

QUANTITATIVE APTITUDE

- There were 'n' employees in an office. Then employees were increased by 'p%' and 'q%' employees left yet the office had 'n' number of employees remained in the office. The value of p – q is
 (a) $\frac{p}{q}$ (b) pq (c) $\frac{pq}{100}$ (d) None of the above
- The balance of a trader weight 10% less than it should be still the trader marks up his goods to get the overall profit of 20%. What is the markup on the cost price.
 (a) 20% (b) 10% (c) 18% (d) 8%
- Cost price of 12 oranges is equal to the selling price of 9 oranges and discount on 10 oranges is equal to profit on 5 oranges. What is the percentage point difference between the profit percentage and discount percentage.
 (a) 20% (b) 22.22% (c) 16.66% (d) 15%
- C.P. of two bikes is same. One is sold at a profit of 15% and the other for Rs.4800 more than first. If the net profit is 20%, find the cost price of each motor cycle .
 (a) Rs.48000 (b) Rs.52000 (c) Rs.36000 (d) Rs.42500
- A sum of Rs.390200 is to be paid back in three equal annual installments. What is the amount of each installment at 4% p.a. and interest compounded annually.
 (a) 140608 (b) 120560 (c) 100000 (d) 180000
- A person divided Rs.340000 between his 2 sons aged 10 year and 12 year in such a way that each could get an equal amount when they attain 18 year of age if rate is 10% p.a. simple interest. Find share of elder son.
 (a) Rs.240000 (b) Rs.260000 (c) Rs.12000 (d) Rs.180000
- A, B and C can complete a price of work in 15, 30 and 40 days respectively. They started the work together and A left the job 2 days and B left the job 4 days before the completion of work. In how many days was the work completed?
 (a) Not possible (b) $10\frac{2}{15}$ days (c) $7\frac{3}{10}$ days (d) None of these
- In 'm' men can do a work in 'r' day then the number of days taken by (m+n) men to do it is
 (a) $\frac{m+n}{mn}$ (b) $\frac{m+n}{mr}$ (c) $\frac{mr}{m+n}$ (d) $\frac{(m+n)}{mn}r$
- A fast train crosses a slow train in 20 seconds. The speed of the fast train is 72 km/hr and speed of the slow train is 27 km/hr. If they are moving in the same direction and length of faster train is 100m. Find the length of the slower train.
 (a) 100m (b) 125m (c) 150m (d) 200m
- A can win B by 250 m in a 2 km race. What should be the change in distance of start up so that B must cover 20% less distance than A in the same time.
 (a) 50m (b) 100m (c) 125m (d) 150m
- At what time after 3:10 am, the acute angle made by the minute and hour hand is double to that of 3 : 10 am for the first time.
 (a) 4:43am (b) 3:48 am (c) $3:29\frac{1}{11}$ am (d) None of these
- Rs.69 were divided among 115 students so that each girl gets 50p less than a boy. Thus each received twice the paise than each girls received. The number of girls in the class is.
 (a) 92 (b) 42 (c) 33 (d) 23
- The slant height of a conical tent made of canvas is $14\frac{1}{3}$ m. the radius of ten is 2.5m. The width of the canvas cloth is 1.25 m. If rate of canvas per meter is Rs.33, then the total cost of the canvas required for the tent is
 (a) 726 (b) 950 (c) 960 (d) 968
- Two cubes whose each edge is 15cm, are joined together to form a single cuboid. What is the total surface area of the new cuboid so formed?
 (a) 1820 cm^2 (b) 2250 cm^2 (c) 2150 cm^2 (d) 1950 cm^2
- The area of an equilateral triangle inscribed in a circle is $16\sqrt{3}m^2$. Find the area of circle (in terms of π).

- (a) $5\frac{1}{3}\pi\text{ cm}^2$ (b) $3\frac{1}{21}\pi\text{ cm}^2$ (c) $21\frac{2}{3}\pi\text{ cm}^2$ (d) $21\frac{1}{3}\pi\text{ cm}^2$
16. Four isosceles triangle are cut off from the corner of square of area 400m^2 find the area of new smaller square.
 (a) 400 (b) $\frac{200}{\sqrt{2}}$ (c) 200 (d) $100\sqrt{2}$
17. 64 small cubes of 1 cm^3 are to be arranged in a cuboidal shape in such a way that the surface area will be minimum. What is the length of diagonal of the larger cuboid?
 (a) $8\sqrt{2}\text{ cm}$ (b) $\sqrt{273}\text{ cm}$ (c) $4\sqrt{3}\text{ cm}$ (d) 4cm
18. The diagonals of the three faces of a cuboid are x, y and z respectively. Find the volume of cuboid?
 (a) $\frac{xyz}{2\sqrt{2}}$
 (b) $\frac{\sqrt{(y^2+z^2-x^2)(z^2+x^2-y^2)(x^2+y^2-z^2)}}{2\sqrt{2}}$
 (c) $\frac{\sqrt{(y^2+z^2)(z^2+x^2)(x^2+y^2)}}{2\sqrt{2}}$
 (d) None of these
19. A hollow cylindrical tube open at both ends is made of iron 1 cm thick. Find the volume of iron used in making the tube, if the external diameter is 12cm and the length of tube is 70cm.
 (a) 2420 cm^2 (b) 2520 cm^2 (c) 2720 cm^2 (d) 2900 cm^2
20. If $(x+2)$ is the H.C.F. of x^2+ax+b and x^2+cx+d ($a \neq c$ & $b \neq d$) then which one of the following is correct?
 (a) $a+b=b+d$ (b) $2a+b=2c+d$ (c) $b+2c=2a+d$ (d) $b-2c=2a-d$
21. If $\frac{5}{x}+6y=13$ and $\frac{3}{x}+4y=7$ then find the value of y .
 (a) -2 (b) 3 (c) 4 (d) 5
22. If $a^{1/3}+b^{1/3}+c^{1/3}=0$, then
 (a) $a+b+c=0$ (b) $a+b+c=3abc$
 (c) $a^3+b^3+c^3=0$ (d) $(a+b+c)^3=27acb$
23. If $\frac{x}{(b-c)(b+c-2a)} = \frac{y}{(c-a)(c+a-2b)} = \frac{z}{(a-b)(a+b-2c)}$, then the value of $(x+y+z)$ is
 (a) $a+b+c$ (b) 0 (c) $a^2+b^2+c^2$ (d) can't be determined
24. If $x=7+4\sqrt{3}$ and $xy=1$, then the value of $\left(\frac{1}{x^2}+\frac{1}{y^2}\right)$ is
 (a) 194 (b) 57 (c) $85\sqrt{3}$ (d) $\frac{7+4\sqrt{3}}{7-4\sqrt{3}}$
25. If $a+b+c=3, a^2+b^2+c^2=6$ and $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=1$, where a, b & c are all non zero, then abc is
 (a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{2}$ (d) 1
26. What are the fraction of $\left(\frac{1}{3}x^2-2x-9\right)$?
 (a) $\frac{1}{3}(x-9)(x+3)$ (b) $\frac{1}{3}(x-9)(x-3)$ (c) $\frac{1}{3}(x+9)(x+3)$ (d) $\frac{1}{3}(x+9)(x-3)$
27. The value of x in the solution of this equation $2^{x+y}=2^{x-y}=\sqrt{8}$ is

- (a) 0 (b) $\frac{3}{2}$ (c) $\frac{1}{4}$ (d) $\frac{1}{8}$
28. If $x + \frac{1}{x} = \sqrt{3}$, then find the value of $x^{18} + x^{12} + x^6 + 1$
 (a) 0 (b) 1 (c) 2 (d) 3
29. If $x^2 + y^2 + \frac{1}{x^2} + \frac{1}{y^2} = 4$ then the value of $x^2 + y^2$ is
 (a) 2 (b) 4 (c) 8 (d) 16
30. If the sum of $\frac{a}{b}$ and its reciprocal is 1 and $a \neq 0, b \neq a$, then the value of $a^3 + b^3$ is
 (a) 2 (b) -1 (c) 0 (d) 1
31. Smaller diagonals of a parallelogram is 10cm and an angle of the parallelogram is $\frac{\pi}{4}$. If its height be 8 cm then find area of parallelogram.
 (a) 112 cm² (b) 88 cm² (c) 92 cm² (d) 104 cm²
32. Three circles each of unit radius touch each other at P, Q and R. what is the sum of length of arcs PQ, QR, & PR?
 (a) $\sqrt{3}\pi$ (b) $2\sqrt{2}\pi$ (c) π (d) None of these
33. The diameter of a circle is 80 cm. the radii (in cm) of their concentric circles drawn in such a manner that the whole area is divided into four equal parts.
 (a) $20\sqrt{2}, 20\sqrt{3}, 20$
 (b) $\frac{10\sqrt{3}}{3}, \frac{10\sqrt{2}}{3}, \frac{10}{3}$
 (c) $10\sqrt{3}, 10\sqrt{2}, 10$
 (d) 17, 14, 9
34. A square and rhombus have the same base. If the rhombus is inclined at 60°, find the ratio of area of square to the area of the rhombus.
 (a) $2 : \sqrt{3}$ (b) $1 : \sqrt{3}$ (c) $\sqrt{3} : 2$ (d) None of these
35. The speed of a boat in upstream is $\frac{2}{3}$ that of downstream. Find the ratio of speed of boat in still water and to the speed of the current.
 (a) $\frac{24}{25}$ (b) $\frac{5}{1}$ (c) $\frac{5}{12}$ (d) None of these
36. The height of a cone is 30cm. a small cone is cut off at the top by a plane parallel to the base. If its volume be $\frac{1}{27}$ th of volume of the given cone, at what height above the base is the section made?
 (a) 19 cm (b) 20 cm (c) 12 cm (d) 15 cm
37. The height of the right pyramid whose area of the base is 30m² and volume is 500 m³, is
 (a) 50 m (b) 60 m (c) 40 m (d) 20 m
38. The base of a prism is a right angled triangle with two sides 5 cm and 12cm. the height of the prism is 10cm. the total surface area of the prism is
 (a) 360 sq. cm (b) 300 sq. cm (c) 330 sq. cm (d) 325 sq. cm
39. In an equilateral triangle of side 24cm, a circle is inscribed touching its sides. The area of the remaining portion of the triangle ($\sqrt{3} = 1.732$)
 (a) 98.55 sq. cm (b) 100 sq. cm (c) 101 sq. cm (d) 95 sq. cm
40. The base of a right prism is an equilateral triangle. If the lateral surface area and volume is 120 cm², $40\sqrt{3}$ cm³ respectively then the side of base the prism is
 (a) 4 cm (b) 5 cm (c) 7 cm (d) 40 cm

41. Perimeter of a rhombus is $2p$ unit and sum of length of diagonals is m unit, then area of the rhombus is
- (a) $\frac{1}{4}m^2p$ sq.unit
 (b) $\frac{1}{4}mp^2$ sq. unit
 (c) $\frac{1}{4}(m^2 - p^2)$ sq. unit
 (d) $\frac{1}{4}(p^2 - m^2)$ sq. unit
42. The diameter of the base of a right circular cone is 4cm and its height is $2\sqrt{3}$ cm. The slant height of the cone is
- (a) 5cm (b) 4cm (c) $2\sqrt{3}$ cm (d) 3cm
43. The length of canvas 1.1 m wide required to build a conical tent of height 14m and the floor area 346.5 m^2 is
- (a) 665 m (b) 525m (c) 490 m (d) 860 m
44. There is a cylindrical pipe. Its height is 20 m outer radius is 2m and inner radius is 1.5m. Find the volume of the metal used in the pipe.
- (a) 110 m^3 (b) 210 m^3 (c) 180 m^3 (d) 220 m^3
45. Water flows through cylindrical pipe of internal diameter 7cm at 2m per second. If the pipe is always half full, then what is the volume of water (in litres) discharged per hour.
- (a) 2310 (b) 3850 (c) 13860 (d) 9240
46. Calculate the mean deviation for the following data

Heights in cms	50	57	62	70	75	65
No. of pupil	15	20	25	30	35	40

- a) 5 (b) 4 (c) 5.9 (d) 4.5
47. Three unbiased coins are tossed. What is the probability of getting at most 2 heads?
- (a) $\frac{1}{4}$ (b) $\frac{3}{8}$ (c) $\frac{7}{8}$ (d) $\frac{1}{2}$
48. Ticket numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn bears a number which is multiple of 3?
- (a) $\frac{3}{20}$ (b) $\frac{3}{10}$ (c) $\frac{2}{5}$ (d) $\frac{1}{2}$
49. A bag contains 4 red, 5 yellow and 6 green balls. 3 balls are drawn randomly. What is the probability that the balls drawn contain no yellow ball?
- (a) $\frac{24}{91}$ (b) $\frac{33}{91}$ (c) $\frac{12}{65}$ (d) Data Inadequate
50. There are 5 boys and 4 girls. They sit in a row randomly. what is the chance that all the girls sit together?
- (a) $\frac{6!}{9!}$ (b) $\frac{5!}{9!}$ (c) $\frac{5!}{10!}$ (d) None of these

REASONING ABILITY

Directions (51): Study the following information carefully to answer the given question.

Six friends A, B, C, D, E, F sitting in a row Facing South. A sits third left of B and Both are not sits any extreme end. C is neighbour of D.

51. Who sits second left of E?
 a) A b) B c) C d) Can't be determined

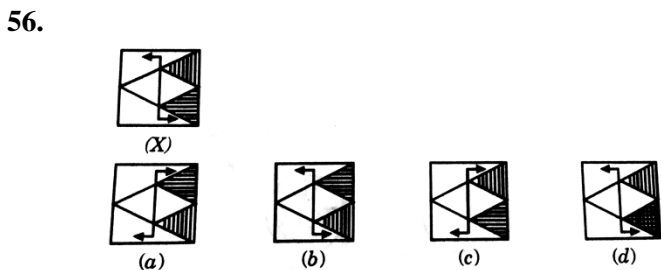
Directions (52-54): A cube is coloured red on one face, green on the opposite face, yellow on another face and blue on a face adjacent to the yellow face. The other two faces are left uncoloured. It is then cut into 125 smaller cubes of equal size.

52. How many cubes are uncoloured on all the faces?
 a) 64 b) 48 c) 36 d) 27
53. How many cubes have at least two coloured faces?
 a) 23 b) 21 c) 19 d) 16
54. How many cubes are coloured red on one face and have the remaining faces uncoloured?
 a) 16 b) 12 c) 20 d) 8

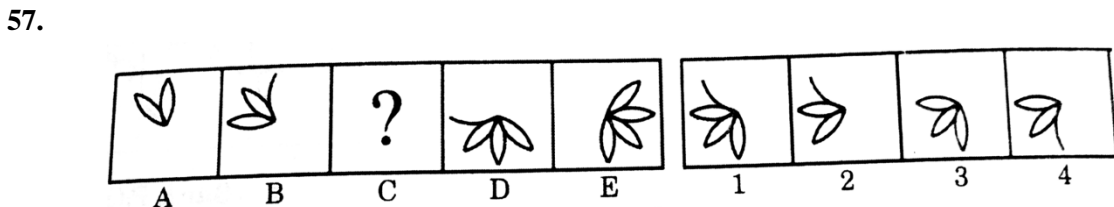
Direction (55): In the following question, you are given a combination of alphabets and/or numbers followed by four alternatives a), b), c) and d). Choose the alternative which most closely resembles the water image of the given combination.

55. **monday**
 (a) **yadnom** (b) **γsbnom**
 (c) **λeouow** (d) **ωουqελ**

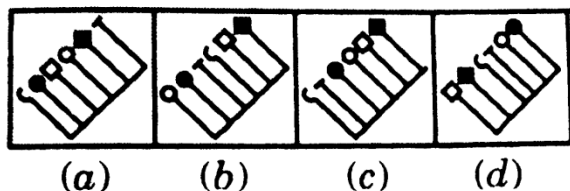
Directions (56): In the following question, choose the correct water-image of the Fig. (X) from amongst the four alternatives a), b), c) and d) given along with it.



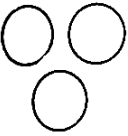
Directions (57): In the following questions, there are two Problem Figures (un-numbered figures) followed by four Answer Figures (numbered as 1, 2, 3 and 4). There are certain common characteristics/properties between the two Problem Figures. Select a figure from amongst the Answer Figures which shows similar characteristics/properties as shown by the Problem Figures.



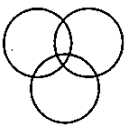
Directions (58): In the problem, out of the four figures marked a), b), c) and d), four are similar in a certain manner. However, one figure is not like the other four. Choose the figure which is different from the rest.



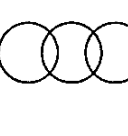
Direction (59-60): Select the related letter/word/number from the given alternatives.

59. ADHM : ZWSN :: CFJO : ?
 a) ZVRM b) YRVM c) YMVR d) None of these
60. 3 : 234 :: 5 : ?
 a) 425 b) 465 c) 546 d) 456
61. Find out the set of number amongst the four sets of numbers given in the alternatives which is the most like the set given in the question.
 Given set (23, 29, 37)
 a) (17, 21, 29) b) (31, 37, 49) c) (13, 15, 23) d) (41, 47, 53)
62. In a class, the names of boys are arranged alphabetically. Gaurav and Saurabh have 14 boys between them. If Gaurav is 37th from the bottom, Saurabh would be at what position from the top?
 a) 25th b) 28th c) 27th d) Cannot be determined
63. From the given alternative words, select the one which can be formed using the letters of the given word CHROMOSOME.
 a) HERONE b) ROME c) SOLE d) HEROINE
64. How many 6s in the series are preceded by 5 but not followed by 9?
 5 6 8 6 7 6 5 6 5 6 8 5 9 6 5 6 9 6 8 6 5 5 6 8 6 5 9 5 6 9 5 6 8
 a) 4 b) 6 c) 7 d) 5
65. From the given alternative words, select the one which cannot be formed using the letters of the given word REPRIMAND.
 a) MAIDEN b) REPAIR c) MUNDANE d) REMAND
66. In a certain code language, BAT is written YZG. How will SICK be written in that same code?
 a) HRYV b) HRZP c) HRXP d) RHPX
67. Choose the correct relationship depicting diagram for Smokers, Lawyers, Non – smokers.
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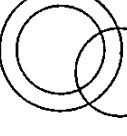
(a)



(b)



(c)

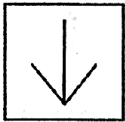


(d)
68. In the following numbers, of letters are skipped in between by a particular rule. Which of the following series observe the rule? Number of letters skipped in between adjacent letters in the series decreases by two.
 a) EPVAF b) GPWBE c) UCJOP d) XFMQU
69. A and B are sisters. A is the mother of D. B has a daughter C who is married to F. G is the husband of A. How is B related to F?
 a) Mother b) Mother-in-law c) Sister-in-law d) None of the above
70. Which letter will be 10th to the left of the 15th letter from the left end of the following sequence?
 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 a) E b) F c) G d) H

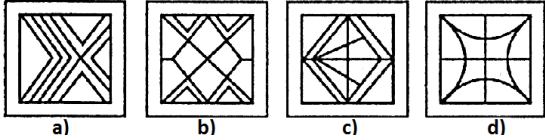
Direction (71-72): Find the odd number/letters/number pair from the given alternatives.

71. a) 117 – 39 b) 164 – 41 c) 198 – 66 d) 213 – 71
72. a) Paper – Pencil b) Head – Cap c) Ink – Inkpot d) Present – Wrapper
73. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

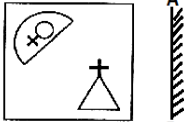


Answer Figures

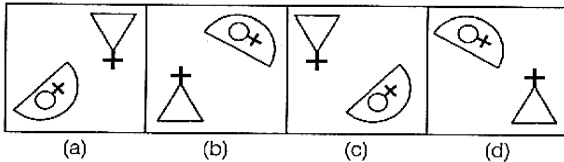


74. Which of the following figure is the correct mirror image of the given figure?

Question Figure

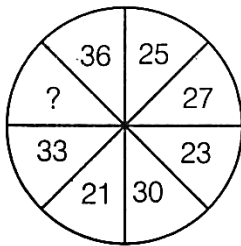


Answer Figures



Direction (75): Select the missing number from the given responses.

75.

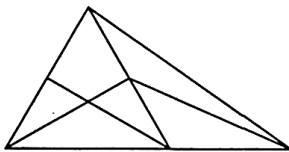


- a) 19 b) 22 c) 32 d) 35

76. In a row of forty children, P is thirteenth from the left end and Q is ninth from the right end. How many children are there between P and R if R is fourth from the left of Q?

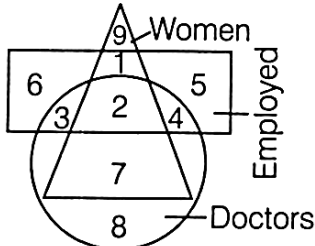
- a) 12 b) 13 c) 14 d) 15

77. How many triangles are there in the following figure?



- a) 11 b) 13 c) 9 d) 15

78. In the following figure, which number represents the women doctors who are not employed?



- a) 7 b) 3 c) 1 d) 8

79. If '−' (minus) means 'multiplied by', '×' means 'plus', '+' means 'divided by' and '÷' means 'minus', then the value of $14 - 10 \times 4 \div 16 + 8$ is

- a) 134 b) 142 c) 6 d) 2

80. Take the two given statements to be true and decide which one of the inferences can be definitely drawn from these statements.

Statements: Some houses are offices. Some offices are schools.

Select the correct conclusion.

- a) No school is house. b) All schools are houses. c) Some offices are houses. d) Some schools which are offices are also houses.

81. Manipulate the symbol and find the missing number. If

$$3 * 6 = 18$$

$$4 * 7 = 22$$

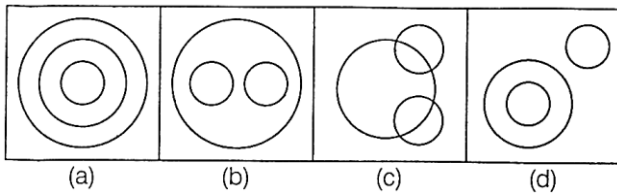
$$9 * 1 = 20$$

Then,

$$5 * 2 = ?$$

- a) 14 b) 7 c) 10 d) 3

82. Which of the following diagram correctly represents grains, wheat and maize?



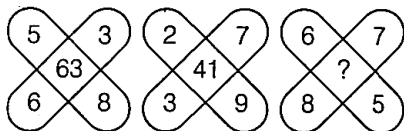
Direction (83-84): In these questions, find the missing number from the given responses.

83.

16	210	14
14	156	12
12	?	10

- a) 100 b) 120 c) 90 d) 110

84.



- a) 26 b) 82 c) 83 d) 86

Direction (85): In the question, you have to identify the correct response from the given premises stated according to following symbols.

85. If $> \Rightarrow \div$, $\vee \Rightarrow \times$, $< \Rightarrow +$, $\wedge \Rightarrow -$, $+\Rightarrow =$, $\times \Rightarrow <$, $-\Rightarrow >$

a) $6 < 2 > 3 \wedge 8 \vee 4 + 13$ b) $6 \wedge 2 < 3 > 8 < 4 - 13$

c) $6 \vee 2 < 3 \wedge 8 > 4 \times 13$ d) $6 > 2 \vee 3 < 8 \wedge 4 + 13$

86. A group of alphabets are given with each being assigned a number. These have to be unscramble into a meaningful word and correct order of letter may be indicated from the given responses.

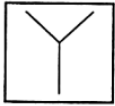
R T E F A

1 2 3 4 5

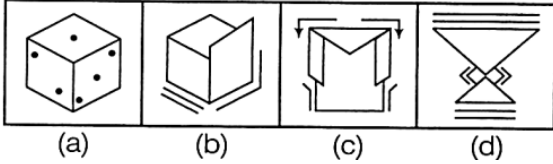
- a) 2, 5, 1, 3, 4 b) 4, 3, 5, 1, 2 c) 5, 4, 1, 3, 2 d) 5, 4, 2, 3, 1

87. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question Figure

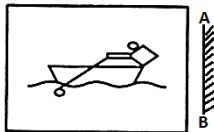


Answer Figures

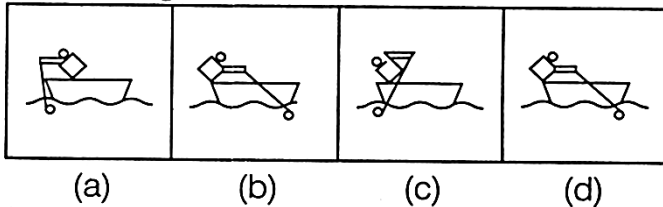


88. Which of the following figure is the correct mirror image of the given figure?

Question Figure



Answer Figures

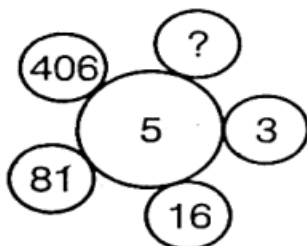


Direction (89-90): Which one set of letter when sequentially placed at the gaps in the given letter series shall complete it?

89. ccbab__caa__bccc__a__
 a) babb b) bbba c) baab d) babc
90. aab__ab__cabcca__bcab__c
 a) bbbc b) bbab c) cabc d) cbab
91. The 1st bunch of bananas has $\frac{1}{4}$ excess to as many as bananas in 2nd bunch. If the 2nd bunch has 3 bananas less than the 1st bunch, then the number of bananas in 1st bunch is
 a) 9 b) 10 c) 12 d) 15
92. $25*2*6 = 4*11*0$
 Which set of symbols can replace?
 a) $\times, -, \times, +$ b) $+, -, \times, +$ c) $\times, +, \times, -$ d) $\times, +, +, \times$
93. Pointing to a girl in a bus, a man tells his friend, "She is the daughter of the only son of my father's wife". How is the girl related to the man?
 a) Cousin b) Daughter c) Mother d) Sister

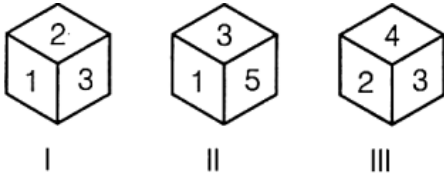
Direction (94): Select the missing number from the given responses.

94.



- a) 1 b) 731 c) 1625 d) 2031

95. Which number is opposite to face 3?



- a) 1 b) 6 c) 5 d) 4

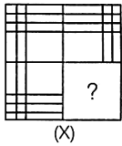
96. Which letter of the following alphabet is the 5th letter to the right of the letter, which is 18th from the right?

A C E G I K M O Q S U W Y
B D F H J L N P R T V X Z

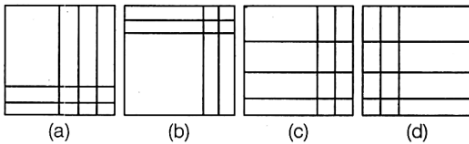
- a) Q b) S c) B d) U

97. Which answer figure will complete the pattern of question figure?

Question Figure

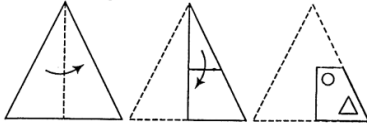


Answer Figures

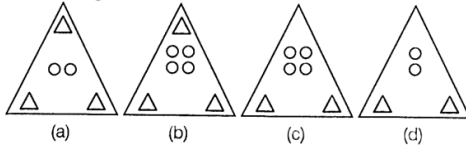


98. A piece of paper of folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question Figures



Answer Figures



Directions (99-100): Study the following information carefully to answer the given question.

99. Statements: All A are B. Some C are B. Some C are D. Some E are C.

Conclusions:

- I. Some A are C II. No B is D

- a) only I follows b) only II follows
- c) either I or II follows d) neither I nor II follow

100. Statements: Some A are B. Some C are D. No B is E.

Conclusions:

- I. Some B are C II. No A is E
- a) only I follows b) only II follows
- c) either I or II follows d) neither I nor II follow