

# MAT 2001

## Language Comprehension

### Instructions [1 - 5]

Read the following passage carefully and then answer these questions based on what is stated or implied in the passage.

#### Passage I :

We call a man irrational when he acts in a passion, when he cuts off his nose to spite his face. He is irrational because he forgets that, by indulging the desire which he happens to feel most strongly at the moment, he will thwart other desires which in the long run are more important to him. If men were rational, they would take a more correct view of their own interest than they do at present; and if all men acted from enlightened self-interest the world would be a paradise in comparison with what it is. I do not maintain that there is nothing better than self-interest as a motive to action; but I do maintain that self-interest, like altruism, is better when it is enlightened than when it is unenlightened. In an ordered community it is very rarely to a man's interest to do anything which is very harmful to others. The less rational a man is, the oftener he will fail to perceive how what injures others also injures him, because hatred or envy will blind him. Therefore, although I do not pretend that enlightened self-interest is the highest morality, I do maintain that, if it became common, it would make the world an immeasurably better place than it is.

Rationality in practice may be defined as the habit of remembering all our relevant desires, and not only the one which happens at the moment to be strongest. Like rationality in opinion, it is a matter of degree. Complete rationality is no doubt an unattainable ideal, but so long as we continue to classify some men as lunatics it is clear that we think some men more rational than others. I believe that all solid progress in the world consists of an increase in rationality, both practical and theoretical. To preach an altruistic morality appears to me somewhat useless, because it will appeal only to those who already have altruistic desires. But to preach rationality is somewhat different, since rationality helps us to realise our own desires on the whole, whatever they may be. A man is rational in proportion as his intelligence informs and controls his desires. I believe that the control of our acts by our intelligence is ultimately what is of most importance, and that alone will make social life remain possible as science increases the means at our disposal for injuring each other. Education, the press, politics, religion—in a word, all the great forces in the world—are at present on the side of irrationality, they are in the hands of men who flatter King Demos in order to lead him astray. The remedy does not lie in anything heroically cataclysmic, but in the efforts of individuals towards a more sane and balanced view of our relations to our neighbours and to the world. It is to intelligence, increasingly side-spread, that we must look for the solution of the ills from which our world is suffering.

#### 1. What is the central idea of the passage ?

- A** The problems of the world can best be solved by rationality and enlightened self-interest.
- B** Altruism and rationality are the main indicators of intelligence.
- C** Altruism can make this world a heaven.
- D** Man is absolutely irrational.

**Answer: A**

2. **What is the author's attitude to modern development in science and communications ?**

- A** Cynical about their use.
- B** Sceptical about the uses they are put to.
- C** One of cautious acceptance.
- D** One of concern about their harmful potential.

**Answer: D**

3. **Rationality, according to the passage means mainly**

- A** Having regard for others.
- B** Intelligent control of one's desires.
- C** The ability to cultivate a balanced view of one's surroundings.
- D** Power to resist yielding to strong passions.

**Answer: D**

4. **The author feels that it is impractical to appeal to altruism because**

- A** Not all people are altruistic by nature.
- B** Altruism is weaker than rationality.
- C** Altruism is more refined than rationality.
- D** None of the above.

**Answer: A**

5. **The King Demos' refers to**

- A** Populace
- B** Politician
- C** Scientist
- D** Despot

**Answer: D**

## Instructions [6 - 10 ]

Read the following passage carefully and then answer these questions based on it.

### Passage II :

Over four hundred years after his death, scholars are still travelling the mysteries of Michelangelo's art. Recently one mystery that was revealed was that his famous drawing of a pensive Cleopatra included a hidden drawing of a different Cleopatra on the reverse side. This hidden Cleopatra shows a tormented woman, whose eyes stare out at the viewer and whose mouth is open, screaming in horror. The two images, drawn on two sides of the same paper, can be viewed simultaneously. A second mystery concerns Michelangelo's architectural plan for the dome of St Peter's Basilica in Rome. Did he intend for the dome to look like the model he built between 1558 and 1561? Or did he change his mind after building the model and decide to elevate the dome in the way it is today? Scholars do not agree on the answer. A third mystery about one of the greatest artists who ever lived was why he destroyed hundreds or thousands of his drawings before he died. Did he feel they were unimportant? Did he want posterity to see only his finished products?

6. It can be inferred from the passage that the most unusual aspect of the Cleopatra drawing is that

- A The figure is tormented.
- B The figure is screaming.
- C One drawing is hidden.
- D One drawing is backward.

**Answer:** C

7. The word 'pensive' (underlined) can best be substituted with the word

- A Angry
- B Happy
- C Anxious
- D Thoughtful

**Answer:** D

8. The dome of St Peter's Basilica

- A Bears no relation to the one in the model.
- B Was destroyed after the model was built.
- C Is raised more than the one in the model.

**D** Follows the plan of the model.

**Answer: C**

9. **According to the passage, Michelangelo is**

**A** A private person.

**B** One of the greatest artists in the world.

**C** The most famous architect in Rome.

**D** Screaming in horror.

**Answer: B**

10. **Why did Michelangelo destroy so many drawings before he died?**

**A** Nobody knows.

**B** They were unimportant.

**C** They were only drafts.

**D** He had changed the drawings.

**Answer: A**

### **Instructions [11 - 15 ]**

In these questions, choose the word from the alternatives (a), (b), (c) and (d) that is similar in meaning to the word given in capital letters.

11. **GIST**

**A** Contribution

**B** Substance

**C** Prestige

**D** Accessory

**Answer: B**

12. **SOLICITOUS**

**A** Nonchalant

**B** Firm

**C** Reverential

**D** Worried

**Answer: D**

13. **HOMELY**

**A** Refined

**B** Plain

**C** Reliable

**D** Amiable

**Answer: B**

14. **LOQUACIOUS**

**A** Verbose

**B** Taciturn

**C** Rational

**D** Alluring

**Answer: A**

15. **PACIFY**

**A** Placate

**B** Rouse

**C** Harass

**D** Rejoice

**Answer: A**

**Instructions [16 - 20 ]**

In these questions, choose the word from the alternatives (a), (b), (c) and (d) that is opposite in meaning to the word given in capital letters.

16. **PERTINENT**

**A** Appropriate

- B** Pleasant
- C** Extraneous
- D** Paltry

**Answer: C**

17. **SLOPPY**

- A** Meticulous
- B** Inappropriate
- C** Robust
- D** Gullible

**Answer: A**

18. **WANTON**

- A** Sportive
- B** Ardent
- C** Fragile
- D** Discreet

**Answer: D**

19. **FINESSE**

- A** Atrocity
- B** Weakness
- C** Tact
- D** Clumsiness

**Answer: D**

20. **IGNITE**

- A** Kindle

- B** Attach
- C** Extinguish
- D** Split

**Answer: C**

**Instructions [21 - 25 ]**

In each of these questions, a related pair of words is followed by four pairs of words (a), (b), (c) and (d). Choose the pair that best expresses a relationship similar to that expressed in the given pair.

21. **DRILL : BORE ::**

- A** Painter : brush
- B** Sieve : sift
- C** Helmet : head
- D** Mason : wall

**Answer: B**

22. **DOE : STAG ::**

- A** Horse : colt
- B** Dog : kennel
- C** Duck : drake
- D** Sheep : flock

**Answer: C**

23. **PHILATELIST : STAMPS ::**

- A** Carpenter : saw
- B** Runner : sneakers
- C** Numismatist : coins
- D** astrologer : predictions

**Answer: C**

24. **UMPIRE : GAME ::**

- A** Chef : banquet
- B** Legislator : election
- C** Moderator : debate
- D** Prodigy : wonder

**Answer: C**

25. **NUCLEUS : CELL ::**

- A** Rind : melon
- B** Web: spider
- C** Stalk : corn
- D** Yolk : egg

**Answer: D**

#### **Instructions [26 - 30 ]**

Each of the sentences in these questions has a blank indicating that something has been omitted. Beneath each sentence, four choices of words or phrases (a), (b), (c) and (d) are given. Choose the one that best fits the meaning of the sentence as a whole.

26. **Criticism that tears down without suggesting areas of improvement is not ..... and should be avoided if possible.**

- A** Constructive
- B** Mandatory
- C** Pertinent
- D** Sagacious

**Answer: A**

27. **Many educators believe that bilingual education has proved to have definite ..... education in any one tongue.**

- A** Correlations with
- B** Limitations on
- C** Advantages over
- D** Connotations for



**Answer: C**

28. Ballet dancers, ..... actors, must spend many hours a day practising before a performance.

- A** Like
- B** The like
- C** The same
- D** Same as

**Answer: A**

29. The weather in the far north is not ..... it is down south.

- A** Like humid as
- B** As humid as
- C** Humid as
- D** So humid that

**Answer: B**

30. Language, culture and personality may be considered independently of each other in thought, but they are ..... in fact.

- A** Equivocal
- B** Pervasive
- C** Inseparable
- D** Autonomous

**Answer: C**

### Instructions [31 - 35 ]

In these questions, each sentence has four underlined portions marked A, B, C and D. Choose that portion which must be changed so that the sentence becomes correct.

31. River water pollution (A) / is often indicate (B) / by (C) / algae distribution. (D)

- A** A
- B** B
- C** C

**D** D

**Answer: B**

32. The ways of communication (A) / has (B) / changed dramatically (C) / since (D) / the last century.

**A** A

**B** B

**C** C

**D** D

**Answer: B**

33. Which (A) / determines a (B) / good meal varies (C) / from country to (D) / country.

**A** A

**B** B

**C** C

**D** D

**Answer: A**

34. Gandhiji lived a noble life of fasting (A) / and poverty (B) / in order to work for peaceful (C) / and independence (D)

**A** A

**B** B

**C** C

**D** D

**Answer: C**

35. The first year of child's life is (A) / characterised (B) / in (C) / rapid physical (D) / growth.

**A** A

**B** B

**C** C

**D** D

**Answer: C**

**Instructions [36 - 40 ]**

In each of these questions, an idiomatic expression is given. Choose the correct choice which expresses the meaning to the given expression from the four options (a), (b), (c) and (d).

36. **To smell a rat**

**A** Signs of plague epidemic

**B** Bad smell

**C** Suspect foul dealings

**D** To be in a bad mood

**Answer: C**

37. **To be above board**

**A** To have a good height

**B** To be honest in any deal

**C** To have no debts

**D** To be able to swim

**Answer: B**

38. **To have the gift of the gab**

**A** Atalent for speaking

**B** To do exactly the right thing

**C** To be cheerful

**D** To get lots of gifts

**Answer: A**

39. **To fall flat**

**A** Retreat

- B** Met accidentally
- C** Quarrel
- D** To be met with a cold reception

**Answer: D**

40. **Right-hand man**

- A** An honest person
- B** Most efficient assistant
- C** One who cannot use his left hand
- D** A foolish person

**Answer: B**

## Mathematical Skills

41. **Walking at  $\frac{3}{4}$  of his usual pace, a man reaches his office 20 minutes late. Find his usual time.**

- A** 2 hrs
- B** 1 hr
- C** 3 hrs
- D** 4 hrs

**Answer: B**

**Explanation:**

Let usual speed = 4 m/min and usual time taken be  $t$  min

=> New speed =  $\frac{3}{4} \times 4 = 3$  m/min and new time =  $(t + 20)$  min

Speed is inversely proportional to time

$$\Rightarrow \frac{4}{3} = \frac{t+20}{t}$$

$$\Rightarrow 4t = 3t + 60$$

$$\Rightarrow t = 60$$

$\therefore$  Usual time = 60 min = **1 hour**

=> Ans - (B)

42. If the difference between the simple and the compound interests on some principal amount at 20% for 3 years is Rs 48, then the principal amount must be

**A** Rs 650

**B** Rs 600

**C** Rs 375

**D** Rs 400

**Answer: C**

**Explanation:**

Difference between SI and CI for 3 years =  $\frac{Pr^2}{100^2} \left( 3 + \frac{r}{100} \right)$  and for 2 years =  $\frac{Pr^2}{100^2}$

Now, rate of interest =  $r = 20\%$  and time =  $t = 3$  years

Let principal amount be Rs.  $P$

$$\Rightarrow \text{Difference} = P \times \frac{(20)^2}{(100)^2} \left( 3 + \frac{20}{100} \right) = 48$$

$$\Rightarrow P \times \frac{1}{25} \times \frac{16}{5} = 48$$

$$\Rightarrow P = \frac{48 \times 125}{16} = 3 \times 125$$

$$\Rightarrow P = \text{Rs. } 375$$

$\Rightarrow$  Ans - (C)

43. In a zoo, there are rabbits and pigeons. If their heads are counted, these are 90 while their legs are 224. Find the number of pigeons in the zoo.

**A** 70

**B** 68

**C** 72

**D** 22

**Answer: B**

**Explanation:**

Let us assume all 90 are rabbits, thus there must be 360 legs (Rabbits have 4 legs and pigeons have 2)

But there are  $360 - 224 = 136$  less legs, so rabbits must be less.

$$\Rightarrow \text{Number of pigeons} = \frac{136}{2} = 68$$

Alternate Method : Let number of pigeons be  $x$  and number of rabbits be  $y$

$$\Rightarrow x + y = 90 \text{ -----(i)}$$

$$\text{and } 2x + 4y = 224 \text{ -----(ii)}$$

Solving the two equations, we get :  $x = 68$  and  $y = 22$

=> Ans - (B)

44. The sides of a rectangular field are in the ratio 3 : 4 with its area as 7500 sq m. The cost of fencing the field @ 25-paise per metre is

**A** Rs 87.50

**B** Rs 86.50

**C** Rs 67.50

**D** Rs 55.50

**Answer: A**

**Explanation:**

Let sides of rectangular field be  $3x$  and  $4x$  m respectively.

$$\Rightarrow \text{Area} = lb = 7500$$

$$\Rightarrow 3x \times 4x = 7500$$

$$\Rightarrow x^2 = \frac{7500}{12} = 625$$

$$\Rightarrow x = \sqrt{625} = 25$$

$$\Rightarrow \text{Perimeter of field} = 2(3x + 4x) = 14x$$

$$= 14 \times 25 = 350 \text{ m}$$

$$\therefore \text{Cost of fencing} = 350 \times 0.25 = \text{Rs. } 87.50$$

=> Ans - (A)

45. A and B together can do a piece of work in 6 days. A alone can do it in 10 days. What time will B require to do it alone ?

**A** 20 days

**B** 15 days

**C** 25 days

**D** 30 days

**Answer: B**

**Explanation:**

$$\text{Time required by B alone} = \frac{1}{6} - \frac{1}{10}$$

$$= \frac{5-3}{30} = \frac{2}{30} = \frac{1}{15}$$

$\therefore$  B alone finishes the work in **15 days**.

=> Ans - (B)

46. A square and an equilateral triangle have the same perimeter. If the diagonal of the square is  $12\sqrt{2}$  cm, then the area of the triangle is

**A**  $24\sqrt{3} \text{ cm}^2$

**B**  $24\sqrt{2} \text{ cm}^2$

**C**  $64\sqrt{3} \text{ cm}^2$

**D**  $32\sqrt{3} \text{ cm}^2$

**Answer: C**

**Explanation:**

Let the perimeter of square and equilateral triangle be  $12x$  cm

=> Each side of square =  $\frac{12x}{4} = 3x$  cm and each side of equilateral triangle =  $4x$  cm

Diagonal of a square =  $d = \sqrt{2} \times \text{side}$

$$\Rightarrow 3x \times \sqrt{2} = 12\sqrt{2}$$

$$\Rightarrow x = \frac{12}{3} = 4$$

=> Side of equilateral triangle =  $4 \times 4 = 16$  cm

$\therefore$  Area of equilateral triangle =  $\frac{\sqrt{3}}{4} s^2$

$$= \frac{\sqrt{3}}{4} \times (16) \times (16)$$

$$= 64\sqrt{3} \text{ cm}^2$$

=> Ans - (C)

47. A cistern is filled in 5 hours and it takes 6 hours when there is a leak in its bottom. If the cistern is full, in what time shall the leak empty it?

**A** 6 hrs

**B** 5 hrs

**C** 30 hrs

**D** 15 hrs

**Answer: C**

**Explanation:**

Let capacity of cistern = L.C.M. (5,6) = 30 units

Efficiency to fill it =  $\frac{30}{5} = 6$  units/hr

Let efficiency of leak =  $-x$  units/hr

According to ques,  $\Rightarrow (6 - x) \times 6 = 30$

$$\Rightarrow 6 - x = 5$$

$$\Rightarrow x = 1$$

$$\therefore \text{Time taken by leak to empty it} = \frac{30}{1} = 30 \text{ hours}$$

$\Rightarrow$  Ans - (C)

48. The radius of the circumcircle of an equilateral triangle of side 12 cm is

**A**  $\left(\frac{4}{3}\right) \sqrt{3} \text{ cm}$

**B**  $4\sqrt{3} \text{ cm}$

**C**  $4\sqrt{2} \text{ cm}$

**D**  $\left(\frac{4}{3}\right) \sqrt{2} \text{ cm}$

**Answer: B**

**Explanation:**

Side of the equilateral triangle =  $s = 12 \text{ cm}$

$$\Rightarrow \text{Area of triangle} = \Delta = \frac{\sqrt{3}}{4} s^2$$

$$= \frac{\sqrt{3}}{4} \times 12 \times 12 = 36\sqrt{3} \text{ cm}^2$$

$$\therefore \text{Circumradius} = R = \frac{abc}{4\Delta}$$

$$= \frac{12 \times 12 \times 12}{4 \times 36\sqrt{3}}$$

$$= \frac{12}{\sqrt{3}} = 4\sqrt{3} \text{ cm}$$

$\Rightarrow$  Ans - (B)

49. The sides of a triangle are 6 cm, 11 cm and 15cm. The radius of its incircle is

**A**  $\frac{(5\sqrt{2})}{4} \text{ cm}$

**B**  $3\sqrt{2} \text{ cm}$

**C**  $6\sqrt{2} \text{ cm}$

**D**  $\frac{(4\sqrt{2})}{5} \text{ cm}$

**Answer: A**

**Explanation:**

Sides of the triangle are  $a = 6, b = 11, c = 15 \text{ cm}$

Area of a triangle =  $\Delta = rs$ , where  $r$  = in radius and  $s$  is semi perimeter



$$\Rightarrow \text{Semi perimeter} = s = \frac{a+b+c}{2} = \frac{6+11+15}{2} = 16 \text{ cm}$$

$$\text{Area of triangle using Heron's Formula} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{16 \times 10 \times 5 \times 1}$$

$$= \sqrt{2^5 \times 5^2} = 20\sqrt{2} \text{ cm}^2$$

$$\therefore r = \frac{\Delta}{s}$$

$$= \frac{20\sqrt{2}}{16} = \frac{5\sqrt{2}}{4} \text{ cm}$$

$\Rightarrow$  Ans - (A)

50. The sum of the interior angles of a polygon is 1620. The number of sides of the polygon must be

**A** 9

**B** 11

**C** 15

**D** 12

**Answer: B**

**Explanation:**

Let the number of sides of the polygon be  $n$

$$\text{Sum of interior angles of any polygon} = (n - 2) \times 180 = 1620$$

$$\Rightarrow n - 2 = \frac{1620}{180} = 9$$

$$\Rightarrow n = 9 + 2 = 11$$

$\Rightarrow$  Ans - (B)

51. The distance between the tops of two trees 20 m and 28 m high is 17 m. The horizontal distance between the two trees is

**A** 9 m

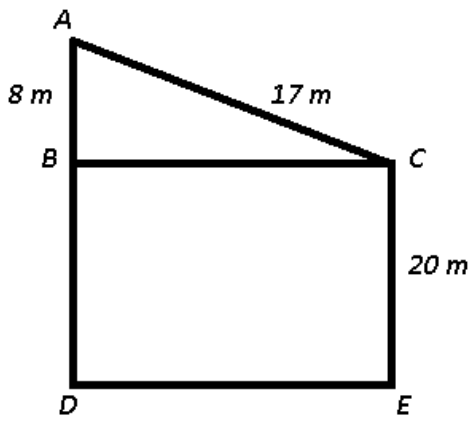
**B** 11 m

**C** 15 m

**D** 31 m

**Answer: C**

**Explanation:**



AD and CE are two trees of height 28 m and 20 m respectively.  $AC = 17$  m

In right  $\triangle ABC$ ,

$$\Rightarrow (BC)^2 = (AC)^2 - (AB)^2$$

$$\Rightarrow (BC)^2 = (17)^2 - (8)^2$$

$$\Rightarrow (BC)^2 = 289 - 64 = 225$$

$$\Rightarrow BC = \sqrt{225} = 15 \text{ m}$$

$\Rightarrow$  Ans - (C)

52. Rs 770 have been divided among A, B and C such that A receives  $\frac{2}{9}$ th of what B and C together receive. Then A's share is

**A** Rs 140

**B** Rs 154

**C** Rs 165

**D** Rs 170

**Answer: A**

**Explanation:**

Let B and C together have = Rs.  $9x$

$$\Rightarrow \text{A's share} = \frac{2}{9} \times 9x = \text{Rs. } 2x \text{ -----(i)}$$

$$\text{Also, amount that A receive} = (770 - 9x) \text{ -----(ii)}$$

$$\text{Comparing equations (i) and (ii), } \Rightarrow 2x = 770 - 9x$$

$$\Rightarrow 11x = 770$$

$$\Rightarrow x = \frac{770}{11} = 70$$

$$\therefore \text{A's share} = 2 \times 70 = \text{Rs. } 140$$

$\Rightarrow$  Ans - (A)

53. What least number must be subtracted from each of the numbers 14, 17, 34 and 42 so that the remainders are proportional ?

**A** 0

**B** 1

**C** 2

**D** 7

**Answer: C**

**Explanation:**

Let  $x$  must be subtracted.

$$\Rightarrow \frac{14-x}{17-x} = \frac{34-x}{42-x}$$

$$\Rightarrow (14-x)(42-x) = (34-x)(17-x)$$

$$\Rightarrow 588 - 14x - 42x + x^2 = 578 - 34x - 17x + x^2$$

$$\Rightarrow 56x - 51x = 588 - 578$$

$$\Rightarrow 5x = 10$$

$$\Rightarrow x = 2$$

$$\Rightarrow \text{Ans - (C)}$$

54.  $\frac{3\pi}{5}$  radians is equal to

**A** 108

**B** 54

**C** 100

**D** 81

**Answer: A**

**Explanation:**

Expression :  $\frac{3\pi}{5}$  radians

$$= \frac{3}{5} \times 180$$

$$= 3 \times 36 = 108^\circ$$

$$\Rightarrow \text{Ans - (A)}$$

55. If  $\sin A : \cos A = 4 : 7$ , then the value of  $\frac{(7 \sin A - 3 \cos A)}{(7 \sin A + 2 \cos A)}$  is

**A**  $\frac{3}{14}$

**B**  $\frac{3}{2}$

**C**  $\frac{1}{3}$

**D**  $\frac{1}{6}$

**Answer: D**

**Explanation:**

Let  $\sin A = 4$  and  $\cos A = 7$

Expression :  $\frac{(7 \sin A - 3 \cos A)}{(7 \sin A + 2 \cos A)}$

$$= \frac{7(4) - 3(7)}{7(4) + 2(7)} = \frac{28 - 21}{28 + 14}$$

$$= \frac{7}{42} = \frac{1}{6}$$

=> Ans - (D)

56. A tree breaks due to storm and the broken part bends so that the top of the tree first touches the ground, making an angle of  $30^\circ$  with the horizontal. The distance from the foot of the tree to the point where the top touches the ground is 10 m. The height of the tree is

**A**  $10(\sqrt{3} + 1)$  m

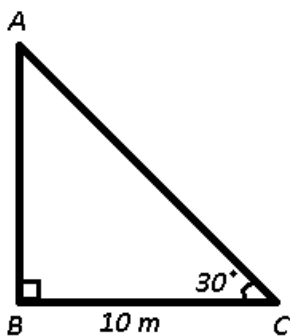
**B**  $10\sqrt{3}$  m

**C**  $10(\sqrt{3} - 1)$  m

**D**  $\left(\frac{10}{\sqrt{3}}\right)$  m

**Answer: B**

**Explanation:**



Given :  $BC = 10$  m and  $\angle ACB = 30^\circ$

To find :  $AC + AB = ?$

Solution : In right  $\triangle ABC$

$$\Rightarrow \tan(30^\circ) = \frac{AB}{BC}$$

$$\Rightarrow \frac{1}{\sqrt{3}} = \frac{AB}{10}$$

$$\Rightarrow AB = \frac{10}{\sqrt{3}} \text{-----(i)}$$

$$\text{Similarly, } \cos(30^\circ) = \frac{BC}{AC}$$

$$\Rightarrow \frac{\sqrt{3}}{2} = \frac{10}{AC}$$

$$\Rightarrow AC = \frac{20}{\sqrt{3}} \text{-----(ii)}$$

$$\therefore \text{Height of tree} = AB + AC$$

$$= \frac{10}{\sqrt{3}} + \frac{20}{\sqrt{3}}$$

$$= \frac{30}{\sqrt{3}} = 10\sqrt{3} \text{ m}$$

$\Rightarrow$  Ans - (B)

57. If  $pqr = 1$  then

$$\left( \left( \frac{1}{(1+p+q^{-1})} \right) + \left( \frac{1}{(1+q+r^{-1})} \right) + \left( \frac{1}{(1+r+p^{-1})} \right) \right) \text{ is equal to}$$

**A** 1

**B**  $pq$

**C**  $qr$

**D**  $\frac{1}{pq}$

**Answer: A**

**Explanation:**

Given :  $pqr = 1$

$$\text{Expression : } \left( \left( \frac{1}{(1+p+q^{-1})} \right) + \left( \frac{1}{(1+q+r^{-1})} \right) + \left( \frac{1}{(1+r+p^{-1})} \right) \right)$$

$$= \frac{1}{(1+p+\frac{1}{q})} + \frac{1}{(1+q+\frac{1}{r})} + \frac{1}{(1+r+\frac{1}{p})}$$

$$= \frac{q}{(1+q+pq)} + \frac{1}{(1+q+pq)} + \frac{1}{(1+pq+p)}$$

$$= \frac{q}{(1+q+pq)} + \frac{1}{(1+q+pq)} + \frac{pq}{(1+q+pq)}$$

$$= \frac{1+q+pq}{1+q+pq} = 1$$

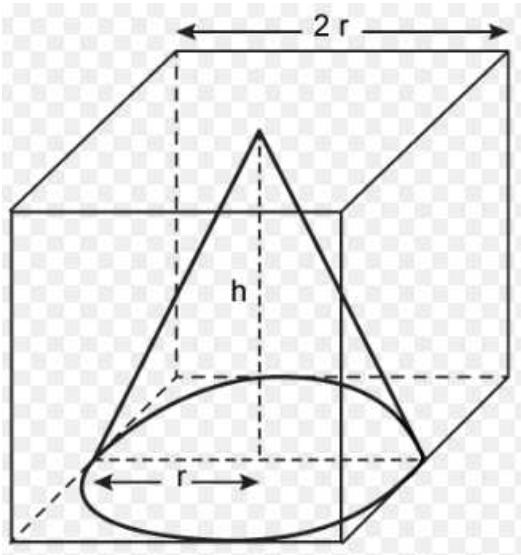
$\Rightarrow$  Ans - (A)

58. An edge of a cube measures 10 cm. If the largest possible cone is cut out of this cube, then the volume of the cone is

- A**  $260 \text{ cm}^3$
- B**  $260.9 \text{ cm}^3$
- C**  $261.9 \text{ cm}^3$
- D**  $262.7 \text{ cm}^3$

**Answer: C**

**Explanation:**



Edge of cube = 10 cm

Radius of the largest possible cone = 5 cm and height of cone = 10 cm

Volume of cone =  $\frac{1}{3}\pi r^2 h$

$$= \frac{1}{3} \times \frac{22}{7} \times (5)^2 \times 10$$

$$= \frac{25 \times 220}{21} = 261.9 \text{ cm}^3$$

=> Ans - (C)

59. If a solid sphere of radius 10 cm is moulded into 8 spherical solid balls of equal radius, then the surface area of each ball is

- A**  $60\pi \text{ cm}^2$
- B**  $50\pi \text{ cm}^2$
- C**  $75\pi \text{ cm}^2$
- D**  $100\pi \text{ cm}^2$

**Answer: D**

**Explanation:**

Let radius of each small spherical ball =  $r$  cm

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

$$\Rightarrow 8 \times \frac{4}{3}\pi(r)^3 = \frac{4}{3}\pi(10)^3$$

$$\Rightarrow r^3 = \frac{(10)^3}{8}$$

$$\Rightarrow r = \frac{10}{2} = 5$$

$$\therefore \text{Surface area of each ball} = 4\pi r^2$$

$$= 4 \times \pi \times (5)^2 = 100\pi \text{ cm}^2$$

$\Rightarrow$  Ans - (D)

60. If  $a$  and  $b$  are the roots of the equation  $x^2 - 6x + 6 = 0$ , then the value of  $a^2 + b^2$  is

**A** 36

**B** 24

**C** 12

**D** 6

**Answer: B**

**Explanation:**

$$\text{Equation : } x^2 - 6x + 6 = 0$$

$$\text{Sum of roots} = a + b = 6 \text{ and Product of roots} = ab = 6 \text{ -----(i)}$$

$$\text{Now, squaring both sides, } \Rightarrow (a + b)^2 = (6)^2$$

$$\Rightarrow a^2 + b^2 + 2ab = 36$$

$$\Rightarrow (a^2 + b^2) + 2(6) = 36$$

$$\Rightarrow (a^2 + b^2) = 36 - 12 = 24$$

$\Rightarrow$  Ans - (B)

61. If  $a : b = 2 : 5$  then  $(3a + 4b) : (5a + 6b)$  is equal to

**A**  $\frac{13}{20}$

**B**  $\frac{26}{33}$

**C**  $\frac{16}{27}$

**D**  $\frac{18}{35}$

**Answer: A**

**Explanation:**

Let  $a = 2$  and  $b = 5$

To find  $= (3a + 4b) : (5a + 6b)$

$$= \frac{3(2)+4(5)}{5(2)+6(5)} = \frac{(6+20)}{(10+30)}$$

$$= \frac{26}{40} = \frac{13}{20}$$

=> Ans - (A)

62. The value of

$$(1^3 + 2^3 + 3^3 + \dots + 15^3) - (1 + 2 + 3 + \dots + 15) \text{ is}$$

**A** 14280

**B** 14400

**C** 12280

**D** 13280

**Answer:** A

**Explanation:**

Sum of  $n$  consecutive natural number cubes  $= \left[ \frac{n(n+1)}{2} \right]^2$

and sum of  $n$  consecutive natural numbers  $= \frac{n(n+1)}{2}$

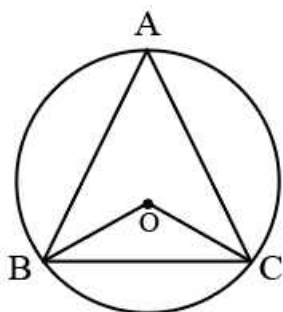
Expression :  $(1^3 + 2^3 + 3^3 + \dots + 15^3) - (1 + 2 + 3 + \dots + 15)$

$$= \left( \frac{15 \times 16}{2} \right)^2 - \left( \frac{15 \times 16}{2} \right)$$

$$= (120)^2 - 120$$

$$= 14400 - 120 = 14280$$

63. In the figure given below, O is the centre of the circle. If  $\angle OBC = 37^\circ$ , the  $\angle BAC$  is equal to



**A** 74

**B** 106

**C** 53



**D** 37

**Answer: C**

**Explanation:**

In the circle,  $OB=OC$  (radii),  $\Rightarrow \angle OBC = \angle OCB = 37^\circ$

In  $\triangle OBC$ , using angle sum property

$$\Rightarrow \angle BOC + \angle OBC + \angle OCB = 180^\circ$$

$$\Rightarrow \angle BOC + 37^\circ + 37^\circ = 180^\circ$$

$$\Rightarrow \angle BOC = 180^\circ - 74^\circ = 106^\circ$$

Now, angle subtended by an arc at the centre is double the angle subtended by it at any point on the circle.

$$\Rightarrow \angle BOC = 2 \times \angle BAC$$

$$\Rightarrow \angle BAC = \frac{106^\circ}{2} = 53^\circ$$

$\Rightarrow$  Ans - (C)

64. A horse is tethered to one corner of a rectangular grassy field 40 m by 24 m with a rope 14 m long. Over how much area of the field can it graze ?

**A**  $154 \text{ m}^2$

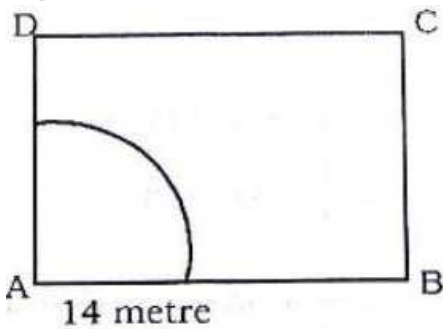
**B**  $308 \text{ m}^2$

**C**  $150 \text{ m}^2$

**D** None of these

**Answer: A**

**Explanation:**



Area of the field that the horse can gaze = area of sector having radius  $r = 14 \text{ m}$

$$= \frac{\theta}{360^\circ} \pi r^2$$

$$= \frac{90^\circ}{360^\circ} \times \frac{22}{7} \times 14 \times 14$$

$$= \frac{1}{4} \times 22 \times 28$$

$$= 22 \times 7 = 154 \text{ m}^2$$

$\Rightarrow$  Ans - (A)

65. A two-digit number is such that the product of the digits is 14. When 45 is added to the number, then the digits interchange their places. Find the number.

**A** 72

**B** 27

**C** 37

**D** 14

**Answer: B**

**Explanation:**

Factors of 14 = 1, 2, 7, 14

Thus, only two digit numbers possible are 27 and 72

Now, when 45 is added, number will be reversed,  $\Rightarrow$  Number = **27**

$\Rightarrow$  Ans - (B)

66. Vishal goes to a shop to buy a radio costing Rs 2568. The rate of sales tax is 7%. He tells the shopkeeper to reduce the price of the radio to such an extent that he has to pay Rs 2568, inclusive of sales tax. Find the reduction needed in the price of the radio.

**A** Rs 179.76

**B** Rs 170

**C** Rs 168

**D** Rs 169

**Answer: C**

**Explanation:**

Let reduced price of the radio = Rs.  $x$

$\Rightarrow$  Reduced Price + Sale tax = Rs. 2568

$$\Rightarrow x + \frac{7x}{100} = 2568$$

$$\Rightarrow \frac{107x}{100} = 2568$$

$$\Rightarrow x = \frac{2568}{107} \times 100$$

$$\Rightarrow x = 24 \times 100 = 2400$$

$$\therefore \text{Reduction needed} = 2568 - 2400 = \text{Rs. } 168$$

$\Rightarrow$  Ans - (C)

67. Dinesh travels 760 km to his home, partly by train and partly by car. He takes 8 hours if he travels 160 km by train and the rest by car. He takes 12 minutes more if he travels 240 km by train and the rest by car. The speeds of the train and the car respectively are

- A 80 km/hr, 100 km/hr
- B 100 km/hr, 80 km/hr
- C 120 km/hr, 100 km/hr
- D 100 km/hr, 120 km/hr

**Answer: A**

**Explanation:**

Let speeds of train and car be  $x$  km/hr and  $y$  km/hr respectively.

According to ques,

$$\Rightarrow \frac{160}{x} + \frac{600}{y} = 8 \text{ -----(i)}$$

$$\text{and } \frac{240}{x} + \frac{520}{y} = 8 + \frac{12}{60} = 8.2 \text{ -----(ii)}$$

Applying :  $3 \times (i) - 2 \times (ii)$

$$\Rightarrow \frac{1800}{y} - \frac{1040}{y} = 24 - 16.4$$

$$\Rightarrow \frac{760}{y} = 7.6$$

$$\Rightarrow y = \frac{760}{7.6} = 100$$

$$\text{Similarly, } x = \frac{160}{2} = 80$$

$\therefore$  Speeds of train and car are **80 km/hr** and **100 km/hr** respectively.

$\Rightarrow$  Ans - (A)

68. A person on tour has Rs 360 for his daily expenses. If he extends his tour for 4 days, he has to cut his daily expenses by Rs 3. Find the original duration of the tour.

- A 15 days
- B 30 days
- C 20 days
- D 24 days

**Answer: C**

**Explanation:**

Let original duration of tour be  $x$  days and expense per day = Rs.  $\frac{360}{x}$

According to ques,

$$\Rightarrow (x + 4)\left(\frac{360}{x} - 3\right) = 360$$

$$\Rightarrow 360 - 3x + \frac{1440}{x} - 12 = 360$$

$$\Rightarrow -3x^2 + 1440 - 12x = 0$$

$$\Rightarrow x^2 + 4x - 480 = 0$$

$$\Rightarrow (x + 24)(x - 20) = 0$$

$$\Rightarrow x = 20, -24$$

$\therefore x$  cannot be negative, thus number of days = **20**

$\Rightarrow$  Ans - (C)

69. Rs 6500 were divided equally among a certain number of persons. Had there been 15 more persons, each would have got Rs 30 less. Find the original number of persons.

**A** 50

**B** 60

**C** 40

**D** 55

**Answer: A**

**Explanation:**

Let original number of persons be  $x$  and amount received by each person = Rs.  $\frac{6500}{x}$

According to ques,

$$\Rightarrow (x + 15)\left(\frac{6500}{x} - 30\right) = 6500$$

$$\Rightarrow 6500 - 30x + \frac{15 \times 6500}{x} - 450 = 6500$$

$$\Rightarrow -30x^2 + (15 \times 6500) - 450x = 0$$

$$\Rightarrow x^2 + 15x - 3250 = 0$$

$$\Rightarrow (x + 65)(x - 50) = 0$$

$$\Rightarrow x = 50, -65$$

$\therefore x$  cannot be negative, thus number of persons are **50**

$\Rightarrow$  Ans - (A)

70. Pipes A and B running together can fill a cistern in 6 minutes. If B takes 5 minutes more than A to fill the cistern, then the times in which A and will fill the cistern separately will be respectively

**A** 15 minutes, 20 minutes

**B** 15 minutes, 10 minutes

**C** 10 minutes, 15 minutes

**D** 25 minutes, 20 minutes

**Answer: C**

**Explanation:**

Let time taken by A alone to fill the cistern =  $t$  minutes

=> Time taken by B =  $(t + 5)$  minutes

According to ques, =>  $\frac{1}{t} + \frac{1}{t+5} = \frac{1}{6}$

$$\Rightarrow \frac{t+t+5}{t(t+5)} = \frac{1}{6}$$

$$\Rightarrow 12t + 30 = t^2 + 5t$$

$$\Rightarrow t^2 - 7t - 30 = 0$$

$$\Rightarrow (t - 10)(t + 3) = 0$$

$$\Rightarrow t = 10, -3$$

∴ Time cannot be negative, =>  $t = 10$

Thus, time taken by A and B separately to fill the cistern is **10 min** and **15 min** respectively.

=> Ans - (C)

71. In a flight of 3000 km, an aircraft was slowed down by bad weather. Its average speed for the trip was reduced by 100 km/hour and the time increased by one hour. Find the original duration of the flight.

**A** 5 hours

**B** 6 hours

**C** 4 hours

**D** 10 hours

**Answer: A**

**Explanation:**

Let initial speed be  $x$  km/hr, => New speed =  $(x - 100)$  km/hr

Let original duration of flight =  $t$  hours and actual time taken =  $(t + 1)$  hours

Total distance =  $xt = 3000$  -----(i)

Speed is inversely proportional to time,

$$\Rightarrow \frac{x}{x-100} = \frac{t+1}{t}$$

$$\Rightarrow xt = xt + x - 100t - 100$$

$$\Rightarrow x - 100t = 100$$

$$\Rightarrow \frac{3000}{t} - 100t = 100$$

$$\Rightarrow -100t^2 - 100t + 3000 = 0$$

$$\Rightarrow t^2 + t - 30 = 0$$

$$\Rightarrow (t + 6)(t - 5) = 0$$

$$\Rightarrow t = 5, -6$$

$\therefore$  Time cannot be negative,  $\Rightarrow$  Original duration = 5 hours

$\Rightarrow$  Ans - (A)

72. Students of a class are made to stand in rows. If 4 students are extra in a row, there would be 2 rows less. If 4 students are less in a row, there would be 4 more rows. Find the number of students in the class.

**A** 86

**B** 106

**C** 96

**D** Cannot be determined

**Answer: C**

**Explanation:**

Let number of students in each row be  $x$  and number of rows =  $y$

$\Rightarrow$  Total number of students =  $xy$

Case 1 :  $(x + 4) \times (y - 2) = xy$

$$\Rightarrow xy - 2x + 4y - 8 = xy$$

$$\Rightarrow 2y - x = 4 \text{ -----(i)}$$

Case 2 :  $(x - 4) \times (y + 4) = xy$

$$\Rightarrow xy + 4x - 4y - 16 = xy$$

$$\Rightarrow x - y = 4 \text{ -----(ii)}$$

Adding equations (i) and (ii),  $\Rightarrow y = 8$

and similarly,  $x = 12$

$\therefore$  Total number of students =  $12 \times 8 = 96$

$\Rightarrow$  Ans - (C)

73. Four different objects 1, 2, 3, 4 are distributed at random in four places marked 1, 2, 3, 4. What is the probability that none of the objects occupy the place corresponding to its number ?

**A**  $\frac{17}{24}$

**B**  $\frac{3}{8}$

**C**  $\frac{1}{2}$

**D**  $\frac{5}{8}$

**Answer: B**

**Explanation:**

A derangement is a permutation of objects that leave no object in its original position. Number of derangement's of set with  $n$  elements is

$$D_n = n! \left[ 1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} - \dots + (-1)^n \frac{1}{n!} \right]$$

The probability of derangement =  $\frac{D_n}{n!}$

Now, in the given case  $n = 4$

$\therefore$  Probability that none of the objects occupy the place corresponding to their number

$$= 1 - \frac{1}{1!} + \frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!}$$

$$= 1 - 1 + \frac{1}{2} - \frac{1}{6} + \frac{1}{24}$$

$$= \frac{12-4+1}{24} = \frac{9}{24} = \frac{3}{8}$$

=> Ans - (B)

74. **A boat goes 24 km upstream and 28 km downstream in 6 hours. If it goes 30 km upstream and 21 km downstream in 6 hours and 30 minutes, find the speed of the stream.**

**A** 10 km/hr

**B** 5 km/hr

**C** 4 km/hr

**D** 6 km/hr

**Answer: C**

**Explanation:**

Let speed of boat =  $x$  km/hr and speed of stream =  $y$  km/hr

=> Downstream speed =  $(x + y)$  km/hr and downstream speed =  $(x - y)$  km/hr

According to ques,

$$\Rightarrow \frac{24}{x-y} + \frac{28}{x+y} = 6 \text{ -----(i)}$$

$$\text{and } \frac{30}{x-y} + \frac{21}{x+y} = 6.5 \text{ -----(ii)}$$

Using the operation :  $4 \times \text{(ii)} - 3 \times \text{(i)}$

$$\Rightarrow \frac{48}{x-y} = 26 - 18$$

$$\Rightarrow x - y = \frac{48}{8} = 6 \text{ -----(iii)}$$

$$\text{Similarly, } x + y = 14 \text{ -----(iv)}$$

Now, subtracting equation (iii) from (iv),  $\Rightarrow 2y = 8$

$$\Rightarrow y = \frac{8}{2} = 4$$

$\therefore$  Speed of stream = **4 km/hr**

$\Rightarrow$  Ans - (C)

**75. The diameter of a cycle wheel is 70 cm. A cyclist takes 30 hours to reach a destination at the speed of 22 km/hr. How many revolutions will the wheel make during this journey?**

- A** 3 million
- B** 3 lakh
- C** 4 lakh
- D** None of these

**Answer: B**

**Explanation:**

Distance covered at 22 km/hr in 30 hours =  $22 \times 30 = 660 \text{ km} = 66 \times 10^6 \text{ cm}$

Radius of cycle = 35 cm

In one revolution, distance covered by the wheel = Circumference of cycle =  $2\pi r$

$$= 2 \times \frac{22}{7} \times 35 = 220 \text{ cm}$$

$$\therefore \text{Number of revolutions in the total journey} = \frac{66 \times 10^6}{220} = 3 \times 10^5$$

= **3 lakh** revolutions

$\Rightarrow$  Ans - (B)

**76. Shyam had 85 currency notes in all, some of which were of Rs 100 denomination and the remaining of Rs 50 denomination. The total amount of all these currency notes was Rs 5000. How much amount in rupees did he have in the denomination of Rs 50?**

- A** 3500
- B** 70
- C** 15
- D** 1500

**Answer: A**

**Explanation:**



Let number of notes of Rs. 50 denomination =  $x$  and number of notes of Rs. 100 denomination =  $(85 - x)$

According to ques,

$$\Rightarrow 50x + 100(85 - x) = 5000$$

$$\Rightarrow 50x + 8500 - 100x = 5000$$

$$\Rightarrow 50x = 3500$$

$$\Rightarrow x = 70$$

$\therefore$  Amount in only Rs. 50 denomination =  $70 \times 50 = \text{Rs. } 3500$

$\Rightarrow$  Ans - (A)

**77. Acar owner buys petrol at Rs 7.50, Rs 8.00 and Rs 8.50 per litre for three successive years. What approximately is the average cost per litre of petrol if he spends Rs 4000 each year?**

**A** Rs 8

**B** Rs 9

**C** Rs 7.98

**D** Rs 8.50

**Answer: C**

**Explanation:**

Since amount spend each year is constant, thus average cost is the harmonic mean of each price

$$= 3 \div \left( \frac{1}{7.5} + \frac{1}{8} + \frac{1}{8.5} \right)$$

$$= 3 \div \left( \frac{2}{15} + \frac{1}{8} + \frac{2}{17} \right)$$

$$= 3 \div \left( \frac{272+255+240}{2040} \right)$$

$$= 3 \times \frac{2040}{767} = 7.98$$

$\Rightarrow$  Ans - (C)

**78. If 10 years are subtracted from the present age of Ram and the remainder divided by 14, then you would get the preset age of his grandson Shyam. If Shyam is 9 years younger to Sunder whose age is 14, then what is the present age of Ram?**

**A** 80 years

**B** 70 years

**C** 60 years

**D** None of these

**Answer: A**

**Explanation:**

Sunder's age = 14 years and Shyam's age =  $14 - 9 = 5$  years

Let present age of Ram =  $x$  years

According to ques,  $\Rightarrow \frac{(x-10)}{14} = 5$

$$\Rightarrow x - 10 = 70$$

$$\Rightarrow x = 70 + 10 = 80$$

$\therefore$  Ram's age = **80 years**

$\Rightarrow$  Ans - (A)

79. **Sunder purchased an office bag with a price tag of Rs 600 in a sale where 25% discount was being offered on the tag price. He was given a further discount of 10% on the amount arrived at after giving usual 25% discount. What was the final amount paid by Sunder?**

**A** Rs 210

**B** Rs 540

**C** Rs 405

**D** Rs 450

**Answer: C**

**Explanation:**

Marked price = Rs. 600

Relative discount after successive discounts of 25 and 10% =  $25 + 10 - \left(\frac{25 \times 10}{100}\right) = 32.5\%$

$\therefore$  Sale price =  $600 - \left(\frac{32.5}{100} \times 600\right)$

$$= 600 - 195 = \text{Rs. } 405$$

$\Rightarrow$  Ans - (C)

80. **The mean of 30 values was 150. It was detected on rechecking that one value 165 was wrongly copied as 135 for the computation of the mean. Find the correct mean.**

**A** 151

**B** 149

**C** 152

**D** None of these

**Answer: A**

**Explanation:**

Mean of 30 values = 150

After replacing 135 by 165, correct mean =  $\frac{(30 \times 150) + (-135 + 165)}{30}$

$$= 150 + \frac{30}{30} = 151$$

=> Ans - (A)

## Data Analysis & Sufficiency

### Instructions [81 - 86 ]

The following table gives the enrolment in Higher Secondary Schools in 1978. Study the table carefully and answer these questions.

Enrolment	No.of Schools
20-39	526
40-59	620
60-79	674
80-99	717
100-119	681
120-139	612
140-159	540
160-179	517
180-199	522
Total	5439

81. What is the approximate percentage of schools, where the enrolment was below 120?

**A** 59.16

**B** 59.27

**C** 60

**D** 61

**Answer:** A

#### Explanation:

Percentage of schools where enrolment is below 120 are given by

$$= \frac{(526+620+674+717+681)}{5439} \times 100$$

$$= \frac{3218}{5439} \times 100 \approx 59.16\%$$

=> Ans - (A)

82. What is the approximate percentage of schools, where the enrolment was above 79 but below 180?

**A** 56

**B** 56.39

**C** 57

**D** 55

**Answer: B**

**Explanation:**

Percentage of schools, with enrolment above 79 & below 180 are given by

$$= \frac{(717+681+612+540+517)}{5439} \times 100$$
$$= \frac{3067}{5439} \times 100 \approx 56.39\%$$

=> Ans - (B)

**83. Under which class, the maximum number of schools fall?**

**A** 100-119

**B** 80-99

**C** 60-79

**D** None of these

**Answer: B**

**Explanation:**

It is clear after viewing the all the enrolments that under the class **80-99**, maximum no. of schools (717) fall.

=> Ans - (B)

**84. What is the approximate percentage of the least number of schools for the classes of enrolment ?**

**A** 8

**B** 9.5

**C** 9

**D** 10

**Answer: B**

**Explanation:**

The least no. of schools (517) are in class 160-179

$$\Rightarrow \text{Required \%} = \frac{517}{5439} \times 100 \approx 9.5\%$$

=> Ans - (B)

**85. What is the number of schools where the enrolment is above 99 but below 1607 ?**

**A** 2550

**B** 2033

**C** 1833

**D** 1316

**Answer: C**

**Explanation:**

No. of schools with enrolment above 99 & below 160 are

$$= 681 + 612 + 540 = 1833$$

=> Ans - (C)

86. **What is the average enrolment per HS School?**

**A** 107.87

**B** 217.60

**C** 109.5

**D** 129.5

**Answer: C**

**Explanation:**

Average enrolment is the average of mean enrolment

$$= \frac{(29.5+49.5+69.5+89.5+109.5+129.5+149.5+169.5+189.5)}{9}$$

$$= \frac{985.5}{9} = 109.5$$

=> Ans - (C)

**Instructions [87 - 96 ]**

The following table gives Population and Activities of Indian Children (1993-94). Study the table carefully and answer these questions.

**POPULATION AND ACTIVITIES OF INDIAN CHILDREN (1993-94)****Percentage of Age Group**

<b>Age/Gender Groups</b>	<b>Total population (Millions)</b>	<b>In School</b>	<b>Not in School and Working</b>	<b>Not in School and not Working</b>	<b>Total Child Population not in School(Millions)</b>
Rural males (5-9)	39.7	67.2	1.3	31.5	13.02
Rural females (5-9)	35.7	56.2	3	40.8	15.63
Urban males (5-9)	11.3	84.1	0.3	15.2	1.79
Urban females (5-9)	10.2	80.1	1.3	18.6	2.02
Rural males (10-14)	36.1	76.6	12.8	10.6	8.44
Rural females (10-14)	30.3	55.7	30.3	14	13.42
Urban males (10-14)	11.7	87.2	7	5.8	1.5
Urban females (10-14)	10.5	81.6	13.1	5.3	1.93
<b>Total</b>	<b>185.5</b>				<b>57.79</b>

87. What is the average of Rural Males Population in millions ?

- A** 36.1
- B** 39.7
- C** 37.9
- D** 30.3

**Answer: C**

**Explanation:**

Population (in millions) of Rural males (5-9) = 39.7

Population (in millions) of Rural males (10-14) = 36.1

$$\Rightarrow \text{Required average} = \frac{39.7+36.1}{2} = 37.9$$

$\Rightarrow$  Ans - (C)

88. In which category of populatoin, there is the lowest percentage of children in the school ?

- A** Urban males 5-9
- B** Rural males 5-9
- C** Urban females 5-9
- D** Rural females 10-14

**Answer: D**

**Explanation:**

Percentage of children in school in category :

$$\text{Urban males (5-9)} = 84.1\%$$

Rural males (5-9) = 67.2%

Urban females (5-9) = 80.1%

Rural females (10-14) = 55.7% [MIN]

=> Ans - (D)

89. What is the approximate percentage of children of all categories not in school ?

A 40.8

B 31.5

C 30.5

D 31.13

**Answer: D**

**Explanation:**

Total number of children (in millions) not in school = 57.79

=> Required ratio =  $\frac{57.79}{185.5} \times 100 \approx 31.13\%$

=> Ans - (D)

90. What per cent is the ratio between urban males and rural males not in school ?

A 16

B 18

C 15.33

D None of these

**Answer: C**

**Explanation:**

Urban males (in millions) not in school =  $1.79 + 1.5 = 3.29$

Rural males (in millions) not in school =  $13.02 + 8.44 = 21.46$

=> Required % ratio =  $\frac{3.29}{21.46} \times 100 = 15.33\%$

=> Ans - (C)

91. What is the approximate number of children in millions who are working ?

A 17

B 18

**C** 19

**D** 16

**Answer: B**

**Explanation:**

The number of children who are working is to be determined from the 4th column from the left.

Rural males (5-9) working in millions =  $(1.3/100) \times 39.7 = 0.5161$  million

Rural females (5-9) working in millions =  $(3/100) \times 35.7 = 1.071$  million

And so on, doing approx calculations and adding up all results, the sum comes close to approx 18 million

92. **What is the approximate percentage of all categories of children not in school and not working ?**

**A** 20.06

**B** 21.56

**C** 22.36

**D** None of these

**Answer: D**

**Explanation:**

Number of children not in school and not working in all categories (in millions) :

$$= \left( \frac{31.5}{100} \times 13.02 \right) + \left( \frac{40.8}{100} \times 15.63 \right) + \left( \frac{15.2}{100} \times 1.79 \right) + \left( \frac{18.6}{100} \times 2.02 \right) + \left( \frac{10.6}{100} \times 8.44 \right) + \left( \frac{14}{100} \times 13.42 \right) +$$

$$\left( \frac{5.8}{100} \times 1.5 \right) + \left( \frac{5.3}{100} \times 1.93 \right)$$

$$= 14.08$$

$$\Rightarrow \text{Required \%} = \frac{14.08}{57.79} \times 100 \approx 24.36\%$$

$\Rightarrow$  Ans - (D)

93. **In which category of children, there is maximum number not in school and not working?**

**A** Rural females 10-14

**B** Rural males 5-9

**C** Rural females 5-9

**D** Urban males 10-14

**Answer: C**

**Explanation:**

Number of children (in millions) not in school and not working in the category :

$$\text{Rural females (10-14)} = \frac{14}{100} \times 13.42 = 1.88$$



$$\text{Rural males (5-9)} = \frac{31.5}{100} \times 13.02 = 4.10$$

$$\text{Rural females (5-9)} = \frac{40.8}{100} \times 15.63 = 6.37 \quad [\text{MAX}]$$

$$\text{Urban males (10-14)} = \frac{5.8}{100} \times 1.5 = 0.08$$

=> Ans - (C)

94. In which category of children, there is maximum number not in school but working?

**A** Rural males 10-14

**B** Rural females 10-14

**C** Urban females 10-14

**D** Urban males 10-14

**Answer: B**

**Explanation:**

Number of children (in millions) not in school but working in the category :

$$\text{Rural males (10-14)} = \frac{12.8}{100} \times 8.44 = 1.08$$

$$\text{Rural females (10-14)} = \frac{30.3}{100} \times 13.42 = 4.06 \quad [\text{MAX}]$$

$$\text{Urban females (10-14)} = \frac{13.1}{100} \times 1.93 = 0.25$$

$$\text{Urban males (10-14)} = \frac{7}{100} \times 1.5 = 0.10$$

=> Ans - (B)

95. What percentage of the total population of the children of all categories is in the school?

**A** 68.87

**B** 69.87

**C** 67.9

**D** 68.80

**Answer: A**

**Explanation:**

Total child population not in school (in millions) = 57.79

Total child population in school (in millions) =  $185.5 - 57.79 = 127.71$

$$\Rightarrow \text{Required \% ratio} = \frac{127.71}{185.5} \times 100$$

$$= 68.87\%$$

=> Ans - (A)

96. What approximately is the percentage ratio between the total number of children not in school and in school?

**A** 50.20

**B** 44.20

**C** 45.20

**D** 46.20

**Answer: C**

**Explanation:**

Total child population not in school (in millions) = 57.79

Total child population in school (in millions) =  $185.5 - 57.79 = 127.71$

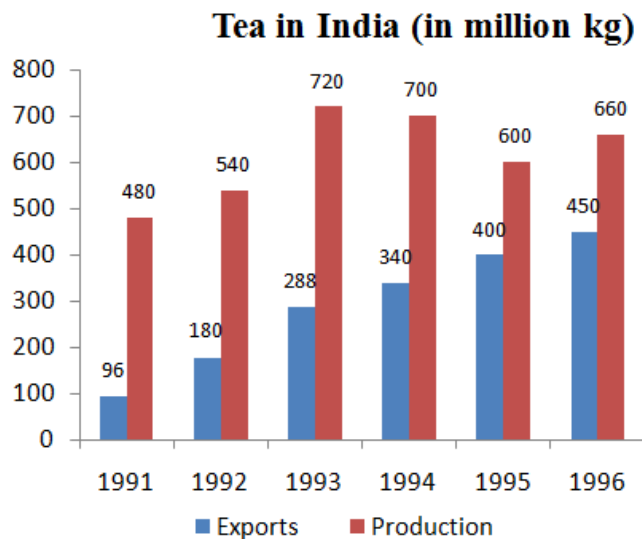
=> Required % ratio =  $\frac{57.79}{127.71} \times 100$

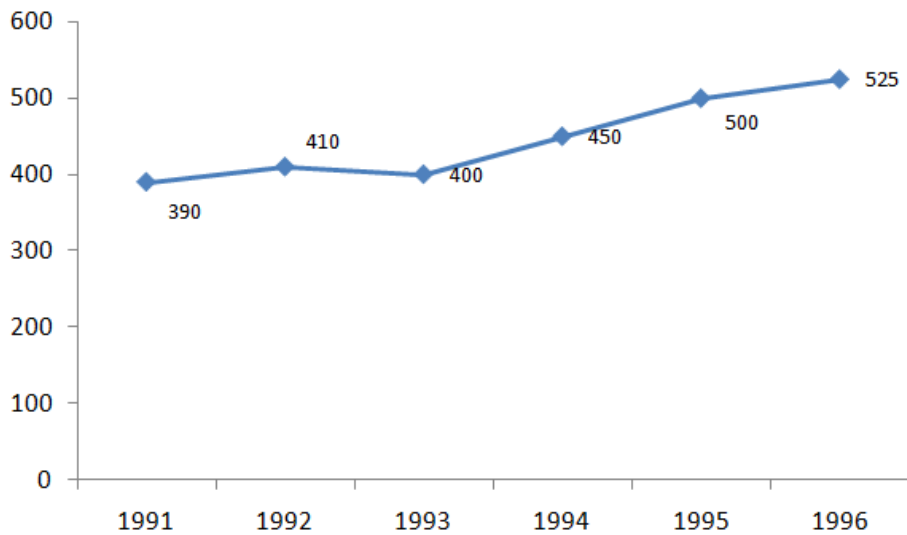
= 45.20%

=> Ans - (C)

**Instructions [97 - 106 ]**

Study the following graph and answer these questions given below it.





97. Which year shows the maximum percentage of export with respect to production?

- A 1992
- B 1993
- C 1996
- D 1995

**Answer: C**

**Explanation:**

Percentage of export with respect to production in the year

$$1992 = \frac{180}{540} \times 100 = 33.33\%$$

$$1993 = \frac{288}{720} \times 100 = 40\%$$

$$1996 = \frac{450}{660} \times 100 = 68.19\% \quad \text{[MAX]}$$

$$1995 = \frac{400}{600} \times 100 = 66.67\%$$

=> Ans - (C)

98. The population of India in 1993 was

- A 800 million
- B 1080 million
- C 985 million
- D 900 million

**Answer: B**

**Explanation:**

Tea available in India in 1993 =  $720 - 288 = 432$  million kg

Per capita availability in 1993 = 0.4 kg

=> Population =  $\frac{432}{0.4} = 1080$  million

=> Ans - (B)

99. If the area under tea production was less by 10% in 1994 than in 1993, then the approximate rate of increase in productivity of tea in 1994 was

**A** 97.2

**B** 3

**C** 35

**D** Cannot be determined

**Answer: D**

**Explanation:**

Since there is no data given about area, hence it cannot be determined.

=> Ans - (D)

00. The average proportion of tea exported to the tea produced over the period is

**A** 0.87

**B** 0.47

**C** 0.48

**D** 0.66

**Answer: B**

**Explanation:**

Total tea exported (in millions kg) =  $96+180+288+340+400+450 = 1754$

Total tea produced (in millions kg) =  $480+540+720+700+600+660 = 3700$

=> Required ratio =  $\frac{1754}{3700} = 0.47$

=> Ans - (B)

01. What is the first half decade's average per capita availability of tea ?

**A** 457 gm

**B** 535 gm

**C** 446 gm

**D** 430 gm

**Answer: D**

**Explanation:**

First half decade's (1991-1995) average per capita availability of tea

$$= \frac{(390+410+400+450+500)}{5}$$

$$= \frac{2150}{5} = 430 \text{ gm}$$

=> Ans - (D)

02. In which year was the per capita availability of tea minimum ?

**A** 1996

**B** 1994

**C** 1991

**D** None of these

**Answer: C**

**Explanation:**

Clearly, per capita availability of tea is minimum in the year **1991** which was 390.

=> Ans - (C)

03. In which year was there minimum percentage of export with respect to production?

**A** 1991

**B** 1992

**C** 1993

**D** 1994

**Answer: A**

**Explanation:**

Percentage of export with respect to production in the year :

$$1991 = \frac{96}{480} \times 100 = 20\% \quad \text{[MIN]}$$

$$1992 = \frac{180}{540} \times 100 = 33.33\%$$

$$1993 = \frac{288}{720} \times 100 = 40\%$$

$$1994 = \frac{340}{700} \times 100 \approx 50\%$$

=> Ans - (A)

04. In which year we had maximum quantity of tea for domestic consumption?

- A** 1994
- B** 1991
- C** 1993
- D** 1996

**Answer: C**

**Explanation:**

Maximum quantity of tea for domestic consumption was available in the year which has the highest production, i.e. **1993** producing 720 million kg.

=> Ans - (C)

05. **What approximately was the average quantity of tea available for domestic consumption during the period?**

- A** 324.3 million kg
- B** 400 million kg
- C** 410.3 million kg
- D** 320.3 million kg

**Answer: A**

**Explanation:**

The total production of tea in the 6 year period = 3700 million kg

The total export of tea in the 6 year period = 1754 million kg

Total quantity available for domestic consumption =  $3700 - 1754 = 1946$  million kg

Average qty available per year =  $1946/6 = 324.3$  million kg

06. **What was approximately the average population during the period?**

- A** 625 million
- B** 624 million
- C** 600 million
- D** 757 million

**Answer: D**

**Instructions [107 - 114]**

Study the table given below and answer these questions.

### MAJOR INDICATORS OF INDIA'S FOREIGN TRADE

Year	Exports Balance	Import GDP ratio %	Trade GDP ratio %	Exports	Import
1989-90	16613	21219	-4606	6.1	7.7
1990-91	18145	24073	-5928	6.1	8.1
1991-92	17865	19411	-1546	7.1	7.8
1992-93	18537	21882	-3345	7.6	9
1993-94	22238	23306	-1068	8	8.3
1994-95	26331	28654	-2323	8	8.7
1995-96	31795	36675	-4880	8.7	10.1
1996-97	33470	39132	-5662	8.4	99
1997-98	35006	41485	-6479	8.3	9.9
1998-99	33659	41858	-8199	8.1	10

07. In which period, did we have the most adverse trade balance for India ?

- A 1996-97
- B 1989-90
- C 1998-99
- D 1990-91

**Answer: C**

**Explanation:**

The period with the most adverse trade balance was **1998-99** having lowest trade balance equal to -8199.

=> Ans - (C)

08. What was the average % growth rate of exports during the entire period ?

- A 6.5
- B 9.56
- C 5.06
- D 10.26

**Answer: D**

**Explanation:**

% Growth rate of exports during the entire period.

$$= \frac{33659 - 16613}{16613} \times 100$$

$$\approx 102.60\%$$

$$\text{Thus, average growth for the 10 year interval} = \frac{102.60}{10} = 10.26\%$$

=> Ans - (D)

09. In which period was the trade balance the best ?

- A** 1998-99
- B** 1991-92
- C** 1994-95
- D** 1993-94

**Answer: D**

**Explanation:**

Clearly, trade balance is best in the period **1993-94** which was -1068 (maximum).

=> Ans - (D)

10. In which period the growth rate of exports was the highest?

- A** 1995-96
- B** 1993-94
- C** 1989-90
- D** None of these

**Answer: A**

**Explanation:**

Clearly, growth rate of exports is highest in the period **1995-96** which was 8.7

=> Ans - (A)

11. During which period the Export/Import ratio was the highest ?

- A** 1994-95
- B** 1993-94
- C** 1991-92
- D** 1995-96

**Answer: B**

**Explanation:**

Export/Import ratio in the period :

$$1994-95 = \frac{8}{8.7} = 0.91$$

$$1993-94 = \frac{8}{8.3} = 0.96 \quad \text{[MAX]}$$

$$1991-92 = \frac{7.1}{7.8} = 0.91$$

$$1995-96 = \frac{8.7}{10.1} = 0.86$$



=> Ans - (B)

12. What is the average growth rate of exports for the period 1992-93 to 1995-96?

- A 15
- B 15.75
- C 14
- D 17.88

**Answer: D**

**Explanation:**

% Growth rate of exports during the period 1992-93 to 1995-96

$$= \frac{31795 - 18537}{18537} \times 100$$

$$\approx 71.52\%$$

$$\text{Thus, average growth for the 4 year interval} = \frac{71.52}{4} = 17.88\%$$

=> Ans - (D)

13. What is the average Export/ Import ratio for the period 1992-93 to 1998-99?

- A 83.4
- B 86.3
- C 65.1
- D 87.0

**Answer: B**

14. Using Exports GDP ratio for the period 1989-90, find the GDP for the same period.

- A 272344
- B 275571
- C 273345
- D 275572

**Answer: A**

Study the table given below carefully and answer these questions.

**WATER SUPPLY PROJECTIONS FOR HYDERABAD**

Year	Population to be covered (million)	Water requirement (mid)	Actual or Projected supplies (mid)
1991	3.3	722	545
1994	4.35	913	680
2001	6.23	1105	1090
2011	8.19	1862	1906
2021	10.15	2224	1906

mid : Million litres per day

15. What is the average growth rate per year of population to be covered from 2001 to 2011?

- A 3.15%
- B 2.86%
- C 4%
- D 2%

**Answer: A**

**Explanation:**

Growth rate per year of population to be covered from 2001 to 2011

$$= \frac{8.19 - 6.23}{6.23} \times 100$$

$$\approx 31.5\%$$

$$\text{Now, average growth rate of 10 years} = \frac{31.5}{10} = 3.15\%$$

=> Ans - (A)

16. In which year was there maximum difference between water requirements and actual or projected supplies?

- A 1994
- B 2011
- C 2021
- D 1991

**Answer: C**

**Explanation:**

Difference in per capita water requirements and the actual or projected supplies in the year :

$$1994 = 913 - 680 = 233$$

$$2011 = 1862 - 1906 = -44$$

$$2021 = 2224 - 1906 = 318 \quad \text{[MAX]}$$

$$1991 = 722 - 545 = 177$$

=> Ans - (C)

17. In which year the actual or projected supplies exceeded/exceeds the water requirements?

**A** 2011

**B** 1994

**C** 2021

**D** None of these

**Answer: A**

**Explanation:**

Clearly in the year **2011**, the actual or projected supplies exceeded/exceeds the water requirements by :

$$= 1906 - 1862 = 44 \text{ mid}$$

=> Ans - (A)

18. What approximately is the maximum per capita of actual or projected supplies as litres/day ?

**A** 278.1

**B** 187.78

**C** 232.7

**D** 174.9

**Answer: C**

**Explanation:**

Per capita of water in actual or projected supplies in the year :

$$1991 = \frac{545}{3.3} \approx 165$$

$$1994 = \frac{680}{4.35} \approx 156$$

$$2001 = \frac{1090}{6.23} \approx 175$$

$$2011 = \frac{1906}{8.19} \approx 232.7 \quad \text{[MAX]}$$

$$2021 = \frac{1906}{10.15} \approx 188$$

=> Ans - (C)

19. In which year, there was the least difference in per capita water requirements and the actual or projected supplies?

**A** 2001

**B** 2011

**C** 1991

**D** 1994

**Answer: B**

**Explanation:**

Difference in per capita water requirements and the actual or projected supplies in the year :

$$2001 = 1105 - 1090 = 15$$

$$2011 = 1862 - 1906 = -44 \quad \text{[MIN]}$$

$$1991 = 722 - 545 = 177$$

$$1994 = 913 - 680 = 233$$

=> Ans - (B)

20. In which year, there was the lowest per capita of water in actual or projected supplies?

**A** 2021

**B** 2001

**C** 1994

**D** 1991

**Answer: C**

**Explanation:**

Per capita of water in actual or projected supplies in the year :

$$2021 = \frac{1906}{10.15} \approx 188$$

$$2001 = \frac{1090}{6.23} \approx 175$$

$$1994 = \frac{680}{4.35} \approx 156 \quad \text{[MIN]}$$

$$1991 = \frac{545}{3.3} \approx 165$$

=> Ans - (C)

## Intelligence & Critical Reasoning

### Instructions [121 - 130 ]

Read the following information carefully to answer these questions.

A sample poll of 200 votes revealed the following information concerning three candidates A, B and C of a certain party who were running for three different offices.

28 in favour of both A and B.

98 in favour of A or B but not C.

42 in favour of B but not A or C.  
122 in favour of B or C but not A.  
64 in favour of C but not A or B.  
14 in favour of A and C but not B.

21. How many voters were in favour of all the three candidates?

**A** 14

**B** 8

**C** 20

**D** 16

**Answer: B**

22. How many voters were in favour of all the three candidates?

**A** 78

**B** 64

**C** 42

**D** 56

**Answer: A**

23. How many voters were in favour of B irrespective of A or C?

**A** 78

**B** 62

**C** 48

**D** 86

**Answer: D**

24. How many voters were in favour of C irrespective of A or B?

**A** 78

**B** 102

**C** 88

**D** 86

**Answer: B**

25. How many voters were in favour of A and B but not C?

- A** 8
- B** 20
- C** 14
- D** 16

**Answer: B**

26. How many voters were in favour of only one of the candidates ?

- A** 58
- B** 78
- C** 106
- D** 142

**Answer: D**

27. How many voters were in favour of A and C but not B?

- A** 22
- B** 14
- C** 16
- D** 20

**Answer: B**

28. How many voters were in favour of C alone?

- A** 36
- B** 42
- C** 64
- D** 38

**Answer: C**

29. How many voters were in favour of B and C but not A?

- A 16
- B 14
- C 42
- D 64

**Answer:** A

30. How many voters were in favour of A and C but not B?

- A 16
- B 14
- C 36
- D 42

**Answer:** B

31. What is the next letter in the following series ? a, c, b, d, e?

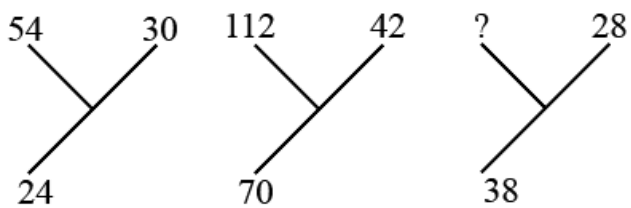
- A h
- B g
- C i
- D j

**Answer:** B

### Instructions [132 - 138 ]

In these questions, find the missing number.

32.



- A 76
- B 66

**C** 10

**D** None of these

**Answer: B**

**Explanation:**

In first diagram,  $24+30 = 54$

In second diagram,  $70+42 = 112$

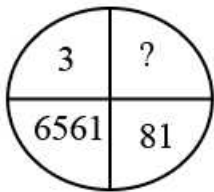
The logic here is the sum of bottom left number and top right number is equal to top left number.

Similarly,

In third diagram, required number =  $38+28 = 66$

Hence, the correct answer is Option B

33.



**A** 18

**B** 27

**C** 24

**D** 9

**Answer: D**

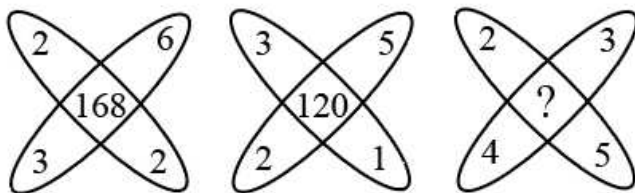
**Explanation:**

We can see that 6561 is the square of 81.

We will try substituting the blank with the square of 3 i.e. 9 and see whether the relationship holds.

And it does.  $3 \rightarrow 9 \rightarrow 81 \rightarrow 6561$

34.



**A** 240

**B** 195



**C** 84

**D** None of these

**Answer:** B

35.

3	5	8	7
4	6	4	6
5	2	2	3
<hr/>	<hr/>	<hr/>	<hr/>
58	58	62	?
<hr/>	<hr/>	<hr/>	<hr/>

**A** 126

**B** 122

**C** 128

**D** 124

**Answer:** D

**Explanation:**

The logic here is

$$58 = (3 \times 4 \times 5) - 2$$

$$58 = (5 \times 6 \times 2) - 2$$

$$62 = (8 \times 4 \times 2) - 2$$

$$\text{Similarly, the required number} = (7 \times 6 \times 3) - 2 = 126 - 2 = 124$$

Hence, the correct answer is Option D

36. **6, 15, 36, 75, ?**

**A** 231

**B** 138

**C** 214

**D** None of these

**Answer:** B

37. **5 : 7 :: ? : 28**

**A** 20

- B** 14
- C** 56
- D** None of these

**Answer: A**

**Explanation:**

The logic here is

$$7 \times 4 = 28 \longrightarrow \text{second number} \times 4 = \text{fourth number}$$

$$\text{Similarly, first number} \times 4 = \text{third number}$$

$$\therefore \text{Third number} = 5 \times 4 = 20$$

Hence, the correct answer is Option A

38. **15, 45, ?, 405**

- A** 90
- B** 75
- C** 135
- D** 51

**Answer: C**

**Explanation:**

We can see that  $15 \times 3 = 45$

So we can try putting  $45 \times 3 = 135$  in missing blank and then cross check whether  $135 \times 3$  equals 405.

We can see that the relationship holds and thus, the blank should be filled with 135.

**Instructions [139 - 148 ]**

In these questions, two statements are given followed by two conclusions I and II. You have to consider both the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions is/are definitely drawn from the given statements.

39. **Statements :**

**When it rains, usually X does not go out.**

**X has gone out.**

**Conclusions:**

**I. It is not raining.**

**II. X has some urgent business to transact.**

- A** If only I follows
- B** If only II follows
- C** If neither I nor II follows

**D** If both I and II follow

**Answer: C**

**Explanation:**

X may or may not go out if it is raining. So if X went out, we cannot say whether it is raining or not for sure. Also, the reason for X going out has nowhere been given to us. Hence, neither of the 2 follow.

40. **Statements :**

**In a Golf Club, all the members are not active players of the game but all of them are rich.**

**Mrs X is a member.**

**Conclusions:**

**I. She is a golfer.**

**II. She is rich.**

**A** If only I follows

**B** If only II follows

**C** If neither I nor II follows

**D** If both I and II follow

**Answer: B**

**Explanation:**

All members of the club are said to be rich and Mrs. X being a member, has to be rich too. Hence, II follows.

However, it is given that one need not be a golfer compulsorily to be member of the club. Hence, I cannot be said with complete certainty. Hence, only II follows.

41. **Statements :**

**All employees of company A have identity cards.**

**Ram is an employee of company A.**

**Conclusions :**

**I. Ram has an identity card.**

**II. Ram is the General Manager of the Company.**

**A** If only I follows

**B** If only II follows

**C** If neither I nor II follows

**D** If both I and II follow

**Answer: A**

**Explanation:**

Ram is an employee of the company A and all the employees of company A have identity cards. So Ram

has an identity card. Hence conclusion I follows.

There is no information about General Manager of company A from the statements. so conclusion II is unrelated and pointless. Hence conclusion II do not follow.

∴ Only conclusion I follows the given statements.

Hence, the correct answer is Option A

42. **Statements:**

**If there is shortage in the production of onions, the price of onions will go up.**

**Price of onions has gone up.**

**Conclusions :**

**I. There is shortage in the production of onions.**

**II. Onions were exported.**

**A** If only I follows

**B** If only II follows

**C** If neither I nor II follows

**D** If both I and II follow

**Answer: C**

**Explanation:**

Prices of onions can go up for reasons beyond and other than shortage in the production of onions. hence, conclusion 1 cannot be made with complete confidence. Conclusion 2 is irrelevant. Hence, C.

43. **Statements:**

**If all players play to their full potential, we will win the match.**

**We have won the match.**

**Conclusions:**

**I. All players played to their full potential.**

**II. Some players did not play to their full potential.**

**A** If only I follows

**B** If only II follows

**C** If neither I nor II follows

**D** If both I and II follow

**Answer: C**

**Explanation:**

The first statement "If all players play to their full potential, we will win the match." does not mean that the match will be won ONLY if all players play to full potential. The guarantee is only one directional.

Hence, even if the match was won, it is not assured that all players must have played to their full potential.

Also, the second conclusion cannot be said to have occurred definitely. Either conclusion 1 happened or conclusion 2 happened. None can be said to have occurred with complete certainty. Hence, neither of the 2 follow.

44. **Statements :**

**Some businessmen are rich.**

**Soman is rich.**

**Conclusions :**

**I. Soman is a businessman.**

**II. Soman has a big farm.**

**A** If only I follows

**B** If only II follows

**C** If neither I nor II follows

**D** If both I and II follow

**Answer: C**

**Explanation:**

Even though some businessmen are rich and Sonam is also rich, it doesn't necessarily mean that Sonam is also a businessman.

Also, there is no relevance of owning a farm. Hence, none of the 2 conclusions follow.

45. **Statements :**

**All persons who own a house or a car should file Income Tax return.**

**Shiela files her income tax return.**

**Conclusions:**

**I. Shiela owns a house or a Car.**

**II. Shiela neither owns a house nor a Car.**

**A** If only I follows

**B** If only II follows

**C** If either I or II follows

**D** If both I and II follow

**Answer: C**

**Explanation:**

It is not necessary that only people who own house/car/both file income tax return. So it is perfectly valid that Shiela doesn't own either of these and yet files income tax return.

However, from the given statements of conclusion, we know clearly that either Shiela owns house/car or she doesn't own any at all. There be no common ground nor a situation other than these 2. Hence, either I follows or II.

46. **Statements :**

**In order to be selected for the local cricket team, a person should be either a good batsman or bowler.**

**Shyam is selected for the team.**

**Conclusions:**

**I. Shyam is a good batsman.**

**II. Shyam is not a good bowler.**

- A** If only I follows
- B** If only II follows
- C** If neither I nor II follows
- D** If both I and II follow

**Answer: C**

**Explanation:**

Shyam got selected in the team means that:

1. He is a good batsman

OR 2. He is a good bowler

OR 3. He is both a good bowler and a good batsman

Any of these 3 situations is possible. If Shyam is a good batsman doesn't mean that he is a bad bowler. We only know that he is a good batsman and thus, got selected to the team. Same logic applies if Shyam is a good bowler.

Hence, neither I or II follows with certainty.

47. **Statements:**

**Without rains the crops will not be good.**

**The crops were good.**

**Conclusions :**

**I. There were rains.**

**II. Crops were good due to good fertilizers.**

- A** If only I follows
- B** If only II follows
- C** If neither I nor II follows
- D** If both I and II follow

**Answer: A**

**Explanation:**

We are told that crops cannot be good if rains do not happen. And then we are given that crops turned out to be good.

Hence, it follows rationally that rains happened. Hence, I follows.

There is no mention of fertilizers or their effect on crops. Hence, nothing can be said about II. Hence, only I follows.

48. **Statements:**

**According to the evolution theory, man evolved from a monkey.**

**X is a monkey.**

**Conclusions:**

**I. X can become a man.**

**II. Man can become a monkey.**

**A** If only I follows

**B** If only II follows

**C** If neither I nor II follows

**D** If both I and II follow

**Answer: C**

**Explanation:**

We are given that man evolved from a monkey. However, it is not given how much time the evolution actually took. It can be anything.

So even if X is a particular monkey, it may or may not live long enough to evolve into a man.

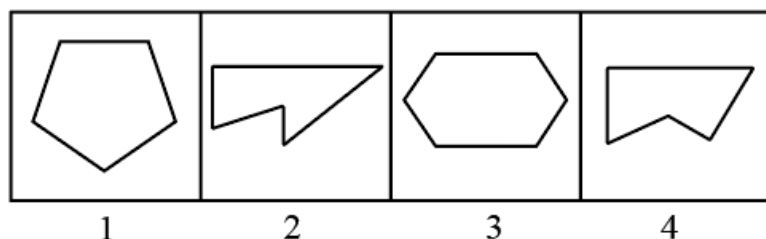
Hence, we cannot say that X can become a man.

Also, the question of man becoming a monkey again does not arise because we are not given whether the evolution is unidirectional or reversible. Hence, none follow.

### Instructions [149 - 153 ]

In these questions, select the odd one out.

49.



**A** 1

**B** 2

**C** 3

**D** 4

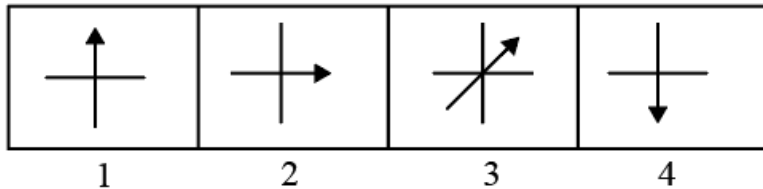
**Answer: A**

**Explanation:**

In the given figures, Only the figure 1 is a regular polygon with all sides and interior angles are equal. In other figures the sides are irregular and not equal.

∴ Figure 1 is the odd one among the given figures.

50.



**A** 2

**B** 1

**C** 4

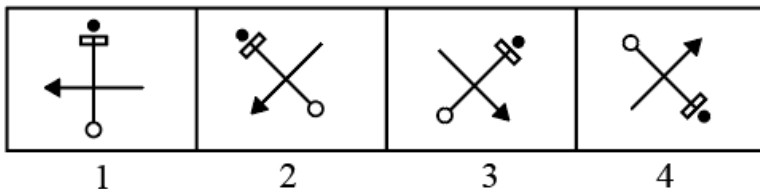
**D** 3

**Answer: D**

**Explanation:**

The arrowed line is perpendicular to the plain segment in all of 1, 2, 4. Only in 3 there is a deviation from this pattern. Hence, odd one out.

51.



**A** 2

**B** 1

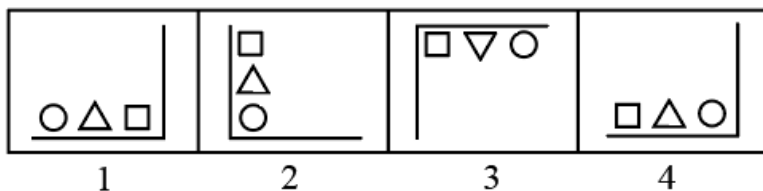
**C** 3

**D** 4

**Answer: C**



52.



**A** 3

**B** 2

**C** 4

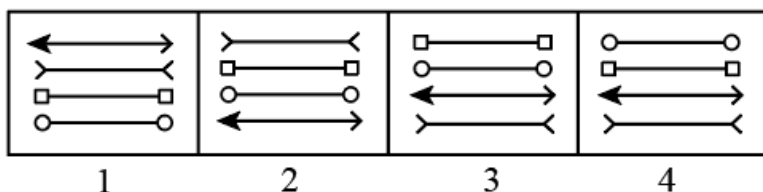
**D** 1

**Answer: B**

**Explanation:**

In 1, 3, 4 all the three figures are aligned along the horizontal segment of the figure. Only in 2 are they aligned with the vertical line. Hence, 2 is the odd one out.

53.



**A** 3

**B** 4

**C** 2

**D** 1

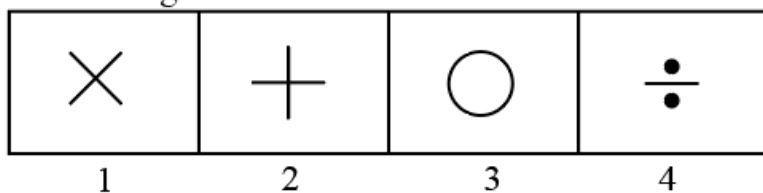
**Answer: A**

54. Four positions of a cube are shown below. Which symbol is opposite to the face having ' $\triangle$ '

Question Figures



Answer Figures



**A** 3

**B** 1

**C** 2

**D** 4

**Answer: C**

### Instructions [155 - 158 ]

Read the following information carefully and answer these questions.

In a certain coding system,

'816321' means "The brown dogfrightened the cat",

'64851' means "The frightened cat ran away",

'7621' means "The cat was brown",

'341' means "The dog ran"

55. **What is the code for 'the dog was frightened'?**

**A** 8263

**B** 8731

**C** 5438

**D** None of these

**Answer: B**

### Explanation:

From statements 1 and 3 we can say that only brown is left common and "2" is unassigned common number.

Hence, "brown" = 2

Consequently, "was" = 7

From statements 1 and 4, dog will stand for "3" as "the" has already been assigned 1.

Hence, the statement 'the dog was frightened' will be coded as: 1-3-7-8 in any order.

This is reflected in option B

56. **What is the code for 'frightened' ?**

**A** 2

**B** 6

**C** 3

**D** 8

**Answer: D**

**Explanation:**

57. What is the code for 'away' ?

**A** 5

**B** 7

**C** 6

**D** 1

**Answer: A**

**Explanation:**

The word "away" appears only in the second sentence.

And the only unique number in the code for the second sentence is 5.

hence, "away" = 5

58. What is the code for 'brown' ?

**A** 2

**B** 4

**C** 6

**D** 8

**Answer: A**

**Explanation:**

Sentences 1 and 3 have "brown" in common now and only "2" in common

Hence, "brown" = 2

59. In how many ways can 7 people be seated at a roundtable if 2 particular people must not sit next to each other?

**A** 5040

**B** 240

**C** 480

**D** 720

**Answer: C**

60. In a certain coding system ETTPI stands for APPLE. What is the code for 'DELHI' ?

- A** CQMNP
- B** HIPLM
- C** PMULM
- D** CQPLM

**Answer: B**

**Explanation:**

Let the alphabets be numbered as A = 1, B = 2 up to Z = 26

Thus, if A gets coded to E, P gets coded to T, it means each alphabet moves 4 steps ahead in the coding system.

Hence, D moves forward to H, E moves forward to I and so on.

Hence, DELHI gets coded to H-E-P-L-M

### Indian & Global Development

61. William M Daley who was part of the US President's delegation to India is the

- A** Secretary of State for Commerce
- B** Chairman of the Committee on Foreign Affairs
- C** Asst. Secretary of State for Information Technology
- D** Leader of the House of Representatives

**Answer: A**

62. Where was the last round of talks for the WTO held in November-December 1999?

- A** Sydney
- B** London
- C** Washington
- D** Seattle

**Answer: D**

63. Who played the role of Saket Ram in the controversial film Hey Ram?

- A** Shah Rukh Khan
- B** Kamal Hassan
- C** Naseeruddin Shah
- D** Om Puri

**Answer: B**

64. **The present Pope went on a historic tour of which region in March 2000?**

- A** Russia
- B** Greece
- C** Israel and Jordan
- D** Turkey

**Answer: C**

65. **Nokia is going to begin shipping 1 million WAP phones every week which will allow the user to browse the Internet through the mobile phone. What does WAP stand for ?**

- A** Windows Applications Protocol
- B** Wireless Applications Protocol
- C** Windows Alpha Project
- D** Wireless Alpha Project

**Answer: B**

66. **15th World Chess Championship was won by**

- A** Viswanathan Anand
- B** Anatoly Karpov
- C** Karnam Malleswari
- D** Leander Paes

**Answer: A**

67. **Which city in the world has the distinction of hosting the most cricket matches ?**

- A** London (Lords)
- B** Melbourne
- C** Calcutta
- D** Sharjah

**Answer: A**

68. **Who was the last President of the US to serve for two terms before Mr Bill Clinton?**

- A** John F Kennedy
- B** Ronald Reagan
- C** George Bush
- D** Jimmy Carter

**Answer: B**

69. **We have all heard of a venture capitalist in the IT industry. Who or what is an angel investor?**

- A** Someone who puts money in the beginning of the project and usually does not expect returns on the investment.
- B** Someone who puts money in an internet company that is running into losses.
- C** Someone who gives only technical consultancy for the project.
- D** None of the above

**Answer: A**

70. **Who is the Supreme Commander of the Indian Armed Forces?**

- A** Prime Minister
- B** Defence Minister
- C** President
- D** Chief of the Army Staff

**Answer: C**

71. **Which company has been listed as the highest spender on advertisements?**

- A** Reliance
- B** Hindustan Lever
- C** Dabur India
- D** Nestle India

**Answer: B**

72. **Salman Khan and Sunil Shetty have been recruited as part of which campaign in the year 2000?**

- A** Coke
- B** Pepsi
- C** Thumps Up
- D** Kawasaki Bajaj

**Answer: C**

73. **What is the present level of Indo-US trade?**

- A** \$ 5-6 billion
- B** \$ 8-9 billion
- C** \$ 11-12 billion
- D** \$ 20 billion

**Answer: C**

74. **Bill Clinton is the fourth US President to visit India. Who was the first US President to visit India?**

- A** D Eisenhower
- B** John F Kennedy
- C** Richard Nixon
- D** Lyndon B Johnson

**Answer: A**

75. **Who among the following holds the Telecom Ministry in the present NDA government?**

- A** Nitish Kumar

- B** Mamta Bannerjee
- C** Ram Vilas Paswan
- D** None of the above

**Answer: C**

76. **Who is the Chief Election Commissioner of India at present?**

- A** N Vittal
- B** MS Gill
- C** Arun Jaitley
- D** TN Seshan

**Answer: B**

77. **Bill Gates recently stepped down as the CEO of Microsoft but announced that he will take a new post to "focus on technologies of the future". What is this post?**

- A** Chairman and Chief Software Architect
- B** Managing Director
- C** President
- D** All of the above

**Answer: A**

78. .... is not a member of ASEAN.

- A** Pakistan
- B** Singapore
- C** Malaysia
- D** Indonesia

**Answer: A**

79. **Which famous war hero said : "You are remembered for the rules you break"?**

- A** Douglas MacArthur
- B** Napoleon



- C** Rommel
- D** Lawrence of Arabia

**Answer: A**

80. **Who is associated with Narmada Bachao Andolan?**

- A** AB Vajpayee
- B** Medha Patkar
- C** Mamata Bannerjee
- D** Sunder Lal Bahuguna

**Answer: B**

81. **Name the actress who played the leading role in the film Elizabeth directed by Shekhar Kapoor?**

- A** Cate Blanchet
- B** Demi Moore
- C** Nandita Das
- D** Meryl Streep

**Answer: A**

82. **The Romantics is the first fiction work of which writer?**

- A** Raj Kamal Jha
- B** Salman Rushdie
- C** Tarun Tejpal
- D** Pankaj Mishra

**Answer: D**

83. **The Upper House of Parliament is known as**

- A** Parliament House

- B** Rashtrapati Bhawan
- C** Rajya Sabha
- D** Lok Sabha

**Answer: C**

84. **The US attacked terrorists training camps in Afghanistan belonging to Osama Bin Laden. To which country does he originally belong to?**

- A** Saudi Arabia
- B** Iraq
- C** Iran
- D** Yemen

**Answer: A**

85. **Which country did Saddam Hussein invade that sparked off the Gulf War?**

- A** Jordan
- B** Iran
- C** Saudi Arabia
- D** Kuwait

**Answer: D**

86. **The satellite-based personal communications company Iridium, which had to shut down its services, is a subsidiary company of which US giant?**

- A** General Electric
- B** US Robotics
- C** Motorola
- D** AT & T

**Answer: C**

87. **Miss World 2000 title has been won by**

- A** Aishwarya Rai
- B** Sushmita Sen
- C** Priyanka Chopra
- D** Diya Mirza

**Answer: C**

88. In radio, what does SW stand for ?

- A** Short Wave
- B** Slim Wave
- C** Sholowsky Wave
- D** None of the above

**Answer: A**

89. Shekhar Kapoor is working on film project with which of the following famous composers?

- A** John Williams
- B** Andrew Lloyd Webber
- C** Elton John
- D** Paul McCartney

**Answer: B**

90. Which of the following did India not want to be part of the last WTO talks ?

- A** Labour standards
- B** Environmental standards
- C** Textile quotas
- D** Labour and Environmental Standards

**Answer: D**

91. Which multi-purpose vehicle was launched by Toyota this year in India?

- A** Qualis

- B** Land Cruiser
- C** Wagon R
- D** Land Rover

**Answer: A**

92. **Which artist's autobiography is titled "Autobiography of a Genius"?**

- A** Winston Churchill
- B** ZA Bhutto
- C** Otto Von Bismark
- D** None of these

**Answer: D**

93. **With which airlines does Virgin Atlantic have a strategic tie-up?**

- A** United Airlines
- B** British Airways
- C** Singapore Airlines
- D** None of these

**Answer: D**

94. **Which of the following cities was not visited by President Mr Bill Clinton during his trip to India?**

- A** Bangalore
- B** Mumbai
- C** Hyderabad
- D** Agra

**Answer: A**

95. **KS Sudarshan took over as the head of which organisation recently?**

- A** Vishwa Hindu Parishad

- B** Rashtriya Swayamsewak Sangh
- C** Swadeshi Jagran Manch
- D** Bharatiya Mazdoor Sangh

**Answer: B**

96. In which city was the film Water being shot before it was halted due to protests?

- A** Dethi
- B** Allahabad
- C** Kanpur
- D** Varanasi

**Answer: D**

97. Who said ; "I do not fear computers, I fear the lack of them."

- A** Ray Bradbury
- B** Isaac Newton
- C** Thomas Edison
- D** Isaac Asimov

**Answer: D**

98. Which is the newly-formed ministry of the Government of India?

- A** Ministry of IT
- B** Ministry of I & B
- C** Ministry of S & T
- D** Ministry of Environment

**Answer: A**

99. When was the last time that India won the Gold medal in Hockey in the Olympics ?

- A** 1992
- B** 1980

**C** 1964

**D** 1972

**Answer: B**

100. Recently Bill Gates became the first man to cross the 100 billion dollars mark. According to economists this means that only ..... nations have an economic output higher than that of Bill Gates.

**A** More than 50

**B** Less than 42

**C** 60

**D** 80

**Answer: B**