Mathematics — Ganita Manjari

Chapter 7 Test 9

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. Which statement about sample size is correct?

(A) A large sample can never be biased
(B) Any ten people represent a whole town
(C) A larger representative sample usually gives a more reliable estimate
(D) A sample must equal the population

2. A report claims to show all 40 coin tosses. What is wrong with its table?

Result	Heads	Tails
Frequency	23	18

(A) Heads is too frequent to be possible
(B) The counts total 41, not 40
(C) Tails must equal heads
(D) Every count must be even

3. An event has zero favourable outcomes among 18 equally likely outcomes. Its probability is:

(A) 0
(B) 1/18
(C) 18
(D) 1

4. Drawing with replacement means that after the first draw:

(A) Only a different object may be drawn
(B) The chosen object is discarded
(C) The remaining objects are doubled
(D) The chosen object is returned before the next draw

5. A fair die shows 1 on four successive rolls. Why is the probability of 1 on the next independent roll still 1/6?

(A) A 1 is now due
(B) Earlier rolls do not affect it
(C) The die compensates
(D) Four rolls prove unfairness

SECTION B

(4 questions × 2 marks = 8 marks)

6. A spinner's three outcomes occurred 14, 9 and 17 times. Calculate their experimental probabilities and verify that they add to 1.

7. Tickets numbered 1 to 15 are drawn uniformly. Find the probability of a number below 4 or above 12, listing the favourable tickets.

8. A forecast gives rain probability 0.8. Explain why "rain is certain" and "it will rain for 80% of the day" are both unjustified.

9. For two ordered tosses, a pupil lists $\{HH, HT, TT\}$ as the sample space. Correct the list and explain what was omitted.

SECTION C

(3 questions × 3 marks = 9 marks)

10. A pupil independently guesses three multiple-choice questions, each with four equally likely options and one correct answer. Find the probability of exactly two correct answers.

11. Two fair three-sector spinners numbered 1, 2, 3 are spun independently. The grid shows ordered results. List the cells with a sum at least 5 and calculate their probability.

First / Second	1	2	3
1	(1, 1)	(1, 2)	(1, 3)
2	(2, 1)	(2, 2)	(2, 3)
3	(3, 1)	(3, 2)	(3, 3)

12. A spinner lands on green 6 times in 10 spins and 18 times in 90 further spins. A pupil averages 0.6 and 0.2 to report 0.4. Find the correct combined estimate and explain the error.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A player is at square 96 and rolls a fair standard die. Reaching 100 exactly wins; overshooting 100 means staying at 96. Find the probabilities of winning immediately, moving without winning, and staying at 96.