Prepp.in

Prepp

Your Personal Exams Guide

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RRB Group D 2018 Prev. Yr. Paper (7 Dec 2018) (Shift 2)

Total Time: 1 Hour : 30 Minute **Total Marks:** 100

Instructions

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

1.) A total of 90 minutes is allotted for the examination.

2.) The server will set your clock for you. In the top right corner of your screen, a countdown timer will display the remaining time for you to complete the exam. Once the timer reaches zero, the examination will end automatically. The paper need not be submitted when your timer reaches zero.

3.) There will, however, be sectional timing for this exam. You will have to complete each section within the specified time limit. Before moving on to the next section, you must complete the current one within the time limits.

CBT

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

   Error : Big mistake : : deny : ?

   a. Deep

   b. Den

   c. Dig

   d. Prohibition

---

2. The least common multiple of 21 and 560 is: **(+1, -0.33)**

   a. 560

   b. 1680

   c. 1120

   d. 840

---

3. If X is the husband of Aamir's mother's sister, then how is X related to Aamir? **(+1, -0.33)**

   a. Father

   b. Brother

   c. Uncle

   d. Nephew

4. Identify the odd: **(+1, -0.33)**

   a. dyne cm^{-2}

   b. Pa

   c. $N\ m^{-2}$

   d. N

5. If the alphabets in the word "ASTEROID" are arranged in alphabetical order and the numerical values of each letter in alphabetical order are assigned 1, 2, 3 then the total value of the position of the consonants from the left side is: **(+1, -0.33)**

   a. 23

   b. 25

   c. 22

   d. 24

6. In each of the questions below, a statement is given, followed by two arguments I and II. You have to decide which argument is 'stronger'. **(+1, -0.33)**

   Statement: Should TV plays be banned?

   Argument:

   I. Yes, they show a very negative view of life situations that are influencing some sects of society to imitate the same behaviour.

   II. No, this is good interesting entertainment for older people.

a. Only argument I is strong.

b. Both I and II are strong.

c. Neither I nor II is strong.

d. Only argument II is strong.

---

7. Which country has won the 2018 FIFA Fair Play Trophy? **(+1, -0.33)**

a. France

b. Argentina

c. Spain

d. Brazil

---

8. What amount of water can reach a height of 10 m by a pump of 1 kW in a minute? (Take g = 10 m/s^2) **(+1, -0.33)**

a. 1000 kg

b. 100 kg

c. 500 kg

d. 600 kg

---

9. Who has won the Man Booker International Award for his novel "A Horse Walks Into a Bar'? **(+1, -0.33)**

a. Ismail Kadar

b. David Grossman

c. Philip Roth

d. Jessica Cohen

---

10. How many multiples of the number 4840 are there? **(+1, -0.33)**

a. 25

b. 26

c. 24

d. 27

---

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

4D3C, 7G6F, 10J9I, _____ ?

a. 13K12L

b. 13L12M

c. 13M12L

d. 12L13N

---

12. The mean of the three numbers is 38 and the range of data is 31. The middle number is 20 less than the sum of the other two numbers. What is the largest number among these three numbers? **(+1, -0.33)**

a. 47

b. 49

c. 51

d. 45

---

13. The fertile Gangetic plain is made up of rich _____ soil. **(+1, -0.33)**

a. Arid

b. Black

c. Alluvial

d. Red

---

14. True is related to False, as Straight is related to: **(+1, -0.33)**

a. Lend

b. Tend

c. Curve

d. Mend

---

15. What is the trailing velocity? **(+1, -0.33)**

a. Exactly the same velocity

b. Walking the object at a rapid pace

c. The electrons in the conductor move at a constant average speed

d. Uneven velocity of electrons

---

16. _____ is a public sector industry. **(+1, -0.33)**

a. Amul

b. SAIL

c. Reliance Petroleum

d. TISCO

---

17. If a : b = 4 : 5 and a : c = 3 : 4, then find b : c. **(+1, -0.33)**

a. 15 : 16

b. 3 : 5

c. 5 : 4

d. 13 : 14

---

18. A particle is actuated by a force of constant magnitude which is always perpendicular to the velocity of the particle, the velocity of the particle is on a flat surface. It follows that **(+1, -0.33)**

a. Its acceleration is constant.

b. Its kinetic energy is constant.

c. Its distance is constant

d. Its velocity is constant.

---

19. Pradhan Mantri Ujjwala Yojana was launched: **(+1, -0.33)**

a. July 2017

b. January 2018

c. May 2014

d. May 2016

---

20. The value of Avogadro constant is _____. **(+1, -0.33)**

a. 6.023×10^{23}

b. 6.022 × 10 21

c. 6.022 × 10 22

d. 6.022 × 10 24

---

21. Read the given statement and conclusion carefully and choose which conclusion logically follows. **(+1, -0.33)**

Statement:

Homegrown fruits and vegetables are better for health than consuming imported fruits and vegetables, which are maintained to show freshness using artificial conditions.

Conclusions:

I. Imported vegetables are maintained under artificial conditions.

II. Homegrown fruits and vegetables are usually fresh.

a. Only conclusion II follows.

b. Neither conclusion I nor II follows

c. Both conclusions follow.

d. Only conclusion I follows.

---

22. The LCM and HCF of two numbers are 120 and 3 respectively. One of these numbers is 24. What is the second number? **(+1, -0.33)**

a. 30

b. 15

c. 20

d. 60

---

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

Statement:

Read the instructions before you start playing the game.

Assumptions:

I. The game is being organized.

II. No blind person is playing the game.

III. Players are literate.

a. None are implicit.

b. Only I and III are implicit.

c. Only I is implicit.

d. All are implicit.

---

24. Choose the Venn diagram that shows the best of the three classes below: **(+1, -0.33)**

State, District, City

a)

b)

c)

d)

a. d

b. c

c. b

d. a

25. A person of 80 kg mass runs with a force of 240 N. Its acceleration should be _____. **(+1, -0.33)**

a. 3 ms^{-2}

b. 8 ms^{-2}

c. 24 ms^{-2}

d. 4 ms^{-2}

---

26. What is the total number of frequencies observed in an observation of a data called? **(+1, -0.33)**

a. Mean

b. Median

c. Range

d. Frequency

---

27. Which city has been chosen to host the 2022 Commonwealth Games? **(+1, -0.33)**

a. Leeds

b. Portsmith

c. Liverpool

d. Birmingham

---

28. A, B, C and D are points on the circle. AC and BD intersect each other inside the circle at point E. The AB and CD lines are drawn. ∠BAE = 37° and ∠ACD = 83°, what is the measure of ∠BEC? **(+1, -0.33)**

a. 120°

b. 140°

c. 130°

d. 110°

---

29. Pipes A and B can fill a tank in 15 and 12 minutes respectively. Pipe C can empty the same tank at the rate of 2 liters per minute when the tank is full. If all three pipes are operating at the same time, The tank gets emptied one hour. Tank capacity is **(+1, -0.33)**

a. 14 liters

b. 12 liters

c. 18 liters

d. 16 liters

---

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

a. 19

b. 23

c. 21

d. 30

---

31. (3.7 - 2.931 + 0.12) × 0.37 = ? **(+1, -0.33)**

find the vale of '?'

a. 0.37893

b. 0.35893

c. 0.33893

d. 0.32893

---

32. Which one of the following fundamental rights is not enshrined in the Constitution of India? **(+1, -0.33)**

a. Right to Property

b. Rights against exploitation

c. Right to Freedom

d. Right to Equality

---

33. Which of the following metals exist in their original state? **(+1, -0.33)**

a. Copper

b. Platinum

c. Iron

d. Potassium

---

34. The convex lens has a focal length of _____. **(+1, -0.33)**

a. Infinite

b. Zero

c. Positive

d. Negative

---

35. Read the following information carefully and answer the questions given below it. **(+1, -0.33)**

Sudeep is applying for residential accommodation at IOCL Panipat Company. To get residential accommodation by IOCL company, the employee has to fulfil the following criteria:

(I) He must have worked in the company for at least 10 years and in the ABC department for at least 4 years.

(II) He should have a maximum of five members in his family.

(III) Before retirement age is 58 years, there is a minimum of 5 years' term left.

(IV) He should not be the owner or co-owner of a house (if one of the spouses is the owner).

For cases in which an employee:

Fulfills all the conditions except (I) above and has joined the company as a manager, he shall be referred to the Director.

Fulfills all the conditions except (III) above and is working as a senior manager in the company, he will be referred to the Managing Director.

Moved from another city. Condition (I) can be removed.

Based on the above conditions, decide whether Sudeep will be provided accommodation or the matter will be referred to a higher authority. All cases are presented on 31 July 2016.

Sudeep has been transferred from another office and on February 6, 2016, he was 53 years old. He has been working in the company for the last 20 years. Out of which he has worked for 6 years in ABC department. He has 4 members in the family and neither he nor his wife owned any house.

a. His case will be referred to the Director.

b. Sudeep will be provided company accommodation.

c. His case will be referred to the Managing Director.

d. Sudeep will not be provided company accommodation.

---

36. The outermost shell of a _____ element has two electrons. **(+1, -0.33)**

a. Carbon

b. Boron

c. Magnesium

d. Chlorine

---

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

Following

Find the value of $p^2 - q^2$.

Statement:

1) If $p + q = 12$

2) If $pq = 4$

a. Only 1 is sufficient.

b. Neither 1 nor 2 is sufficient.

c. Only 2 is sufficient.

d. Both 1 and 2 are sufficient.

---

38. Bats detect the obstacles along the way by getting the reflected _____. **(+1, -0.33)**

a. Subsonic waves

b. Radio waves

c. Ultrasonic waves

d. Electric magnetic waves

39. If $a - \frac{1}{a} = 7$, then $a^3 - \frac{1}{a^3} = ?$ **(+1, -0.33)**

a. 322

b. 364

c. 357

d. 343

---

40. The question given below is followed by two statements 1 and 2. You have to decide whether this statement is definitely sufficient to answer the question. Choose the appropriate answer from the options given below. **(+1, -0.33)**

Question:

1. $(a + b)^2 > (a - b)^2$

2. $a = b$

Question:

Determine if the product ab is positive.

a. Only statement 1 is sufficient, while statement 2 alone is not enough.

b. Both statements together are not sufficient.

c. Both statements together are sufficient.

d. Only statement 2 is sufficient, while statement 1 alone is not enough.

---

41. What will be the square root of 12996? **(+1, -0.33)**

a. 106

b. 126

c. 124

d. 114

---

42. A bullet of 10 g mass comes out with an initial velocity of 1000 m/s and strikes the earth at a velocity of 500 m/s at the same level. What will be the work done (in water) by facing resistance to air? **(+1, -0.33)**

a. 500

b. 5000

c. 375

d. 3750

---

43. What will come in the place of the question mark '?' in the following question? **(+1, -0.33)**

76 ÷ 19 × 2 - 6 = _____ ?

a. -4

b. 2

c. 2.375

d. -1

---

44. Pradeep and Ashoka were running in exactly the opposite direction. If Pradeep was running in the north-west direction, in which direction was Ashoka running? **(+1, -0.33)**

a. North - East

b. North - West

c. South - East

d. South - West

---

45. Read the statement below and decide which of the conclusions logically follows it? **(+1, -0.33)**

Statement:

Nowadays the prices of goods are increasing.

Conclusions:

I. All things are becoming rare.

II. People cannot eat things.

a. Only conclusion (I) follows.

b. Neither (I) nor (II) follows.

c. Only conclusion (II) follows.

d. Both conclusions (I) and (II) follow.

---

46. Which of the following is not a homologous series? **(+1, -0.33)**

a. CH_4

b. C_2H_6

c. C_4H_9

d. C_3H_8

---

47. If '×' is supposed as '−' and '÷' is supposed as '+', find the value of ((55 × 50) ÷ 25) ÷ 125. **(+1, -0.33)**

a. 155

b. 145

c. 150

d. 125

---

48. Who is the current head of State Bank of India? **(+1, -0.33)**

a. Nita Ambani

b. Dinesh Kumar Khara

c. Barkha Singh

d. Arundhati Bhattacharya

---

49. _____ tissue transports food to plants. **(+1, -0.33)**

a. Xylem

b. Parenchyma

c. Phloem

d. Collenchyma

---

50. A and B are friends and A is 2 years older than B. A's father D is twice as old as A and B's age is twice as old as his sister C's age. The difference between D and C's age is 40 years. Find the age of A. **(+1, -0.33)**

a. 25 years

b. 15 years

c. 40 years

d. 26 years

---

51. The SI unit of momentum is _____. **(+1, -0.33)**

a. kg ms $^{-2}$

b. kg ms ^{1}

c. kg ms ^{2}

d. kg ms $^{-1}$

---

52. Four friends Bipin, Anwar, John and Dhoni are playing cards. Anwar and Bipin are partners. Dhoni is facing north. If Anwar is facing west, then who is facing south? **(+1, -0.33)**

a. Dhoni

b. John

c. Bipin

d. Anwar

---

53. Who is the current Chief Minister of Odisha? **(+1, -0.33)**

a. Mamata Banerjee

b. Naveen Patnaik

c. Siddaramaiah

d. Chandrababu Naidu

---

54. The first Indian Governor General of independent India was named _____. **(+1, -0.33)**

a. C. Rajagopalachari

b. Annie Besant

c. M.N. Prasad

d. C.V. Raman

---

55. Ileana is smart enough to choose odds, who does she choose from below? **(+1, -0.33)**

a. c

b. d

c. a

d. e

---

56. Which of the following was not awarded the Crystal Award at the World Economic Forum in Davos in January 2018? **(+1, -0.33)**

a. Elton John

b. Kiran Rao

c. Shahrukh Khan

d. Cate Blanchett

---

57. Who said, "God save us from people who mean well." **(+1, -0.33)**

a. Kiran Desai

b. R. K. Narayan

c. Khushwant Singh

d. Vikram Seth

---

58. Any sum invested for 3.5 years at 12% annual interest becomes Rs. 994 at maturity. What was the principal amount invested? **(+1, -0.33)**

a. Rs. 700

b. Rs. 750

c. Rs. 725

d. Rs. 720

---

59. What is the SI unit of resistance? **(+1, -0.33)**

a. Ohm (Ω)

b. Ohm meter (Ω. m)

c. Ampere

d. Coulomb

---

60. Who played the lead role in the film "Newton", which was released in the year 2017? **(+1, -0.33)**

a. Nawazuddin Siddiqui

b. Akshay Kumar

c. Irfan Khan

d. Raj Kumar Rao

---

61. Calculate the number of squares in the given figure: **(+1, -0.33)**

a. 42

b. 44

c. 46

d. 40

62. Which one of the given statements is sufficient/necessary to answer the question? **(+1, -0.33)**

Question:

Is this a box?

Statement:

1. It opens and closes with flaps.
2. It can be used to store various items.

a. Only statement 1 is sufficient, while statement 2 is not enough.

b. Either 1 or 2 is enough.

c. Statements 1 and 2 both are sufficient.

d. Only statement 2 is sufficient, while statement 1 is not sufficient.

---

63. Read the statement given below and consider the given facts to be true even if they appear to be different from the commonly known facts. From the two conclusions given next, decide which of them logically follows the conclusion from them? **(+1, -0.33)**

Statement

All jaguars are cheetah.

All cheetahs are leopards.

All leopards are panthers (black leopards).

All panthers are cats.

Conclusions:

1. Some cats are cheetahs.
2. Some panthers are cheetah.

a. Only conclusion (2) follows.

b. Either conclusion (1) or (2) follows.

c. Only conclusion (1) follows.

d. Both conclusions (1) and (2) follow.

---

64. Nonlinear muscles are _____. **(+1, -0.33)**

a. Non-cellular

b. Bi-cellular

c. Uni-cellular

d. Multi-cellular

---

65. Manika moves around her rectangular field at a slow pace. She starts walking towards the west, then turns 45° to her right and walks 500m. Which direction is she facing now? **(+1, -0.33)**

a. North-East

b. South-West

c. South-East

d. North-West

---

66. Select the correct alternative that represents the answers for statements A and B respectively.: A. What is the fixed number of water molecules present in a formula unit of salt? **(+1, -0.33)**

B. What is the number of water molecules in $CuSO_4 5H_2O$?

a. Neutralization water, four

b. Crystallization water, five

c. Neutralization water, five

d. Crystallization water, two

---

67. Three of the four options below are related in a particular way. Select an option that is different or mismatched from others. **(+1, -0.33)**

a. Cow

b. King

c. Spider

d. Web

---

68. The 158.5 m long train crosses the 761.5 m long bridge in 46 seconds. What is the speed of this train? **(+1, -0.33)**

a. 80 km/h

b. 75 km/h

c. 72 km/h

d. 78 km/h

---

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

Question:

Identify the code for SUN from the given statements.

Statement:
I: GUN is written as HUN and TUN are written as UUN.
II: SUN rises from the east.

a. Neither statement I nor II is sufficient.

b. Only statement II is sufficient.

c. Only statement I is sufficient.

d. Both statements I and II are sufficient.

---

70. India and Pakistan have extended the agreement of _____ for 3 years, ie by 2021, which is the second only rail service between the two countries. **(+1, -0.33)**

a. Border Express

b. Samjhauta Express

c. Thar Link Express

d. Attari Express

---

71. A tank can be filled by tap A in 2 hours and tap B in 5 hours. Tap C can empty the filled tank in 8 hours. If all the taps are opened simultaneously, how long will it take to fill the tank completely? **(+1, -0.33)**

a. 12 hours

b. 10/3 hours

c. 8 hours

d. 40/23 hours

72. If a mirror is placed to the right of the figure, indicate the correct mirror image of the given figure. **(+1, -0.33)**

a. 

b. 

c. 

d. 

73. In the 19th century, Western music became popular in India and as a result the following instruments were adopted: **(+1, -0.33)**

a. Guitar, Tabla

b. Trampoline, Tanpura

c. Violin, Piano

d. Sitar, Piano

---

74. Two friends park their vehicle outside the garden entrance. The parking lot is 500 meters from the garden entrance and is located 90° to the left of the garden entrance. If the entrance of the garden is towards the east then in which direction is the parking lot? **(+1, -0.33)**

a. North

b. South

c. West

d. East

---

75. If the molecular formulas of ethane, hydrogen chloride, and glucose are C_2H_6, HCl, and $C_6H_{12}O_6$ respectively, what will be their respective empirical formulas? **(+1, -0.33)**

a. CH_3, HCl and CH_2O

b. C_2H_6, HCl and $C_6H_{12}O_6$

c. $2CH_3$, HCl and $6\ CH_2O$

d. CH, HCl and CHO

---

76. What are the next three numbers in this series? **(+1, -0.33)**

61, 61, 37, 67, 67, 52, 71, 71, _____, _____, _____

a. 64, 73, 73

b. 67, 75, 75

c. 67, 73, 73

d. 65, 75, 75

---

77. The Chief Election Commissioner is appointed by **(+1, -0.33)**

a. Chief Minister

b. Prime minister

c. Vice President

d. President

---

78. 71g of Cl_2 contains atoms: **(+1, -0.33)**

a. 1.205×10^{21}

b. 1.205 × 10 24

c. 1.205 × 10 23

d. 1.205 × 10 22

---

79. y years ago June was 2/7 of Janaki's age. After y years from today, June's age will be 2/3 of Janaki's age. What is the ratio of the present ages of June and Janaki? **(+1, -0.33)**

a. 3 : 4

b. 9 : 16

c. 6 : 11

d. 2 : 7

---

80. 36 kg of gunpowder contains 27 kg of salt, 5.4 kg of charcoal and some amount of sulfur. Find the percentage of sulfur. **(+1, -0.33)**

a. 15%

b. 10%

c. 8%

d. 100%

---

81. Humayun's Tomb, built in 1570, is a fine specimen of great _____ architecture. **(+1, -0.33)**

a. British

b. Chola

c. Mughal

d. Magadh

---

82. Select the mirror image for the following figure. **(+1, -0.33)**

a. C

b. D

c. A

d. B

---

83. Phylum _____ occurs exclusively in marine animals. **(+1, -0.33)**

a. Platyhelminthes

b. Echinodermata

c. Coelenterate

d. Nematode

---

84. If 1234x is divisible by 11, what will be the value of x? **(+1, -0.33)**

a. 4

b. 1

c. 3

d. 2

---

85. _____ is the first in South India and the eighth court in the country, in which e-court payment facility has been introduced. (+1, -0.33)

a. Karnataka High Court

b. Madras High Court

c. Kerala High Court

d. Mumbai High Court

---

86. What is the unit of ionization energy? (+1, -0.33)

a. Joule

b. N/m^2

c. $KJ\ mol^{-1}$

d. $KJ\ m^{-1}$

---

87. Which of the following metals is used to electrode iron material? (+1, -0.33)

a. Calcium

b. Zinc

c. Silver

d. Aluminum

---

88. On investing an amount of 7.5% simple interest per annum, it becomes Rs. 819 after completion of 4 years. What was the amount invested? (+1, -0.33)

a. Rs. 630

b. Rs. 660

c. Rs. 620

d. Rs. 640

---

89. The tissue that makes a plant hard and strong is called: **(+1, -0.33)**

a. Sclerenchyma

b. Aerenchyma

c. Colenchyma

d. Parenchyma

---

90. Which of the following words is related to football? **(+1, -0.33)**

a. Dribble

b. Night watchman

c. Doosra

d. Googly

---

91. What type of vegetative spread is seen in chrysanthemum (Guldaudi)? **(+1, -0.33)**

a. Runner

b. Stallon

c. Offset

d. Blotch

---

92. A computer game has builders and destroyers. They are 32. Some of them try to build a wall around a palace while the rest try to demolish it. Each builder can build a wall alone in 36 hours while any destroyer can demolish it in 30 hours. If all 32 are activated when there is no wall and the wall is built in 2.5 hours, how many of them are destroyers? **(+1, -0.33)**

a. 12

b. 6

c. 8

d. 10

---

93. In which state are the Khetri mines located? **(+1, -0.33)**

a. Orisha

b. Rajasthan

c. Bihar

d. Uttar Pradesh

---

94. The length and width of a rectangular piece of ground are 80 m and 36 m, respectively. A pit was dug 40 m long, 18 m wide and 12 m deep in one corner of this ground. The soil from the pit was spread evenly over the remaining ground. How much did it increase the height of the land? **(+1, -0.33)**

a. 2 m

b. 3 m

c. 4 m

d. 5 m

---

95. If 8219x is divisible by 11, what will be the value of x? **(+1, -0.33)**

a. 5

b. 2

c. 3

d. 4

---

96. 60 men can do a work in 17 days. 5 workers left work after 6 days. Since then How many days will it take to complete the remaining work? **(+1, -0.33)**

a. 15

b. 16

c. 13

d. 12

---

97. Wooden sleepers (timber) are used under the rail. What does it produce? **(+1, -0.33)**

a. Large area, which reduces pressure.

b. Small area, which increases the pressure.

c. Large area, which increases the pressure.

d. Wooden sleepers are easy to find.

---

98. Read the following information carefully and answer the question given below: **(+1, -0.33)**

Veena and Bindu play Carrom and Throwball.
Kavya and Pavitra play tennis and chess.
Bindu and Kavya play chess and throwball.
Veena and Pavitra play carrom and tennis.
Who among them plays chess, throwball and tennis?

a. Kavya

b. Bindu

c. Veena

d. Pavitra

---

99. You are given a question and two statements. Find out which statement is necessary / sufficient to answer the question. **(+1, -0.33)**

Question:

What is the total sales made by Company Y in the financial year 2017

Statement:

1. The company sold 2000 products of Y in the year 2017, each worth Rs. 1000.

2. The company did not release any product other than Y in the year 2017.

a. Each statement alone is sufficient.

b. 1 alone is sufficient while 2 alone is not sufficient.

c. 2 alone is sufficient while 1 alone is not sufficient.

d. Both 1 and 2 together are sufficient.

---

100. The four abbreviations arranged in ascending order are w, x, y and z. The smallest three numbers average 23, while the largest three numbers average 29. What is the range of data? **(+1, -0.33)**

a. 15

b. 24

c. 18

d. 21

Answers

1. **Answer: d**

Explanation:

Given,

Error : Big mistake : : deny : ?

Here we see error means mistake or a big mistake, similarly, deny means prohibition or disallow.

∴ The term related to the third term is prohibition.

Hence, the correct answer is Prohibition.

---

2. **Answer: b**

Explanation:

Calculation:

Find the prime factorization of 21

⇒ 21 = 3 × 7

Find the prime factorization of 560

⇒ 560 = 2 × 2 × 2 × 2 × 5 × 7

Multiply each factor the greater number of times it occurs above to find the LCM.

⇒ LCM = 2 × 2 × 2 × 2 × 3 × 5 × 7

⇒ LCM = 1680

∴ The least common multiple of 21 and 560 is 1680.

3. **Answer: c**

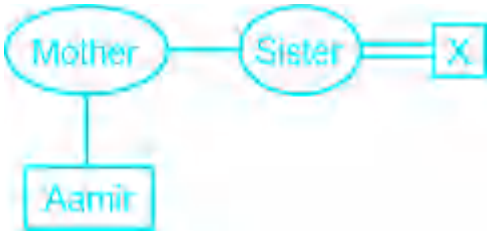
Explanation:

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

Given,

X is the husband of Aamir's mother's sister.

The family tree is as follow,



Here we see X is **Uncle** to Aamir.

Hence, the correct answer is Uncle.

4. **Answer: d**

Explanation:

The correct answer is **N.**

⭐ **Key Points**

- **N (Newton)** is the **SI unit of force.**
- All other options are **a unit of pressure.**
- **Dyne cm -2** (dyne per centimeter squared) is a **unit of pressure i** n the **CGS system.**
- **Pa (Pascal)** is the **SI unit of pressure.**
- **N m -2** (Newton per meter squared) is a **unit of pressure** that is **equivalent to Pascal.**

---

5. **Answer: a**

Explanation:

The positions of the letters according to the English alphabet series:

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

Given word,

"ASTEROID"

In alphabetical order,

ADEIORST

∴ The total value of consonants,

Consonants are D, R, S and T

The total value of the position of the consonants from the left side is :

8 +7 + 6 + 2 = 23

Hence, the correct answer is 23.

---

6. **Answer: d**

Explanation:

Given,

Statement: Should TV plays be banned?

Argument:

I. Yes, they show a very negative view of life situations that are influencing some sects of society to imitate the same behaviour.

→ This argument does not follow the statement as TV plays do not show a very negative view of life situations that are influencing some sects of society to imitate the same behaviour.

II. No, this is good interesting entertainment for older people.

→ This argument supports the statement as TV plays entertains the older people.

Hence, the correct answer is Only argument II is strong.

---

7. **Answer: c**

Explanation:

The correct answer is**Spain**.

⭐ Key Points

- **Spain has won the 2018 FIFA Fair Play Trophy.**
  - **Spain** won the **Fair Play Trophy** which goes to the team with the tournament's best **disciplinary record** .
  - The winner is selected by the **FIFA Technical Study Group** .
  - **Luka Modric, Kylian Mbappe, Harry Kane, and Thibaut Courtois** all received awards for their respective achievements at the **2018 World Cup** during the presentation ceremony following the final at the **Luzhniki Stadium in Moscow, Russia** .
  - The **FIFA Fair Play Award is a FIFA** recognition of **exemplary behavior that promotes the spirit of fair play and compassion** in association with **football** around the world.
  - **First awarded in 1987** , it has been presented to individuals (including posthumously), **teams, fans, spectators, football associations/federations, and even entire footballing communities.**

⭐ Additional Information

- **The fair play award** is an annual football **award** and it is **awarded** to the team which has the **best record of playing** as per the rules and **playing fair** even when they are competing hard.
- **Leeds United and their manager** ,**Marcelo Bielsa** , have won the **2019 Fifa Fair Play Award** at the governing body's annual award ceremony in **Milan** .
  - The **Championship side won the award after Bielsa** ordered his team to let **Aston Villa score an equalizer at Elland Road in April.**
- **Mattia Agnese** a **17-year-old Italian defender** who has won the **2020 FIFA Fair Play Award** after saving the life of one of his opponents last January.
  - **Agnese (17)** is playing for **Ospedaletti, a non-professional Italian club based in the Region of Liguria.**

8. **Answer: d**

Explanation:

The correct answer is 600kg.

⭐ Key Points

- **Power of pump=1kW=1000W**
  - **Time(t)** =60s
  - **Height(h)** =10 m
  - **g** =10ms $^{-2}$
  - We know, **Power=work done per unit time**
  - **Work done=mgh**
  - = **m×10×10 =100m**
  - **Power** = 100m/t
  - **1000** = 100m/60
  - **m=600 kg**
- **Hence,pump can raise 600 kg water per minute up to 10 m height.**

---

9. **Answer: b**

Explanation:

The correct answer is**David Grossman**.

⭐ Key Points

- **David Grossman has won the Man Booker International Award for his novel '** A Horse Walks Into a Bar **'.**
  - **David Grossman** has become the **first Israeli author** to win the **Man Booker International Prize.**
  - **Grossman** is a bestselling **Israeli writer of fiction, non-fiction, and children's literature,** whose works have been translated into **36 languages** .

- **A Horse Walks into a Bar** is a novel published in **Hebrew in 2014 by Ha'kibbutz Ha'meuchad as Sus echad nichnas Lebar** .
    - The book was translated into English by **Jessica Cohen** , and published in the UK by Jonathan Cape in **November 2016** and in the US by **Alfred A. Knopf in February 2017** .
    - The title is **derived from** a**common bar joke** .
- Hence, the correct option is 2.

⭐ Additional Information

- **Ismail Kadare** is an Albanian novelist, poet, essayist, and playwright.
    - He has been a leading **literary figure in Albania** since the 1960s.
    - He focused on poetry until the publication of his first novel **"The General of the Dead Army** " which made him a leading literary figure in Albania and famous internationally.
- **Philip Milton Roth** (March 19, 1933 – May 22, 2018) was an **American novelist** and short-story writer.
    - Roth's fiction, regularly set in his birthplace of Newark, New Jersey, is known for its intensely **autobiographical character** for philosophically and formally blurring the distinction between **reality and fiction** .
- **Jessica Cohen** is a **British-Israeli-American literary translator.**
    - **Her** translation of David Grossman's 2014 novel A Horse Walks Into a Bar was awarded the **2017 Man Booker International Prize.**

---

10. **Answer: c**

Explanation:

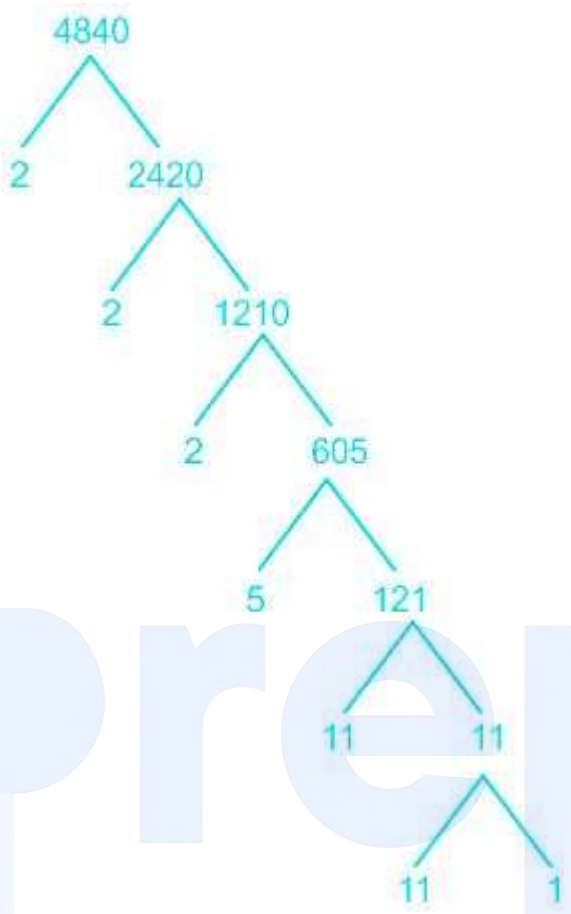
Formula used:

$n = x^a \times y^b \times z^c \times p^d$

Factor d(n) is

$d(n) = (a + 1)(b + 1)(c + 1)(d + 1)$

Calculation:



The prime factorization in exponential form is: $2^3 \times 5^1 \times 11^2$

$\Rightarrow 4,840 = 2^3 \times 5^1 \times 11^2$

$\Rightarrow d(n) = (a + 1)(b + 1)(c + 1)$

$\Rightarrow d(4840) = (3 + 1)(1 + 1)(2 + 1)$

$\Rightarrow d(4840) = (4)(2)(3)$

$\Rightarrow d(4840) = 24$

∴ multiples of the number 4840 are 24

---

11. Answer: c

Explanation:

We know,

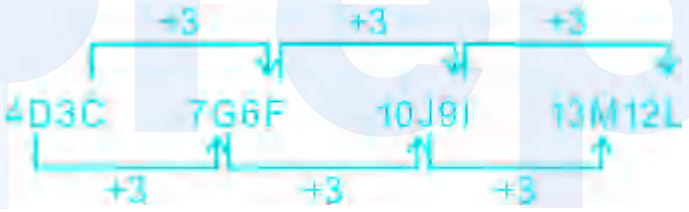
Alphabets	A	B	C	D	E	F	G	H	I	J	K	L	M
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Alphabets	Z	Y	X	W	V	U	T	S	R	Q	P	O	N

Given,

4D3C, 7G6F, 10J9I, _____ ?

The pattern followed here is,

The number represents the place value of the alphabets



Hence, the correct answer is 13M12L.

---

12. Answer: b

Explanation:

Given:

Mean = 38

Range = 31

The middle number is 20 less than the sum of the other two numbers

Formula used:

Mean = (x + y + z)/3

Range = biggest term – smallest term

Calculation:

Let the three numbers is x, y, and z.

Mean = (x + y + z)/3

⇒ 38 = (x + y + z)/3

⇒ x + y + z = 114 ....(i)

According to question,

Middle term = (first term + last term) – 20

⇒ y = (x + z) – 20

Value of y putting in equation (i)

⇒ x + z + (x + z) – 20 = 114

⇒ 2(x + z) =134

⇒ x + z = 67 ....(ii)

According to question

Rang = biggest term – smallest term

⇒ z – x = 31 ....(iii)

add the equation of (ii) and (iii)

⇒ 2z = 98

⇒ z = 49

∴ **The largest number is 49.**

13. **Answer: c**

Explanation:

The correct answer is**Alluvial**.

⭐ **Key Points**

- **The fertile Gangetic plain is made up of rich Alluvial soil.**
  - **Alluvial soils** are soils deposited by **surface water.**
  - You will find them along **rivers, in floodplains and deltas, stream terraces, and areas called alluvial fans.**
  - This last category results from larger floods, causing the soil to spread out in the shape of a **triangle fan.**
  - Most alluvial soils are derived from the sediment being deposited by the **river Ganga** in **the Indo–Gangetic plain.**
  - **Alluvial soil** can be classified into **two groups** on the basis of its age :
    1. **khaddar**
    2. **Bhangar**

⭐ **Additional Information**

- **Arid soil** has a very low concentration of **organic matter** , reflecting the paucity of **vegetative production** on these **dry soils** .
  - In India, the arid soil is mainly found in parts of **Western Rajasthan, Haryana, and Punjab** and extends up to the **Rann of Kutch in Gujarat.**
  - It is also called **Desert soil** in some places.
- **Red soil** is a type of soil that develops in a **warm, temperate, moist climate under deciduous.**
  - It has thin organic and **organic-mineral layers** overlying a **yellowish-brown leached layer** resting on an illuvium red layer.
  - Red soils are generally derived from **crystalline rock** .
- **Black soils** are mineral soils that have a black surface **horizon, enriched with organic carbon that is at least 25 cm deep.**
  - These soils are black in color due to the presence of **iron, aluminum compounds, and humus.**

- The black soil is majorly found in the parts of **Gujarat, Maharashtra, Western parts of Madhya Pradesh, North- Western Andhra Pradesh, Karnataka.**

---

14. **Answer: c**

Explanation:

Given,

True is related to False.

We know the opposite of true is false.

Similarly,

The opposite of straight is the curve.

Hence, the correct answer is Curve.

---

15. **Answer: c**

Explanation:

The correct answer is **The electrons in the conductor move at a constant average speed** .

⭐ **Key Points**

- **In trailing velocity the electrons in the conductor move at a constant average speed.**
- **Drift velocity defined** as:
  - The average velocity attained by **charged particles, (eg. electrons) in a material due to an electric field** .
  - The **SI unit** of **drift velocity** is **m/s** .

- Subatomic particles like **electrons move in random directions all the time.**
  - When electrons are subjected to an **electric field they do move randomly, but they slowly drift in one direction.**
- The **drift velocity** of an **electron for a unit electric field** is known as the **mobility of the electron** .

⭐ Additional Information

- **Velocity Defined** :
  - The meaning of velocity of an object can be defined as the rate of change of the object's position with respect to a frame of reference and time.
  - It might sound complicated but velocity is basically speeding in a specific direction.
- **Constant Velocity** :
  - The motion with constant velocity is the simplest form of motion. We witness constant motion whenever an object slides over a horizontal, low friction surface.

---

16. **Answer: b**

Explanation:

The correct answer is**SAIL**.

⭐ Key Points

- **SAIL is a public sector industry.**
  - **Steel Authority of India Limited** (SAIL) is an Indian state-owned steel making company based in **New Delhi,** India.
  - SAIL traces its origin to the **Hindustan Steel Limited** (HSL) which was set up on **19 January 1954.**
  - It is a **public sector** undertaking, owned and operated by the **Government of India.**
  - SAIL operates and owns **5 integrated steel plants** at **Bhilai, Rourkela, Durgapur, Bokaro, and Burnpur** (Asansol) and **3 special steel plants at Salem, Durgapur, and Bhadravathi.**

- It also owns a **Ferro Alloy plant at Chandrapur.**

⭐ Additional Information

- **Amul** is an **Indian dairy cooperative society,** based at Anand in the Indian state of Gujarat formed in **1946.**
  - Amul brand is today managed by the **Gujarat Co-operative Milk Marketing Federation Ltd** (GCMMF) which is jointly owned by about **3,000,000** milk producers in the state.
  - AMUL stands for **Anand Milk Union Limited** .
- **TISCO** is known as Tata Steel, which has grown to **the world's 7th largest Steel Company.**
  - In terms of **domestic** production, Tata Steel is the largest company in India.
  - The **main plant** of Tata Steel is located in **Jamshedpur** and **registered office in Mumbai.**
  - The name of the town where TISCO was founded by Jamshedji was given by **Lord Chelmsford in 1919** .
- **Reliance Petroleum** is an Indian petroleum company that specializes in **oil and energy** owned by **Seema Bindal** of Reliance Industries Limited.
  - It is based in **Ahmedabad, Gujarat** , India, and has interests in the **downstream oil business** .

---

17. **Answer: a**

Explanation:

Given:

a : b = 4 : 5 and a : c = 3 : 4

Calculation:

To find a : b : c, a is made same in both the ratios,

Now, a/b = 4/5

⇒ b = 5a/4 ----(1)

And a/c = 3/4

⇒ c = 4a/3 ----(2)

Dividing eq (1) and eq (2) we'll get

⇒ b/c = (5a/4)/(4a/3)

∴ **b : c is 15 : 16**

---

18. Answer: b

Explanation:

The correct answer is **Its kinetic energy is constant**.

- As mentioned in the given condition, the particle is acted upon by a force of constant magnitude which is always perpendicular to the velocity of the particle, so work done by the force in the direction of the velocity is zero.
- Therefore, the magnitude of velocity would not change due to this force.
- $KE = \frac{1}{2}mv^2$
- As we know mass and magnitude of velocity will always be constant in this given situation so the kinetic energy will also be constant.

---

19. Answer: d

Explanation:

The correct answer is**May 2016**.

⭐ **Key Points**

- **Pradhan Mantri Ujjwala Yojana was launched in May 2016.**

- Pradhan Mantri Ujjwala Yojana was launched by **Prime Minister of India Narendra Modi on 1 May 2016.**
- it is implemented by the Ministry of **Petroleum and Natural Gas through its Oil Marketing Companies.**
- The government aims to provide **LPG connections to BPL households** in the country.
- The scheme is **aimed** at replacing the **unclean cooking fuels** mostly used in **rural India** with clean and more efficient LPG.

⭐ Additional Information

- **Pradhan Mantri Jan Dhan Yojana:**
  - Pradhan Mantri Jan Dhan Yojana is a **financial inclusion** program of the Government of India open to Indian citizens.
  - This yojana **aims** to expand affordable access to **financial services such as bank accounts, remittances, credit, insurance, and pensions.**
- **Pradhan Mantri Awas Yojana:**
  - Pradhan Mantri Awas Yojana is an initiative by the Government of India in which **affordable housing** will be provided to the **urban poor** with a **target** of building **20 million affordable houses by 31 March 2022** .
- **Pradhan Mantri Suraksha Bima Yojana:**
  - Pradhan Mantri Suraksha Bima Yojana is a **government-backed accident insurance scheme** in India.
  - It was originally mentioned in the **2015 Budget s** peech by Finance Minister Late **Arun Jaitley in February 2015** .
  - It was formally **launched** by **Prime Minister Narendra Modi on 8 May in Kolkata.**

---

20. Answer: a

Explanation:

The correct answer is 6.023×10^{23}.

⭐ Key Points

- **Avogadro's Number:**
  - **The number of units in one mole of any substance is called Avogadro's number or Avogadro's constant.**
  - It is equal to **$6.022140857 \times 10^{23}$**.
  - The units may be electrons, ions, atoms, or molecules, depending on the character of the reaction and the nature of the substance.

---

21. Answer: c

Explanation:

Given,

Statement:

Homegrown fruits and vegetables are better for health than consuming imported fruits and vegetables, which are maintained to show freshness using artificial conditions.

Conclusions:

I. Imported vegetables are maintained under artificial conditions.

→ True the Imported vegetables are maintained under artificial conditions to show freshness.

II. Homegrown fruits and vegetables are usually fresh.

→ True as they are homegrown they are not maintained under any artificial condition.

Hence, the correct answer is Both conclusions follow.

⭐ Additional Information

- If there are two or more sentences that are used to frame a statement, then, **the sentences must be interrelated, and mutual contradiction should be there.**

- **Do not look for truthful notions.** The **information provided** in the **statement is the only requirement for a student to answer the question. No assumptions must be made.**
- Read the statement carefully and **look for keywords that are common between the statement and the conclusions**
- If there is more than one conclusion that is applicable to the statement, students must ensure that the conclusions they opt for have some relation with each other.

---

22. Answer: b

Explanation:

Given:

The LCM and HCF of two numbers are 120 and 3

One of these numbers is 24

Formula used:

Product of two no. = product of their LCM and HCF

Calculation:

Let the other no. be p

So, 24 × p = 120 × 3

⇒ 24 × p = 360

⇒ p = 15

Therefore, the second number is 15

---

23. Answer: d

Explanation:

Given,

Statement:

Read the instructions before you start playing the game.

Assumptions:

1. The game is being organized. → Implicit as the game is about to start.
2. No blind person is playing the game. → Implicit as the statement asks to 'read' the instructions. This requires the players to be having proper eyesight. Thus, the authorities might have assumed that people who are playing might be not blind.
3. Players are literate. → Implicit as the statement asks to 'read' the instructions. This requires the players to be capable of reading. Thus, the authorities might have assumed that people who are playing might be literate.

Hence, the correct answer is "All are implicit."

---

24. Answer: d

Explanation:

Given,

State, District, City

The best possible Venn diagram is,

Hence, the correct answer is **figure a.**

---

25. Answer: a

Explanation:

The correct answer is 3 ms-2 .

⭐ Key Points

- Force = mass * acceleration
  - **Acceleration = force/mass**
  - **Acceleration** = 240/80
  - **Acceleration** =3 ms $^{-2}$
- Hence, acceleration should be 3 ms $^{-2}$

⭐ Additional Information

- **Newton's 2nd law states** that the acceleration of an object as produced by a **net force is directly proportional to the magnitude of the net force, in the same direction as the net force, and inversely proportional to the mass of the object.**
  - **Force = mass *acceleration.**

---

26. Answer: d

Explanation:

The correct answer is the **Frequency**.

⭐ **Key Points**

- **Frequency:**
  - The **total number of frequencies observed in observation of data.**
- **Mean:**
  - The **"mean" is the "average"** you're used to, where you add up all the numbers and then divide by the number of numbers
- **Median:**
  - The **"median" is the "middle"** value in the list of numbers
- **Range:**
  - **List numbers** are just the difference between the largest and smallest values .

---

27. **Answer: d**

Explanation:

The correct answer is **Birmingham**.

⭐ **Key Points**

- **Birmingham City has been chosen to host the 2022 Commonwealth Games.**
  - The **2022 Commonwealth Games,** officially known as the **XXII Commonwealth Games** and commonly known as **Birmingham 2022.**
  - It is an **international multi-sport** event for **members of the Commonwealth** that is scheduled to be held in **Birmingham, England** .
  - This is to be the **third time England** has hosted the Games after **London in 1934 and Manchester in 2002.**
  - The Games are expected to **take place** between **28 July and 8 August 2022.**
  - The city was announced as the host by the **Commonwealth Games Federation (GCF)** at a press conference at the **Arena Academy in Birmingham on 21 December 2017.**

⭐ Additional Information

- **Her Majesty Queen Elizabeth II** is **Head** of the Commonwealth.
- The **headquarters** of GCF is located in **London, England.**
- 2026 Commonwealth Games:
  - The 2026 Commonwealth Games, officially known as the **XXIII Commonwealth Games.**
  - It is a **multi-sport event** for members of the Commonwealth to be organized in a city designated by the Commonwealth Games Federation.
  - The **host city** was initially intended to be selected at the **2019 GCF General Assembly in Kigali, Rwanda.**
- 2018 Commonwealth Games:
  - The 2018 Commonwealth Games, officially known as the **XXI Commonwealth Games** and commonly known as **Gold Coast 2018.**
  - It was held on the **Gold Coast, Queensland, Australia, between 4 and 15 April 2018.**
  - It was India's **18th** appearance at the Commonwealth Games. With **26 Gold medals** and a **total of 66 medals.**
  - India finished **3rd** in the tournament.
  - The first time a major multi-sport event achieved **gender equality** by having an **equal number** of events for **male and female athletes.**

28. **Answer: a**

Explanation:

Given:

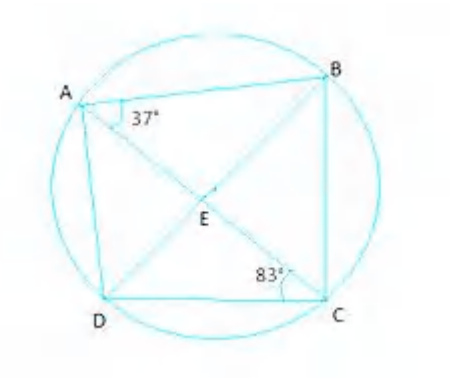
A, B, C, and D are points on the circle.

The AC and BD on E intersect each other inside the circle

The AB and CD lines are drawn

∠ BAE = 37° and ∠ACD = 83°

Calculation:



∠ABD = ∠ACD = 83° (angle in the same segment are equal)

Now in triangle AEB

⇒ 37° + 83° + ∠AEB = 180° (angle sum property)

⇒ ∠AEB = 60°

As AEC is a straight line

So, ∠AEB + ∠BEC = 180 (linear pair)

⇒ 60° + ∠BEC = 180°

⇒ ∠BEC = 120°

Therefore, ∠BEC = 120°

---

29. Answer: b

Explanation:

Given:

Pipe A alone can fill a tank in 12 minutes

Pipe B can fill the same tank in 15 minutes

Pipe C which is at the bottom of the tank can drain the tank at the rate of 2 litres/minute

All three pipes are kept open together when the tank is full, the tank gets emptied in one hour

Calculation:

Let C be the lime that Pipe C takes to empty the tank when Pipe A and Pipe B are closed

Pipe A + Pipe B - Pipe C kept Open together results in a full tank getting emptied in 1 hour (60 min.)

⇒ (1/12) + (/15) - (1/C) = - (1/60)

(Negative signed indicates that the tank is getting empty)

⇒ 1/C = (1/12) + (1/15) + (1/60)

⇒ 1/C = (5 + 4 + 1)/60

⇒ 1/C = 10/60

⇒ C = 6 minutes

If Pipe C can empty the tank in 6 minutes and it drains water at the rate of 2 liters/minute

Then the capacity of the tank

⇒ 2 × 6

⇒ 12 liters

∴ The capacity of the tank is 12 liters

---

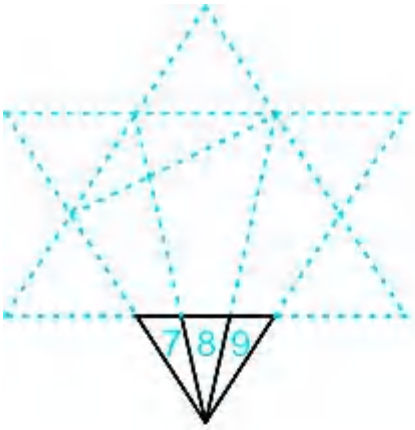
30. **Answer: d**

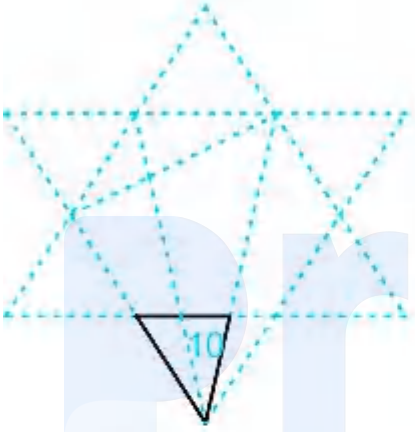
Explanation:

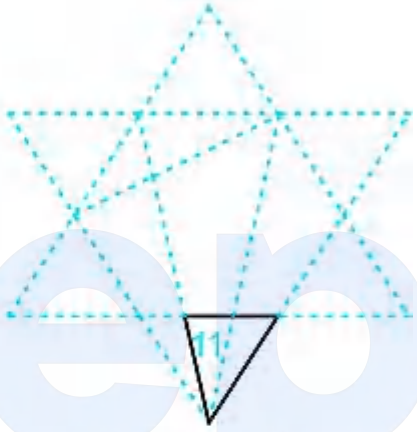
The pattern followed here is:

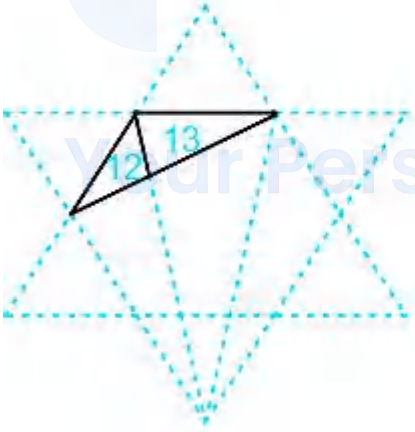
For 1st figure:

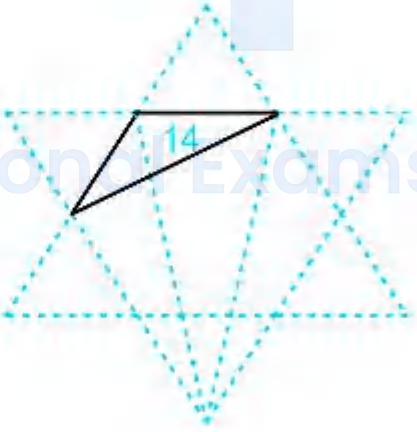
For other triangles:

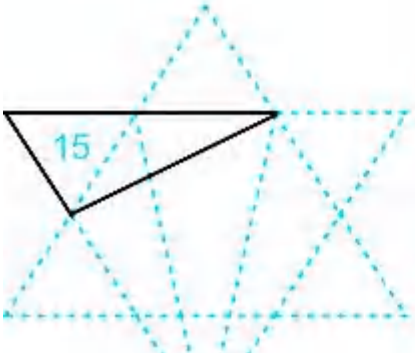


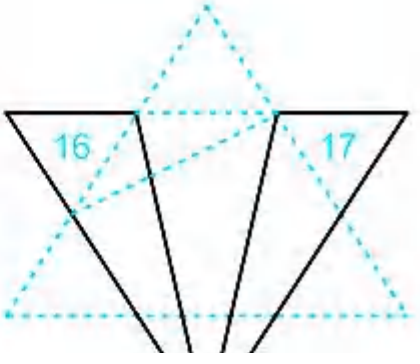


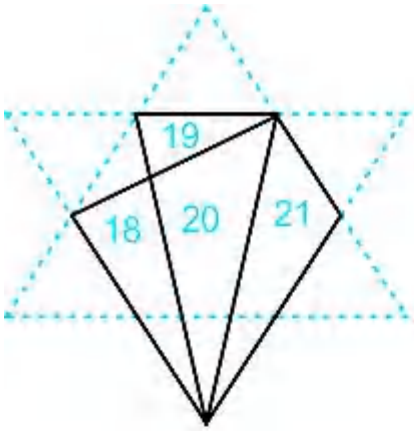


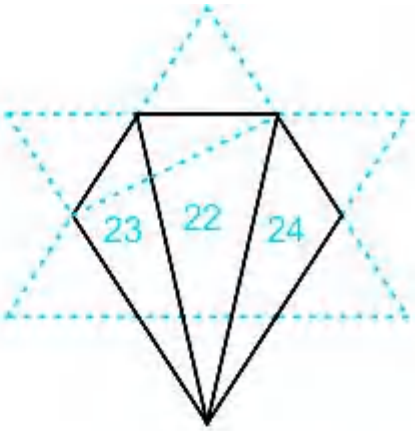


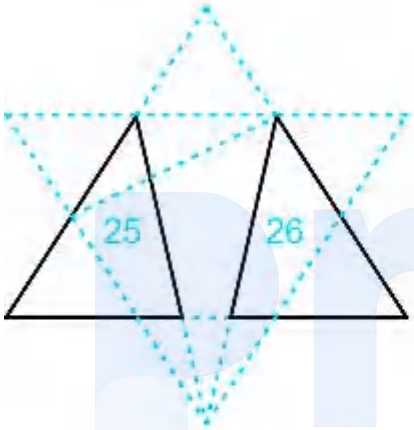


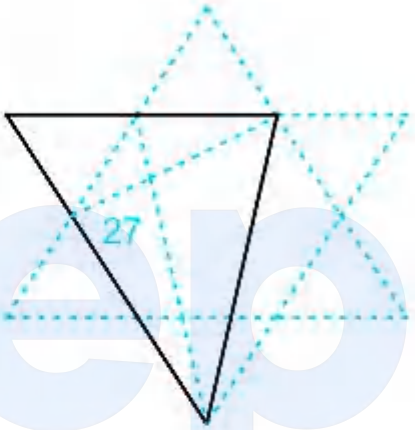


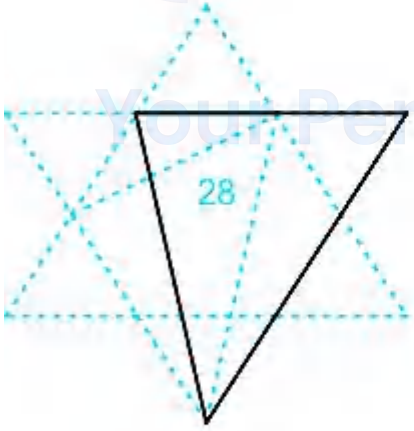


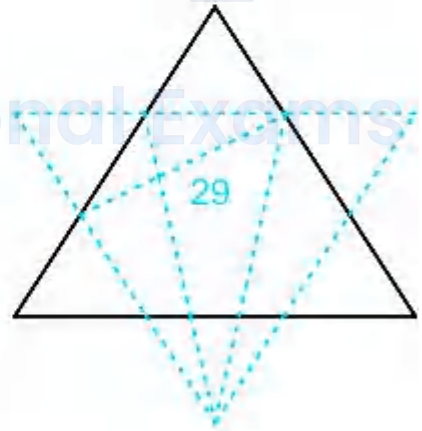


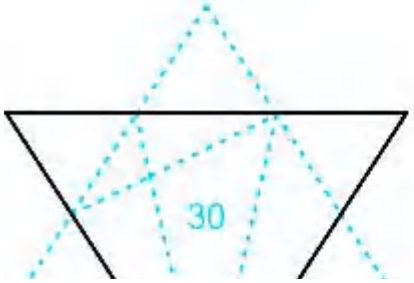












Thus total number of triangles = 30

Hence, the correct answer is **"30".**

---

31. Answer: d

Explanation:

Concep used:

We have to follow the BODMAS rule

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

Calculation:

(3.7 - 2.931 + 0.12) × 0.37 = ?

⇒ (3.82 – 2.931) × 0.37 = ?

⇒ 0.889 × 0.37 = ?

⇒ ? = 0.32893

∴ The vale of '?' is 0.32893

---

32. **Answer: a**

Explanation:

The correct answer is the **Right to Property**.

⭐ **Key Points**

- **The right to Property fundamental rights is not enshrined in the Constitution of India.**
  - The right to property is not a Fundamental Right but is a **constitutional right.**
  - By the **44th Amendment** to the Constitution, the right to property was **removed as a fundamental right,** and instead, a new provision was added to the Constitution.
  - Article **300-A making it a constitutional right.**
  - This right was eliminated to make sure that **every person can get deprived of the property and also decreasing the boundaries** of rich and poor categories for owning land .

⭐ **Additional Information**

- **Fundamental Right Defined** :-
  - Fundamental rights are those rights that are **essential for the intellectual, moral, and spiritual development of citizens of India.**
  - As these rights are fundamental or essential for the existence and **all-around development of individuals,** they are called 'Fundamental Rights'.
- There are **six fundamental rights** recognized by the Indian constitution:
  - **Right to equality (Articles. 14-18)**
  - **Right to Freedom (Articles. 19-22)**
  - **Right Against Exploitation (Articles. 23-24)**
  - **Right to Freedom of Religion (Articles. 25-28)**
  - **Cultural and Educational Rights (Articles. 29-30)**
  - **Right to Constitution**
- **The right to freedom** includes **freedom of speech** and **expression, assembly, association or union or cooperatives, movement, residence, and the right to**

practice any profession or occupation.

- **The right to equality** includes equality before the law, the **prohibition of discrimination** on grounds of **religion, race, caste, sexual orientation, gender or gender identity and/or place of birth, equality of opportunity in matters of employment, the abolition of untouchability, and the abolition of titles.**
- **The right against exploitation** prohibits all forms of forced **labor, child labor, and trafficking of human beings** .
    - Children under the **age of 14** are not allowed to work.

---

33. Answer: b

Explanation:

The correct answer is**Platinum**.

⭐ Key Points

- **Platinum metals exist in their original state.**
    - Platinum is a chemical element with the **symbol Pt** and **atomic number 78.**
    - It is a **dense, malleable, ductile, highly unreactive, precious, silverish-white transition metal.**
    - Its name is derived from the Spanish term **platino** , meaning **"little silver"**
    - **Platinum** is a member of the **platinum group of elements** and group **10 of the periodic table of elements.**
    - Platinum is one of the **least reactive** metals.
    - The **white silver** metal known as platinum is the **heaviest** of the **precious metals** , weighing almost twice as much as karat gold.

⭐ Additional Information

- **Copper** is a chemical element with the **symbol Cu** and **atomic number 29.**
    - It is a **soft, malleable, and ductile metal** with very high thermal and electrical conductivity.
    - A freshly exposed surface of pure copper has a **pinkish-orange color.**
    - Copper is used as a **conductor of heat and electricity.**

- **Iron** is a **brittle, hard substance** , classified as a metal in Group **8 on the Periodic Table** of the Elements.
    - The most abundant of all metals, its pure form rapidly corrodes from exposure to moist air and **high temperatures.**
    - It is the f **ourth most widely distributed** element on the earth's crust but is found as iron ore rather than as a useable metal.
    - Iron ore comes in a variety of forms and **looks like a rock** .
    - It is a mixture of **iron, oxygen,** and other elements, mixed in with **sands and clays** .
- **Potassium** is a chemical element with the **symbol K** and **atomic number 19.**
    - Potassium is a **silvery-white metal** that is **soft** enough to be **cut with a knife** with little force.
    - Potassium metal **reacts rapidly with atmospheric oxygen** to form flaky white potassium peroxide in only seconds of exposure.

---

34. **Answer: c**

Explanation:

The correct answer is **Positive**.

⭐ **Key Points**

- **The convex lens has a focal length of Positive.**
    - The **focal length of an optical system** is a **measure** of how strongly the **system converges** or **diverges light** .
    - it is the **inverse of the system's optical power** .
    - A **positive focal length** indicates that a system converges light, while a **negative focal length indicates that the system diverges light.**
    - The **focal length** of a double convex lens is given by the formula **(1/v) + (1/u) = (1/f).**
    - where **u is the distance** between the **object and the lens** ,**v is the distance** between the **image and the lens.**

⭐ **Additional Information**

- **The convex lens** is a lens that **converges rays of light** that convey **parallel to its principal axis** , which is relatively thick across the **middle and thin at the lower and upper edges** .
    - The **edges are curved outward** rather than inward.
    - Convex lenses are **used in eyeglasses** for correcting **farsightedness,** where the distance between the eye's lens and retina is too short, as a result of which the focal point lies behind the retina.
    - Eyeglasses with **convex lenses increase refraction,** and accordingly reduce the focal length.
- **Macro Lenses** - This **type of camera** lens is used to create **very close-up, macro photographs.**
- **Telephoto Lenses** - Telephoto lenses are **a type of zoom lens with multiple focal points.**
- **A concave lens** is a lens that possesses at least one surface that curves inwards.
    - Concave lenses are **used** in **telescope and binoculars** to magnify objects.
    - It is a **diverging lens** , meaning that it **spreads out light ray** s that have been refracted through it.
    - A concave lens is **thinner at its center** than at its edges and is used to correct short-sightedness.
        - **Biconcave** - A lens in which both sides are **concave is biconcave** . Biconcave lenses are **diverging lenses.**
        - **Plano-concave** - A **lens** in which one side is **concave and the other is Plano** .**Plano-concave** lenses are **diverging lenses** .

---

35. Answer: b

Explanation:

Given,

Criteria for accommodation:

(I) He must have worked in the company for at least 10 years and in the ABC department for at least 4 years.

(II) He should have a maximum of five members in his family.

(III) Before retirement age is 58 years, there is a minimum of 5 years' term left.

(IV) He should not be the owner or co-owner of a house (if one of the spouses is the owner).

For cases in which an employee:

Fulfills all the conditions except (I) above and has joined the company as a manager, he shall be referred to the Director.

Fulfills all the conditions except (III) above and is working as a senior manager in the company, he will be referred to the Managing Director.

Moved from another city. Condition (I) can be removed.

Based on the above conditions, decide whether Sudeep will be provided accommodation or the matter will be referred to a higher authority. All cases are presented on 31 July 2016.

We see Sudeep fulfills all the criteria.

∴ Sudeep will be provided with company accommodation.

Hence, the correct answer is Sudeep will be provided company accommodation.

---

36. Answer: c

Explanation:

The correct answer is**Magnesium**.

⭐ **Key Points**

- **The outermost shell of a Magnesium element has two electrons** .
  - **12** is the **atomic mass** for **magnesium** .

- it is in **group 2 of the periodic table** , which it loses, so its **outer shell is full (2,8).**
- it has a charge of **+2** , as it still has **12 protons** (positive charges) and now has only **10 electrons** (negative charges).
- Magnesium is **used** in products that benefit from being **lightweight, such as car seats, luggage, laptops, cameras, and power tools.**
- It is also added to **molten iron** and **steel to remove sulfur.**

- **Outermost Shell :**
  - This outermost shell is known as the valence shell, and the electrons found in it are called valence electrons.
  - In general, atoms are most **stable, least reactive, when their outermost electron shell is full.**

⭐ Additional Information

- **Carbon** is a **chemical element** with the **symbol C** and **atomic number 6.**
  - It is **nonmetallic** and **tetravalent** -making **four electrons** available to form covalent chemical bonds.
  - It belongs to group **14 of the periodic table** .
  - Carbon typically shares electrons to achieve a complete valence shell, **forming bonds** with **multiple other atoms** .
- **Boron** is a **chemical element** with the **symbol B** and **atomic number 5** .
  - The boron atom has only **six electrons** in its outer shell, leading to an electron deficiency.
  - This molecule has **12 valence shell electron** s, **3 each from the B atoms** , and **1 each from the six H atoms** .
    - Electrons per shell: 2,3
    - Atomic Mass: 10.811 g/mol
- **Chlorine** atom consists of **17 protons** (positively charged sub-atomic particles) in the atom's nucleus (central region), balanced by **seventeen electrons** (negatively charged sub-atomic particles) distributed around the nucleus.

---

37. **Answer: d**

Explanation:

Given:

$p + q = 12$

$pq = 4$

Formula used:

$(p - q)^2 = p^2 + q^2 - 2pq$

$(p + q)^2 = p^2 + q^2 + 2pq$

$p^2 - q^2 = (p + q)(p - q)$

Calculation:

$p + q = 12$ ----(i)

$pq = 4$ ----(ii)

$(p + q)^2 = p^2 + q^2 + 2pq$

Putting the value from equation number (i) and (ii)

$\Rightarrow (12)^2 = p^2 + q^2 + 2 \times 4$

$\Rightarrow 144 = p^2 + q^2 + 8$

$\Rightarrow p^2 + q^2 = 144 - 8$

$\Rightarrow p^2 + q^2 = 136$ ----(iii)

$(p - q)^2 = p^2 + q^2 - 2pq$

Putting the value from equation number (ii) and (iii)

$\Rightarrow (p - q)^2 = 136 - 2 \times 4$

$\Rightarrow (p - q)^2 = 136 - 8$

$\Rightarrow (p - q)^2 = 128$

$\Rightarrow (p - q) = 8\sqrt{2}$ ....(iv)

Then, $P^2 - q^2 = (p + q)(p - q)$

Putting the value for equation number (i) and (iv)

$\Rightarrow P^2 - q^2 = 12 \times 8\sqrt{2}$

$\Rightarrow P^2 - q^2 = 96\sqrt{2}$

Therefore, Both statements are necessary to answer the question.

---

38. Answer: c

Explanation:

The correct answer is **Ultrasonic waves**.

⭐ **Key Points**

- **Bats detect the obstacles along the way by getting the reflected Ultrasonic waves.**
- They are one of the few mammals that can use sound to **navigate--a trick** called echolocation.
- Bats produce **echolocation sounds** , which are usually **ultrasonic, ranging in frequency** from **20 kilohertz (kHz) to 200 kHz.**
- Bats **emit high-frequency sound waves while navigating** , and process the echo that comes back from obstacles.
- Bats are not blind, but **at night** their **ears are more important than their eyes.**
- The **returning echoes** give the bats information about anything that is ahead of them, including the **size and shape** of an insect and which way it is going.
- Hence, the correct option is 3.

⭐ **Additional Information**

- **Ultrasonic Wave** :

    - Ultrasound is sound waves with **frequencies higher than the upper audible limit of human hearing.**
    - Ultrasound is not different from "normal" sound in its physical properties, except that humans cannot hear it.
    - This limit varies from person to person and is approximately **20 kilohertz in healthy young adults.**
    - **Ian Donald and engineer Tom Brown**with the invention of ultrasonic wave.
- **Radio Wave** :
    - Radio waves are a type of **electromagnetic radiation** best-known for their use in communication technologies, such as **television, mobile phones, and radios** .
    - These devices receive radio waves and convert them to mechanical vibrations in the speaker to create sound waves.
    - Radio waves have **frequencies as high as 300 gigahertz to as low as 30 hertz.**
- **Subsonic Wave** ;
    - A subsonic wave is a wave that is **traveling slower than the speed of sound** and a supersonic wave travels faster.
    - By definition, a sound wave travels at the speed of sound which varies depending on the medium through which it's traveling.
- **Electromagnetic Waves** :
    - EM waves are waves that are created as a result of **vibrations between an electric field and a magnetic field.**
    - In other words, EM waves are **composed of oscillating magnetic and electric fields.**

---

39. **Answer: b**

Explanation:

Given:

$a - \frac{1}{a} = 7$

Formula used:

$(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

Calculation:

$a - \frac{1}{a} = 7$ ----1

$\Rightarrow \left(a - \frac{1}{a}\right)^3 = a^3 - \frac{1}{a^3} - \frac{3a}{a}\left(a - \frac{1}{a}\right)$

$\Rightarrow a^3 - \frac{1}{a^3} = \left(a - \frac{1}{a}\right)^3 + 3\left(a - \frac{1}{a}\right)$

$\Rightarrow a^3 - 1/a^3 = 7^3 + 3 \times 7$

$\Rightarrow 343 + 21$

$\Rightarrow 364$

$\therefore a^3 - \frac{1}{a^3} = 364$

---

40. Answer: a

Explanation:

Given:

condition are $(a + b)^2 > (a - b)^2$

a = b

Calculation:

condition 1

$(a + b)^2 > (a - b)^2$

$\Rightarrow a^2 + 2ab + b^2 > a^2 - 2ab + b^2$

$\Rightarrow 2ab > -2ab$

$\Rightarrow 4ab > 0$

⇒ ab > 0 ----1

condition 2

a = b ----2

∴ here we conclude that (a + b) 2 > (a - b) 2 is sufficient to answer question but a = b is not sufficient to answer question

---

41. **Answer: d**

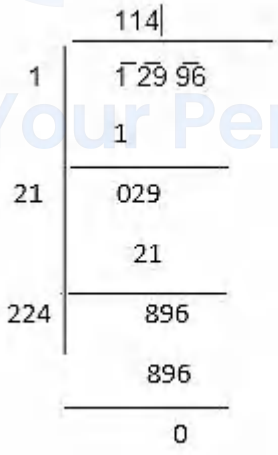
Explanation:

Given:

√12996

Calculation:

Division method



∴ The value of √12996 is 114

⭐ Shortcut Trick

We know that

$110^2 = 12100$

$120^2 = 14400$

⇒ 12100 < 12996 < 14400

⇒ √ 12996 lies between 110 and 120

From options 114 will be the answer

∴ The value of √12996 is 114

---

42. Answer: d

Explanation:

The correct answer is 3750.

⭐ Key Points

- By work-energy theorem
  - Work was done in overcoming the air resistance=Loss in energy
  - Initial KE=$0.5\times m\times v1^2$
    - $=0.5\times0.01\times10^6$
    - $=5000J$
  - Final KE=$0.5\times m\times v2^2$
    - $=0.5\times0.01\times25\times10^4$
    - $=1250J$
  - Work was done in overcoming the air resistance=5000-1250=3750J
- Hence the correct answer is option 4

---

43. Answer: b

Explanation:

Given:

76 ÷ 19 × 2 – 6

Concept used:

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

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

calculation:

76 ÷ 19 × 2 – 6

⇒ 4 × 2 – 6

⇒ 8 – 6

⇒ 2

∴ The value of 76 ÷ 19 × 2 – 6 is 2

---

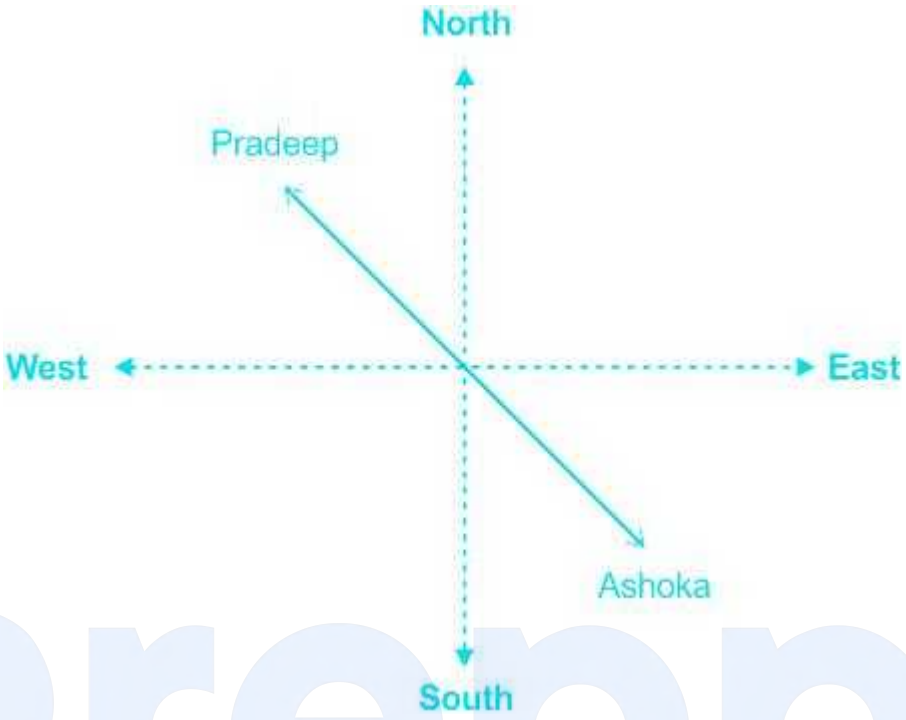
44. Answer: c

Explanation:

Given,

Pradeep and Ashoka were running in exactly the opposite direction. Pradeep was running in the north-west direction.

∴



Here we see Ashoka is running in the South-East direction.

Hence, the correct answer is South - East.

---

45. Answer: b

Explanation:

Given,

Statement:

Nowadays the prices of goods are increasing.

Conclusions:

I. All things are becoming rare. → This statement does not follow as all things are not becoming rare.

II. People cannot eat things. → This statement also does not follow as the statement is regarding increasing prices of goods and it has nothing to do what people can eat and not.

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

---

46. Answer: c

Explanation:

The correct answer is C_4H_9.

⭐ Key Points

- **Homologous series:**
  - Homologous series is a series of compounds with similar chemical properties and some functional groups differing from the successive member by CH_2.
  - Carbon chains of varying length have been observed in organic compounds having the same general formula.
  - Alkanes with general formula C_nH_{2n+2}, alkenes with general formula C_nH_{2n} and alkynes with general formula C_nH_{2n-2} form the most basic homologous series in organic chemistry.

⭐ Important Points

- In a homologous series, the increment in the carbon chain of the adjacent members is $-CH_2$.
- **Hence C_4H_9 is not the Homologous series .**

---

47. Answer: a

Explanation:

Given,

'×' is supposed as '−' and

'÷' is supposed as '+'

((55 × 50) ÷ 25) ÷ 125.

∴ → ((55 - 50) + 25) + 125

→ (5 + 25) + 125

→ 30 + 125

→ 155

Hence, the correct answer is 155.

---

48. Answer: b

Explanation:

The correct answer is **Dinesh Kumar Khara.**

⭐ **Key Points**

- **Dinesh Kumar Kharais the current head of State Bank of India.**
- **State Bank of India** :
  - It is an Indian **multinational, public sector banking and financial services** statut **ory body headquartered in** Mumbai, Maharashtra.
  - SBI is the **43rd largest ban** k in the world and ranked **221st in the Fortune Global** 500 list of the world's biggest corporations of 2020.

⭐ **Additional Information**

- **Dinesh Kumar Khara :**
  - He has **replaced SBI chairman Rajnish Kumar,** whose three-year term comes to an end today.

    - Mr Khara joined SBI as Probationary Officer in 1984.
    - He has over **36 years** of rich **experience** in all facets of Banking.
    - The Government **appointed** Dinesh Kumar Khara as chairman of the bank **for three years** effective from **October 7, 2020.**
    - Khara was **appointed** as managing director of SBI in **August 2016** for a three-year term..
    - Khare was **instrumental in merging** five associate banks and **Bharatiya Mahila Bank with SBI effective April 2017** .
- Nita Mukesh Ambani:
    - She is an Indian **philanthropist.**
    - She is the **chairperson and founder** of the **Reliance Foundation, Dhirubhai Ambani International School** and a **non-executive director of Reliance Industries** .
    - She is **married** to Reliance Industries chairman and managing director **Mukesh Ambani.**
- Barkha Singh:
    - She is an Indian model.
    - She **began her career** as a **child artist** at the age of 10.
- Arundhati Bhattacharya :
    - She is a **retired** Indian banker and **former Chairperson of the State Bank of India.**
    - She is **the first woman** to be the Chairperson of the **State Bank of India.**
    - **In 2016 she was listed as the 25th most powerful woman in the world by Forbes.**

---

49. Answer: c

Explanation:

The correct answer is**Phloem**.

⭐ Key Points

- Phloem tissue transports food to plants .

- In plants, the **synthesized food molecules** by the leaves are transported to the different storage organs- **roots, stem, fruits with the help of vascular tissue** called phloem.
- Phloem is the **living tissue** in vascular plants that transports the soluble organic compounds made during **photosynthesis** and known as photosynthates, in particular the sugar sucrose, to parts of the plant where needed.
- This transport process is called **translocation.**
- The phloem **carries food downward from the leaves to the roots.**
- Xylem cells **constitute** the major part of a **mature woody stem or root.**

- Hence, the correct option is 3.

⭐ **Additional Information**

- Xylem:
  - Xylem, plant vascular tissue that conveys **water and dissolved minerals** from the roots to the rest of the plant and also provides physical support.
  - Xylem tissue consists of a variety of **specialized, water-conducting cells known as tracheary elements.**
  - Xylem can be found in vascular bundles, present in non-woody plants and non-woody parts of woody plants.
- Parenchyma:
  - The functional tissue of an organ as distinguished from the connective and supporting tissue.
  - Parenchyma tissue is **composed of thin-walled** cells and makes up the photosynthetic tissue in leaves, the pulp of fruits, and the endosperm of many seeds.
- Collenchyma:
  - Collenchyma, in plants, **supports the tissue of living elongated cells with irregular cell walls** .
  - Collenchyma cells have **thick deposits of cellulose** in their cell walls and appear **polygonal in cross-section** .
  - The strength of the tissue results from these thickened cell walls and the longitudinal interlocking of the cells.

50. **Answer: d**

Explanation:

Given:

D – C = 40 years.

Calculation:

According to problem

D – C = 40

⇒ C = D – 40 ----1

B's age is twice as old as his sister C's age

B = 2(D - 40) ----2

A is 2 years older than B

A = 2(D - 40) + 2 ----3

D is twice as old as A

D = 2A ----4

⇒ D = 2(2(D - 40) + 2)

⇒ D = 4D -160 + 4

⇒ 3D = 156

⇒ D = 52 years

From equation 4

⇒ A = 52/2 = 26

∴ Age of age is 26 years

51. **Answer: d**

Explanation:

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

⭐ **Key Points**

- **The SI unit for momentum is kg m/s $^{-1}$.**
  - **Newton's second law of motion** in terms of momentum states that the net external force equals the change in momentum of a system divided by the time over which it changes.
- **Momentum can be defined as "mass in motion."**
  - All objects have mass; so if an object is moving, then it has momentum - it has its mass in motion.
  - The amount of momentum that an object has is dependent upon two variables: how much stuff is moving and how fast the stuff is moving
  - . Momentum depends upon the variables mass and velocity.
  - In terms of an equation, the momentum of an object is equal to the mass of the object times the velocity of the object.
  - **Momentum = mass * velocity**
- Hence, the correct option is 4.

⭐ **Additional Information**

- **Impulse**
  - These concepts are merely an outgrowth of Newton's second law as discussed in an earlier unit.
  - **Newton's second law (Fnet = m * a)** stated that the acceleration of an object is directly proportional to the net force acting upon the object and inversely proportional to the mass of the object.
  - **Impulse = Change in momentum**

52. **Answer: b**

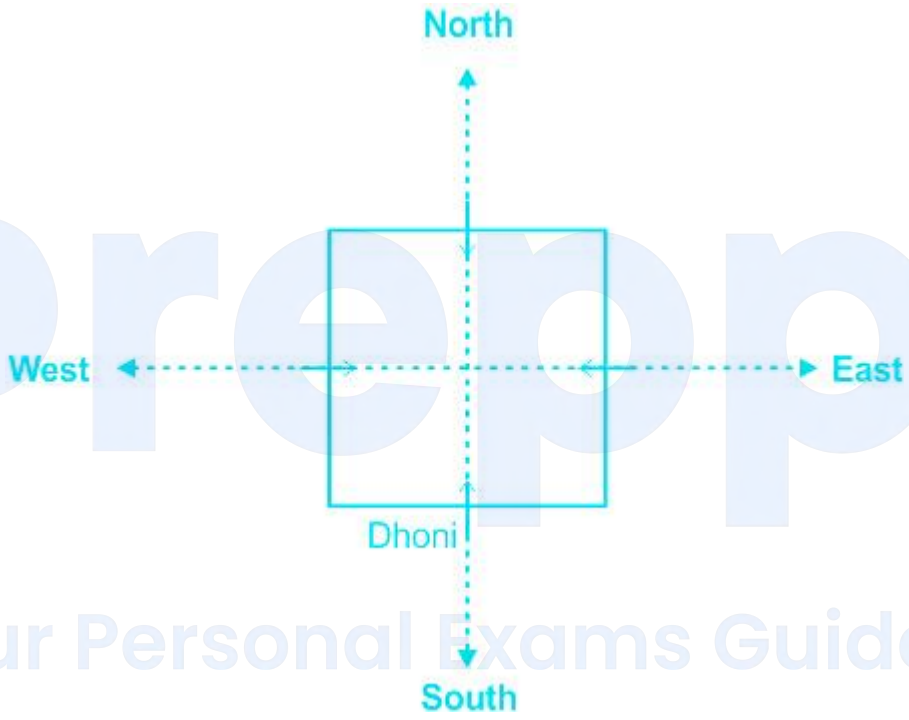
Explanation:

Given,

Four friends Bipin, Anwar, John and Dhoni are playing cards. Anwar and Bipin are partners.

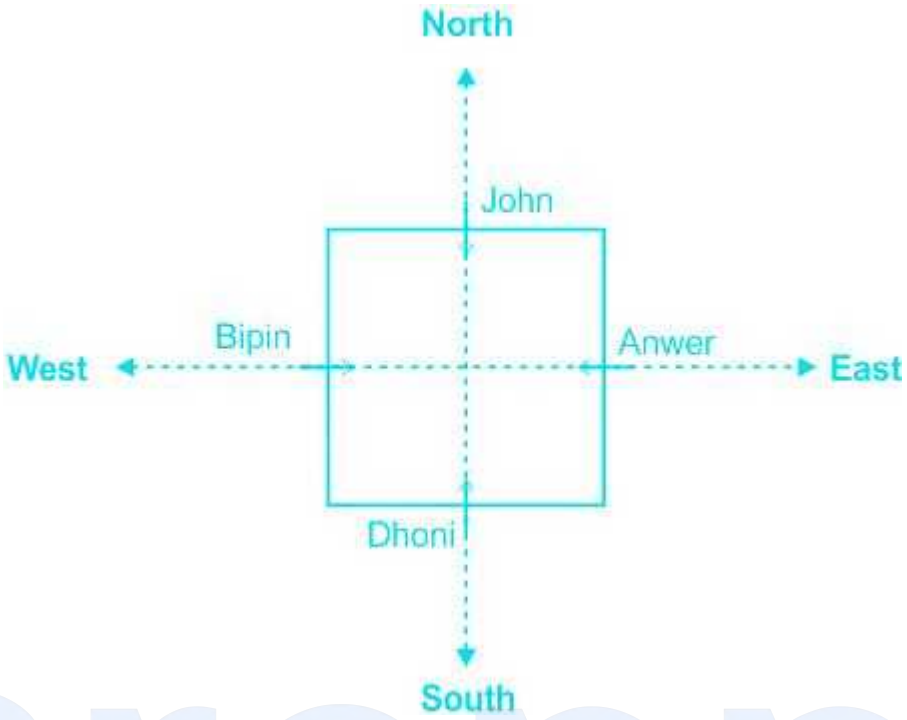
Dhoni is facing north.

∴



Anwar is facing West.

∴



Here we see **John** is facing the South direction.

Hence, the correct answer is John.

---

53. Answer: b

Explanation:

The correct answer is**Naveen Patnaik**.

⭐ Key Points

- **Naveen Patnaik is the current Chief Minister of Odisha**.
  - Naveen Patnaik (born 16 October 1946) is an **Indian politician** serving as the **current** and **14th Chief Minister of Odisha.**
  - He is also the **presiden** t of the **Biju Janata Dal** , a writer.
  - He has authored three books.
  - He is the **longest-serving chief minister of Odisha** and as of 2019, one of the longest-serving chief ministers of any Indian state.

    - He holding the post for almost **two decades** , and only the third **Indian chief Minister after Pawan Chamling and Jyoti Basu to win five consecutive terms as Chief Minister of an Indian state.**
- Hence, the correct option is 2.

⭐ Additional Information

- Mamata Banerjee :
    - Mamata Banerjee is an **Indian politician** who is serving as the **8th** and **current Chief Minister of West Bengal** since **2011.**
    - She the **first woman** who **holds** the office **since 2011.**
    - She founded the **All India Trinamool Congress party** in **1998** after separating from the **Indian National Congress** and became its chairwoman.
- Siddaramaiah:
    - He is an **Indian politician.**
    - He is currently **serving** as the Leader of **Opposition in the Karnataka Legislative Assembly** since **9 December 2019** .
    - Siddaramaiah is a politician and representative of the **Indian National Congress party** in the state of Karnataka.
    - He is known for his **socialist, secular and anti-caste outlook** .
- Chandrababu Naidu:
    - Nara Chandrababu Naidu is an **Indian politician** and **current leader of opposition** in the **Andhra Pradesh Legislative Assembly.**
    - He is a former Chief Minister of Andhra Pradesh, serving from **2014 to 2019.**
    - He was the **first Chief Minister of the state** after it was divided

---

54. Answer: a

Explanation:

The correct answer is C. Rajagopalachari.

⭐ Key Points

- **The first Indian Governor-General of independent India was named C. Rajagopalachari.**
  - Chakravarti Rajagopalachari, **popularly** known as **Rajaji** , was **independent India's first Indian Governor-General.**
  - He was also the **last one** .
  - Chakravarti Rajagopalachari, informally called Rajaji or C.R., was an **Indian politician, independence activist, lawyer, writer, historian, and statesman.**
  - Rajagopalachari was the last Governor-General of India, as India soon became a **Republic in 1950** .
- Hence, the correct option is 1.

⭐ Additional Information

- Annie Besant :
  - Annie Besant was a **British socialist, theosophist, women's rights activist, writer, orator, educationist, and philanthropist.**
  - Regarded as a **champion of human freedom.**
  - she was an **ardent supporter** of both **Irish and Indian self-rule.**
  - She was a prolific author with over **three hundred books** and pamphlets to her credit.
- C. V. Raman:
  - Chandrasekhara Venkata Raman was an **Indian physicist** known mainly for his work in the **field of light scattering** .
  - **With his student** K. S. Krishnan, he **discovered** that when **light traverses a transparent material, some of the deflected light changes wavelength and amplitude.**
  - The **Nobel Prize** in **Physics 1930** was awarded to Sir Chandrasekhara Venkata Raman "for his work on the scattering of light and for the discovery of the effect named after him."

---

55. **Answer: a**

Explanation:

Given,

Here we see in all the figures there are only three petals except in the figure **c,** in the figure c there are four petals.

∴ The odd figure is **c**.

Hence, the correct answer is c.

---

56. Answer: b

Explanation:

The correct answer is**Kiran Rao.**

⭐ **Key Points**

- **Kiran Rao was not awarded the Crystal Award at the World Economic Forum in Davos in January 2018.**
  - Kiran Rao is an Indian film **producer, screenwriter, and director.**
  - She is **married** to Bollywood actor **Aamir Khan.**
  - She is the **cousin** of actress **Aditi Rao Hydari** .
  - In **2016,** Rao co-founded **Paani Foundation, a non-profit organization** working towards the mission of **fighting drought in Maharashtra.**
- The**Crystal Awards**celebrate the **achievements of leading artists and cultural figures** whose **leadership inspires inclusive and sustainable change.**
- Hence, the correct option is 2.

⭐ **Additional Information**

- **Shah Rukh Khan**:

    - Bollywood Actor Shah Rukh Khan has **won the 2018 Crystal Award** from India.
    - The superstar was **honored** with this award for his **leadership in championing children's and women's rights in India.**
    - Shah Rukh Khan received the **24th Crystal Award 2019** for " **his leadership in championing children's and women's rights in India," the World Economic Forum (WEF).**
- Deepika Padukone:
    - Bollywood actor Deepika Padukone has been **awarded** the **Crystal Award 2020** at the annual meeting of the World Economic Forum.
    - The actor has been awarded for her **leadership in raising mental health awareness and her foundation Live Love Laugh.**
- Elton John:
    - Sir Elton Hercules John CH CBE (born Reginald Kenneth Dwight; 25 March 1947) is an **English singer, songwriter, pianist, and composer.**
    - Collaborating with **lyricist Bernie Taupin since 1967** on more than **30 albums,**
    - John has **sold over 300 million records,** making him one of the best-selling music artists of all time.
- Cate Blanchett:
    - Catherine Elise Blanchett AC is an **Australian actor, producer, and theatre director.**
    - Regarded as one of the **greatest actresses of her generation.**
    - she is noted for her versatile roles in **blockbusters, independent films** , and in her stage work in various theatre productions

---

57. Answer: d

Explanation:

The correct answer is**Vikram Seth**.

⭐ Key Points

- "God save us from people who mean well is said, Vikram Seth.

- Vikram Seth(born 20 June 1952)is an **Indian novelist and poet.**
- He has written several novels and poetry books.
- He has received several **awards** such as **Padma Shri, Sahitya Academy Award, Pravasi Bharatiya Samman, WH Smith Literary Award, and Crossword Book Award.**
- Seth's most lauded works are the travel book From **Heaven Lake (1983), the verse novel The Golden Gate (1986), and the epic novel A Suitable Boy (1993).**

- Hence, the correct option is 4.

⭐ Additional Information

- Kiran Desai :
  - Kiran Desai is an **Indian author.**
  - Her novel The Inheritance of Loss won the **2006 Man Booker Prize and the National Book Critics Circle Fiction Award.**
  - In January 2015, The Economic Times listed her as one of 20 **"most influential" global Indian women.**
- Krishnaswami Iyer Narayanaswami :
  - Rasipuram Krishnaswami Iyer Narayanaswami, commonly **known** as **R. K. Narayan.**
  - He was an Indian writer known for his work set in the **fictional South Indian town of Malgudi.**
  - He was a leading author of early Indian literature in English along with **Mulk Raj Anand and Raja Rao.**
- Khushwant Singh :
  - Khushwant Singh was an **Indian author, lawyer, diplomat, journalist, and politician.**
  - His experience in the 1947 Partition of India inspired him to write Train to Pakistan in 1956, which became his most well-known novel.

---

58. Answer: a

Explanation:

Given:

Rate of interest = 12%

time = 3.5 years

Formula used:

Simple interest = (principal amount × rate of interest × time)/100

Calculation:

Let P be the principal amount

So, S.I. = 994 – P

⇒ 994 – P = (P × 12 × 3.5)/100

⇒ 99400 – 100P = 42P

⇒ 142P = 99400

⇒ P = 700 Rs

∴ The principal amount invested was Rs. 700.

---

59. Answer: a

Explanation:

The correct answer is Ohm (Ω).

⭐ Key Points

- **Resistance** is a measure of the opposition to current flow in an electrical**circuit**.
- **Resistance is measured in ohms** , symbolized by the Greek letter omega (Ω).
- **Ohms are named after Georg Simon Ohm** (1784-1854), a German physicist who studied the relationship between voltage, current, and resistance.

Physical quantity	Symbol	Unit	Symbol	Measure device
Current	I	Ampere	A	Amperemeter
Voltage	U	Volt	V	Voltmeter
Power	P	Watt	W	Powermeter
Resistance	R	Ohm	Ω	Ohmmeter
Capacitance	C	Farad	F	Capacitance meter
Inductance	L	Henry	H	Inductance meter
Frequency	f	Hertz	Hz	Oscilloscope
Period	T	Second	s	Oscilloscope
Charge	Q	Coulomb	C	Charge meter
Conductance	G	Siemens	S	Conductivity meter

- Hence, the correct option is 1.

⭐ Additional Information

- Ampere is the SI unit of current .
- Ohm-meter is the SI unit of electrical resistivity which is the measure of an object's ability to oppose the flow of current.

---

60. **Answer: d**

Explanation:

The correct answer is**Raj Kumar Rao**.

⭐ Key Points

- **Raj Kumar Rao played the lead role in the film "Newton", which was released in the year 2017.**
- Newton is a 2017 Indian black **comedy-drama film** co-written and directed by **Amit V. Masurkar** .
  - **The film stars Rajkummar Rao, Pankaj Tripathi, Anjali Patil and Raghubir Yadav.**
  - Newton had its world premiere in the Forum section of the **67th Berlin International Film Festival.**

- Raj Kumar Yadav, known professionally as Rajkummar Rao, is an Indian actor known for his work in Hindi films.
    - Rao **won** the **Asia Pacific Screen Award** for **Best Actor** and the writers won the award for **Best Screenplay** .
    - He is the recipient of several awards, including a **National Film Award, three Filmfare Awards, and an Asia Pacific Screen Award.**
- Hence, the correct option is 4.

⭐ Additional Information

- Nawazuddin Siddiqui:
    - Nawazuddin Siddiqui is an **Indian actor** known for his **work in Hindi cinema.**
    - He is an **alumnus** of the National School of Drama.
    - Siddiqui's feature film debut was **alongside director Prashant Bhargava in Patang.**
    - his performance was **appreciated** by cinema critic **Roger Ebert** .
- Akshay Kumar:
    - **Rajiv Hari Om Bhatia,** known professionally as Akshay Kumar.
    - He is an India-born naturalized **Canadian actor, producer, martial artist, and television personality** who works in Bollywood.
- Irfan Khan:
    - Sahabzade Irfan Ali Khan, known **professionally as Irrfan Khan** or simply Irrfan.
    - He was an Indian actor who **worked** in **Hindi cinema** as well as **British and American films.**

---

61. Answer: d

Explanation:

Given,

The number of squares is,

Small squares = 24

Squares consisting of four small squares = 11

Squares consisting of nine small squares = 4

Large square = 1

∴ Total number of squares = 24 + 11 + 4 + 1 = **40**

Hence, the correct answer is 40.

---

62. **Answer: c**

Explanation:

Given,

Question:
Is this a box?
Statement:
1. It opens and closes with flaps. → Yes, the box opens and closes with flaps.
2. It can be used to store various items. → Yes, the box can be used to store various items.

Here we see both the statements are sufficient/necessary to answer the question.

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

---

63. **Answer: d**

Explanation:

Given,

Statement

All jaguars are cheetah.

All cheetahs are leopards.

All leopards are panthers (black leopards).

All panthers are cats.

Conclusions:
1. Some cats are cheetahs.
2. Some panthers are cheetah.

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

Conclusions:

1. Some cats are cheetahs. → True (From Venn diagram we see some cats are cheetahs)
2. Some panthers are cheetah. → True (From Venn diagram we see some panthers are cheetahs)

Hence, the correct answer is **Both conclusions (1) and (2) follow.**

---

64. Answer: c

Explanation:

The correct answer is **Uni-cellular**.

⭐ **Key Points**

- **Nonlinear muscles are Uni-cellular.**
- A unicellular organism, also **known as a single-celled organism** , is an organism that **consists of a single cell** , unlike a multicellular organism that consists of multiple cells.
  - Unicellular organisms fall into **two general categories:**
    - **prokaryotic organisms**
    - **eukaryotic organisms** .
  - Unicellular organisms include bacteria, protists, and yeast.
    - For example, a p **aramecium is a slipper-shaped,** unicellular organism found in pond water.
  - It takes in food from the water and digests it in organelles known as food vacuoles.
- Hence, the correct option is 3.

⭐ **Additional Information**

- **Multi-cellular**:
  - Multicellular organisms are organisms that **consist of more than one cell, in contrast to unicellular organisms.**
  - **Animals, plants, and fungi** are multicellular organisms and often, there is a specialization of different cells for various functions.
  - Multicellular organisms arise in various ways, for example by **cell division or by aggregation** of many single cells.
- **Non-cellular**:
  - Non-cellular life refers to **organisms, such as viruses** , that exist without any cells.

- The cell theory, which is one of the fundamental tenets of biology, states that all living things are composed of cells and that cells are the basic units of life.
- **Viruses, virions, and viroids** are all examples of non-cellular life.
- Viruses are parasites that infect plants, animals, fungi, and bacteria.
- They consist of genetic material and a protective protein coat.
- Viruses are **dormant** without a host.

---

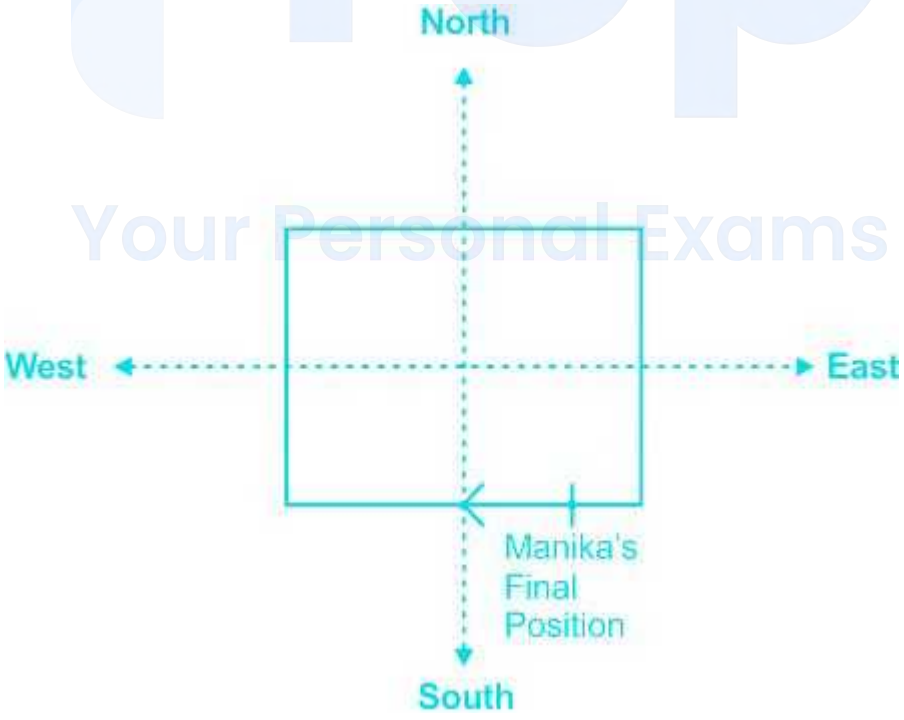
65. Answer: d

Explanation:

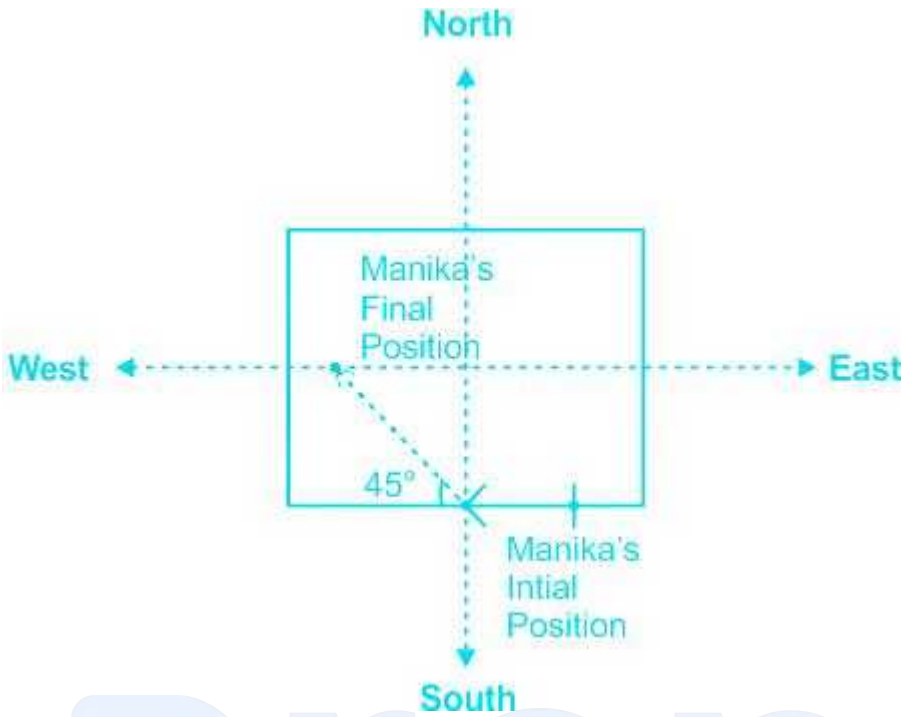
Given,

Manika moves around her rectangular field at a slow pace.

She starts walking towards the west,



then turns 45° to her right and walks 500m.



Here we see Manika is facing **North-West** direction.

Hence, the correct answer is North-West.

---

66. **Answer: b**

Explanation:

The correct answer is **Crystallization water, five.**

⭐ **Key Points**

- The **water of crystallization** or **crystallization water** is the **number of water molecules** that combine chemically in a **definite molecular proportion** , with the concerned salt in the **crystalline state.**
- In the above formula , **$CuSO_4 5H_2O$,** it is clear that we have **5 H_2O (water)** molecules **attached to a molecule of $CuSO_4$.**

⭐ **Additional Information**

- The **water of crystallization** is removed by **heating** and with this, the **crystalline properties are also lost.**
- Examples are CaSO 4.2H 2O, Na 2CO 3.10H 2O, CoCl 2.6H 2**O, etc.**

---

67. **Answer: d**

Explanation:

Given,

Cow, King, Spider, Web.

Here we see all are living things except Web.

∴ The **Web** is mismatched from the others.

Hence, the correct answer is Web.

---

68. **Answer: c**

Explanation:

Given:

Length of train = 158.5 m

Length of bridge = 761.5 m

Time = 46 second

Formula used:

Speed = Distance/Time

Concept used:

1 m/s = (60 × 60)/1000 km/hour = 3600/1000 km/hour

To convert m/s to km/hour we have to multiply by 18/5

To convert km/hour to m/s we have to multiply by 5/18

Calculation:

Total distance = 158.5 + 761.5 = 920 m

Speed = 920/46

⇒ 20 m/s

⇒ 20 × 18/5

⇒ 72 km/hour

∴ Speed of the train is 72 km/hour

---

69. **Answer: c**

Explanation:

Given,

Question:
Identify the code for SUN from the given statements.
Statement:
I: GUN is written as HUN and TUN are written as UUN.
II: SUN rises from the east.

From statement I , we get,

GUN → HUN, TUN → UUN

The pattern followed here is,

Here we see we get the code from Statement I.

And statement II is irrelevant as it does not give the answer.

∴ The only statement I is sufficient.

Hence, the correct answer is the Only statement I is sufficient.

---

70. **Answer: c**

Explanation:

The correct answer is Thar Link Express.

⭐ Key Points

- India and Pakistan have extended the agreement of Thar Link Express for 3 years, ie by 2021, which is the second only rail service between the two countries.
- Thar Link Express :
  - India and Pakistan have extended the agreement of Thar Link Express, the **second solitary rail service between both countries for three more years till 2021.**

    - The Thar Express links **Jodhpur** (India) and **Karachi** (Pakistan) via **Munabao** (Rajasthan)- **Khokhrapar** (Sindh province) border crossing and carries only passengers.
- Currently, **two train runs** between India and Pakistan.
    - One is **Samjhauta Express** , which starts from Delhi, India, and ends in Lahore, Pakistan and 2nd are **Thar Link Express** .
    - Hence, the correct option is 3.

⭐ Additional Information

- Samjhauta Express :
    - The Samjhauta Express is a bi-weekly train — **Thursday and Monday** — that **runs between Delhi and Attari** in India and **Lahore in Pakistan** .
    - The word Samjhauta means " **agreement"** , "accord" and " **compromise"** in both Hindi and Urdu.
    - Until the reopening of the Thar Express, this was the only rail connection between the two countries.
    - The train was **started on 22 July 1976** following the Shimla Agreement and ran between Amritsar and Lahore, a distance of about **52 km.**
    - On **8 August 2019** , the service was **suspended by Pakistan** following the **revocation of Article 370 in Jammu And Kashmir.**
    - Pakistani authorities briefly suspended the train service on **February 28, 2019,** following tensions in the aftermath of the **Pulwama terror attack** in which 40 CRPF soldiers were killed.

---

71. Answer: d

Explanation:

Given:

A can fill a tank in 2 hours

B can fill a tank in 5 hours

C can empty tank in 8 hours

Concept:

If a can fill in n hours then 1-hour work is 1/n

Calculation:

One hour work of A, B and C

$1/x = 1/2 + 1/5 - 1/8$

$\Rightarrow (20 + 8 - 5)/40$

$\Rightarrow 23/40$

∴ The tank will take 40/23 hours to fill.

⭐ Alternate Method

Taking LCM of 2, 5, and 8 is 40

$A = 2 \times 20 = 40$

$B = 5 \times 8 = 40$

$C = -8 \times 5 = -40$

Negative sign shows work is negative

Total work is 40

Time required to fill the tank = $40/(20 + 8 - 5)$

$\Rightarrow 40/23$

∴ The tank will take 40/23 hours to fill.

---

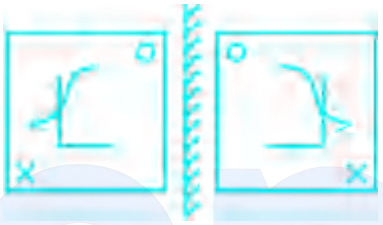
72. Answer: a

Explanation:

Given,

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

∴



∴ The mirror image is

Hence, the figure in option 1 is the correct answer.

---

73. Answer: c

Explanation:

The correct answer is Violin, Piano.

⭐ Key Points

- In the 19th century, Western music became popular in India and as a result, the Violin, Piano instruments were adopted.
- **The piano** is an acoustic, stringed musical instrument invented in Italy by Bartolomeo Cristofori around the year 1700.

- It is played using a keyboard, which is a row of keys (small levers) that the **performer presses down or strikes with the fingers and thumbs of both hands to cause the hammers to strike the strings.**
- **Pianos** can be broken down into **three types of categories:**
  - Grand pianos, Upright pianos, and digital pianos.

- **The violin** , sometimes known as **a fiddle** , is a wooden chordophone in the violin family.
  - Most violins have a **hollow wooden body.**
  - It is the smallest and thus highest-pitched instrument in the family in regular use.
  - A distinctive feature of a violin body is its **hourglass-like shape and the arching of its top and back.**
  - The hourglass shape comprises **two upper bouts, two lower bouts** , and **two concave C-bouts at the waist** , providing clearance for the bow.
  - Hence, the correct option is 3.

⭐ Additional Information

- Guitar :
  - The guitar is a fretted musical instrument that usually has **six strings.**
  - It is typically **played with both hands by strumming or plucking** the strings with either a guitar **pick or the fingers/fingernails of one hand,** while simultaneously **fretting with the fingers of the other hand.**
  - There are **three main types of modern acoustic guitar** :
    - **the classical guitar, the steel-string acoustic guitar, the archtop guitar.**
  - **George Beauchamp invented** Guitar.
- Tanpura:
  - The tanpura is a **long-necked** plucked string instrument, originating from India, found in various forms in Indian music.
  - It does not play melody but rather supports and sustains the melody of another instrument or singer by providing a continuous harmonic bourdon or drone.
- Sitar:
  - The sitar is a **plucked stringed instrument, originating** from the Indian subcontinent, used in Hindustani classical music.

- The instrument was invented in medieval India and flourished in the **16th and 17th centuries** and **arrived** at its present form in 18th-century India.

---

74. Answer: a

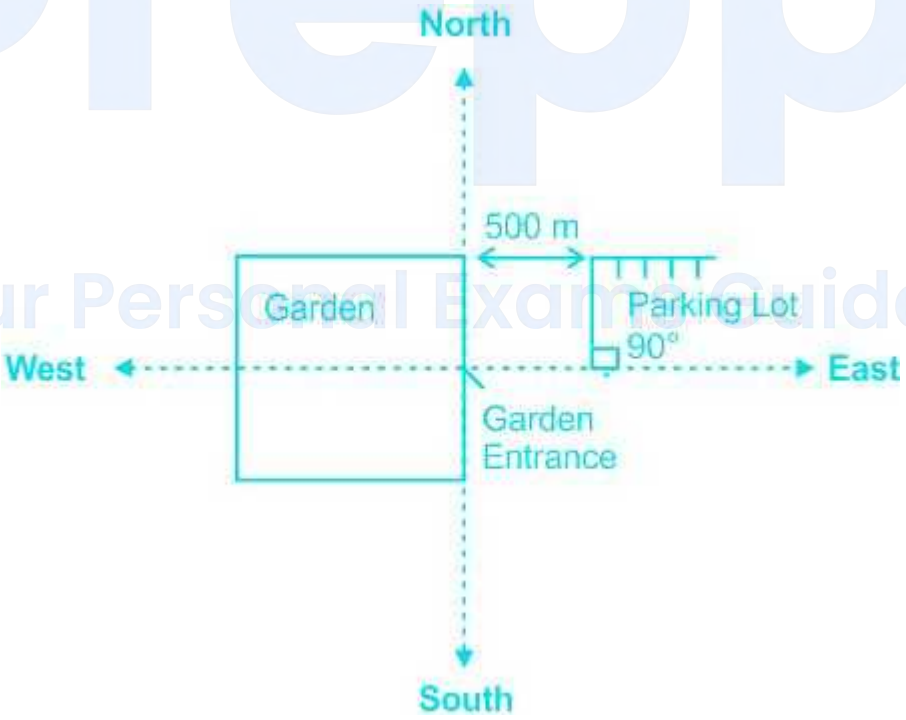
Explanation:

Given,

Two friends park their vehicle outside the garden entrance. The parking lot is 500 meters from the garden entrance and is located 90° to the left of the garden entrance.

The entrance of the garden is towards the east.

∴



Here we see the parking lot is towards the **North** .

Hence, the correct answer is North.

---

75. **Answer: a**

Explanation:

The correct answer is **CH3, HCl, and CH 2O**.

⭐ **Key Points**

- If the **molecular formulas of ethane, hydrogen chloride, and glucose** are C 2 H_6, HCl, and C_6H 12 O 6 respectively, then empirical formulas are CH $_3$, HCl and CH $_2$O respectively
- Hence, the correct option is 1.

⭐ **Additional Information**

- **Empirical versus Molecular Formulas**
  - The formulas we have calculated in the preceding section express the simplest atomic ratio between the elements in the compound.
    - **Such formulas are called empirical formulas.**
  - An empirical formula does not necessarily represent the actual numbers of atoms present in a molecule of a compound; it represents only the ratio between those numbers.
  - The actual numbers of atoms of each element that occur in the smallest freely existing unit or molecule of the compound are expressed by the molecular formula of the compound.
  - The **molecular formula of a compound** may be the empirical formula, or it may be a multiple of the empirical formula.
  - For example, the molecular formula of butane, C $_4$H $_8$, shows that each freely existing molecule of butene contains four atoms of carbon and eight atoms of hydrogen.
  - Its empirical formula is CH $_2$. One molecule of ethylene (molecular formula C $_2$H $_4$) contains two atoms of carbon and four atoms of hydrogen.
  - Its empirical formula is CH $_2$.
    - **Both have the same empirical formula, yet they are different compounds with different molecular formulas** .

- Butene is C $_4$H $_8$, or four times the empirical formula; ethylene is C 2H 4 or twice the empirical formula.

---

76. Answer: c

Explanation:

Given:

61, 61, 37, 67, 67, 52, 71, 71, _____, _____, _____

Concept:

61 + 6 = 67

37 + 15 = 52

67 + 4 = 71

52 + 15 = 67

71 + 2 = 73

∴ The series will be 61, 61, 37, 67, 67, 52, 71, 71, 67, 73, 73

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77. Answer: d

Explanation:

The correct answer is**President.**

⭐ Key Points

- The Chief Election Commissioner is appointed by President.
  - The Chief Election Commissioner **heads the Election Commission of India.**
  - A body constitutionally empowered to **conduct free and fair elections** to the national and state legislatures and of President and Vice-President.
  - Sushil ChandraChief Election Commissioner of India and Chairman.
  - A-WEB addressing participants of the **International Virtual Election Visitors Programme 2020** for Bihar Legislative Assembly Elections.
  - Chief Election Commissioner Sh. Sunil Arora **released** a book titled ' **Electoral Reforms in India'** on **January 15, 2021,** authored by **Dr. Komal Jain.**
- Ram Nath kovindis the current president of India.
- Hence, the correct option is 4.

⭐ Additional Information

- Chief Minister :
  - A chief minister **heads a state government's council** of ministers and can be deputed in that **role by a deputy chief minister.**
  - In the Republic of India, a **chief minister is the elected head of governmen** t of each state out of **28 states** and sometimes a **union territory.**
  - The governor appoints and swears in the chief minister, whose council of Ministers are collectively responsible to the assembly.
  - The chief minister is elected through a **majority in the state legislative assembly.**
  - This is procedurally established by the vote of confidence in the legislative assembly, as suggested by the governor of the state who is the appointing authority.
- Prime Minister:
  - Narendra Damodardas Modiis an Indian politician serving as the **14th and current Prime Minister** of India **since 2014** .
  - He was the **Chief Minister of Gujarat** from **2001 to 2014** and is the Member of **Parliament for Varanasi** .
  - The Prime minister can be a member of any of the two houses of the Parliament of India :
    - the Lok Sabha

        - the Rajya Sabha
    - The prime minister **selects and can dismiss members** of the **cabinet; allocates posts to members** within the government.
    - The prime minister is the **senior-most member of the cabinet** in the executive of government in a parliamentary system.
- Vice President:
    - Venkaiah Naidu is the current Vice President of India.
    - He **defeate** d UPA's candidate **Gopalkrishna Gandhi** in the **5 August 2017 election.**
    - The Vice President of India is the **second-highest constitutional office in India after the President.**
    - The Vice President is **elected indirectly by members of an electoral college consisting of the members of both Houses of Parliament.**
    - The Vice President **acts as President in the absence** of the president due to death, resignation, impeachment, or other situations.
    - The Vice President of India is **Chairperson of the Rajya Sabha.**

---

78. **Answer: b**

Explanation:

The correct answer is 1.205 × 10 24.

⭐ Key Points

- **Weight of Cl_2=71 g.**
- Molecular weight of Cl 2=71 g/mol
- The number of moles of Cl 2= 71 g/71g/gatom=1 moles.
- Avogadro's number is 6.023×10^{23} molecules/mol.
- The number of atoms of Cl 2 =2 atoms/molecule ×1 mol. ×6.023×10^{23} molecules/mol =1.205×10^{24} atoms.
- Hence, the correct option is 2.

---

79. **Answer: c**

Explanation:

Calculation :

Let June's age P and Janki's age Q

According to the question,

y year age ratio is 2/7

⇒ (P – y)/(Q – y) = 2/7

⇒ 7P – 7y = 2Q – 2y

⇒ 7P – 2Q = 5y

⇒ y = (7P – 2Q)/5 ----(i)

Again, according to question

After y year from today June's age will be 2/3

⇒ (P + y)/(Q + y) = 2/3

⇒ 3P + 3y = 2Q + 2y

⇒ 3P – 2Q = -y ----(ii)

Put the value y in equation number (i) to equation number (ii)

⇒ 3P – 2Q = -[(7P – 2Q)/5]

⇒ 15P – 10Q = -7P + 2Q

⇒ 22P = 12Q

⇒ P/Q = 12/22

⇒ P : Q = 6 : 11

∴ the ratio of the present ages of June and Janaki is 6 : 11

---

80. **Answer: b**

Explanation:

Given:

Gunpowder = 36 kg

Salt = 27 kg

Charcoal = 5.4 kg

Concept:

The percentage of sulfur = (Amount of sulfur / Total amount of gunpowder)× 100

Calculation:

Total weight of gunpowder = 36 kg

According to the question,

Let sulfur be x

⇒ (27 + 5.4 + x) kg = 36 kg

⇒ (32.4 + x) kg = 36 kg

⇒ x = (36-32.4) kg

⇒ x = 3.6 kg

The percentage content of sulfur in the gunpowder = (Amount of sulfur / Total amount of gunpowder) 100

⇒ (3.6/36) × 100%

⇒ 0.1 × 100%

⇒ 10%

Therefore, percentage content of Sulfur is 10%.

---

81. Answer: c

Explanation:

The correct answer is**Mughal**.

⭐ **Key Points**

- **Humayun's Tomb, built-in 1570, is a fine specimen of great Mughal architecture.**
  - Humayun's tomb in the **capital Delhi is a fine specimen** of the great Mughal architecture.
  - Built-in 1570, the tomb is of particular cultural significance as it was the **first garden-tomb on the Indian subcontinent.**
  - Humayun's tomb is the tomb of the **Mughal Emperor in Delhi, India.**
  - The tomb was commissioned by **Humayun's first wife and chief consort, Empress Bega Begum.**
  - **In 1558** designed by **Mirak Mirza Ghiyas and his son, Sayyid Muhammad.**
- Hence, the correct option is 3.

⭐ **Additional Information**

- **British**:
  - British architects in India in the later **19th century,** especially in **public and government buildings in the British Raj.**
  - The All India War Memorial Arch, also known as the **India Gate is one of the monuments built by the British.**
  - The monument was designed by the famous **British architect Edward Lutyens and was completed in 1931.**
  - This impressive structure is also a work of art by the **British architect Edward Lutyens.**
  - The 1490s, while other historians date the empire from the early 1600s.

    - The end of the empire came in the years after **World War 2** , with most of Britain's colonies ruling themselves independently by the late 1960s.
- Chola:
    - The Cholas ruled for **more than 1,500 years** , making them one of the l **ongest-ruling families in human history** , if not the longest.
    - The Chola Empire was **based** in the **Kaveri River Valley,** which runs southeast through Karnataka, Tamil Nadu, and the southern Deccan Plateau to the Bay of Bengal.
    - The Chola dynasty was a **Tamil thalassocracy empire of southern India** , one of the longest-ruling dynasties in the world's history.
- Magadha:
    - The Hindu **Mahabharata calls Brihadratha** the **first ruler** of Magadha.
    - King Bimbisara of the Haryanka dynasty led an **active and expansive policy, conquering the Kingdom of Anga** in what is now West Bengal.
    - King Bimbisara was **kille** d by **his son ,Prince Ajatashatru.**
    - Magadha was an ancient **Indian kingdom in southern Bihar** , and was counted as one of the **sixteen Mahajanapadas** , 'Great Kingdoms' of ancient India.
    - Magadha played an **important role** in the development of **Jainism and Buddhism, and two of India's greatest empires, the Maurya Empire and the Gupta Empire, originated in Magadha.**

---

82. Answer: c

Explanation:

Given,

When the mirror is placed horizontally the left and right part of the figure remains unchanged and the top and bottom part of the image interchanges.

∴

∴ The mirror image is

Hence, the correct answer is A.

---

83. Answer: b

Explanation:

The correct answer is**Echinodermata**.

⭐ Key Points

- Phylum Echinodermata occurs exclusively in marine animals.

    - An echinoderm is any member of the **phylum Echinodermata** of **marine animals** .
    - **Sea stars, sea cucumbers, sea urchins, sand dollars, and brittle stars** are all **examples** of echinoderms
    - They have a **star-like appearance** and are spherical or elongated.
    - The **skeleton** is made up of **calcium carbonate.**
    - The organisms are **spiny-skinned.**
    - Echinoderms also have a very simple **digestive system, circulatory system, and nervous system.**
- Hence, the correct option is 2.

⭐ Additional Information

- Platyhelminthes:
    - Platyhelminthes are **triploblastic, bilaterally symmetrical, dorsoventrally flattened, acoelomate flatworms** with organ grade of construction without a definite anus, circulatory, skeletal or respiratory system.
    - Animals in the phylum Platyhelminthes are called **flatworms** because they are **fl attened from head to tail** .
    - Platyhelminthes have t **hree embryonic tissue layers** :
        - ectoderm
        - mesoderm
        - endoderm
    - Platyhelminthes are **free-living** and can be **found in ponds, lakes, streams, ditches, and temporary puddles.**
- Coelenterate:
    - Coelenterata is a term encompassing the animal **phyla Cnidaria and Ctenophora.**
    - The body form is radially **symmetrical, diploblastic,** and does not have a coelom.
    - In the **coelenterates** , many kinds of **reproduction exist** .
    - Like all metazoa, **they can reproduce sexually** .
    - The **fertilized eggs may produce larvae** differing anatomically and ecologically from the adult sexually reproducing stage.
- Nematode:

- Nematodes are very **small, slender worms** typically about **5 to 100 µm thick, and 0.1 to 2.5 mm long.**
- They are a diverse animal phylum inhabiting a broad range of environments.
- Many species of **nematodes are 'free-living ,living in soil, sea, and freshwater.**
- These **feed on bacteria, fungi, protozoans,** and even other nematodes, and play a very important role in nutrient cycling and release of nutrients for plant growth.

---

84. Answer: d

Explanation:

Given:

1234x is divisible by 11

Concept used:

Divisibility rule of 11 = The difference of the sum of its digits at odd places and sum of its digits at even places is either 0 or a number divisible by 11.

Calculation:

According to the divisibility rule,

Sum of the odd place = 1 + 3 + x

⇒ 4 + x

Sum of the even place = 2 + 4

⇒ 6

Difference = sum of the odd place – sum of the even place

⇒ 4 + x – 6

⇒ x – 2

For x – 2 to be divisible by 11, x = 2

∴ The value of x = 2.

---

85. Answer: b

Explanation:

The correct answer is **Madras High Court**.

⭐ **Key Points**

- **Madras High Court is the first in South India and the eighth court in the country, in which an e-court payment facility has been introduced.**
  - The Madras High Court is the **second oldest High Court of India** after the Calcutta High Court in Kolkata.
  - It is located in **Chennai, Tamil Nadu.**
  - **Thiruvarur Muthuswamy Iyer KCI** was an Indian lawyer who, in 1877, became the first native Indian to be appointed as judge of the Madras High Court.
  - He also acted as **the Chief Justice of the Madras High Court in 1893.**
  - He is also one of the first Indians to have a statue.
- Hence, the correct option is 2.

⭐ **Additional Information**

- **Electronic court**:
  - The e-Court Fee system is an **internet-based application** that gives you the convenience of paying court fees without hassles involved in obtaining physical Judicial Stamps.
  - The system is **secure and reliable.**
  - An electronic court is a location in which matters of law are adjudicated upon, in the **presence of qualified Judge or Judges,** which has a well-developed technical infrastructure.

- Mumbai High Court:
  - The Bombay High Court is one of **the o** ldest High Courts of India.
  - It is located in Mumbai, Maharashtra.
  - Its jurisdiction covers the states of Maharashtra and Goa and the **Union Territory of Dadra and Nagar Haveli and Daman and Diu.**
- Kerala High Court:
  - The High Court of Kerala is **the highest court in the Indian state of Kerala** and in the Union Territory of Lakshadweep.
  - It is **located in Kochi.**
- Karnataka High Court:
  - The High Court of Karnataka is the High Court of the Indian state of Karnataka and thus its highest judicial authority **.**
  - **The court's principal bench is** located in Bangalore, the capital city of Karnataka, with additional **benches in Hubli-Dharwad** and **Gulbarga.**

---

86. Answer: c

Explanation:

The correct answer is **KJ mol -1**.

⭐ Key Points

- **Ionization energy is the energy required to remove an electron from one mole of gaseous atoms** .
  - Units = Energy/Mol
  - = KJ/mol
  - =KJ mol -1
- Hence, the correct option is 3.

⭐ Additional Information

- **Ionization energy** is the quantity of energy that an isolated, gaseous atom in the ground electronic state must absorb to discharge an electron, resulting in a cation.

- $H(g) \rightarrow H^+(g) + e^-$
- This energy is usually expressed in kJ/mol, or the amount of energy it takes for all the atoms in a mole to lose one electron each.
- The most **notable factors affecting the ionization energy** include:
  - **Electron configuration** : this accounts for most element's IE, as all of their chemical and physical characteristics can be ascertained just by determining their respective electron configuration.
  - **Nuclear charge:** if the nuclear charge (atomic number) is greater, the electrons are held more tightly by the nucleus and hence the ionization energy will be greater.
  - **A number of electron shells** : if the size of the atom is greater due to the presence of more shells, the electrons are held less tightly by the nucleus and the ionization energy will be lesser.
  - **Effective nuclear charge (Zeff)** : if the magnitude of electron shielding and penetration is greater, the electrons are held less tightly by the nucleus, the Zeff of the electron, and the ionization energy is lesser.
  - **Type of orbital ionized** : an atom having a more stable electronic configuration has less tendency to lose electrons and consequently has higher ionization energy.
  - **Electron occupancy** : if the highest occupied orbital is doubly occupied, then it is easier to remove an electron.

---

87. **Answer: c**

Explanation:

The correct answer is **Silver**.

⭐ **Key Points**

- **Silver metals are used as electrode iron material**.
- Silver is a **chemical element** with the **symbol Ag** and **atomic number 47.**
  - **A soft, white, lustrous transition metal** .
  - It exhibits the **highest electrical conductivity, thermal conductivity** , and reflectivity of any metal.

- Silver is mined in many countries, but most come from the **USA, Canada, Mexico, Peru, and Bolivia.**
- Silver is commonly extracted from ore by **smelting or chemical leaching.**

- Hence, the correct option is 3.

⭐ Confusion Points

- Zinc is used for the galvanization of iron but to use iron as an electrode, a coating of silver is used.

⭐ Additional Information

- Zinc:
  - Zinc is a **chemical element** with the **symbol Zn** and **atomic number 30.**
  - Zinc is a slightly **brittle metal at room temperature** and has a **blue-silvery appearance** when oxidation is removed.
  - It is the first element in group **12 of the periodic table** .
  - Zinc is a **bluish-white, lustrous metal.**
- Calcium:
  - Calcium is a **chemical element** with the symbol **Ca** and **atomic number 20.**
  - As an alkaline earth metal, calcium is a **reactive metal** that forms a **dark oxide-nitride laye** r when exposed to air.
  - Its physical and chemical properties are most similar to its heavier **homologs strontium and barium.**
- Aluminium:
  - Aluminium is a **chemical element** with the **symbol Al** and **atomic number 13.**
  - Aluminium has a density lower than those of other common metals, at approximately one-third that of steel.
  - Aluminium has a great affinity towards oxygen, thanks to which it forms a protective layer of oxide on the surface.

---

88. **Answer: a**

Explanation:

Given:

Rate(R)% = 7.5%

Time(T) = 4 years

Amount = Rs. 819

Formula used:

Amount = Principal(P) + Simple interest(S.I)

Amount = P(1 + RT/100)

Calculation:

According to the question,

simple interest(S.I) = (P × R × T)/100

Amount = P + S.I

⇒ P + PRT/100

⇒ Amount = P(1 + RT/100)

⇒ 819 = P(1 + (7.5 × 4)/100)

⇒ 819 = 13P/10

⇒ P = 8190/13

⇒ P = 630

∴ The amount invested was Rs. 630.

Shortcut Trick

Net effective rate in four year = 7.5 × 4

⇒ 30%

⇒ 30% in fraction form = 3/10

⇒ amount = 10 + 3 = 13 unit

⇒ 13 unit = 819

⇒ 1unit = 63

then,

⇒ Principal = 10 unit

⇒ 10 × 63

⇒ 630

∴ The amount invested was Rs. 630.

---

89. **Answer: a**

Explanation:

The correct answer is **Sclerenchyma**.

⭐ **Key Points**

- **Sclerenchyma is the tissue that makes the plant hard and strong.**
  - Sclerenchyma tissue, **when mature is composed of dead cells that have heavily thickened walls** containing lignin and a **high cellulose content** (60%–80%).
  - It serves the function of providing structural support in plants.
  - Sclerenchyma cells possess **two types** of cell walls:
    - **primary walls**
    - **secondary walls.**
      - Hence, the correct option is 1.

⭐ Additional Information

- Aerenchyma :
  - Aerenchyma is a **spongy tissue that forms spaces or air channels in the leaves, stems, and roots of some plants,** which allows the exchange of gases between the shoot and the root.
  - Aerenchyma is the parenchyma cells **present in floating water plants that have air vacuoles** that give them buoyancy and help them float.
- Chlorenchyma:
  - chlorenchyma Parenchyma tissue that contains **chloroplasts and is photosynthetic.**
  - Chlorenchyma makes up the **mesophyll tissue** of plant leaves and is also found in **the stems** of certain plant species.
  - A chlorenchyma has **chlorophyll-containing plastids called chloroplasts.** A chloroplast is a plastid that contains high amounts of **green pigment** .
- Parenchyma:
  - Parenchyma tissue is composed of **thin-walled cells** and makes up the photosynthetic tissue in leaves, **the pulp of fruits, and the endosperm of many seeds.**
  - Collenchyma cells mainly form supporting tissue and have irregular cell walls.
  - They are found mainly in the cortex of **stems and in leaves.**

---

90. **Answer: a**

Explanation:

The correct answer is Dribble.

⭐ Key Points

- Dribble words are related to football.
  - Dribbling is **manoeuvring a ball by one player while moving in a given direction** , avoiding defenders' attempts to intercept the ball.

- A successful dribble will bring the ball past defenders legally and create opportunities to score.
- The dribbling is related to:
  - The **"solo" i**n Gaelic football, **kicking the ball to oneself while running.**
  - The **"hop"** in Gaelic football, **bouncing the ball on the ground and back to oneself while running** .
  - Hence, the correct option is 1.

⭐ **Additional Information**

- **Nightwatchman:**
  - In the sport of cricket, a nightwatchman is a **lower-order batsman** who comes in to bat higher up the order than usual near **the end of the day's play.**

Doosra:

- It is a very difficult skill to master so you'll need plenty of practice if you want to learn how to do it.
- However, its validity has been called into question because of the number of off-spinners who have been reported to the International Cricket Council for suspect actions bowling the doosra.
- **Googly :**
  - A "googly"(**coined by cricketer B.J.T. Bosanquet on the 1903–04 MCC tour**) is a ball bowled with **fingerspin** that breaks unexpectedly in the opposite direction from that anticipated by the batsman given the motion of the bowler.

---

91. Answer: d

Explanation:

The correct answer is **Blotch**.

⭐ **Key Points**

- Blotch type of vegetative spread is seen in chrysanthemum (Guldaudi).
  - Chrysanthemum has been commercially propagated by**rooting of cuttings,**whereas the quality will decline over **multiple collections from a single plant.**
  - They are native to **East Asia and northeastern Europe** .
  - Most species originate from East Asia and the centre of diversity is in **China.**
  - Chrysanthemum is propagated vegetatively either through**root suckers or terminal cuttings**.

⭐ Additional Information

- Vegetative propagation is commonly used to multiply elite individuals in a number of **horticultural and silvicultural** plants and particularly frequently in chrysanthemum (Chrysanthemum grandiflorum).
- Chrysanthemum is one of the major world ornamental species, and cuttings are normally taken from a stock plant, but their **vigour of cuttings te** nds to decline when the cuttings were harvested repeatedly from the same stock plants.
- It is **laborious to reestablish** the stock plants to meet the need for cuttings.
- The development of techniques to extend the period for cuttings collection would therefore be of significant economic interest.

---

92. **Answer: c**

Explanation:

Given:

Destroyer + Builder = 32

Concept:

LCM method and solving equations.

Calculation:

According to the question,

Destroyer + Builder = 32

Let say Number of builders = B

Then, Number of destroyer = 32 – B

1 Builder can build wall in 36 hours

in 1 hour 1 builder can built wall = 1/36

B builders in 1 hour can build wall in B/36

B builders in 2.5 hours can build wall in 2.5B/36

⇒ 5B/72

1 Destroyer can demolish wall in 30 hours

in 1 hour 1 destroyer can demolish wall = 1/30

32 – B destroyers in 1 hr can demolish wall = (32 – B)/30

32 – B destroyers in 2.5 hrs can demolish a wall in 2.5(32 – B)/30

⇒ (32 – B)/12

⇒ 5B/72 – (32 – B)/12 = 1

multiplying by 72 both sides

⇒ 5B – 192 + 6B = 72

⇒ 11B = 264

⇒ B = 24

⇒ 24 Builders are there

⇒ Destroyer = 32 – B

⇒ 32 – 24

⇒ 8

∴ Destroyers are 8.

Shortcut Trick

According to the question,

Let b uilders be x

destroyers = 32 – x

then,

⇒ x/36 – (32 – x)/30 = 1/2.5

⇒ (11x – 192)/180 = 1/2.5

⇒ 11x = 72 + 192

⇒ x = 264/11

⇒ x = 24

⇒ destroyer = 32 – 24

⇒ 8

∴ Destroyers are 8.

---

93. Answer: b

Explanation:

The correct answer isRajasthan.

⭐ Key Points

- The Khetri mines are located in Rajasthan.
  - Khetri mines in **Rajput are famous for copper mines** .

- Khetri Nagar, which is located **10 km** far from Khetri, is known as the ' **Tamba Project** '.
- Khetri Nagar was built by **Hindustan Copper Limited** which is a public sector under the " **Government of India** " and under his jurisdiction.
- Khetri Nagar is a town in the **Jhunjhunu** district of Rajasthan in India.
- Khetri Nagar is also very well known with the name of ' **Copper** '.

⭐ Additional Information

- There are four main mining methods: **underground, open surface (pit), placer, and in-situ mining** .
  - **Underground mines** are more expensive and are often used to reach **deeper deposits** .
  - **Surface mines** are typically used for more **shallow and less valuable deposits.**
  - **Placer mining** is used to sift out valuable metals from **sediments in river channels, beach sands, or other environments.**
  - **In-situ mining** , which is primarily used in **mining uranium** , involves dissolving the mineral resource in place then processing it at the surface without moving rock from the ground.

---

94. **Answer: c**

Explanation:

Given:

Length(L) of rectangular piece of ground = 80 m
Breadth(B) of rectangular piece of ground = 36 m
Length(L) of pit = 40 m
Breadth(B) of pit = 18 m
Height(H) of pit = 12 m

Formula used:

Volume of earth taken out = volume of pit = L × B × H

Area of rectangle = L × B

Calculation:

According to the question,

Volume of the pit = L × B × H

⇒ 40 m × 18 m × 12 m

⇒ 8640 m^3

Area of rectangular piece of ground = L × B

⇒ 80 m × 36 m

⇒ 2880 m^2

Area of the base of pit = L × B

⇒ 40 m × 18 m

⇒ 720 m^2

Area of remaining portion of rectangular ground = Area of rectangular ground – Area of the base of pit.

⇒ 2880 – 720

⇒ 2160 m^2

Now, the height of the level of remaining part of the ground = volume of pit/area of remaining portion of the rectangular ground

⇒ 8640/2160

⇒ 4 m

∴ The height of the land is 4 m.

⭐ Shortcut Trick

Height of pit = volume of pit/(area of ground – area of the base pit)

⇒ (40 × 18 × 12)/(80 × 36 – 40 × 18)

⇒ 4 m.

∴ The height of the land is 4 m.

---

95. Answer: b

Explanation:

Given:

8219x is divisible by 11

Concept used:

Divisibility rule of 11 = The difference of the sum of its digits at odd places and sum of its digits at even places is either 0 or a number divisible by 11.

Calculation:

According to the divisibility rule,

Sum of the odd place = 8 + 1 + x

⇒ 9 + x

Sum of the even place = 2 + 9

⇒ 11

Difference = sum of the odd place – sum of the even place

⇒ 9 + x – 11

⇒ x – 2

For x – 2 to be divisible by 11, x = 2

∴ The value of x = 2.

---

96. **Answer: d**

Explanation:

Given:

60 men can do a work in 17 days

5 workers left work after 6 days

Concept used:

Men × day = Total Work

Calculation:

According to the question,

60 men can complete a work in 17 days

Total work to be done = 60 × 17

= 1020

Before 6 days Work done by 60 men in 6 days

= 60 × 6 = 360

Let the number of days taken to complete the remaining work after 6 days be 'x' days

Number of men when 5 workers left = (60 – 5) = 55 men

Work done by 55 men in 'x' days

= 55 × x

= 55x

We know that,

Total work to be done = Work done by 60 men in 6 days + Work done by 55 men in 'x' days

⇒ 1020 = 360 + 55x

⇒ 660 = 55x

⇒ 660/55 = x

⇒ 12 = x

⇒ x = 12

∴ The number of days taken to complete the work after 6 days is 12 days.

60 men can complete a work in 17 days.

So, total work = 60 × 17

= 1020

Work done by 60 men in 6 days = 360.

The remaining work = total work – Work done by 60 men in 6 days

= 1020 – 360

= 660

After 6 days five workers left. So, number of men working is 55

Total number of days required for 55 men to complete the remaining work = remaining work/remaining men

= 660/55

= 12

∴ The number of days taken to complete the work after 6 days is 12 days.

Shortcut Trick

The remaining work in = (Total work – Work done by 60 men in 6 days)/(remaining days)

⇒ (60 × 17 - 60 × 6)/(60 - 5)

⇒ 60 × 11/55

⇒ 12 days

∴ The number of days taken to complete the work after 6 days is 12 days.

---

97. **Answer: a**

Explanation:

The correct answer is**Large area, which reduces pressure**.

- **Wooden sleepers (timber) are used under the rail and it produces a large area, which reduces pressure**. Hence, the correct option is 1.

⭐ **Key Points**

- There are many kinds of wood that can be used as the railroad sleeper in the world, but not every kind of wood can be used.
- At the different sections of the tracks, for example, **common track section, turnout track section, bridge track section, etc.,**
- wood can be divided into **hardwood and softwood** according to the hardness of wood texture.
- Hardwood railway sleepers are made chiefly from **oak, beech, and hornbeam.**
- softwood railway sleepers from **Scots pine, maritime pine (Pines pinaster), and larch.**

⭐ **Additional Information**

- **Timber sleeper used:**
  - Railway sleepers can be used in lots of different applications, from raised **beds and planters** to retaining walls and water features.
  - Railway sleepers are a great alternative to using **brick or stone** and look absolutely amazing, giving your garden area a rustic feel.
- Railroad construction, **wood rail sleeper, steel rail sleeper, and concrete rail sleeper** are the three most common rail sleepers.
  - Tracing the source, the rail sleeper originates from a **wooden sleeper.**
  - In the past **100 years** , wood rail sleepers are the widest rail sleepers in the railroad, especially in **heavy rail and bridge rail.**
  - With the development and technical requirements of railroad construction, rail sleepers are now made of varieties materials, such as **steel, concrete, and rubber.**

---

98. **Answer: a**

Explanation:

Given,

Veena and Bindu play Carrom and Throwball.
Kavya and Pavitra play tennis and chess.
Bindu and Kavya play chess and throwball.
Veena and Pavitra play carrom and tennis.

Therefore,

Name	Games played
Kavya	Tennis, Chess, Throwball
Veena	Carrom, Throwball, Tennis
Bindu	Carrom, Throwball, Chess
Pavitra	Tennis, Chess, Carrom

Here we see **Kavya** plays chess, throwball and tennis.

Hence, the correct answer is Kavya.

---

99. **Answer: d**

Explanation:

Given:

The company sold 2000 products of Y in the year 2017, each worth Rs. 1000.

The company did not release any product other than Y in the year 2017.

Conclusion:

From statement I we can calculate the total revenue generated from Product Y in 2017

⇒ 2000 × 1000= 2000000

From Statement II we can conclude that in 2017 Company do not sell any other products than Y

∴ Both Statements are required to Infer the Asked conclusion.

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100. Answer: c

Explanation:

Given:

The four abbreviations arranged in ascending order are w, x, y and z.

The smallest three numbers average 23, and the largest three numbers average 29.

Formula used:

Average = sum of observation/total number of observation

Calculation:

According to the question,

w, x, y, z are in ascending order so w is smallest and z is biggest

Average of w, x, y = 23

⇒ sum of w, x, y = 23 × 3

⇒ w + x + y = 69 1

Average of x, y, z = 29

⇒ sum of x, y, z = 29 × 3

⇒ x + y + z = 87 2

Subtracting (1) from (2) we get

⇒ z – w = 87 – 69

⇒ z – w = 18

∴ The range of data is 18.

⭐ **Alternate Method**

The average of first three numbers is 23

The average of last three numbers is 29

Average difference is 6

Since, the average is taken for 3 numbers hence the data range or the difference between last and first number is given as

⇒ 3 × 6

⇒ 18

∴ The range of data is 18.