MATHS

BOOKS - FULL MARKS MATHS (TAMIL ENGLISH)

STATISTICS AND PROBABILITY

Thinking Corner

1. Can variance be negative?

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2. Can the standard deviation be more than the variance?

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3. If the variance is 0.49 then the standard deviation is ___.

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4. For any collection of n values, can you find the value of $\sum(xi - \bar{x})$

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5. If S is the standard deviation of values p, q, r then standard deviation of p-3, q-3, r-3 is .....

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6. What will be the probability that a non-leap year will have 53 saturdays?

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7. What is the complement event of an impossible event?

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8. $P(A \cup B) + P(A \cap B) =$ ___.

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Progress Check

1. Coefficient of variation is a relative measure of .....

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2. When the standard deviation is divided by the mean we get___.

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3. The coefficient of variation depends upon.....and.....

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4. If the mean and standard deviation of a data are 8 and 2 respectively then the co-efficient of variation is ___.

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5. When comparing two data, the data with.....coefficient of variation is inconsistent.

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6. An experiment in which a particular out comes cannot be predicted is called____.

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7. Which of the following values cannot be a probability of an event?

(a) -0.0001 (b) 0.5 (c) 1.001 (d) 1 (e) 20% (f) 0.253 (g) $\frac{1-\sqrt{5}}{2}$ (h) $\frac{\sqrt{3}+(1)}{4}$

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8. P(only A) =.....

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9. $P(\overline{A} \cap B)$=.....

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10. $A \cap B$ and $\overline{A} \cap B$ are.....events.

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11. $P(\overline{A} \cap B)$=.....

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12. If A and B are mutually exclusive events then $P(A \cap B) =$ ___.

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13. If $P(A \cap B) = 0.3$, $P(\overline{A} \cap B) = 0.45$ then $P(B) =$ ____.

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Exercise 8 1

1. Find the range and coefficient of range of the following data.

(i) 63,89,98,125,79,108,117,68

(ii) 43.5,13.6,18.9,38.4,61.4,29.8

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2. If the range and the smallest value of a set of data are 36.8 and 13.4 respectively, then find the largest value.

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3. Calculate the range of the following data.

Income	400-450	450-500	500-550	550-600	600-650
Number of workers	8	12	30	21	6

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4. A teacher asked the students to complete 60 pages of a record note book. Eight students have completed only 32,35,37,30,33,36,35 and 37 pages. Find the standard deviation of the pages yet to be completed by them.

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5. Find the variance and standard deviation of the wages of 9 workers given below :

Rs. 310, Rs. 290, Rs. 320, Rs 280, Rs. 300, Rs. 290, Rs. 320, Rs. 310, Rs. 280.

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6. A wall clock strikes the bell once at 1 o' clock, 2 times at 2 o' clock, 3 times at 3 o' clock and so on. How many times will it strike in a particular day. Find the standard deviation of the number of strikes the bell make a day.

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7. Find the standard deviation of first 21 natural numbers.

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8. If the standard deviation of a data is 4.5 and if each value of the data is decreased by 5, then find the new standard deviation.

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9. If the standard deviation of a data is 3.6 and each value of the data is divided by 3, then find the new variance and new standard deviation.

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10. The rainfall recorded in various places of five districts in a week are given below.

Rainfall (in mm)	45	50	55	60	65	70
Number of places	5	13	4	9	5	4

Find its standard deviation.

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11. In a study about viral fever, the number of people affected in a town were noted as

Age in years	0 - 10	10-20	20-30	30-40	40-50	50-60	60-70
Number of people affected	3	5	16	18	12	7	4

Find its standard deviation.

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12. The measurements of the diameters (in cm) of the plates prepared in a factory are given below. Find its standard deviation.

Diameter (cm)	21-24	25-28	29-32	33-36	37-40	41-44
Number of plates	15	18	20	16	8	7

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13. The time taken by 50 students to complete a 100 meter race are given below. Find its standard deviation.

Time taken (sec)	8.5-9.5	9.5-10.5	10.5-11.5	11.5-12.5	12.5-13.5
Number of students	6	8	17	10	9

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14. For a group of 100 candidatges the mean and standard deviation of their marks were found to be 60 and 15 respectively. Later on it was found

that the scores 45 and 72 were wrongly entered as 40 and 27. Find the correct means and standard deviation.

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15. The mean and variance of seven observations are 8 and 16 respectively. If five of these are 2,4,10,12 and 14, then find the remaining two observations.

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Exercise 8 2

1. The standard deviation and mean of a data are 6.5 and 12.5 respectively. Find the coefficient of variation.

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2. The standard deviation and coefficient of variation of a data are 1.2 and 25.6 respectively. Find the value of mean.

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3. If the mean and coefficient of variation of a data are 15 and 48 respectively, then find the value of standard deviation.

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4. If $n = 5, \bar{x} = 6, \sum x^2 = 765,$ then calculate the coefficient of variation.

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5. Find the coefficient of variation of 24,26,33,37,29,31.

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6. The time taken (in minutes) to complete a homework by 8 students in a day are given by 38,40,47,44,46,43,49,53. Find the coefficient of variation.

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7. The total marks scored by two students Sathya and Vidhya in 5 subjects are 460 and 480 with standard deviation 4.6 and 2.4 respectively. Who is more consistent in performance ?

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8. The mean and standard deviation of marks obtained by 40 students of a class in three subjects Mathematics, Science and Social Science are given below.

Subject	Mean	SD
Mathematics	56	12
Science	65	14
Social Science	60	10

Which of the three subjects shows highest variation and which shows lowest variation in marks ?

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9. The temperature of two cities A and B in a winter season are given below.

Temperature of city A (in degree Celsius)	18	20	22	24	26
Temperature of city B (in degree Celsius)	11	14	15	17	18

Find which city is more consistent in temperature changes ?

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Exercise 8 3

1. Write the sample space for tossing three coins using tree diagram.

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2. Write the sample space for selecting two balls from a bag containing 6 balls numbered 1 to 6 (using tree diagram).

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3. If A is an event of a random experiment such that $P(A): P(\overline{A}) = 17: 15$ and n(S)=640 then find (i) $P(\overline{A})(ii)n(A)$.

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4. A coin is tossed thrice. What is the probability of getting two consecutive tails ?

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5. At a fete, cards bearing numbers 1 to 1000, one number on one card are put in a box. Each player selects one card at random and that card is not replaced. If the selected card has a perfect square number greater than 500, the player wins a prize. What is the probaility that (i) the first player wins a prize (ii) the second player wins a prize, if the first has won ?

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6. A bag contains 12 blue balls and x red balls. If one ball is drawn at random (i) what is the probaility that it will be a red ball ? (ii) If 8 more red balls are put in the bag, and if the probability of drawing a red ball will be twice that of the probaility in (i), then find x.

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7. Two unbiased dice are rolled once. Find the probaility of getting.

(i) a doublet (equal numbers on both dice)

(ii) the product as a prime number

(iii) the sum as a prime number

(iv) the sum as 1

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8. Three fair coins are tossed together. Find the probaility of getting (i) all heads (ii) atleast one tail (iii) atmost one head (iv) atmost two tails

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9. Two dice are numbered 1,2,3,4,5,6 and 1,1,2,2,3,3 respectively. They are rolled and the sum of the numbers on them is noted. Find the probability of gettting each sum from 2 to 9 separately.

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10. A bag contains 5 red balls, 6 white balls, 7 green balls, 8 black balls. One ball is drawn at random from the bag. Find the probability that the ball drawn is (i) white (ii) black or red (iii) not white (iv) neither white nor black

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11. In a box there are 20 non-defective and some defective bulbs. If the probability that a bulb selected at random from the box found to be defective is $3/8$ then, find the number of defective bulbs.

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12. The king and queen of diamonds, queen and jack of hearts, jack and king of spades are removed from a deck of 52 playing cards and then well shufflied. Now one card is drawn at random from the remaining cards. Determine the probability that the card is (i) a clavor (ii) a queen of red card (iii) a king of black card

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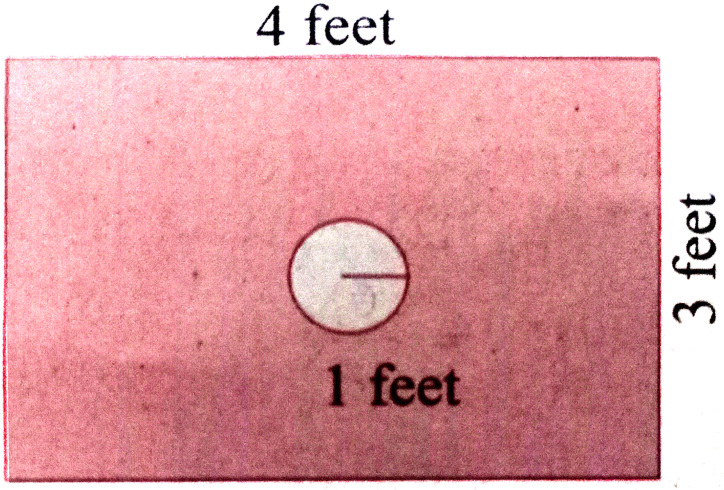
13. Some boys are playing a game, in which the stone thrown by them landing in a circular region (give in the figure) is considered as win and landing other than the circular region is considered as loss. What is the probability to win the game ?



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14. Two customers Priya and Amuthan are visiting a particular shop in the same week (Monday to Saturday). Each is equally likely to visit the shop

on any one day as on another day. What is the probability that both will visit the shop on (i) the same day (ii) different days (iii) consecutive days ?

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15. In a game, the entry fee is Rs. 150. The game consists of tossing a coin 3 times. Dhana bought a ticket for entry. If one or two heads show, she gets her entry fee back. If she throuws 3 heads, she receives double the entry fees. Otherwise she will lose. Find the probability that she (i) gets double entry fee (ii) just gets her entry fee (iii) loses the entry fee.

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Exercise 8 4

1. If $P(A) = \frac{2}{3}, P(B) = \frac{2}{5}, P(A \cup B) = \frac{1}{3}$ then find $P(A \cap B)$

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2. A and B are two events such that, $P(A) = 0.42, P(B) = 0.48,$ and $P(A \cap B) = 016$. Find (i) P (not A) (ii) P (not B) (iii) P (A or B)

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3. If A and B are two mutually exelusive events of a random experiment and P (not A)=0.45, $P(A \cup B) = 0.65$, then find P(B).

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4. The probability that atleast one of A and B occur is 0.6. If A and B occur simultaneously with probability 0.2, then find $P(\overline{A}) + P(\overline{B})$.

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5. The probability of happening of an event A is 0.5 and that of B is 0.3. If A and B are mutually exclusive events, then find the probability that

neither A nor B happen.

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6. Two dice are rolled once. Find the probability of getting an even number on the first die or a total of face sum 8.

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7. From a well-shuffled pack of 52 cards, a card is drawn at random. Find the probability of it being either a red king or a black queen.

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8. A box contains cards numbered 3,5,7,9,..35,37. A card is drawn at random from the box. Find the probability that the drawn card have either multiples of 7 or a prime number.

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9. Three unbiased coins are tossed once. Find the probability of getting atmost 2 tails or atleast 2 heads.

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10. The probability that a person will get an electrification contract is $\frac{3}{5}$ and the probability that he will not get plumbing contract is $\frac{5}{8}$. The probability of getting atleast one contract is $\frac{5}{7}$. What is the probability that he will get both ?

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11. In a town of 8000 people, 1300 are over 50 years and 3000 are females. It is known that 30% of the females are over 50 years. What is the probability that a chosen individual from the town is either a female or over 50 years ?

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12. A coin is tossed thrice. Find the probability of getting exactly two heads or atleast one tail or two consecutive heads.

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13. If A, B, C are any three events such that probability of B is twice as that of probability of A and probability of C is thrice as that of probability of A and if $P(A \cap B) = \frac{1}{6}, P(B \cap C) = \frac{1}{4}, P(A \cap C) = \frac{1}{8}, P(A \cup B \cup C) = \frac{9}{10}$, , then find P(A), P(B) and P(C) ?

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14. In a class of 35, students are numbered from 1 to 35. The ratio of boys to girls is 4 : 3. The roll numbers of students begin with boys and end with girls. Find the probability that a student selected is either a boy with

prime roll number or a girl with composite roll number or an even roll number.

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Exercise 8 5

1. Which of the following is not a measure of dispersion ?

A. Range

B. Standard deviation

C. Arithmetic mean

D. Variance

Answer: C

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2. The range of the data 8,8,8,8,8..8 is

A. 0

B. 1

C. 8

D. 3

Answer: A

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3. The sum of all deviations of the data from its mean is

A. always positive

B. always negative

C. zero

D. non-zero integer

Answer: C

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4. The mean of 100 observations is 40 and their standard deviation is 3. The sum of all observation is ___.

A. 40000

B. 160900

C. 160000

D. 30000

Answer: B

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5. Variance of first 20 natural numbers is

A. 32.25

B. 44.25

C. 33.25

D. 30

Answer: C

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6. The standard deviation of a data is 3 . If each value is multiplled by 5 then the new variance is

A. 3

B. 15

C. 5

D. 225

Answer: D

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7. If the standard deviation of x, y, z is p then the standard deviation of $3x + 5, 3y + 5, 3z + 5$ is ___.

A. $3p + 5$

B. $3p$

C. $p + 5$

D. $9p + 15$

Answer: B

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8. If the mean and coefficient of variation of a data are 4 and 87.5 % then the standard deviation is

A. 3.5

B. 3

C. 4.5

D. 2.5

Answer: A

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9. Which of the following is incorrect ?

A. $P(A) > 1$

B. $0 \leq P(A) \leq 1$

C. $P(\phi) = 0$

D. $P(A) + P(\overline{A}) = 1$

Answer: A

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10. The probability a red marble selected at random from a jar containing p red, q blue and r green marbles is

A. $\frac{q}{p+q+r}$

B. $\frac{p}{q+p+r}$

C. $\frac{p+q}{p+q+r}$

D. $\frac{p+r}{p+q+r}$

Answer: A

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11. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

A. $\frac{3}{10}$

B. $\frac{7}{10}$

C. $\frac{3}{9}$

D. $\frac{7}{9}$

Answer: B

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12. The probability of getting a job for a person is $\frac{x}{3}$. If the probability of not getting the job is $\frac{2}{3}$ then the value of x is

A. 2

B. 1

C. 3

D. 1.5

Answer: A

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13. Kamalam went to play a lucky draw contest. 135 tickets of the lucky draw were sold. If the probability of Kamalam winning is $\frac{1}{9}$, then the number of tickets bought by Kamalam is

A. 5

B. 10

C. 15

D. 20

Answer: C

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14. If a letter is chosen at random from the English alphabets {a, b,.., z}, then the probability that the tletter chosen precedes x

A. $\frac{12}{13}$

B. $\frac{1}{13}$

C. $\frac{23}{26}$

D. $\frac{3}{26}$

Answer: C

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15. A purse contains 10 notes of Rs. 2000, 15 notes of Rs. 500, and 25 notes of Rs. 200. One note is drawn at random. What is the probability that the note is either a Rs. 500 note or Rs. 200 note ?

A. $\frac{1}{5}$

B. $\frac{3}{10}$

C. $\frac{2}{3}$

D. $\frac{4}{5}$

Answer: D

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Unit Exercise

1. The mean of the following frequency distribution is 62.8 and the sum of all frequencies is 50. Compute the missing frequencies f_1 and f_2.

Class Interval	0-20	20-40	40-60	60-80	80-100	100-120
Frequency	5	f_1	10	f_2	7	8

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2. The diameter of circles (in mm) drawn in a design are given below.

Diameters	33-36	37-40	41-44	45-48	49-52
Number of circles	15	17	21	22	25

Calculate the standard deviation.

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3. The frequency distribution is given below.

x	k	$2k$	$3k$	$4k$	$5k$	$6k$
f	2	1	1	1	1	1

In the table, k is a positive integer, has a varience of 160. Determine the value of k.

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4. The standard deviation of some temperature data in degree celsius $(^\circ C)$ is 5. If the data were converted into degree Fahrenhelt $(^\circ F)$ then what is the variance ?

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5. If for a distribution, $\sum(x-5)=3$, $\sum(x-5)^2=43$ and total number of observations is 18, find the mean and standard deviation.

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6. Prices of peanut packets in various places of two cities are given below.

In which city, prices were more stable ?

Prices in city A	20	22	19	23	16
Prices in city B	10	20	18	12	15

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7. If the range and coefficient of range of the data are 20 and 0.2 respectively, then find the largest and smallest values of the data.

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8. If two dice are rolled, then find the probability of getting the product of face value 6 or the difference of face values 5.

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9. In a two children family, find the probability that there is at least one girl in a family.

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10. A bag contain 5 whtie and some black balls. If the probability of drawing a black ball from the bag is twice the probability of drawing a white ball then find the number of black balls.

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11. The probability that a student will pass the final examination in both English and Tamil is 0.5 and the probability of passing neither is 0.1 . If the probability of passing the English examination is 0.75, what is the probability of passing the Tamil examination ?

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12. The King , Queen and Jack of the suit spade are removed from a deck of 52 cards. One card is selected from the remaining cards. Find the probability of getting (i) a diamond (ii) a queen (iii) a spade (iv) a heart card bearing the number 5.

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Additional Question Solved

1. The range of first 10 prime numbers is ____.

A. 28

B. 26

C. 29

D. 27

Answer: D

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2. The least value in a collection of data is 14.1 . If the range of the collection is 28.4, then the greatest value of the collection is .....

A. 42.5

B. 43.5

C. 42.4

D. 42.1

Answer: A

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3. The greatest value of a collection of a data is 72 and the least value is 28. Then, the co-efficient of range is ___.

A. 44

B. 0.72

C. 0.44

D. 0.28

Answer: C

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4. For a collection of 11 items, $\sum x = 132$, then the arithmetic mean is .....

A. 11

B. 12

C. 14

D. 13

Answer: B

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5. For any collection of n items, $\sum(x-\bar{x}) =$ .....

A. $\sum x$

B. $\bar{x}$

C. $n\bar{x}$

D. 0

Answer: D

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6. For any collection of n items, $\sum(x-\bar{x}) =$ .....

A. $n\bar{x}$

B. $(n-2)\bar{x}$

C. $(n-1)\bar{x}$

D. 0

Answer: C

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7. If t is the standard deviation of x, y, z then the standard deviation of $x+5, y+5, z+5$ is .....

A. $\frac{t}{3}$

B. $t+5$

C. t

D. xyz

Answer: C

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8. If the standard deviation of a set of data is 1.6, then the variance is .....

A. 0.4

B. 2.56

C. 1.96

D. 0.04

Answer: B

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9. If the variance of a data is 12.25, then the S.D is .....

A. 3.5

B. 3

C. 2.5

D. 3.25

Answer: A

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10. Variance of the first `11 natural numbers .....

A. $\sqrt{5}$

B. $\sqrt{10}$

C. $5\sqrt{2}$

D. 10

Answer: D

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11. The variance of $10, 10, 10, 10, 10$ is .....

A. 10

B. $\sqrt{10}$

C. 5

D. 0

Answer: D

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12. If the variance of $14, 18, 22, 26, 30$ is 32, then the variance of $28, 36, 44, 52, 60$ is .....

A. 64

B. 128

C. $32\sqrt{2}$

D. 32

Answer: B

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13. Standard deviation of a collection of data is $2\sqrt{2}$. If each value is multiplied by 3, then the standard deviation of the new data is .....

A. $\sqrt{12}$

B. $4\sqrt{2}$

C. $6\sqrt{2}$

D. $9\sqrt{2}$

Answer: C

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14. Given $\sum (x-\bar{x})^2 = 48$, $\bar{x} = 20$ and $n = 12$. The coefficient of variation is .....

A. 25

B. 20

C. 30

D. 10

Answer: D

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15. Mean and standard deviation of a data are 48 and 12 respectively. The coefficient of variation is .....

A. 42

B. 25

C. 28

D. 48

Answer: B

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16. If ϕ is an impossible event, then $P(\phi) =$ .....

A. 1

B. $\frac{1}{4}$

C. 0

D. $\frac{1}{2}$

Answer: C

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17. If S is the sample space of a random experiment, then $P(S) =$ .....

A. 0

B. $\frac{1}{8}$

C. $\frac{1}{2}$

D. 1

Answer: D

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18. If p is the probability of an event A, then p satisfies .....

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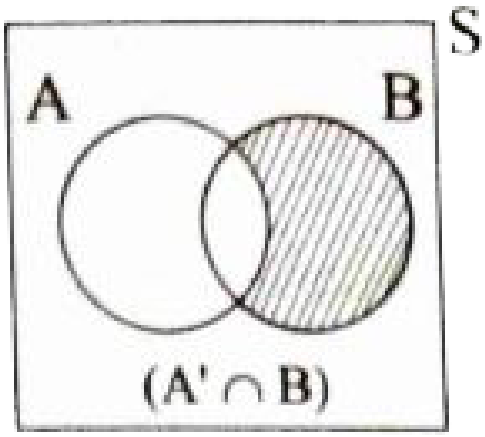
19. Let A and B be any two events and S be the corresponding sample space.

Then $P\left(\overline{A} \cap B\right) =$ .....



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20. The probability that a student will score centum in mathematics is $\frac{4}{5}$. The probability that he will not score centum is .....

A. $\frac{1}{5}$

B. $\frac{2}{5}$

C. $\frac{3}{5}$

D. $\frac{4}{5}$

Answer: A

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21. If A and B are two events such that $P(A) = 0.25$, $P(B) = 0.05$ and $P(A \cap B) = 0.14$, then $P(A \cup B) =$ .....

A. 0.61

B. 0.16

C. 0.14

D. 0.6

Answer: B

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22. There are 6 defective items in a sample of 20 items. One item is drawn at random. The that it is probability a non-defective item is

A. $\frac{7}{10}$

B. 0

C. $\frac{3}{10}$

D. $\frac{2}{3}$

Answer: A

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23. If A and B are mutually exclusive events and S is the sample space such that $P(A) = \frac{1}{3} P(B)$ and $S = A \cup B$, then $P(A) =$ .....

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $\frac{3}{4}$

D. $\frac{3}{8}$

Answer: A

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24. The probabilities of three mutually exclusive events A, B and C are given by $\frac{1}{3}, \frac{1}{4}$ and $\frac{5}{12}$. Then $P(A \cup B \cup C)$ is .....

A. $\frac{19}{12}$

B. $\frac{11}{12}$

C. $\frac{7}{12}$

D. 1

Answer: D

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25. If $P(A) = 0.25, P(B) = 0.50, P(A \cap B) = 0.14$ then P(neither A nor B) $=$ .....

A. 0.39

B. 0.25

C. 0.11

D. 0.24

Answer: A

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26. A bag contains 5 black balls, 4 white balls and 3 red balls. If a ball is selected at random, the probability that it is not red is .....

A. $\frac{5}{12}$

B. $\frac{4}{12}$

C. $\frac{3}{12}$

D. $\frac{3}{4}$

Answer: D

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27. Two dice are thrown simultaneously. The probability of getting a doublet is _____.

A. $\frac{1}{36}$

B. $\frac{1}{3}$

C. $\frac{1}{6}$

D. $\frac{2}{3}$

Answer: C

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28. A fair die is thrown once. The probability of getting a prime or composite number is .....

A. 1

B. 0

C. $\frac{5}{6}$

D. $\frac{1}{6}$

Answer: C

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29. Probability of getting 3 heads or 3 tails in tossing a coin 3 times is .....

A. $\frac{1}{8}$

B. $\frac{1}{4}$

C. $\frac{3}{8}$

D. $\frac{1}{2}$

Answer: B

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30. A card is drawn from a pack of 52 cards at random. The probability of getting neither an ace nor a king card is .....

A. $\frac{2}{13}$

B. $\frac{11}{13}$

C. $\frac{4}{13}$

D. $\frac{8}{13}$

Answer: B

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31. The probability that a leap year will have 53 Fridays or 53 Saturdays is .....

A. $\frac{2}{7}$

B. $\frac{1}{7}$

C. $\frac{4}{7}$

D. $\frac{3}{7}$

Answer: D

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32. The probability that a non-leap year will have 53 Sundays and 53 Mondays is .....

A. $\frac{1}{7}$

B. $\frac{2}{7}$

C. $\frac{3}{7}$

D. 0

Answer: D

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33. The probability of selecting a queen of hearts when a card is drawn from a pack of 52 playing cards is .....

A. $\frac{1}{52}$

B. $\frac{16}{52}$

C. $\frac{1}{13}$

D. $\frac{1}{26}$

Answer: A

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34. Probability of sure event is _____.

A. 1

B. 0

C. 100

D. 0.1

Answer: A

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35. The outcome of a random experiment results in either success or failure. If the probability of success is twice the probability of failure, then the probability of success is .....

A. $\frac{1}{3}$

B. $\frac{2}{3}$

C. 1

D. 0

Answer: B

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36. Find the range and the coefficient of range of the following data.

Income (₹)	610	630	650	670	690
Number of workers	8	12	20	10	5

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37. Two dice are thrown simultaneously. What is the probability that $(i) 5$ will not come up on either of them $(ii) 5$ will come up at both dice

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38. The king, Queen and Jack of clubs are removed from a deck of 52 playing cards and the remaining cards are shuffled. A card is drawn from the remaining cards. Find the probability of getting (i) a card of clubs (ii) a queen of diamond

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39. The standard deviation of 20 observations is $\sqrt{5}$. If each observation is multiplied by 2, find the standard deviation and variance of the resulting observations.

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40. Calculate the variance standard deviation of the following data $38, 40, 34, 31, 28, 26, 34.$

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41. Mean of 100 items is 48 and their standard deviation is 10. Find the sum of all the itmes and the sum of the squares of all items.

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42. If $n = 10, \bar{x} = 12$, and $\sum x^2 = 1530$, then calculate the coefficient of variation.

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43. If the coefficient of variation of a collection of data is 57 and its standard deviation is 6.84, then find the mean.

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44. Find the standard deviation and the variance of first 23 natural numbers ?

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45. Find the coefficient of variation of the following data : $18, 20, 15, 12, 25.$

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46. Three rotten eggs are mixed with 12 good ones. One egg is chosen at random. What is the probability of choosing a rotten egg ?

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47. Two coins are tossed together. What is the probaility of getting at most one head ?

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48. A number is selected at random from integers 1 to 100. Find the probability that it is (i) a perfect square (ii) not a perfect cube.

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49. Three dice are thrown simultaneously . Find the probability of getting the same number.

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50. If $P(A) = \frac{1}{2}$, $P(B) = \frac{7}{10}$, $P(A \cup B) = 1$, find $(i)P(A \cap B)$, $(ii)P(A' \cup B')$

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51. The man of the following frequency distribution is 53 and the sum of all frequencies is 100, compute the missing frequencies f_1 and f_2.

Class interval	0-20	20-40	40-60	60-80	80-100
Frequency	15	f_1	21	f_2	7

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52. Calculate the standard deviation of the following data.

x	3	8	13	18	23
f	7	10	15	10	8

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53. The time (in seconds) taken by a group to walk across a pedstrain crossing a given in the table below :

Time (in sec)	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30
No. of people	4	8	15	12	11

Calcualte the variance and standard deviation of the data.

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54. The mean and standard deviation of 20 items are found to be 10 and 2 respectively. At the time of checking it was found that an item 12 was wrongly entered as 8. Calcualte the correct mean and standard deviation.

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55. Calculate the coefficient of variationof the following data : $20, 18, 32, 24, 26.$

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56. The marks scored by two students A, B in a class are given below.

A	58	51	60	65	66
B	56	87	88	46	43

Who is more consistent ?

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57. If for distribution $\sum(x-7)=3$, $\sum(x-7)^2=57$ and total number of item is 20. Find the mean and standard deviation.

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58. Two unbiased dice are rolled once. Find the probaility of getting.

(i) a doublet (equal numbers on both dice)

(ii) the product as a prime number

(iii) the sum as a prime number

(iv) the sum as 1

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59. A die is thrown twice. Find the probability that atleast one of the two throws comes up with the number 5 (use addition theorem).

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60. Let A,B,C be any three mutually exclusive and exhaustive events such that $P(B) = \frac{3}{2}P(A)$ and $P(C) = \frac{1}{2}P(B)$. Find $P(A)$.

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61. A bag contains 50 bolts and 150 nuts. Half of the bolts and half of the nuts are rusted. If an item is chosen at random, find the probability that it is rusted or that it is a bolt.

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62. Two dice are rolled simultaneously. Find the probability that the sum of the numbers on the faces is neither divisible by 3 nor by 4.

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63. In a class $40\,\%$ of the students participated in Mathematics-quiz, $30\,\%$ in Science-quiz and $10\,\%$ in both the quiz programmes. If a students is selected at random from the class, find the probability that the students participated in Mathematics or science or both quiz programmes.

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64. A two digit number is formed with the digits $2, 5, 9$ (repetition is allowed). Find the probability that the number is divisible by 2 or 5.

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65. The probability that A,B and C can solve a problem are $\frac{4}{5}$, $\frac{2}{3}$ and $\frac{3}{7}$ respectively. The probability of the problem being solved by A and B is $\frac{8}{15}$, B and C is $\frac{2}{7}$, A and C is $\frac{12}{35}$. The probability of the problem being solved by all the three is $\frac{8}{35}$. Find the probaility that the problem can be solved by atleast one of them.

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