

Class : IXTH
Date :

Subject : MATHS
DPP No. : 3

THE MATHEMATICS OF MAY BE : INTRODUCTION TO PROBABILITY

- What is the probability that a number selected randomly from the numbers 1, 2, 8, ..., 15 is a multiple of 4 ?
(a) $\frac{4}{15}$ (b) $\frac{6}{15}$ (c) $\frac{3}{15}$ (d) $\frac{5}{15}$
- The probability of getting a bad egg in a lot of 400 is 0.035 . The number of bad eggs in the lot is:
(a) 7 (b) 14 (c) 21 (d) 28
- A bag contains 4 identical red balls and 3 identical black balls. The experiment consists of drawing one ball, then putting it into the bag and again drawing a ball. What are the possible outcomes of the experiment?
- Two coins are tossed simultaneously 500 times, and we get
Two heads: 105 times; One head : 275 times; No head: 120 times
Find the probability of occurrence of each of these events.
- A quick online poll is conducted among 80 teenagers to find out their favourite video streaming platform. The results show that 28 prefer Netflix, 20 prefer Amazon Prime, 18 prefer Jio Cinema, and 14 prefer YouTube. If one teenager is selected at random, what is the probability that the chosen person's favourite platform is Netflix?
- The record of a weather station shows that out of the past 250 consecutive days, its weather forecasts were correct 175 times.
 - What is the probability that on a given day it was correct?
 - What is the probability that it was not correct on a given day?
- Shivesh was tossing a fair coin. Shown below are the outcomes of his first 5 tosses: Tail, Tail, Tail, Tail, Tail.
Is the probability of Shivesh getting a head in his sixth toss higher than the probability of getting a tail? Give a valid reason.



8. Fifty seeds were selected at random from each of 5 bags of seeds, and were kept under standardised conditions favourable to germination. After 20 days, the number of seeds which had germinated in each collection were counted and recorded as follows:

Bag	1	2	3	4	5
Number of seeds germinated	40	48	42	39	41

What is the probability of germination of

- (i) more than 40 seeds in a bag?
 - (ii) 49 seeds in a bag?
 - (iii) more than 35 seeds in a bag?
9. A coin is tossed repeatedly until a head comes up. Describe the sample space.
10. A die is thrown once. What is the probability of getting a number less than 3 ?
11. A child has a die whose six faces show the letters as shown below :

A	A	B	C	C	C
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The die is thrown once. What is the probability of getting (i) A (ii) C?

12. A piggy bank contains hundred 50p coins, fifty ₹ 1 coins, twenty ₹ 2 coins and ten ₹ 5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin
- (i) will be a 50 p coin?
 - (ii) will not be a ₹ 5 coin?
13. The probability of selecting a rotten apple randomly from a heap of 900 apples is 0.18. What is number of rotten apples in the heap?
14. There are 40 students in Class IX of a school of whom 25 are girls and 15 are boys. The class teacher has to select one student as a class representative. She writes the name of each student on a separate card, the cards being identical. Then she puts cards in a bag and stirs them



thoroughly. She then draws one card from the bag. What is the probability that the name written on the card is the name of (i) a girl? (ii) a boy?

15. A lot consists of 48 mobile phones of which 42 are good, 3 have only minor defects and 3 have major defects. Varnika will buy a phone if it is good but the trader will only buy a mobile if it has no major defect. One phone is selected at random from the lot. What is the probability that it is

- (i) acceptable to Varnika?
- (ii) acceptable to the trader?

16. Consider the following experiments. What is the number of the possible outcomes and the sample space for each?

- (i) Experiment 1: A coin is tossed two times.
- (ii) Experiment 2: A card is drawn at random from cards numbered 1 to 5.

17. 20 tickets, on which numbers 1 to 20 are written, are mixed thoroughly and then a ticket is drawn at random out of them. Find the probability that the number on the drawn ticket is a multiple of 3 or 7 .

18. A bag contains cards which are numbered from 5 to 100 such that each card bears a different number. A card is drawn at random. Find the probability that number on the card is

- (i) a perfect square (ii) a 2-digit number

19. A die is thrown once. Find the probability of getting a number which

- (i) is a prime number
- (ii) lies between 2 and 6.

20. 12 defective pens are accidentally mixed with 132 good ones. It is not possible to just look at a pen and tell whether or not it is defective. One pen is taken out at random from this lot.

Determine the probability that the pen taken out is a good one.

21. An integer is chosen at random between 1 and 100 (not including 1 or 100). Find the probability that it is:

- (i) divisible by 8 . (ii) not divisible by 8 .

22. A bag contains 4 red, 3 blue and 2 yellow balls. One ball is drawn at random from the bag. Find the probability that drawn ball is (i) red (ii) yellow.



23. In a single throw of a pair of different dice, what is the probability of getting (i) a prime number on each die? (ii) a total of 9 or 11 ?
24. If 65% of the population has black eyes, 25% have brown eyes and the remaining have blue eyes, what is the probability that a person selected at random has:
- (i) blue eyes? (ii) brown or black eyes?
25. Box *A* contains 25 slips of which 19 are marked ₹ 1 and other are marked ₹ 5 each. Box *B* contains 50 slips of which 45 are marked ₹1 each and others are marked ₹ 13 each. Slips of both boxes are poured into a third box and reshuffled. A slip is drawn at random. What is the probability that it is marked other than ₹ 1 ?
26. A box contains 90 discs which are numbered from 1 to 90 . If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number, (ii) a number divisible by 5 .
27. A factory manufacturing car batteries made a survey in the field about the life of these batteries. The data obtained is given below:

Life time (in months)	Frequency (number of batteries)
Less than 24	40
24 to 36	220
36 to 48	540
More than 48	200
Total no. of batteries	1000

If you put a battery of this company in

your car, what is the probability that

- (i) the battery will last for more than 36 months?
- (ii) the battery will last for less than 48 months?
- (iii) the battery will last for 36 to 48 months?



1. (c)
2. (b)
3. {RR, RB, BR, BB}
4. $P(\text{getting two heads}) = 0.21; P(\text{getting one head}) = 0.55; P(\text{getting no head}) = 0.24$
5. 0.35
6. (i) 0.7 (ii) 0.3
7. No, tossing a coin is an independent event
8. (i) 0.6 (ii) 0 (iii) 1
9. $\{H, TH, TTH, TTTH, TTTTH, \dots\}$
10. $\frac{1}{3}$
11. (i) $\frac{1}{3}$ (ii) $\frac{1}{2}$
12. (i) $\frac{5}{9}$ (ii) $\frac{17}{18}$
13. 162
14. (i) $\frac{5}{8}$ (ii) $\frac{3}{8}$
15. (i) $\frac{7}{8}$ (ii) $\frac{15}{16}$
16. (i) $\{HH, HT, TH, TT\}$; 4 (ii) $\{1, 2, 3, 4, 5\}$; 5
17. $\frac{2}{5}$
18. (i) $\frac{1}{12}$ (ii) $\frac{15}{16}$
19. (i) $\frac{1}{2}$ (ii) $\frac{1}{2}$
20. $\frac{11}{12}$
21. (i) $\frac{6}{49}$ (ii) $\frac{43}{49}$
22. (i) $\frac{4}{9}$ (ii) $\frac{2}{9}$
23. (i) $\frac{1}{4}$ (ii) $\frac{1}{6}$
24. (i) 10% (ii) 90%
25. $\frac{11}{75}$
26. (i) $\frac{9}{10}$ (ii) $\frac{1}{5}$
27. (i) 0.74 (ii) 0.8 (iii) 0.54

