



MATHS

BOOKS - OSWAAL PUBLICATION

MATHS (KANNADA ENGLISH)

PROBABILITY

Probability

1. Assume that each born child is equally likely to be a boy or a girl. If a family has two

children, what is the conditional probability that both are girls ? Given that (i) the youngest is a girl. (ii) atleast one is a girl.



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3. A speaks truth in 60% of the cases, while B in 90% of the cases. In what percent of cases are they likely to contradict each other in stating the same fact? In the cases of contradiction do you think, the statement of B will carry more weight as he speaks truth in more number of cases than A?



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4. P speaks truth in 70% of the cases and Q in 80% of the cases. In what percent of the cases they are likely to agree in the same fact ? Do you think, when they agree, means both are speaking truth.



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5. A speaks truth in 75 % of the cases, while B in 90 % of the cases. In what percent of cases are they likely to contradict each other in

stating the same fact ? Do you think that statement of B is always true ?



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6. In a school, there are 1,000 students, out of which 380 are girls. Out of 380 girls, 10 % of the girls scored highest in GS . What is the probability that a student chosen randomly scored highest in GS given that the chosen student is a girl? What value do you observe in it?



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7. How many times must a man toss a fair coin, so that the probability of having at least one head is more than 80%?



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8. Probabilities of solving a specific problem independently by A and B are $\frac{1}{2}$ and $\frac{1}{3}$ respectively. If both try to solve the problem independently, find the probability that (i) the

problem is solved (ii) exactly one of them solves the problem.



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10. In a factory which manufactures bolts, machines A, B and C manufacture respectively 25%, 35% and 40% of the bolts. Of their outputs, 5%, 4% and 2% are respectively defective bolts. A bolt is drawn at random from the product and is found to b



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11. An urn contains 4 balls. Two balls are drawn at random from the urn (without replacement)

and are found to be white. What is the probability that all the four balls in the urn are white ?



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12. Bag I contains 3 red and 4 black balls and Bag II contains 4 red and 5 black balls. One ball is transferred from Bag I to Bag II and then a ball is drawn from Bag II. The ball so drawn is found to be red in colour. Find the probability that the t



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13. A man is known to speak truth 3 out of 4 times. He throws a die and reports that it is a six. Find the probability that it is actually a six.



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**Random Variable And Its Probability Distribution
Short Answer Type Questions I**

1. Let X denote the number of hours you study during a randomly selected school day. The probability that X can take the values x has the following form, where k is some unknown constant.

$$P(X=x) = \begin{cases} 0.1 & \text{if } x=0 \\ k & \text{if } x=1 \\ 2k(5-x) & \text{if } x=2, 3, 4, 5 \end{cases}$$


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2. A discrete random variable X has the following probability distribution: $X: 1234567$

$P(X) : c^2 c^2 c^3 \cdot 22c^{27} c^2 + c$ Find the value of

• Also, find the mean of the distribution.



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3. A class has 15 students whose ages are 14, 17, 15, 14, 21, 17, 19, 20, 16, 18, 20, 17, 16, 19 and 20 years. One student is selected in such a manner that each has the same chance of being chosen and the age X of the selected student is recorded. What is the probability

distribution of the random variable X ? Find the mean of X .



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4. An urn contains 4 white and 6 red balls. Four balls are drawn at random from the urn. Find the probability distribution of the number of white balls.



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5. Two cards are drawn successively with replacement from a well-shuffled pack of 52 cards. Find the probability distribution of the number of kings.



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6. Two cards are drawn simultaneously (without replacement) from a well-shuffled pack of 52 cards. Find the mean and variance of the number of red cards.



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7. A random variable X has the following probability distribution:

I	0	1	2	3	4	5	6	7
$P(X)$	0	K	$2K$	$2K$	$3K$	K^2	$2K^2$	$7K^2 + K$

Determine: (i) K (ii) $P(X < 3)$ (iii) $P(X > 6)$ (iv) $P(0 < X < 3)$

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I	0	1	2	3	4	5	6	7
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$$P(X) \quad 0 \quad K \quad 2K \quad 2K \quad 3K \quad K^2 \quad 2K^2 \quad 7K^2 + K$$

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Random Variable And Its Probability Distribution
Long Answer Type Questions I

1. A die is thrown 6 times. If "getting an odd number" is a success, what is the probability of (i) 5 successes? (ii) at least 5 successes? (iii) at most 5 successes?



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2. A die is thrown 6 times. If "getting an odd number" is a success, what is the probability of (i) 5 successes? (ii) at least 5 successes? (iii) at most 5 successes?





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3. A die is thrown 6 times. If getting an odd number is success, What is the probability

(a) 5 successes

(b) at least 5 successes

(c) at most 5 successes



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4. If a fair coin is tossed 8 times. Find the probability of

at least five heads.



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5. If a fair coin is tossed 8 times. Find the probability of
at most five heads.



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6. Find the probability of getting at most two sixes in six throws of a single die .



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7. A person buys a lottery ticket in 50 lotteries, in each of which his chance of winning and prize is $\frac{1}{100}$. What is the probability that he will win a prize.

(a) at least once

(b) exactly once



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8. If a fair coin is tossed 10 times, find the probability of.

(i) exactly six heads and (ii) atleast six heads.



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9. If a fair coin is tossed 10 times, find the probability of.

(i) exactly six heads and (ii) atleast six heads.



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10. Four balls are to be drawn without replacement from a box containing 8 red and 4 white balls. If x denotes the number of red balls drawn. Find the probability distribution of x .



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11. An experiment succeeds thrice as often as it fails. Find the probability that in the next 5 trials, there will be atleast 3 successes.



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12. A pair of dice is thrown 4 times. If getting a doublet is considered a success find the probability of 2 success.



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13. Find the probability of getting at most two sixes in six throws of a single die .



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14. On a multiple choice questions with three possible answers for each of the five questions, what is the probability that a candidate would get 4 or more correct answers just by guessing ?



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