

TOPIC: RATIO PROPORTION INDICES LOGARITHM, EQUATION AND MATRICES, INEQUALITIES, TIME VALUE OF MONEY, STATISTICAL DESCRIPTION OF DATA And MEASURES OF CENTRAL TENDENCY AND DISPERSION

1. Find two numbers such that mean proportional between them is 18 and third proportional between them is 144

- (a) 9 ; 36 (b) 8 ; 32
(c) 7 ; 28 (d) 6 ; 14

2. Rs. 8,000 becomes Rs. 10,000 in two years at simple interest. The amount that will become Rs. 6,875 in 3 years at the same rate of interest is :

- (a) Rs. 4,850 (b) Rs. 5,000 (c) Rs. 5,500 (d) Rs. 5,275

3. What is the coefficient of range for the following distribution ?

| | | | | | |
|----------------|---------|---------|---------|---------|---------|
| Class interval | 10 – 19 | 20 – 29 | 30 – 39 | 40 – 49 | 50 – 59 |
| Frequency | 11 | 25 | 16 | 7 | 3 |

- (a) 22
(b) 50
(c) 75.82
(d) 72.46

4. Y is older than X by 7 years. 15 years back X's age was $\frac{3}{4}$ of Y's age. Their present ages are :

- (a) (X = 36, Y = 43)
(b) (X = 50, Y = 43)
(c) (X = 43, Y = 50)
(d) (X = 40, Y = 47)

5. The solution of the inequality $\frac{(5-2x)}{3} \leq \frac{x}{6} - 5$ is

- (a) $x \geq 8$
(b) $x \leq 8$
(c) $x = 8$
(d) None of these

6. The quickest method to collect primary data is :
- (a) Personal Interview (b) Indirect Interview
(c) Mailed Questionnaire (d) Telephonic Interview
7. Suppose your mom decides to gift you Rs. 10,000 every year starting from today for the next sixteen years. You deposit this amount in a bank as and when you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this money: Given that $P(15, 0.085) = 8.304236$
- (a) 83042 (b) 90100 (c) 93042 (d) 10100
8. If $Y = 12 + 1.50X$ and Mode of X is 15. What is the Mode of Y ?
- (a) 29.50 (b) 34.50 (c) 26.00 (d) None
9. The value of z is given by the following if $z^{z\sqrt{z}} = (z\sqrt{z})^z$
- (a) 2 (b) $\frac{3}{2}$ (c) $-\frac{3}{2}$ (d) $\frac{9}{4}$
10. If $A = \begin{bmatrix} 6 & 10 \\ 3 & 5 \end{bmatrix}$
- (a) Is a singular matrix (b) Non – singular matrix
(c) Identity matrix (d) Symmetric matrix
11. If A and B are matrices, then which from the following is true ?
- (a) $A + B \neq B + A$ (b) $(A^t)^t \neq A$
(c) $AB \neq BA$ (d) all are true
12. Quartile deviation of data is defined as :
- (a) $\frac{Q_1+Q_3}{2}$ (b) $\frac{Q_3-Q_1}{2}$ (c) $Q_1 - Q_3$ (d) None of these
13. A sinking fund is created for redeeming debentures worth Rs. 5 lakhs at the end of 25 years. How much provision needs to be made out of profits each year provided sinking fund investments can earn interest at 4% p.a. ?
- (a) 12,006 (b) 12,040 (c) 12,039 (d) 12,035
14. The Linear relationship between two variables in an inequality :
- (a) $ax + by \leq c$ (b) $ax \cdot by \leq c$
(c) $axy + by \leq c$ (d) $ax + bxy \leq c$
15. Two vessels contain equal quantity of mixtures of milk and water in the ratio of 9 : 5 and 4 : 3 respectively. Both the mixtures are mixed. Find the ratio of milk to water in the new mixture.
- (a) 17 : 11 (b) 11 : 17
(c) 8 : 13 (d) 13 : 8

16. The difference between Compound Interest and Simple Interest on a certain sum of money for 2 years at 4 % per annum is Re. 1 . The sum is
- (a) 625 (b) 630
(c) 640 (d) 635
17. If sum of squares of the values = 3390, N = 30 and standard deviation = 7, find out the mean.
- (a) 113 (b) 210 (c) 8 (d) None of these
18. The primary rules that should be observed in classification
- (i) As far as possible the class should be of equal width
(ii) The classes should be exhaustive
(iii) The classes should be unambiguously defined
- Then which of the following is correct
- (a) Only (i) and (ii) (b) Only (ii) and (iii)
(c) Only (i) and (iii) (d) all (i), (ii) and (iii)
19. If α, β are the roots of equation $x^2 - 5x + 6 = 0$ and $\alpha > \beta$ then the equation with roots $(\alpha + \beta)$ and $(\alpha - \beta)$ is
- (a) $x^2 - 6x + 5 = 0$ (b) $2x^2 - 6x + 5 = 0$
(c) $2x^2 - 5x + 6 = 0$ (d) $x^2 - 5x + 6 = 0$
20. The simplified value of $2 \log_{10} 5 + \log_{10} 8 - \frac{1}{2} \log_{10} 4$ is
- (a) $\frac{1}{2}$ (b) 4 (c) 2 (d) none of these
21. Rs. 407 are to be divided among A, B and C so that their shares are in the ratio $\frac{1}{4} : \frac{1}{5} : \frac{1}{6}$. The respective shares of A, B, C are :
- (a) Rs. 165, Rs. 132, Rs. 110 (b) Rs. 165, Rs. 110, Rs. 132
(c) Rs. 132, Rs. 110, Rs. 165 (d) Rs. 110, Rs. 132, Rs. 165
22. Virat Kohli's average scores in latest 10 innings 44, 48, 34, 42, 55, 63, 70, 46, 54 and 38 then the mean deviation is :
- (a) 11.3 (b) 8.6 (c) 7.24 (d) None
23. The graphical representation of cumulative frequency distribution is called –
- (a) Histogram
(b) Pie Chart
(c) Frequency Polygon
(d) Ogive

24. The effective rate equivalent to nominal rate of 6% compounded monthly is :
- (a) 6.05 (b) 6.17 (c) 6.26 (d) 6.07
25. If $\log_2 [\log_3 (\log_2 x)] = 1$, then x equals ;
- (a) 128 (b) 256 (c) 512 (d) None
26. If there are two groups with 75 and 65 as harmonic means and containing 15 and 13 observations. Then the combined H.M. is given by :
- (a) 70 (b) 80 (c) 70.35 (d) 69.48
27. If the amount of an annuity after 25 years at 5% p.a. C.I is Rs. 50,000 the annuity will be
- (a) Rs. 1,406.90 (b) Rs. 1,047.62
(c) Rs. 1,146.90 (d) none of these
28. The ratio compounded of 5 : 6, 2 : 3, 9 : 4, and 4 : 5 is _____
- (a) 1 : 1 (b) 1 : 5
(c) 3 : 8 (d) none of these
29. The sides of an equilateral triangle are shortened by 12 units, 13 units and 14 units respectively and a right angle triangle is formed. The side of the equilateral triangle is
- (a) 17 units (b) 16 units (c) 15 units (d) 18 units
30. On an average, experienced person does 5 units of work while a fresh one 3 units work daily but the employer have to maintain the output of atleast 30 units of work per day. The situation can be expressed as.
- (a) $5x + 3y \leq 30$
(b) $5x + 3y \geq 30$
(c) $5x + 3y = 30$
(d) None of these
31. Find the number of observations between 250 and 300 from the following data :
- | Value | More than 200 | More than 250 | More than 300 | More than 350 |
|-------------|---------------|---------------|---------------|---------------|
| No. of obs. | 56 | 38 | 15 | 0 |
- (a) 56 (b) 23 (c) 15 (d) 8
32. Mr. Paul borrows Rs. 20,000 on condition to repay it with C.I. at 5% p.a. in annual installments of Rs. 2000 each. The number of years for the debt to be paid off is
- (a) 10 years (b) 12 years (c) 11 years (d) 14.2 years
33. Find median of the following data 7, 19, 12, 22, 16, 4, 13.
- (a) 12 (b) 13 (c) 16 (d) None

34. $\begin{pmatrix} 1 \\ 2 \\ 5 \end{pmatrix} \times (3 \ 4 \ 5 \ 6)$

(a) $\begin{bmatrix} 3 & 4 & 5 & 6 \\ 6 & 8 & 10 & 12 \\ 15 & 20 & 25 & 30 \end{bmatrix}$

(b) $\begin{bmatrix} 3 & 5 & 4 & 6 \\ 6 & 8 & 10 & 12 \\ 12 & 16 & 20 & 24 \end{bmatrix}$

(c) $\begin{bmatrix} 3 & 4 & 5 & 6 \\ 6 & 8 & 10 & 12 \\ 12 & 16 & 20 & 24 \end{bmatrix}$

(d) $\begin{bmatrix} 3 & 4 & 5 & 6 \\ 6 & 8 & 10 & 12 \\ 24 & 16 & 16 & 12 \end{bmatrix}$

35. Mean deviation from the mean for the observations 2, 5, 11 is :

(a) $\frac{10}{3}$ (b) 3 (c) 1.35 (d) None of these

36. If $(25)^{150} = (25x)^{50}$ then the value of x will be

(a) 5^3 (b) 5^4 (c) 5^2 (d) 5

37. The cost of machinery is Rs. 1,25,000/- if its useful life is estimated to be 20 years and the rate of depreciation of its cost is 10% p.a., then the scrap value of the Machinery is _____ [given that $(0.9)^{20} = 0.12158$]

(a) 15,197 (b) 15,400 (c) 15,300 (d) 15,250

38. Profit made by XYZ bank in different years refers to _____ -

(a) Attribute (b) Discrete variable
(c) Continuous variable (d) None

39. If standard deviation for the numbers 1, 4, 5, 7, 8 is 2.47 approximately. If 12 is added to each number, then the new standard deviation will be :

(a) 14.47 nearly (b) 24.47 nearly (c) 2.47 nearly (d) None

40. If one root of the equation $x^2 - 3x + k = 0$ is 2, then value of k will be

(a) -10 (b) 0 (c) 2 (d) 10

41. Logarithm of G.M. is the _____ of the Log of different observed values.

(a) Weighted mean (b) Simple mean
(c) (a) or (b) (d) None of these

42. The Future Value of an annuity of Rs. 500 payable at the end of each year for 14 years if money is worth 5 % effective is _____

(a) Rs. 9173.86 (b) Rs. 9799.32
(c) Rs. 28953.75 (d) None of these

43. If $Q_3 = 20$ and $Q_1 = 10$, then the coefficient of quartile deviation is :

(a) 30% (b) 33.33% (c) 67.7% (d) None

44. $\begin{pmatrix} a & -b \\ b & a \end{pmatrix} \times \begin{pmatrix} -a & b \\ b & a \end{pmatrix}$

(a) $\begin{pmatrix} a^2 + b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(b) $\begin{pmatrix} -a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(c) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 + b^2 \end{pmatrix}$

(d) $\begin{pmatrix} a^2 - b^2 & 0 \\ 0 & a^2 - b^2 \end{pmatrix}$

45. If $x = \log_a bc$; $y = \log_b ca$; $z = \log_c ab$ then the value of $xyz - x - y - z$ is

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

46. Anil bought a motor cycle costing Rs. 1,50,000 by making a down payment of Rs. 50,000 and agreeing to make equal annual payment for five years. How much would be each payment if the interest on unpaid amount be 10% compounded annually ?

[P (5,0.10) = 3.7908]

- (a) Rs. 26379.66 (b) Rs. 26300.70 (c) Rs. 26500.70 (d) Rs. 26370.70

47. The present value of annuity of Rs. 5000 payable at the end of each year for 6 years, if money is worth 7% effective is

- (a) Rs. 23832.70 (b) Rs. 23108.60
(c) Rs. 22502.75 (d) None of these

48. If $2^x = 3^y = 6^{-z}$, $\frac{1}{x} + \frac{1}{y} + \frac{1}{z}$ is

- (a) 1 (b) 0 (c) 2 (d) None of these

49. An attribute shows characteristic.

- (a) A measurable (b) A quantitative
(c) A qualitative (d) All these

50. The coefficient of variation of a series is 60. Its S.D. is 24. Its arithmetic mean is :

- (a) 40 (b) 45 (c) 29.8 (d) None