Mathematics — Ganita Manjari

Chapter 7 Test 7

The Mathematics of Maybe: Introduction to Probability

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Give exact answers unless an approximation is requested.
3. Use the stated fairness and replacement conditions in each question.

SECTION A

(5 questions × 1 mark = 5 marks)

1. A face has not appeared in 15 rolls of a die. This observation alone means:

(A) That face is impossible
(B) The die must be fair
(C) Its experimental probability so far is zero
(D) Its theoretical probability is zero

2. If $P(E) = 1$, the probability that E does not occur is:

(A) 1 (B) $1/2$
(C) Undetermined (D) 0

3. In a tree diagram, one complete path from the start to an end represents:

(A) One complete outcome
(B) The entire sample space
(C) Only the first trial
(D) Always a certain event

4. The table gives cumulative results. How many heads occurred in tosses 21 through 40?

Total tosses	20	40
Total heads	12	22

(A) 12 (B) 10
(C) 22 (D) 34

5. The fraction $7/25$ is calculated because rain was observed on 7 of 25 days. It is a probability estimate based on:

(A) Equally likely weather outcomes (B) Personal feeling only
(C) Recorded statistical data (D) A fair spinner

SECTION B

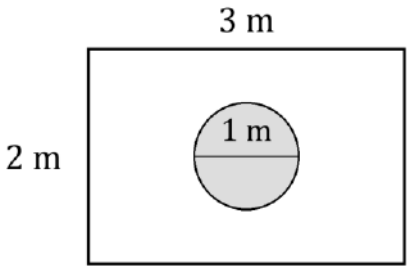
(4 questions × 2 marks = 8 marks)

6. A box has two red balls labelled R1 and R2 and one blue ball B1. A ball is drawn uniformly. Give the sample space when recording the individual ball, and when recording only its colour.

7. A card from 1 to 30 is chosen uniformly. Find the probability that its number is divisible by both 2 and 5.

8. A coin has shown heads 8 times in 20 tosses. The next toss is a head. Find the updated experimental probability and explain why it is not 9/20.

9. A point is selected uniformly in the 3 m by 2 m rectangle. Find the probability that it lies inside the circle of diameter 1 m. Leave the answer in terms of π.



SECTION C

(3 questions × 3 marks = 9 marks)

10. A bag contains 2 red, 1 blue and 1 green ball. Two balls are drawn uniformly with replacement. Find the probability of the same colour. Why is counting three matching colour pairs out of nine insufficient?

11. Two fair dice are rolled independently. Find the probability that their numbers differ by exactly 2. List the favourable ordered pairs.

12. Of 100 randomly sampled residents, 65 use a park. State the exact probability of selecting a park user uniformly from these 100. Can the same value be treated as exact for the whole town? Explain.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A box contains 5 winning and 15 losing tickets. Only losing tickets may be removed. Find how many must be removed so that one uniform draw has winning probability 1/3.