



SAMPLE PAPER

Class 11

(Based on Class 11 Syllabus)

For Students in the Science Stream

Time Allowed : 3 hrs

Maximum Marks : 100

MATHEMATICS

Q1. $\sqrt{-3} \times \sqrt{-3} = ?$

- (a) 3 (b) -3 (c) 3i (d) -3i

Answer : (a)

Q2. $\frac{d}{dx} b^x = ?$

- (a) b^x (b) b_x (c) $b^x \ln b$ (d) $b^x \ln x$

Answer : (c)

Q3. If $A = \begin{bmatrix} a & \dots & -b \\ \vdots & \ddots & \vdots \\ c & \dots & d \end{bmatrix}$ then $A^{-1} = ?$

- (a) $ad + bc$ (b) $\frac{1}{ad-bc} \begin{bmatrix} a & \dots & b \\ \vdots & \ddots & \vdots \\ -c & \dots & d \end{bmatrix}$

- (b) $\frac{1}{ad-bc} \begin{bmatrix} d & \dots & -b \\ \vdots & \ddots & \vdots \\ -c & \dots & a \end{bmatrix}$ (d) $\frac{1}{ad-bc} \begin{bmatrix} d & \dots & b \\ \vdots & \ddots & \vdots \\ -c & \dots & a \end{bmatrix}$

Answer : (c)

Q4. Find the values of x and y from the following equations.

$3x-2y= 4, (x+y = 2)$

- (a) $x=2$ and $y=4$ (b) $x=4$ and $y=6$ (c) $x=\frac{3}{2}$ and $y=3\frac{2}{3}$ (d) $x=\frac{3}{5}$ and $y=\frac{2}{5}$

Answer : (d)

Q5. If $f(x) = \frac{x+2}{3}$ then $f^{-1}(x) = ?$

- (a) $3x - 2$ (b) $2x - 3$ (c) $\frac{3}{x+2}$ (d) does not match

Answer : (c)

Q6. Matrix A has 4 rows and 3 columns and matrix B has 3 rows and 2 columns. The matrix AB will have ?

- (a) 4 rows and 2 columns (b) 5 rows and 3 columns
(c) 2 rows and 4 columns (d) 3 rows and 5 columns

Answer : (a)

Q7. Given that the matrix $\begin{bmatrix} 2 & \dots & -3 \\ \vdots & \ddots & \vdots \\ 4 & \dots & a \end{bmatrix}$ is singular. Find out the value of a ?

- (a) 2 (b) -2 (c) 6 (d) -6

Answer : (d)

Q8. $(1+i)^4 = ?$

- (a) 2 (b) 2i (c) -4 (d) 4i

Answer : (c)

Q9. The straight line $2x+3y+4 = 0$ touches the x axis at ?

- (a) $x = -2$ (b) $x=2$ (c) $x=1$ (d) $x = -1$

Answer : (a)

Q10. $\frac{0.05 \times 0.004}{0.02} = ?$

- (a) 0.001 (b) 0.01 (c) 0.1 (d) 0.2

Answer : (b)

Q11. A gardener brought 5 rabbits. After 2 months, the rabbits became 10, and after 4 months, they became 20. If the growth continues in the same ratio, how many rabbits would be there after one year ?

- (a) 320 (b) 425 (c) 535 (d) 635

Answer : (a)

Q12. Find distance of a straight line from point a (-3,0) to b (0,1) ?

- (a) $\sqrt{5}$ (b) 5 (c) $\sqrt{10}$ (d) 10

Answer : (c)

Q13. There are 6 blacks, 4 red and 2 white balls in a box. A ball is drawn at random. What is the probability that the ball is red ?

- (a) 1/2 (b) 1/3 (c) 1/4 (d) 2/3

Answer : (b)

Q14. If the product of two numbers is 10 and the sum of the two numbers is 7, the larger of the two numbers is

- (a) -2 (b) 2 (c) $1\frac{1}{4}$ (d) 5

Answer : (d)

Q15. What are the values of x and y if $2x-3y=4$ and $3y-8x-2=0$

- (a) $x=1$ and $y=2$ (b) $x=-1$ and $y=-2$ (c) $x=-1$ and $y=2$ (d) $x=1$ and $y=-2$

Answer : (c)

Q16. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 5 & 7 \\ 0 & 0 & 4 \end{bmatrix}$ then $|A| = ?$

- (a) 5 (b) 10 (c) 15 (d) 20

Answer : (d)

Q17. If the first term of an arithmetic progression is 6 and the 11th term is 76. What is the 5th term ?

- (a) 31 (b) 32 (c) 33 (d) 34

Answer : (d)

Q18. If $\int_{\frac{\pi}{2}}^a \sin x \, dx = \frac{1}{2}$ then a = ?

- (a) 0 (b) 1 (c) $-\frac{\pi}{2}$ (d) $-\frac{\pi}{3}$

Answer : (d)

Q19. $(\log_x xy) (\log_{xy} x^y) = ?$

- (a) 1 (b) x (c) y (d) xy

Answer : (d)

Q20. Find the value of x from $\log_8 81 = -4$

- (a) 3 (b) -3 (c) $\frac{1}{2}$ (d) 4

Answer : (d)

Q21. $(-2)^4 \times 2^4 = ?$

- (a) 0 (b) 1 (c) 256 (d) -256

Answer : (c)

Q22. If f is continuous on $[5,2]$, and if f is an anti derivative of f on $[5,2]$, where $f(2) = \frac{3}{2}$

and $f(5) = \frac{4}{3}$. Then $\int_5^2 f(x) dx = ?$

- (a) $\frac{2}{3}$ (b) $\frac{5}{7}$ (c) $-\frac{17}{6}$ (d) $-\frac{13}{6}$

Answer : (c)

Q23. If $y = \ln \frac{1}{x}$, then $\frac{dy}{dx} = ?$

- (a) x (b) -x (c) $\frac{1}{x}$ (d) $-\frac{1}{x}$

Answer : (a)

Q24. $\int_0^2 |x-1| dx = ?$

- (a) 0 (b) 1 (c) 2 (d) 4

Answer : (a)

Q25. $-4 \leq 3(x-2) < 9$ is equivalent to ?

- (a) (2,10) (b) (-2,10) (c) $(\frac{2}{3}, 10)$ (d) $(\frac{2}{3}, 15)$

Answer : (b)

SCIENCE

Q26. Light year is a unit of ?

- (a) time (b) distance (c) sunlight intensity (d) mass

Answer - b

Q27. The dimensional formula for Planck's constant is

- (a) [MLT] (b) $[ML^2T^{-1}]$ (c) $[M^2L^2T^{-1}]$ (d) $[ML^1T^{-1}]$

Answer - b

Q28. The surface tension of a liquid is 70 dyne/cm. In MKS system its value is?

- (a) 70 N/m (b) 7×10^{-2} N/m (c) 7×10^2 N/m (d) 7×10^3 N/m

Answer - b

Q29. The dimensions of Kinetic energy is same as that of

- (a) Force (b) Pressure (c) Work (d) Momentum

Answer - c

Q30. At 4° C, the density of water is equal to

- (a) 10^{-3} kg m⁻³ (b) 10^{-2} kg m⁻³ (c) 10 kg m⁻³ (d) 10^3 kg m⁻³

Answer - d

Q31. One watt hour contains how many joules?

- (a) 3.6×10^8 J (b) 3.6×10^2 J (c) 3.6×10^3 J (d) 10^{-3} J

Answer - c

Q32. Which of the following pairs has the same dimensions?

- (a) Specific Heat and Latent Heat (b) Impulse and Momentum
(c) Surface Tension and Force (d) Moment of Inertia and Torque

Answer - b

**Q33. The equation of state of some gases can be expressed as Vander wal equation
i.e. $(P + a/v^2)(V - b) = RT$**

Where P is the pressure, V is the volume, T is the absolute temperature and a, b, R are constants. The dimensions of 'a' are:

- (a) $[M^1 L^1 T^{-1}]$ (b) $[M^1 L^{-5} T^1]$ (c) $[M^2 L^5 T^{-1}]$ (d) $[M^1 L^5 T^{-2}]$

Answer- d

Q33. Electron volt is a unit of

- (a) Charge (b) Potential difference (c) Energy (d) Magnetic Force

Answer- c

Q34. There are 20 divisions in 4 cm of the main scale. The vernier scale has 10 divisions. The least count of the instrument is

- (a) 0.05 cm (b) 0.5 cm (c) 5.0 cm (d) 0.005 cm

Answer-d

Q35. Who proposed the double helical model of DNA?

- (a) Watson and Crick (b) Watson and Clark (c) James and Crick (d) Neol and James

Answer- a

Q36. Name the type of fertilisation which is unique to angiosperms.

- (a) Single Fertilisation (b) Double fertilisation (c) Triple Fertilisation (d) No Fertilisation

Answer- b

Q37. Explain the term Monoglyceride

- (a) one molecule of glycerol and one molecule of fatty acid.
(b) Two molecule of glycerol and one molecule of fatty acid.
(c) one molecule of glycerol and Two molecule of fatty acid.
(d) Two molecule of glycerol and Two molecule of fatty acid.

Answer- d

Q38. While climbing a hill, Which of the following will be a state function ?

- (a) Distance travelled (b) Energy change
(c) Time Lapsed (d) Altitude Change

Answer- b

Q39. Why are alkali metals used in photoelectric cells?

- (a) low ionization energies (b) High ionization energies
(c) No ionization energies (d) medium ionization energies

Answer- a

Q40. Due to which compound, ozone depletion is caused in Antarctica?

- (a) Sorsorbide dinitrate (b) chlorine nitrate
(c) Sodium Nitrate (d) Potassium

Answer- b

Q41: The SI unit of electric charge is _____

- (a) volts (V) (b) ampere(a) (c) coulomb (C) (d) tesla (T)

Answer- c

Q42: By convention, the charge on a glass rod that has been rubbed with silk is

- (a) Positive (b) Negative (c) either positive or negative (d) none of these

Answer- a

Q43: Two charged bodies having equal potential are connected through a conducting wire, in this case

- (a) current will flow (b) current will not flow
(c) cannot say (d) current will flow if a resistor is also connected.

Answer - a

Q44: The Potential Difference between two terminals can be measured by _____.

- (a) an ammeter (b) a voltmeter (c) an ohm-meter (d) a rheostat

Answer- b

Q45: The net charge flowing through a cross section of a conductor in unit time is known as

- (a) ampere (b) volt (c) resistance (d) electric potential

Answer- a

Q46: Which of the following correctly represents the relation among Charge (Q), Potential difference (V) and Work done (W)

- (a) $V = W \times Q$ (b) $W = V / Q$ (c) $V = Q / W$ (d) $V = W / Q$

Answer- d

Q47: The voltmeter is always connected in _____ across the points between which the potential difference is to be measured.

- (a) series (b) parallel (c) either series or parallel (d) none of these

Answer- b

Q48: How many electrons will be there in 1.6C charge?

- (a) 10^{17} (b) 10^{18} (c) 10^{19} (d) 10^{20}

Answer- c

Q49: According to Ohm's law,

- (a) The resistance increases with the increases in current.
(b) The resistance increases with the increases in voltage.
(c) The current increases with the increases in voltage.
(d) The resistance and current both increases with the increases in voltage.

Answer-c

Q50: A voltmeter is used to measure

- (a) potential difference (b) electric current (c) electric power (d) resistance

Answer-a

-

GENERAL KNOWLEDGE

Q51.The United Nations was founded on _____.

- (a)March 24, 1945 (b)October 24, 1945
(c) March 24, 1949 (d) October 24, 1950

Answer - b

Q52.Which country from the following is NOT the member of UNO?

- (a)Vatican City (b)Afghanistan (c)North Korea (d)Vietnam

Answer-a

Q53.The International Court of Justice is located in _____.

- (a)New York (b)Washigton (c)Geneva (d)The Hague

Answer-d

Q54.There are _____ members of SAARC.

- (a)5 (b)6 (c)7 (d)8

Answer - d

Q55.Organization of Islamic Cooperation (OIC) has _____ official languages.

- (a)1 (b)2 (c)3 (d)4

Answer - c

Q57.There are _____ non-permanent members of the security council.

- (a)5 (B)7 (c)10 (d)15

Answer – c

Q58.The currency of Indonesia is _____.

- (a)rupiah (b)dinar (c)rangit (d)riyal

Answer- a

Q59.The D-8 is an organization of eight _____ countries.

- (a)developed (b)developing (c)Asian (d)African

Answer- b

Q60.The European Union's working capital is in _____.

(a)London (b)Lisbon (c)Austria (d)Brussels

Answer- d

Q61.The headquarter of NATO is located in _____.

(a)New York (b)Paris (c)Geneva (d)Brussels

Answer- d

Q62.The motto of UNO is _____.

(a)It's your world! (b)Life for All! (c)Peace! (d)Love and Peace!

Answer- a

Q63.The world's highest mountain is in _____.

(a)China (b)Pakistan (c)Nepal (d)India

Answer- c

Q64.The headquarter of Red Cross is in _____.

(a)New York (b)Washington (c)Geneva (d)The Hague

Answer- c

Q65.World Trade Organization was established in _____.

(a)1980 (b)1985 (c)1990 (d)1995

Answer - d

Q66.The North Atlantic treaty (NATO) was signed in _____.

(a)1945 (b)1947 (c)1949 (d)1951

Answer- c

Q67.Which country, on the map of world, appears as "Long Shoe"?

(a)Portugal (b)Greece (c)Hungary (d)Italy

Answer- d

Q68.The headquarters of Amnesty International is in _____.

(a)Amserdam (b)Geneva (c)London (d)Berlin

Answer –c

Q69. Yellow Sea lies between _____.

- (a) America and Canada (b) England and France
(c) China and Korea (d) Norway and Sweden

Answer -c

Q70. The smallest Sea of the World is _____.

- (a) Dead Sea (b) Red Sea (c) Baltic Sea (d) Arabian Sea

Answer-c

Q71. World's famous bridge "Golden Gate" is in _____.

- (a) San Francisco (b) New Delhi (c) France (d) Sydney

Answer -a

Q72. Which from the following countries is NOT a member of D-8?

- (a) India (b) Pakistan (c) Nigeria (d) Turkey

Answer-a

Q73. The largest ocean of the world is _____.

- (a) Atlantic (b) Pacific (c) Indian (d) None of these

Answer- b

Q74. The lowest part of the Earth is _____ .

- (a) Dead Sea (b) Mariana Trench (c) South Africa (d) South Pole

Answer -b

Q75. The FIFA football world cup in 2018 is being hosted by which country ?

- (a) Qatar (b) Russia (c) Brazil (d) Italy

Answer-b

MENTAL ABILITY

Q.76 .If INTROVERT : EXTROVERT ,then which of the following follow the same relationship –

- (a) ANGLE : TANGENT (b) EXTREME : INTERIM
(c) AGAINST : FAVOUR (d) ACTION : LAW

Answer (c)

The words are opposites of each other.

Q.77. _____ is to Dusk as Summer is to Monsoon.

- (a) Noon (b) Dawn (c) Night (d) Evening

Answer (d)

Summer is immediately followed by Monsoon. Similarly, after evening, comes dusk.

Q.78 .Shoot is to revolver as Eat is to _____.

- (a) Thirst (b) Hunger (c) Fruit (d) Dinner

Answer (c)

The relation between Shoot and Revolver is : Shoot is the action while Revolver is the object by which one can shoot. Similarly, Eat is the action while Fruit is the object that you eat.

Q.79 .If Water : Swimming Pool ,then Spectators : _____.

- (a) Mountain (b) Building (c) Stadium (d) Mountain

Answer (c)

Water is required to fill a swimming pool and Spectators are required to fill an auditorium.

Q.80 .If Evaporation : Cloud : Rain represents a certain relationship, then which of the following is similar:

- (a) Sneezing : Cough : Cold (b) Accident : Injury : Pain
(c) Tanning : Purse : Leather (d) Bud : Fragrance: Flower

Answer (b)

The first causes the second, the second leads to the third.

Q.81. If in a certain code, CORPORATIONS is written as PROCTAROSNOI, then how will you write JUDICIAL in the same code ?

(a) IDUJLAIC (b) UJIDLAIC (c) UJIDICLA (d) IDUJICLA
 Answer : a – IDUJLAIC

→ C O R P is P R O C
 → O R A T is T A R O
 → I O N S is S N O I

C O R P O R A T I O N S
 P R O C T A R O S N O I

i.e. The code is each set of 4 letters in written in reverse. Hence JUDICIAL will be

→ J U D I is I O U J
 → C I A L is L A I C

Hence, IDUJLAIC

Q.82 .If PARTNER is coded as TRAPREN ,then in the same code,how will FOUNDER be coded.

(a) FOUNRED (b) NUOFRED (c) NOUFDER (d) OFNEUDR

Answer (b)

On dividing the word PARTNER into two ie PART and NER.Now if we reverse the letters in each : ie TRAP and REN ,we then get TRAPREN.

Do the same with FOUNDER : FOUN and DER.Reverse them : NUOF and RED.

Hence FOUNDER in the same code will be NUOFRED.

Q.83.If TWENTY is coded as 863985 ,and ELEVEN is coded as 323039 ,then how will TWELVE be coded .

(a) 683563 (b) 203863 (c) 863651 (d) 863203

Answer (d)

T	W	E	N	T	Y
8	6	3	9	8	5

E	L	E	V	E	N
3	2	3	0	3	9

Based on the above ,TWELVE will be coded as 863203

Q.84 .In a certain code ,RECTANGLE is coded as TGEVCPING ,then using the same code,how will you code RHOMBUS.

- (a) UVWTJON (b) TJOQDWV (c) TJQODWU (d) TAMBUSO

Answer (c)

Each letter of the word REGTANGLE has been moved forward by two alphabets to obtain the code. For example, R becomes T, E becomes G and so on.

Therefore, RHOMBUS will be coded as : TJQODWU

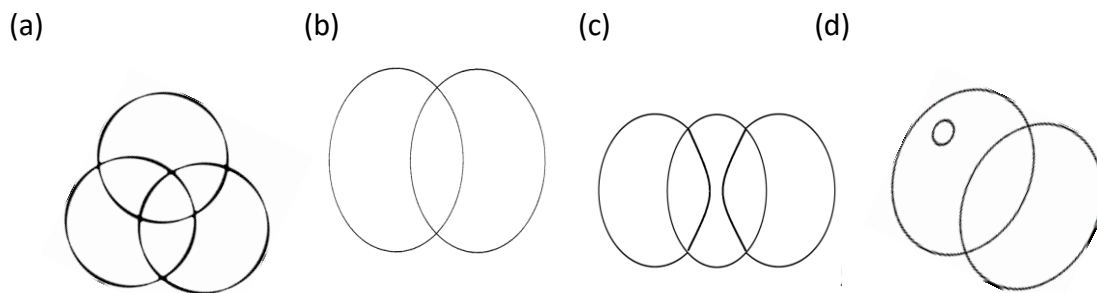
Q.85 .If CARROM is written as MORRAC ,then using the same code,which word represents the word coded as TIBBAR.

- (a) BARTIB (b) TIBTAB (c) RIBBAN (d) RABBIT

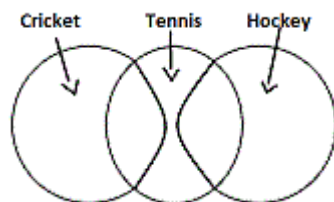
Answer (d)

MORRAC is the reverse of CARROM. Hence ,TIBBAR is reverse of RABBIT.

Q.86 . Some of the cricket players are tennis players, some tennis players are hockey players, no cricket player is a hockey player. Which diagram correctly represents the above statements?



Answer : c



Q.87. Aniket is 7 ranks ahead of Vijay in a class of 39. If Vijay's rank is seventeenth from the last, what is Aniket's rank from the start.

- (a) 18th (b) 15th (c) 16th (d) 19th

Answer (c)

Vijay is 17th from the last and Aniket is 7 ranks ahead of Vijay. So Aniket is 24th from the last.

Therefore, Aniket's rank from the start is $39 + 1 - 24$ ie 16th.

Q88. Today is Tarun's birthday. One year from today, he will be twice as old as he was 12 years ago. How old is Tarun today ?

- (a) 18 yrs (b) 21 yrs (c) 22 yrs (d) 25 yrs

Answer : d – 25 yrs

Suppose Tarun`s age today = X yrs

Then Tarun`s age after 1 year = (X + 1) yrs

Therefore, $X + 1 = 2(X - 12)$

$$X + 1 = 2x - 24$$

$$X - 2X = - 24 - 1$$

$$- X = - 25$$

$$\text{Or } X = 25$$

Q.89 . If the first and second digits in the sequence 5981327438 are interchanged .Also the third and fourth digits,the fifth and sixth digits and so on ,the which digit will be the seventh counting to your left.

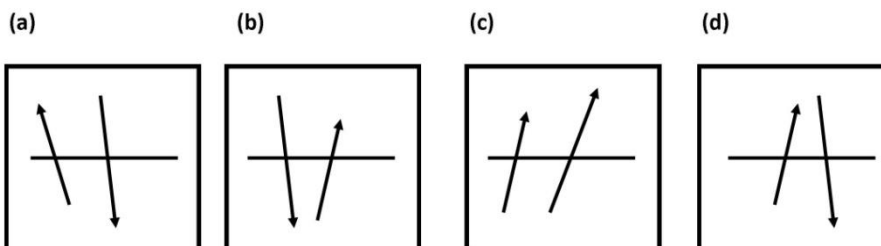
- (a) 1 (b) 4 (c) 6 (d) 8

Answer (d)

The new sequence will be : 9518234783 .

The seventh digit counting to your left is 8.

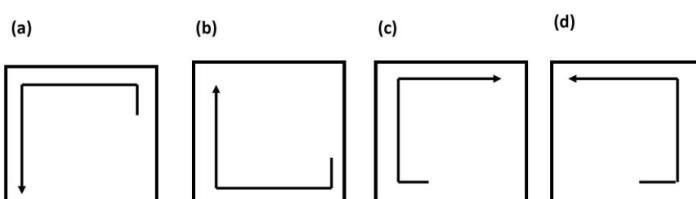
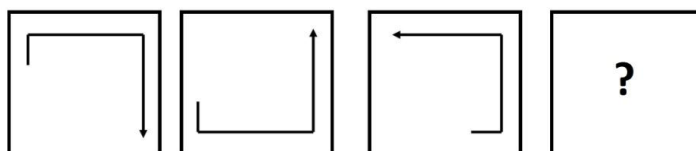
Q.90 .Choose the figure that is different from the others :



Answer (c)

Both the arrow heads are in the same direction.In all others they are in opposite directions,hence (c) is the figure which is different.

Q.91 . What will come in the last box.



Answer (c)

The figure gets turned to the other side by rotating about the main line joining the arrow with the small line segment.

Q.92. What will be the value of L where $L + M = 3$

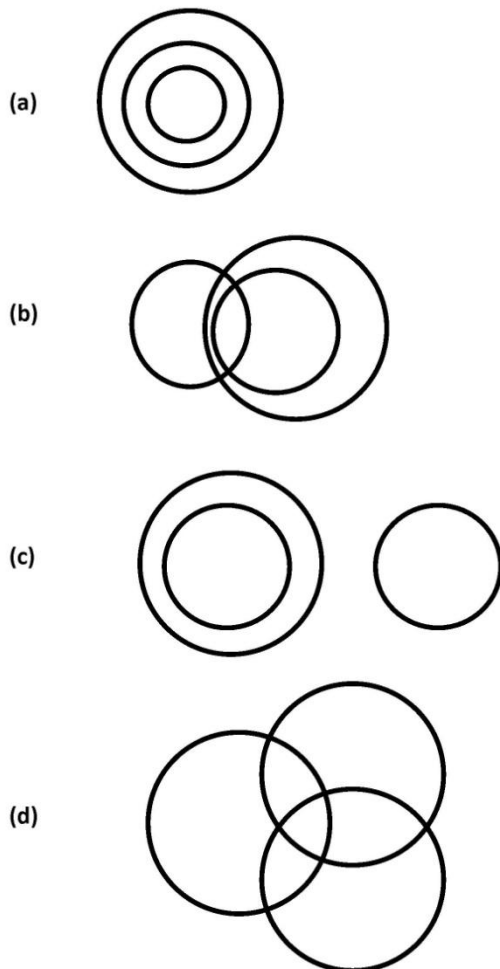
- (a) 1 (b) 2 (c) 6 (d) Either 1 or 2

Answer (d)

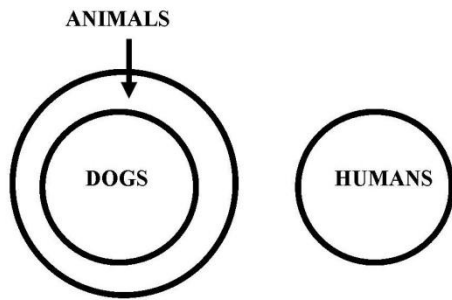
Since $L + M = 3$, L can be either 1 or 2. Similarly M can also be either 1 or 2. Therefore, (d) is the right answer.

Q.93 . Which of the following diagrams represent the relation between the following correctly :

Dogs, Humans and Animals



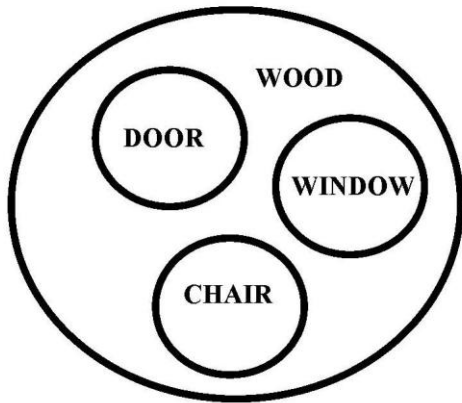
Answer (c)



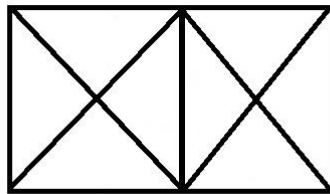
Q.94 . Which of the following diagrams represent the relation between the following correctly :

- (a)
- (b)
- (c)
- (d)

Answer (d)

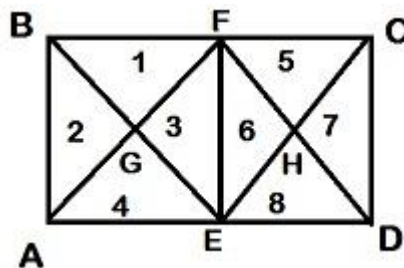


Q.95. How many triangles does the following figure have ?



- (a) 12 (b) 18 (c) 15 (d) 20

Answer : b i.e. 18



Simplest Triangles – 8
 FBE, FEA, EAB, ABF, FCD, CDE, DEF, EFC – 8
 AFD and BEC – 2
 Total = 8+8+2 = 18

Q.96. How many independent meaningful words can be made from the word “LAPAROSCOPY”. The words must be made without changing the order of letters and using each letter only once ?

- (a) 2 (b) 3 (c) 1 (d) 4

Answer : a – 2 : LAP and COPY

Q .97. Identify the missing Character.

11	3	49
5	19	?
7	13	100

(a) 96 (b) 120 (c) 144 (d) 100

Answer (c)

In a row the third number is the square of the average of the first two numbers.

Row 1 : $11 + 3 = 14$, Average is 7. Square of 7 is 49.

Row 3 : $7 + 13 = 20$,Average is 10 ,Square of 10 is 100.

Therefore Row 2 : $5 + 19 = 24$,Average is 12 ,Square of 12 is 144.

Q.98 . Identify the missing value ?

3C	24D	8E
7I	21K	3M
4D	?	7J

(a) 10 F (b) 28 G (c) 45 H (d) 48 B

Answer (b)

In the first row,the letters are consecutive ,ie CDE.

In the second row,the letters are one step forward (+1) ie I ,the leaving one,K,then leaving one ,M.

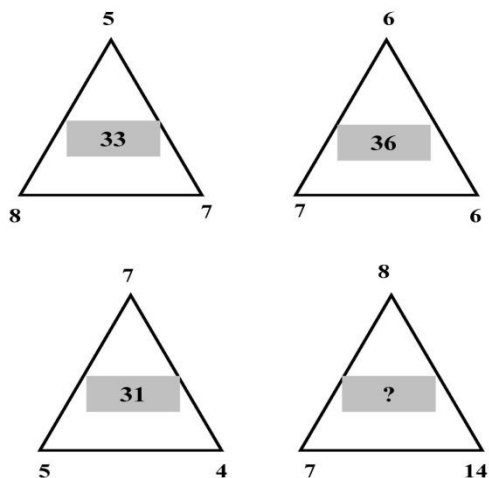
In the third row,the letters are +2 forward ,Hence D , **G** , J

The middle number in each row is the product of the first and third numbers.Ie $3 \times 8 = 24$;

$7 \times 3 = 21$,Hence $4 \times 7 = \mathbf{28}$

Therefore : 28 G

Q.99. Which number should replace the question mark ?



- (a) 32 (b) 42 (c) 38 (d) 30

Answer (b)

$$(5 \times 8) - 7 = 33$$

$$(6 \times 7) - 6 = 36$$

$$(7 \times 5) - 4 = 31$$

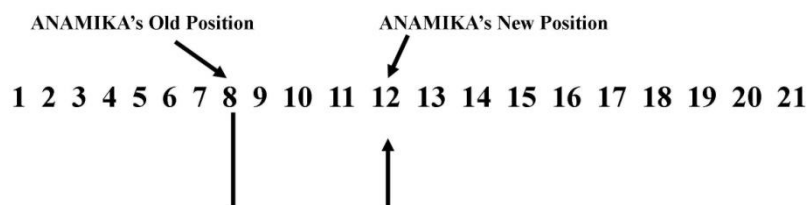
$$(8 \times 7) - 14 = 42$$

Q.100. In a row of 21 girls, when Anamika was shifted by four places towards the right, she became 12th from the left end .What was her earlier position from the right end of the row ?

- (a) 12th (b) 11th (c) 10th (d) 14th

Answer (d)

The change of place of Anamika as given below :



Therefore her earlier position was clearly 14th from the right end.