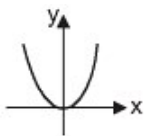
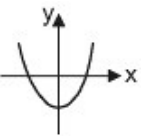
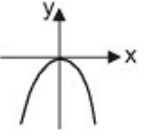
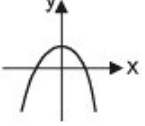


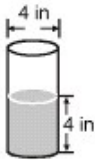
1. The graph of $y = x^2$ looks like

- A. 
- B. 
- C. 
- D. 

2. The expression $(-15)^3 + (7)^3 + (8)^3$ equals

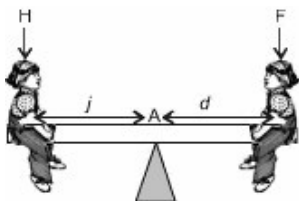
- A. 0
- B. -123
- C. +123
- D. None of these.

3. A scientist studying global warming conducted an experiment in her lab. She poured 4 inches of water into a cylinder as shown in figure. According to her study, the volume of water in the cylinder should rise by 0.1% when she raises the water temperature by 10 degrees. Which of these is closest to the volume of water in the cylinder after the temperature is raised 10 degrees ? ($\pi = 3.14$)



- A. 50.29 cubic inches
- B. 55.26 cubic inches
- C. 200.96 cubic inches
- D. 201.16cubicinches

4. The seesaw shown is an example of a type of lever. A lever will balance when the product of the force (weight of one child) and the distance on one side of the fulcrum equals the product of the force (weight of the other child) and the distance on the other side. The fulcrum is at point A where the seesaw balances. H is the force applied at a distance j on one side of the fulcrum and F is the force applied at a distance d on the other side of the fulcrum. Which of the following equations represent this relationship?



- A. $Fd = Hj$
- B. $FH = dj$

C. $\frac{F}{H} = \frac{d}{j}$

D. $\frac{F}{j} = \frac{d}{H}$

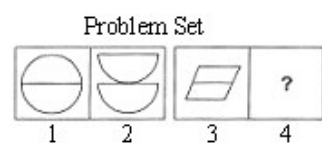
5. A sum of money placed at C.I. doubles itself in 5 years. It will amount to eight times itself in _____.

- A. 15 years
B. 20 years
C. 12 years
D. 10 years

6. If the positions of the first and the sixth digit of the sequence of numbers 8 9 0 3 2 1 4 6 7 5 are interchanged, the second and the seventh and so on, which number would be seventh from the right end?

- A. 2
B. 6
C. 7
D. 8

7. The given question consists of two sets of figures. Figures 1,2,3 and 4 constitute the Problem set. There is a definite relationship between figures 1 and 2. Establish a similar relationship between figures 3 and 4 by choosing figure 4 from the alternatives.



- A.
- B.
- C.
- D.

8. P and Q can do a piece of work in 12 days, Q and R in 15 days, R and P in 20 days. In how many days can R alone do it?

- A. 60
B. 50
C. 25
D. 24

9. If $x = \frac{\sqrt{3}}{2}$, then $x^3 + \frac{1}{x^3} =$ _____.

$216\sqrt{3}$

- A. $\frac{72}{91\sqrt{3}}$
- B. $\frac{72}{192\sqrt{3}}$
- C. $\frac{72}{261\sqrt{3}}$
- D. $\frac{2}{2}$

10. Which of the following numbers has the terminal decimal representation?

- A. $\frac{1}{7}$
- B. $\frac{1}{3}$
- C. $\frac{3}{5}$
- D. $\frac{17}{3}$

11. If $\frac{9^n \times 3^2 \times (3^{\frac{n}{2}})^{-2} - (27)^n}{3^{3m} \times 2^3} = \frac{1}{27}$, then $m - n$ is _____.

- A. 1
- B. 2
- C. 3
- D. 4

12. $\frac{2^{n+4} - 2(2^n)}{2(2^{n+3})} = \underline{\hspace{2cm}}.$

- A. $2^{n+1} - \frac{1}{8}$
- B. -2^{n+1}
- C. $1 - 2^n$
- D. $\frac{7}{8}$

13. If $a^m \cdot a^n = a^{mn}$, then $m(n-2) + n(m-2)$ is _____.

- A. $\frac{2n-4}{n-1}$
- B. n
- C. $\frac{n(2n-4)}{(n-1)}$
- D. $\frac{n}{n-1}$

14. Factors of $1 - x + x^2 - x^3 =$

- A. $(1+x)(1-x^2)$

- B. $(1 - x)(1 + x^2)$
- C. $(1 - x)(1 - x^2)$
- D. $(1 + x)(1 + x^2)$

15. If $x + \frac{1}{x} = a + b$ and $x - \frac{1}{x} = a - b$, then _____.

- A. $ab = 1$
- B. $a = b$
- C. $ab = 2$
- D. $a + b = 0$

16. $x - 8xy^3 =$

- A. $x(1 - 2y)(1 + 2y + 4y^2)$
- B. $x(1 + 2y)(1 + 2y + 4y^2)$
- C. $x(1 - 2y)(1 - 2y + 4y^2)$
- D. $x(1 + 2y)(1 - 2y + 4y^2)$

17. The value of $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$ when $a + b + c = 3x$, is _____.

- A. 3
- B. 2
- C. 1
- D. 0

18. The option which is not a solution of the equation $2x + 3y = 6$, is _____.

- A. (3, 0)
- B. (0, 2)
- C. (-3, 4)
- D. (1, 1)

If $\angle A$ and $\angle B$ are complement ary angles and $m\angle A$ is x° ,

19. which equation can be used to find $m\angle B$ which is denoted by y ?

- A. $y = (90 + x)^\circ$
- B. $y = (90 - x)^\circ$
- C. $y = (180 - x)^\circ$
- D. $y = (x + 180)^\circ$

20. According to Euclid, a plane has _____.

- A. Length but no breadth and thickness
- B. Length and breadth but no thickness
- C. No length, no breadth and no thickness
- D. Length, breadth and thickness

21. One set of ordered pair which belongs to a straight line represented by an equation $y = 2x - 1$ is _____.

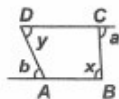
- A. (1, 1)
- B. (2, 1)

- C. (1, 2)
D. (3,1)

22. The cost of a note book is twice the cost of a pen. If the cost of a note book is 'x' and that of a pen is 'y', then a linear equation in two variables to represent is

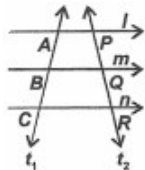
- A. $x + 2y = 0$
B. $x - 2y = 0$
C. $-x + 2y = 0$
D. $2x - y = 0$

23. The sides BA and DC of the quadrilateral ABCD are produced as shown in the figure, then _____.



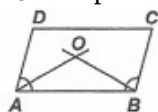
- A. $a + x = b + y$
B. $a + y = b + x$
C. $a + b = x + y$
D. $a + b = x - y$

24. If l, m, n are three parallel lines and the transversals t_1 and t_2 cut the lines l, m, n at the points A, B, C and P, Q, R as shown in the figure, then _____.



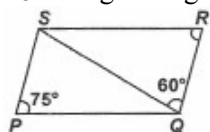
- A. $AB/BC = PQ/QR$
B. $AB/QR = BC/PQ$
C. $AP/BQ = BQ/CR$
D. $AB/PQ = AP/BQ$

25. In a parallelogram, the sum of the angle bisectors of two adjacent angles is _____.



- A. 30°
B. 45°
C. 60°
D. 90°

26. The given figure PQRS is a parallelogram. Then the values of $\angle SQP$ and $\angle QSP$ are _____.



- A. $45^\circ, 60^\circ$
B. $60^\circ, 45^\circ$

- C. $70^\circ, 35^\circ$
- D. $35^\circ, 70^\circ$

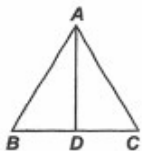
27. The orthocentre of a triangle is the point of concurrency of its _____.

- A. Medians
- B. Angle bisectors
- C. Altitudes
- D. Perpendicular bisectors

28. A running track is the ring formed by two concentric circles. It is 10 feet wide. The circumferences of the two circles differ by about _____.

- A. 10 feet
- B. 30 feet
- C. 60 feet
- D. 100 feet

In $\triangle ABC$, if AD divides BC in the ratio $m : n$,
29. then Area of $\triangle ABD$: Area of $\triangle ADC$ is _____.

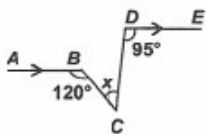


- A. nm
- B. mn
- C. $(m + 1) : n$
- D. $m : (n + 1)$

30. The sum of the interior angles of a polygon is three times the sum of its exterior angles. Then number of sides in a polygon is _____.

- A. 6
- B. 7
- C. 8
- D. 9

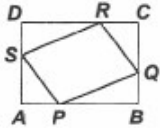
31. From the adjoining figure $AB \parallel DE$. Then the value of x is _____.



- A. 25°
- B. 35°
- C. 45°
- D. 55°

32. Points P, Q, R and S divide the sides of rectangle ABCD in the ratio $1 : 2$, as shown in the figure. What fraction of area of the

rectangle is the area of the parallelogram PQRS?



- A. $\frac{2}{5}$
- B. $\frac{3}{5}$
- C. $\frac{4}{9}$
- D. $\frac{5}{9}$

33. Two identical right circular cones each of height 2 cm are placed as shown in diagram (each is vertical, apex downward). At the start, the upper cone is full of water and lower cone is empty. Then water drips down through a hole in the apex of upper cone into the lower cone. The height (measured from apex of cone) of water in the lower cone at the moment when height of water in upper cone is 1 cm is _____.



- A. 1 cm
- B. $\sqrt{\frac{1}{2}}cm$
- C. $\sqrt[3]{\frac{1}{4}}cm$
- D. $\sqrt[3]{7}cm$

34. What change in percent is made in the area of a rectangle by decreasing its length and increasing its breadth by 5 %?

- A. 2.5 % increase
- B. 0.25 % increase
- C. 0.25 % decrease
- D. 2.5 % decrease

35. A solid consists of a circular cylinder with an exact fitting right circular cone placed on the top. The height of the cone is h . If the total volume of the solid is three times the volume of the cone, then the height of the cylinder is _____.

- A. $2h$
- B. $4h$
- C. $\frac{2h}{3}$
- D. $\frac{3h}{2}$

The probability of guessing the correct answer to a certain test question is $\frac{x}{2}$. If the

36. probability of not guessing the correct answer to this question is $\frac{2}{3}$, then $x =$ _____.

- A. 2
- B. 3
- C. $\frac{2}{3}$
- D. $\frac{1}{3}$

37. Algebraic sum of the deviation of a set of values of a data from their mean is _____.

- A. > 0
- B. $= 0$
- C. < 0
- D. ≥ 0

38. A die is thrown once. The probability of getting a number greater than 3 is _____.

- A. $\frac{1}{2}$
- B. $\frac{1}{3}$
- C. $\frac{2}{3}$
- D. 0

39. Two dice are thrown simultaneously. The probability of getting a multiple of 2 on one die and a multiple of 3 on the other is _____.

- A. $\frac{5}{36}$
- B. $\frac{5}{12}$
- C. $\frac{11}{36}$
- D. $\frac{1}{12}$

40. The mean of n items is x and if each item is increased by 4, then its mean will be _____.

- A. $x+4$
- B. $4x$
- C. $10x$
- D. $10+x$

41. In the given figure a square sheet of paper has been folded and punched as shown. How would the paper look like when unfolded?



- A. 
- B. 
- C. 
- D. 

- If $X\phi Y$ means X is the wife of Y, $X\$Y$ means X is the son of Y and $X\psi Y$ means X is the sister of Y, which of the following would mean that A is the daughter of B?
42. A. $A\$C\psi D\phi B$
 B. $A\phi C\$D\psi B$
 C. $A\psi C\phi D\$B$
 D. $A\psi C\$D\phi B$
43. If the first three letters of the word 'COMPREHENSION' are reversed, then last three letters are added and then the remaining letters are reversed and added, then which letter will be exactly in the middle?
- A. H
 B. R
 C. S
 D. N
44. If $\otimes$ stands for 'addition', $\neg$ stands for 'subtraction', $\uparrow$ stands for 'division', $\bar{}$ stands for 'multiplication', $\square$ stands for 'equal to', then of the given alternatives which one is correct?
- A. $2\bar{}4\neg6\otimes2\square6$
 B. $5\otimes7\neg4\uparrow2\square4$
 C. $3\bar{}62\otimes3\neg6\square6$
 D. $7\neg4\otimes3\uparrow6\bar{}1\square4$
45. Six books P, Q, R, S, T and U are placed side by side. R, Q, T have blue covers and other books have red covers. Only S and U are new books and the rest are old, P, R S are law reports, the rest are Gazetteers. Which two books are old Gazetteers with blue covers?
- A. Q and R
 B. Q and T
 C. Q and U
 D. T and U
46. A and B invest in a business in the ratio 3: 2. If 5% of the total profit goes to charity and A's share is Rs.855, the total profit is _____.
- A. Rs.1425
 B. Rs.1500
 C. Rs.1537.50
 D. Rs.1576

47. A man sells two horses for Rs.4000 each, neither losing nor gaining in the deal. If he sold one horse at a gain of 25%, the other horse is sold at a loss of _____.

- A. $16\frac{2}{3}\%$
- B. $18\frac{2}{9}\%$
- C. 25%
- D. None of these

48. If 36 men can do a certain piece of work in 25 days, then 15 men will do it in _____

- A. 60 days
- B. $10\frac{15}{36}$ days
- C. 40 days
- D. 50 days

49. A man rows downstream 30 km and upstream 18 km, taking 5 hours each time. The velocity of current is _____.

- A. 1.2 km/hr
- B. 6 km/hr
- C. 3.6 km/hr
- D. 2.4 km/hr

50. The simple interest of x% for x years will be Rs.x on a sum of _____.

- A. Rs.x
- B. Rs.100x
- C. $\text{Rs.}\left(\frac{100}{x}\right)$
- D. $\text{Rs.}\left(\frac{100}{x^2}\right)$