 46% of all tickets sold on a single day were purchased by students. If the number of tickets sold on that day was 1250, how many of those tickets were purchased by the students? (+1, -0.33)

- a. 550
- b. 575
- c. 580
- d. 570

83. Which Indian civilian award was given to KJ Yesudas in 2017 for his contribution to Indian music? (+1, -0.33)

- a. Padma Vibhushan
 - b. Bharat Ratna
 - c. Padma Shri
 - d. Padma Bhushan
-

84. If the mirror is placed on the MN line, find the mirror image of the given figure. (+1, -0.33)



85. The cow has the same relation to milk as the tree has with _____. (+1, -0.33)

- a. Stems
- b. Fruit
- c. Wood

d. Shadow

86. A factory outlet has decided to dispose of its old stock by selling each set of cups for ₹ 287 and recovering only the variable cost. If the fixed cost is 18% of the total cost, what was the cost price of each set of cups? (+1, -0.33)

a. ₹ 320

b. ₹ 350

c. ₹ 325

d. ₹ 340

87. $54 \div 3^2 \times 6 + 3 = ?$ (+1, -0.33)

a. 4

b. 39

c. $2/3$

d. 54

88. Which one of the following is **not** an alkaline earth metal? (+1, -0.33)

a. Magnesium

b. Barium

c. Sodium

d. Calcium

89. Find the two operations to be converted to correct the following equation. (+1, -0.33)

$$((3 \times 10 + 14) \div 4) - 2 = 6$$

- a. Multiplication and addition
- b. Division and multiplication
- c. Addition and subtraction
- d. Subtraction and division

90. Sperm are temporarily kept in _____. (+1, -0.33)

- a. Epididymis
- b. Vas-deferens
- c. Bladder
- d. Vas Aference

91. The most important event of Ashoka's reign, was the victory of Kalinga, _____ in the modern era, which proved to be an important change in his life. (+1, -0.33)

- a. Bihar
- b. Odisha
- c. Jharkhand
- d. Assam

92. Two pipes 'L' and 'K' together fill a tank in 4 hours. Pipe K alone fills it in 5 hours. In how many hours will pipe L fill this tank alone? **(+1, -0.33)**

- a. 20 hours
 - b. 12 hours
 - c. 8 hours
 - d. 15 hours
-

93. The length and width of a rectangle has been increased by 15% and 10% respectively. What will be the percentage increase in the area of the rectangle? **(+1, -0.33)**

- a. 26.5%
 - b. 30.5%
 - c. 20.5%
 - d. 25%
-

94. Soda-acid is a salt used in fire extinguishers: **(+1, -0.33)**

- a. Calcium oxychloride
 - b. Sodium Carbonate
 - c. Sodium Hydrogen Carbonate
 - d. Sodium Hydroxide
-

95. Two arguments 1 and 2 are given before the statement below. You have to decide which of the arguments is/are strong, considering the statement and the arguments given next to it. (+1, -0.33)

Statement:

Should it be mandatory to work after school?

Argument:

1. Yes, it helps to develop life skills.
 2. No, not all students are fully mature in dealing with work matters.
- a. Only argument 1 is strong.
 - b. Only argument 2 is strong.
 - c. Neither 1 nor 2 is strong.
 - d. Both 1 and 2 are strong.

96. Hitesh can complete a work alone in 24 days and Jinesh can complete the same work in 30 days alone. With the help of Ishaan, they can complete this work in 10 days. In how many days will Ishaan complete this work alone? (+1, -0.33)

- a. 32 days
- b. 36 days
- c. 48 days
- d. 40 days

97. HCF of 88 and 220 is: (+1, -0.33)

- a. 8
- b. 22
- c. 44
- d. 11

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

Statement:

A friend of Meena said, "Meena's mobile has more features than her sister's mobile".

Conclusion:

- 1. Meena has a sister.
- 2. Meena's friend is a very close associate of her sister.

- a. Conclusion 2 alone follows.
- b. Conclusion 1 alone follows.
- c. Both the conclusion follow.
- d. Neither conclusion 1 nor 2 follow.

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



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

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100. Sadhana's face was towards the northeast. She turns 45° clockwise and then 180° counterclockwise. In which direction is her face now? (+1, -0.33)

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

Answers

1. Answer: d

Explanation:

Given:

Time taken to cross first-person = 10.8 sec

Time taken to cross second person = 11.4 sec

Speed of first-person = 4.8 km/h

Speed of second person = 6.6 km/h

Concept used:

When two objects are traveling in the same direction the relative speed will be the difference in their speeds (faster – slower)

Speed = Distance/Time

Calculation:

let the speed of the train be x km/h

Relative speed in first case = $(x - 4.8)$ km/h

$$distance = (x - 4.8) \times \frac{10.8}{3600}$$

Relative speed in second case = $(x - 6.6)$ km/h

$$distance = (x - 6.6) \times \frac{11.4}{3600}$$

Distance in both cases will be equal i.e. length of the train

$$(x - 4.8) \times \frac{10.8}{3600} = (x - 6.6) \times \frac{11.4}{3600}$$

$$\Rightarrow 10.8x - 51.84 = 11.4x - 75.24$$

$\Rightarrow$

$$0.6x = 23.4$$

$\Rightarrow$

$$x = 39 \text{ km/h}$$

$\therefore$ The speed of train is 39 km/hr

2. Answer: b

Explanation:

Given,

126, 132, 142, 148, _ _ _

The pattern followed here is,

$$126 + 6 = 132$$

$$132 + 10 = 142$$

$$142 + 6 = 148$$

$$148 + 10 = 158$$

Hence, the correct answer is 158.

3. Answer: c

Explanation:

The correct answer is Shimla.

★ Key Points

- Sir John Lawrence officially declared Simla the summer capital of the British empire in 1864 .
- After independence , the city became the capital of Punjab and was later made the capital of Himachal Pradesh .
- During the British Raj, until 1911, Calcutta was the capital of India .

★ Additional Information

- King George V proclaimed the transfer of the capital from Calcutta to Delhi at the climax of the 1911 Imperial Durbar on 12 December 1911 .
- Now Shimla is the summer capital of Himachal Pradesh .
- Dharamshala is the winter capital of Himachal Pradesh .
- Dalhousie is a high-altitude town spread across 5 hills of Himachal Pradesh .
- Ooty (short for Udhagamandalam) is a resort town in the Western Ghats mountains, in Tamil Nadu state .
- Darjeeling is a town in India's West Bengal state , in the Himalayan foothills.

4. Answer: b

Explanation:

The correct answer is Time.

★ Key Points

There are **three equations of motion** that can be used to derive components such as **displacement(s)**, **velocity (initial and final)**, **time(t)**, and **acceleration(a)**.

The following are the three equation of motion:

- First Equation of Motion: $v=u+at$
- Second Equation of Motion: $s=ut+\frac{1}{2}at^2$
- Third Equation of Motion: $v^2=u^2+2as$

Where the initial velocity is **u**, acceleration is denoted as **a**, the time period is denoted as **t**, the final velocity is denoted as **v**, and the distance traveled is denoted as **s**.

★ Additional Information

Newton's 2nd law states that the **rate of change of a body's momentum—the product of its mass and velocity—is proportional to the force applied**, and takes place in the direction of the applied force.



Important Point

Sir Isaac Newton has given three laws to describe the motion of an object. These laws are known as Newton's laws of motion.

1) NEWTON'S FIRST LAW OF MOTION:-

- A body that continues to its state of rest will remain in uniform speed in a straight line unless and until it is compelled by an external force to change its state of rest or of uniform motion.
- Newton's first law recognizes that everybody has some inertia.
- Inertia is an intrinsic property of the body by the virtue of which it resists a change in its state of rest or of uniform motion.

2) NEWTON'S SECOND LAW OF MOTION:-

- The net force applied to a body is equal to the rate of change of momentum.
- For the case of mass, force equals mass times acceleration.
- i.e. $F = ma$

Where,

- F = force applied
- m = mass and
- a = acceleration.

- Unlike Newton's first law of motion, Newton's second law of motion pertains to the behavior of objects for which all existing forces are unbalanced.
- Newton's second law of motion is more quantitative and is used extensively to calculate what happens in situations involving a force.

3) NEWTON'S THIRD LAW OF MOTION:-

- It states that to every action there will be an equal and opposite reaction.
- i.e. "when one object exerts a force on the other object, the first object experiences a force which is equal in magnitude in the opposite direction of the force which is exerted".

Explanation:-

- According to Newton's second law of motion:
- The rate of change in momentum of an object as produced by a net force is directly proportional
- to the magnitude of the net force, in the same direction as the net applied force.
- For example-
- Suppose an object of mass M , moving along a straight line with an initial velocity u . After a certain time t , it moves with a constant acceleration and the final velocity becomes v .
- So, the initial momentum is given as-
- $p_i = M \times u$
- Similarly, the final momentum
- $p_f = M \times v$
- The change in momentum is
- $p_f - p_i = (M \times v) - (M \times u)$
- $p_f - p_i = M (v - u)$
- The rate of change of momentum with respect to time is proportional to the applied force.
- The applied force is
- $F \propto M (v - u)/t$ or $F \propto M \times a$
- $a = (v - u)/t = \text{Rate of change of velocity/Time}$
- $F = k \times m \times a$
- $k = \text{proportionality constant.}$

- Therefore, from the second law of motion, we can say that force is the product of mass and acceleration
- i.e $F = ma$ or rate of change of momentum ($\frac{dp}{dt} = m \frac{dv}{dt}$).

FORCE:-
• Force is an external cause that is capable of changing the state of rest or motion of a particular object.
• Force is a vector quantity. So it has both magnitude and direction.
• The direction along which a force is applied is known as the direction of the force and the point where force is applied is called the application point.
• Generally, we measure the magnitude of Force by using a spring balance.
• The SI unit of force is Newton (N).

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5. Answer: a

Explanation:

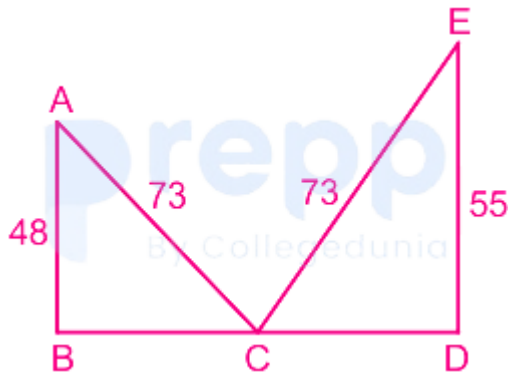
Given:

Height of window = 48 ft

Height of the other window = 55 ft

Length of ladder = 73 ft

Explanation:



in $\triangle ABC$

$$AC^2 = AB^2 + BC^2$$

$$BC = 73^2 - 48^2$$

$$\Rightarrow 55 \text{ ft}$$

In $\triangle ECD$

$$EC^2 = ED^2 + CD^2$$

$$CD = 73^2 - 55^2 = 48 \text{ feet}$$

$$\text{Road's width} = 55 + 48$$

$$\Rightarrow 103 \text{ feet}$$

$\therefore$ The width of street is 103 feet

6. Answer: b

Explanation:

Given:

$$p : p^2 :: p^2 : 1000$$

$$p^2 + 2pn + n^2 = 21$$

Calculation:

From statement 1

$$p/p^2 = p^2/1000$$

$$\Rightarrow 1/p = p^2/1000$$

$$\Rightarrow p^3 = 1000$$

$$\Rightarrow p = 10$$

From statement 1, we can find the value of p

From statement 2

We can't find the value of p because we can't get the value of two variable from one equation

$\therefore$ Only 1 is sufficient

7. Answer: a

Explanation:

Given:

Time taken by A = 15 mins

Time taken by B = 10 mins

Time taken by C = 5 mins

Formula used:

Efficiency = Total work/Time taken

Calculation:

LCM of (15, 10 and 5) = 30 = Total work

Efficiency of pipe A = $30/15 = 2$ units

Efficiency of Pipe B = $30/10 = 3$ units

Efficiency of pipe C = $30/5 = 6$ units

Total efficiency of A, B and C = $(2 + 3 + 6) = 11$ units

Part of work done by B and C in the tank = $(6 + 3)/11 = 9/11$

∴ The part of work done by B and C in the tank is $9/11$

8. Answer: d

Explanation:

The correct answer Ampere.

★ Key Points

- The **ampere**, symbol **A**, is the **SI unit of electric current**.
- It is defined by taking the fixed numerical value of the elementary charge e to be $1.602\,176\,634 \times 10^{-19}$ when expressed in unit **C**, which is **equal to A.s**.

★ Additional Information

- The **seven SI base units**, which are comprised of:
 - Length – meter (m)
 - Time – second (s)
 - Amount of substance – mole (mole)
 - Electric current – ampere (A)
 - Temperature – kelvin (K)
 - Luminous intensity – candela (cd)
 - Mass – kilogram (kg)
- Ohm (Ω) is the SI unit of **Electric Resistance**.
- Volt (V) is the SI unit of **Electric Potential**.

- Ohmmeter , an instrument for measuring electrical resistance , which is expressed in ohms .
-

9. Answer: a

Explanation:

The correct answer is Kerala.

★ Key Points

- Kerala is the **largest producer of rubber plantation** in India .
- Tamil Nadu is the **2nd largest** producer of **rubber plantations** in India.
 - The **soil of cultivation** is suitable for rubber plantation, most of the farmers grow rubber trees rubber has a very good market, it is easy to grow.
- Traditional rubber-growing states comprising **Kerala and Tamil Nadu** account for **81% of production** .

★ Additional Information

- The **world's leading producer of natural rubber** in **Thailand** , as of 2019.
 - In second place in **Indonesia** .
 - **John Joseph Murphy** came to India at a young age and set up the country's first commercial rubber plantation at **Thattekkad near Kothamangalam** in 1902 .
-

10. Answer: a

Explanation:

Given:

mean of four numbers = 22

mean of three smallest numbers = 19

data range 15

Formula used:

Mean = Sum of observations/Number of observations

Data range = Largest number – Smallest number

Calculation:

Sum of all numbers = $22 \times 4 = 88$

Sum of three smallest numbers = $19 \times 3 = 57$

Largest number = $88 - 57 = 31$

Smallest number = $31 - 15 = 16$

Sum of three largest number = $88 - 16 = 72$

Mean = $72/3$

$\Rightarrow 24$

$\therefore$ The mean of three largest number is 24

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11. Answer: b

Explanation:

GIVEN:

height (h) = $\sqrt{429}$ cm

Slant height (l) = 25 cm

Formula used:

CSA of cone = πrl

$$l^2 = r^2 + h^2$$

Where, r is the radius of the cone

Calculation:

$$r^2 = (25)^2 - (\sqrt{429})^2$$

$$\Rightarrow r^2 = 625 - 429$$

$$\Rightarrow r^2 = 196$$

$$\Rightarrow r = 14 \text{ cm}$$

$$\text{Curved surface area of cone} = \left(\frac{22}{7}\right) \times 14 \times 25 \text{ cm}^2$$

$$\Rightarrow 1100 \text{ cm}^2$$

$\therefore$ The curved surface area of cone is 1100 cm^2

12. Answer: c

Explanation:

The correct answer is Shooting.

★ Key Points

- Youth Olympics champion and Asian Games gold medallist, 17-year-old Saurabh Chaudhary won the men's gold in 10-meter air pistol in the 63rd National shooting championship in 2020.
- Sarabjot Singh, Abhishek Verma is got 2nd and 3rd positions respectively.

13. Answer: d

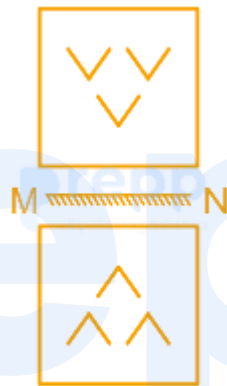
Explanation:

Given,



When the mirror is placed horizontally the left and right part of the figure remains the same and the changes occur in the top and bottom part of the figure.

$\therefore$



Hence, the correct answer is A.

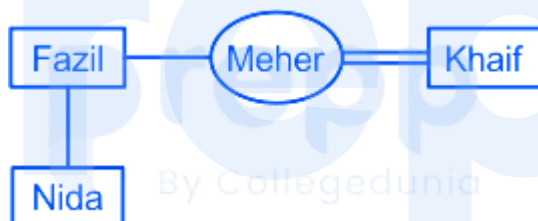
14. Answer: d

Explanation:

Symbol in Diagram	Meaning
○	Female
□	Male
==	Married couple
—	Siblings
	Difference of a generation

Given,

Nida is the son of Fazil. Fazil is Meher's brother. Khaif is Mehar's husband.



Here we see Meher is **Aunt** of Nida.

Hence, the correct answer is Aunt.

15. Answer: d

Explanation:

The correct answer is The velocity of the object increases.

★ Key Points

- Velocity describes how position changes and acceleration describes how velocity changes.
- Acceleration is defined to be the **rate of change of the velocity.**

- Positive acceleration is increasing speed with the direction of travel.
- Negative acceleration is decreasing speed with the direction of travel.
- Uniform acceleration is a freely falling body (since it has a uniform acceleration equal to the acceleration due to the gravity of the earth).
- No acceleration means no change in velocity. For example, an apple thrown in space.
 - The thing is moving at a constant velocity relative to an inertial reference frame.

16. Answer: b

Explanation:

The correct answer is $19.8 \times 10^6 \text{ J}$.

★ Key Points

- 1 Kwh can be defined as the amount of electrical energy consumed when a 1000 watt electrical appliance is used for an hour.
- So 5.5 Kwh is can be defined as the amount of electrical energy consumed when a 5500-watt electrical appliance is used for an hour.
- 1 Watt = 1 Joule /second.
1 kilowatt hour is 3.6 megajoules.
 $5.5 \text{ kwh} = 3.6 \times 5.5 = 19.8 \text{ mrgajoules} = 19.8 \times 10^6 \text{ J}$.

17. Answer: d

Explanation:

The correct answer is Endospores.

★ Key Points

- Microorganisms sense and adapt to changes in their environment.

- **Endospores** can survive environmental assaults that would normally kill the bacterium. These stresses include **high temperature, high UV irradiation, desiccation, chemical damage, and enzymatic destruction.**
- A variety of different microorganisms form "**spores**" or "**cysts**", but the **endospores of low G+C Gram-positive bacteria are by far the most resistant to harsh conditions.**

★ Additional Information

- **Endotoxin** is a type of pyrogen and is a component of the exterior cell wall of Gram-negative bacteria, like E. coli.
 - Endotoxin is a **lipopolysaccharide or LPS.**
 - **LPS** consists of the lipid A portion containing fatty acids and disaccharide phosphates, core polysaccharides, and the O-antigen.
- **Peptidoglycan** is the basic unit of the cell wall in bacteria, that confers **mechanical rigidity to the cell**, protects the cytoplasmic membrane, and determines the cell form.
 - In Gram-positive bacteria, a thick coat of peptidoglycan combined with **teichoic acid** constitutes the basic structure of the cell wall.
- **Endogenous budding** is the process when the bud develops inside the parent body.
 - Endogenously developing bud is called a **gemmule.**
 - It occurs in- **freshwater sponges and a few marine sponges.**
 - They reproduce by **sexual and asexual mode.**

18. Answer: d

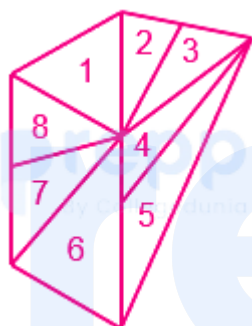
Explanation:

Given,

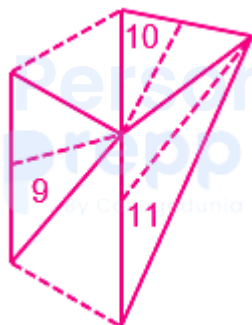


The number of triangles is,

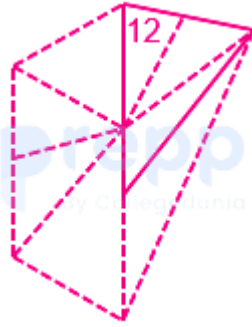
No. of small triangles = 8



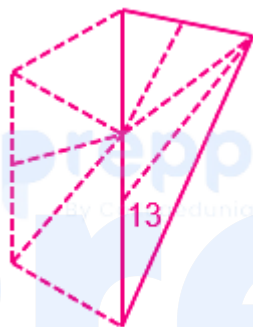
No. of triangles consisting of two small triangles = 3



No. of triangles consisting of three small triangles = 1



No. of triangles consisting of four small triangles = 1



$\therefore$ The total no. of triangles = 13

Hence, the correct answer is 13.

19. Answer: b

Explanation:

The correct answer is Singapore.

★ Key Points

- The **6th edition** of the biennial **World Cities Summit (WCS-2018)** has started in **Singapore**.
- The **5-day event** is co-organized by the **Centre for Liveable Cities** and the **Urban Redevelopment Authority**.
- The **theme** was **"Liveable & Sustainable Cities: Embracing the Future through Innovation and Collaboration"**.

- The **motto** was how cities can be more **liveable and resilient through better governance and planning, technology and social innovations**, as well as collaborations with various stakeholders and with other cities.
- This **summit** was held in conjunction with the **Singapore International Water Week (SIWW)** and the **CleanEnviro Summit Singapore (CESG)**.

★ Additional Information

- The **7th World Cities Summit (WCS)** will be held from **5 to 9 July 2020** in **Singapore**.

20. Answer: b

Explanation:

We know,

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

Given,

Biscuit = 83

Cake = 20

Cookie = 58

The pattern followed here is

the addition of the positional value of the letters is the code for given words.

$$\begin{array}{cccccc} \text{B} & \text{i} & \text{s} & \text{c} & \text{u} & \text{i} & \text{t} \\ | & | & | & | & | & | & | \\ 2 & +9 & +19 & +3 & +21 & +9 & +20 = 83 \end{array}$$

$$\begin{array}{cccc} \text{C} & \text{a} & \text{k} & \text{e} \\ | & | & | & | \\ 3 & +1 & +11 & +5 = 20 \end{array}$$

$$\begin{array}{cccccc} \text{C} & \text{o} & \text{o} & \text{k} & \text{i} & \text{e} \\ | & | & | & | & | & | \\ 3 & +15 & +15 & +11 & +9 & +5 = 58 \end{array}$$

$$\begin{array}{cccccc} \text{C} & \text{o} & \text{f} & \text{f} & \text{e} & \text{e} \\ | & | & | & | & | & | \\ 3 & +15 & +6 & +6 & +5 & +5 = 40 \end{array}$$

Hence, the correct answer is 40.

21. Answer: a

Explanation:

The correct answer is Indira Banerjee.

★ Key Points

- She was elevated as the **Chief Justice of the Madras High Court** and assumed charge on **5 April 2017**.
- She was appointed as a Permanent Judge of the **Calcutta High Court** on **5 February 2002**.
- Then she transferred to the **Delhi High Court** with effect from **8 August 2016**.

★ Additional Information

- **Satish K. Agnihotri** is the former **Chief Justice of Sikkim High Court**.
 - He also served as a **judge of the Madras High Court**.
 - **Rajesh Kumar Agrawal** is the **current President of the National Consumer Disputes Redressal Commission (NCDRC)**.
 - He is a **former judge of the Supreme Court of India**.
 - He also served as the **Chief Justice of the Madras High Court (24 October 2013 – 17 February 2014)**.
 - **Sanjay Kishan Kaul** is a **Judge of the Supreme Court of India**.
 - He is **former Chief Justice of Madras, Punjab and Haryana High Court**.
-

22. Answer: d

Explanation:

Given,

Statement:

As part of the city's beautification campaign, the local municipal body plans to clean up the old lake in the city center.

Assumptions:

1. If the lakes are well maintained, then it adds to the beauty of the city and checks the water level of that area.
2. The lake is full of dirt.

Here we see both the assumptions are implicit.

Hence, the correct answer is Both 1 and 2 are implicit.

23. Answer: c

Explanation:

The correct answer is 14 September.

★ Key Points

- the **World Hindi Diwas** , the **National Hindi Diwas** is observed on **September 14** every year.
- It recognizes the day when **Hindi was adopted as one of the official languages of India** by the **Constituent Assembly** in **1949** .
- Apart from **Hindi Diwas** ,**World Hindi Day 2020** is observed on **January 10** .
 - The day commemorates the **anniversary of the first World Hindi Conference** held in **Nagpur** on **January 10, 1975** .

★ Important Points

- **14 December – National Energy Conservation Day** .
 - It is celebrated every year by the Bureau of Energy Efficiency (BEE), under the Ministry of Power.
- **14 June – World Blood Donor Day** .
- **14 November – Children’s Day** .
 - It is celebrated to commemorate the birth anniversary of **Pt. Jawaharlal Nehru** .
 - He was born on **14 November 1889** .
 - Jawaharlal Nehru had immense love, care, and affection for children and so, they call him **Chacha Nehru** .

24. Answer: c

Explanation:

Concept:

Follow the BODMAS rule to solve this question, as per the order given below,

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

Calculation:

$$96 \div 2^3 \times 3 + 8 = ?$$

$$\Rightarrow 96 \div 8 \times 3 + 8 = ?$$

$$\Rightarrow 12 \times 3 + 8 = ?$$

$$\Rightarrow 36 + 8 = ?$$

$$\Rightarrow 44 = ?$$

$\therefore$ The required value is 44

25. Answer: c

Explanation:

Given,

$\Sigma, \Phi, \delta, \#$

Here we see all are mathematical symbols except #.

Hence, the correct answer is #.

26. Answer: a

Explanation:

Calculation:

From statement I,

Let the numbers be x and $(x + 2)$

According to question,

$$x^2 + (x + 2)^2 = 52$$

$$\Rightarrow x^2 + x^2 + 4 + 4x = 52$$

$$\Rightarrow 2x^2 + 4x - 48 = 0$$

$$\Rightarrow x^2 + 2x - 24 = 0$$

$$\Rightarrow x^2 + 6x - 4x - 24 = 0$$

$$\Rightarrow x(x + 6) - 4(x + 6) = 0$$

$$\Rightarrow (x + 6)(x - 4) = 0$$

$$\Rightarrow x = 4 \text{ or } -6$$

We can get the numbers by statement I

From statement II,

We can't get the number by statement II

$\therefore$ Only statement I is sufficient, while statement II alone is not sufficient.

27. Answer: d

Explanation:

The correct answer is Atal Bihari Vajpayee.

★ Key Points

Bharat Ratna Award Winners: List of Recipients (2015)

Laureates	Brief Description
Atal Bihari Vajpayee	• Parliamentarian for over four decades. • He was elected nine times to the Lok Sabha, twice to the Rajya Sabha. • He served as the Prime Minister of India for three terms; 1996, 1998, 1999–2004. • He was Minister of External Affairs during 1977–79 and was awarded the "Best Parliamentarian" in 1994.
Madan Mohan Malaviya	• Scholar and educational reformer Malaviya is a founder of Akhil Bharatiya Hindu Mahasabha (1906) and Banaras Hindu University and served as the university's vice-chancellor from 1919 till 1938. • He was the President of the Indian National Congress for four terms and was the Chairman of Hindustan Times from 1924 to 1946.

★ Additional Information

Bharat Ratna Award Winners: List of Recipients (2019)

Laureates	Brief Description
Pranab Mukherjee	• He is an Indian politician who served as the 13th President of India from 2012 until 2017. • He has been a senior leader in the Indian National Congress and has occupied several ministerial portfolios in the Government of India. • Before he was elected President, he was Union Finance Minister from 2009 to 2012.
Nanaji Deshmukh	• He was a social activist from India. He worked in the fields of education, health, and rural self-reliance. • He was a member of RSS, a leader of the Bharatiya Jana Sangh, and also a member of the Rajya Sabha. • He was honored with the Padma Vibhushan in 1999. • India's first Saraswati Shishu Mandir was established by him at Gorakhpur in 1950.
Bhupen Hazarika	• He was an Indian playback singer, lyricist, musician, singer, poet, and film-maker from Assam, widely known as Sudhakantha. • He got Bharat Ranta (India's highest civilian award) • He received the National Film Award for Best Music Direction in 1975. Recipient of Sangeet Natak Akademi Award (1987), Padmashri (1977), and Padmabhushan (2001), and also awarded with Dada Saheb Phalke Award (1992).

28. Answer: a

Explanation:

Given,



Here we see in all the figures dots are to the either side of the line except in the figure D.

Hence, the correct answer is D.

29. Answer: d

Explanation:

The correct answer is Increased.

★ Key Points

- The elastic potential energy is equal to the work done (w) in the spring.
 $w = \frac{1}{2}kx^2$, where k is the spring constant and x is the change in the length of spring from the normal position to the compressed position.
- This work done is stored in spring as elastic potential energy (PE) when the spring is compressed and hence elastic potential energy increases.

30. Answer: b

Explanation:

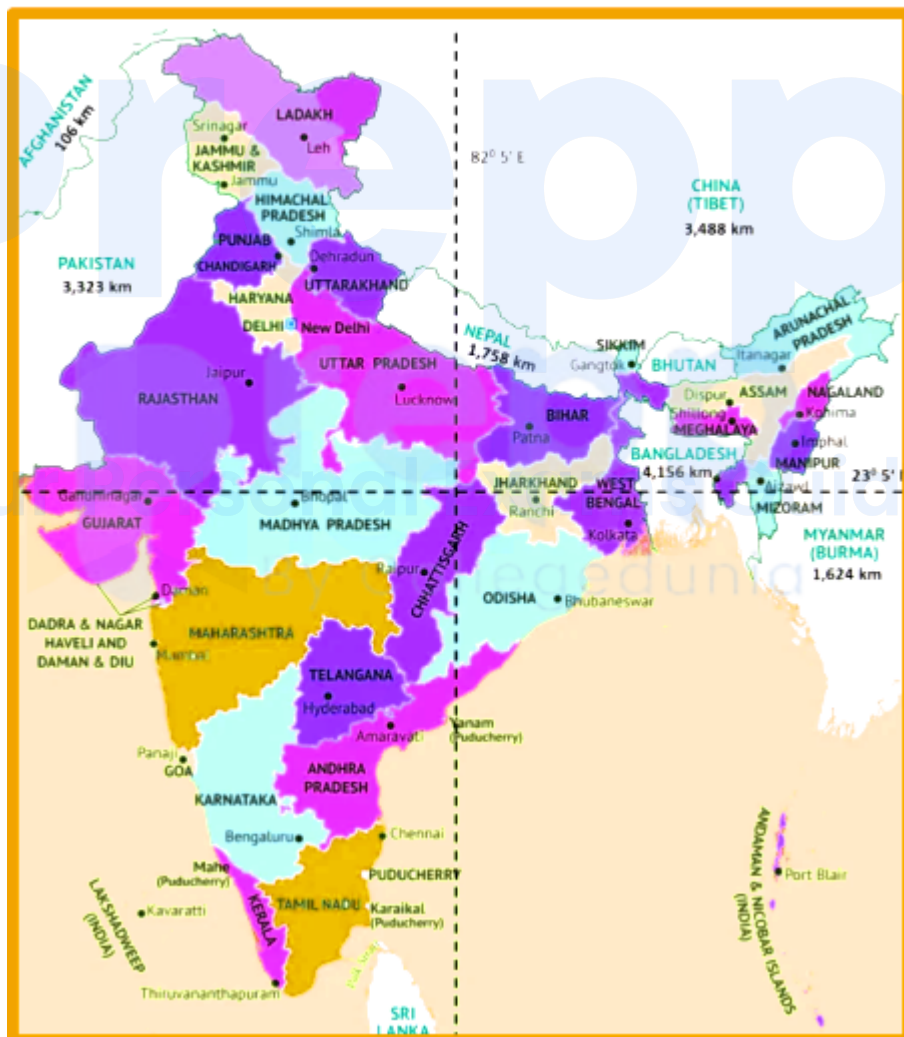
The correct answer is Himachal Pradesh.

★ Key Points

- Nepal shares a border of about 1850 km with five Indian States – Uttarakhand, Uttar Pradesh, Bihar, West Bengal, and Sikkim.

★ Important Points

- **Nepal** (as of May 2022)
 - Capital: Kathmandu
 - Currency: Nepalese Rupee
 - President: Bidya Devi Bhandari.
 - Prime Minister: Pushpa Kamal Dahal
- **Himachal Pradesh** (as of Jan 2023)
 - Chief Minister: Sukhwinder Singh Sikhu
 - Governor: Rajendra Arlekar



★ Additional Information

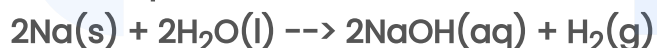
- **India** shares borders with **09 countries**:
 - In the **north or north-west**: China, Bhutan, Nepal, Pakistan, Afghanistan .
 - In the **east**: Bangladesh, Myanmar.
 - **Water borders**: Sri Lanka, Maldives.

31. Answer: a

Explanation:

The correct answer is Potassium (K) and Sodium (Na).

- Apart from sodium, potassium, **lithium, and cesium** metal are stored in kerosene oil as they both can react in **air or water**.
- These metals are highly reactive to oxygen, carbon dioxide, and moisture present in the air.
- If it is kept in the open air, **it easily reacts with the oxygen and catches fire**.
- **kerosene** is a **mixture of hydrocarbons**, it won't react with it.
- The reaction proceeds as follows (sodium in the example, but it could be any of the **Group 1 metals**):



Hydrogen gas is formed during the reaction. In more explosive reactions (potassium, rubidium, and cesium).

32. Answer: a

Explanation:

Given,

Question:

Who is the largest among T, V and W?

Statement:

1. T is older than W.
2. W is the elder sister of V.

Here we see T is older than W and W is older than V and both the statements are necessary to answer the question.

∴ T is the oldest.

Hence, the correct answer is Statements 1 and 2 are sufficient.

33. Answer: c

Explanation:

The correct answer is Density.

★ Key Points

Sound is energy ,not matter or substance . Sound is not a physical thing.

★ Important Points

- **Density** is a characteristic property of a **substance or matter** .
- The density of a substance is the **relationship between the mass of the substance and how much space it takes up (volume)** .
- **Density equals the mass of the substance divided by its volume ; $D = m/v$** .
- **Objects with the same volume but different mass have different densities** .

★ Additional Information

- There are **five main** characteristics of sound waves: **wavelength, amplitude, frequency, time period, and velocity** .
 - The **wavelength** of a sound wave indicates the distance that the waves travel before it repeats itself.
 - The **amplitude** of a wave defines the maximum displacement of the particles disturbed by the sound wave as it passes through a medium. **A large-amplitude indicates a large sound wave** .

- The **frequency** of a sound wave indicates the number of sound waves produced by each second. **Low-frequency sounds produce sound waves less often than high-frequency sounds .**
- The **time period** of a sound wave is the amount of time required to create a complete wave cycle. Each vibration from the sound source produces a wave's worth of sound.
- The **velocity** of a sound wave determines how fast the wave is moving and is expressed as meters per second.

34. Answer: a

Explanation:

Given,

Rubber, Copper, Human Body, Graphite.

Here we see based on the electrical conductivity all are good conductors except Rubber.

Hence, the correct answer is Rubber.

35. Answer: d

Explanation:

The correct answer is Inertia.

★ Key Points

- **Newton's first law of motion** , which is sometimes called the **law of inertia** , explains that an object at **rest stays at rest** , and an object in **motion remains in motion with the same velocity unless acted upon by an external force**.
- For instance, if the **front wheel of a bicycle** being ridden at speed hits a large rock, the bike is **acted upon by an external force, causing it to stop**.

- Unfortunately for the cyclist, he or she will not have been acted upon by the same force and will continue in motion—over the handlebars.

★ Additional Information

Velocity	• Velocity is defined as a vector measurement of the rate and direction of motion of an object. • velocity formula when an object moving in a straight line: $r = d / t$ ◦ r is the rate or speed, d is the distance moved, t is the time it takes to complete the movement. • SI unit: meter/second.
Freefall	• Downward movement under the force of gravity only.
Impulse	• A change in momentum may result from an acceleration or a force or an impulse. • The impulse experienced by an object is always equal to the change in its momentum. ◦ In terms of equations is expressed as $\text{Impulse} = \text{Force} \times \text{Time}$

Your Personal Exams Guide

36. Answer: c

Explanation:

We know,

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

Given,

NYLON is written as 1425121514.

The pattern followed here is,



Hence, the correct answer is 31520201514.

37. Answer: c

Explanation:

The correct answer is Velocity.

★ Key Points

- A **vector quantity** is specified by its magnitude as well as the direction associated with it.
 - For example: – Acceleration, velocity, displacement, and angular velocity.

- Velocity is defined as a vector measurement of the rate and direction of motion of an object.
 - velocity formula when an object moving in a straight line: $r = d / t$
 - r is the rate or speed, d is the distance moved, t is the time it takes to complete the movement.
 - SI unit: meter/second.
 - Other units: mph, ft/s, Km/h.

★ Additional Information

Displacement	• Displacement is a vector quantity that refers to "how far out of place an object is". • It is the object's overall change in position.
Momentum	• Momentum is a vector quantity that is a product of the mass (weight) of a particle and its velocity (speed). • SI unit: kilogram meter per second (kg·m/s). • Newton's 2nd law of motion related to the momentum that is the rate of change of momentum in an object is directly proportional to the force applied.
Force	• Force is defined as a push or pulls exerted on one object by another. • Force measured in Newtons (denoted N, where 1 N is the force required to give a 1 kg mass an acceleration of 1 m/s^2).

38. Answer: d

Explanation:

The correct answer is New Delhi.

★ Key Points

- **New Delhi** is the headquarters of Sahitya Akademi.
- The **Sahitya Akademi Award** is a **literary honor**, that is conferred by **India's National Academy of Letters, Sahitya Akademi annually to writers** of the most outstanding books of literary merit published in any of the **24 listed languages**.
- The winners will be honored with a **copper plaque** and prize money of **Rs 1 lakh**.

★ Additional Information

- **Sahitya Akademi Award 2019 Winners:**

Language	Title & Genre	Author
English	An Era of Darkness (Non-Fiction)	Shashi Tharoor
Hindi	Chheelate Hue Apne Ko (Poetry)	Nand Kishore Acharya
Bengali	Ghumer Darja Thele (Essays)	Chinmoy Guha
Bodo	Akhai Athumniphrai (Poetry)	Phukan Ch. Basumatary
Santhali	Marom (Novel)	Shyam Besra

- It is to be noted **Santhali language** was used in Rajya Sabha for the first time.
- In 2005 **Bodo and Santhali** were introduced in Sahitya Akademi Award.
- The **first** award was given in **1955**.

39. **Answer: b**

Explanation:

Given,

Statements:

Should the Indian government stop spending large amounts of money on border security?

Argument:

I. Yes, it is a waste of public money

II. No, it is a national security issue

Here we see only II argument is strong.

Hence, the correct answer is Only II is strong.

40. Answer: d

Explanation:

Given,



Here we see all are punctuations except '+' which is mathematical sign.

Hence, the correct answer is C.

41. Answer: a

Explanation:

The correct answer is As a mixture with gourd-metal.

★ Key Points

- **Metal** is very **reactive and unstable**. In surroundings, they react with other elements to form compounds to attain stability.

- Metals thus react with **sulfides, carbonates, oxygen** to form **respective minerals**.
- Hence they **do not occur in the free state**.
- The metals that can be found in the **free state in nature** are **gold, silver, platinum**, etc.
 - Because they are **non-reactive metals**.

★ Hint

- A **native metal** is any metal that is **found pure** in its metallic form in nature.
 - Only **gold, silver, copper, and the platinum group** occur natively in large amounts.

42. Answer: d

Explanation:

The correct answer is Sandeep Sejwal.

★ Key Points

- **Sandeep Sejwal** is an **Indian swimmer (Senior National Champion)** .
- He contested in the **men's 100 m and 200 m breaststroke** events at the **2010 Asian Juniors in Beijing**.
- He won the **bronze medal** in the **2014 Asian games** in **50 m breaststroke**.

★ Important Points

Gagan Narang	• He is an Indian shooter. • He was the first Indian to qualify for the London Olympics and won the Bronze Medal in the Men's 10 m Air Rifle Event at the 2012 Summer Olympics in London.
Mirabai Chanu	• She is an Indian weightlifter. • She won India's first gold medal in the Commonwealth Games. • The 23-year-old won her first medal in the 2014 Commonwealth Games, the silver in the women's 48-kg weight class.
Deepika Kumari	• She is an Indian athlete who competes in the event of archery. • She won a gold medal in the 2010 Commonwealth games. • She won her first World Cup individual stage recurve gold medal in May 2012. • 'Ladies First' is a 2017 documentary based on her life.

43. Answer: a

Explanation:

The correct answer is They produce hydrogen ions in water.

★ Key Points

- The alkali metals are a group of chemical elements in the periodic table with the following physical and chemical properties :
 - shiny
 - soft
 - They are slippery, soapy.
 - silvery
 - They decompose the thick material.

- highly reactive at standard temperature and pressure
- readily lose their outermost electron to form cations with a charge of +1.
- They can all be cut easily with a plastic knife due to their softness, and their shiny surface tarnishes rapidly in air due to oxidation.
- These turn the red litmus blue.
- Because of their high reactivity, alkali metals must be stored under oil to prevent reaction with air.
- In the modern IUPAC nomenclature, the alkali metals comprise the group 1 elements, excluding hydrogen.
- All the alkali metals react with water, with the heavier alkali metals reacting more vigorously than the lighter ones.
- Hence, option 1 is correct.

44. Answer: c

Explanation:

The correct answer is Sulfur.

★ Key Points

- Sulfur is **polyatomic**.
 - Sulfur exists as S_8
 - Hydrogen exists as H_2
 - Oxygen exists as O_2
- Any molecule that contains more than 2 atoms is polyatomic.
 - Hence Sulfur is **polyatomic**.
- Hence, option 3 is correct.

★ Additional Information

- Any molecule that contains more than 2 atoms is polyatomic.
- Polyatomic molecules consist of a stable system (bound state) comprising three or more atoms.

- The molecular formula characterizes different molecules by reflecting their exact number of compositional atoms.
-

45. Answer: c

Explanation:

Given,

Question:

Nayan has 6 boards of 3 different shapes. Find how many rectangular boards it has?

Statement:

1. The number of rectangular and circular boards is the same.
2. The board is circular.

Here we see by both the statements we cannot find the exact number of rectangular boards.

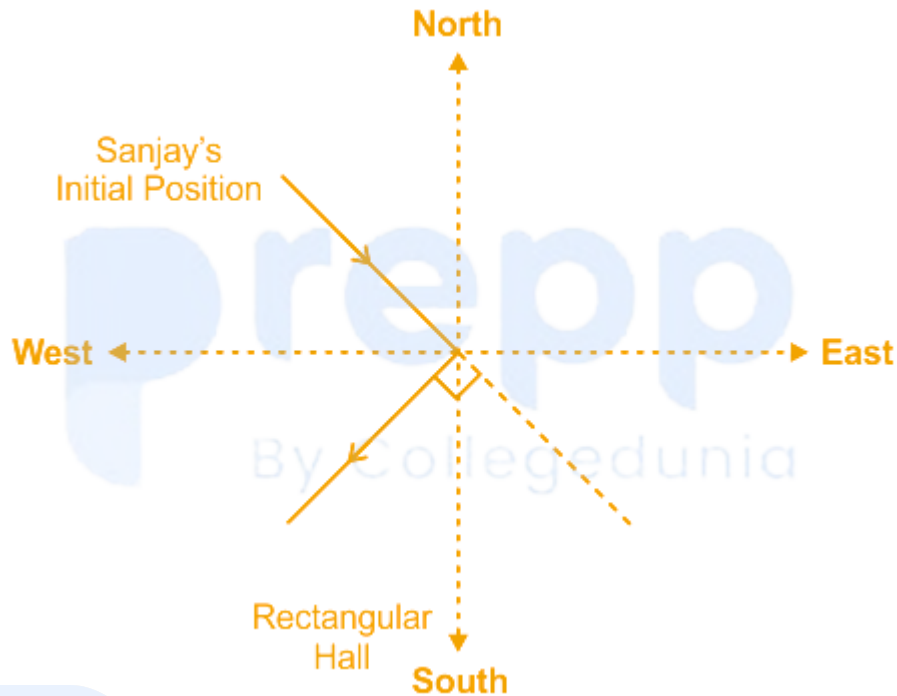
Hence, the correct answer is Statements 1 and 2 are not sufficient.

46. Answer: d

Explanation:

Given,

Sanjay was going in the southeast direction. He suddenly turns 90° right.



Hence, the correct answer is South-West.

47. Answer: c

Explanation:

Calculation:

$\sqrt{2}$ is a non terminating non recurring irrational number whose value is 1.4142135623730950.....

$\therefore$ The closest value will be 1.41421356

48. Answer: c

Explanation:

Given,

Question figure:



Here we see in the second image shaded part of the figure was removed similarly in the third image shaded part of the figure will be removed.

∴ The answer figure is



Hence, the correct answer is B.

49. Answer: b

Explanation:

The correct answer is Carcinogenic.

★ Key Points

- Carcinogenic does not form part of the periodic table .
- Hence, option 2 is correct .

★ Additional Information

- Halogen, any of the six nonmetallic elements that constitute Group 17 (Group XVII) of the periodic table.
 - The halogen elements are fluorine (F), chlorine (Cl), bromine (Br), iodine (I), astatine (At), and tennessine (Ts).
- Lanthanoid , also called **lanthanide** , any of the series of 15 consecutive chemical elements in the periodic table from lanthanum to lutetium (**atomic numbers 57–71**) .

With scandium and yttrium, they make up the rare-earth metals.

- Their atoms have similar configurations and similar physical and chemical behaviour; the most common valences are 3 and 4.
- **These elements are also called lanthanide elements.**
- **Actinides** are elements with atomic numbers from **90 to 103 following element Actinium**.
 - They include naturally occurring elements of thorium, protactinium, and uranium and eleven transuranic i.e., artificially produced by nuclear reactions. Nevertheless, all actinides are radioactive.
 - **Elements: Thorium; Uranium; Plutonium; Actinium.**

50. Answer: b

Explanation:

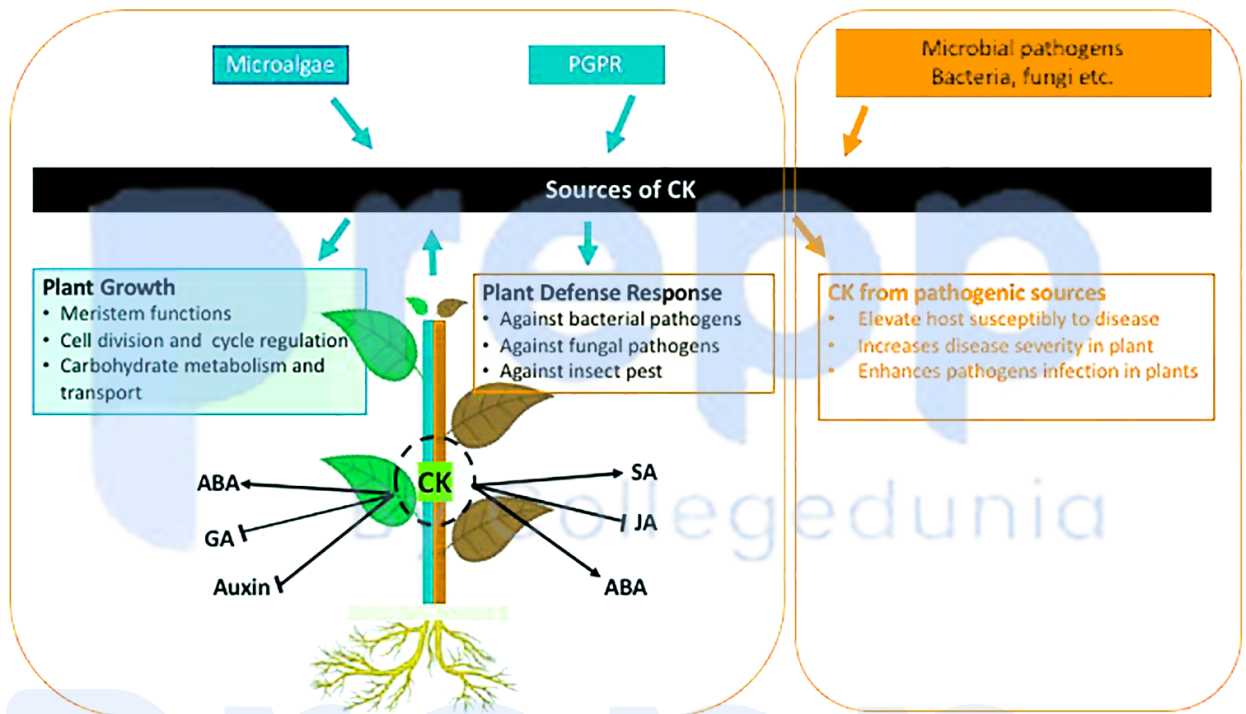
The correct answer is Aids in cell division.

★ Key Points

- **Plants contain cytokine, that aids in cell division.**
 - They are involved primarily in cell growth and differentiation, but also affect apical dominance, axillary bud growth, and leaf senescence.
- Hence, option 2 is correct.

★ Additional Information

- **Cytokinins (CK)** are a class of plant growth substances (phytohormones) that **promote cell division, or cytokinesis, in plant roots and shoots.**
- They are involved primarily in cell growth and differentiation, but also affect apical dominance, axillary bud growth, and leaf senescence.



51. Answer: a

Explanation:

Given:

In $\triangle ABC$, $AB = AC$

$\angle A = (5x - 30)^\circ$

$\angle C = x$

Concept used:

If two sides of a triangle are equal their opposite angles will also be equal.

The sum of all angles of a triangle is 180° .

Calculation:

$AB = AC$

$$\Rightarrow \angle C = \angle B = x$$

According to question,

$$5x - 30^\circ + x + x = 180^\circ$$

$$\Rightarrow 7x - 30^\circ = 180^\circ$$

$$\Rightarrow 7x = 210^\circ$$

$$\Rightarrow x = 30^\circ$$

$\therefore$ The value of $\angle B$ is 30°

52. Answer: b

Explanation:

GIVEN:

principal = Rs. 84500

interest rate = 8% per annum

time = 1 year 6 months

compounded half-yearly

CONCEPT:

for half-yearly, the time period will be doubled and the rate will be halved

FORMULA USED:

$$A = P\left(1 + \frac{R}{100}\right)^t$$

CALCULATION:

$$R = 4\%$$

$$\text{Time period (t)} = 3 \text{ years}$$

$$A = 84500\left(1 + \frac{4}{100}\right)^3$$

$$A = 84500(1.04)^3$$

$$A \approx 95051$$

$$\text{interest} = 95051 - 84500 = \text{Rs}10551$$

ALTERNATE SOLUTION:

$$R = 4\%$$

$$T = 3 \text{ years}$$

$$4\% = \frac{1}{25}$$

$$\text{Let } P = 25 \text{ and then } A = 25 + 1 = 26$$

$$P^3 = 25^3 \text{ and } A^3 = 26^3$$

$$\text{Interest} = 17576 - 15625 = 1951 \text{ units.}$$

$$\text{As } 15625 \text{ unit} = 84500, \text{ then } 1951 \text{ units} = \text{Rs } 10551$$

53. Answer: c

Explanation:

Given,

Odissi, Kathakali, Hip hop, Bharatanatyam

Here we see all are Indian dance forms except Hip hop.

Hence, the correct answer is **Hip hop**.

54. Answer: b

Explanation:

The correct answer is 82 and 1/2 Degree east longitude.

★ Key Points

- 82 and 1/2 Degree east longitude is the Meridian on which the Indian Standard Time is based.
 - The longitude of $82\frac{1}{2}^{\circ}$ E ($82^{\circ} 30'E$) is considered as the standard meridian.
 - The local time stated or mentioned at this meridian is considered as the standard time for the whole country.
 - This is called **the Indian Standard Time (IST)**.
- Hence, option 2 is correct.

★ Additional Information

- The standard meridian of India **passes through the following states** :
 - Uttar Pradesh
 - Madhya Pradesh
 - Chattisgarh
 - Orissa
 - Andhra Pradesh
- **About Standard Meridian**
 - The Standard Meridian of India having the longitude $82^{\circ}30'E$, which passes through **Mirzapur** in Uttar Pradesh is considered as the **standard time for the whole country**
 - **Standard time** is referred to as the synchronization of clocks within a certain geographical area to a single standard time, instead of using solar time or a locally chosen meridian (longitude) to establish a local mean time standard
 - A standard meridian is established in every country so that it is the central longitude of the whole country and at the **same time is throughout the country**.

55. Answer: c

Explanation:

Calculation:

$$30625 = (175)^2$$

$$38416 = (196)^2$$

$$40804 = (202)^2$$

But, 34967 is not a perfect square

★ Shortcut Trick

The last digit of a perfect square will always be 0, 1, 4, 5, 6 or 9

So, 34967 can't be a perfect square

56. Answer: a

Explanation:

The correct answer is South Korea.

★ Key Points

- The Pyongyang Winter Olympic Games 2018 was held in South Korea country.
- Hence, option 1 is correct.

★ Additional Information

- **Host city:** Pyeongchang, South Korea
- **Motto:** Passion. Connected.
- **Nations:** 92

- **Athletes** : 2,922
- **Events**: 102 in 7 sports (15 disciplines)
- **Opening**: 9 February
- **Closing**: 25 February
- **Opened by** : President Moon Jae-in
- **Cauldron**: Kim Yun-a
- **Stadium**: Pyeongchang Olympic Stadium

★ Important Points

- **2022 Winter Olympics** is an international winter multi-sport event that is scheduled to take place from **4 to 20 February 2022**, in Beijing and towns in the neighbouring **Hebei province, China**.
- **About South Korea:(2022)**
 - **Capital**: Seoul
 - **Currency**: South Korean Won
 - **President**: Yoon Suk-yeol
 - **Prime Minister**: Han Duck-soo

57. **Answer: c**

Explanation:

The correct answer is 2.

Concept:

- The Law of conservation of mass states that matter can neither be created nor destroyed.
- In a chemical reaction, new compounds different from the starting materials are formed.
- In accordance with the law of conservation of mass, thus the number of atoms of each element in the reactant and product **side will be the same**.

So, we need to balance the chemical equation.

Calculation:

To balance a chemical reaction:

- Check the number of atoms before and after the reaction.
- Balance the elements one at a time by adding coefficients before them .
- Change the coefficients as required .
- Never change the subscripts.
- **$\text{PbO} + 2\text{HCl} \rightarrow \text{PbCl}_2 + \text{H}_2\text{O}$ is the balanced equation.**
 - The balance of the above equation requires 2 moles of HCl.

Hence, 2 moles is correct.

★ Additional Information

- **Balanced chemical equation:**
 - A chemical equation in which the number of each type of atom is equal on the two sides of the equation.

58. Answer: c

Explanation:

GIVEN:

A's time = 20 days

B's time = 16 days

(A + B + C)'s time = 8 days

(C + D)'s time = 60 days

EXPLANATION:

let total work be 240 (L.C.M of 20, 16, 8, 60)

A's efficiency = $\frac{240}{20} = 12$

$$B's \text{ efficiency} = \frac{240}{16} = 15$$

$$(A + B + C)'s \text{ efficiency} = \frac{240}{8} = 30$$

$$(C + D)'s \text{ efficiency} = \frac{240}{60} = 4$$

$$C's \text{ efficiency} = 30 - (12 + 15) = 3$$

$$D's \text{ efficiency} = 4 - 3 = 1$$

$$\therefore \text{time taken by D} = \frac{240}{1} = 240 \text{ days}$$

59. Answer: d

Explanation:

Given:

Tuhin's age 15 months ago = 3 × sambit's age

Sambit's age = soumik's age + 6 months

Tuhin's age after 5 months = 2.5 × soumik's age

Calculation:-

let the present age of tuhin, sambit, and soumik be x, y, z months respectively

According to question-

$$x - 15 = 3(y - 15) \quad \text{-----(1)}$$

$$y = z + 6 \quad \text{-----(2)}$$

$$(x + 5) = 2.5(z + 5) \quad \text{-----(3)}$$

putting the value of y from (2) and x from (3) in equation (1),

$$2.5z + 7.5 - 15 = 3(z + 6 - 15)$$

$$2.5z - 7.5 = 3z + 18 - 45$$

$$0.5z = 45 - 18 - 7.5$$

$$z = 39 \text{ months}$$

putting z in equation (2) and (3), we get

$$y = 39 + 6 = 45 \text{ months ,}$$

$$x = 2.5 \times 39 + 7.5 = 105 \text{ months}$$

$$\text{total sum of ages} = 105 + 45 + 39 = 189 \text{ months} = 15 \text{ years } 9 \text{ months.}$$

60. Answer: c

Explanation:

Given,

Arrangement : _____ :: Selection : Combination

Here we see selection is related to combination, in the same way arrangement is related to Permutation.

Hence, the correct answer is Permutation.

61. Answer: a

Explanation:

EXPLANATION:

$$\sqrt{7225} = 5 \times 5 \times 17 \times 17 = 85$$

$$\sqrt{8464} = 4 \times 4 \times 23 \times 23 = 92$$

$$\sqrt{3136} = 4 \times 4 \times 14 \times 14 = 56$$

$$4235 = 5 \times 7 \times 11 \times 11$$

$\therefore$ Square root of 4235 is irrational number

62. Answer: a

Explanation:

Given:

mean of four numbers = 110

largest number = 135

Formula used:

Mean = Sum of observations / Number of observation

Range of set = largest number – smallest number

Calculation:

Sum of all numbers = 440

Sum of numbers other than the largest = $440 - 135 = 305$

for the value of the range to be maximum other two numbers should be 134 and 133 as all numbers are different.

Smallest number = $305 - (134 + 133) = 38$

Range = $135 - 38 = 97$

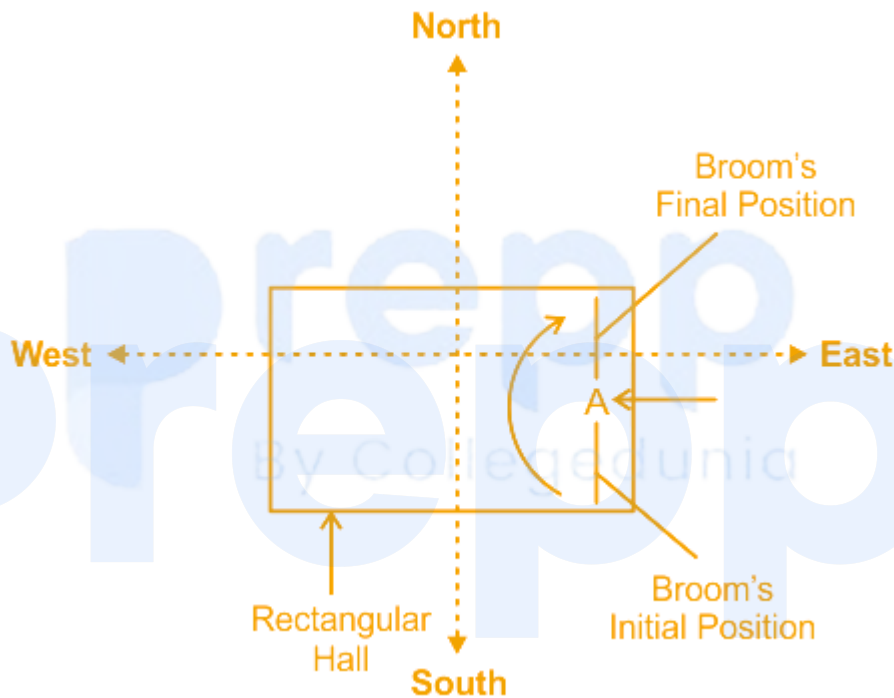
$\therefore$ The range of the set of these four numbers is 97

63. Answer: b

Explanation:

Given,

A is cleaning a rectangular hall whose entrance is to the east. After entering the room, A starts cleaning to his left. At one stroke, A makes an angle of 180° with the sweep.



Here we see broom is facing **North** direction.

Hence, the correct answer is North.

64. Answer: c

Explanation:

The correct answer is 0.45 m.

★ Key Points

- 0.45 m is the wavelength of a sound wave in a medium with a frequency of 840 Hz and a speed of 380 m/s seconds.
- **Speed of the sound wave, $v = 380 \text{ ms}^{-1}$**
- For a sound wave,
 - Speed = Wavelength x Frequency
 - wavelength = speed / frequency
 - wavelength = $380 / 840$
 - **wavelength = 0.45 m**
- Hence, the wavelength of the sound wave is 0.45 m.
- Hence, option 3 is correct.

65. Answer: c

Explanation:

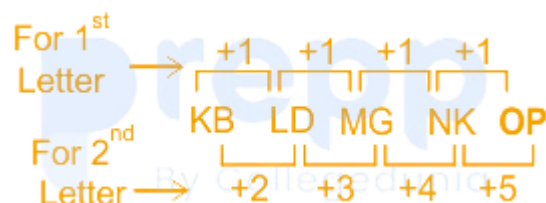
We know,

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

Given,

KB, LD, MG, NK, ?

The pattern followed here is,



Hence, the correct answer is OP.

66. Answer: b

Explanation:

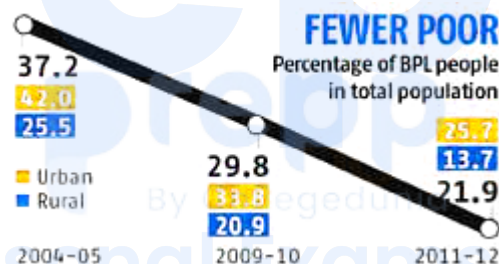
The correct answer is 22%.

★ Key Points

- 22% is the below poverty line (BPL) percentage in India as per the 2011 census .
- Hence, option 2 is correct.

★ Additional Information

- The proportion of people living below the poverty line (BPL) has come down from 37.2 percent in 2004-05 to 22 percent in 2011-12.



- **Below Poverty Line** is a benchmark used by the government of India to indicate economic disadvantage and to identify individuals and households in need of government assistance and aid.
 - It is determined using various parameters which vary from state to state and within states.
 - The present criteria are based on a survey conducted in **2002** .

★ Important Points

- **Census of India, 2011:**
 - Total Population of India was 1,210,193,422.
 - The **Sex Ratio** (females per thousand males) in India was 943.

- The **population density** was reported at **382 persons per sq. km.**
- **Total districts covered- 640** . Hence, statement 1 is correct.
- Crude Birth Rate- 21.8.
- Crude Death Rate- 7.1 per thousand population
- Infant Mortality Rate was 44 per thousand live births
- Literacy rate of the country- 74.04 per cent. (82.14 for males and 65.46 for females).
- State with the **highest literacy- Kerala** (94.0%)
- State with the **lowest literacy -Bihar** (61.8%)
- state with the **highest female literacy rate - Kerala** (92.1%)
- **Census:**
 - In **1872 AD**, the **first Non-synchronised Census** was done in India during the time of **Lord Mayo**.
 - The **first synchronised census** in India took place in **1881** .
 - Since 1901, it has been taking place after every decade.
 - **Census 2011** , is the **15th census and 7th after independence**.
 - The slogan of Census 2011 is **"Our Census, Our Future"**.

67. Answer: a

Explanation:

The correct answer is To connect SWIFT with its Basic Banking Solution (CBS).

★ Key Points

- To improve the internal control of banks, the Reserve Bank of India has asked all banks to connect SWIFT with its Basic Banking Solution (CBS) till 30 April 2018.
- Hence, option 1 is correct.

★ Additional Information

- **Reserve Bank of India**
 - The Reserve Bank of India is **India's central bank**, responsible for the issue and supply of the Indian rupee and the regulation of the Indian banking

system.

- It also manages the country's main payment systems and works to **promote** its economic development.
- **Governor:** Shaktikanta Das
- **Headquarters:** Mumbai, Maharashtra, India
- **Established:** 1 April 1935; 85 years ago

68. Answer: c

Explanation:

Concept used:

We can get the square root by prime factorization method

Calculation:

$$21316 = 2 \times 2 \times 73 \times 73$$

$$21316 = 2^2 \times 73^2$$

$$\Rightarrow 21316 = (2 \times 73)^2$$

$$\Rightarrow 21316 = 146^2$$

$\therefore$ The square root of 21316 is 146

69. Answer: c

Explanation:

Given,

Statements:

- No jockey is an ace.

- No Ace is a Queen.

Conclusions:

1. No jockey is queen.
2. All queens are jockeys.

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



Conclusions:

1. No jockey is queen → False (It is possible but not definite)
2. All queens are jockeys → False (It is possible but not definite)

Hence, the correct answer is **"Neither conclusion 1 nor 2 follows"**.

70. Answer: d

Explanation:

The correct answer is Antidone.

★ Key Points

- Antidone is not related to the phylum Churnapravara (Mollusca).
- Hence, option 4 is correct.

★ Additional Information

- The phylum Mollusca is typically **divided into 9 or 10 taxonomic classes of which two are entirely extinct.**
- These classes are **Aplacophora, Bivalvia, Cephalopoda, Polyplacophora, Gastropoda, Monoplacophora, Pleistomollusca, Rostroconchia, Scaphopoda,**

Incertae sedis.

- Decapoda is an order of crustaceans within the class Malacostraca.

71. Answer: c

Explanation:

The correct answer is 64 u.

★ Key Points

- 64 u is the expected molecular mass of sulfur dioxide [SO_2].
- The molar mass of sulfur is 32.1 g/mol, and oxygen is 16.0 g/mol .
 - Therefore, the molar mass of sulfur dioxide is $1 \times 32.1 + 2 \times 16.0 = 64.1$ g/mol.
- Hence, option 3 is correct.

★ Additional Information

- Sulfur dioxide or sulphur dioxide is the chemical compound with the formula SO_2 .
 - It is a **toxic gas** responsible for the smell of burnt matches.
 - It is **released naturally by volcanic activity** and is produced as a by-product of copper extraction and the burning of fossil fuels contaminated with sulfur compounds.

72. Answer: d

Explanation:

The correct answer is Karnataka.

★ Key Points

- Shakti Sthal is a solar power park, which was recently inaugurated in the Karnataka state.
 - The world's largest solar park, Shakti Sthala, has a capacity of 2,000 MW and has set up at an investment of Rs16,500 crore at Pavagada in Karnataka's Tumakuru district.
- Hence, option 4 is correct.

★ Additional Information

- The first phase of the Rs16,500 crore park called "Shakti Sthala" will generate 600MW.
- It is part of the "Karnataka Solar Policy 2014-2021" which aims to decrease dependence on traditional power sources and move to environmentally friendly ones to meet the growing power needs of the state.
- The solar park is also part of the Siddaramaiah-led Congress government's "Nava Karnataka Nirmana" (building a new Karnataka) campaign.

73. Answer: d

Explanation:

The correct answer is Dr. Neeru Chadha.

★ Key Points

- Dr. Neeru Chadha is the first Indian woman to be elected as a judge of the International Tribunal for the Law of the Sea (ITLOS).
- Hence, option 4 is correct.

★ Additional Information

- Ms. Chadha, an eminent lawyer, and the first Indian woman to become the chief legal adviser in the ministry of external affairs won the election yesterday to the International Tribunal for the Law of the Sea (ITLOS) for a nine-year term from 2017 to 2026.

- Ms. Chadha got **120 votes**, the highest in the Asia Pacific group, and was elected in the first round of voting itself.
 - The candidate from Indonesia got 58 votes, Lebanon 60, and Thailand 86.

74. Answer: b

Explanation:

The correct answer is Kohima.

★ Key Points

- Kohima is the capital of Nagaland.
- Dispur is the capital of the Indian state of Assam.
 - Dispur, a locality of Guwahati, became the capital of Assam in 1973.
- Gangtok is the capital of the mountainous northern Indian state of Sikkim.
- Imphal is the capital city of the Indian state of Manipur.
- Hence, option 2 is correct.

★ Additional Information

- Nagaland
 - **Capital:** Kohima (Executive Branch)
 - **Governor:** Jagdish Mukhi
 - **Chief minister:** Neiphiu Rio
 - **Kohima**, situated in the south at an altitude of 1444m above sea level, is the capital city of Nagaland.
 - **Sharing its borders** with Dimapur and Peren District in the West, Zunheboto and Phek District in the East, Manipur State in the South, and Wokha District in the North.

75. Answer: b

Explanation:

Given:

Ratio of boys and girls = 8 : 11

Total number of students = 399

Calculation:

Let the number of boys and girls be $8x$ and $11x$ respectively

Total number of students = $(8x + 11x)$

$\Rightarrow 19x$

Now, according to question

$19x = 399$

$\Rightarrow 8x = (399/19x) \times 8x$

$\Rightarrow 168$

$\therefore$ The number of boys are 168

76. Answer: a

Explanation:

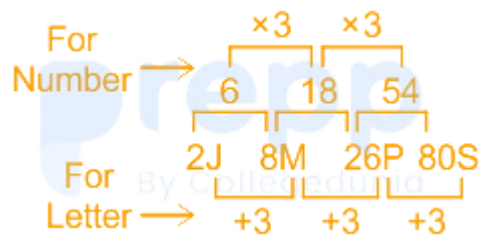
We know,

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

Given,

2J, 8M, 26P, ____

The pattern followed here is,



Hence, the correct answer is the 80S.

77. Answer: d

Explanation:

Calculation:

$$1.42 \times 0.005 = ?$$

$$\Rightarrow (142/100) \times (5/1000) = ?$$

$$\Rightarrow 710/100000 = ?$$

$$\Rightarrow 0.0071 = ?$$

$\therefore$ The value of ? is 0.0071

78. Answer: a

Explanation:

The correct answer is 2002.

★ Key Points

- **Dhyan Chand Award**

- The award was first given in **2002**, to those **sportspersons who have contributed to sports by their performance and continue to contribute to the promotion of sports** even after their retirement from active sporting career.
- It is the lifetime achievement sporting honor of the Republic of India.
- The award is named **after Dhyan Chand** (1905–79), an Indian field hockey player who scored more than 1000 goals during a career that spanned over 20 years from 1926 to 1948.

- Hence, option 1 is correct.

★ **Additional Information**

- The **first recipients of the award were Shahuraj Birajdar (Boxing), Ashok Diwan (Hockey), and Aparna Ghosh (Basketball)**, who was honored in 2002.
- Usually conferred upon not more than three sportspersons in a year, a few **exceptions** have been made (2003, 2012–2013, and 2018–2020) when more recipients were awarded.

79. **Answer: a**

Explanation:

Calculation:

$$x^2 + 4x - 12 < 0$$

$$\Rightarrow x^2 + 6x - 2x - 12 < 0$$

$$\Rightarrow x \times (x + 6) - 2 \times (x + 6) < 0$$

$$\Rightarrow (x - 2) \times (x + 6) < 0$$

$$\Rightarrow \text{For } x < 2, \text{ and } x > -6$$

$$\therefore -6 < x < 2$$

80. Answer: c

Explanation:

The correct answer is Angiosperms.

★ Key Points

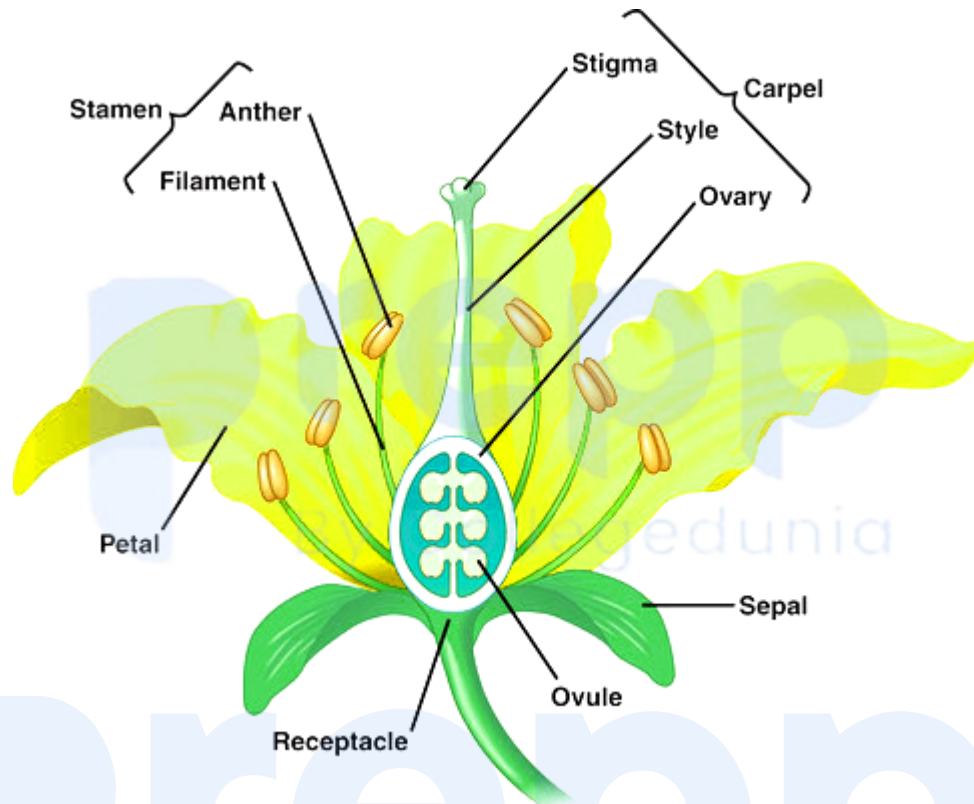
- The reproductive parts of Angiosperms are located in the flower.
 - Angiosperms are vascular plants.
 - They have stems, roots, and leaves.
 - Unlike gymnosperms such as conifers and cycads, angiosperm's seeds are found in a flower.
 - Angiosperm eggs are fertilized and developed into a seed in an ovary that is usually found in a flower.
- Hence, option 3 is correct.

★ Additional Information

As a plant's reproductive part, a flower contains a stamen (male flower part) or pistil (female flower part), or both, plus accessory parts such as sepals, petals, and nectar glands .

- The **stamen** is the male reproductive organ.
- It consists of a **pollen** sac (anther) and a long supporting filament.
- **Sepals** are small, green, leaflike structures located at the base of a flower.
 - They protect the flower bud. Collectively, the sepals are called a calyx.
- The **pistil** is a plant's female part.
 - It generally is shaped like a bowling pin and is located in the flower's center.

It consists of a stigma, style, and ovary.



81. Answer: c

Explanation:

The correct answer is 20 m.

★ Important Points

• **Concept:**

- When the body is released from a height then all the potential energy will be converted to kinetic energy.
- Hence, Assuming base as a reference
- $P.E. + 0 = K.E. + 0$
- $P.E. = mgh = 400J$
- Here, $m = 2kg$ and $g = 10 m/s^2$
- $mgh = 400$
- $2 * 10 * h = 400$
- $h = 20 m$

82. Answer: b

Explanation:

Given:

Ticket purchased by students = 46%

Total tickets sold = 1250

Calculation:

Number of tickets purchases by students = 46% of 1250

$$\Rightarrow (46/100) \times 1250$$

$$\Rightarrow 575$$

$\therefore$ The number of tickets purchased by students is 575

83. Answer: a

Explanation:

The correct answer is Padma Vibhushan.

★ Key Points

- K. J. Yesudas is a multilingual singer, singing Indian classical music, devotional, light music, and Film songs.
 - His commercially published recordings span multiple genres.
- He was awarded the Padma Shri in 1975, the Padma Bhushan in 2002, and the Padma Vibhushan (second-highest civilian award) in 2017 by the Government of India for his contributions towards the arts.
- Hence, option 1 is correct.

★ Additional Information

- Padma Shri is the fourth-highest civilian award in the Republic of India, after the Bharat Ratna, the Padma Vibhushan, and the Padma Bhushan.
 - It is awarded by the Government of India every year on India's Republic Day.
 - Established: 1954
- The **Bharat Ratna** is the **highest civilian award** of the Republic of India.
 - **Instituted on 2 January 1954**, the award is conferred in recognition of exceptional service/performance of the highest order, without distinction of race, occupation, position, or sex.

84. Answer: a

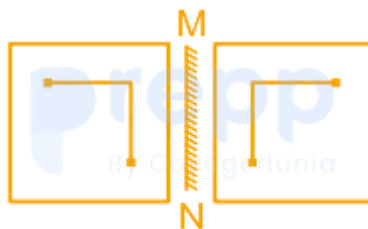
Explanation:

Given,



In the mirror image, the top and bottom part of the figure remains the same and left and right part interchanges.

∴



Hence, the correct answer is



85. Answer: b

Explanation:

The correct answer is fruits.

★ Key Points

- The cow has the same relation to milk as the tree has with fruits.
- Hence, option 2 is correct.

★ Additional Information

- Milk is a nutrient-rich liquid food produced by the mammary glands of mammals.
- It is the primary source of nutrition for young mammals, including **breastfed human infants** before they are able to digest solid food.
- Early-lactation milk is called **colostrum**, which contains antibodies that strengthen the immune system and thus reduces the risk of many diseases.
- It holds many other nutrients, including protein and lactose.
- Interspecies consumption of milk is not uncommon, particularly among humans, many of whom consume the milk of other mammals.

86. Answer: b

Explanation:

Given:

SP of each set = Rs. 287

Fixed cost = 18% of total cost

Explanation:

There is a loss of 18 %

∴ SP is 82% of CP

82% of CP = Rs. 287

CP = Rs. $(287/82) \times 100$

⇒ Rs. 350

∴ The cost price of each set of cup is Rs. 350

87. Answer: b

Explanation:

Concept used:

Follow the BODMAS rule as given below to solve this question

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

Calculation:

$$54 \div 3^2 \times 6 + 3 = ?$$

$$\Rightarrow 54 \div 9 \times 6 + 3 = ?$$

$$\Rightarrow 6 \times 6 + 3 = ?$$

$$\Rightarrow 36 + 3 = ?$$

$$\Rightarrow 39 = ?$$

$\therefore$ The value of ? is 39

88. Answer: c

Explanation:

The correct answer is Sodium.

★ Key Points

- **Sodium** is not an alkaline earth metal.
- **Alkaline earth metals** are group II elements like calcium, magnesium, Barium, and strontium
- Hence, option 3 is correct.

★ Additional Information

- The elements of Group 2 include **beryllium, magnesium, calcium, strontium, barium, and radium**.
 - These elements with the exception of beryllium are commonly known as **alkaline earth metals**.
- These elements are called Alkaline Earth metals because of two **reasons**:
 - Their oxides exist in the **earth's crust** and are very stable to heat.
 - Their **oxides and hydroxides show basic (alkaline)** natures.
 - Beryllium fulfills the first criterion but not the second one since its oxides and hydroxides show amphoteric behavior, rather than alkaline.

89. Answer: c

Explanation:

Calculation:

$$((3 \times 10 + 14) \div 4) - 2 = 6$$

Option 1:

Multiplication and addition

$$((3 + 10 \times 14) \div 4) - 2 = 33.75$$

Option 2:

Division and multiplication

$$((3 \div 10 \times 14) \times 4) - 2 = 55.2$$

Option 3:

Addition and subtraction

$$((3 \times 10 - 14) \div 4) + 2 = 16/4 + 2 = 6$$

Option 4:

Subtraction and division

$$((3 \times 10 + 14) - 4) \div 2 = (44 - 4) \div 2 = 20$$

$\therefore$ Option 3 is correct

90. Answer: a

Explanation:

The correct answer is Epididymis.

★ Key Points

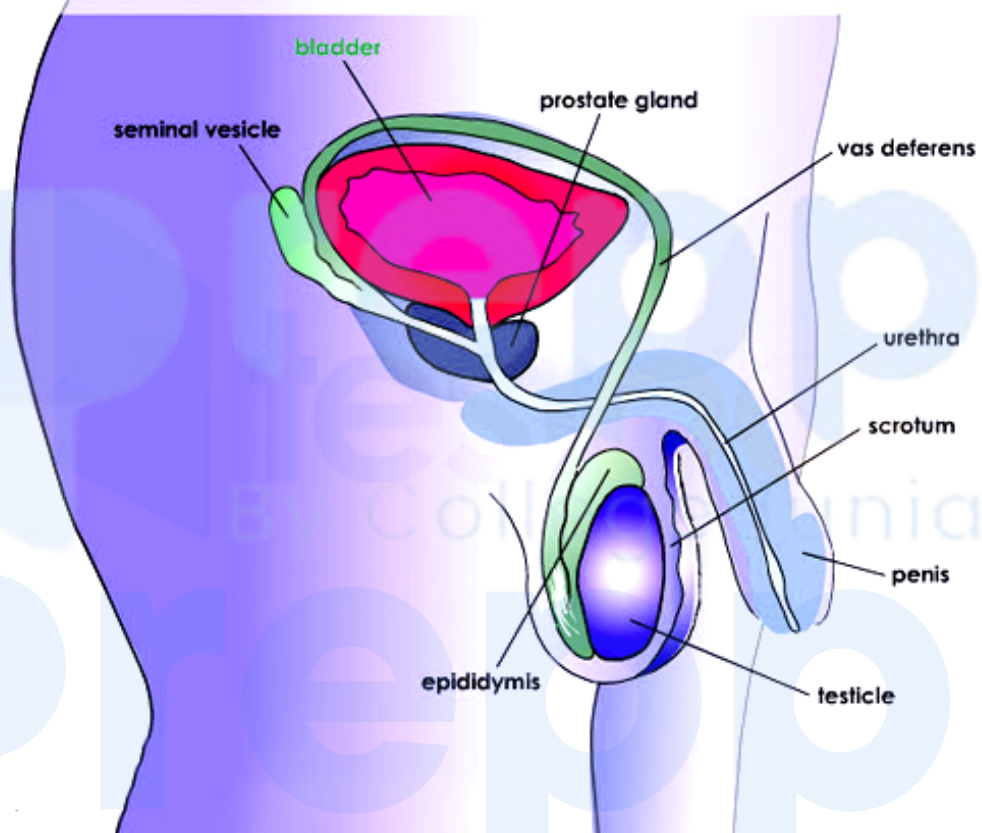
- **Sperm** are temporarily kept in Epididymis.
- Each sperm cell takes between **65–75 days to form** and around 300 million are produced every day.
- Inside the testes, sperm is made in structures called the seminiferous tubules.
- **At the top and to the back of each testicle (testis) is the epididymis, which stores sperm .**
- Hence, option 1 is correct.

★ Additional Information

- In mammals, sperm cells are produced in the seminiferous tubules of each testis.
- These sperm cells leave the testes and pass into a larger coiled tube known as the **epididymis** .
- The sperm cells attain maturity in the epididymis.
- The sperm cells are stored in this structure till they are ejaculated.
- During ejaculation, **the sperms pass from the epididymis into the vas deferens and are ejaculated with the semen through the penis.**

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91. Answer: b

Explanation:

The correct answer is Odisha.

★ Key Points

- The most important event of Ashoka's reign was the victory of Kalinga, Odisha in the modern era, which proved to be an important change in his life.
- Hence, option 2 is correct.

★ Additional Information

- War with Kalinga
 - Ashoka conquered Kalinga in the 9th year of his reign.

- **Kalinga was a modern Odisha.**
 - Ashoka decided to attack Kalinga due to its strategic location.
 - Kalinga war was a horrifying event as it was mentioned in the **13th Rock Edict of Ashoka**.
 - Approximately, hundred and fifty thousand people were wounded while a hundred thousand people were killed in the course of the war.
 - This horrific event deeply impacted Ashoka and led to a change in his heart.
 - He vowed to never fight a war.
 - **He preferred now Dhammavijay over Dig-Vijay.**

92. Answer: a

Explanation:

Given:

Time taken by (L + K) to fill the tank = 4 hours

Time taken by K to fill the tank = 5 hours

Formula Used:

Efficiency = Total work/Time taken

Calculation:

LCM of 4 and 5 = 20 = Total work

Efficiency of L and K = $20/4$ units/day

⇒ 5 units/day

Efficiency of K = $20/5$ units/day

⇒ 4 units/day

Efficiency of L = $(5 - 4) = 1$ unit/day

Time taken by pipe L = $20/1$ hours

$\Rightarrow$ 20 hours

$\therefore$ Time taken by pipe L alone is 20 hours

93. Answer: a

Explanation:

Given:

Length and width has been increased by 15% and 10% respectively

Formula used:

Percentage increase in the area = $[x + y + (xy/100)]$

Where, x = Percentage increase in Length

y = Percentage increase in Width

Calculation:

Percentage increase in area = $[15 + 10 + (15 \times 10)/100]\%$

$\Rightarrow [25 + 1.5]\%$

$\Rightarrow 26.5\%$

$\therefore$ The percentage increase in the area is 26.5%

94. Answer: c

Explanation:

The correct answer is Sodium Hydrogen Carbonate.

★ Key Points

- Soda-acid fire extinguishers comprise sodium bicarbonate or Sodium Hydrogen Carbonate and sulphuric acid.
- It is the most efficient house-hold fire extinguisher.
- It consists of a strong iron vessel with a side discharge nozzle.
- The iron vessel is filled with a **sodium bicarbonate solution**.
- Hence, option 3 is correct.

★ Additional Information

- The **working principle** of any fire extinguisher is based on the following **three conditions**:
 - cooling of the combustible material below its ignition temperature
 - cutting off the air supply
 - cooling the combustible material simultaneously while cutting off the air supply.
- **Reaction**
 - There is a **solution of sodium bicarbonate in water in the fire extinguisher and sulphuric acid** in a different bottle within it.
 - The sulphuric acid is combined with sodium bicarbonate solution and creates an amount of **carbon dioxide gas** when the fire extinguisher is operated by turning the knob on it.
 - **Carbon dioxide gas is not combustible**, nor does it endorse combustion.
 - It is heavier than air and cuts off the air's supply of oxygen, thus extinguishing the flames.
 - The following reaction takes place
 - $2\text{NaHCO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O} + 2\text{CO}_2$

95. Answer: d

Explanation:

Given,

Statement:

Should it be mandatory to work after school?

Arguments:

1. Yes, it helps to develop life skills.
2. No, not all students are fully mature in dealing with work matters.

Here we see both the arguments are strong, as both the arguments follow the statement.

Hence, the correct answer is Both 1 and 2 are strong.

96. Answer: d

Explanation:

Given:

Time taken by Hitesh to complete the work = 24 days

Time taken by Jinesh to complete the work = 30 days

Time taken with the help of Ishaan to complete the work = 10 days

Formula used:

Efficiency = Total work/Time taken

Calculation:

LCM of (24, 30 and 10) = 120 = Total work

Efficiency of Hitesh = $120/24$ units/day

$\Rightarrow 5$ units/day

Efficiency of Jinesh = $120/30$ units/day

⇒ 4 units/day

Efficiency of all of them together = $120/10$ units/day

⇒ 12 units/day

Efficiency of Ishaan = $12 - (5 + 4)$ units/day

⇒ $(12 - 9)$ units/day

⇒ 3 units/day

Time taken by Ishaan = $120/3$ days

⇒ 40 days

∴ Time taken by Ishaan to complete the work is 40 days

97. Answer: c

Explanation:

Concept used:

HCF can be found by prime factorization method

HCF is the common factor of different numbers

Calculation:

$$88 = 2 \times 2 \times 2 \times 11$$

$$220 = 2 \times 2 \times 5 \times 11$$

$$\text{Common factor} = 2 \times 2 \times 11$$

$$\Rightarrow 44$$

∴ The HCF of 88 and 220 is 44

98. Answer: b

Explanation:

The statement of Meena's friend mentions Meena's sister.

Therefore, conclusion 1 follows.

However, the statement does not imply any closeness between Meena's friend and her sister.

Therefore, conclusion 2 does not follow.

Hence, only conclusion 1 follows.

99. Answer: b

Explanation:

Given,



Here we see the 1st image has two parts and in the 2nd image only the right part of the 1st is shown that is shaded. Similarly, in the 3rd image, the circle is divided into two parts. Therefore, in the 4th image only shaded the right part of the circle will be shown.

∴ The shape that will replace the question mark (?) is



Hence, the correct answer is



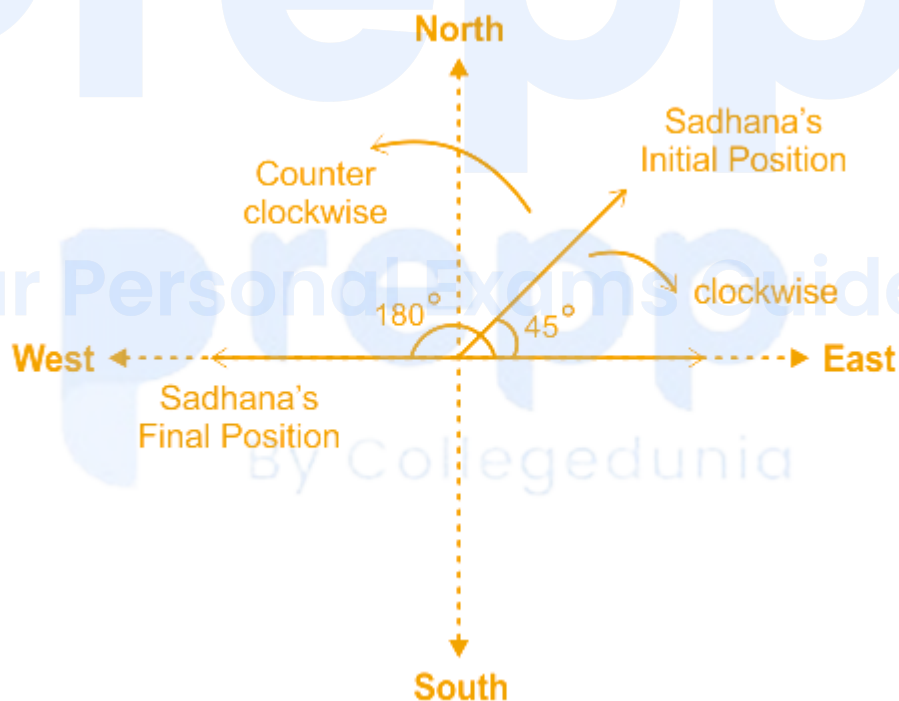
100. Answer: a

Explanation:

Given,

Sadhana's face was towards the northeast. She turns 45° clockwise and then 180° counterclockwise.

$\therefore$



Here we see Sadhana's face at final position is towards West.

Hence, the correct answer is West.