NDA	CDS	SSC CGL	CBSE UGC NET
IAS	SSC CHSL	CTET	MPSC
AFCAT	CSIR UDC NET	IBPS PO	UP POLICE
SSC MTS	SBI PO	BPSC	UPTET
IBPS RRB	IBPS CLERK	IES	UPSC CAPF
SSC Stenogr..	RRB NTPC	SSC GD	RBI GRADE B
RBI Assistant	DSSSB		

RRB Group D 2018 Prev. Yr. Paper (14 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. Read the given statements and decide which of the assumptions is implicit   **(+1, -0.33)**
   in the statement.

   Statement:

   Dogs usually do not sleep much longer at night.

   Assumptions:

   1. Dogs take short naps.

   2. Dogs sleep during the day.

   a. Only assumption 2 is implicit.

   b. Only assumption 1 is implicit.

   c. Both 1 and 2 assumptions are implicit.

   d. Neither assumption 1 nor assumption 2 is implicit.

---

2. In _ _ _ _ _, 71-year-old Ram Nath Kovind has been elected as the 14th   **(+1, -0.33)**
   President.

   a. June 2017

   b. August 2017

   c. July 2017

   d. March 2017

---

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

Statement:

Television is correctly called the Idiot box.

Assumptions:

1. People who watch television are idiots.

2. People who do not watch television are intelligent.

a. Only assumption 1 is implicit.

b. Both assumptions are implicit.

c. No assumption is implicit.

d. Only assumption 2 is implicit.

---

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

Gun : Armory :: Grain : ?

a. Granary

b. Fish

c. Zoo

d. Birds

---

5. _ _ _ _ _ _ was the adopted son of Bajirao II, who was denied his pension and title.   (+1, -0.33)

a. Bahadur Shah Zafar

b. Mangal Pandey

c. Tatya Tope

d. Nana Saheb

---

6. Mr. X says to Ms. Y, "Your father's wife's sister is my aunt". How is Mr. X related to Ms. Y?   **(+1, -0.33)**

   a. Cousin

   b. Father

   c. Brother-in-Law

   d. Son

---

7. Two pipes can fill an empty tank in 1.8 hours and 3 hours respectively while a third pipe can empty a tank filled in x hours. If all three pipes are opened simultaneously then an empty tank is completely filled in 2.25 hours. Find the value of x.   **(+1, -0.33)**

   a. 2

   b. 2.25

   c. 1.5

   d. 2.5

---

8. Suraj drove his bicycle towards the north. Then he turned to the right and covered a distance of 2 km. Then, he turned to the right and covered a distance of 4 km. He found himself 2 km east of his starting point. How far did he go by bicycle in the north direction?   **(+1, -0.33)**

a. 2 km

b. 4 km

c. 6 km

d. 8 km

---

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

   Question:

   If there are 100 sheep in a farm then what is the number of female sheep
   that are brown ?

   Statements:

   1. There are 10 male sheep that are brown.

   2. 25% of the sheep's are brown.

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

   b. Both 1 and 2 together are sufficient

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

   d. Each statement alone is sufficient

---

10. What is the square root of 33489?   (+1, -0.33)

    a. 163

    b. 183

   c. 179

   d. 167

---

11. What will be the HCF of 195 and 273?   **(+1, −0.33)**

   a. 39

   b. 65

   c. 3

   d. 13

---

12. A hose has three pipes. Pipe x and pipe y fill the hose and pipe z empties   **(+1, −0.33)**
the hose. The pipe x can fill the tank alone in 15 hours. The pipe y can fill
the same hose in 12 hours alone. The pipe z can completely empty the
hose in 20 hours alone. If all the pipes are opened at the same time, how
much time will it take to fill the fill the hose?

   a. 10 hours

   b. 12 hours

   c. 8 hours

   d. 6 hours

---

13. 1 kWh = _ _ _ _ _ _ J.   **(+1, −0.33)**

   a. 36000

   b. 36000000

c. 360000

d. 3600000

---

14. Indian Space Research Organization (ISRO) has joined hands with which state government to set up a telemedicine center at an altitude of 12,700 feet to serve pilgrims en route to the Amarnath shrine.   (+1, -0.33)

a. Sikkim

b. Uttarakhand

c. Jammu and Kashmir

d. Himachal Pradesh

---

15. How to express 20 g of CO_2 in moles. (Atomic mass C = 12, O = 16)   (+1, -0.33)

a. 4 mole

b. 2 mole

c. 1 mole

d. 0.45 moles

---

16. Complete the following analogy.   (+1, -0.33)

ROAD : URDG :: LANE : ?

a. DOQH

b. ODQH

   c. ODHQ

   d. OQDH

---

17. In Uttar Pradesh _ _ _ _ _ _ is famous for the work of glass bangles.   **(+1, -0.33)**

   a. Shikohabad

   b. Firozabad

   c. Ghaziabad

   d. Moradabad

---

18. Kalbeliya is a popular dance form in _ _ _ _ _ _.   **(+1, -0.33)**

   a. Gujarat

   b. Rajasthan

   c. Manipur

   d. Meghalaya

---

19. Answer the following questions based on the diagrams given below: **(+1, -0.33)**
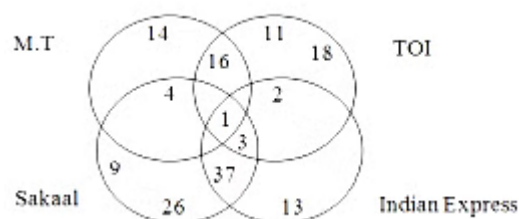
Numbers represent the number of subscribers and circles indicate a newspaper.

Question:

How many people buy only Sakal newspapers?

a. 35

b. 76

c. 72

d. 80

20. Who was appointed by British Prime Minister Theresa May as the new Brexit Secretary?   (+1, -0.33)

a. Eleanor Laing

b. Heidi Alexander

c. George Howarth

d. Stephen Barclay

21. When an acid reacts with a carbonate or metal hydrogen, it forms salts, carbon dioxide gas and water accordingly. Which of the following equations is correct for this chemical reaction?   (+1, -0.33)

a. $Na_2CO_{3(s)} + HCl(aq) \rightarrow 2NaCl_{(aq)} + H_2O(l) + 2CO_{2(g)} + H_2O_{(l)}$

b. $Na_2CO_{3(s)} + HCl(aq) \rightarrow NaCl_{(aq)} + H_2O(l) + CO_{2(g)}$

c. $Na_2CO_{3(s)} + 2HCl(aq) \rightarrow 2NaCl_{(aq)} + H_2O(l) + CO_{2(g)}$

d. $Na_2CO_{3(s)} + 2HCl(aq) \rightarrow 2NaCl_{(aq)} + 2CO_{2(g)}$

22. More diversity is allowed for breeding by _ _ _ _ _.   (+1, -0.33)

   a. Vegetative propagation

   b. Tissue culture

   c. Asexual reproduction

   d. Sexual reproduction

---

23. The least common multiple and highest common factor of two numbers   (+1, -0.33)
    are 90 and 9 respectively and one of those numbers is 18. What is the
    second number:

   a. 9

   b. 36

   c. 45

   d. 30

---

24. 54 ÷ 6 + 3 × 3 = ?   (+1, -0.33)

   a. 15

   b. 5

   c. 18

   d. 36

25. The table below shows the passing percentage of four schools in four years. (+1, -0.33)

Name of school	2012-13	2013-14	2014-15	2015-16
PQR	27%	31%	45%	67%
ABC	61%	65%	50%	78%
DEF	95%	86%	80%	70%
XYZ	92%	82%	78%	71%

The percentage of which school is increasing sequentially (gradually)?

a. XYZ

b. ABC

c. DEF

d. PQR

26. The elevation angle of the tower is 30° from the 18 m high top of a platform. If the height of the tower is 78 m, then what is the distance of the tower from the platform? (+1, -0.33)

a. 60 m

b. 20√3 m

c. 70√3 m

d. 60√3 m

---

27. To get the result of the equation given as 5, Enter the mathematical symbol in place of '?':   (+1, −0.33)

    ((120?110)?5)?10 = 5

    a. −, ÷, ÷

    b. +, ÷, ×

    c. −, +, +

    d. −, ×, ÷

---

28. Which scheme aims to provide piped water supply to villages powered by solar energy?   (+1, −0.33)

    a. Swajal Scheme

    b. Gangajal Scheme

    c. Pure water scheme

    d. Ground water scheme

---

29. Who wrote the epic Ramayana?   (+1, −0.33)

   **a.** Chitragupta

    b. Valmiki

c. Chanakya

d. Dronacharya

---

30. _ _ _ _ _ of the stems and roots also store nutrients and water.   (+1, −0.33)

a. Parenchyma

b. Xylem

c. Collenchyma

d. Sclerenchyma

---

31. The Venn diagram below illustrates the sports preferences stated by a   (+1, −0.33)
group of 100 college students. These students play one of the three games
given below and 5 of them play all three games. These three sports are:
Football (A), Tennis (B) and Cricket (C). Based on the diagram, how many
students only like playing tennis and football?
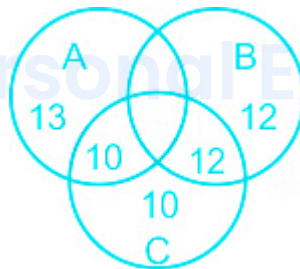
a. 34

b. 35

c. 37

d. 38

---

32. According to the New World Wealth Report, India was ranked _____ in   **(+1, -0.33)**
the list of wealthiest countries, according to which India had assets of $
8,230 billion in 2017.

    a. Seventh

    b. Tenth

    c. Fifth

    d. Sixth

---

33. What is the difference between the place values of two 5 in 1452058?   **(+1, -0.33)**

    a. 49050

    b. 49950

    c. 0

    d. 51950

---

34. What is the title of biography of Nelson Mandela?   **(+1, -0.33)**

    a. My lone walk to freedom

    b. Long walk to freedom

    c. Mandela

    d. Madiba

---

35. Which of the following is the least active?   **(+1, -0.33)**

a. Silver

b. Potassium

c. Sodium

d. Lead

---

36. India does not share terrestrial border with _ _ _ _ _ .   **(+1, -0.33)**

a. Sri Lanka

b. Afghanistan

c. China

d. Bangladesh

---

37. Select the sequence of mathematical operators that when arranged   **(+1, -0.33)**
sequentially in the spaces of a given series, will complete the series
completely.

2 _ 5 _ 2 _ 6 _ 11

a. +, -, +, =

b. +, -, -, +

c. -, +, =, +

d. +, +, +, -

---

38. If 7364x is divisible by 11, what will be the value of x?   **(+1, -0.33)**

a. 7

b. 6

c. 5

d. 4

---

39. The average score achieved by Subir in 15 tests is 29. Ruchira has averaged 27 so far, but has given only 11 Tests so far. How much does Ruchira score on average in the remaining four Tests to match Subir's performance?   **(+1, -0.33)**

a. 36

b. 35.5

c. 35

d. 34.5

---

40. Consider the following statement and decide which of the assumptions is implicit from the statement.   **(+1, -0.33)**

Statement:

Eating Pizza often affects a person's health.

Assumptions:

I. Mostly, pizza contains lot of saturated fat and salts that lead to various health issues.

II. To a large extent, overeating of pizzas leads to a sharp rise in blood cholesterol levels.

a. Both I and II are implicit

b. Only II is implicit

c. Only I is implicit.

d. Neither I nor II is implicit

---

41. Newton's Second Law of Motion: (+1, -0.33)

a. Also known by the law of inertia.

b. Also known by the law of conservation of energy.

c. It is helpful to understand the effects of heat.

d. Describes the relationship between the forces of two mutually affecting objects.

---

42. The annual depreciation of a car's value is 10%. By what percentage will the price of the car fall after 4 years?   (+1, -0.33)

a. 34.39

b. 32.56

c. 40.12

d. 38.24

---

43. What is the amount of work done by a boy against gravity in which he takes a bicycle weighing 3 kg to a distance of 10 meters on a flat road? (g = 9.8 m/sec ^{2})   (+1, -0.33)

a. 0 J

b. 300 J

c. 0.3 J

d. 30 J

---

44. Which of the following is a vascular plant ?   (+1, -0.33)

a. Marsilea

b. Ulothrix

c. Chara

d. Spirogyra

---

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

Statement:

"The pedestrian crossing is a few feet away, it's safe to use," a mother told
her child.

Conclusions:

1. Pedestrians should use pedestrian crossings for safety.

2. All children know what a pedestrian crossing is.

a. Only conclusion 1 follows.

b. Both 1 and 2 follow.

c. Only conclusion 2 follows.

d. Neither 1 nor 2 follows.

---

46. Which of the following Indian squash player became the first Indian player to be included in the top 10 of the PSA women's rankings?   (+1, -0.33)

a. Deepika Pallikal Karthik

b. Joshna Chinappa

c. Aparna Popat

d. Janet Vidhi

---

47. If 'South-East' is called 'East', 'North-West' is called 'West', 'South-West' is called 'South'. Similarly, what will 'North' be called?   (+1, -0.33)

a. South-West

b. South

c. North

d. North-West

---

48. An object of mass 14 kg is placed at a certain height from the ground. If the potential energy of the object is 560 J, then find the height of the object with reference to the ground. (take g = 10 ms^{-2})   (+1, -0.33)

a. 3 m

b. 4 m

c. 4.5 m

d. 5 m

---

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

11KI, 15OM, _ _ _ _ _ ?

a. 19QS

b. 19QT

c. 19ST

d. 19SQ

---

50. In a concave mirror, where should that object be placed to obtain a real,   (+1, -0.33)
inverted image of the same size at C?

a. At C

b. Between the focus and the mirror pole

c. At infinity

d. At focus

---

51. Which of the following options is equivalent to: (+1, -0.33)

$$\frac{(1+\tan^2\theta)\cot\theta}{\csc^2\theta}$$

a. cot θ

b. tan θ

   c. sin θ

   d. cos θ

---

52. Sakira and Bryan depart from points x and y towards y and x respectively   **(+1, -0.33)**
and travel in the same route. After meeting each other on the way, Sakira
takes 7.5 hours to reach her destination, while Bryan takes 2.7 hours to
reach his destination. After how many hours did they meet after starting
their journey?

   a. 6

   b. 4.8

   c. 5.25

   d. 4.5

---

53. Manoj is the father of Varun's only brother. How is Varun related to Manoj?   **(+1, -0.33)**

   a. Uncle

   b. Son

   c. Cousin

   d. Brother

---

54. Represent $x^3 + 3x^2 + 3x + 1$ in quadratic surd.   **(+1, -0.33)**

   a. $\sqrt{(x+1)^3}$

   b. $(x+1)^{\frac{3}{2}}$

c. $(x+1)^{\frac{2}{3}}$

d. $\sqrt{(x+1)^6}$

---

55. _____ argued that all planets are in the Sun's orbit, not Earth's, contrary to the belief of the time.   (+1, -0.33)

    a. Johann Wolfgang Dobreiner

    b. Gregor Mendel

    c. Galileo Galilei

    d. Isaac Newton

---

56. How many gold medals did India win at the 2018 Commonwealth Games?   (+1, -0.33)

    a. 26

    b. 19

    c. 14

    d. 20

---

57. As of March 2018, which political party was in power in Telangana?   (+1, -0.33)

    a. TRS

    b. BJP

    c. Congress

58. The digit present in place of unit of cube root of a number is equal to the digit present in place of unit of its number. This is appropriate in cases of how many different digits in place of the unit? (+1, -0.33)

    a. 6

    b. 2

    c. 4

    d. 1

59. The population of a small town is 12,000. If the population increases by 15% from year to year, then what will be the population of that city in two years? (+1, -0.33)

    a. 14,760

    b. 15,870

    c. 15,620

    d. 16,870

60. Two trains, one 157 m long and the other 123 m long, are crossing each other in opposite directions in 7.2 seconds. The combined speed of two trains every hour will be: (+1, -0.33)

    a. 70 km/hr

    b. 105 km/hr

c. 280 km/hr

d. 140 km/hr

---

61. 200 students appeared in a specific examination. There were 80 students who failed in Mathematics. 160 students passed in Physics.

   30 students failed in Chemistry.

   30 students failed in Mathematics and Physics. 15 students failed in Mathematics and Chemistry. 10 students failed in Physics and Chemistry. 100 students passed in all three subjects.

   How many students failed in only one subject?

   a. 45

   b. 55

   c. 30

   d. 80

(+1, −0.33)

---

62. Why is the classification of elements important?

   a. To study the properties of the elements in a convenient manner.

   b. To know their atomic number.

   c. To know the functions of the elements.

   d. To know their electronic orientation.

(+1, −0.33)

---

63. The body's tendency to resist acceleration is called _ _ _ _ _.

(+1, −0.33)

a. Inertia

b. Force

c. Energy

d. Momentum

---

64. What is the full form of AIDS? (+1, -0.33)

a. Advancement in developing syndrome

b. Acquired Immune Deficiency Syndrome

c. Active immune divide signal

d. All immune down syndrome

---

65. Choose the mirror image of the given figure. (+1, -0.33)
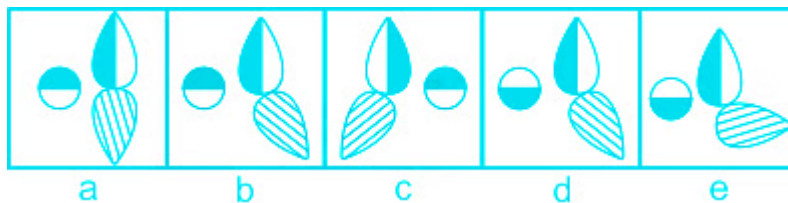
a. a

b. b

c. e

d. d

---

66. Three of the four options below are related in a particular way. Select the   (+1, -0.33)
option which is different or odd from the others.

   a. Cat

   b. Lamb

   c. Kitten

   d. Cub

---

67. Which of the following is an example of a good thermal insulation?   (+1, -0.33)

   a. Aluminum

   b. Glass

   c. Copper

   d. Steel

---

68. What is the smallest number. Which, when divided by 16, 24, 30 and 48,   (+1, -0.33)
remains 11 in each case?

   a. 465

   b. 491

   c. 499

   d. 495

---

69. How many FIFA World Cup titles have France won? (+1, -0.33)

    a. 3

    b. 2

    c. 1

    d. 5

70. When the time in a clock is 7:20, what is the small angle drawn between the minute needle and the hour needle? (+1, -0.33)

    a. 130°

    b. 120°

    c. 100°

    d. 75°

71. In a scheme, ₹ 200 was invested for one year, which provides 10% annual simple interest. Another ₹ 200 was invested for one year in another scheme, which provides compound interest at 10% half-yearly. How much more will be the interest earned under the second plan? (+1, -0.33)

    a. 50 paise

    b. No difference

    c. 25 paise

    d. ₹ 1

72. Suppose the given statements are true, even if they seem to be at variance from commonly known facts and decide which of the conclusions completely follows the statement.   (+1, −0.33)

Statement

The boss insulted Sachin in the presence of his colleagues.

Conclusions:

1. Boss doesn't like Sachin.

2. Sachin was not popular among his colleagues.

   a. Neither conclusion 1 nor 2 follows.

   b. Only conclusion 1 follows.

   c. Either conclusion 1 or 2 follows.

   d. Only conclusion 2 follows.

---

73. Literary sources from the Mauryan period include Indica and _ _ _ _ _ _ _ _.   (+1, −0.33)

   a. Rock Inscriptions

   b. Arthshastra

   c. Coins

   d. Pillar inscription

---

74. The same mass of ethane and hydrogen is added to a blank vessel at 25°. What is the fraction of the total pressure exerted by hydrogen?   (+1, −0.33)

   a. 1 : 2

b. 1 : 1

c. 15 : 16

d. 1 : 16

---

75. If a triangle has two vertices (−3, 1) and (0, −2) and the nucleus is the origin, then the third vertex is (α, β). What is the value of (2α − β)?   **(+1, −0.33)**

a. 5

b. 4

c. 6

d. 3

---

76. The weight of the object is 98 N. What will be its mass on Earth? (Given: g = 9.8 ms^{-2})   **(+1, −0.33)**

a. 98 kg

b. 10 N

c. 100 kg

d. 10 kg

---

77. Choose the correct water-image of the following figure from the four figures given below.   **(+1, −0.33)**

FAMILY

a.

b. FAMILY

c. FAMILY

d. FAMILY

---

78. How many real zeros in the polynomial $x^3 - x^2 + 2$?   (+1, -0.33)

    a. 3

    b. 0

    c. 1

    d. 2

---

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

Statement:

An ad for a weight-loss organization says, "Lose your weight by 5 kg in three sessions."

Assumptions:

1. If you join a weight loss program, you will lose 10 kg in six sessions.

2. The institute deals with weight loss programs.

    a. Neither assumption 1 nor assumption 2 is implicit.

    b. Only assumption 1 is implicit.

    c. Either assumption 1 or assumption 2 is implicit.

d. Only assumption 2 is implicit.

---

80. Mount Dhupgai is the highest peak in the Satpura Range, which is located in _ _ _ _ _. **(+1, -0.33)**

a. Gujarat

b. Maharashtra

c. Madhya Pradesh

d. Chhattisgarh

---

81. The three elements A, B and C form the Döbereiner's triads. If the atomic mass of element A is 7 and the atomic mass of element C is 39, what will be the atomic mass of element B? **(+1, -0.33)**

a. 46

b. 22

c. 32

d. 23

---

82. A 42 cm long hollow cylinder has an outer diameter of 16 cm and an internal diameter of 12 cm. If the weight of the cylinder's material is 10 g/cm ^{3}, what is the weight of the hollow or empty cylinder? (π = 22/7) **(+1, -0.33)**

a. 32.960 kg

b. 36960 kg

c. 36.960 kg

d. 32960 kg

---

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

Problem Figures

Answer Figures
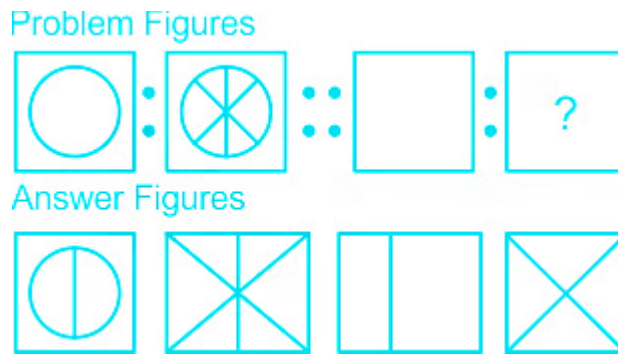
a. 3

b. 1

c. 2

d. 4

---

84. _ _ _ _ _ coating on silver is an example of corrosion. **(+1, -0.33)**

a. Blue

b. Black

c. Green

d. Brown

---

85. Differentiation in organisms leads to _ _ _ _ _. **(+1, -0.33)**

a. Origin and Development of Diversity

b. Choose the most desirable properties

c. Survival of organism

d. Complex form of origin

---

86. A and B can complete a work in 36 days. However, A had to leave a few days before the work was completed and hence it took 54 days to complete the work. If A alone can complete a work in 48 days, then how many days before the completion of the work did A take leave?   (+1, −0.33)

    a. 24

    b. 30

    c. 25

    d. 28

---

87. Silicon forms a compound with hydrogen consisting of a chain of _ _ _ _ atoms.   (+1, −0.33)

    a. 8 or 9

    b. 5 or 6

    c. 6 or 7

    d. 7 or 8

---

88. If a shopkeeper makes a 30% profit by selling an item for ₹ 4420, what is the cost price of that item?   (+1, −0.33)

    a. ₹ 2500

    b. ₹ 3400

    c. ₹ 3600

    d. ₹ 3300

---

89. The atmospheric pressure at sea level is _ _ _ _ _ atmosphere.　　　　　**(+1, -0.33)**

    a. 0.1

    b. 0.001

    c. 1

    d. 0

---

90. Find the next word in this series.　　　　　**(+1, -0.33)**

ZKC, XPE, VUG, _ _ _ _ _.

    a. TYJ

    b. TZI

    c. TYI

    d. TZJ

---

91. If two objects, whose masses are 'm' and '9m', are moving with equal　　　**(+1, -0.33)**
kinetic energy, find the ratio

of their linear momentum.

    a. 1 : 9

b. 1 : 3

c. 9 : 1

d. 3 : 1

---

92. In an imaginary language, the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are replaced by a, b, c, d, e, f, g, h, i and j.

(+1, -0.33)

The value of $((h \times i) \div e) + ((a \times d) - f) \times g$ is:

a. -16

b. 14

c. -5

d. 28

---

93. What does the amplitude of sound wave determine ?

(+1, -0.33)

a. Loudness

b. Pitch

c. Frequency

d. Amplitude

---

94. Who played the lead actor in the 2017 film 'Pink'?

(+1, -0.33)

a. Akshay Kumar

b. Abhishek Bacchan

    c. Amitabh Bachchan

    d. Anupam Kher

---

95. LK Advani is popular for his contribution in which of the following fields?   **(+1, -0.33)**

    a. Social activism

    b. Sports

    c. Music

    d. Politics

---

96. The table below shows the passing percentage of four schools over four years.   **(+1, -0.33)**

Name of School	2012-13	2013-14	2014-15	2015-16
PQR	27%	31%	45%	67%
ABC	61%	65%	50%	78%
DEF	95%	86%	80%	70%
XYZ	92%	82%	78%	71%

In which year the passing percentage result of all schools was above 60%?

a. 2013-14

b. 2012-13

c. 2015-16

d. 2014-15

---

97. Which pattern of answer figures is very similar to the given form?　　　　(+1, -0.33)

Problem Figures

Answer Figures

(a)　　(b)　　(c)　　(d)
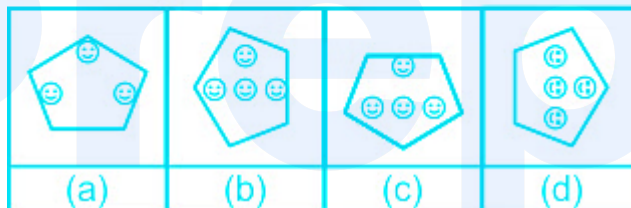
a. D

b. C

c. A

d. B

---

98. Computer scientists from the Indian Institute of Technology (IIT) Madras　　(+1, -0.33)
have built the first microprocessor with six industry-standard under
Project Shakti. What was the initial batch of 300 chips named?

a. INDIANINTEL

b. ROSECRT

c. RENDCART

d. RISECREEK

---

99. Select the number which is related to the third number in the same way as the second number is to the first number.

(+1, -0.33)

53 : 59 :: 61 : _ _ _ _

a. 67

b. 62

c. 58

d. 66

---

100. Find the shape that will replace the question mark in the following analogy.

(+1, -0.33)

a.

b.

c.

d.

Answers

1. Answer: c

Explanation:

Assumptions 1: This is implicit because as it is given that dogs do not sleep much longer at night which means they take short naps.

Assumptions 2: This is implicit because as dogs do not sleep much longer at night it means they sleep during the day.

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

⭐ <u>Additional Information</u>

1. Read the statement with an approach that the assumptions would be true with regard to the statement.
2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not overcomplicate it.
3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts.

---

2. Answer: c

Explanation:

The correct answer is in <u>July 2017</u>.

- In July 2017, Ram Nath Kovind has been elected as the 14th President.

⭐ <u>Key Points</u>

- He is the current President of India.
- He was also Governor of Bihar in 2015.

- He succeeded Late. Pranab Mukherjee.
- He was a lawyer in Delhi High court and Supreme court, before coming to politics.
- He was born in Uttar Pradesh.
- The oath was taken by him in 25th July 2017.

⭐ Additional Information

- He is the first Indian President, who is from Rashtriya Swayamsevak Sangh.
- He served as the spokesperson of BJP in 2010.

3. **Answer: c**

Explanation:

Assumption 1: It can not be assumed because the person in the statement is Idiot, nothing has been said about it. We have not to assumed something on our own.

Thus, Assumption 1 is not implicit.

Assumption 2: It can not be assumed for the given statements because the person in the statement is intelligent, nothing has been said about it. We have not to assumed something on our own.

Thus, Assumption 2 is not implicit.

Hence, the correct answer is **"No assumption is implicit".**

⭐ Additional Information

1. Read the statement with an approach that the assumptions would be true with regard to the statement.
2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not overcomplicate it.
3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts.

4. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient.

4. Answer: a

Explanation:

As **Gun** is kept in the **Armory.**

Similarly,

Grain is kept in the **Granary.**

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

⭐ **Additional Information**

- A park full of wild animals and birds is called a **Zoo.**

5. Answer: d

Explanation:

The correct answer is **Nana Saheb.**

- **Nana Sahib was the adopted son of Bajirao II**.
- **Narayan Bhat** and **Gangabai** were his father and mother.

⭐ **Key Points**

- He was denied his pension and title.
- In Maratha Empire, he was an **Indian Peshwa** .
- The **rebellion of Kanpur** was led by him.
- He believed that he deserves a pension from the British East India company.

- But the company refused to continue his pension followed by the death of his father.
- Due to these British policies.
    - He decided to revolt against the British.
    - In Cawnpower, the British garrison was forced to surrender by him.
    - He was one of the important and famous leaders of the revolt of 1857.

---

6. **Answer: a**

Explanation:

Family chart,

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

Drawing the family tree according to the given information,

Family tree,
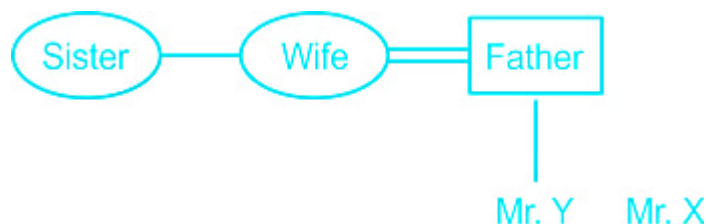
As Mr. X is the cousin of Ms. Y.

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

Note -

As Brother is not given in the option, then cousin is the suitable answer. This question is from the previous year exam and the answer is as per the official answer key.

---

7. **Answer: b**

Explanation:

Given:

⇒ One pipe's 1 hours work = 1/1.8

⇒ Second pipe's 1 hours work = 1/3

⇒ Third pipe's 1 hours work = 1/x

Calculation:

⇒ All three pipes opened simultaneously = 1/1.8 + 1/3 – 1/x

⇒ 1/2.25 = 1/1.8 + 1/3 – 1/x

⇒ 1/x = 1/2.25

Third pipe can empty tank in 2.25 hours.

∴ **The value of x is 2.25**

---

8. **Answer: b**

Explanation:

Representing the given information on **NESW direction :**
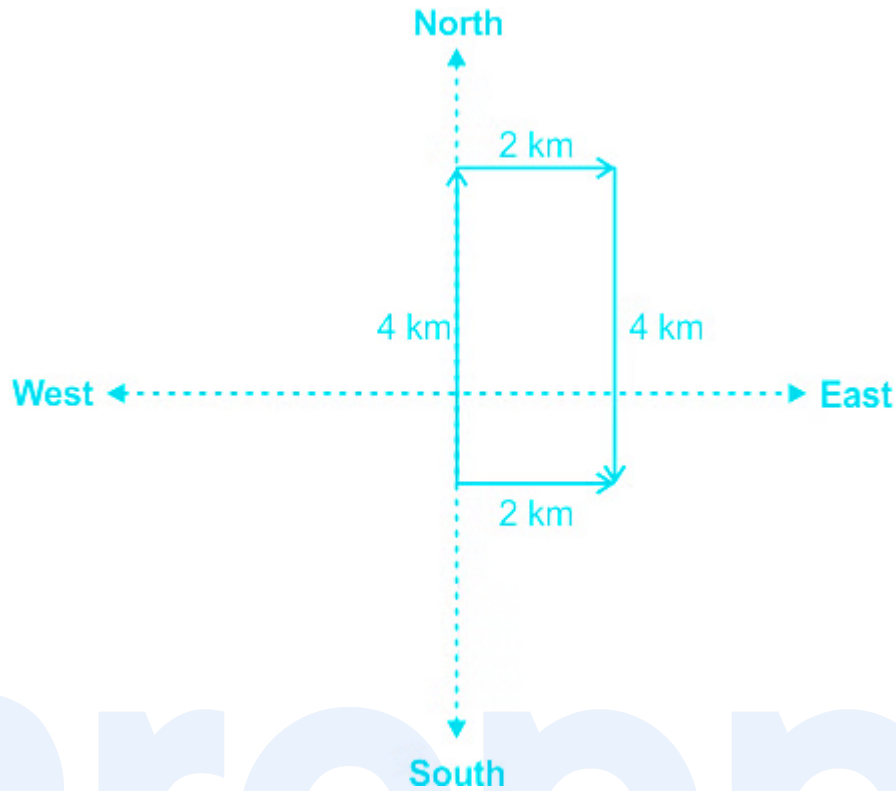
As Suraj 1st drove his bicycle towards the North direction(don't know the distance), then turned to the right and covered a distance of 2 km, then turned right and covered a distance of 4 km then he found himself 2 km east of the starting point. It means, he covered 4 km in the north direction.

Thus, In the north direction, Suraj went 4 Km away by bicycle.

Hence, the correct answer is **"4 Km"**.

---

9. **Answer: b**

Explanation:

Given:

Number of sheep on the farm = 100

Calculation:

Statement I: There are 10 male sheep that are brown.

It means out of 100, there are 10 male brown sheep. But we have to find the female brown sheep.

Statement II: 25% of the sheep are brown.

25% of 100 = 25 sheeps are brown(Male + Female)

The number of female sheep is not mentioned.

Statement I + Statement II:

When we combine the two statements we get the actual value of Female brown sheep.

25 sheep are brown(male + female) - 10 Male sheep that are brown = 15 Female sheep are brown.

∴ Both statements are required to get the solution.

---

10. **Answer: b**

Explanation:

Given:

$\sqrt{33489} = ?$

Calculation:

$\sqrt{33489} = \sqrt{(3 \times 3 \times 61 \times 61)}$

$= 3 \times 61 = 183$

∴ $\sqrt{33489}$ **= 183.**

---

11. **Answer: a**

Explanation:

Given:

Numbers = 195 and 273

Concept used:

HCF: Highest Common Factor

The common factor to the given numbers

Calculation:

Let us factories the given numbers.

195 = 5 × 39

273 = 7 × 39

From the above, we can see that the common factor to both the numbers is 39.

∴ HCF (195, 273) = 39.

---

12. **Answer:** a

Explanation:

Given:

⇒ Pipe x's 1 hour's work = 1/15

⇒ Pipe y's 1 hour's work = 1/12

⇒ Pipe z's 1 hour's work = 1/20

Calculation:

⇒ Pipe (x + y + z)'s 1 hour's work = 1/15 + 1/12 – 1/20 = 1/10

∴ In 10 hours, hose will get completely filled if all three pipes are opened simultaneously.

---

13. **Answer: d**

Explanation:

The correct answer is 3600000.

- 1 Kwh is equal to 3600000 joules.
- The unit of energy is expressed in kilowatt hour.

⭐ **Key Points**

- The energy consumed by electric utilities is also expressed in kilowatt hour.
- If for the time duration 1 hour, the 1 kw of power is sustained then it is called as kilowatt hour.
- In non-SI unit, hour is listed.
- The less commonly uses unit of energy is kilowatt hour.
- In kilowatt hour, the electrical energy is sold to consumers.
- Energy can neither be created nor be destroyed, it can only be transferred from one form to another.

---

14. **Answer: c**

Explanation:

The correct answer is Jammu and Kashmir.

- ISRO has joined hands with Jammu and Kashmir government to set up a telemedicine center at an altitude of 12,700 feet to serve pilgrims in route to the Amarnath shrine.

⭐ **Key Points**

- The real-time treatment will be provided by the Patanjali base camp hospital.
- Many health problems are faced by the pilgrims in high-altitude regions like Amarnath.
- To handle critically ill patients, the setup of an ICU will take place.
- By the efforts of ISRO, using telemedicine facilities. The medical services will be delivered in remote, distant in unserved areas.
- A very small aperture terminal consists of the Shesnad telecommunication node.
- The facility of telemedicine is spread across the country with 105 centers.

---

15. **Answer: d**

Explanation:

The correct answer is <u>0.45 moles</u>.

The number of moles of a substance in a given sample can be represented by the following formula:
$n = m/M$
Here, n = the number of moles of the substance
     m = mass of the given substance
     M = Molar mass
Given- Atomic mass of C= 12
     The atomic mass of O= 16
Molar mass of 1 mole of CO_2= Molar mass of C +2 x Molar mass of O
                    = 12 + 32 = 44
So, no. of moles in 20 gm of CO_2= 20/44 moles of CO_2
                    = 0.45 moles

---

16. **Answer: b**

Explanation:

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

Logic:- Each letter is increasing by 3.

(18)	(15)	(1)	(4)
R	O	A	D
↓+3	↓+3	↓+3	↓+3
U	R	D	G
(21)	(18)	(4)	(7)

Similarly,

(12)	(1)	(14)	(5)
L	A	N	E
↓+3	↓+3	↓+3	↓+3
O	D	Q	H
(15)	(4)	(17)	(8)

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

---

17. **Answer: b**

Explanation:

The correct answer is <u>Firozabad</u>.

- Firozabad is famous for the work of glass bangles in Uttar Pradesh.
- Near the city of Agra, Firozabad is located.

⭐ <u>Key Points</u>

- Many glass-making industries are located here.

- So Firozabad is also known as the center of glassmaking.
- The bangles made here are of good quality.
- Revenue was brought through the city at the time of Akbar.
- The Etah district in north and Manipuri district in north bounds Firozabad.
- On the southern side, the boundary is made by the Yamuna River.
- The city is also important for market activities.
- In this city, female child labor is present extensively.
- In ancient times, the region was ruled by Chauhan rulers.
- In 1566, the foundation of the modern city of Firozabad was laid.

---

18. Answer: b

Explanation:

The correct answer is Rajasthan.

- Kalbelia is a dance form of Rajasthan.
- The dance reflects the culture of the state.

⭐ Key Points

- Both men and women perform in this dance.
- In ancient times, kalbelia community changed its location frequently.
- Catching snakes and trading snake venoms are the traditional occupations of the kalbelia community.
- The costumes of kalbelia dance look somewhere similar to serpents.
- Sapera and yogi also participate in this.
- This community is found in a large number in the pali district.
- In cane baskets, cobras are carried in a traditional basket by men in old times.
- There is a negative impact on the occupation of the kalbelia community after the passing of the wildlife protection act 1972.

---

19. Answer: a

Explanation:

Given:

The Venn diagram about the people using newspapers.

Calculation:

Number of people who use only Sakaal newspaper = (from the Venn diagram) 9 + 26 = 35 people.

---

20. Answer: d

Explanation:

The correct answer is <u>Stephen Barclay</u>.

- <u>**Stephen Barclay was appointed by the British Prime minister Theresa as the new Brexit secretary**</u>.

⭐ <u>Key Points</u>

- The post of secretary was resigned by the Dominic Raab.
- The Brexit negotiation was overseen by the secretary.
- In 2016, this position was created.
- The department for existing the European Union is newly created.
- This department will be headed by the secretary.
- The planning for the event in the UK will be led by Barclay.
- Brexit is backed by Barclay.
- A very high Euroskeptic constituency is represented by a secretary.
- Micheal Gove was initially offered for this role.
- Anti-money laundering was also headed by Barclay.

---

21. Answer: c

Explanation:

The correct answer is <u>Na 2CO 3(s) + 2HCl(aq) → 2NaCl (aq) + H 2O(I) + CO 2(g).</u>

- When an acid reacts with a metal carbonate or metal hydrogen a salt, carbon dioxide, and water are formed.
- It can be represented as-

  Acid + Metal carbonate → Salt + Water + Carbon dioxide

- The current equation for this chemical reaction is given below-

  $Na_2CO_3(s) + 2HCl\ (aq) \rightarrow 2NaCl\ (aq) + H_2O(I) + CO_2(g)$

---

22. Answer: d

Explanation:

The correct answer is <u>Sexual reproduction</u>.

- <u>More diversity is allowed for Sexual Reproduction</u>.

⭐ <u>Key Points</u>

- Sexual reproduction
  - It is the process in which new organisms are created, by combining the genetic information from two individuals of different sexes.
  - The genetic information is carried on chromosomes within the nucleus of specialized sex cells called gametes.
  - In sexual reproduction, **different mutations are continually reshuffled from one generation to the next when different parents combine their unique genomes; this results in an increase in genetic diversity** .

⭐ <u>Additional Information</u>

- When from the parent plant, the growth of a new plant takes place it is called vegetative reproduction .

- Plant reproduction happens in both ways both naturally and artificially .
- The process in which replication of plants takes place by vegetative plants is called asexual propagation .
  - Asexual propagation is developed by horticulturalists .
- There is a difference in the success rates of propagation.
- The offsprings that are produced through vegetative propagation are clones of their parent plants.
- Research areas are provided in the field of biology by vegetative propagation.

---

23. **Answer: c**

Explanation:

Given:

Least Common Multiple, LCM = 90

Highest Common Factor, HCF = 9

One of the numbers, N_1 = 18

Concept used:

HCF × LCM = Product of the numbers

Calculation:

$N_2 = (90 \times 9)/18 = 45$

∴ The other number is 45.

---

24. **Answer: c**

Explanation:

Given:

54 ÷ 6 + 3 × 3 = ?

Concept used:

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

Calculation:

54 ÷ 6 + 3 × 3 = ?

9 + 3 × 3 = ?

9 + 9 = ?

18 = ?

∴ The value of '?' is 18.

---

25. **Answer: d**

Explanation:

Given:

The table about the passing percentage of four schools in four years.

Calculation:

The gradual increase means there must no decrease in between.

Looking at the table, we can see that :

PQR → 27%, 31%, 45%, 67%

In all others, there is a decrease while going from 2012 to 2016.

∴ **A gradual increase is shown by PQR.**

---

26. **Answer: d**

Explanation:

Given:

Height of the platform = 18 m

Height of the tower = 78 m

The angle of elevation of the tower from platform = 30°

Figure:
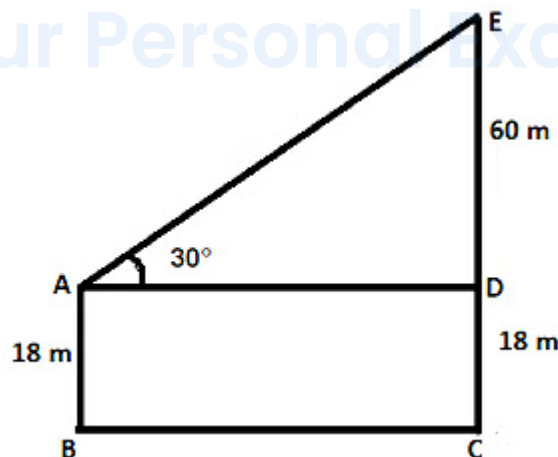
Where, AB = length of the platform

EC = ED + DC = length of the tower

BC = distance between the tower and the platform

Calculation:

From the figure, tan 30º = ED/AD

$1/\sqrt{3}$ = 60/AD

AD = $60\sqrt{3}$ m

∴ The distance between the tower and the platform is $60\sqrt{3}$ m.

---

27. Answer: d

Explanation:

Given:

((120?110)?5)?10 = 5

Concept used:

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

Calculation:

Let us apply the options one by one:

Option 1: ((120 − 110) ÷ 5)÷ 10 ≠ 5

Option 2: $((120 + 110) \div 5) \times 10 \neq 5$

Option 3: $((120 - 110) + 5) + 10 \neq 5$

Option 4: $((120 - 110) \times 5) \div 10 = 10 \times 5/10 = 5$

∴ **The value of '?' will be option 4.**

---

28. **Answer: a**

Explanation:

The correct answer is <u>**Swajal Scheme**</u>.

- Swajal" scheme was launched in February 2018 under the National Rural Drinking Water Programme, in six states of Bihar, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and Uttarakhand.

⭐ <u>**Key Points**</u>

- This scheme aims at providing sustainable and adequate drinking water in the rural areas.
- The Scheme benefits have been extended to all the 117 Aspirational Districts spread over 28 States.

⭐ <u>**Important Points**</u>

- The objective of Swajal scheme is a single village piped water scheme, hence to have a low cost scheme and maintenance cost that would reduce the tariff burden on community.

---

29. **Answer: b**

Explanation:

The correct answer is <u>**Valmiki**</u>.

- Ramayana is an ancient Indian epic that was composed in the 5th century BCE.

⭐ <u>Key Points</u>

- This poem **narrates the exile and return of Rama** , prince of Ayodhya.
- It is one of the two most important Sanskrit epics of ancient India, the other one is **Mahabharata** .
- It was composed in **Sanskrit by Valmiki** .
- It is one of the largest ancient epics in world literature and in its present form it consists of 24,000 verses divided into seven books.
- This poem has an important influence on later **Sanskrit poetry and Hindu life and culture** .

---

30. **Answer: a**

Explanation:

The correct answer is <u>Parenchyma</u>.

- Parenchyma is a type of simple permanent tissue.

⭐ <u>Key Points</u>

- It refers to a **specific type of ground tissue with thin cell walls and the ability to grow and divide** .
- They are non-vascular and are composed of simple, living, and undifferentiated cells, which are adapted to perform various functions which are as follows-
  - Parenchyma helps in **storing food and provides support** to plants.
  - The parenchyma of stem and roots helps in the storage of **water and nutrients** .
  - It is involved in the process of **growth and development** .
  - It plays a major role in the movement of water and other nutrients.
  - In leaves, parenchyma is responsible for photosynthesis and the exchange of gases.

- It also performs other specialized functions such as **buoyancy control in aquatic plants** .

---

31. **Answer: d**

Explanation:

Given:

1) Total students in college = 100

2) Number of students who play all three games = 5

3) Number of students who play only Football (A) = 13

4) Number of students who play only Tennis (B) = 12

5) Number of students who play only Cricket (C) = 10

6) Number of students who play both Football and Cricket = 10

7) Number of students who play both Tennis and Cricket = 12

<u>Concepts used :</u>

Used of Venn diagram.
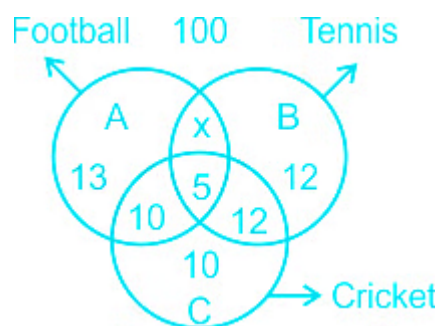
<u>Calculation;</u>

Let the number of students who only like playing Tennis and Football be x,

From the above figure: We can write,

Total number of students,

100 = 13 + x + 5 + 10 + 12 + 12 + 10

100 = 62 + x

x = 100 - 62

x = 38.

Hence, the correct answer is **"38"**.

---

32. Answer: d

Explanation:

The correct answer is <u>Sixth</u>.

- According to the New World Wealth report, India was the best-performing wealth market globally in the year 2017.

⭐ <u>Key Points</u>

- Total wealth implies the **private wealth held by all the individuals living in a particular country** .
- It includes all their assets less any liabilities.
- The total wealth of India rose **25% from $6,584 billion in 2016** to **$8,230 billion in 2017** .
- India has approximately 20,730 multi-millionaires which is the 7 [th] largest in the world.

⭐ <u>Additional Information</u>

- The **top three countries on the list were** –
  - The United States of America with a total wealth of 64,584 billion US dollars.
  - China with a total wealth of 24,803 billion US dollars
  - Japan with a total wealth of 19,522 billion US dollars.

33. Answer: b

Explanation:

Given:

Number = 1452058

Calculation:

Place value of first 5 = 5 × 10000 = 50000

Place value of last 5 = 5 × 10 = 50

Difference between the place values = 50000 – 50 = 49950.

∴ **The required difference is 49950.**

34. Answer: b

Explanation:

The correct answer is a <u>Long walk to freedom</u>.

- Nelson Mandela was a **South African politician and activist** .
- He was the first black President of South Africa who was appointed on April 27, 1994.

⭐ <u>Key Points</u>

- During his rule, he **focused on ending racism, poverty, inequality, and improving racial understanding** in South Africa.
- Long Walk to Freedom is an autobiography written by him.
- It was published in **1994 by Little Brown & Co** .
- This book gives a glimpse of his early life, education, and 27 years in prison.

⭐ <u>Additional Information</u>

- In the **second part of the book**, Mandela introduced the **political and social aspects of apartheid in South Africa** .

---

35. **Answer: a**

Explanation:

The correct answer is <u>Silver</u>.

- <u>**Silver is the least active**</u>.
- The **reactivity series helps us to know how metals react** .
- A more reactive metal displaces a less reactive metal from a compound.

⭐ <u>Key Points</u>

- Some metals are more reactive as compared to others. We arrange them in order of their reactivity in a series that starts with the most reactive.
- **Silver is a good conductor of electricity** because of the **presence of delocalized electrons** between the **layers of metal ions** .
- It is not highly reactive because a lot of energy is required to break the metallic bonds within the layers.

---

36. **Answer: a**

Explanation:

The correct answer is <u>Sri Lanka</u>.

- <u>**India does not share a terrestrial border with Sri Lanka**</u>.
- **Ceylon** was the former name of Sri Lanka.

⭐ <u>Key Points</u>

- India shares its land boundary with **China, Pakistan, Myanmar, Bangladesh, and Nepal** .
- Sri Lanka and India are separated by the Indian Ocean.
- So terrestrial border with Sri Lanka is not shared by India.
- Sri Lanka is India's maritime neighbour.
- **Bangladesh** is the country with which **India shares its largest land border** .
- Most India and Bangladesh enclaves were exchanged in 2015.
- To set up border haats, the state government suggests to the Ministry of external affairs.

---

37. **Answer: a**

Explanation:

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

According to the given information we have to check the options one by one:

Given series:

2 _ 5 _ 2 _ 6 _ 11

We have using the **BODMAS** rule:

Option 1) → +, −, +, =

2 + 5 − 2 + 6 = 11

13 − 2 = 11

11 = 11

Option 2) → +, −, −, +

2 + 5 − 2 − 6 + 11

18 − 8 → 10

Option 3) → −, +, =, +

2 − 5 + 2 = 6 + 11

4 − 5 = 17

−1 ≠ 17

Option 4) → +, +, +, −

2 + 5 + 2 + 6 − 11

15 − 11 → 4

Hnce, the correct answer is "+, −, +, =".

---

38. **Answer: c**

Explanation:

Given:

Number = 7364x

Number divisible by 11

Concept used:

Divisibility rule of 11: When the difference between the sum of alternate digits of a number is either 0 or divisible by 11, then the number is divisible by 11.

Calculation:

Let's add the alternate digits of the given number.

7 + 6 + x = y

3 + 4 = 7

Difference between the two = y − 7

(7 + 6 + x) − 7 = multiple of 11 = 0 (least multiple of 11)

⇒ 6 + x = 0

⇒ x = −6

As we can not have a negative value for x in the number, we subtract 6 from 11 to get the positive value of x.

x = 11 − 6 = 5

∴ For the number to be divisible by 11 the value of x must be 5.

---

39. Answer: d

Explanation:

Given:

The average score of Subir in 15 tests = 29

The average score of Ruchira in 11 tests = 27

Concept used:

Total marks scored = average marks obtained in tests × number of tests

Calculation:

Total marks scored by Subir = 29 × 15 = 435

Total marks scored by Ruchira = 27 × 11 = 297

Marks to be scored by Ruchira to reach Subir's score = 435 − 297 = 138

Average marks to be obtained by Ruchira in the next four tests = 138/4 = 34.5

∴ **The average mark to be obtained by Ruchira on the next four tests is 34.5.**

---

40. **Answer: a**

Explanation:

Assumption 1: This is assumed because this increased intake of saturated fats and salt over a sustained period of time could potentially lead to a whole host of health problems, such as obesity, high blood pressure, and cholesterol levels, and heart disease - all of which could.

So, assumption 1 is implicit.

Assumption 2: This is implicit because this increased intake of saturated fats and salt over a sustained period of time could potentially lead to a whole host of health problems, such as obesity, high blood pressure and cholesterol levels, and heart disease - all of which could prove fatal.

So, Assumption 2 is implicit.

Hence, the correct answer is **"Both I and II are implicit".**

⭐ **Additional Information**

Read the statement with an approach that the assumptions would be true with regard to the statement.

1. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not overcomplicate it.
2. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts.
3. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice

that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient.

---

41. Answer: d

Explanation:

The correct answer is <u>Describes the relationship between the forces of two mutually affecting objects</u>.

- <u>Newton's second law of motion relates to the behaviour of objects for which all existing forces are unbalanced</u>.

⭐ <u>Key Points</u>

- The second law of motion is more quantitative and is used broadly to calculate what happens in situations involving a force.
- It states that
  - The acceleration of an object depends upon the net force acting on the object and the mass of the object.
- In other words, the **rate of change of momentum of a body in a given time is directly proportional to the applied force** and is in the same direction as the applied force.
- Thus, this law helps to ascertain what happens to the massive body when acted upon by an external force.

---

42. Answer: a

Explanation:

Given:

Annual depreciation of car value = 10%

Concept used:

If P is the initial price of the commodity, then after 'n' years the value of the commodity will become P × [1 – (n/100)]^n

That means the new value of the commodity will be only [1 – (n/100)]^n times the original price.

Or, we can say, the value of price reduced by {1 – [1 – (n/100)]^n} times the original price.

Calculation:

Percentage fall in price after 4 years = {1 – [1 – (10/100)]^4} × 100

 Percentage fall in price after 4 years = [1 – (9/10)^4] = [1 – 6561/10,000] × 100

Percentage fall in price after 4 years = 3439/10,000 × 100

We can see that, percentage fall in price after 4 years = 34.39%

∴ **The percentage fall in price after 4 years is 34.39%.**

---

43. **Answer: a**

Explanation:

The correct answer is **0J**.

Concept:

- Work is said to be done by a force when the body is displaced actually through some distance in the direction of the applied force.
- Since the body is being displaced in the direction of F , therefore work done by the force in displacing the body through a distance s is given by:

$$W = \vec{F} \cdot \vec{s}$$

Or, W = Fs cos θ

- Thus work done by a force is equal to the scalar or dot product of the force and the displacement of the body.
- If the direction of force and displacement is opposite then the work done will always be negative, since angle θ between force and displacement is 180°

$$\therefore\ Work\ done,\ W\ =\ Fdx\cos 180° = Fdx\ (-1) = -Fdx$$

- So, from this, we can conclude that
  - Work done is positive when the direction of both force and displacement are the same
  - Work done is negative when the direction of force and displacement are the opposite.
  - Whereas work is done is zero when direction force (Centripetal force) and displacement are perpendiculars this case is true for an object moving in a circular motion

Explanation:
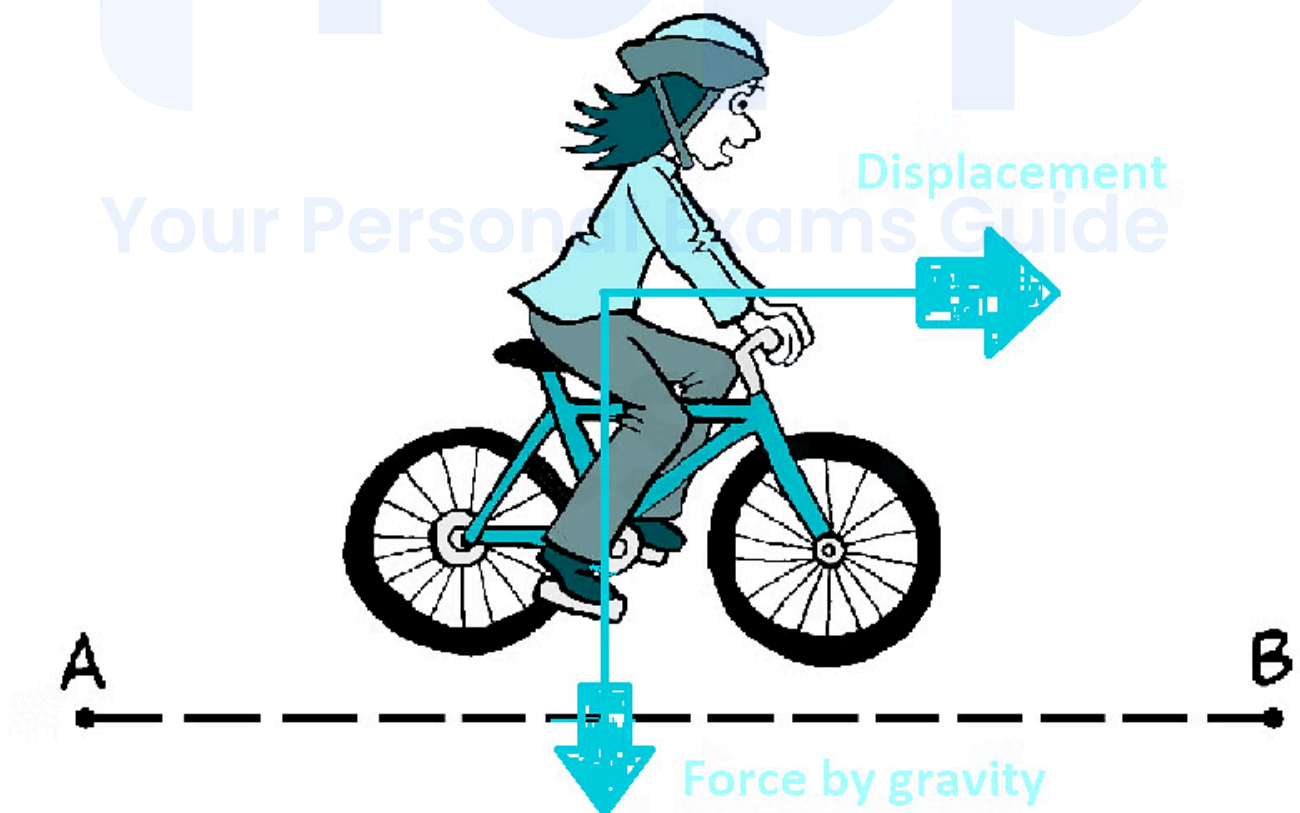
- When the **cycle** moves on a horizontal surface , then work done by gravity is zero since gravitational force acts perpendicular to the displacement i.e., θ = 90º

⇒ W = Fs cos 90º = 0   [∵ cos 90º = 0]

<u>Hence the work done by a boy against gravity in which he takes a bicycle is zero.</u>

---

44. Answer: a

Explanation:

The correct answer is <u>Marsilea</u>.

- Vascular plants are those categories of plants, which have specialized vascular tissues for the transportation of water, minerals, and food.

⭐ <u>Key Points</u>

- They also have roots, stems, and leaves and are also known as tracheophytes, which means "tube plants."
- They contain **specialized conducting tissues known as xylem** and **phloem** .
- Xylem transports water and minerals from roots whereas Phloem transports food produced during photosynthesis to other parts of the plants.

⭐ <u>Additional Information</u>

- Example-
  - **Marsilea is a vascular plant** that is a **genus of nearly 65 species** of aquatic ferns of the family Marsileaceae.
  - These are small plants with an unusual appearance.

---

45. Answer: a

Explanation:

The logic follows here is:

Conclusions:

1. Pedestrians should use pedestrian crossings for safety → True (This is logically correct with regards to the statement.)

2. All children know what a pedestrian crossing is → False (This is logically incorrect with regards to the statement as nothing is mentioned whether children should know or not, we can't assume anything on our own).

Hence, the correct answer is **"Only conclusion 1 follows".**

⭐ **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.

---

46. **Answer: a**

Explanation:

The correct answer is Deepika Pallikal Karthik.

- Dipika Pallikal Karthik is an Indian professional squash player.
- She was born in Chennai into a Malayali family.
- She is the daughter of Sanjiv and Susan Pallikal.

⭐ **Key Points**

- She is the first Indian squash player to break into the top 10 in the PSA Women's rankings.
- She is also the first Indian to play in the final of a silver event of the Tournament of Champions, 2012, and the semi-finals of a gold event Australian Open, 2012.
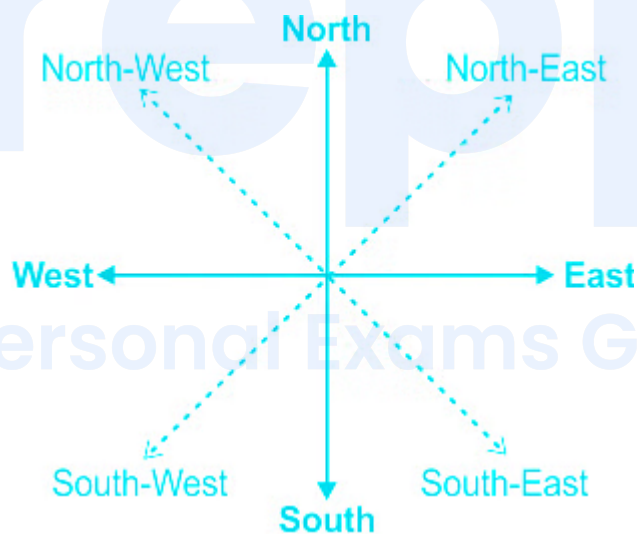
⭐ <u>Important Points</u>

- She became the first female squash player to **win the Arjuna Award, in 2012** and the **Padma Shri, India's fourth-highest civilian honour in 2014** .
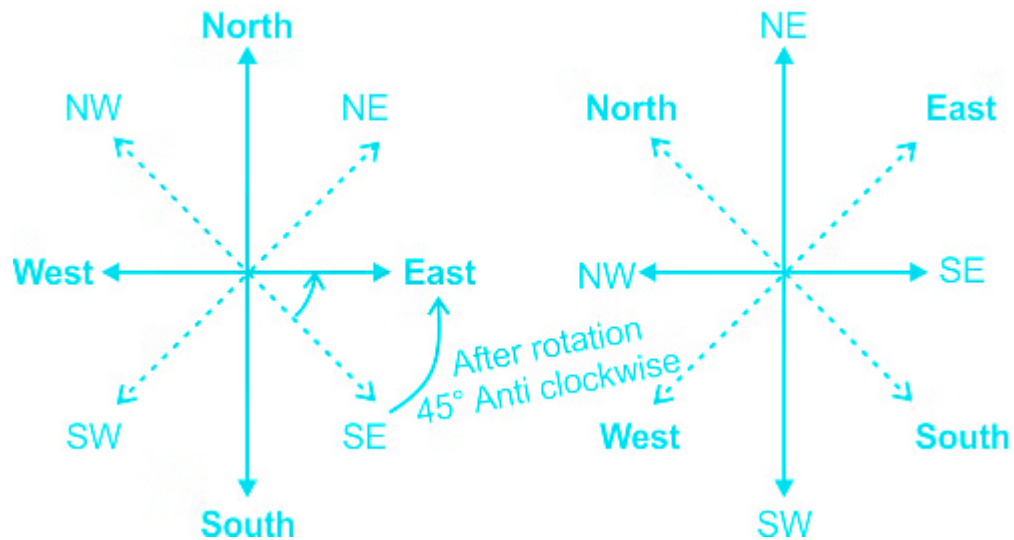
---

47. Answer: d

Explanation:

The logic follows here is:

If 'South-East' is called 'East', 'North-West' is called 'West', 'South-West' is called 'South'

Now, North will be called as North-West.

Hence, the correct answer is **"North-West"**.

---

48. **Answer: b**

Explanation:

The correct answer is <u>4 m</u>.

Ep = mgh

Here, Ep= Potential energy

  m= mass

  g= Gravitational field strength

  h= Vertical height

Given-

Mass of the body= 14 kg

Ep= 560 J

'g' = 10 ms-2

Putting these values in the formula mentioned above, we get-

Ep= mgh

560= 14×10×h

Therefore, h = 560/ 140

= 4 m

---

49. Answer: d

Explanation:

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

The pattern follows here is:
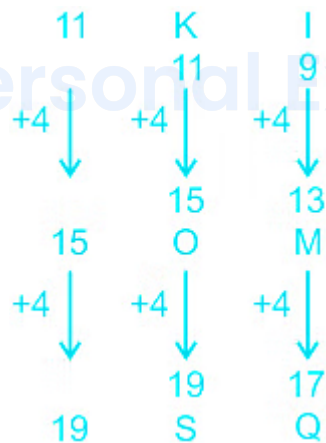
Hence, the correct answer is "19SQ".

---

50. Answer: a

Explanation:

The correct answer is <u>**At C**</u>.

⭐ <u>**Key Points**</u>

- A concave mirror is a type of spherical mirror in which, the **reflecting surface is the inner curved surface of the sphere** .
  - The incident light is reflected inwards because of its shape. Thus, such mirrors are also called converging mirrors.
- A concave mirror forms different images which depend on the distance between the object and the mirror.
- **In a concave mirror, the object should be placed at C** (center of curvature) **to obtain a real, inverted image of the same size at C** . In this case, **the image dimensions are equal to the dimensions of the object** .

---

51. **Answer: b**

Explanation:

Given:

$[(1 + \tan^2\theta) \times \cot\theta]/\csc^2\theta$

Formula used:

$1 + \tan^2\theta = \sec^2\theta$

$\cot\theta = \cos\theta/\sin\theta$

$\csc\theta = 1/\sin\theta$

$\sec\theta = 1/\cos\theta$

Calculation:

$[(1 + \tan^2\theta) \times \cot\theta]/\csc^2\theta = (\sec^2\theta \times \cot\theta)/\csc^2\theta$

$\Rightarrow (\sec^2\theta \times \cot\theta)/\csc^2\theta = [(1/\cos\theta)^2 \times \cos\theta]/[\sin\theta \times (1/\sin\theta)^2] = \sin\theta/\cos\theta$

$\Rightarrow \sin\theta/\cos\theta = \tan\theta$

$\therefore$ Equivalent value of $[(1 + \tan^2\theta) \times \cot\theta]/\csc^2\theta$ is $\tan\theta$.

---

52. Answer: d

Explanation:

Given:

Let time after which they meet each other be a hour.

$\Rightarrow$ Time taken by Sakira to complete distance = (a + 7.5) hours

$\Rightarrow$ Time taken by Bryan to complete distance = (a + 2.7) hours

Formula:

$\Rightarrow$ Distance = Speed × time

$S_1/S_2 = \sqrt{(T_2/T_1)}$

Where S_1 and S_2 are the speeds of the object

T_1 and T_2 are the time to reach their destination after meeting

Calculation:

$\Rightarrow$ Ratio of their time taken = (a + 7.5) : (a + 2.7)

$\Rightarrow$ Ratio of their speeds = (a + 2.7) : (a + 7.5)   ----(1)

According to the formula

$S_{Sakira} / S_{Bryan} = \sqrt{(2.7/7.5)}$

$\Rightarrow S_{Sakira} / S_{Bryan} = 3/5$ ----(2)

Now, form (1) and (2), we have

(a + 2.7) : (a + 7.5) = 3 : 5

⇒ 5a + 13.5 = 3a + 22.5

⇒ 2a = 9 hours

⇒ a = 4.5 hours

∴ After 4.5 hours they meet each other.

---

53. **Answer: b**

Explanation:

The family chart is as follows:

Symbol in Diagram	Meaning
◯	Female
▢	Male
=	Married couple
—	Siblings
|	Difference of a generation

Drawing the family tree as per the given information:
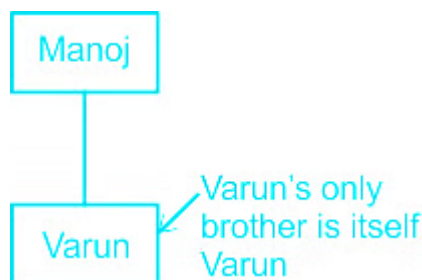
Varun is related to Manoj as the Son.

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

---

54. Answer: d

Explanation:

Given:

Expression: $x^3 + 3x^2 + 3x + 1$

Concept used:

Quadratic surd: An expression that contains a square root under which is a rational number which is not a perfect square.

Calculation:

$x^3 + 3x^2 + 3x + 1 = (x + 1)^3$

The expression $(x + 1)^3$ itself is not a perfect square.

Then, to represent it in quadratic surd form, we just need to write it in the form of a perfect square under the square root.

$(x + 1)^3 = \sqrt{(x + 1)^6}$

∴ **The quadratic surd form of the above expression is $\sqrt{(x + 1)^6}$.**

---

55. Answer: c

Explanation:

The correct answer is <u>Galileo Galilei</u>.

- Galileo Galilei's was an Italian astronomer and his observations of the **solar system and the Milky Way have reformed our understanding of our place in the Universe** .

⭐ <u>Key Points</u>

- The discoveries of Galileo Galilei about the Moon, Jupiter's moons, Venus, and sunspots supported the fact that the Sun - not the Earth was the center of the Universe, as was commonly believed earlier.
- He also provided strong evidence that planets orbited the sun.
- His work laid the foundation for today's modern space probes and telescopes.

56. Answer: a

Explanation:

The correct answer is <u>26</u>.

- 2018 Commonwealth Games were held at **Gold Coast, Australia** from 4 to 15 April 2018.

⭐ <u>Key Points</u>

- India competed in the Commonwealth Games for the 18 [th] time. India finished at 3 [rd] spot in the tournament with **26 Gold medals and a total of 66 medals** .
- It was the best position achieved by India since the 2010 Commonwealth Games.
- India appeared as the best nation in 5 disciplines, weightlifting, shooting, wrestling, badminton, and table tennis, and the second-best nation in boxing.

- India won their **maximum number of medals in Shooting** i.e., 16 in total and seven of them were gold.

---

57. Answer: a

Explanation:

The correct answer is **TRS**.

- **Telangana Rashtra Samithi** is an **Indian regional political party** in Telangana which was founded on **27 April 2001 by K. Chandrashekar Rao** .

⭐ Key Points

- This party was created with the **agenda of creating a separate state, Telangana with Hyderabad as its capital** .
- This party formed the first government of the state with K. Chandrashekar Rao as its chief minister in 2014.
- Telangana Legislative Assembly elections in the year 2018 were also won by this part for the second time.

---

58. Answer: a

Explanation:

Given:

The digit present in place of the unit of the cube root of a number is equal to the digit present in place of the unit of its number.

Calculation:

We have unit digits in any number from 0 to 9

Let us cube the unit digit and see how many of the cubes so obtained will have the same unit digit.

unit digit	unit digit of the cube	unit digit	unit digit of the cube
0	0	5	5
1	1	6	6
2	8	7	3
3	7	8	2
4	4	9	9

From the above table we get that in 6 numbers, the unit digit of the cubes is the number itself.

∴ **The required answer is 6.**

---

59. **Answer: b**

Explanation:

Given:

Population of town = 12,000

Percentage increase in population = 15%

Concept used:

Population of the city in n years = initial population × $(1 + r/100)^n$

Calculation:

Population of the city in two years = 12,000 × (1 + 15/100) ^{2}= 15,870

∴ **The population of the city in two years is 15,870.**

---

60. **Answer: d**

Explanation:

Given:

Length of train 1 = 157 m

Length of train 2 = 123 m

Time taken to cross each other in opposite direction = 7.2 s

Concept used:

Time taken by trains to cross each other in the opposite direction, t = $(L_1 + L_2)/(S_1 + S_2)$

Where S_1 and S_2 are speeds of trains 1 and 2 respectively.

s m/s = s × (18/5) km/hr

Calculation:

7.2 = (157 + 123)/$(S_1 + S_2)$

⇒ $(S_1 + S_2)$ = 280/7.2 m/s
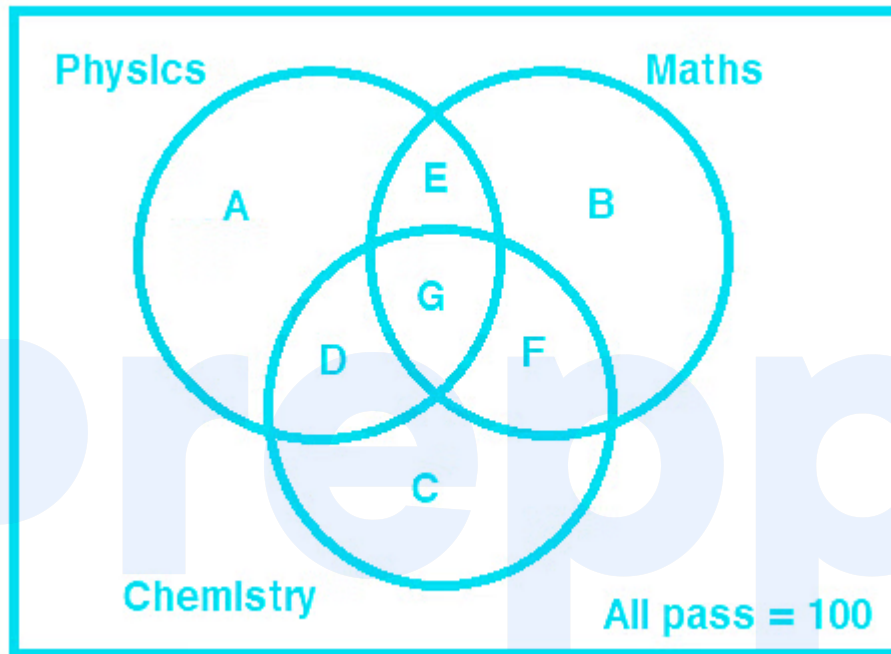
⇒ 280/7.2 × (18/5) = 140 km/hr

∴ **The combined speed of both trains is 140 km/hr.**

---

61. **Answer: b**

Tak

Explanation:

Concept used:

The Venn diagram is constructed based on the number of students who failed the exam.

Calculation:

From the given information we get,

C + D + G + F = 30

G + E = 30

G + F = 15

D + G = 10

B + E + G + F = 80

From the data we can deduce the following:

A + E + G + D = 200 – 160 = 40

C + A + D = 20

A + E + B = 70

B + F + C = 60

Substituting and solving we get,

A = 5, B = 40, E = 25, G = 5, F = 10, C = 10, D = 5

Number of people who failed in only one subject = A + B + C = 5 + 40 + 10 = 55

---

62. **Answer: a**

Explanation:

The correct answer is <u>To study the properties of the elements in a convenient manner.</u>

⭐ **Key Points**

- There are many elements that are known to us and it is quite difficult to study their properties separately.
- So, in order to make their study easier and understand the properties of the elements properly, **the classification of elements is done** .
- Classification is the **process of arranging similar elements together and separating them from dissimilar elements** .
- The method of arranging the elements into different classes is termed as the Periodic Classification of elements.
- It is based on the similarities in the properties, which helps to understand the properties of the elements in a convenient manner.

---

63. **Answer: a**

Explanation:

The correct answer is <u>Inertia</u>.

⭐ <u>Key Points</u>

- **Inertia** is the **tendency of an object to resist changes in its state of motion** .
- The state of motion of an object is defined by its velocity - the speed with a direction. Thus, inertia could be redefined as follows:
  - Inertia: the tendency of an object to resist changes in its velocity.
- An object at rest has zero velocity - and (in the absence of an unbalanced force) will remain with a zero velocity. Such an object will not change its state of motion (i.e., velocity) unless acted upon by an unbalanced force.
  - **Example** - An object in motion with a velocity of 2 m/s, East will (in the absence of an unbalanced force) remain in motion with a velocity of 2 m/s, East. Such an object will not change its state of motion (i.e., velocity) unless acted upon by an unbalanced force. Objects resist changes in their velocity.

⭐ <u>Additional Information</u>

- **Force** -
  - Force, in mechanics, any action that tends to maintain or alter the motion of a body or to distort it. The concept of force is commonly explained in terms of Isaac Newton's three laws of motion set forth in his Principia Mathematica (1687).
- **Momentum** -
  - Momentum, a product of the mass of a particle and its velocity. Momentum is a vector quantity; i.e., it has both magnitude and direction. Isaac Newton's second law of motion states that the time rate of change of momentum is equal to the force acting on the particle
- **Energy** -
  - In physics, energy is the quantitative property that must be transferred to an object in order to perform work on, or to heat, the object. Energy is a conserved quantity; the law of conservation of energy states that energy can be converted in form, but not created or destroyed.

64. **Answer: b**

Explanation:

The correct answer is <u>Acquired Immune Deficiency Syndrome</u>.

- <u>AIDS stands for Acquired immune deficiency syndrome</u>.

⭐ <u>Key Points</u>

- AIDS:
  - It is a syndrome caused by a virus termed HIV (human immunodeficiency virus).
  - This virus affects the **immune system in humans** and makes them much more vulnerable to infections and diseases.
  - It is a disease that progressed initially for a long period of time without any symptoms.
  - When the HIV virus attacks the T-cells in the immune system, it makes your **body weak symptoms like a headache, fever, sore joints, and muscles, etc** . start appearing. When AIDS remains unattended, it leads to death.

65. **Answer: b**

Explanation:

The correct mirror image of the given figure is:
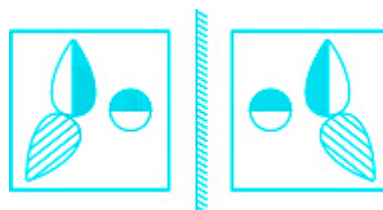
Hence, the correct answer is **"Option 2"**.

⭐ <u>Additional Information</u>

In a mirror image Left changes to right and the right changes to left vice-versa.

When placement of mirror not given, By default we will assume it in Vertical direction .

The Letter adjacent to the mirror after the mirror image will adjacent to it just with the left change to right and right change to left vice-versa.

The starting letter of the word will be at last after the mirror image drawn with left changes to right and right changes to left.

---

66. **Answer: a**

Explanation:

The logic follows here is:

All of them are the young ones of the animals except the cat which does not refer to any young one.

Animals	Their Young Ones
Cat	Kitten
Sheep	Lamb
Tiger	Cub

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

⭐ <u>Additional Information</u>

Some important animals and their young ones.

Animals	Their Young Ones
Pig	Piglet
Deer	Fawn
Kangaroo	Joey
Hare	Leveret
Tiger	Cub
Elephant	Calf

67. Answer: b

Explanation:

The correct answer is <u>Glass</u>.

⭐ <u>Key Points</u>

- **Thermal insulation** is the reduction of heat transfer between the objects in thermal contact.
- **Glass is the most common insulation used in modern time** s.
  - It is used as **an insulator because it has atoms that have electrons that are closely packed with each other** .
- Hence, because of this property, it does not allow the electrons to **roam freely** and do sharing with nearby atoms, thereby, preventing the flow of electrical current in other materials.

⭐ <u>Additional Information</u>

- **Aluminum**
  - It is obtained from bauxite.
  - It is a lightweight and non-corrosive mineral.
  - It is cheaper than copper and is used in electrical appliances.

- It is also used to make household utensils, car parts, railway carriages, aircraft parts, windows, and doors.
- It is also used in the chemical industry, oil refining industry, cement iron, and steel industry.

- Copper
  - It is an easily molded base metal that is often added to precious metals to improve their elasticity, flexibility, hardness, colour, and resistance to corrosion.
  - Gold is one of the most common alloyed metals with copper

- Steel
  - The major component of steel is iron, a metal that in its pure state is not much harder than copper.
  - Stainless steel is 100 percent recyclable, easy to sterilize, and used in many applications.
    - Culinary uses:- Kitchen sinks, Cutlery, Cookware.
    - Surgical tools and medical equipment.

---

68. **Answer: b**

Explanation:

Given:

⇒ Four numbers = 16, 24, 30, 48

Calculation:

Prime factorization of the numbers:

16 = 2 × 2 × 2 × 2
24 = 2 × 2 × 2 × 3
30 = 2 × 3 × 5
48 = 2 × 2 × 2 × 2 × 3

⇒ LCM of four numbers (16, 24, 30, 48) = 240

Let the number is N.

N = LCM (16, 24, 30, 48) × x + 11

⇒ N = 240x + 11

⇒ N = 229x + 11x + 11 = (229x) + 11x + 11

⇒ 11x + 11 is divisible by 11.

⇒ 11 × 1 + 11 = 22 is divisible by 8

⇒ x = 1

∴ N = 240 × 1 + 11 = 251

Not in the option, So x = 2

⇒ x = 2

∴ N = 240 × 2 + 11 = 491

⭐ Alternate Method

Using Hit and trial, 491 when divided by 16, 24, 30, and 48 leaves the remainder 11.

⭐ Shortcut Trick

To find the smallest number which will leave the remainder '11' when divided by 516, 24, 30, and 48

L.C.M of 16, 24, 30, and 48 = 240

Smallest number = 240 × 2 + 11

= 491

Hence, "491" is the correct answer.

69. Answer: b

Explanation:

The correct answer is **2**.

⭐ **Key Points**

- France was one of the four European teams that participated in the inaugural World Cup in 1930.
- It has appeared in 15 FIFA World Cups, tied for the sixth time. **Total FIFA cup titles won by France are two in Number** .
- The French team won **its first World Cup title in the year 1998** .
- The tournament was played in France and it defeated Brazil in the finals.
- In **2018, France won the World Cup for the second time** , by defeating Croatia in the finals.
- In 2006, France finished as runners-up and it has also finished in third place in 1958 and 1986, and in fourth place once, in 1982.

---

70. **Answer: c**

Explanation:

The logic follows here is:

The angle = (30 H - 11 M / 2)

H = 7 and M = 20

Angle = 30 × 7 - (11 × 20) / 2

Angle = 210 - (11 × 20) / 2

Angle = 210 - (220) / 2

Angle = 210 - 110

Angle = 100º

Hence, the correct answer is **"100º"**.

---

71. **Answer: a**

Explanation:

Given:

⇒ Principle = Rs.200

⇒ Rate of interest = 10%

⇒ Time period = 1 year

Formula:

Let P = Principle, R = Rate of interest and N = time period

⇒ Simple interest = PNR/100

⇒ Compound interest = $P(1 + (R/2)/100)^{2n} - P$

Calculation:

⇒ Simple Interest after a year = (200 × 10 × 1)/100 = Rs.20

⇒ Compound interest after a year compounded half yearly = $200(1 + 5/100)^2 - 200$

= Rs.20.5

∴ Required difference between interests = 20.5 – 20 = Rs.0.5 = 50 paise.

---

72. **Answer: a**

Explanation:

The logic follows here is:

The manager might have insulted Sachin not because of his dislike but on account of certain negligence or mistake on his part. So, we cannot deduce anything definite about it.

So, Conclusion I does not follow.

Also, nothing about Sachin's popularity around his colleagues can be deduced from the statement.

So, Conclusion II does not follow.

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

⭐ 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.

---

73. **Answer: b**

Explanation:

The correct answer is <u>Arthshastra</u>.

⭐ Key Points

- There are two types of sources of Mauryan History i.e **Literary and another one is Archaeological** .

- The literary sources comprised Kautilya's **Arthasastra** , Visakha Datta's **Mudra Rakshasa** , Megasthenese's **Indica** ,**Buddhist literature** , and **Puranas.**
- Arthasastra -
  - It is a book **written by Kautilya on polity and governance** .
  - He was the Prime Minister of Chandragupta Maurya, founder of the Mauryan dynasty.
  - It tells the economic and political conditions of the Mauryan period.
- Indica -
  - Indica is an account of **Mauryan India by Megasthenese** who was the ambassador of Seleucus Nikator in the court of Chandragupta Maurya.
  - It illustrates the administration in the Mauryan Empire, the **seven-caste system** , and the absence of slavery in India.

---

74. **Answer: c**

Explanation:

The correct answer is <u>15:16</u>.

⭐ **Key Points**

Given:- Equal masses of ethane and hydrogen.

Let's take mass to be x.

Molar mass of ethane = C_2H_6 = 30

The molar mass of hydrogen = H_2 = 2

Moles= $\frac{X}{30}$

Moles H_2 = $\frac{X}{2}$

$P_T = P_{Eth} + P_{H2}$

So, Moles FractionH_2= $\frac{X/2}{X/30+X/2}$

$$= \frac{1/2}{16/30}$$

$$= \frac{30}{32} = \frac{15}{16}$$

---

75. Answer: a

Explanation:

Given:

Vertices of the triangle = (–3, 1), (0, –2) and (α, β)

Centroid = origin (0, 0)

Concept used:

Centroid $(x, y) = [(x1 + x2 + x3)/3, (y1 + y2 + y3)/3]$

Calculation:

So, $(0, 0) = [(-3 + 0 + α)/3, (1 - 2 + β)/3]$

$0 = α - 3$

$0 = β - 1$

The value of α and β is 3 and 1 respectively.

Then, 2α – β = 2 × 3 – 1 = 6 –1

2α – β = 5

∴ 2α – β is 5.

---

76. Answer: d

Explanation:

The correct answer is <u>10 kg</u>.

As we know,

W = mg

Here W = weight

  m = the mass of the object

  g = gravitational acceleration

Given-

  Weight of the object= 98N

  g = 9.8 ms-2

Putting these values in the formula mentioned above, we get-

  98 N = m× 9.8 ms-2 (m= W/G)

m = 98/9.8 = 10kg

---

77. **Answer: d**

Explanation:

The logic follows here is :

In the water image, upper portion is rotated 180º and vice versa.

FAMILY

FAMILY

Hence, the correct answer is **"Option 4"**.

⭐ <u>Additional Information</u>

- The reflection of an object into the water is its water image.
- It appears by inverting an object vertically i.e. upside down.
- The water image of the figure looks like the mirror image of the figure in case the mirror is horizontally at the bottom of the figure.

---

78. **Answer: c**

Explanation:

Given:

$\Rightarrow p(x) = x^3 - x^2 + 2$

Calculation:

A rational zero theorem tells that if p/q is a zero then p = factor of leading term and q = factor of constant.

$\Rightarrow$ p/q for $p(x) = \pm 1$ and $\pm 1/2$

So, dividing $p(x)$ with $(x + 1)$ gives $p(x) = 0$, then (−1) is the only real zero function of given polynomial.

∴ **For given polynomial, there is only one real zero.**

⭐

Important Points – A root or a zero of a polynomial are the value(s) of X that cause the polynomial to = 0.

79. **Answer: d**

Explanation:

The logic follows here is:

It cannot be assumed from the given statements that you will lose 10 kg in six-session because nowhere it is talking about 6 sessions. We have not to assume anything on our own.

Hence, Assumption 1 is not implicit.

From the statements, it can be assumed that the institute deals with weight loss programs because in their Ad they have mentioned weight-loss sessions.

Hence, Assumptions 2 will be implicit.

Hence, the correct answer is **"Only assumption 2 is implicit"**.

⭐ <u>Additional Information</u>

1. Read the statement with an approach that the assumptions would be true with regard to the statement.
2. Do not go too logical with the statements. Analyze the given information and the assumption must only be made based on the information in the statement. Do not over complicate it.
3. Common assumptions can always be followed but other than that do not align the statement with General Knowledge or other facts
4. Use the elimination method if you are unable to apprehend the answer. Read the statement and then the assumptions given in the options, you shall notice that a few of them will most definitely not follow. Eliminate them and then choosing from lesser options may prove to be more convenient
5. One thing to make a note of is that the assumption is something that the author believes to be true so while choosing the correct option, keep this thought in mind as well. If any option contradicts the statement, then that assumption will not follow.

---

80. **Answer: c**

Explanation:

The correct answer is <u>Madhya Pradesh</u>.

- <u>Mount dhupagai is the highest peak of the Satpura range, which is located in Madhya Pradesh</u>.

⭐ <u>Key Points</u>

- In central India, Satpura hills are located in the **states of Maharashtra, Gujarat, Chattisgarh, and Madhya Pradesh** the hill expands.
- In Vindhya Range in the north, the Satpura range runs parallel to it.
- Vindhya Range divides North India from South India.
- In Amarkantak hills in the Satpura ranges, the River Narmada rises.
- From the eastern and central part of the Satpura, the Tapti River is originated.
- The Chota Nagpur plateau is met by Satpura Ranges on the eastern side.
- In the north, the Satpura hills are flanked by the Narmada River.

---

81. Answer: d

Explanation:

The correct answer is <u>23</u>.

⭐ <u>Key Points</u>

- **Dobereiner's law of triads** :-
  - It states that the atomic mass of the middle element of a triad is the arithmetic mean of the atomic masses of the other two elements.
- **Given** :-
  - The atomic weight of A=7
  - The atomic weight of C=39
- The atomic weight of B = $\frac{Atomic\,Weight\,of\,A + Atomic\,Weight\,of\,C}{2}$
- The **atomic weight of B** = $\frac{7+39}{2} = 23$

---

82. Answer: c

Explanation:

Given:

⇒ Outer diameter of cylinder = 16cm

⇒ Outer radius of cylinder = 8cm

⇒ Inner diameter of cylinder = 12cm

⇒ Inner radius of cylinder = 6cm

⇒ Height of cylinder = 42cm

Formula:

⇒ Volume of hollow cylinder = $\pi h[(\text{outer radius})^2 - (\text{inner radius})^2]$

Calculation:

⇒ Volume of hollow cylinder = $22/7 \times 42 \times (8^2 - 6^2)$ = 3696 cm^3

⇒ Weight of hollow cylinder = 3696 × 10 = 36960 g

∴ **Weight of cylinder = 36960 /1000 = 36.960 kg**

---

83. **Answer: c**

Explanation:

The logic follows here is:

In the second figure, **3 lines are added to the first figure.**

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

---

84. **Answer: b**

Explanation:

The correct answer is <u>Black</u>.

- <u>The black coating on silver is an example of corrosion</u>.

⭐ <u>Key Points</u>

- When a **metal deteriorates due to its reaction with air** present in the atmosphere, it can be said as **corrosion** .
- The process of corrosion **takes place due to oxidation** .
- Iron is rusted and silver is tarnished in the air when they are left free in the air.
- The metals need to be protected from corrosion.
- Rust is an iron oxide, a usually reddish-brown oxide formed by the reaction of iron and oxygen in the catalytic presence of water or air moisture.
- The beautiful blue-green color (patina) on copper after oxidation is the visible result of the metals losing electrons to the air.

⭐ <u>Additional Information</u>

- Many methods are developed via industrial research to protect a metal from corrosion.
- Except for gold and platinum, the corrosion of most of the metals is spontaneous.
- Anti-corrosive chemicals are used to prevent metal from corrosion.
- Iron can also be coated with tin to protect it from corrosion.
- Tin is less reactive and it will protect the iron.
- **Cathodic protection, hot deep galvanization, alloyed steel, and barrier coatings** are some other methods to protect a metal from corrosion.

---

85. **Answer: d**

Explanation:

The correct answer is a <u>Complex form of origin</u>.

- <u>Differentiation in organisms leads to a complex form of origin</u>.

⭐ <u>Key Points</u>

- The changing of the form of the cell takes place in cellular differentiation.
- In a more specialized type, the changes of cells take place.
- At the time of multicellular organism, differentiation in organisms occurs.
- **Daughters cells** are created and fully differentiated by the adult stem cells through differentiation.
- Antigen exposures are also one of the reasons for happening of differentiation in organisms.

⭐ <u>Additional Information</u>

- **Terminal differentiation** is a form of differentiation.
- The cell division is done by precursor cell during terminal differentiation.
- Differentiation continues after terminal differentiation if the changes are required.
- The integration of the cellular process is called **dedifferentiation** .

---

86. **Answer: a**

Explanation:

Given:

⇒ (A + B)'s 1 day's work = 1/36

⇒ A's 1 day's work = 1/48

Calculation:

⇒ B's 1 day's work = 1/36 – 1/48 = 1/144

⇒ B's 54 days work = 54 × 1/144 = 3/8

Let number of days for A worked be m days.

⇒ A's m days work = m × 1/48

Then,

⇒ m/48 + 3/8 = 1

⇒ m/48 = 5/8

⇒ m = 30

∴ The number of days before the completion of work A take leave = 54 - 30 = 24

⭐ Mistake Points

Check options carefully as A's working days and not working days both given in options.

⭐ Alternate Method

Given:

A can do a piece of work in = 48 days

(A + B) can do a piece of work in = 36ays

B's 1 day's work = 1/36 - 1/48 = 1/144

B can do a piece of work in = 144 days

Calculation:

Person	Work can be complete in days	LCM of 30, 50 and 40	Work done in 1 day
A	48		3
B	144	144	1
Total work done in a day			4

⇒ Work done by B in 54 days = 1 × 54 = 54 units

Let number of days for A worked be m days.

⇒ Work done by A in m days = 144 – 54 = 3m

⇒ m = 30

∴ The number of days before the completion of work A take leave = 54 – 30 = 24

87. **Answer: d**

Explanation:

The correct answer is **7 or 8**.

⭐ **Key Points**

- **Carbon** has the **ability to form bonds with other carbon atoms** which results in the formation of larger molecules.
- This unique property of Carbon to form chains of atoms of a particular element is known as **Catenation** .

- These carbon atoms may be **single-bonded or contain double or triple bonds** .
- Carbon atoms that are linked by single bonds are known as saturated compounds.
- On the other hand, Carbon atoms that are linked by double or triple bonds are unsaturated compounds.
- Silicon forms a compound with hydrogen which has chains of up to **seven or eight atoms** . But, these compounds are highly reactive.

---

88. Answer: b

Explanation:

Given:

⇒ Selling price of an item = Rs.4420

⇒ Profit percentage = 30%

Formula:

⇒ Selling price = Cost price × (profit percentage + 100)/100

Calculation:

⇒ 4420 = Cost price × (100 + 30)/100

⇒ Cost price = 3400

∴ The cost price of an item is Rs.3400.

---

89. Answer: c

Explanation:

The correct answer is 1.

⭐ <u>Key Points</u>

- Atmospheric pressure is defined as the **pressure within the Earth's atmosphere** .
- An atmosphere (atm) is a unit of measurement which is equal to the average air pressure at sea level at a temperature of 15 degrees Celsius.
- The atm unit is roughly equal to the mean sea-level atmospheric pressure on Earth i.e. Earth's atmospheric pressure at sea level is approximately **1 atm** .

---

90. **Answer: b**

Explanation:

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

The pattern follows here is:

26	11	3
Z	K	C
-2	+5	+2
24	16	5
X	P	E
-2	+5	+2
22	21	7
V	U	G
-2	+5	+2
20	26	9
T	Z	I

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

---

91. **Answer: b**

Explanation:

<u>Concept:</u>

Momentum

- Momentum is defined as the **product of the mass and velocity** of the body.
- It is a vector quantity directed toward velocity.
- It is given as

p = mv -- (1)

m is mass, v is the velocity, p is momentum

Kinetic Energy

- The **energy of a body in motion due to its state of motion** is called kinetic energy.
- It is given as

$K = \frac{1}{2}mv^2$ --- (2)

K is kinetic energy, m is mass, v is speed.

Relationship between Momentum and Kinetic Energy

If we combine equation (1) and (2) we will get the relationship between momentum and kinetic energy as

$K = \frac{p^2}{2m}$ -- (3)

<u>Calculation:</u>

Given the mass of body 1 $m_1 = m$

The momentum of body 1 is p_1

Mass of body 2 $m_2 = 9m$

The momentum of body 2 is p_2

So, the Kinetic energy of the body 1 according to the above conditions.

$K_1 = \frac{p_1^2}{2m_1} = \frac{p_1^2}{2m}$ -- (3)

Kinetic energy of body 2

$K_2 = \frac{p_2^2}{2m_2} = \frac{p_2^2}{2 \times 9m}$ -- (4)

Since both kinetic energies are equal. We can equate equation (3) and (4)

$\frac{p_1^2}{2m} = \frac{p_2^2}{2 \times 9m}$

$\implies \frac{p_1^2}{p_2^2} = \frac{2m}{2 \times 9m}$

$\implies \frac{p_1}{p_2} = \sqrt{\frac{m}{9m}}$

$\implies \frac{p_1}{p_2} = \frac{1}{3}$

So, the **ratio of momentum is 1:3.**

The correct option is 1:3

---

92. **Answer: a**

Explanation:

The logic follows here is:

Original Digits	Replaced by
0	a
1	b
2	c
3	d
4	e
5	f
6	g
7	h
8	i
9	j

Given equation $((h \times i) \div e) + ((a \times d) - f) \times g$

replacing the given equation using the table we get:

$((7 \times 8) \div 4) + ((0 \times 3) - 5) \times 6$

$= (56 \div 4) + ((0 \times 3) - 5) \times 6$

$= (56 \div 4) + (0 - 5) \times 6$

$= 14 + (-5) \times 6$

$= 14 - 30$

$= -16$

Hence, the correct answer is **"-16"**.

---

93. **Answer: a**

Explanation:

The correct answer is <u>Loudness</u>.

- **The amplitude of the sound wave determines its loudness** .

⭐ <u>Key Points</u>

- A louder sound is represented by a larger amplitude.
- A softer sound indicates a smaller amplitude.
- Due to the larger amplitude, there is a **more energetic vibration** .
- The **sensitivity of the ear** also determines the loudness of a sound.
- Towards some frequencies, the ear is more sensitive.
- The **amplitude and frequency are the two factors** , upon which the **volume of sound received by us depends** .

---

94. **Answer: c**

Explanation:

The correct answer is <u>Amitabh Bachchan</u>.

- <u>In the 2017 film 'Pink', Amitabh Bacchan played the lead actor role</u>.

⭐ <u>Key Points</u>

- It is a social thriller film.
- The movie is in the Hindi language.
- **Aniruddha Roy Chowdhury** has directed this film.
- Rashmi Sharma telefilms, Sheel Kumar and Shujit Sirkar have produced this film.
- **Amitabh Bacchan, Tapasi Pannu** , and others worked in the film.
- U/A certification is granted to the film by CBEC (Central Board of film certification).

⭐ <u>Additional Information</u>

- **Shantanu Moitra and Anupam Roy** have given music in this film.
- 23 crore was the budget of the film.
- The pink movie is **related to the feminist matter** .

---

95. Answer: d

Explanation:

The correct answer is **Politics**.

- L K Advani is popular for his contribution in politics.
- His full name is Lal Krishna Advani.

⭐ Key Points

- The 7th deputy Prime minister of India was L K Advani.
- In BJP, he was a senior leader.
- He also co-founded BJP with others.
- He was also minister of home affairs in BJP from 1998-2004.
- In 2009 general election, he served as prime ministerial candidate in national democratic alliance.
- In RSS (Rashtriya Swayamsevak sangh), he was a volunteer.
- The birth of L K Advani was in Karachi.

---

96. Answer: c

Explanation:

Given:

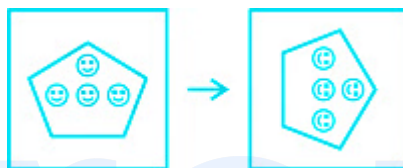The table showing the passing percentage of four schools over four years.

Calculation:

From the table, the year in which all the schools have scored more than 60% is 2015-16.

---

97. Answer: a

Explanation:

The logic follows here is:

The given figure is rotated by 90 degrees in a clock-wise direction.

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

---

98. Answer: d

Explanation:

The correct answer is <u>RISECREEK</u>.

⭐ <u>Key Points</u>

- Computer scientists from the Indian Institute of Technology (IIT) Madras have built the **first microprocessor with silk industry** standards under **project Shakti** .
- The initial batch of 300 chips is named **RISKCREEK** .
- The dependency on imported microchips will be reduced by shakti.
- The shakti will also **minimize the cyber frauds** .
- At the semi-conductor laboratory of ISRO, the microchip which is present in the Shakti is fabricated.
- The communication and defence sector will be especially benefitted by this.
- The different types of hardware will be needed by different devices.

- The initial batch of 300 chips which was fabricated, named RISKCREEK.

---

99. **Answer: a**

Explanation:

The logic follows here is:

The given numbers are the consecutive prime numbers.

53 is a prime number.

Next prime number is 59.

Next prime number is 61.

Next prime number is 67.

Hence, the correct answer is **"67"**.

⭐ **Alternate Method**

59 = 53 + 6

67 = 61 + 6

⭐ **Additional Information**

- The priority will always be the prime number in the exams.
- There is some standard rule which needs to be followed while selecting the priority.
- **priority lists to be followed in exams according to their preferences are:**

  1. **Prime number.**
  2. **Square.**
  3. **Cube.**
  4. **Multiplication and divisions**
  5. **Addition and subtraction.**

- A prime number can be divided, without a remainder, only by itself and by 1.
- **Some facts about the Prime numbers:**

1. The only even prime number is 2. All other even numbers can be divided by 2.
2. If the sum of a number's digits is a multiple of 3, that number can be divided by 3.
3. No prime number greater than 5 ends in a 5. Any number greater than 5 that ends in a 5 can be divided by 5.
4. Zero and 1 are not considered prime numbers.
5. Except for 0 and 1, a number is either a prime number or a composite number. A composite number is defined as any number, greater than 1, that is not prime.

---

100. **Answer: d**

Explanation:

The logic follows here is:

The outer shape replaces its position with the most inner shape and vice-versa and the shaded area of inner shape changes to stripes lines.

Hence, the correct answer is **"Option 4".**