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## MATHS

## BOOKS - PREMIERS PUBLISHERS

## STATISTICS AND PROBABILITY

## Solution To Exercise 81

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. Find the range and coefficient of range of the following data.
(i) $63,89,98,125,79,108,117,68$

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3. 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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4. Calculate the range of the following data.

| Income | $400-$ <br> 450 | $450-$ <br> 500 | $500-$ <br> 550 | $550-$ <br> 600 | $600-$ <br> 650 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Number <br> of <br> workers | 8 | 12 | 30 | 21 | 6 |

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5. 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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6. 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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7. 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.
8. Find the standard deviation of first 21 natural numbers.

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9. 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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10. 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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11. The rainfall recorded in various places of five districts in a week are given below.

| Rainfall <br> (in mm) | 45 | 50 | 55 | 60 | 65 | 70 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Number of <br> places | 5 | 13 | 4 | 9 | 5 | 4 |

Find its standard deviation.

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

| Age in years | $\begin{aligned} & 0- \\ & 10 \end{aligned}$ | $\begin{aligned} & \mathbf{1 0 -} \\ & \mathbf{2 0} \end{aligned}$ | $\begin{gathered} \mathbf{2 0} \\ \mathbf{3 0} \end{gathered}$ | $\begin{gathered} 30- \\ 40 \end{gathered}$ | $\begin{gathered} \mathbf{4 0 -} \\ 50 \end{gathered}$ | $\begin{gathered} 50- \\ 60 \end{gathered}$ | $\begin{aligned} & 60- \\ & 70 \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Number of people affected | 3 | 5 | 16 | 18 | 12 | 7 | 4 |

Find its standard deviation.

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

| Diameter <br> (cm) | $21-$ <br> 24 | $25-$ <br> 28 | 32 | 36 | 40 | 44 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Number of <br> plates | 15 | 18 | 20 | 16 | 8 | 7 |

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

| Time <br> taken <br> (sec) | $8.5-$ | $9.5-$ | $10.5-$ | $11.5-$ | $12.5-$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Number <br> of <br> students | 6 | 8 | 17 | 10 | 9 |

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15. 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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16. 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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## Solution To Exercise 82

1. The standard deviation and mean of a data are 6.5 and 12.5 respectively.

Find the coefficient of variation.
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 $24,26,33,37,29,31$.
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 | $\mathbf{5 6}$ | $\mathbf{1 2}$ |
| Science | $\mathbf{6 5}$ | $\mathbf{1 4}$ |
| Social Science | $\mathbf{6 0}$ | $\mathbf{1 0}$ |

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 <br> city A (in degree <br> Celsius) | 18 | 20 | 22 | 24 | 26 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Temperature of <br> city B (in degree <br> Celsius) | 11 | 14 | 15 | 17 | 18 |

Find which city is more consistent in temperature changes ?

## - Watch Video Solution

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

## - Watch Video Solution

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

## ( Watch Video Solution

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

## - Watch Video Solution

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

## - Watch Video Solution

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

## - Watch Video Solution

6. 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 ?

## - Watch Video Solution

7. 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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8. 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 .

## - Watch Video Solution

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## - Watch Video Solution

10. 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

## - Watch Video Solution

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## - Watch Video Solution

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(iii) the sum as a prime number
(iv) the sum as 1

## - Watch Video Solution

14. Three fair coins are tossed together. Find the probability of getting ' all tails'.
15. 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

## - Watch Video Solution

16. 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

## - Watch Video Solution

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

## - Watch Video Solution

18. 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.

## - Watch Video Solution

19. 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

## - Watch Video Solution

20. 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

## - Watch Video Solution

21. 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

## - Watch Video Solution

22. 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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23. 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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24. 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 shuffied. 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

## - Watch Video Solution

25. 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 shuffied. 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

## - Watch Video Solution

26. 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

## - Watch Video Solution

27. 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?

## 4 feet


28. 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 ?

## - Watch Video Solution

29. 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 ?

## - Watch Video Solution

30. 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 ?

## (D) Watch Video Solution

31. 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.

## - Watch Video Solution

32. 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.

## - Watch Video Solution

33. 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.

## - Watch Video Solution

## Solution To Exercise 84

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

## - Watch Video Solution

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)
3. 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)

## - Watch Video Solution

4. $A$ 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) $\mathrm{P}(\operatorname{not} \mathrm{B})($ iii) $\mathrm{P}(\mathrm{A}$ or B$)$

## - Watch Video Solution

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

## - Watch Video Solution

6. 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 $P(\bar{A})+P(\bar{B})$.

## Watch Video Solution

7. 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.

## - Watch Video Solution

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

## - Watch Video Solution

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

## - Watch Video Solution

10. 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.

## ( Watch Video Solution

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

## - Watch Video Solution

12. 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 ?

## - Watch Video Solution

13. 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 ?

## - Watch Video Solution

14. A coin is tossed thrice. Find the probability of getting exactly two heads or atleast one tail or two consecutive heads.
15. 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
$P(A \cap B)=\frac{1}{6}, P(B \cap C)=\frac{1}{4}, P(A \cap C)=\frac{1}{8}, P(A \cup B \cup C)=\frac{9}{10}$,
, then find $P(A), P(B)$ and $P(C)$ ?

## - Watch Video Solution

16. 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
$P(A \cap B)=\frac{1}{6}, P(B \cap C)=\frac{1}{4}, P(A \cap C)=\frac{1}{8}, P(A \cup B \cup C)=\frac{9}{10}, 1$ , then find $P(A), P(B)$ and $P(C)$ ?

## - Watch Video Solution

17. 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 $A$
$P(A \cap B)=\frac{1}{6}, P(B \cap C)=\frac{1}{4}, P(A \cap C)=\frac{1}{8}, P(A \cup B \cup C)=\frac{9}{10}, 1$ , then find $P(A), P(B)$ and $P(C)$ ?

## - Watch Video Solution

18. 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.

## - Watch Video Solution

## Solution To Exercise 85

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

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

## - Watch Video Solution

4. The mean of 100 observations is 40 and their standard deviation is 3 . The sum of all observation is $\qquad$ .
A. 40000
B. 160900
C. 160000
D. 30000

## D Watch Video Solution

5. Variance of first 20 natural numbers is
A. 32.25
B. 44.25
C. 33.25
D. 30

## Answer: c

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

## - Watch Video Solution

7. If the standard deviation of $x, y, z$ is $p$ then the standard deviation of $3 x+5,3 y+5,3 z+5$ is $\qquad$ .
A. $3 p+5$
B. $3 p$
C. $p+5$
D. $9 p+15$
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

## - Watch Video Solution

9. Which of the following is incorrect?
A. $P(A)<1$
B. $0 \leq P(A) \leq 1$
C. $P(\phi)=0$
D. $P(A)+P(\bar{A})=1$

## Answer: a

## - Watch Video Solution

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

## Answer: b

## - Watch Video Solution

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

## - Watch Video Solution

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: b

## - Watch Video Solution

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

## - Watch Video Solution

14. If a letter is chosen at random from the English alphabets $\{a, b, ., \mathrm{z}\}$, 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

## - Watch Video Solution

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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## Solution To 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 |

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 <br> circles | 15 | 17 | 21 | 22 | 25 |

Calculate the standard deviation.

## - Watch Video Solution

3. The frequency distribution is given below.
$\begin{array}{lllllll}x & k & 2 k & 3 k & 4 k & 5 k & 6 k\end{array}$
$\begin{array}{lllllll}f & 2 & 1 & 1 & 1 & 1 & 1\end{array}$
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 $\left({ }^{\circ} C\right)$ is 5 . If the data were converted into degree Fahrenhelt $\left({ }^{\circ} F\right)$ 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.

## Watch Video Solution

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 |

## - Watch Video Solution

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.
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 .

## - Watch Video Solution

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

## - Watch Video Solution

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?

## - Watch Video Solution

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 .

## - Watch Video Solution

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## - Watch Video Solution

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## Solution To Thinking Corner

1. Does the mean, median and mode are same for a given data?
2. What is the differemce between the atithmetic mean and average?

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3. The mean of n observation is $\bar{x}$, if first term is increased by 1 second term is increased by 2 and so no. What will be the new mean?

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4. Can variance be negative?

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

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

## - Watch Video Solution

7. For any collection of n values, can you find the value of $\left(\sum x i\right)-\bar{x}$

## B Watch Video Solution

8. The S.D of a data is 2.8 , if 5 is added to all the data values then the new S.D is $\qquad$ .

## - Watch Video Solution

9. If $S$ is the standard deviation of values $p, q, r$ then standard deviation of $p-3, q-3, r-3$ is
10. What will be the probability that a non-leap year will have 53 saturdays?

## - Watch Video Solution

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

## - Watch Video Solution

12. $P(A \cup B)+P(A \cap B)=\ldots$.

## - Watch Video Solution

## Solution To Progress Check

1. The sum of the all the observations divided by number of observation is $\qquad$ .
2. If the sm of 10 data values is 265 then their mean is $\qquad$ .

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3. If the sum and mean of a data are 407 and 11 respectively, then the number of observations in the height is $\qquad$ .

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4. The range of first 10 prime numbers is

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5. If the variance is 0.49 then the standard deviation is $\qquad$ .
6. Coefficient of variation is a relative measure of $\qquad$

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7. When the standard deviation is divided by the mean we get $\qquad$ .

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

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9. If the mean and standard deviation of a data are 8 and 2 respectively then the co-efficient of variation is $\qquad$ .

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

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11. An experiment in which a particular out comes cannot be predicted is called $\qquad$ .

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12. The set of all possible outcomes is called $\qquad$ .

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13. 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) $\frac{1-\sqrt{5}}{2}$
$\frac{\sqrt{3}+(1)}{4}$
14. P(only A) $=$........

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15. $P(\bar{A} \cap B)=. . . .$.

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16. $A \cap B$ and $\bar{A} \cap B$ are.......events.

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17. $P(\bar{A} \cap \bar{B})=. . . . . .$.

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

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19. If $P(A \cap B)=0.3, P(\bar{A} \cap B)=0.45$ then $P(B)=$ $\qquad$ .

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## Solution To Activity

1. Find the standard deviation of the marks obtained by you in all five subjects in the quarterly examination and in the midterm test separately.

What do you observe from you results?

| Subjects: | English | Language | Maths | Science | Social |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Quarterly Exam: | $\mathbf{7 0}$ | $\mathbf{6 6}$ | 75 | $\mathbf{8 2}$ | $\mathbf{8 7}$ |
| Mid Term Test: | $\mathbf{8 1}$ | $\mathbf{7 2}$ | $\mathbf{7 9}$ | $\mathbf{8 5}$ | $\mathbf{9 0}$ |

2. There are three routes $R_{1}, R_{2}$ and $R_{3}$ from Madhu's home to her place of work. There are four parking lots $P_{1}, P_{2}, P_{3}, P_{4}$ and three entrances $B_{1}, B_{2}, B_{3}$ into the office building. There are two elevatos $E_{1}$ and $E_{2}$ to her floor. Using the tree diagram explain how many ways can she reach her office?

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3. Collect the details and find the probabilites of selecting a boy from you class.

## - Watch Video Solution

4. Collect the details and find the probability of selecting a girl from you class.

## - Watch Video Solution

5. Collect the details and find the probabilites of selecting a student from tenth standard in your school.

## - Watch Video Solution

6. Collect the details and find the probabilites of selecting a boy from tenth standard in your school.

## - Watch Video Solution

7. Collect the details and find the probabilites of selecting a girl from tenth standard in your school.

## - View Text Solution

8. The addition theorem of probability can be written easily using the following ways :

$$
P(A \cup B)=S_{1}-S_{2}
$$

$P(A \cup B \cup C)=S_{1}-S_{2}+S_{3}$
Where $S_{1} \rightarrow$ Sum of probability of events taken one at a time.
$S_{2} \rightarrow$ Sum of probability of events taken two at time.
$S_{3} \rightarrow$ Sum of prbability of evants taken three at time.

$$
\begin{aligned}
& P(A \cup B)=\underbrace{P(A)+P(B)}_{S_{1}} \underbrace{P(A \cap B)}_{S_{2}} \\
& P(A \cup B \cup C)=\underbrace{P(A)+P(B)+P(C)}_{S_{1}} \\
& \underbrace{(P(A \cap B)+P(B \cap C)+P(A \cap C))}_{S_{2}} \underbrace{P(A \cap B \cap C)}_{S_{3}}
\end{aligned}
$$

Find the probability of $P(A \cup B \cup C \cup D)$ using the above way. Can you find a pattern for the number of terms in the formula?

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## Other Important Objective Type Questions

1. If the sum and mean of the data are 418 and 11 respectively then the no.
of observation is the data is:
B. 36
C. 37
D. 38

## Answer: d

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2. The coefficient of range of the data $20,62,43,48,13,34,39$, is :
A. 0.476
B. 0.653
C. 0.470
D. 0.376

Answer: b
3. If the standard deviation of the data $2,3,5,7,8$, is 2.28 what will be standard deviation of the data $10,15,25,35,40$ ?
A. 11.4
B. 0.456
C. $2.28^{5}$
D. 7.28

## Answer: a

4. The variance of first 10 natural numbers is:
A. $\frac{99}{12}$
B. $\frac{100}{12}$
C. $\frac{101}{12}$
D. $\sqrt{\frac{99}{12}}$

## Answer: a

## - Watch Video Solution

5. The mean of the data is 16 and the coefficient of varation is 12.5 . Find the standard deviaton:
A. 2
B. 2.5
C. 3
D. 3.5

## Answer: a

## D Watch Video Solution

6. Batsmen $A$ and $B$ have their coefficient of variation as $13.5 \%$ and $25 \%$ respectively. Therefore we conclude:
A. $A$ is more consistent than $B$
B. $B$ is more consistent than $A$
C. $A$ is more efficient than $B$
D. $B$ is more efficient than $A$

## Answer: a

## D Watch Video Solution

7. When a dice is thrown, the probability of getting an odd number is:
A. $\frac{1}{6}$
B. $\frac{1}{4}$
C. $\frac{1}{3}$
D. $\frac{1}{2}$

## Answer: d

8. When two dice is thrown, the probability of getting sum of the number on the dice as 11 is:
A. $\frac{7}{15}$
B. $\frac{1}{18}$
C. $\frac{3}{12}$
D. $\frac{2}{5}$

## Answer: b

## - Watch Video Solution

9. A bag contains 6 blue balls and 5 green balls and 2 red balls. A ball is chosen at random. What is the probability of getting a red ball?
A. $\frac{2}{13}$
B. $\frac{6}{13}$
C. $\frac{5}{13}$
D. $\frac{11}{13}$

## Answer: a

## - Watch Video Solution

10. Two dice are rolled. Find the probability that the sum of the outcome is greater than 9 .
A. $\frac{1}{12}$
B. $\frac{1}{6}$
C. $\frac{1}{18}$
D. $\frac{1}{36}$

## Answer: b

11. From a well shuffled pack of 52 cards one card is selected at random.

Find the probability of getting black king.
A. $\frac{2}{13}$
B. $\frac{1}{13}$
C. $\frac{1}{26}$
D. $\frac{1}{52}$

## Answer: c

## - Watch Video Solution

12. A year is selected at random. What is the probability that
(i) it contains 53 Sundays
(ii) it is a leap year which contains 53 Sundays
A. `
B.
C.
D.

Answer: $\frac{2}{7}$

## - Watch Video Solution

13. Three fair coins are tossed together. Find the probability of getting ' all tails'.

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14. If $\mathrm{P}(\mathrm{A})=0.5, \mathrm{P}(\mathrm{B})=0.3, P(A \cap B)=0.25$. Find $P(A \cup B)$
A. 0.65
B. 0.35
C. 0.55
D. 0.45

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15. la A and B are mutually exclusive, given $P(A \cup B)=\frac{3}{5}, P(A)=\frac{1}{2}$ then $P(B)$ is:
A. $\frac{1}{10}$
B. $\frac{1}{15}$
C. $\frac{4}{5}$
D. $\frac{2}{3}$

## Answer: a

## - Watch Video Solution

16. Given $A$ and $B$ are mutually exclusine events $P($ not $A)=0.35$
$P(A \cup B)=0.85$. Find $\mathrm{P}($ not B$)$.
A. 0.65
B. 0.25
C. 0.2
D. 0.8

## Answer: d

## D Watch Video Solution

17. Find the odd one out:
A. $P(A)+P(\bar{A})=1$
B. $P(s)=1$
C. $P(\phi)=0$
D. $\mathrm{P}(\mathrm{A})>1$

## Answer: d

18. The sum of all deviations of the data from its mean is
A. zero
B. lass than 1
C. greater than 1
D. positive integer

## Answer: a

## - Watch Video Solution

19. The range of $6,6,6,6,6,6,6$ is:
A. 6
B. 72
C. 7
D. zero

## Answer: d

## - Watch Video Solution

20. If the standard deviation of $\mathrm{a}, \mathrm{b}, \mathrm{c}$ is $\sigma$ this standard deviation of $4 \mathrm{a}+7$, $4 b+7,4 c+7$ will be of:
A. $4 \sigma+7$
B. $\sigma+7$
C. $4 \sigma$
D. $12 \sigma+7$

## Answer: c

## - Watch Video Solution

21. If $P(A)=\frac{x}{21}$ and $P(\bar{A})$ is $\frac{11}{21}$. Find x .
A. 7
B. 8
C. 10
D. 9

## Answer: c

## - Watch Video Solution

22. From the English alphabers one letter is chosen at random. What is the probability that it is a vowel?
A. $\frac{5}{26}$
B. $\frac{6}{26}$
C. $\frac{7}{26}$
D. $\frac{8}{26}$

## Answer: a

## D Watch Video Solution

23. Match the following :

| 23. | $\mathrm{P}(\phi)=$ | (a) 16 |
| :--- | :--- | :--- |
| 24. | If $\mathrm{S} . \mathrm{D}=4$, variance is | (b) $\frac{1}{6}$ |
| 25. | When two dice are thrown the probability of <br> getting a doublet is | (c) $\frac{7}{10}$ |
| 26. | If $\mathrm{P}(\mathrm{A})=0.37$ <br> $\mathrm{P}(\mathrm{B})=0.42$ <br> $\mathrm{P}(\mathrm{A} \cap \mathrm{B})=0.09$ <br> Then $\mathrm{P}(\mathbf{A} \cup \mathrm{B})$ | (d) 0 |

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