

(1) Ans. b

Explanation:

$$CI = 60000 \left(1 + \frac{6}{100}\right) \left(1 + \frac{8}{100}\right) \left(1 + \frac{10}{100}\right) - 60,000 = \text{Rs. } 15,556.80$$

(2) Ans. a

Explanation:

$$3P = P \left(1 + \frac{r \times 8}{100}\right)$$

$$r = 25\%$$

$$5P = P \left(1 + \frac{25 \times t}{100}\right)$$

$$t = 16 \text{ years}$$

(3) Ans. c

Explanation:

$$1 \text{ Rs.} : 50 \text{ P} : 25 \text{ P}$$

$$4x, 5x, 6x$$

$$4x + \frac{250x}{100} + \frac{150x}{100} = 120$$

$$x = 15$$

$$\text{The number of coins of 25 paise} = 6 \times 15 = 90$$

(4) Ans. c

Explanation:

$$A : B = 4 : 5 \quad | \times 7$$

$$B : C = 7 : 8 \quad | \times 5$$

$$A : B : C = 28 : 35 : 40$$

(5) Ans. c

Explanation:

$$A = \{1, 2, 3\}$$

Subsets of A = Power set of A

$$\{\phi, \{1\}, \{2\}, \{3\}, \{1, 2\}, \{2, 3\}, \{1, 3\}, \{1, 2, 3\}\}$$

(6) Ans. a

Explanation:

$$\frac{1}{1 + \frac{a^x}{a^y}} + \frac{1}{1 + \frac{a^y}{a^x}}$$

$$= \frac{a^y}{a^y + a^x} + \frac{a^x}{a^x + a^y} = \frac{a^x + a^y}{a^x + a^y} = 1$$

(7) Ans. b

Explanation:

$$A = P \left(1 + \frac{r}{100} \right)^n$$

$$2000 = P \left(1 + \frac{8}{100} \right)^4$$

$$P = \text{Rs. } 1470.06$$

(8) Ans. a

Explanation:

$$P = \frac{R}{r} \left[(1+r)^n - 1 \right]$$

$$5,00,000 = \frac{R}{.08} \left[(1+0.08)^3 - 1 \right]$$

$$R = \text{Rs. } 1,94,016.75$$

(9) Ans. c

Explanation:

The sum of digit in unit place

$$= (3 + 4 + 5 + 6) \times 31$$

$$= 108$$

(10) Ans. b

Explanation:

The number of straight lines

$$= {}^n C_2 - {}^x C_2 + 1$$

$$= {}^{15} C_2 - {}^6 C_2 + 1 = 91$$

(11) Ans. c

Explanation:

The no. of arrangements = Total no. of arrangements - Two 'o's come together-

$$= \frac{6!}{2!} - 5! = 240$$

(12) Ans. d

Explanation:

$$\text{Number of ways} = {}^6 C_3 \times {}^5 C_2 = 200$$

(13) Ans. d

Explanation:

$$\text{Different words can be formed} = \frac{11!}{4!4!2!}$$

$$S = 4, P = 2, I = 4$$

(14) Ans. c

Explanation:
By option (c)

(15) Ans. b

Explanation:

It is an AP with $a = -111$ and $d = 4$

$$\begin{aligned} T_n &= a + (n-1)d \\ &= -111 + (n-1)4 \\ &= -111 + 4n - 4 \\ &= 4n - 115 \end{aligned}$$

$$T_n > 0$$

$$4n - 115 > 0$$

$$n > 28\frac{3}{4}$$

\therefore The smallest integer greater than $28\frac{3}{4}$ is 29.

(16) Ans. b

Explanation:

$$9, G, G_2, G_3, G_4, 288$$

$$l = ar^{n-1}$$

$$288 = 9r^5$$

$$r^5 = 2^5$$

$$r = 2$$

$$G_1 = ar = 9 \times 2 = 18$$

$$G_2 = ar^2 = 9 \times 4 = 36$$

$$G_3 = ar^3 = 9 \times 8 = 72$$

$$G_4 = ar^4 = 9 \times 16 = 144$$

(17) Ans. b

Explanation:

$$\begin{aligned} \log_{10} 80 &= \log_{10} (8 \times 10) \\ &= \log_{10} (2 \times 4 \times 10) \\ &= \log_{10} 2 + \log_{10} 4 + \log_{10} 10 \\ &= x + y + 1 \end{aligned}$$

(18) Ans. d

Explanation:
By option (d)

(19) Ans. a

Explanation:

$$\frac{2^{n+3} - 10 \times 2^{n+1}}{2^{n+1} \times 6}$$
$$= \frac{2^n \times 2^3 - 10 \times 2^n \times 2}{2^{n+1} \times 2 \times 6}$$
$$= \frac{8 - 20}{12} = \frac{-12}{12} = -1$$

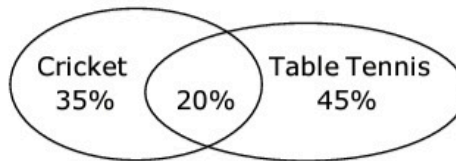
(20) Ans. a

Explanation:

$$\text{Compound annual growth rate} = \left[\frac{v(t_n)}{v(t_o)} \right]^{\frac{1}{t_n - t_o}} - 1$$
$$= \left(\frac{210}{100} \right)^{\frac{1}{4}} - 1 = 26.98\%$$

(21) Ans. b

Explanation:



$$\begin{aligned} \text{No. of students can play cricket} &= 35\% + 20\% \\ &= 55\% \text{ of } 120 \\ &= 66 \end{aligned}$$

(22) Ans. b

Explanation:

$$f(x) = \frac{1}{x-1}$$

if $x = 1$ $f(x)$ will be undefined

$$A = R - \{1\}$$

(23) Ans. d

Explanation:

$$\int \frac{dx}{x + \sqrt{x^2 - 1}} = \int \frac{x - \sqrt{x^2 - 1}}{(x + \sqrt{x^2 - 1})(x - \sqrt{x^2 - 1})} dx$$
$$= \int (x - \sqrt{x^2 - 1}) dx$$

$$= \frac{x^2}{2} - \frac{x}{2} \sqrt{x^2 - 1} + \frac{1}{2} \log (x + \sqrt{x^2 - 1}) + C$$

(24) Ans. c

Explanation:

$$\int_1^2 (x^2 - 5x + 2) dx$$

$$= \left[\frac{x^3}{3} - \frac{5x^2}{2} + 2x \right]_1^2 = -\frac{19}{6}$$

(25) Ans. c

Explanation:

$$\frac{d}{dx} (x^2 \log x)$$

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

$$= x(1 + 2 \log x)$$

(26) Ans. c

Explanation:

$$f(x) = {}^x c_2$$

$$= \frac{x(x-1)}{2}$$

$$= \frac{x^2 - x}{2}$$

$$f'(x) = \frac{2x-1}{2}$$

$$f'(3) = \frac{2 \times 3 - 1}{2} = \frac{5}{2}$$

(27) Ans. a

Explanation:

$$C(x) = 2x^3 - 15x^2 + 36x + 15$$

$$C'(x) = 6x^2 - 30x + 36$$

$$C'(x) = 0$$

$$x^2 - 5x + 6 = 0$$

$$x = 2, 3$$

$$C''(x) = 12x - 30$$

$$\text{Put } x = 3$$

$$C''(x) = 36$$

$$\text{if } C''(x) > 0$$

The cost will be minimum when $x=3$

(28) Ans. b

Explanation:

$$\begin{aligned} f \circ g(x) &= f[g(x)] \\ &= f\left[\frac{1}{1-x}\right] \\ &= \frac{1}{1-x} - 1 \\ &= \frac{1}{1-x} - \frac{1-x}{1-x} \\ &= x \end{aligned}$$

(29) Ans. d

Explanation:

Relation R is Symmetric and Transitive but not Reflexive because (3,3) does not belong to R.

(30) Ans. b

Explanation:

$$\begin{aligned} \alpha - \beta &= \sqrt{(\alpha + \beta)^2 - 4\alpha\beta} \\ &= \sqrt{(7)^2 - 4(-9)} = \sqrt{85} \end{aligned}$$

(31) Ans. c

Explanation:

By Option

(32) Ans. d

Explanation:

$$\begin{aligned} x^2 - (\text{sum of roots})x + \text{product of roots} &= 0 \\ x^2 - (2 - \sqrt{3} + 2 + \sqrt{3})x + (2 - \sqrt{3})(2 + \sqrt{3}) &= 0 \\ x^2 - 4x + 1 &= 0 \end{aligned}$$

(33) Ans. b

Explanation:

By Option

(34) Ans. a

Explanation:

	Machine I	Machine II	
Grade A	2	3	≥ 14
Grade B	1	4	≥ 12

$$2x + 3y \geq 14$$

$$x + 4y \geq 12$$

- (35) Ans. d
 Explanation:
 a, x, c are in A. P. Then,
 $2x = a + c$
 $a + c = 50$ (i)
 a, y, c are in G.P. Then,
 $y^2 = ac$
 $49 = ac$(ii)
 On solving equation (i) and (ii)
 $a = 1, c = 49$

- (36) Ans. a
 Explanation:
 $a = 5,00,000$, $d = 15,000$

$$S_n = \frac{n}{2} [2a + (n - 1) d]$$

$$= \frac{10}{2} [2 \times 5,00,000 + (10 - 1) 15,000]$$

$$= \text{Rs. } 56,75,000$$

- (37) Ans. d
 Explanation:

$$A^{\frac{1}{2}} \times A^{\frac{1}{4}} \times A^{\frac{1}{8}} \dots \dots \dots \infty$$

$$= A^{\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots \dots \dots \infty}$$

$$S^\infty = \frac{a}{1 - r}$$

$$= A^{\frac{1}{1 - 1/2}} = A$$

- (38) Ans. c
 Explanation:
 Transpose of row matrix is Column Matrix.

- (39) Ans. b
 Explanation:
 $2i \times -i - 2i \times 3i$
 $= 2 + 6$
 $= 8$

- (40) Ans. b
 Explanation:
 3×2 Matrix multiply by 2×3 matrix then order of matrix will be 3×3 matrix.

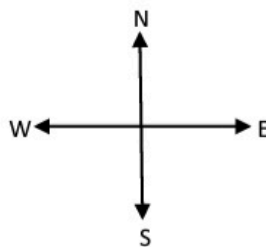
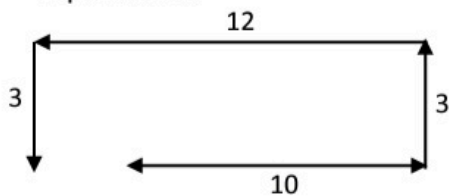
- (41) Ans. c
 Explanation:

? = L

(42) Ans. b
Explanation:
White = 4

(43) Ans. a
Explanation:
Fruit = Sky

(44) Ans. c
Explanation:

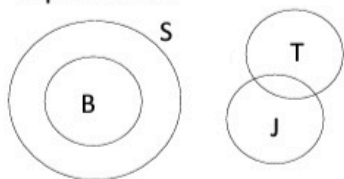


(45) Ans. c
Explanation:
12 ex. U, V, M etc.

(46) Ans. c
Explanation:
26

(47) Ans. d
Explanation:
I or III are Contra Diction.

(48) Ans. a
Explanation:



I ✓

II ✗

(49) Ans. d
Explanation:

I ✗

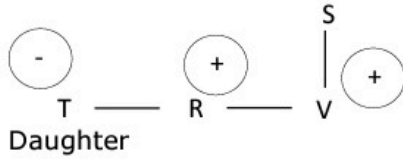
II ✗

(50) Ans. d
Explanation:

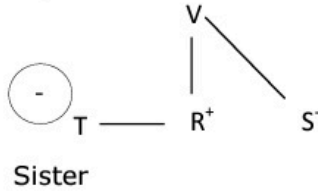
I ✗

II ✗

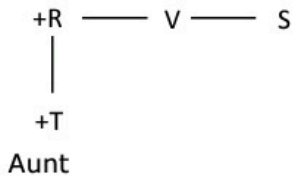
(51) Ans. d
Explanation:



(52) Ans. b
Explanation:



(53) Ans. a
Explanation:



(54) Ans. d
Explanation:
XC

(55) Ans. d
Explanation:
Second from Right

(56) Ans. c
Explanation:
XA

(57) Ans. a
Explanation:
One

(58) Ans. b
Explanation:
B

(59) Ans. a
Explanation:
South

(60) Ans. d
Explanation:
R K

(61) Ans. c
Explanation:
"The less than Ogive" is a S-shaped curve

(62) Ans. d
Explanation:
Most of the commonly used frequency curves are Bell-shaped

(63) Ans. b
Explanation:

$$\text{Income Tax Central angle} = \frac{240}{720} \times 360 = 120$$

$$\text{Wealth Tax angle} = \frac{180}{720} \times 360 = 90$$

(64) Ans. a
Explanation:

The most appropriate diagram to represent 5 year plan outlay of India in different economic sectors is Pie diagram

(65) Ans. c
Explanation:
The most stable measure of central tendency is mean

(66) Ans. c
Explanation:

$$\sum (x - \bar{x})^2 = \text{Minimum}$$

(67) Ans. d
Explanation:
GM cannot be determined if data set have positive and negative observations

(68) Ans. a
Explanation:

$$A.M. = \frac{6 + 8 + 12 + 36}{4} = 15.5$$

$$G.M. = (6 \times 8 \times 12 \times 36)^{1/4} = 12$$

(69) Ans. c
Explanation:

$$4x - 6y = 13$$

$$4 \times 16 - 6y = 13$$

$$64 - 13 = 6y$$

$$6y = 51$$

$$y_m = \frac{51}{6} = 8.5$$

- (70) Ans. a
Explanation:

$$Q_1 = \frac{1(n+1)}{4} \text{th}$$

$$= \frac{10+1}{4} \text{th}$$

$$2.75 \text{ th item} = 62.75$$

$$D_6 = \frac{6(n+1)}{10} \text{th}$$

$$\frac{6 \times 11}{10} = 6.6 \text{ th}$$

$$6.6 \text{ th item} = 81.20$$

$$P_{82} = \frac{82(n+1)}{100} \text{th}$$

$$\frac{82 \times 11}{100} \text{th}$$

$$9.02 \text{ th item} = 120.20$$

- (71) Ans. b
Explanation:
Mean - Mode = 3 (Mean - Median)
 $50 - x = 3 (50 - 40)$
 $50 - x = 30$
 $x = 20$

- (72) Ans. d
Explanation:

$$\sum n^2 = \frac{n(n+1)(2n+1)}{6}$$

A.M. of first $2n$ natural number

$$\frac{2n(2n+1)(4n+1)}{6 \times 2n}$$
$$= \frac{(2n+1)(4n+1)}{6}$$

- (73) Ans. a
Explanation:

$$\sigma_x = 3$$

$$y = 5 - 2x$$

$$\sigma_y = \frac{2}{1} \times 3 = 6$$

$$vy = 36$$

- (74) Ans. c
Explanation:

$$\sum dx^2 = 250 \quad n = 10$$

$$\bar{x} = 50$$

$$\sigma = \sqrt{\frac{250}{10}} = 5$$

$$C.V. = \frac{5}{50} \times 100 = 10$$

(75) Ans. b

Explanation:

If the values of y are not affected by changes in the values of x, the variables are said to be Uncorrelated

(76) Ans. b

Explanation:

Correlation coefficient is Independent of the units of measurement

(77) Ans. b

Explanation:

The correlation between sale of cold drinks and day temperature is positive

(78) Ans. c

Explanation:

If $y = a + bx$, then what is the coefficient of correlation between x and y -1

(79) Ans. c

Explanation:

If the plotted points in a scatter diagram lie from upper left to lower right, then correlation is negative

(80) Ans. a

Explanation:

Co-variance may be positive, negative or zero false

(81) Ans. d

Explanation:

The difference between the observed value and the estimated value in regression analysis is known as error or residue

(82) Ans. a

Explanation:

The two lines of regression meet at (\bar{x}, \bar{y})

(83) Ans. a

Explanation:

$$5x + 7y - 22 = 0$$

$$6x + 2y - 22 = 0$$

$$r = \sqrt{\frac{10}{42}}$$

$$b_{yx} = \frac{-5}{7}$$

$$b_{xy} = -\frac{2}{6} \quad -\frac{5}{7} = -\frac{\sqrt{\frac{10}{42}} \times \sqrt{15}}{\sigma_x}$$

$$\sigma_x = 2.646$$

(84) Ans. b

Explanation:

$$b_{yx} = 0.80$$

$$p = \frac{1}{-3}$$

$$q = \frac{5}{-2}$$

$$b_{yx} = \frac{q}{p} \times b_{uv}$$

$$0.80 = \frac{\frac{-5}{-2}}{\frac{-1}{3}} \times b_{uv} \quad b_{uv} = 0.1066$$

(85) Ans. b

Explanation:

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

$$-\frac{3}{4} = -\frac{\sqrt{\frac{3}{2}} \times 2}{\sigma_x}$$

$$\sigma_x = \sqrt{\frac{16}{3}}$$

$$V_x = \frac{16}{3}$$

(86) Ans. a

Explanation:

$$b_{yx} = \frac{0.92 \times 6}{5}$$

$$b_{xy} = \frac{0.92 \times 5}{6}$$

$$b_{yx} + b_{xy} = 1.871$$

(87) Ans. b

Explanation:

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

$$0.2 = \frac{0.6745 \times (1 - r^2)}{3}$$

$$r = 0.332$$

(88) Ans. c

Explanation:

$$P(A \cap B) = 1 - \frac{5}{6} = \frac{1}{6}$$

$$P(B) = 1 - \frac{2}{3} = \frac{1}{3}$$

$$P(A \cup B) = \frac{1}{2} + \frac{1}{3} - \frac{1}{6} = \frac{2}{3}$$

(89) Ans. a

Explanation:

(3, 4) (4, 3) (2, 6) (6, 2)

$$= \frac{4}{36}$$

(90) Ans. d

Explanation:

$$\frac{5c_3}{12c_3} \times \frac{7c_3}{12c_3} = \frac{7}{968}$$

$$\frac{5c_3}{12c_3} \times \frac{7c_3}{12c_3} = \frac{5}{264}$$

(91) Ans. c

Explanation:

Standard normal distribution have inflexion points - 1 & +1.

(92) Ans. c

Explanation:

$$A = \frac{4}{5} \quad A' = \frac{1}{5}$$

$$B = \frac{3}{4} \quad B' = \frac{1}{4}$$

$$A B' + B A' = \frac{7}{20}$$

(93) Ans. b

Explanation:

SM

MT

TW

$$WT \quad 53 \text{ Saturday} = \frac{2}{7}$$

TF
FS
SS

(94) Ans. d

Explanation:

$E(x - \mu)^2$ and $E[x - E(x)]^2$ both are known as variance

(95) Ans. b

Explanation:

$\beta(n, p)$ it is Biparametric and Parameters are n and p

(96) Ans. d

Explanation:

$$n p = 3$$

$$\sqrt{npq} = 1.5$$

$$3q = 2.25$$

$$q = \frac{2.25}{3} \quad q = 0.75, p = 0.75 \quad \text{so } n = 12$$

(97) Ans. a

Explanation:

$$n p = 4$$

$$npq = 3$$

$$4q = 3$$

$$q = \frac{3}{4} \quad p = \frac{1}{4} \quad \text{so } n = 16$$

$$\text{mod } e = (16 + 1) \frac{1}{4} = \frac{17}{4} = (4)$$

(98) Ans. a

Explanation:

$${}^{10}C_5 \left(\frac{1}{2}\right)^{10}$$

(99) Ans. b

Explanation:

$$\text{Mean} = 6 \times \frac{1}{2} = 3$$

$$SD = \sqrt{6 \times \frac{1}{2} \times \frac{1}{2}} = 1.22$$

(100) Ans. b

Explanation:

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

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

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

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

$$6 q = n p^{-2} p$$

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

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

$$18 q = 10 - 6 p$$

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

$$12 p = 8$$

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

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

$$n = 5$$

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

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

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

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