

**PAPER 3 : QUANTITATIVE APTITUDE**

1. Ans. a

Explanation:

$$K = \frac{R}{I} = \frac{4000}{\frac{8}{12 \times 100}} = 600000$$

2. Ans. a

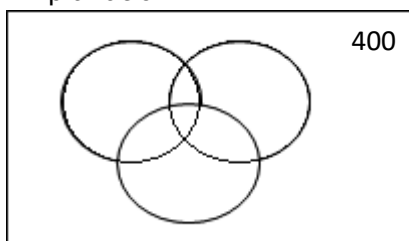
Explanation:

a	b	c	A.P
1	2	3	
x	y	z	G.P
2	4	8	

put the value

3. Ans. a

Explanation:



$$400 - 313 = 88$$

$$\begin{array}{r} 112 \\ + 120 \\ + 160 \\ - 32 \\ - 40 \\ - 20 \\ + 12 \\ \hline 312 \end{array}$$

4. Ans. b

Explanation:

(1, 2) (2, 1) (1, 1) Transitive  
(3, 2) + R Not Reflexive

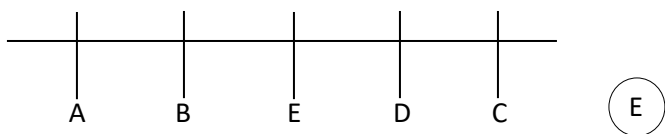
5. Ans. c

Explanation:

taking log both side  
 $\log x^p y^q = \log (x+y)^{p+q}$   
 $\log x^p + \log y^q = (p+q) \log x+y$   
 $p \log x + q \log y = (p+q) \log (x+y)$   
 by differentiation  $\frac{y}{x}$

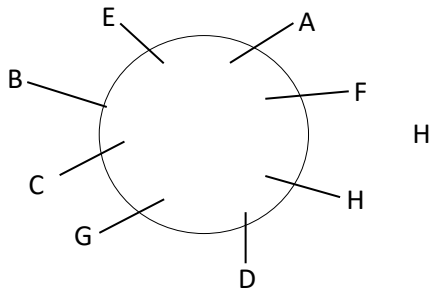
6. Ans. d

Explanation:

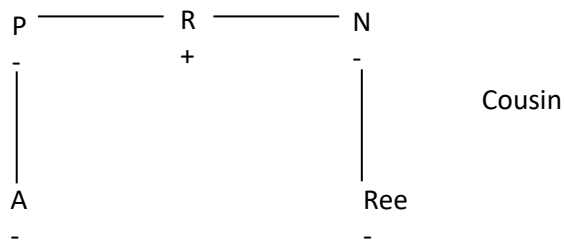


## Mittal Commerce Classes

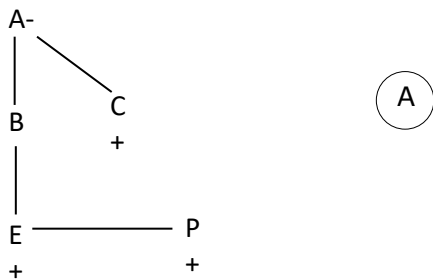
7. Ans. c  
 Explanation:



8. Ans. c  
 Explanation:



9. Ans. d  
 Explanation:



10. Ans. c  
 Explanation:  
 $M = 13 - 4 = 9$   
 $E = 5 - 4 = 1$   
 $L = 12 - 4 = 8$

I H J E D  
 54610

11. Ans. a  
 Explanation:

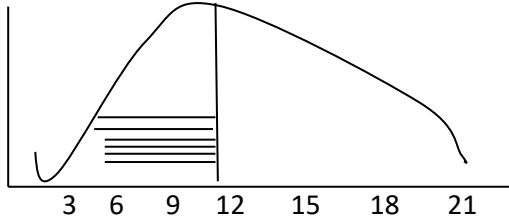
$$\begin{aligned} \mu - \sigma &= 6 \\ \mu + \sigma &= 14 \end{aligned}$$

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$$\begin{aligned} \infty \mu &= 20 \\ \mu &= 10 \end{aligned}$$

$$\begin{aligned} 10 - \sigma &= 6 \\ \sigma &= 4 \end{aligned}$$

12. Ans. a  
 Explanation:



$$\begin{aligned}
 &0.5 \\
 &\underline{-0.47725} \\
 &0.02275 \times 100 \\
 &2.28-1
 \end{aligned}$$

13. Ans. a  
 Explanation:  
 False in case of normal distribution it is multi model.
14. Ans. c  
 Explanation:  
 Wages of workers of factory normal distribution.
15. Ans. c  
 Explanation:  

$$1200 = P \times \frac{18}{100} \times \frac{1}{12}$$
16. Ans. b  
 Explanation:  

$$A = P \left( 1 + \frac{rt}{100} \right)$$

$$A = 100000 \left( 1 + \frac{6 \times 2}{100} \right) = 112000$$
17. Ans. a  
 Explanation:  
 Drinking habit of a person is An attribute.
18. Ans. c  
 Explanation:  
 Age of a person is A continuous variable.
19. Ans. c  
 Explanation:  
 Quickest method to collect primary data is telephone interview.
20. Ans. a  
 Explanation:  
 Amount of non-responses is maximum mailed questionnaire method.
21. Ans. b  
 Explanation:  
 A firm registers both profits and losses, which of the following measure of central tendency cannot be considered GM.
22. Ans. c  
 Explanation:  

$$(8 \times 24 \times 40)^{1/3}$$

$$(8 \times 8 \times 3 \times 8 \times 5)^{1/3}$$

## Mittal Commerce Classes

$$(8^3)^{1/3} (15)^{1/3}$$

$$8 \sqrt[3]{15}$$

23. Ans. c

Explanation:

$$\frac{30 \times 50 + 20 \times 60}{50}$$

24. Ans. c

Explanation:

$$2 \times 5a + 10b = 40$$

$$10a + 25b = 95$$

$$10a + 20b = 80$$

$$10a + 25b = 95$$

$$\underline{\quad \quad \quad}$$

$$-5b = -15$$

$$b = 3$$

$$a = 2$$

y on x

$$y = a + bx$$

$$y = 2 + 3x$$

25. Ans. b

Explanation:

$$3x + y = 13$$

$$2x + 5y = 20$$

$$\frac{15}{2} > 1 \quad \text{y on x 2nd equation}$$

26. Ans. b

Explanation:

$$P.E = 0.6745 \times \frac{1-r^2}{\sqrt{n}}$$

$$\frac{0.6745 \times 1 - \left(\frac{2}{\sqrt{10}}\right)^2}{\sqrt{36}} = \frac{0.6745 \times 1 - \frac{4}{10}}{6} = 0.06745$$

27. Ans. c

Explanation:

$$b_{yx} = 1 \quad r = 0.5$$

$$b_{yx} = \frac{r \times \sigma_y}{\sigma_x}$$

$$1 = 0.5 \times \frac{\sigma_y}{\sigma_x}$$

$$\frac{\sigma_y}{\sigma_x} = 2$$

$$\frac{\sigma_y^2}{\sigma_x^2} = 4$$

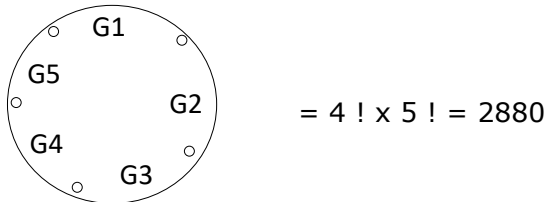
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28. Ans. a  
 Explanation:  
 $2 \rightarrow 6300$   
 $3.75 \rightarrow 7875$   
 $1.75 \text{ S.I} = 1575$   
 $1 \text{ S.I} = 900$   
 $2 \text{ S.I} = 1800$   
 $6300$   
 $- 1800$   
 $P = 4500$   
 $900 = 4500 \times \frac{r}{100} \times 1$   
 $r = 20\%$
29. Ans. a  
 Explanation:  
 $C, C, N, T, N, T$  (AOUA)  
 $\frac{7!}{2!2!2!} \times \frac{4!}{2!} = 7560$
30. Ans. b  
 Explanation:  
 $F.V = 200000$   
 $200000 = \frac{A}{0.05}((1.05)^{20} - 1)$
31. Ans. b  
 Explanation:  
 A.M. of regression coefficients is Greater then or equal to r.
32. Ans. b  
 Explanation:  
 $H T H T H$       $\frac{2}{32} = \frac{1}{16}$   
 $T H T H H$
33. Ans. b  
 Explanation:  
 $np = 5$   
 $npq = 3$   
 $5q = 3$   
 $q = \frac{3}{5}$       $p = \frac{2}{5}$       $q > P$
34. Ans. b  
 Explanation:  
 $100 \times \frac{5}{100} \times 10 = 500 = 1500$   
 $2250$

## Mittal Commerce Classes

$$\begin{aligned} -1500 \quad 750 &= 1500 \times \frac{5}{100} \times t \\ t &= 10 \\ \text{Total time } 10 + 10 &= 20 \end{aligned}$$

35. Ans. c  
 Explanation:



36. Ans. c  
 Explanation:

$$\begin{aligned} 4 \text{ SD} &= 5 \text{ MD} - 1 \quad (1) \times (2) \\ 4 \text{ SD} &= 6 \text{ QD} - 2 \\ \text{SD} &= \sqrt{\frac{15}{8}} \sqrt{\text{MD} \times \text{QD}} \end{aligned}$$

37. Ans. b  
 Explanation:

$$\begin{aligned} &\left( P \times P^2 \times P^3 \dots P^n \right)^{\frac{1}{n}} \\ &\left( P^{\frac{n(n+1)}{2}} \right)^{\frac{1}{n}} = P^{\frac{n+1}{2}} \end{aligned}$$

38. Ans. a  
 Explanation:

$$\begin{aligned} &105 \quad 110 \quad \dots \quad 995 \\ n &= \frac{995 - 105}{5} + 1 = 179 \\ S_n &= \frac{179}{2} (105 + 995) = 98450 \end{aligned}$$

39. Ans. d  
 Explanation:

$$\begin{aligned} \text{C.V} &= 20 \quad 20 = \frac{10}{\bar{X}} \times 100 \\ \bar{X} &= 50 \end{aligned}$$

40. Ans. b  
 Explanation:

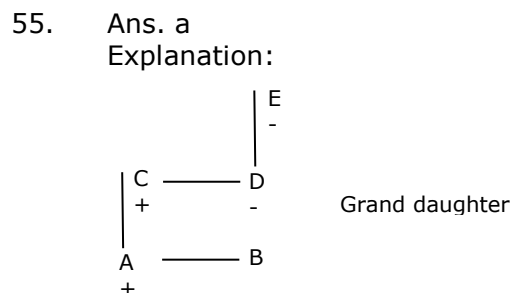
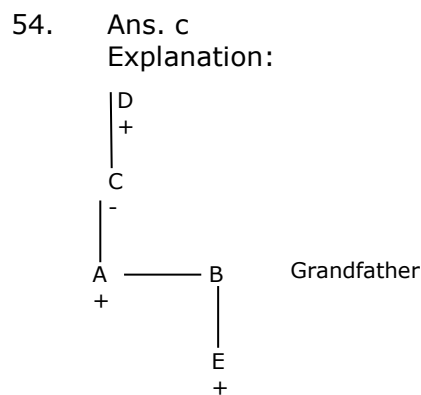
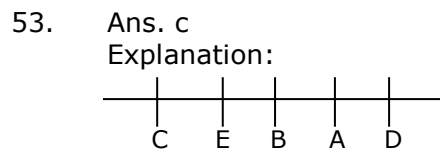
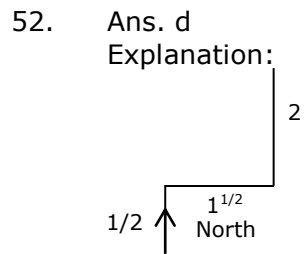
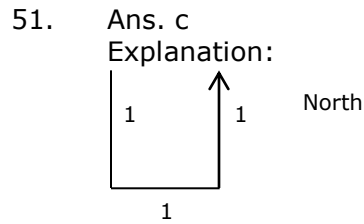
$$\sum xy = 0 \quad \sum x = 0 \quad \text{So } r = 0$$



## Mittal Commerce Classes

49. Ans. a  
 Explanation:  
 $\int 1 \cdot (\log x)^2 dx$                       apply I L A T E

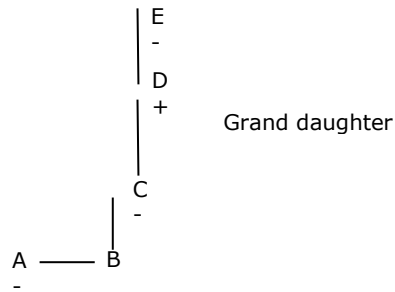
50. Ans. a  
 Explanation:  
 $B \cap C = \{5\}$   
 $(2, 4) (3, 5)$





## Mittal Commerce Classes

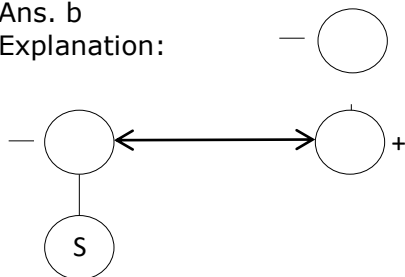
56. Ans. d  
 Explanation:



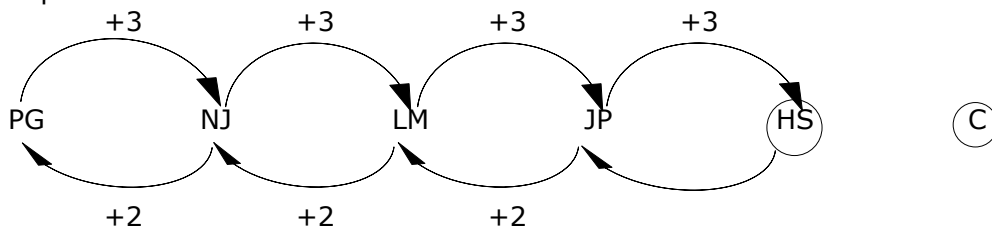
57. Ans. b  
 Explanation:

$$\bar{x}_{com} = \frac{K\bar{x} + 10K\bar{y}}{11K} \quad \bar{x}_{com} = \frac{\bar{x} + 10\bar{y}}{11}$$

58. Ans. b  
 Explanation:



59. Ans. c  
 Explanation:



60. Ans. b  
 Explanation:

$$STSTRUM = \frac{119}{7} = 17$$

1234567

$$\therefore STEP = \frac{60}{4} = 15$$

1234

61. Ans. d  
 Explanation:  
 The odd one student.

## Mittal Commerce Classes

62. Ans. c  
 Explanation:  
 Given: Mode - Mean = 63  
 We know the empirical relationship between mean, Median & Mode i.e.  
 (Mode - Mean) = 3 (Median - Mean)  
 Median - Mean =  $\frac{63}{3} = 21$

63. Ans. c  
 Explanation:

X	P	PX
1	1/3	1/3
2	1/3	2/3
3	1/3	3/3

$$\frac{1}{3} + \frac{2}{3} + \frac{3}{3}$$

$$= \frac{6}{3} = 2$$

64. Ans. d  
 Explanation:  
 $E(x - \mu)^2$  and  $E[x - E(x)]^2$  both are variance.

65. Ans. c  
 Explanation:  
 a=132, l=468  
 $l = a + (n-1)d$   
 $468 = 132 + (n-1)(12)$   
 n=29  
 $S_n = \frac{n}{2}(a + l)$   
 $S_{29} = \frac{29}{2}(132 + 468) = 8700$

66. Ans. c  
 Explanation:

	Grade I	Grade II	
Plant A	6	3	$\leq 120$
Plant B	4	10	$\leq 180$

$$6x + 3y \leq 120$$

$$4x + 10y \leq 180$$

67. Ans. c  
 Explanation:  
 $A \times B = \{ (2,4), (2,5), (3,4), (3,5) \}$   
 $B \times C = \{ (4,5), (4,6), (5,5), (5,6) \}$   
 $(A \times B) \cup (B \times C) = \{ (2,4), (2,5), (3,4), (3,5), (4,5), (4,6), (5,5), (5,6) \}$

## Mittal Commerce Classes

68. Ans. b

Explanation:

$$\begin{aligned} \text{No. of such ways} &= \frac{(n-1)!}{2} \\ &= \frac{5!}{2} \end{aligned}$$

69. Ans. d

Explanation:

$$\begin{aligned} \text{fog}(x) &= f[g(x)] \\ &= f[2x-3] \\ &= (2x-3)^2 + 3(2x-3) + 1 \\ &= 4x^2 - 6x + 1 \end{aligned}$$

$$\text{fog}(-1) = 4 + 6 + 1 = 11$$

70. Ans. b

Explanation:

$$n p = \frac{10}{3}$$

$$2 n_{c_2} p^2 q^{n-2} = n_{c_3} p^3 q^{n-3}$$

$$\frac{2 \times n!}{2! n-2!} q = \frac{n!}{3! n-3!} p$$

$$\frac{q}{n-2} = \frac{p}{6}$$

$$6q = n p - 2 p$$

$$6q = \frac{10}{3} - 2 p$$

$$6q = \frac{10 - 6p}{3}$$

$$18q = 10 - 6p$$

$$18 - 18p = 10 - 6p$$

$$12p = 8$$

$$p = \frac{2}{3} \quad q = \frac{1}{3}$$

$$n \times \frac{2}{3} = \frac{10}{3}$$

$$n = 5$$

$$5_{c_0} \left(\frac{2}{3}\right)^0 \left(\frac{1}{3}\right)^5 + 5_{c_1} \left(\frac{2}{3}\right)^1 \left(\frac{1}{3}\right)^4 + 5_{c_2} \left(\frac{2}{3}\right)^2 \left(\frac{1}{3}\right)^3$$

$$\frac{1}{3^5} + 5 \times \frac{2}{3^5} + \frac{10 \times 4}{3^5}$$

## Mittal Commerce Classes

$$\frac{1 + 10 + 40}{3^5} = \frac{51}{3^5} = \frac{51}{243} = \frac{17}{81}$$

71. Ans. c

Explanation:

$$\begin{aligned} &= \log(1+2+3) = \log 6 \\ &= \log(1 \times 2 \times 3) \\ &= \log 1 + \log 2 + \log 3 \end{aligned}$$

72. Ans. c

Explanation:

$$x + \frac{1}{x} = \sqrt{2} \quad (\text{squaring both sides})$$

$$\left(x + \frac{1}{x}\right)^2 = (\sqrt{2})^2$$

$$x^2 + \frac{1}{x^2} + 2 = 2$$

$$x^2 + \frac{1}{x^2} = \boxed{0}$$

73. Ans. a

Explanation:

$$\text{By Option A Mean } b = \sqrt{ac} = \sqrt{9 \times 36} = 18$$

$$\text{IIRD } c = \frac{b^2}{a} = \frac{36^2}{9} = 144$$

74. Ans. b

Explanation:

$$3^x = 2 \quad \text{put the value}$$

$$5^{xy} = 2$$

$$2^{xyz} = 2^1$$

$$xyz = 1$$

75. Ans. d

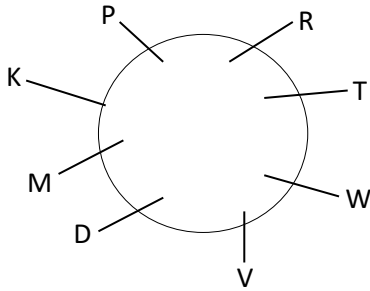
Explanation:

x	
1	$\sigma = \sqrt{\frac{n^2 - 1}{12}}$
2	$\sigma = \sqrt{\frac{25 - 1}{12}} = \sqrt{\frac{24}{12}} = \sqrt{2}$
3	
4	
5	



## Mittal Commerce Classes

84. Ans. a  
 Explanation:



85. Ans. c  
 Explanation:  
 Ogive graph is used for finding Median.

86. Ans. d  
 Explanation:

$$\frac{\alpha}{\beta} + \frac{\beta}{\alpha} = \frac{\alpha^2 + \beta^2}{\alpha\beta} = \frac{(\alpha + \beta)^2 - 2\alpha\beta}{\alpha\beta}$$

$$\frac{\left(-\frac{3}{2}\right)^2 - 2\left(\frac{7}{2}\right)}{\frac{7}{2}}$$

87. Ans. c  
 Explanation:

$$5000 \left(1 + \frac{1.5}{100}\right)^{20} = 6734.27$$

$$6734.27 \left(1 + \frac{4}{100}\right)^{16} = 12613.10$$

88. Ans. a  
 Explanation:

$${}_{13}C_6 + {}_{13}C_5 + {}_{13}C_5 + {}_{13}C_4 = {}_{15}C_x$$

$${}_{13}C_6 + {}_{13}C_5 + {}_{13}C_5 + {}_{13}C_4 = {}_{15}C_x$$

$${}_{13}C_6 + {}_{13}C_5 + {}_{13}C_5 + {}_{13}C_4 = {}_{15}C_x$$

$${}_{14}C_6 + {}_{14}C_5$$

$${}_{14}C_6 + {}_{14}C_5$$

$${}_{14}C_6 + {}_{14}C_5$$

$$15$$

$${}_{15}C_6 = x = 6$$

$$6$$

## Mittal Commerce Classes

89. Ans. a

Explanation:

$fg(n)$

$f(x^2 + 1)$

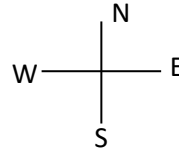
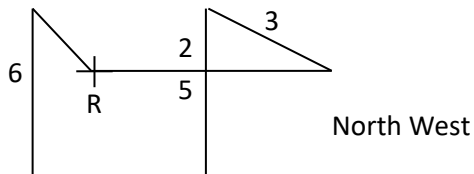
$x^2 + 1 + 1$

$x^2 + 2$

6

90. Ans. c

Explanation:



91. Ans. d

Explanation:

$y = 2x + 10$

$\sigma_y = \frac{2}{1} \times \sqrt{23} = \sqrt{23} \quad V = 92$

92. Ans. c

Explanation:

x	P	Px
0	0.30	0
1	0.50	0.50
2	0.20	0.40
		0.90

93. Ans. c

Explanation:

$E(13x + 9)$

$E(13)E(x) + E(a)$

$13E(x) + 9$

94. Ans. b

Explanation:

$$\frac{n}{4}$$

95. Ans. a

Explanation:

$np = 3$

$npq = 2$

$3q = 2$

$q = \frac{2}{3}$

$(q + p)^n$

$$p = \frac{1}{3} \quad n = 9 \quad \left(\frac{2}{3} + \frac{1}{3}\right)^9$$

96. Ans. a  
 Explanation:  
 $m = np$

$$200 \times \frac{1.5}{100} = 3 \quad \frac{e^{-3} 3^0}{0!}$$

97. Ans. a  
 Explanation:  
 $x = 0 \quad x = 1 \quad x = 2 \quad x = 3$

$$\sqrt{m} = 1.732$$

$$m = 3$$

$$\frac{e^{-3} 3^0}{0!} + \frac{e^{-3} 3^1}{1!} + \frac{e^{-3} 3^2}{2!} + \frac{e^{-3} 3^3}{3!}$$

98. Ans. c  
 Explanation:  
 $MD = 0.80 \sigma$   
 $MD = 0.80 \times 4$   
 $MD = 3.20$

$$5 MD = 6QD$$

$$5 \times 3.20 = 6QD$$

$$2.70$$

99. Ans. b  
 Explanation:

$$500000 = \frac{A}{0.10} \left(1 - \frac{1}{(1.10)^{20}}\right)$$

100. Ans. b  
 Explanation:

$$F.v = \frac{1000}{0.14} (1.14)^5 - 1)$$

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