



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 (25-Sep-2018) (Shift 3)

Total Time: 1 Hour : 30 Minute

Total Marks: 100

Instructions

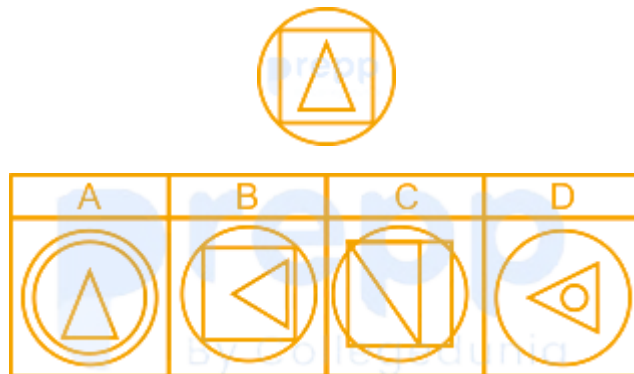
Sl No.	Section Name	No. of Question	Maximum Marks	Negative Marks	Positive Marks
1	CBT	100	100	0.33	1

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

Your Personal Exams Guide

CBT

1. Which one of the following options is the most closely related to the given figure? (+1, -0.33)



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

2. $[60 \div \{3^3 \times 2 - (29 - \overline{26 - 31})\}]$ (+1, -0.33)

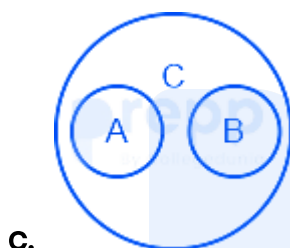
- a. 6
- b. 10
- c. 5
- d. 3

3. Which Venn diagram correctly depicts the relationship between the following? (+1, -0.33)

(A) Computer

(B) Table

(C) Electronic



4. 216 cards are distributed among A and B. First of all, the cards are distributed among A and B in the ratio 5:4 respectively. After some time, the cards are again collected and distributed among A and B in the ratio of 11:13 respectively. How many cards did A get the second time as compared to the first? (+1, -0.33)
- 3 less
 - 3 more
 - 21 more
 - 21 less

5. If the density of water is 10^3 kg/m^3 and the density of copper is $8.9 \times 10^3 \text{ kg/m}^3$, then the relative density of copper will be: (+1, -0.33)

- a. 89
- b. 0.89
- c. 890
- d. 8.9

6. Which book is written by former RBI governor Raghuram Rajan? (+1, -0.33)

- a. The Emergency-Indian Democracy's Darkest Hour
- b. I Do What I Do
- c. The Ministry of Utmost Happiness
- d. The Unseen Indira Gandhi

7. When an acid reacts with a metal oxide, _____ and _____ are obtained as products. (+1, -0.33)

- a. Salt, Water
 - b. Acid, Water
 - c. Base, Water
 - d. Base, Acid
-

8. The L.C.M. of two numbers is 2604 and H.C.F. is 12. If one of the numbers is 84, what will be the other number? (+1, -0.33)
- a. 327
 - b. 273
 - c. 372
 - d. 237
-

9. Isobars have the same number of _____. (+1, -0.33)
- a. Ion
 - b. Nucleons
 - c. Electron
 - d. Proton
-

10. Read the given statement(s) and conclusions carefully and choose which of the conclusions beyond reasonable doubt logically follows from the information in the statement. (+1, -0.33)

Statements:

Some cotton are cloth. Some woolen clothes are cotton

Conclusion

- 1. Some cotton are leaves
- 2. Wool is a fabric

- a. Both the conclusions are true in according to the statements

- b. Only conclusion 2 is true according to the statement
 - c. Only conclusion 1 is true according to the statement
 - d. Neither 1 nor 2 is true according to the statement
-

11. There is a creator and a destroyer in a computer game. Their total number is 16. Some try to build a wall around the palace and others try to destroy it. Each builder alone can build a wall in 18 hours while any destroyer can destroy it in 15 hours. The wall is built in 2.5 hours if all the 16 people are activated before the wall is built. Find the number of destroyers out of these? (+1, -0.33)

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

12. Which of the following has only magnitude and no direction? (+1, -0.33)

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

13. Testosterone which is a male sex hormone is synthesized in _____. (+1, -0.33)

- a. Scrotum

- b. Testicle
 - c. Seminal Vesicle
 - d. Prostate Gland
-

14. _____ started the system of Mansabdari to strengthen the army. (+1, -0.33)

- a. Babur
 - b. Aurangzeb
 - c. Akbar
 - d. Jahangir
-

15. _____ in plants helps in the absorption and uptake activity, from roots to leaves, in the transmission of water and minerals. (+1, -0.33)

- a. Consideration
 - b. Photosynthesis
 - c. Respiration
 - d. Transpiration
-

16. $(-8)[30 \div \{7 - (-3)\}] = ?$ (+1, -0.33)

- a. -24
- b. 60
- c. 24

d. -60

e. Question Not Attempted

17. The nature of _____ is electro-positive. (+1, -0.33)

a. Non-metals

b. Metals

c. Semi-metals

d. Metalloid

18. Kaveri bought a toy for Rs. 280 and sold it for Rs. 315. How much profit did she get? (+1, -0.33)

a. 17.5%

b. 12.5%

c. 16%

d. 15.25%

19. A train with a speed of 78 km/hr crosses a platform 450 m long in 27 sec. (+1, -0.33)
What is the length of the train?

a. 120 m

b. 135 m

c. 130 m

d. 125 m

20. The L.C.M. of 42, 84 and 48 is.

(+1, -0.33)

a. 210

b. 336

c. 168

d. 420

21. Which of the following is a unicellular green algae?

(+1, -0.33)

a. Chara

b. Ulothrix

c. Spirogyra

d. Chlamydomonas

22. If $522 \div 29 = 18$, then $5.22 \div 0.0018 = ?$

(+1, -0.33)

a. 0.29

b. 2900

c. 2.9

d. 290

23. Which of the following is present in carpel?

(+1, -0.33)

- a. Pollen grain
 - b. Ovule
 - c. Petals
 - d. Sepals
-

24. Objects that do not produce light themselves are called? (+1, -0.33)

- a. Transparent objects
 - b. Translucent objects
 - c. Non-illuminated objects
 - d. Illuminated objects
-

25. Which of the following will be the sides of a right angled triangle? (+1, -0.33)

- a. 84 cm, 13 cm, 85 cm
 - b. 84 cm, 63 cm, 115 cm
 - c. 15 cm, 112 cm, 111 cm
 - d. 76 cm, 100 cm, 57 cm
-

26. Which is the largest producer of manganese in India? (+1, -0.33)

- a. Madhya Pradesh
- b. Odisha

- c. Maharashtra
 - d. Karnataka
-

27. _____ tissue is formed by the combination of dead cells. (+1, -0.33)

- a. Sclerenchyma
 - b. Aerenchyma
 - c. Collenchyma
 - d. Parenchyma
-

28. A question and two statements are given. Decide which of the statement(s) is/are sufficient to answer the question. (+1, -0.33)

Question:

Nitara has 20 colored pencils of four different colours. How many black pencils does she have?

Statements:

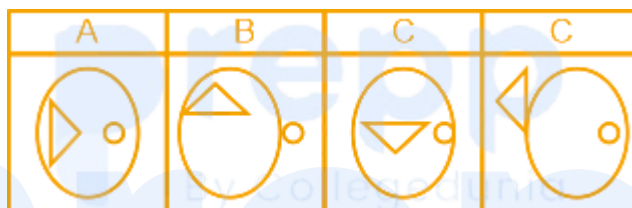
- 1. It has 5 red colored pencils.
 - 2. She has 4 blue colored pencils.
 - 3. The number of green pencils is twice that of blue pencils.
- a. Only statement 1 is sufficient.
 - b. Only statement 3 is sufficient.
 - c. Statements 1, 2 and 3 all together are sufficient.
 - d. Statements 1 and 2 together are not sufficient.

29. Select the alternative figure that will complete the series of question pictures? (+1, -0.33)

Question Figure:



Option Figure :



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

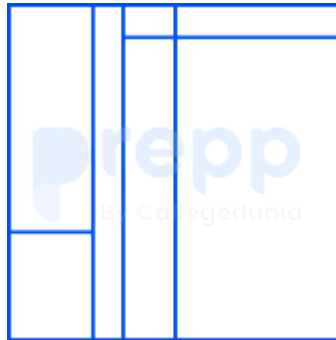
30. Select the term which is related to the third term in the same way as the second term is related to the first term. (+1, -0.33)

Needle : Stitch :: Knife : ?

- a. Blade
- b. Butter
- c. Cut
- d. Sharp

31. How many rectangles are there in the following picture?

(+1, -0.33)



- a. 10
- b. 20
- c. 18
- d. 15

32. Which of the following words does not belong to the group?

(+1, -0.33)

- A. Jam
- B. Juice
- C. Squash
- D. Lemon

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

33. An object covers a distance of 22 m in 4 s and then another 15 m in 2 s. (+1, -0.33)
What is the average speed of the object?

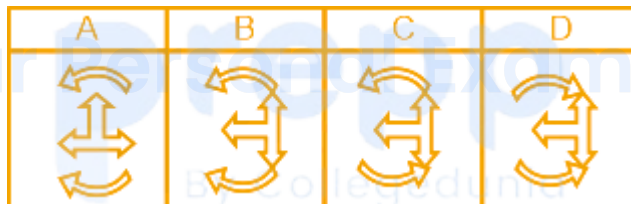
- a. 6.67 ms^1
- b. 6.17 s^{-1}
- c. 6.17 m
- d. 6.17 ms^{-1}

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

Question Figure:



Option Figure:



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

35. The question given below is followed by two arguments. You have to decide which of the arguments are strong with respect to the statement. **(+1, -0.33)**

Question:

Should there be any check on consumerism in society?

Argument:

I. Yes, as it promotes the acquisition of at most goods, it affects the ecological balance by generating more waste. People have got into the habit of throwing using objects. We must strike a balance.

II. No, it promotes industrial development and welfare responsible for the economic conditions of a country.

- a. Only Argument II is strong
- b. Neither argument I nor argument II is strong
- c. Only Argument I is strong
- d. Arguments I and II both are strong

Your Personal Exams Guide

36. On an average Meenakshi spends 10% of her monthly salary on shopping and going to restaurants and malls. The remaining 80% is spent on his household expenses and 10% is saved. If the monthly household expenditure is Rs. 48,000, then what is the monthly income? **(+1, -0.33)**

- a. Rs. 60,000
- b. Rs. 80,000
- c. Rs. 1,20,000
- d. Rs. 54,000

37. $\{28 - (31 - 48)\} \div \{-2 \times 9 - (-3)\} - 57 \div (-22 + 3) = ?$ (+1, -0.33)

- a. -2
- b. 1
- c. 0
- d. 2

38. The mean of 12, 13, 15, 18, X, 28, 18, 12, 6, 8 is 15. What is the median of the data? (+1, -0.33)

- a. 14.5
- b. 13.5
- c. 14
- d. 13

39. Select the option that will replace the question mark in the following series. (+1, -0.33)

<table border="1"><tr><td>/▼/</td><td>€Ω</td></tr><tr><td>±∧±</td><td>•±•</td></tr></table>	/▼/	€Ω	±∧±	•±•	<table border="1"><tr><td>±</td><td>▼\</td></tr><tr><td>•±•</td><td>Ω€</td></tr></table>	±	▼\	•±•	Ω€	<table border="1"><tr><td>•±•</td><td>±∧±</td></tr><tr><td>€Ω</td><td>/▲/</td></tr></table>	•±•	±∧±	€Ω	/▲/	?
/▼/	€Ω														
±∧±	•±•														
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€Ω	/▲/														

A	B	C	D
±	Ω€	*±*	Ω€
/▼/	*±*	/▼/	±

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

40. The number of diagonals in a 19 - gon is: (+1, -0.33)

- a. 161
 - b. 133
 - c. 171
 - d. 152
-

41. Who is the first wicket-keeper in the world to do 100 stumpings in One Day International cricket matches? (+1, -0.33)

- a. Kumar Sangakkara
 - b. Shahid Afridi
 - c. Adam Gilchrist
 - d. M.S. Dhoni
-

42. Aarti and Bharti take 30 days and 42 days respectively to complete a work individually. Aarti starts working alone and then a few days later Bharti joins her. In all, they take 20 days to complete the work. After how many days did Bharti join the work? (+1, -0.33)

- a. 4
 - b. 7
 - c. 5
 - d. 6
-

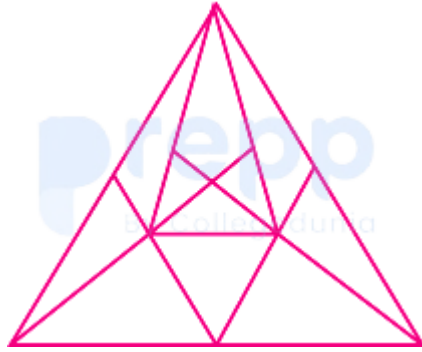
43. Metal reacts with steam of _____ to form oxide. (+1, -0.33)

- a. Potassium
 - b. Sodium
 - c. Calcium
 - d. Iron
-

44. Loo is a type of _____. (+1, -0.33)

- a. Cyclone
 - b. Cold wave
 - c. Heat wave
 - d. Tsunami
-

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



- a. 16
- b. 23
- c. 10
- d. 20

46. What is "Hausla 2017", which was celebrated from 16 November to 20 November 2017? (+1, -0.33)

- a. Celebration of the rights of senior citizens
- b. Celebration of women's rights
- c. Celebration of transgender rights
- d. Celebration of children's rights

47. Find the difference between simple interest and compound interest on Rs. 2000 for 2 years at 10% per annum? (+1, -0.33)

- a. Rs. 0
- b. Rs. 30
- c. Rs. 20

d. Rs. 10

48. Sanchi Stupa has been designed on the page side of which of the following Indian bank notes? (+1, -0.33)

a. Rs. 200

b. Rs. 50

c. Rs. 500

d. Rs. 2,000

49. If WAIT is coded as 231920 then what will be the code for RUN? (+1, -0.33)

a. 182014

b. 192114

c. 182115

d. 182114

50. Who was honored with the 2018 Padma Shri award in the field of 'Art-Folk Music' from Uttar Pradesh? (+1, -0.33)

a. Bhikhudan Gadhvi

b. Chitra Singh

c. Mohan Swaroop Bhatia

d. Shubha Mudgal

51. Which of the following elements has three valence electrons? (+1, -0.33)

- a. Al
- b. Ag
- c. Au
- d. Ca

52. From the top of a 46 m high tower, the angles of depression of the top and bottom of a building are observed to be 45° and 60° respectively. Find the height of the building. (+1, -0.33)

- a. 23 m
- b. 19.45m
- c. 46 m
- d. $23\sqrt{3}$ m

53. If RATE is coded as 181205, then what will be the code for KEY? (+1, -0.33)

- a. 11523
- b. 11814
- c. 11924
- d. 11525

54. Example of motion of a freely falling object is: (+1, -0.33)

- a. rectilinear motion
 - b. Non Uniform acceleration
 - c. Uniform acceleration
 - d. Circular motion
-

55. The Mughal ruler Akbar was born in _____. (+1, -0.33)

- a. Amarkot
 - b. Fatehpur Sikri
 - c. Sialkot
 - d. Agra
-

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

Statement:

"My dog loves food," Anita tells her friend.

Conclusion:

- I. Anita has a dog.
 - II. Her dog doesn't like anything but food.
- a. Only conclusion II follows.
 - b. Neither I nor II follow.
 - c. Both conclusions follow.

d. Only conclusion I follows.

-
57. Consider the given statement and decide which of the given concepts are implicit in the statement. (+1, -0.33)

Statement: "Try to steal this phone from our store" – a display unit on the notice board of the stores

Assumption:

I. People want to own a mobile phone

II. A powerful surveillance system has been put in place in this store to challenge theft.

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

-
58. The liquid used to conduct current is called (+1, -0.33)

- a. suspension
b. non-electrolyte
c. emulsion
d. electrolyte

-
59. Who among the following was sworn in as the 45th Chief Justice of India in August 2017? (+1, -0.33)

- a. Justice Chelameswar
- b. Jagdish Singh Khehar
- c. Ranjan Gogoi
- d. Deepak Mishra

60. Eight years ago Ashwin's age was 1 year less than 3 times Arpit's age. Six years ago Ashwin's age was 1 year more than 2 times Arpit's age. What will be Arpit's age after 7 years? (+1, -0.33)

- a. 19 years
- b. 15 years
- c. 16 years
- d. 12 years

61. Who among the following Chief Ministers of India was presented the 'Transformative Chief Minister Award' by the US-India Business Council (USIBC) in May 2017? (+1, -0.33)

- a. Yogi Adityanath
- b. Nitish Kumar
- c. N. Chandrababu Naidu
- d. K. Chandrashekhara Rao

62. What should be added to $5\frac{3}{5}$ to get the value $8\frac{3}{7}$? (+1, -0.33)

a. $\frac{99}{35}$

b. $\frac{96}{35}$

c. $\frac{99}{33}$

d. $\frac{94}{35}$

63. February 2, 2019 will be Saturday. Then which day will be on October 4, 2019? (+1, -0.33)

a. Thursday

b. Friday

c. Saturday

d. Sunday

64. Complete the following sequence by choosing the correct option. (+1, -0.33)

91827364, 81726354, 71625344 -----

a. 61524334

b. 5234165

c. 61524336

d. 5234166

65. Who is the owner of Mumbai's IPL team 'Mumbai Indians'? (+1, -0.33)

a. Shahrukh Khan

- b. times of India
- c. Reliance Industries
- d. Amitabh Bachchan

66. What is the full form of CII? (+1, -0.33)

- a. Confederation of Indigenous Industry
- b. Conciliation in Indian Industry
- c. Confederation of Indian Industry
- d. Committee for Indian Industry

67. What will be the lateral mirror image of &^*\$? (+1, -0.33)

A	B	C	D
&^*\$	\$*^&	&*^\$	\$*v&

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

68. Find the next term in the series given below. (+1, -0.33)

2J, 9M, 16P, _ _ _ _

- a. 23 R
 - b. 20 R
 - c. 22 R
 - d. 23 S
-

69. Which film won the National Award for Best Film on Social Issues at the 64th National Film Awards, 2017? (+1, -0.33)

- a. Sultan
 - b. Dangal
 - c. Pink
 - d. Airlift
-

70. Who jointly inaugurated the Global Entrepreneurship Summit (GES - 2017) in Hyderabad along with Prime Minister Narendra Modi? (+1, -0.33)

- a. Melanie Trump
 - b. Ivanka Trump
 - c. Donald Trump
 - d. Ivana Trump
-

71. Name the actor who played the character of Bhallaladeva in the film series 'Bahubali'? (+1, -0.33)

- a. M. Nassar

- b. Rana Daggubati
 - c. Prabhas
 - d. Abhishek Bacchan
-

72. Lime reacts with chlorine to form what? (+1, -0.33)

- a. Baking soda
 - b. Plaster of Paris
 - c. Baking powder
 - d. Bleaching powder
-

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

Statements:

Diabetics can eat fruits.

Conclusion:

- I. Sugar in its natural form is harmful.
 - II. Consumption of fruits makes the sugar available in sufficient quantity for the normal metabolism of the body.
- a. Both conclusions follow.
 - b. Only conclusion II follows.
 - c. Only conclusion I follows.

d. Neither I nor II follows.

74. Read the question and two statements given below.

(+1, -0.33)

Question:

Neeta has 6 pens of two different colours. Can we tell how many black pens he has?

Statements:

1. There are 4 red pens
2. He bought those pens yesterday.

Which statement is sufficient to answer the given question?

- a. Statements 1 and 2 both are not sufficient.
 - b. Statement 2 alone is sufficient.
 - c. Statements 1 and 2 both are sufficient.
 - d. Statement 1 alone is sufficient.
-

75. Strong is related to weak as languorous is to _____.

(+1, -0.33)

- a. run
 - b. swim
 - c. jump
 - d. sink
-

76. Which of the following factors reduces the rate of evaporation? (+1, -0.33)

- a. rise in temperature
- b. moisture
- c. increase in surface area
- d. increase in wind speed

77. After 11 innings, the average score per innings of a batsman is 52. After 13 innings, the average increased to 54. If the batsman scored 16 more runs in the 13th innings than the previous innings, then how many runs did he score in the 12th innings? (+1, -0.33)

- a. 54
- b. 57
- c. 56
- d. 55

78. $(2.5)^2 + 8.7 - \left(\frac{1.12}{1.4}\right) \times 0.5 = ?$ (+1, -0.33)

- a. 14.55
- b. 10.95
- c. 14.91
- d. 14.32

79. What is the time taken by an oscillator to complete one oscillation called? (+1, -0.33)

- a. amplitude
- b. period
- c. distance
- d. frequency

80. A computer company sells two brands of computers on the same day and makes a total profit of Rs.15,000. If the profit from one brand is 35% of the total profit, then what is the profit amount made by selling the computer of the other brand? (+1, -0.33)

- a. Rs. 8,750
- b. Rs. 8,000
- c. Rs. 9,750
- d. Rs. 9,000

81. 19 years from now Vinod's age will be twice that of Anand. Seven years ago Anand's age was one fourth of Vinod's age then. What is Vinod's present age? (+1, -0.33)

- a. 53 years
- b. 57 years
- c. 55 years

d. 59 years

82. Name the Indian female weightlifter who won the gold medal in the Asian Youth and Junior Weightlifting Competition held in Nepal on July 25, 2017. (+1, -0.33)

- a. Kavita Deva
 - b. Konsam Ormila Devi
 - c. Karnam Malleswari
 - d. Reema Joseph
-

83. If an object moves a distance of 1 m in a specified direction by applying a force of 1 N, then the work done will be: (+1, -0.33)

- a. 1 N
 - b. 1 J
 - c. 1 kW
 - d. 1 ohm
-

84. Which of the following inert gas has only two electrons in its outermost shell? (+1, -0.33)

- a. helium
- b. argon
- c. neon
- d. krypton

85. Fullerene is an allotrope of _____.

(+1, -0.33)

- a. Zinc
- b. Sulphur
- c. Gold
- d. Carbon

86. When a sum is invested for 5 years, the amount will be Rs. 3,640. If the rate of simple interest is increased by 2% per annum from earlier then this amount will be Rs. 3,920 turns out to be. What is the principal amount invested?

(+1, -0.33)

- a. Rs. 2,560
- b. Rs. 2,690
- c. Rs. 2,750
- d. Rs. 2,800

87. Considering the following statement, decide which of the given assumptions are implicit in which statement?

(+1, -0.33)

Statements:

Swimming improves overall physical health.

Assumption:

- I. Secretion of good hormones is essential for good health.
- II. Water provides relief to the muscles.

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

88. The SI unit of pressure is-

(+1, -0.33)

- a. pascal
 - b. Kgms⁻¹
 - c. dyne
 - d. newton
-

89. What is the main occupation of the merchants known as Shroffs, Seths, Sahukars, Mahajans and Chheti since ancient times?

(+1, -0.33)

- a. Construction
 - b. Teaching
 - c. Banking
 - d. Treatment
-

90. A man walking towards East takes a 270 clockwise turn and starts walking. In which direction is he walking now?

(+1, -0.33)

- a. West
- b. North

- c. East
 - d. South
-

91. An object covers a distance of 23 m in 4 s and then another 15 m in 2 s. (+1, -0.33)
What is the average speed of the object?

- a. 6.34s^{-1}
 - b. 6.34 m
 - c. 6.33 ms^{-1}
 - d. 6.67 ms^{-1}
-

92. The area of a rhombus is 216 m^2 and the length of one of its diagonals is 24 m. The length of each side of the rhombus will be: (+1, -0.33)

- a. 12 m
 - b. 18 m
 - c. 15 m
 - d. 30 m
-

93. On adding zinc to copper sulphate solution: (+1, -0.33)

- a. water is formed
- b. zinc sulphate is formed
- c. zinc oxide is formed

d. no reaction takes place

94. Two gas filling tubes A and B can fill a gas cylinder in 15 minutes and 40 minutes respectively. Both the tubes are opened simultaneously but after 4 minutes, tube A is closed. How much time will it take to fill the cylinder? (+1, -0.33)

a. 14 minutes 40 seconds

b. 10 minutes 10 seconds

c. 20 minutes 10 seconds

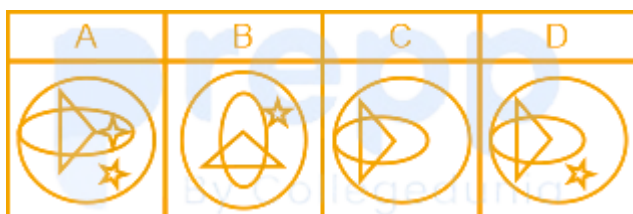
d. 29 minutes 20 seconds

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

Question figure



Option figure



a. A

b. C

c. B

d. D

96. Nayan walks 1 km towards East. At a crossroads he took a right turn and walked 500 meters to reach the hospital. In which direction is the hospital from Nayan's initial position? (+1, -0.33)

- a. north-east
 - b. north-west
 - c. south-east
 - d. south-west
-

97. What will be the next term in the following series? (+1, -0.33)

N14M13, O15L12, P16K11, -----

- a. Q17J10
 - b. J10Q17
 - c. Q18J10
 - d. Q17J13
-

98. Navodaya Vidyalaya Samiti and Kendriya Vidyalaya Sangathan are autonomous bodies under which central ministry? (+1, -0.33)

- a. Ministry of home affairs
- b. Ministry of Defence
- c. Finance Ministry

d. Ministry of Human Resource Development

99. On 4 September 2016, _____ was canonized as a saint by Pope Francis (+1, -0.33)
at a grand ceremony at the Vatican.

a. Mother Teresa

b. Sister Florence

c. St. Mary's

d. Sister Nirmala

100. What will be the next number in the following series? (+1, -0.33)

30, 43, 56, 69, -----

a. 80

b. 78

c. 82

d. 81

Answers

1. Answer: c

Explanation:

The given figure rotates 90° anticlockwise direction which is given below:-



Hence, "option 3" is the correct answer.

2. Answer: d

Explanation:

Concept Used:

Follow the BODMAS rule according to the table 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:

$$[60 \div \{3^3 \times 2 - (29 - \overline{26 - 31})\}]$$

$$\Rightarrow [60 \div \{3^3 \times 2 - (29 - (-5))\}]$$

$$\Rightarrow [60 \div \{3^3 \times 2 - (29 + 5)\}]$$

$$\Rightarrow [60 \div \{27 \times 2 - 34\}]$$

$$\Rightarrow [60 \div (54 - 34)]$$

$$\Rightarrow (60 \div 20)$$

$$\Rightarrow 3$$

$\therefore$ The required value is 3

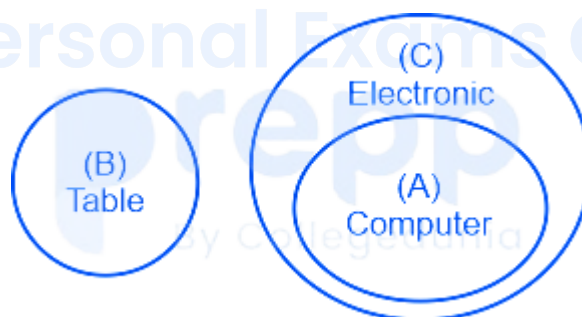
3. Answer: b

Explanation:

The Venn diagram is given below:-

(A) Computer, (B) Table, (C) Electronic

Modern computers are electronic and the table is different from both.



Hence, "Option 2" is the correct answer.

★ Additional Information

Modern computers are electronic because they use active semiconductors (e.g. transistors), mostly in the form of integrated circuits. That is what distinguishes them from mere electric device, i. e. one that uses electricity (like a conventional lightbulb).

4. Answer: d

Explanation:

Given:

Total number of cards = 216

Cards distributed for the first time between A and B = 5 : 4

Cards distributed for the second time between A and B = 11 : 13

Calculation:

According to the question

Number of Cards got A in first time = $(5/9 \times 216) = 120$ cards

Again,

Number of Cards got A in second time = $(11/24 \times 216) = 99$ cards

Difference of cards A on second time as compared to first time

$\Rightarrow (99 - 120)$

$\Rightarrow -21$

$\therefore$ Cards did A get the second time as compared to the first is 21 less

5. Answer: d

Explanation:

The correct answer is 8.9.

- Given,

- density of water = 10^3 kg/m^3 .
- density of copper = $8.9 \times 10^3 \text{ kg/m}^3$.
- $\text{Relative density} = \frac{\text{Density of Copper}}{\text{Density of Water}}$
 - = $\frac{8.9 \times 10^3 \text{ kg/m}^3}{10^3 \text{ kg/m}^3}$
 - = 8.9 kg/m^3

★ Additional Information

- Relative density is measured by **Hydrometer**.
- The **relative density** is defined as the **ratio of the density of the substance to the density of water at 4°C**.

6. Answer: b

Explanation:

The correct answer is I Do What I Do.

★ Key Points

- I do what I do book is written by former RBI governor Raghuram Rajan.
 - I do what I Do is a nonfiction book authored by economist and former Governor of the Reserve Bank of India, Raghuram Rajan published by Harper Collins India in 2017.
 - The book is a collection of speeches delivered by Rajan during his stint as the Governor of the Reserve Bank of India along with his commentary on the economic and political context prevalent at that time.
 - The book was released on **September 5, 2017**, and quickly made its way to topping the list of best sellers on Amazon India and Flipkart.

★ Additional Information

- The book titled ' **The Emergency – Indian Democracy's Darkest Hour** ' has been authored by **Surya Prakash**, the chairman of Prasar Bharati.
 - The book has recently launched by **Union Minister for Urban Development M Venkaiah Naidu** in Ahmedabad, Gujarat.

- The book “ **The Unseen Indira Gandhi**” has been authored by **Dr. KP Mathur** , who was the personal physician of former Prime Minister Indira Gandhi for nearly 20 years till her assassination in 1984.
- **The Ministry of Utmost Happiness** is the second novel by Indian writer **Arundhati Roy**, published in 2017, twenty years after her debut, The God of Small Things.

7. Answer: a

Explanation:

The correct answer is Salt, water.

★ Key Points

- When an acid reacts with a metal oxide, salt and water are obtained as products.
 - **Salt and water** are produced when acids react with metal oxides.
 - Metal oxides are bases because they neutralize acids.
- In general:
 - **Acid + metal oxide → salt + water**
- For example:
 - **Sulfuric acid + copper(II) oxide → copper(II) sulfate + water**
 - $\text{H}_2\text{SO}_4(\text{aq}) + \text{CuO}(\text{s}) \rightarrow \text{CuSO}_4(\text{aq}) + \text{H}_2\text{O}(\text{l})$

★ Additional Information

- Al₂O₃ reacts with acids and bases.
 - Aluminum oxide (Al₂O₃) is an amphoteric substance.
 - The amphoteric substance is a substance that can react with both acids and bases usually to produce salt and water.
 - Aluminium oxide therefore can react with both acids as well as bases. We will take the example of its reaction with hydrochloric acid (strong acid) and sodium hydroxide (strong base).
 - When mixed with these two compounds aluminium oxide either acts like acid with a base and a base with an acid.

8. Answer: c

Explanation:

Given:

The LCM of two numbers = 2604

HCF = 12

One number = 84

Formula used:

$\text{LCM} \times \text{HCF} = \text{one number} \times \text{other number}$

Calculation:

Let the other number be x

According to the question

$$\Rightarrow (2604 \times 12) = (84 \times x)$$

$$\Rightarrow 84x = 31,248$$

$$\Rightarrow x = (31,248/84)$$

$$\Rightarrow x = 372$$

$\therefore$ The other number is 372

9. Answer: b

Explanation:

The correct answer is Nucleons.

★ Key Points

- Two elements are said to be isobars of one another if they have different sets of electrons and the same number of nucleons.
 - An example of a series of isobars would be the 40 S, 40 Cl, 40 Ar, 40 K, and 40 Ca.
- The term nucleon is a **collective term** used for the combination of neutron and proton altogether inside the nucleus of an atom .

★ Additional Information

- **Isotopes** are atoms of the **same element with a different number of Neutrons**.
- Isotopes are atoms with the **same number of protons** but that have a **different number of neutrons**.
- For example - Uranium-235 and Uranium-239 are **two different isotopes of the element uranium**.
 - the atomic number is equal to the number of protons.
 - the atomic mass is the sum of protons and neutrons .
- Isotopes are elements with the **same atomic number but different mass numbers**.

10. Answer: d

Explanation:

- The given statement is only taking about three items - cotton, cloth, and woolen clothes.
- It does not state anything about either leaves or fabric.
- Hence, none of the conclusions logically follow the statement.

The correct answer is **option 4**.

11. Answer: a

Explanation:

Given:

Total number of creator = 16

Each builder alone can build a wall = 18 hours

Destroyer destroy the wall in = 15 hours

16 People worked then wall will built in = 2.5 hours

Formula used:

Work = Efficiency $\times$ Time

Calculation:

Let the number of destroyer be x and number of builder be $(16 - x)$

LCM of 18 and 15 is 90

1 hour work of builder and destroyer together = $(90/2.5) = 36$ units

1 hour work of builder = $(90/18) = 5$ units

1 hour work of destroyer = $(90/15) = 6$ units

Difference between the work done = $[36/(6 - 5)]$ units

$\Rightarrow 36$

According to the question

$\Rightarrow 5(16 - x) - 6x = 36$

$\Rightarrow 80 - 5x - 6x = 36$

$\Rightarrow -11x = -44$

$\Rightarrow x = (-44/-11)$

$$\Rightarrow x = 4$$

$\therefore$ Number of destroyer is 4

12. Answer: c

Explanation:

The correct answer is Work.

★ Key Points

- Work has only magnitude and no direction.
 - Work is nothing but the energy generated.
 - Work has only a magnitude but no direction.
 - The formula for work is written as a dot product of force and displacement.
 - $W = F \cdot d$
 - Here,
 - W = Work
 - F = force
 - d = displacement
 - Therefore, work is a **scalar** quantity.

★ Additional Information

- A vector is a physical quantity that has Magnitude and direction.
 - Symbols for physical quantities that are vectors are in bold type, underlined, or with an arrow above.
 - It is typically represented by an arrow whose direction is the same as that of the quantity and whose length is proportional to the quantity's magnitude.
 - For example, displacement, velocity, and acceleration, momentum are vector quantities.
 - A quantity that requires both the magnitude in number field along with the direction of the quantity accompanied by the units of measurement or SI units is known as a vector quantity.

- Vector quantities should also obey the triangular law of vectors.

13. Answer: b

Explanation:

The correct answer is Testicle.

★ Key Points

- Testosterone is the **only male sex hormone** present in the human body, which causes physical changes in puberty, increases bone density and muscle mass, growth of facial, pubic, and body hair, deepening of the voice, and is also responsible for sexual and reproductive development .
 - Testosterone is the main sex hormone in men , which is naturally produced in the testes and in small amounts by the adrenal glands.
 - Testosterone belongs to a class of male hormones called androgens, which are also known as steroids .
 - The production of male sex hormones is mainly controlled by the hypothalamus and pituitary gland.
 - The testosterone levels gradually decrease with age, which results in impotence, shrinking of testes, low sperm count, depression, mood swings, irritability, etc .

★ Additional Information

- The pituitary gland is a small pea-sized gland that plays a major role in regulating vital body functions and general wellbeing .
 - It is referred to as the body's ' master gland ' because it controls the activity of most other hormone-secreting glands.
 - The pituitary gland is a small gland that sits in the sella turcica, a bony hollow in the base of the skull, underneath the brain, and behind the bridge of the nose.
- Adrenal glands , also known as suprarenal glands, are small, triangular-shaped glands located on top of both kidneys.

- Adrenal glands produce hormones that help regulate your metabolism, immune system, blood pressure, response to stress, and other essential functions .
- The ovary is an organ found in the female reproductive system that produces an ovum .
 - When released, this travels down the fallopian tube into the uterus, where it may become fertilized by a sperm.
 - There is an ovary found on each side of the body.

14. Answer: c

Explanation:

The correct answer is Akbar.

★ Key Points

- Akbar started the system of Mansabdari to strengthen the army.
 - Akbar started the Mansabdari system in **1571 AD** .
 - It was such a practice of organizing the army in which each mansabdar kept a cavalry soldier according to his rank and rank and the mansab was used to determine the superiority and influence of his post in the court.

★ Additional Information

- **The Mansabdari system** was started during the time of Akbar.
 - Because at that time the cavalry was the most important part of the Mughal army.
 - Therefore, in **1571 AD**, Akbar thought it appropriate to pay attention to the officers who were responsible for maintaining a certain number of cavalry.
- In order to raise the level of cavalry, the slave system was practiced because this part of the army was formed on the basis of mansabdari system in place of **jagirdari system** .
 - During the reign of Babur and Humayun, jagirs were given to the rich.
 - He used to deduct his army and his expenses from those jagirs and deposited the rest of the money in the treasury.

- But in this, the emperor did not give a cash salary to the jagirdar.
- **Abu'l-Fath Jalal-ud-din Muhammad Akbar** , popularly known as Akbar the Great, and also as Akbar I, was the third Mughal emperor, who reigned from 1556 to 1605.
 - Akbar succeeded his father, **Humayun** , under a regent, **Bairam Khan** , who helped the young emperor expand and consolidate Mughal domains in India.

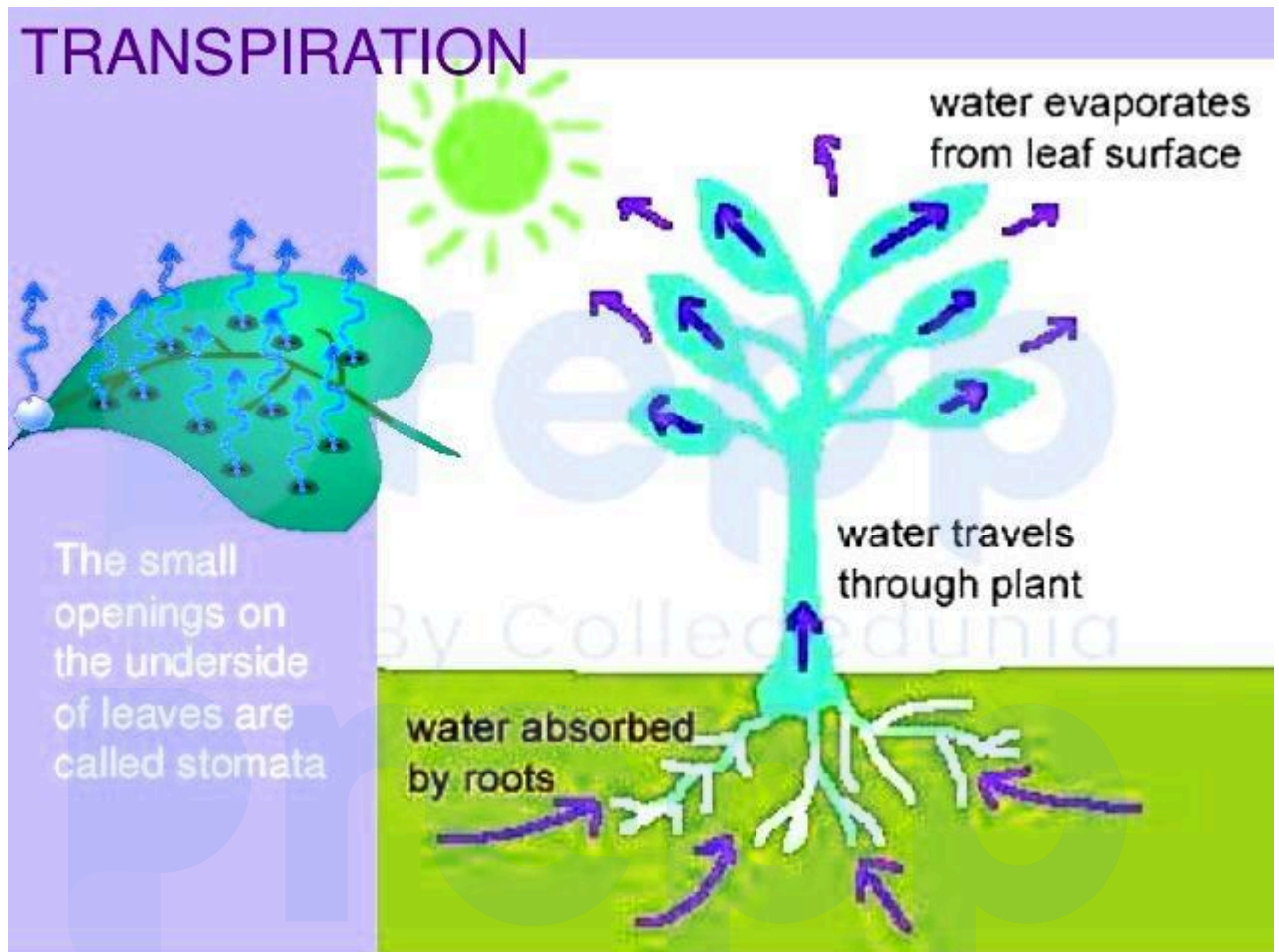
15. Answer: d

Explanation:

The correct answer is Transpiration.

★ Key Points

- Transpiration in plants helps in the absorption and uptake activity, from roots to leaves, in the transmission of water and minerals.
- Transpiration has two main functions:
 - Cooling the plant and pumping water and minerals to the leaves for photosynthesis.
- **Transpiration** helps in the transportation of absorbed minerals to all the parts of the plant.
 - Transpiration provides water for the process of photosynthesis.
 - Transpiration helps in cooling the structures of the plant when exposed to hot sunlight.
 - **Transpiration helps the cells to maintain their turgidity.**
 - Excess water is removed from the cells of the plant to prevent plant decay.



★ Additional Information

- **Photosynthesis**, the process by which green plants and certain other organisms transform light energy into chemical energy.
 - During photosynthesis in green plants, light energy is captured and used to convert water, carbon dioxide, and minerals into oxygen and energy-rich organic compounds.
- In physiology, **respiration** is the movement of oxygen from the outside environment to the cells within tissues and the removal of carbon dioxide in the opposite direction.
 - The physiological definition of respiration differs from the biochemical definition, which **refers to a metabolic process** by which an organism obtains energy (in the form of ATP and NADPH) by oxidizing nutrients and releasing waste products.

16. Answer: a

Explanation:

Concept Used:

Follow the BODMAS rule according to the table 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:

$$(-8)[30 \div \{7 - (-3)\}] = ?$$

$$\Rightarrow (-8)[30 \div \{7 + 3\}] = ?$$

$$\Rightarrow (-8)[30 \div 10] = ?$$

$$\Rightarrow (-8)[3] = ?$$

$$\Rightarrow (-8 \times 3) = ?$$

$$\Rightarrow -24 = ?$$

∴ The required value of ? is -24

17. Answer: b

Explanation:

The correct answer is Metals.

★ Key Points

- The nature of metals is electro-positive.
 - Metals are electropositive because they lose electrons and form positively charged ions.
 - **For example , Na, K , Ca, Mg**, loose electrons form positively charged ions so they are electropositive in nature.

★ Additional Information

- **Physical properties of metals:**
 - Metals are lustrous, malleable, ductile, good conductors of heat and electricity. Other properties include:
 - **State** : Metals are solids at room temperature with the exception of mercury, which is liquid at room temperature (Gallium is liquid on hot days).
 - **Luster** : Metals have the quality of reflecting light from their surface and can be polished e.g., gold, silver and copper.
 - **Malleability** : Metals have the ability to withstand hammering and can be made into thin sheets known as foils.
 - For example, a sugar cube-sized chunk of gold can be pounded into a thin sheet that will cover a football field.
 - **Ductility** : Metals can be drawn into wires. For example, 100 g of silver can be drawn into a thin wire about 200 meters long.
 - **Hardness** : All metals are hard except sodium and potassium, which are soft and can be cut with a knife.
 - **Valency** : Metals typically have 1 to 3 electrons in the outermost shell of their atoms.
 - **Conduction** : Metals are good conductors because they have free electrons.
 - **Silver and copper** are the two best conductors of heat and electricity.
 - **Lead is the poorest conductor of heat.**

- Bismuth, mercury and iron are also poor conductors
- **Density** : Metals have high density and are very heavy.
 - Iridium and osmium have the highest densities whereas lithium has the lowest density.
- **Melting and Boiling Points**: Metals have high melting and boiling points.
 - Tungsten has the highest melting and boiling points whereas mercury has the lowest.
 - Sodium and potassium also have low melting points.

18. Answer: b

Explanation:

Given:

Cost Price of a toy = Rs. 280

Selling price of a toy = Rs. 315

Formula used:

$$\text{Profit} = \text{SP} - \text{CP}$$

$$\text{Profit\%} = \text{Profit}/\text{CP} \times 100$$

Calculation:

According to the question

$$\text{Profit} = \text{Rs. } (315 - 280)$$

$$\Rightarrow \text{Rs. } 35$$

$$\text{Profit\%} = (35/280 \times 100)$$

$$\Rightarrow (3500/280)$$

$$\Rightarrow 12.5\%$$

∴ The required profit is 12.5%

19. Answer: b

Explanation:

Given:

Speed of the train = 78 km/hr

Distance = 450 m

Time = 27 sec

Formula Used:

speed = distance / time

Calculation:

Let the length of the train be L.

According to Question,

Speed of train = 78 km/hr = $(78 \times \frac{5}{18})$ m
 $\frac{65}{3}$ m

now,

$$\frac{65}{3} = \frac{(450 + L)}{27}$$

$$(65 \times 27) = (1350 + 3L)$$

$$1755 = (1350 + 3L)$$

$$3L = (1755 - 1350)$$

$$3L = 405$$

$$L = (405/3)$$

$$L = 135 \text{ m}$$

The required length of the train is 135 m.

20. Answer: b

Explanation:

Concept used:

LCM - The least number which is exactly divisible by two or more numbers

Calculation:

$$\Rightarrow 42 = 2 \times 3 \times 7$$

$$\Rightarrow 84 = 2 \times 2 \times 3 \times 7$$

$$\Rightarrow 48 = 2 \times 2 \times 2 \times 2 \times 3$$

LCM of 42, 24 and 48 is

$$\Rightarrow 2 \times 2 \times 2 \times 2 \times 3 \times 7$$

$$\Rightarrow 336$$

$\therefore$ The required LCM is 336

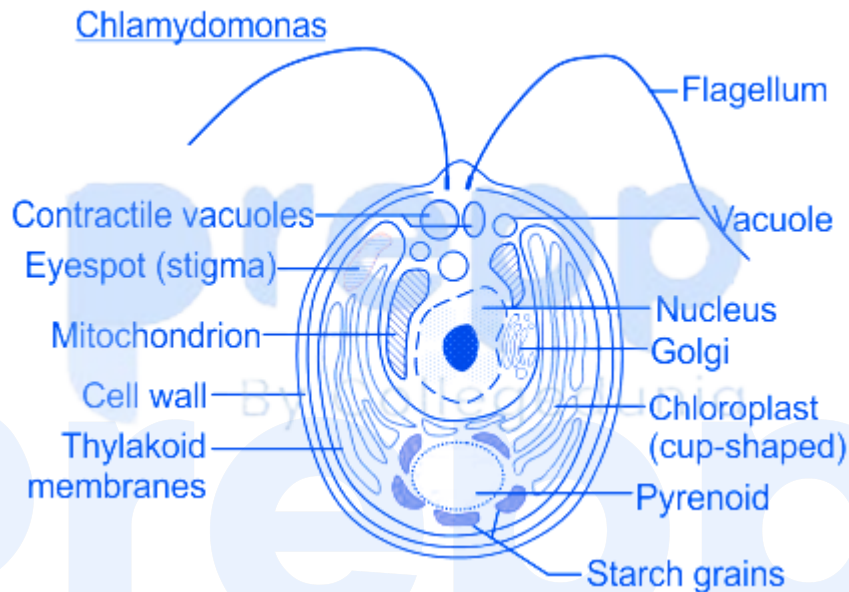
21. Answer: d

Explanation:

The correct answer is Chlamydomonas.

★ Key Points

- Chlamydomonas is a unicellular green algae.
- *Chlamydomonas reinhardtii*, a **unicellular**, photosynthetic green alga in the Chlamydomonadaceae, has never had a multicellular ancestor yet is closely related to the volvocine algae, which express multicellularity in colonies of up to 50,000 cells.



★ Additional Information

- Green algae, variable in size and shape, include single-celled (*Chlamydomonas*, desmids), colonial (*Hydrodictyon*, *Volvox*), filamentous (*Spirogyra*, *Cladophora*), and tubular (*Actebularia*, *Caulerpa*) forms.
- Sexual reproduction is common, with gametes that have two or four flagella.
 - The golden-brown algae and diatoms are the most widespread unicellular species of algae.
 - Some examples are amoeba, paramecium, bacteria, and cyanobacteria.

22. Answer: b

Explanation:

Calculation:

$$5.22 \div 0.0018 = ?$$

According to the question

$$\Rightarrow (5.22 \div 0.0018) = ?$$

$$\Rightarrow (522/18 \times 10000/100) = ?$$

$$\Rightarrow (5220000/1800) = ?$$

$$\Rightarrow 2900 = ?$$

$\therefore$ The required value of ? is 2900

23. Answer: b

Explanation:

The correct answer is Ovule.

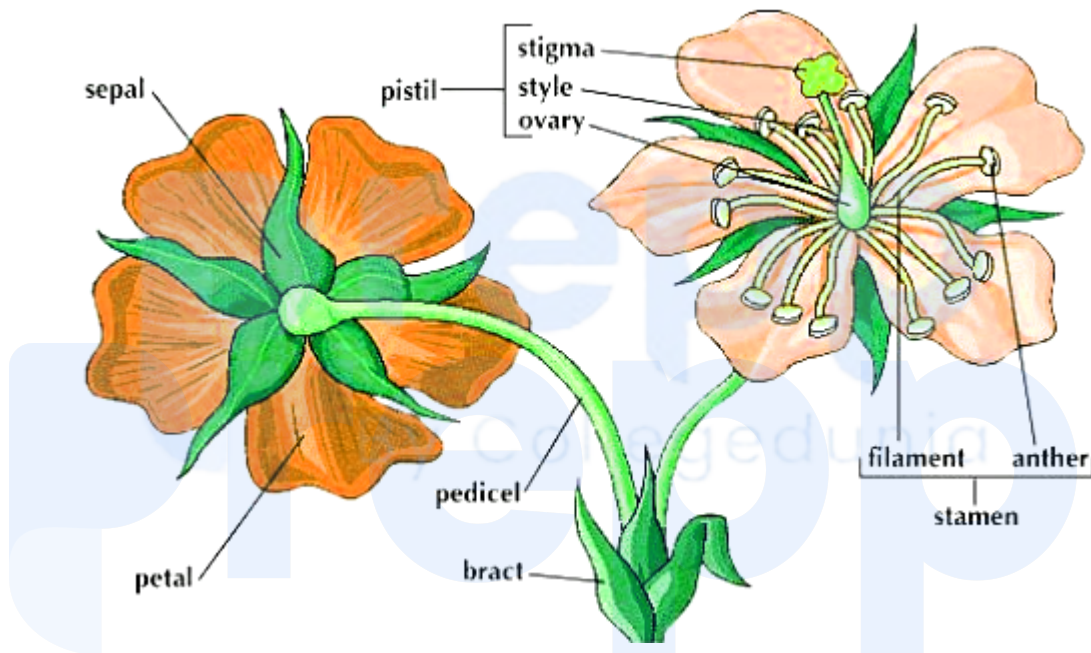
★ Key Points

- Ovule is present in carpel.
 - A carpel is the female reproductive part of the flower—composed of the **ovary, style, and stigma**—and usually interpreted as modified leaves that bear structures called **ovules**, inside which egg cells ultimately form.
 - Carpel, One of the leaflike, seed-bearing structures that constitute the innermost whorl of a flower.
 - **One or more carpels make up the pistil.**

★ Additional Information

- The **male reproductive organ of the flower** is known as the stamen.
- This produces pollen. Pollen is a powder produced from **pollen grains, containing seed plant sperm cells.**
- It is having two parts:
 - Anthers – The part of the stamen where pollen is produced.
 - Filaments – It is a stalk-like structure that connects the base of the flower with anther.

- The anther is composed of microsporangia.
- The Pistil is the female reproductive part of a flower.
- A floral style is a stalk that supports the stigma and connects it to the ovary.
- Ovary - It is the enlarged basal portion of the pistil, where ovules are produced.
- Pistil - It is the female reproductive part of the flower.
- Stigma - It is the part of the pistil where pollen germinates.



24. Answer: c

Explanation:

The correct answer is Non-illuminated objects.

★ Key Points

- Objects that do not produce light themselves are called non-illuminated objects.
- **Non-luminous objects** :- The objects that can not emit light energy by themselves are known as Non- luminous objects.
- Objects like the **moon** that do not give out or emit light of their own are Non-luminous objects.

- **Moon is an example of a non-luminous object** as we can see the moon because it reflects light from the sun.

★ Additional Information

- Materials like **air, water, and clear glass** are called transparent. When light encounters transparent materials, almost all of it passes directly through them.
 - Glass, for example, is transparent to all visible light.
- Translucent objects allow some light to travel through them.
 - **Translucent objects allow some light to travel through them.** Materials like frosted glass and some plastics are called translucent.
 - When light strikes translucent materials, only some of the light passes through them.
- Materials such as wood, stone, and metals are opaque to visible light.
 - **Illuminated objects are objects that are capable of reflecting light to our eyes.**
 - The sun is an example of a luminous object, while the moon is an illuminated object.

25. Answer: a

Explanation:

The correct answer is 84 cm, 13 cm, 85 cm.

★ Key Points

- In a right - angled triangle:
- **According to pythagoras theorem:**
 - $(\text{Hypotaneous})^2 = (\text{Base})^2 + (\text{Height})^2$
 - So, $(85)^2 = (13)^2 + (84)^2$
- So, Option 1 is correct.

26. Answer: a

Explanation:

The correct answer is Madhya Pradesh.

★ Mistake Points

- Odisha has the highest reserve of Manganese ore in our country while the maximum Manganese producing state is MP.

★ Key Points

- Madhya Pradesh is the largest producer of manganese in India.
 - Manganese is needed to build iron.
 - It is also used to produce bleaching powder, insecticides, and paints.
 - It is used to make metal.
 - Madhya Pradesh, the major manganese ore producing state, accounted for 33% of the total production in 2018-19, followed by Maharashtra (27%) and Odisha (16%).
 - Manganese is used to make clear glass, to desulfurize and deoxidize steel in steel production, and to reduce the octane rating in gasoline.
 - It also is used as a black-brown pigment in paint and as a filler in dry cell batteries.
 - Its alloys help stiffen the aluminium in soft-drink cans, according to Chemicool.

★ Additional Information

- **Copper Ore Reserves**
 - Rajasthan :
 - Largest reserves/resources of copper ore.
 - 813 million tonnes (53.81%)
 - Jharkhand:
 - 295 million tonnes (19.54%)
 - Madhya Pradesh:
 - 283 million tonnes (18.75%).
 - Other Copper Reserves resources accounted for the remaining 7.9%:

- Andhra Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Meghalaya, Nagaland, Odisha, Sikkim, Tamil Nadu, Telangana, Uttarakhand, and West Bengal.
- Link: https://ibm.gov.in/writereaddata/files/01072021154458Manganesecore_2019.pdf

27. Answer: a

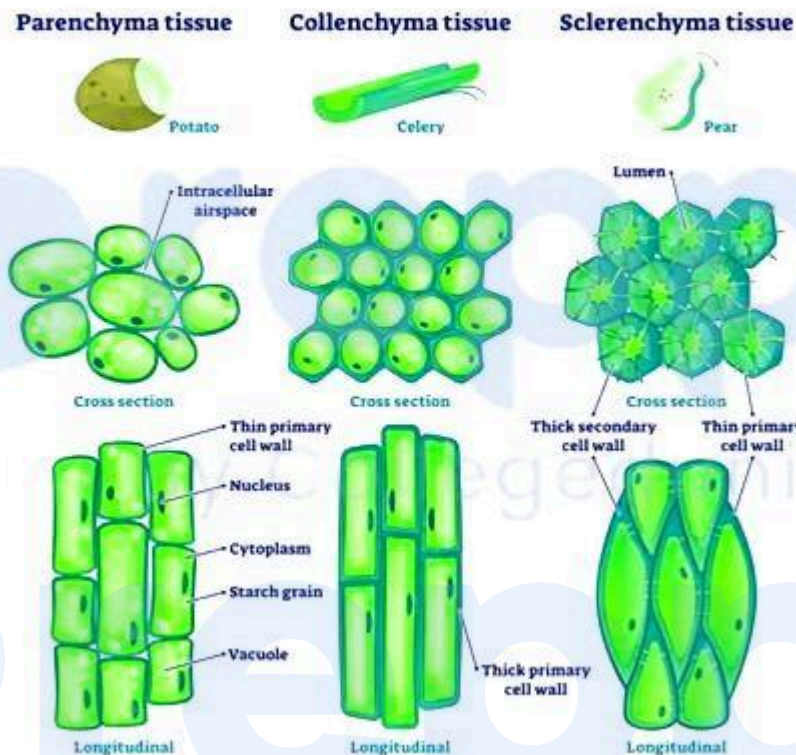
Explanation:

The correct answer is Sclerenchyma.

★ Key Points

- **Sclerenchyma**, in plants, supports tissue composed of any of various kinds of hard woody cells.
 - **Sclerenchyma** tissue is formed by the **combination of dead cells**.
 - Mature sclerenchyma cells are usually dead cells that have heavily thickened secondary walls containing lignin.
 - Mature sclerenchyma cells are usually dead cells that have heavily thickened secondary walls containing lignin.
 - They characteristically contain very thick, hard secondary walls lined with lignin; consequently, sclerenchyma provides additional support and strength to the plant body.

TYPES OF PLANT TISSUE



★ Additional Information

• Parenchyma Cells

- These are the living plant cells known to repair and heal and also to store food, forming a thin layer known as the primary cell wall of the plant.
 - They occur as a continuous mass, widely distributed from stems, roots to leaves and fruits
- Generates other special cells and tissues
- **Isodiametric** in shape, having thin cell walls hence experience pressure and force around the cells, therefore, cells increase their volume capacity to equalize all-over pressure on the cells
- **Cells composed of cellulose and hemicellulose**
- Show abundance in cell organelles such as – Golgi bodies, ribosomes, Chloroplast, Endoplasmic Reticulum, and other constituents such as pigments, fats, starch, proteins.

• Collenchyma Cells

- Known to render mechanical support to plants by protecting the delicate inner structure of plants
- They have thick cell walls composed of cellulose, hemicellulose, and pectin and are living cells.
- **Cells comprise of prominent nucleus and organelles**
- It carries out storage of food, checks for the tearing of leaves, carry out photosynthesis.
 - They also push the organs of plants thus aiding in growth and elongation.

28. Answer: c

Explanation:

Given:

Nitara has 20 pencils of 4 different colours

1. Nitara has red coloured pencils = 5

2. Nitara has blue coloured pencils = 4

3. Number of green coloured pencils = Twice that of blue coloured pencils

Calculation:

According to the question

Number of green coloured pencils = twice that of blue coloured pencils = (2×4)

$\Rightarrow 8$

So, Number of black coloured pencils = $[20 - (5 + 4 + 8)]$

$\Rightarrow (20 - 17)$

$\Rightarrow 3$

$\therefore$ Statements 1, 2 and 3 all together are sufficient.

29. Answer: a

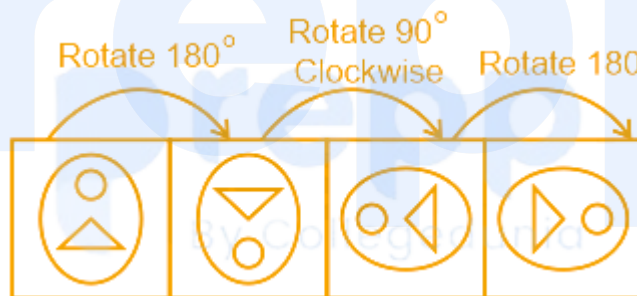
Explanation:

The logic followed here is:-

1)



rotate 180° from the first block to the second block, then rotate clockwise direction 90° from the second block to the third block and then rotate 180° from the third block to the fourth block.



Hence, "option 1" is the correct answer.

30. Answer: c

Explanation:

The logic followed here is:-

The needle is used for stitching.

Similarly,

The knife is used for cutting.

Hence, "option 3" is the correct answer.

31. Answer: c

Explanation:

★ Important Points

Rectangle: A rectangle is a **four-sided** figure or shape and **all angles should be right angle**.

Square: A square, there are **4 sides** and **all the four angles are right angles**.

Right Angle: A right angle is **an angle of exactly 90°** , The angle bounded by two lines perpendicular **to each other**.

A square is a special type of rectangle because it possesses all the properties of a rectangle. Similar to a rectangle, a square has:

- Opposite sides that are parallel and equal.
- Two diagonals that bisect each other and are equal.

Thus, a **square** is a **rectangle**.

The diagram is given below:-

Hence, "option 3" is the correct answer.



Explanation:

The logic followed here is:-

Lemon is fruit while the Jam, Juice, and Squash are the products made from fruits.

So, Lemon is different from others.

Hence, "option 2" is the correct answer.

Note:

Squash is a game and can be an odd one

but if we check the options, we can clearly identify that it's related to fruit.

Now all 3 are products of fruits while lemon itself is a fruit, hence here the correct option will be Lemon.

33. Answer: d

Explanation:

Given:

Distance₁ = 22 m

Time₁ = 4 s

Distance₂ = 15 m

Time₂ = 2 s

Formula used:

Average speed = Total distance/Total time taken

Calculation:

According to the question

Total distance of the object = $(22 + 15)$ m

$\Rightarrow 37$ m

Total time taken by the object = $(4 + 2)$ s

$\Rightarrow 6$ s

Average speed = $(37/6)$ m/s

$\Rightarrow 6.1666$ m/s ~ 6.17 m/s

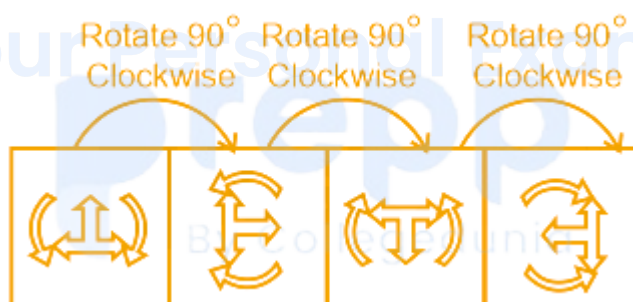
$\therefore$ The required average speed of the object is 6.17 ms^{-1}

34. Answer: a

Explanation:

The logic followed here is:-

1) The shape is rotating clockwise direction by 90° in each figure.



Hence, "option 1" is the correct answer.

35. Answer: c

Explanation:

The statement asks whether consumerism is favorable or not.

- Argument I suggests that there should be a check on consumerism, and justifies that people use goods recklessly and create more waste if consumers are not kept aware. Thus it is a strong argument.
- Argument II suggests that there should not be a check on consumerism, because it is good for economic development. But it does not justify unchecked or uncontrolled consumerism. Thus, argument II is not strong.

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

★ Additional Information

- *Consumerism is the idea that increasing the consumption of goods and services purchased in the market is always a desirable goal and that a person's wellbeing and happiness depend fundamentally on obtaining consumer goods and material possessions.*

36. Answer: a

Explanation:

Given:

Salary spent on shopping, going to restaurants and malls = 10%

Remaining salary on household expenses = 80%

Salary goes to savings = 10%

Salary spent on the house = Rs. 48,000

Concept used:

1 year = 12 months

Calculation:

According to the question

$$\Rightarrow 80\% = 48,000$$

$$\Rightarrow 100\% = (48,000 \times 100/80)$$

$$\Rightarrow \text{Rs. } 60,000$$

$\therefore$ The monthly income is Rs. 60,000

37. Answer: c

Explanation:

Concept Used:

Follow the BODMAS rule according to the table 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:

$$\{28 - (31 - 48)\} \div \{-2 \times 9 - (-3)\} - 57 \div (-22 + 3) = ?$$

$$\Rightarrow \{28 - (31 - 48)\} \div \{-2 \times 9 - (-3)\} - 57 \div (-19) = ?$$

$$\Rightarrow \{28 - (31 - 48)\} \div (-18 + 3) - 57 \div (-19) = ?$$

$$\Rightarrow \{28 - (31 - 48)\} \div (-15) - 57 \div (-19) = ?$$

$$\Rightarrow [28 - (-17) \div (-15)] - 57 \div (-19) = ?$$

$$\Rightarrow [(28 + 17) \div (-15)] + 3 = ?$$

$$\Rightarrow [45 \div (-15)] + 3 = ?$$

$$\Rightarrow (-3 + 3) = ?$$

$$\Rightarrow 0 = ?$$

$\therefore$ The value of ? is 0

38. Answer: c

Explanation:

Given:

The mean of 12, 13, 15, 18, X, 28, 18, 12, 6, 8 = 15

Formula used:

Mean = Sum of observations / Number of observations

If the total number of observation given is odd, then the formula to calculate the median is:

$$\text{Median} = \{(n+1)/2\}^{\text{th}} \text{ term}$$

If the total number of observation is even, then the median formula is:

$$\text{Median} = [(n/2)^{\text{th}} \text{ term} + \{(n/2)+1\}^{\text{th}}] / 2$$

Calculation:

According to the question

$$\text{Total number} = (12 + 13 + 15 + 18 + X + 28 + 18 + 12 + 6 + 8)$$

$$\Rightarrow (130 + X)$$

$$\text{Mean} = (130 + x)/10 = 15$$

$$\Rightarrow (130 + x) = 150$$

$$\Rightarrow x = (150 - 130)$$

$$\Rightarrow 20$$

Now,

Arrange the numbers in ascending order

$$\Rightarrow 6, 8, 12, 12, 13, 15, 18, 18, 20, 28$$

$$\Rightarrow n = 10 \text{ which is even}$$

$$\text{Median} = [(10/2) + (10/2 + 1)]/2$$

$$\Rightarrow (5^{\text{th}} \text{ term} + 6^{\text{th}} \text{ term})/2$$

$$\Rightarrow (13 + 15)/2$$

$$\Rightarrow (28/2)$$

$$\Rightarrow 14$$

$\therefore$ The required median is 14

39. Answer: a

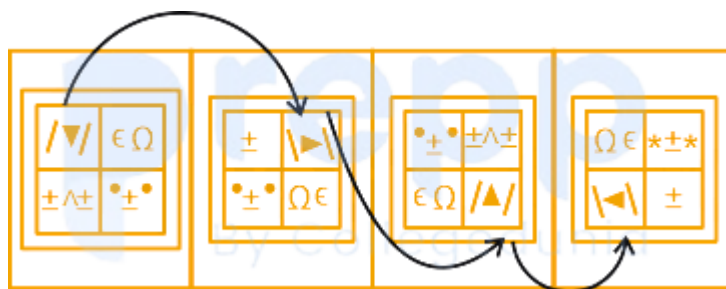
Explanation:

The logic followed here is:-

Triangle (



) rotates 90^0 anticlockwise directions in each step.



Both symbols ($\epsilon\Omega$) rotate of one place in the clockwise direction in each step and both symbols interchange their position in each step.



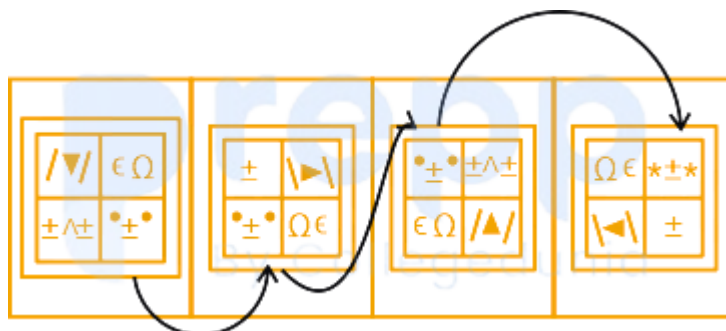
Symbols ($\pm\wedge\pm$) rotate of one place in the clockwise direction in each step and symbol $\pm\wedge\pm$ changes to symbol $\pm$ in each step.



The symbol



rotate one place in the clockwise direction in each step.



So, the next image of the given series is:-



Hence, "option 1" is the correct answer.

40. Answer: d

Explanation:

Formula used:

No. of diagonals in polygon = $\{n(n - 3)/2\}$

Calculation:

According to the question

$$\Rightarrow \{19(19 - 3)/2\}$$

$$\Rightarrow \{19(16/2)\}$$

$$\Rightarrow (19 \times 8)$$

$$\Rightarrow 152$$

$\therefore$ The required number of diagonals in a 19 - gon is 152

41. Answer: d

Explanation:

The correct answer is M.S. Dhoni.

- MS Dhoni is the first wicketkeeper in the world to do 100 stampings in one-day international cricket matches.

★ Additional Information

- **Cricket:**
 - The first official cricket test match was played in the year 1877 between Australia and England in Melbourne.
 - The **First One Day International cricket match** was played in the year 1971 **between England and Australia in Melbourne.**
 - The first World Cup of one-day matches was played in **1975 in London.**
 - The apex institution of world cricket is the **International Cricket Council (ICC)** and its headquarters are now in **Dubai.**
 - Earlier it was in Lords (England).
 - The **ICC** was founded in **1909.**
 - The **Board of Control for Cricket in India (BCCI)** was formed in **1927.**

42. Answer: d

Explanation:

Given:

Time taken to complete the work by Aarti = 30 days

Time taken to complete the work by Bharti = 42 days

Time taken to complete the work by both = 20 days

Formula used:

Work = Efficiency × Time

Calculation:

LCM of 30 and 42 is 210

Efficiency of Aarti in 1 day = $(210/30) = 7$ units

Efficiency of Bharti in 1 day = $(210/42) = 5$ units

Total work by both = $[20 \times (7 + 5)]$ units

$\Rightarrow (20 \times 12)$ units

$\Rightarrow 240$ units

Remaining work = $(240 - 210)$ units

$\Rightarrow 30$ units

Time taken by Bharti to complete the work alone = $(30/5)$ days

$\Rightarrow 6$ days

$\therefore$ Bharti joined the work after 6 days

43. Answer: d

Explanation:

The correct answer is Iron.



Key Points

- The metal reacts with the steam of iron to form oxide.
- When a metal reacts with steam it forms metal oxide and hydrogen gas is evolved.
- When a metal reacts with steam then the products formed are metal oxide and hydrogen gas.
 - **Metal + steam $\rightarrow$ Metal oxide + Hydrogen**
- When red hot iron reacts with steam to form iron(II, III) oxide and hydrogen.
 - **$3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}$**



Additional Information

- When a metal reacts with oxygen metallic oxide is formed.

- Many metals react with oxygen to form metal oxides. Potassium and sodium are soft metals that are easily cut exposing a shiny surface that changes to dull rapidly.
- The change from shiny to dull is called tarnishing.
- For example:
 - Potassium burns with a lilac flame when heated in the air.
 - potassium + oxygen $\rightarrow$ potassium oxide
 - $4K(s) + O_2(g) \rightarrow 2K_2O(s)$
 - Magnesium reacts readily in the air burning with white light.
 - magnesium + oxygen $\rightarrow$ magnesium oxide
 - $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$

44. Answer: c

Explanation:

The correct answer is Heat wave.

★ Key Points

- The Loo is a **strong, dusty, gusty, hot, and dry summer wind from the west** which blows over the Indo-Gangetic Plain region of North India and Pakistan.
- It is especially strong in the months of **May and June**.
- **Heatstroke** is brought about by excessive exposure to the sun heat.
 - It results due to an imbalance in the thermosetting of the body.
 - The cooling mechanism of the body relies upon water evaporation in the form of sweat.

★ Additional Information

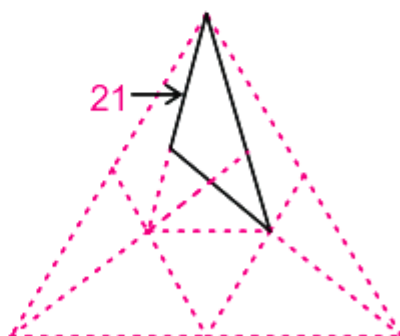
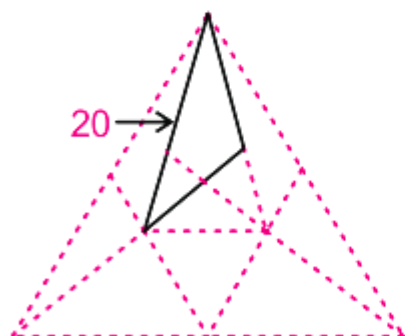
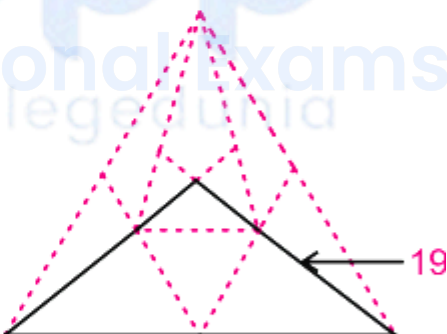
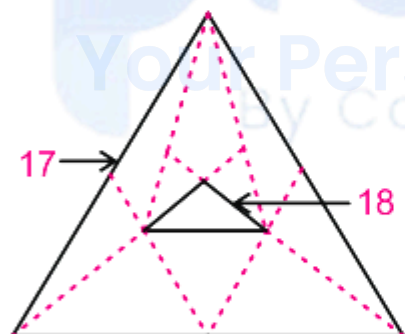
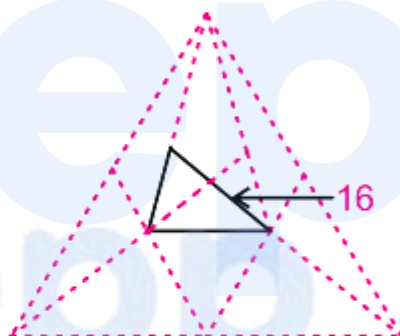
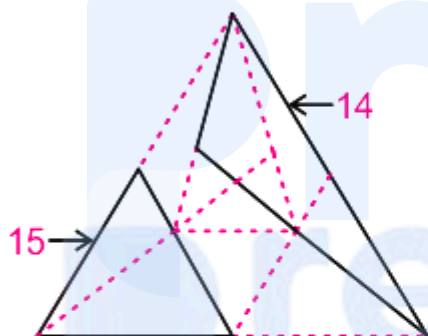
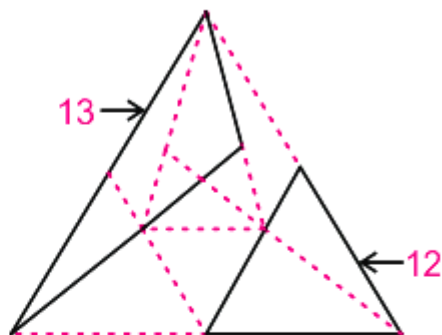
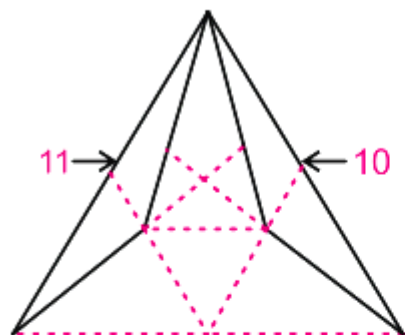
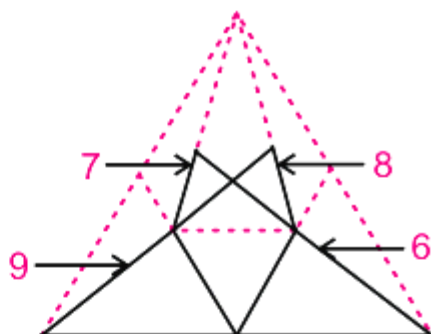
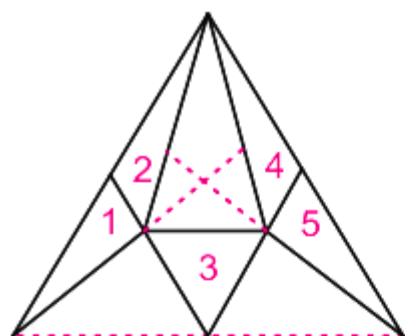
- Foehn or Fohn
 - Foehn is a hot wind of local importance in the Alps.
 - It is a strong, gusty, dry, and warm wind that develops on the leeward side of a mountain range.
 - As the windward side takes away whatever moisture there is in the incoming wind in the form of orographic precipitation, the air that

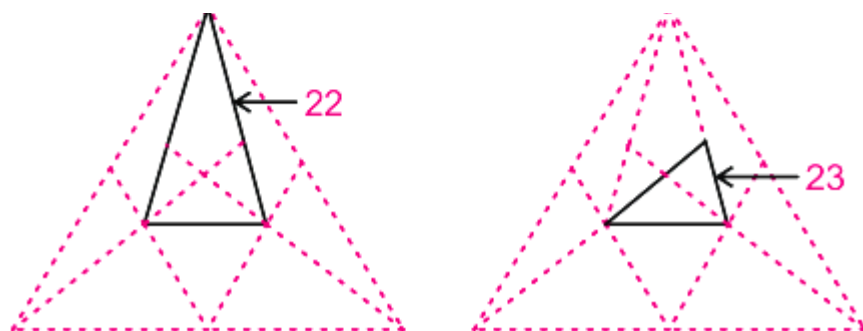
- descends on the leeward side is dry and warm (Katabatic Wind).
- The temperature of the wind varies between 15°C and 20°C.
 - The wind helps animal grazing by melting snow and aids the ripening of grapes.
 - Chinook
 - Foehn like winds in USA and Canada move down the west slopes of the Rockies and are known as
 - It is beneficial to ranchers east of the Rockies as it keeps the grasslands clear of snow during much of the winter.
 - Mistral
 - Mistral is one of the local names given to such winds that blow from the Alps over France towards the Mediterranean Sea.
 - It is channeled through the Rhine valley.
 - It is very cold and dry at a high speed.
 - It brings blizzards into southern France.
 - Sirocco
 - Sirocco is a Mediterranean wind that comes from the Sahara and reaches hurricane speeds in North Africa and Southern Europe.
 - It arises from a warm, dry, tropical air mass that is pulled northward by low-pressure cells moving eastward across the Mediterranean Sea, with the wind originating in the Arabian or Sahara deserts.
 - The hotter, drier continental air mixes with the cooler, wetter air of the maritime cyclone, and the counter-clockwise circulation of the low propels the mixed air across the southern coasts of Europe.
 - The Sirocco causes dusty dry conditions along the northern coast of Africa, storms in the Mediterranean Sea, and cool wet weather in Europe.

45. Answer: b

Explanation:

The triangles in the given figure are shown below:





- The total number of triangles is 23.

Hence, "option 2" is the correct answer.

46. Answer: d

Explanation:

The correct answer is Celebration of children's rights.

★ Key Points

- "Hausla 2017", which was celebrated from 16 November to 20 November 2017 is the celebration of children's rights.
- The Union Ministry of Women and Child Development will celebrate Child Rights Week (Hausla 2017) from 16th to 20th November 2017.
- In India, Children's Day is celebrated on **14 November**, and International Child Rights Day is celebrated on **20 November** every year.
- The period between these two important events will be celebrated as Child Rights Week by WCD Ministry.

★ Additional Information

- The commemoration of the "Hausala 2017" festival will provide an occasion to showcase the talents of children from Child Care Institutions (CCIs) from various child care institutions across the country and provide them space to express their dreams and aspiration.
 - Under this festival, children will participate in various events like **Bal Sansad, athletics meet, painting competition, football, chess competition,**

and speech writing.

47. Answer: c

Explanation:

Given:

Principal = Rs. 2000

Rate = 10%

Time = 2 years

Formula used:

$$SI = (P \times R \times T)/100$$

$$CI = [P(1 + R/100)^n - P]$$

Calculation:

According to the question

$$SI = \text{Rs. } (2000 \times 10 \times 2)/100$$

$$\Rightarrow \text{Rs. } 400$$

$$CI = [2000 (1 + 10/100)^2 - 2000]$$

$$\Rightarrow \text{Rs. } [(2000 \times 11/10 \times 11/10) - 2000]$$

$$\Rightarrow \text{Rs. } (2420 - 2000)$$

$$\Rightarrow \text{Rs. } 420$$

$$\text{Difference between CI and SI} = \text{Rs. } (420 - 400)$$

$$\Rightarrow \text{Rs. } 20$$

∴ The required difference is Rs. 20

48. Answer: a

Explanation:

The correct answer is **Rs. 200**.

★ Key Points

- Sanchi Stupa has been designed on the page side of Rs. 200 Indian bank notes.
- The Sanchi Stupa motif is a feature in the new Rs 200 note.
 - Sanchi is a Buddhist complex, famous for its Great Stupa, on a hilltop at Sanchi Town in Raisen District of the State of Madhya Pradesh.
 - The Great Stupa at Sanchi is one of the oldest stone structures in India and was originally commissioned by the emperor Ashoka in the 3rd century BCE.
 - Sanchi was also her birthplace as well as the venue of her and Ashoka's wedding .

★ Additional Information

- **Rs 50 note** is fluorescent blue in colour.
 - The note has geometric patterns on both sides and is comparatively smaller in size.
 - **On the reverse Rs, 50 note has the 'Hampi with Chariot' motif at the back.**
- **Rs 500 :**
 - The new note has shades of green and is smaller in size as compared to the note of the previous series.
 - The figure on the note is written in Devnagri.
 - On the reverse side of Rs 500 note is the image of the **historical Red Fort building** .
- **Rs 2,000:**
 - The new Rs 2,000 note is pink in colour, is slightly bigger than Rs 500 note.

- Both the Rs 500 and Rs 2,000 note has the **Swachh Bharat** logo on the **note**.
- The Reverse side of Rs 2000 note has an image of **Mangalyaan** representing India's first interplanetary space mission.

49. Answer: d

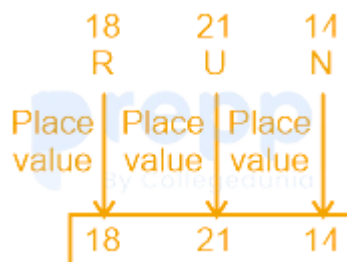
Explanation:

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 logic followed here is:-



Similarly,



Hence, "option 4" is the correct answer.

50. Answer: c

Explanation:

The correct answer is Mohan Swaroop Bhatia.

★ Key Points

- Mohan Swaroop Bhatia was honored with the 2018 Padma Shri award in the field of 'Art-Folk Music' from Uttar Pradesh.
- Swaroop Bhatia will be honored with the Padma Shri award in the field of folk art of Brijki.
 - People associated with the culture and literary world of Mathura have expressed happiness after receiving the award for Bhatia.
 - Bhatia, 83, has been the vice-president of the Uttar Pradesh Sangeet Natya Akademi.
 - He has also received Lok Bhushan Samman from Uttar Pradesh Hindi Sansthan.
 - He has been honored by various institutions in the field of Hindi literature, Brajbhasha, Brajlok art.
 - He also has vast experience in the field of education.

★ Additional Information

- Padma Shri:
 - Padma Shri also spelled Padma Shree, 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.
- Padma Awards:
 - Padma Vibhushan- Awarded for exceptional and distinguished service.
 - Padma Bhushan- Awarded for distinguished service of a high order.
 - Padma Shri- Awarded for distinguished service in any field.

51. Answer: a

Explanation:

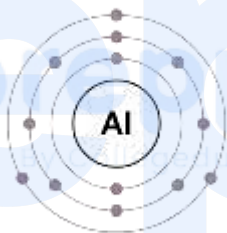
The correct answer is Al.

★ Key Points

- Al has three valence electrons.
 - The atomic number of aluminium is 13.
 - Thus, it contains 13 protons and 13 electrons.
- The electronic configuration of aluminium (Al) is 2,8,3.
 - Valency = no. of valence electrons (n), if $n < 4$.
- Thus, the valency of aluminum is 3.

13: Aluminium

2,8,3



★ Additional Information

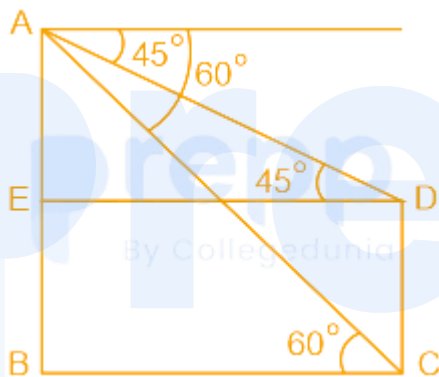
- Ag has 1 valence electron.
- Au has 1 valence electron.
- Ca has 2 valence electrons.
- Valence is the number of electrons an atom must lose or gain to attain the nearest noble gas or inert gas electronic configuration.
 - "Electrons in the outer shells that are not filled are called valence electrons".
 - The valence electrons are part of most of the chemical reactions because they contain more energy compared to the electrons present in inner orbits.

- Meanwhile, the number of valence electrons present also helps us determine a specific element's chemical properties, such as its valence or valency, the formation of bonds with other elements.
- It also gives us an idea of how readily the atoms can form bonds, the number of unpaired electrons, and how many atoms can take part.

52. Answer: b

Explanation:

Given:



The angle of depression of building = 45° and 60°

Height of the tower = 46 m

Formula used:

$$\tan 60^\circ = \sqrt{3}$$

$$\tan 45^\circ = 1$$

Calculation:

In triangle ABC

$$\Rightarrow \tan C = AB/BC$$

$$\Rightarrow \tan 60 = 46/BC$$

$$\Rightarrow BC = 46/\sqrt{3}$$

In triangle ADE

$$\Rightarrow AE/ED$$

$$\Rightarrow \tan 45 = AE/ED$$

$$\Rightarrow 1 = AE/ED$$

$$\Rightarrow BC = DE$$

$$\Rightarrow AE = DE = BC = 46/\sqrt{3}$$

$$BE = 46 - 46/\sqrt{3}$$

$$\Rightarrow 46 - 26.55$$

$$BE = 19.45$$

$\therefore$ The height of building is 19.45 m.

53. Answer: d

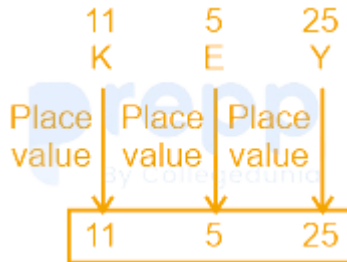
Explanation:

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 logic followed here is:-



Similarly,



Hence, "option 4" is the correct answer.

54. Answer: c

Explanation:

The correct answer is Uniform acceleration.

★ Key Points

- The motion of a freely falling body is an example of uniformly accelerated motion.
- The motion of the body where the acceleration is constant is known as uniformly accelerated motion.
- The value of the acceleration does not change with the function of time.

★ Additional Information

- Non-uniform acceleration as the acceleration in which the velocity of a body does not change at a constant rate in a given interval of time.
 - In non-uniform motion, the direction of the body or the magnitude of acceleration can change with time.

- Circular motion is a movement of an object along the circumference of a circle or rotation along a circular path.
 - It can be uniform, with the constant angular rate of rotation and constant speed, or non-uniform with a changing rate of rotation.

55. Answer: a

Explanation:

The correct answer is Amarkot.

★ Key Points

- On October 15, 1542 AD, Mughal emperor Jalal-ud-din Muhammad Akbar was born in Amarkot, Pakistan in the palace of King Veersaal when his father **Humayun** fled from military defeat at the hands of **Sher Shah Suri**.
 - Abu'l-Fath Jalal-ud-din Muhammad Akbar, also known as Akbar I, was the third Mughal emperor, who reigned from 1556 to 1605.
 - Akbar succeeded his father, Humayun, under a regent, Bairam Khan, who helped the young emperor expand and consolidate Mughal domains in India.

★ Additional Information

- **Nizamuddin Ahmad** was a Muslim historian of late medieval India.
 - He was son of **Muhammad Muqim-i-Harawi**.
 - He was **Akbar's Mir Bakhsh** i.
 - His work, the **Tabaqat-i-Akbari**, is a comprehensive work on general history covering the time from the Ghaznavids up to the **38th year of Akbar's reign**.
- **Gulbadan Begum** was a Mughal princess and the daughter of Emperor Babur, the founder of the Mughal Empire.
 - She is best known as the author of **Humayun Nama**, the account of the life of her half-brother, Emperor Humayun, which she wrote at the request of her nephew, **Emperor Akbar**.
- **Abul Fazl** was the grand vizier of the **Mughal emperor Akbar**.

- He was the author of the Akbarnama, the official history of Akbar's reign in three volumes, and a Persian translation of the Bible.
- **Dara Shikoh**, also known as Dara Shukoh, was the eldest son and heir-apparent of the **Mughal emperor Shah Jahan**.
 - Dara was designated with the title Padshahzada-i-Buzurg Martaba and was favoured as a successor by his father and his older sister, Princess Jahanara Begum.
 - Dara Shikoh is the author of the book **Sakinat-ul-Auliya**.

56. Answer: d

Explanation:

- From the given statement, it is clear that Anita has a dog because he is telling his friend about it. So, conclusion I follows.
- The statement only says that Anita's dog loves food, but it does not say that it only loves food and nothing else. So, conclusion II does not logically follow.

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

57. Answer: b

Explanation:

- The given statement is clearly a challenge to the thieves to try and steal the said phone from their store, implying that the store must have a very powerful surveillance system. Thus, assumption II is clearly implicit.
- The given statement cannot be used to determine whether or not people want to own a mobile phone. The ones who already own a phone or two might not want it. Nothing in the statement implies this. Thus, assumption I is not implicit.

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

58. Answer: d

Explanation:

The correct answer is electrolyte.

★ Key Points

- Electrolytes are **minerals in our blood and other body fluids that carry an electric charge**.
- Electrolytes affect how your body functions in many ways, including:
 - The amount of water in your body, the acidity of your blood (pH), your muscle function.
- The major electrolytes: **sodium, potassium, and chloride**.

★ Additional Information

- **Nonelectrolytes** are **compounds that do not ionize at all—in solution**.
- An **emulsion** is **a mixture of two or more liquids that are normally immiscible** (unmixable or unblendable) owing to liquid-liquid phase separation.
 - Emulsions are part of a more general class of two-phase systems of matter called colloids.
 - Two liquids can form different types of emulsions.
- A **suspension** is a heterogeneous mixture of a fluid that contains solid particles sufficiently large for sedimentation.

59. Answer: d

Explanation:

The correct answer is Deepak Mishra.

★ Key Points

- Justice **Deepak Mishra** was sworn in as the 45th Chief Justice of India in August 2017.
- At a brief ceremony in the Darbar Hall of Rashtrapati Bhawan, **President Ramnath Kovind** administered the oath of office to Misra.
- Justice Deepak Mishra succeeded Chief Justice Jagdish Singh Khehar.

★ Additional Information

- The chief justice of the supreme court of India is the chief judge of the Supreme Court of India as well as the highest-ranking officer of the Indian federal judiciary.
- The Constitution of India grants power to the president of India to appoint, in consultation with the outgoing chief justice, the next chief justice, who will serve until they **reach the age of sixty-five or are removed by impeachment**.
- As per convention, the name suggested by the incumbent chief justice is almost always the **next senior-most judge in the Supreme Court**.
- In accordance with Article 145 of the Constitution of India and the Supreme Court Rules of Procedure of 1966, the chief justice allocates all work to the other judges who are bound to refer the matter back to them (for re-allocation) in any case where they require it to be looked into by a larger bench of more judges.

60. Answer: a

Explanation:

Given:

Age of Ashwin's 8 years ago is 1 year = less than 3 times Arpit's age

Age of Ashwin's 6 years ago was 1 year = more than 2 times Arpit's age

Calculation:

Let the age of Arpit before 8 years be x years

Age of Ashwin = $(3x - 1)$ years

Present age of Arpit = $(x + 8)$ years

Present of Ashwin = $(3x + 7)$ years

According to the question

$$\Rightarrow (3x + 7 - 6) = 2(x + 8 - 6) + 1$$

$$\Rightarrow (3x + 1) = (2x + 4) + 1$$

$$\Rightarrow 3x + 1 = 2x + 5$$

$$\Rightarrow x = 4$$

Present age of Arpit = $(x + 8) = (4 + 8)$ years

$\Rightarrow 12$ years

Age of Arpit after 7 years = $(12 + 7)$ years

$\Rightarrow 19$ years

$\therefore$ The required age of Arpit after 7 years is 19 years

61. Answer: c

Explanation:

The correct answer is N. Chandrababu Naidu.

★ Key Points

- N. Chandrababu Naidu was presented the 'Transformative Chief Minister Award' by the US-India Business Council (USIBC) in May 2017.
- He was awarded during the USIBC West Coast Summit in the Silicon Valley in the US for his efforts to strengthen ties between the two countries at the state level.
- The award acknowledges excellence in public service and recognizes the honoree's achievement in championing US-India ties in the areas of trade,

politics and culture.

62. Answer: a

Explanation:

Calculation:

Let the number be x

According to the question

$$\Rightarrow (28/5 + x) = 59/7$$

$$\Rightarrow x = (59/7 - 28/5)$$

$$\Rightarrow x = (295 - 196)/35$$

$$\Rightarrow x = 99/35$$

$\therefore$ The required number is $99/35$

63. Answer: b

Explanation:

Given that:-

Year 2019 is not a leap year so, there are 28 days in February.

So, February 2, 2019 will be a Saturday.

So, the number of days after 2nd February 2019 to 4th October 2019 are $26 + 31 + 30 + 31 + 30 + 31 + 31 + 30 + 4 = 244$

Number of odd days in 244 days = $244/7 = 6$

Thus, on 4th October 2019 the day will be Saturday + 6 days = Friday.

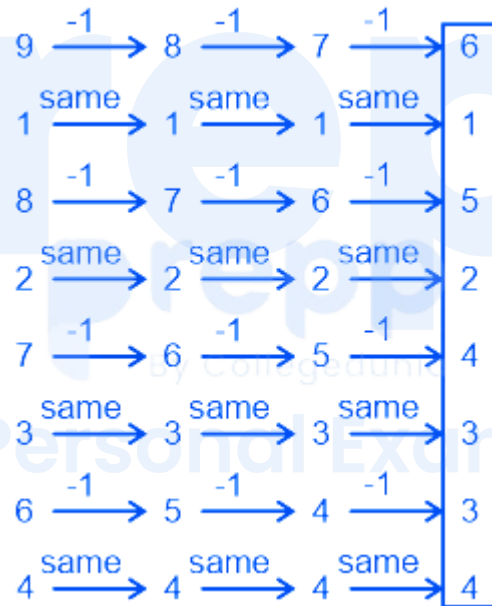
Hence, "option 2" is the correct answer.

64. Answer: a

Explanation:

The logic followed here is:-

- 1) The numbers first, third, fifth, and seventh subtracted 1 in each number.
- 2) The numbers second, fourth, sixth, and eight remain same all number.



Hence, "option 1" is the correct answer.

65. Answer: c

Explanation:

The correct answer is Reliance Industries.

★ Key Points

- Reliance Industries is the owner of Mumbai's IPL team 'Mumbai Indians'.
- The Mumbai Indians are a franchise cricket team based in Mumbai, Maharashtra, that competes in the Indian Premier League.
- Founded in 2008, the team is owned by India's biggest conglomerate, Reliance Industries, through its 100% subsidiary Indian Sports.
- In 2017, the Mumbai Indians became the first franchise to cross the \$100 million mark in brand value among the IPL franchises.
- The brand value of Mumbai Indians, in 2019, is estimated to be around ₹809 crores (roughly \$115 million), the highest among all the IPL franchises for the fourth consecutive year.

★ Additional Information

- Mumbai Indians won the Indian Premier League (IPL) 2020.
- The final match was played between Mumbai Indians and Delhi Capitals.
- Mumbai Indians won this match by 5 wickets.
- Mumbai Indians also won Paytm Fairplay Award this year.
- This is the consecutive second time Mumbai Indians won the IPL title & overall 5th time.
 - IPL 2019: Mumbai Indians beat Chennai Super Kings by 1 run.
 - IPL 2017: Mumbai Indians beat Rising Pune Supergiant by 1 run.
 - IPL 2015: Mumbai Indians beat Chennai Super Kings by 41 runs.
 - IPL 2013: Mumbai Indians beat Chennai Super Kings by 23 runs.
- Orange Cap – KL Rahul (670 runs)
- Purple Cap – Kagiso Rabada (30 wickets)

66. Answer: c

Explanation:

The correct answer is Confederation of Indian Industry.

★ Key Points

- The full form of CII is the **Confederation of Indian Industry**.
- The Confederation of Indian Industry (CII) is a non-governmental trade association and advocacy group **headquartered** in New Delhi, India, founded in 1895.
- CII engages business, political, academic, and other leaders of society to shape global, regional, and industry agendas.
 - It is a membership-based organization.

★ **Additional Information**

- The **Confederation of Indian Industry (CII)** works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.
- For 2021-22, **Mr. T V Narendran, CEO & Managing Director** of Tata Steel Limited, is the President of CII and Mr. Sanjiv Bajaj, Chairman & Managing Director of Bajaj Finserv Limited, is the President-Designate.

67. Answer: a

Explanation:

The lateral mirror image of the given figure is:-



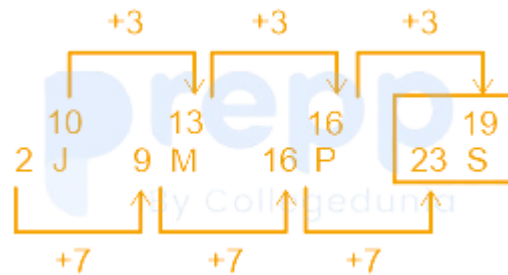
Hence, "option 1" is the correct answer.

68. Answer: d

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 logic followed here is:-



Hence, "option 4" is the correct answer.

69. Answer: c

Explanation:

The correct answer is Pink.

★ Key Points

- The film pink won the National Award for Best Film on Social Issues at the 64th National Film Awards, 2017.
- Amitabh Bachchan and Taapsee Pannu-starrer Pink continue its winning streak.

★ Additional Information

- **The National Film Awards** is the most prominent film award ceremony in India.
- Established in **1954**, it has been administered, along with the International Film Festival of India and the Indian Panorama, by the Indian government's Directorate of Film Festivals since 1973.

- The film Neerja has adjudged the best Hindi feature film at the 2017 National Film Awards.
 - The film won two awards at the 64th ceremony of India's National Film Awards—Best Feature Film in Hindi and Special Mention for Sonam Kapoor.
 - At the 62nd Filmfare Awards, Neerja won five awards, including Best Film (Critics) and Best Actress (Critics); the film was also nominated for Best Director and Best Film.
 - Neerja won four awards at the 18th ceremony of the International Indian Film Academy Awards, including Best Film and Best Supporting Actress.
-

70. Answer: b

Explanation:

The correct answer is Ivanka Trump.

★ Key Points

- Prime Minister Narendra Modi and Ivanka Trump, the adviser and daughter of US President Donald Trump, opened the **Global Entrepreneurship Summit 2017 (GES 2017)** in Hyderabad.
- Ivanka Trump praised Prime Minister Modi for bringing in transformation in India.
- 1500 women entrepreneurs attending the 3-day mega event.
- This is the **eighth edition of the Global Entrepreneurship Summit**.
- A gathering of entrepreneurs, investors and supporters from around the world.

★ Additional Information

- GES is being held for the first time in South Asia in Hyderabad from November 28–30.
- The summit focused on the **theme** of "Women First, Prosperity for All."
- More than 10 countries were represented by an all-female delegation, including Afghanistan, Saudi Arabia, and Israel.

- A number of leading female voices will speak at various plenaries, breakout sessions, master classes, and workshops, including Google's Vice President of Next Billion Users Diana Louise Patricia Layfield, Tennis champion Sania Mirza, Newly-crowned Miss World Manushi Chhillar and CEO of Afghan Citadel Software Company Roya Mahboob.

71. Answer: b

Explanation:

The correct answer is Rana Daggubati.

★ Key Points

- Rana Daggubati played the character of Bhallaladeva in the film series 'Bahubali'.
 - Ramanaidu "Rana" Daggubati born 14 December 1984) is an Indian actor and producer known primarily for his work in Telugu language films, in addition to Hindi and Tamil languages.
 - He made his acting debut with the Telugu film Leader, for which he won the **Filmfare Award for Best Male Debut – South**.
 - In 2012, Rana gained prominence by starring in the hit Telugu film Krishnam Vande Jagadgurum.

★ Additional Information

- **Baahubali:**
 - The Beginning is a 2015 Indian epic action film directed by **S. S. Rajamouli** and produced by Shobu Yarlagadda and Prasad Devineni under Arka Media Works.
 - Shot simultaneously in Telugu and Tamil languages, the film features an ensemble cast including Prabhas, Rana Daggubati, Anushka Shetty, Tamannaah, Ramya Krishna, Sathyaraj, and Nassar.

72. Answer: d

Explanation:

The correct answer is Bleaching powder.

★ Key Points

- Chlorine reacts with dry slaked lime to give a mixture of **calcium chloride and calcium hypochlorite**.
- Thus, during the reaction of chlorine gas with dry slaked lime, bleaching powder is obtained.
- The lime reacts with chlorine to form bleaching powder.
If the slaked lime is not dry, then chlorine reacts with water to form hydrochloric acid and hypochlorous acid.
- $\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$.

★ Additional Information

- **Calcium hypochlorite** is an inorganic compound with the formula Ca(OCl)_2 .
 - It is the main active ingredient of commercial products called **bleaching powder**, chlorine powder, or chlorinated lime, used for water treatment and as a bleaching agent.
- **Uses :**
 - Bleaching powder is used for the disinfection of drinking water.
 - It is also used to wash clothes in the laundry.
 - Used for bleaching wood pulp in the paper manufacturing industry.
 - Used as a bleaching agent in the textile industry for bleaching cotton and linen.

73. Answer: b

Explanation:

The given statement declares that people suffering from diabetes can eat fruits.

- That would imply that sugar in its natural form is **not** harmful. Thus, conclusion I does not follow.
- Conclusion II justifies the given statement by explaining how sugar from fruits can help in metabolism of the body. Thus, conclusion II logically follows the statement.

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

★ Additional Information

- *Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (blood sugar).*

74. Answer: d

Explanation:

Given that:-

Neeta has 6 pens of two different colours.

1. There are 4 red pens.

- Neeta has a total of 6 pens of two different colours.
- Here, there are 4 red pens the remaining 2 black pens so it is definite information. Therefore, statement 1 alone is sufficient.

2. He bought those pens yesterday.

- No information is given about the total number of both colours of pens. Therefore, statement 2 alone is not sufficient.

Here, statement 1 is sufficient to answer.

Hence, "option 4" is the correct answer.

75. Answer: a

Explanation:

The correct answer is run.

★ Key Points

- Strong is related to weak as languorous is to run.
- Strong and weak are opposite words
- Languorous means tiredness or inactivity and so run will be the opposite of languorous.

76. Answer: b

Explanation:

The correct answer is moisture.

★ Key Points

- **Evaporation** can be defined as the process through which a liquid (generally water) is converted into a gas/vapour without being heated to its boiling point.
- **The key factors that affect the rate of evaporation of a liquid are:**
 - **Temperature:** The greater the temperature of the liquid and its surroundings, the faster the rate of evaporation.
 - **Surface area occupied by the liquid:** Since evaporation is a surface phenomenon, the greater the surface area occupied by the liquid, the quicker it undergoes evaporation.
 - **Humidity of the surroundings:** The greater the humidity of the atmosphere surrounding the water, the slower the rate of evaporation.
 - Thus Moisture reduces the rate of evaporation.
 - **Air circulation or wind speed:** The presence of a breeze or another source of air circulation directly contributes towards the rate of evaporation.

★ Additional Information

- **Evaporation** is a type of vaporization that occurs on the surface of a liquid as it changes into the gas phase.
 - The surrounding gas must not be saturated with the evaporating substance.
 - When the molecules of the liquid collide, they transfer energy to each other based on how they collide with each other.

77. **Answer: b**

Explanation:

Given:

The average score after 11 innings = 52

The average score after 13 innings = 54

The Batsman scored 16 more runs in the 13th innings than the previous innings

Formula used:

Average = Sum of observations/Number of observations

Calculation:

Let the score of batsman in 12th innings be x

Let the score of batsman in 13th innings more than the previous innings be $(x + 16)$

The average score after 11 innings = $(52 \times 11) = 572$

The average score after 13 innings = $(54 \times 13) = 702$

According to the question

$$\Rightarrow (572 + x + x + 16) = 702$$

$$\Rightarrow (588 + 2x) = 702$$

$$\Rightarrow 2x = (702 - 588)$$

$$\Rightarrow 2x = 114$$

$$\Rightarrow x = (114/2)$$

$$\Rightarrow x = 57$$

$\therefore$ He scored 57 runs in his 12th innings

78. Answer: a

Explanation:

Concept Used:

Follow the BODMAS rule according to the table 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:

$$(2.5) 2 + 8.7 - \left(\frac{1.12}{1.4}\right) \times 0.5 = ?$$

$$\Rightarrow 6.25 + 8.7 - (1.12/1.4) \times 0.5 = ?$$

$$\Rightarrow 6.25 + 8.7 - 0.8 \times 0.5 = ?$$

$$\Rightarrow 6.25 + 8.7 - 0.4 = ?$$

$$\Rightarrow 14.95 - 0.4 = ?$$

$$\Rightarrow 14.55 = ?$$

$\therefore$ The required value of ? is 14.55

79. Answer: b

Explanation:

The correct answer is period.

★ Key Points

- The time for one complete cycle, a left swing and a right swing, is called the period.
- The period depends on the length of the pendulum and also to a slight degree on the amplitude, the width of the pendulum's swing.

★ Additional Information

- Motion that repeats itself regularly is called periodic motion. One complete repetition of the motion is called a cycle.
 - The duration of each cycle is the period.
- The **frequency** refers to the number of cycles completed in an interval of time.
 - It is the reciprocal of the period and can be calculated with the equation $f=1/T$.
 - Some motion is best characterized by the angular frequency (ω).
- The **angular frequency** refers to the angular displacement per unit time and is calculated from the frequency with the equation $\omega=2\pi f$.
- **In short:**
 - **Period** : The duration of one cycle in a repeating event.
 - **Angular frequency**: The angular displacement per unit time.
 - **Frequency** : The quotient of the number of times n a periodic phenomenon occurs over the time t in which it occurs: $f = n / t$.

80. Answer: c

Explanation:

Given:

Profit after selling two brands of computer = Rs. 15,000

Profit from one brand = 35%

Calculation:

Let the number be 100%

According to the question

$$\Rightarrow (100 - 35)\%$$

$$\Rightarrow 65\%$$

Now,

$$\Rightarrow 65\% \text{ of Rs. } 15,000$$

$$\Rightarrow (65/100 \times 15,000)$$

$$\Rightarrow \text{Rs. } (65 \times 150)$$

$$\Rightarrow \text{Rs. } 9,750$$

$\therefore$ The selling price of the computer of the other brand is Rs. 9,750

81. Answer: d

Explanation:

Given:

Vinod's age after 19 years = twice the age of Anand

Seven years ago Anand's age = $\frac{1}{4}$ of Vinod's age

Calculation:

Let the age of Anand before 7 years = x years

Let the age of Vinod 7 years ago = $4x$ years

Present age of Anand = $(x + 7)$ years

Present age of Vinod = $(4x + 7)$ years

According to the question

$$\Rightarrow 2(x + 7 + 19) = (4x + 7 + 19)$$

$$\Rightarrow (2x + 14 + 38) = (4x + 7 + 19)$$

$$\Rightarrow (2x + 52) = (4x + 26)$$

$$\Rightarrow 2x = 26$$

$$\Rightarrow x = 13$$

Present age of Vinod = $(4x + 7) = (4 \times 13 + 7)$ years

$$\Rightarrow (52 + 7) \text{ years}$$

$$\Rightarrow 59 \text{ years}$$

$\therefore$ The required age of Vinod is 59 years

82. Answer: b

Explanation:

The correct answer is Konsam Ormila Devi.

★ Key Points

- **Konsam Ormila Devi**, the Indian female weightlifter, won the gold medal in the **Asian Youth and Junior Weightlifting Competition** held in Nepal on July 25, 2017.
- The weightlifter from Manipur **lifted 56kg in snatch and 70kg in clean & jerk for a total effort of 126kg in the 44kg weight category** to finish on the top of the podium, according to a release from the Indian Weightlifting Federation.

★ Additional Information

- **Karnam Malleswari** is a retired Indian weightlifter.
 - She is the first Indian woman to **win a medal at the Olympics in 2000**.
 - In 1994, she received the Arjuna Award and in 1999, she received the Rajiv Gandhi Khel Ratna award, India's highest sporting honour, and the civilian Padma Shri award.
- **Kavita Dalal** is an Indian professional wrestler who performed in the WWE under the ring name Kavita Devi, on their developmental territory NXT between 2017 and 2021.
 - **Devi is the first female professional wrestler of Indian nationality to wrestle in WWE.**

83. Answer: b

Explanation:

The correct answer is 1J.

★ Key Points

- Given,
 - Displacement, $s = 1\text{m}$.
 - Force, $F = 1\text{N}$
- **Work done = Force x displacement**
 - $= 1 \times 1$
 - $= 1\text{J}$

★ Additional Information

• **Work:**

- When a body is displaced by applying a force on it, then work is said to be done.
- Work = Force × displacement.
- Its SI unit is joule ($\text{kg m}^2\text{s}^{-2}$).
- **Positive Work Done**
 - Positive work means that force is parallel to displacement, i.e. in the direction of displacement.
- **Negative Work Done**
 - Negative work means that force is opposite to displacement.
- **Zero Work Done**
 - If the force is perpendicular to the displacement and if either the force or the displacement is zero, work done is zero.

84. Answer: a

Explanation:

The correct answer is helium.

★ Key Points

- Helium atom has 2 electrons in its valence shell but its valency is not 2.
- Noble or inert elements are the most stable due to having the maximum number of valence electrons their outer shell or valence shell can hold.
- Helium has no tendency to form any chemical bonds due to highly stable configuration.
- Any element in **group 1** has just one valence electron.
 - Examples include hydrogen (H), lithium (Li), and sodium (Na).
- Any element in group 18 has eight valence electrons (except for helium, which has a total of just two electrons).
- Examples include **neon (Ne), argon (Ar), and krypton (Kr)**.

★ Additional Information

- The discoverers of noble gases are :

Helium	Pierre Janssen and Joseph Norman Lockyer
Neon	William Ramsay
Argon	Lord Rayleigh and William Ramsay
Krypton	William Ramsay
Xenon	William Ramsay
Radon	Friedrich Ernst Dorn

85. Answer: d

Explanation:

The correct answer is carbon.

★ Key Points

- A **fullerene** is an allotrope of carbon whose molecule consists of carbon atoms connected by single and double bonds so as to form a closed or partially closed mesh, with fused rings of five to seven atoms.
 - The **molecule** may be a hollow sphere, ellipsoid, tube, or many other shapes and sizes.
- Various allotropes of carbon are **diamond, graphite, lonsdaleite, fullerene, C-540, C-70, amorphous carbon, carbon nanotube** .
- Diamond and crystalline silicon are isomorphous because they both have a three-dimensional tetrahedral structure.
- Allotropy, the existence of a chemical element in two or more forms, which may differ in the arrangement of atoms in crystalline solids or in the occurrence of molecules that contain different numbers of atoms.

★ Additional Information

- When an element exists in more than one crystalline form, those forms are called allotropes; the two most common allotropes of carbon are diamond and graphite.
 - One of the allotropic form of a carbon is a fullerene in which **“carbon atoms” are “arranged in a sphere”**.
 - Each sphere has **60 carbon** atoms and each carbon atom is linked by a single covalent.
 - The fullerene is considered as purest allotrope of “carbon” because they have “smooth structure” without having dangling bonds.

86. Answer: d

Explanation:

Given:

Time = 5 years

Amount₁ = Rs. 3640

Amount₂ = Rs. 3920

Formula used:

$$SI = (P \times R \times T)/100$$

$$\text{Amount} = P + CI$$

Calculation:

Let the sum of money be Rs. P

Let the rate of interest be r%

According to the question

$$\Rightarrow P + (P \times r \times 5)/100 = 3640$$

$$\Rightarrow 100P + 5Pr = 3640 \times 100$$

$$\Rightarrow 5Pr = (3640 \times 100) - 100P \dots(1)$$

Again,

$$\Rightarrow P + [P \times (r + 2) \times 5]/100 = 3920$$

$$\Rightarrow 100P + 5Pr + 10P = 3920 \times 100$$

$$\Rightarrow 5Pr = (3920 \times 100) - 110P \dots(2)$$

From equation (1) and (2) we get,

$$\Rightarrow (3640 \times 100) - 100P = (3920 \times 100) - 110P$$

$$\Rightarrow (110P - 100P) = (3920 \times 100) - (3640 \times 100)$$

$$\Rightarrow 10P = 100 \times (3920 - 3640)$$

$$\Rightarrow 10P = 100 \times 280$$

$$\Rightarrow 10P = 28000$$

$$\Rightarrow P = (28000/10)$$

$$\Rightarrow P = \text{Rs. } 2800$$

$\therefore$ The required principal is Rs. 2800

87. Answer: d

Explanation:

The statement declares that swimming is good and it helps to improve physical health.

- Secretion of good hormones cannot be directly linked with the act of swimming. Therefore, assumption I is not implicit.

- Water providing relief to the muscles can help in improving physical health. Thus, assumption II is implicit.

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

88. Answer: a

Explanation:

The correct answer is pascal.

★ Key Points

- **The unit of pressure in the SI system is the pascal (Pa)**, defined as a force of one Newton per square meter.
- The conversion between atm, Pa, and the torr is as follows:
 - $1 \text{ atm} = 101325 \text{ Pa} = 760 \text{ torr}$.
- A standardized prefix system indicates fractions and multiples of metric units.

★ Additional Information

- **Pressure** is the force applied perpendicular to the surface of an object per unit area over which that force is distributed.
- **Gauge pressure** is the pressure relative to the ambient pressure. Various units are used to express pressure.
- The **SI unit of force is the newton**, symbol N.
 - The base units relevant to force are:
 - **The meter, unit of length — symbol m.**
- The **SI unit of power is the watt (W)**, in honour of Scottish inventor James Watt (1736 – 1819).
 - Watt's improvements to the steam engine helped to launch the Industrial Revolution.

89. Answer: c

Explanation:

The correct answer is Banking.

★ Key Points

- **Banking is the main occupation of the merchants known as Shroffs, Seths, Sahukars, Mahajans and Chheti since ancient times.**
 - The **Arthashastra of Kautilya** mentions the **presence of bankers during the Maurya era**.
 - There were instruments in the Maurya Era known as “**Adesha**” which are equivalent to the Bill of exchange of current times.
 - There are plenty of references available in the ancient Indian literature regarding an indigenous banking system that financed the trade and commerce in the country.
 - The businessmen **called Shroffs, Seths, Sahukars, Mahajans, Chettis, etc.** had been carrying on the business of banking since ancient times.
 - These indigenous bankers included very small money lenders to shroffs with huge businesses, who carried on the large and specialized business even greater than the business of banks.

★ Additional Information

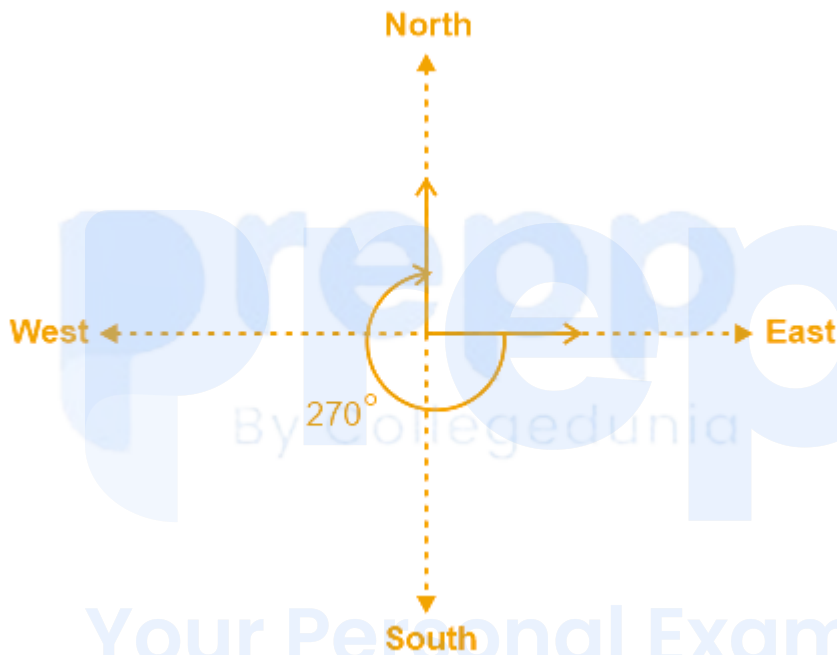
- The **History of Banking in India** is as old as Vedic Civilization.
 - For example, in the Vedic age, the loan deeds called **rnapatra or rnalekhya** were prevalent. Interest rates, as well as usury, were prevalent in Vedic India.
- The **Vedic word Kusidin refers to a usurer.**
 - Manusmriti condemns usury and calls it an acceptable means of acquiring wealth.
- The existence of institution money lending is proved by the fact that Manusmriti fixes minimum and maximum rates of interest and considers money lending above a certain rate as a grave sin.
- However, it fixes different ceiling rates for different caste.
 - For example, the rate of interest for Brahmins was 24% while it was 36%, 48%, and 60% for Kshatriyas, Vaishyas, and Shudras.

- Akin to the Vedic era, the Buddhist, Mauryan, and Mughal periods are also known for various types of such instruments.

90. Answer: b

Explanation:

The diagram is given below:-



He is walking north direction.

Hence, "option 2" is the correct answer.

91. Answer: c

Explanation:

Given:

Distance = 23 m

$$\text{Time}_1 = 4 \text{ s}$$

$$\text{Distance}_2 = 15 \text{ m}$$

$$\text{Time}_2 = 2 \text{ s}$$

Formula used:

$$\text{Average speed} = \text{Total distance} / \text{Total time taken}$$

Calculation:

According to the question

$$\text{Total distance of the object} = (23 + 15) \text{ m}$$

$$\Rightarrow 38 \text{ m}$$

$$\text{Total time taken by the object} = (4 + 2) \text{ s}$$

$$\Rightarrow 6 \text{ s}$$

$$\text{Average speed} = (38/6) \text{ m/s}$$

$$\Rightarrow 6.33 \text{ m/s}$$

$\therefore$ The required average speed of the object is 6.33 ms^{-1}

92. Answer: c

Explanation:

Given:

$$\text{The area of Rhombus} = 216 \text{ m}^2$$

$$\text{Length of one of its diagonal} = 24 \text{ m}$$

Formula used:

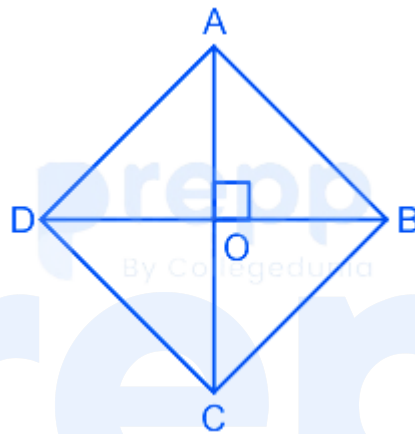
$$\text{Area of rhombus} = \frac{1}{2} \times AC \times BD$$

Concept used:

All the sides of the rhombus are equal

The diagonals of a rhombus bisect each other at right angles.

Calculation:



Here, $AC = 24 \text{ m}$ and $\text{Area} = 216 \text{ m}^2$

According to the question

$$\text{Area of Rhombus} = \left(\frac{1}{2} \times 24 \times BD\right)$$

$$\Rightarrow 216 = \left(\frac{1}{2} \times 24 \times BD\right)$$

$$\Rightarrow 216 = 12BD$$

$$\Rightarrow BD = (216/12)$$

$$\Rightarrow BD = 18 \text{ m}$$

Now,

We know that, the diagonals of a rhombus bisect each other at right angles.

So,

$$OA = \frac{1}{2} \times AC$$

$$\Rightarrow OA = (1/2 \times 24) \text{ m}$$

$$\Rightarrow OA = 12 \text{ m}$$

$$OB = 1/2 \times BD$$

$$\Rightarrow OB = (1/2 \times 18) \text{ m}$$

$$\Rightarrow OB = 9 \text{ m}$$

Now,

In $\triangle OAB$

$$AB^2 = OA^2 + OB^2$$

$$\Rightarrow AB^2 = (12^2 + 9^2)$$

$$\Rightarrow AB^2 = 144 + 81$$

$$\Rightarrow AB^2 = 225 \text{ m}^2$$

$$\Rightarrow AB = 15 \text{ m}$$

$\therefore$ The length of each side of the rhombus is 15 m

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93. Answer: b

Explanation:

The correct answer is zinc sulphate is formed.

★ Key Points

- When **zinc is added to copper sulphate (CuSO_4)** solution due to more reactivity of zinc, copper is replaced by zinc and forms **zinc sulphate**.
- During the process, the colour of the solution changes from blue to colourless.
- The chemical equation of the reaction,
 - $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$

★ Additional Information

- Types of Chemical Reactions:
 - Decomposition reaction: The opposite of a combination reaction, a complex molecule breaks down to make simpler ones. Such reactions are represented by equations of the following form: $AB \rightarrow A + B$.
 - Precipitation reaction: Two solutions of soluble salts are mixed resulting in an insoluble solid (precipitate) forming. Such reactions are represented by equations of the following form: $A + \text{Soluble salt B} \rightarrow \text{Precipitate} + \text{soluble salt C}$.
 - Neutralization reaction: An acid and a base react with each other. Generally, the product of this reaction is salt and water. Such reactions are represented by equations of the following form: $\text{Acid} + \text{Base} \rightarrow \text{Salt} + \text{Water}$.
 - Combustion reaction: Oxygen combines with a compound to form carbon dioxide and water. These reactions are exothermic, meaning they give off heat. Such reactions are represented by equations of the following form: $A + O_2 \rightarrow H_2O + CO_2$.
 - Displacement reaction: One element takes place with another element in the compound. Such reactions are represented by equations of the following form: $A + BC \rightarrow AC + B$.

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94. Answer: d

Explanation:

Given:

Quantity filled by Pipe A = 15 min

Quantity filled by Pipe B = 40 min

Formula used:

Work = Efficiency $\times$ Time

1 min = 60 sec

Calculation:

LCM of 15 and 40 is 120

Quantity filled by Pipe A in 1 min = $(120/15) = 8$ litre

Quantity filled by Pipe B in 1 min = $(120/40) = 3$ litre

Quantity filled by both in 4 min = $[4 \times (8 + 3)]$

$\Rightarrow (4 \times 11)$ litres

$\Rightarrow 44$ litres

Remaining quantity to be filled = $(120 - 44)$ litres

$\Rightarrow 76$ litres

Time required for Pipe B alone to fill the remaining quantity = $(76/3)$

$\Rightarrow 25$ min $(60/3)$ sec

$\Rightarrow 25$ min 20 sec

Now, **Your Personal Exams Guide**

Total time required = $(4 \text{ min} + 25 \text{ min } 20 \text{ sec})$

$\Rightarrow 29$ min 20 sec

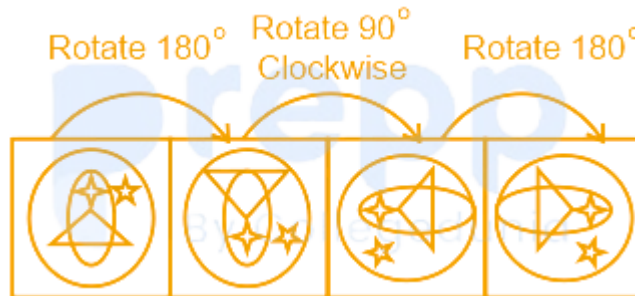
$\therefore$ The required time to fill the cylinder is 29 min 20 sec

95. Answer: a

Explanation:

The logic followed here is:-

- 1) First figure rotates 180° from the first block to the second block.
- 2) Then rotate clockwise direction 90° from the second block to the third block and then rotate 180° from the third block to the fourth block.

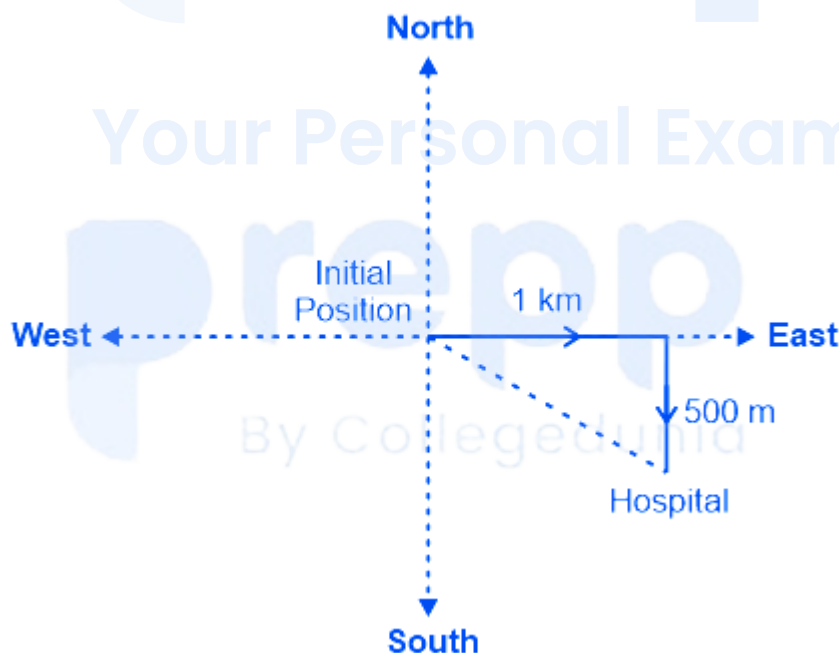


Hence, "option 1" is the correct answer.

96. Answer: c

Explanation:

The figure is given below:-



Hospital is South-east of Nayan's initial position.

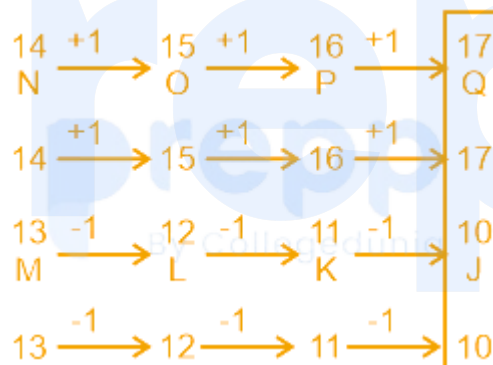
Hence, "option 3" is the correct answer.

97. 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 logic followed here is:-



Hence, "option 1" is the correct answer.

98. Answer: d

Explanation:

The correct answer is Ministry of Human Resource Development

★ Key Points

- Navodaya Vidyalaya Samiti and Kendriya Vidyalaya Sangathan are autonomous bodies under the Ministry of Human Resource Development.

- **Navodaya Vidyalaya Samiti** is an autonomous organization under the Ministry of Human Resource Development, Department of Secondary & Higher Education, Govt, of India.
- The **Chairman** of the Samiti is the Hon'ble Minister of Human Resource Development.
 - They started with the name Navodaya Vidyalayas and were renamed later Jawahar Navodaya Vidyalayas in the birth-centenary year of Pandit Jawahar Lai Nehru.
 - The Samiti functions through an Executive Committee under the Chairmanship of the Union Minister of Human Resource Development.

★ Important Points

- **Union Minister of State for Education is the Vice- Chairman of the Samiti.**
- The Executive Committee is assisted by **Finance Committee** and Academic Advisory Committee in its functions.
- The general body of the **Kendriya Vidyalaya Sangathan** is the apex body.
- The Minister of Human Resource Development, in charge of the Kendriya Vidyalayas scheme, is the Chairman of the Sangathan.
- The Minister of State in the Ministry of Human Resource Development is the Deputy Chairman and an Officer of the Ministry of Human Resource Development, specified by the Government of India for this purpose, is the Vice Chairman of the Sangathan.

★ Additional Information

- The **Ministry of Human Resource Development (MHRD)** is back to being the **Ministry of Education** with the Union Cabinet approving the change in its name on 29 July 2020.
- The Ministry of Education was renamed the HRD ministry in 1985, during the tenure of former Prime Minister Rajiv Gandhi.
- PV Narasimha Rao became the first HRD minister in the Rajiv Gandhi Cabinet.

99. Answer: a

Explanation:

The correct answer is Mother Teresa.

★ Key Points

- On 4 September 2016, Mother Teresa was canonized as a saint by Pope Francis at a grand ceremony at the Vatican.
- Mother Teresa, a renowned and celebrated nun, who served thousands of diseased and destitute people in Kolkata was canonized by **Pope Francis** at a grand ceremony in the Vatican.
 - The event saw lakhs of pilgrims, including those from India, reaching the venue to witness the ceremony.
 - A 12-member delegation led by the **Minister of External Affairs Sushma Swaraj** and a delegation from West Bengal and New Delhi including **Mamata Banerjee** and **Arvind Kejriwal** also became a part of the event.

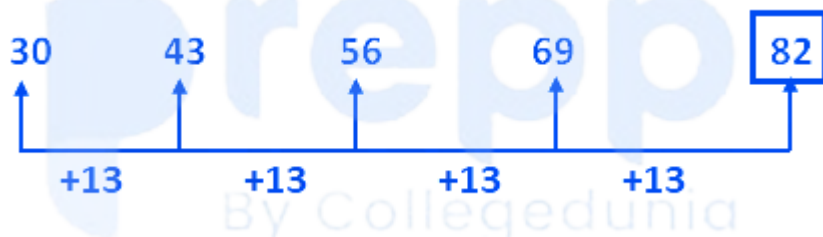
★ Additional Information

- **Mother Mary Teresa Bojaxhiu**, honoured in the Catholic Church as Saint Teresa of Calcutta, was an Albanian-Indian Roman Catholic nun and missionary.
 - She was born in Skopje, then part of the Kosovo Vilayet of the Ottoman Empire.
 - During her lifetime Mother Teresa became famous as the Catholic nun who dedicated her life to caring for the destitute and dying in the slums of Calcutta – now known as Kolkata.

100. Answer: c

Explanation:

The logic followed here is:-



Hence, "option 3" is the correct answer.

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