

MATHEMATICS (Standard)

Chapter 14: Probability

Class X | CBSE Board | Session 2026–27

MCQ + Assertion–Reason

Objective Worksheet

Total Marks: 30 | Time: 40 min

General Instructions: (i) All questions are compulsory. (ii) Each MCQ carries 1 mark. (iii) Each Assertion–Reason question carries 1 mark. (iv) Total marks: 30. (v) No negative marking.

SECTION A — Multiple Choice Questions (MCQ)

[20 × 1 = 20 Marks]

Direction: Choose the correct option for each of the following questions.

Q1. A bag contains 3 red balls, 5 white balls and 7 black balls. What is the probability that a ball drawn at random from the bag is NOT a red ball?

- (a) $\frac{1}{5}$ (b) $\frac{1}{3}$ (c) $\frac{4}{5}$ (d) $\frac{2}{3}$

Q2. Two coins are tossed simultaneously. The probability of getting at most one head is:

- (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{3}{4}$ (d) 1

Q3. A card is drawn at random from a well-shuffled deck of 52 playing cards. The probability of getting a face card (King, Queen or Jack) is:

- (a) $\frac{1}{13}$ (b) $\frac{3}{13}$ (c) $\frac{4}{13}$ (d) $\frac{6}{13}$

Q4. A die is thrown once. The probability of getting an even prime number is:

- (a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$

Q5. In a class of 40 students, 15 are girls. If a student is selected at random, the probability that the selected student is NOT a girl is:

- (a) $\frac{3}{8}$ (b) $\frac{5}{8}$ (c) $\frac{15}{40}$ (d) $\frac{1}{2}$

Q6. Two dice are thrown simultaneously. What is the probability of getting a doublet (same number on both dice)?

- (a) $\frac{1}{36}$ (b) $\frac{5}{36}$ (c) $\frac{1}{6}$ (d) $\frac{1}{3}$

Q7. A card is drawn from a deck of 52 cards. What is the probability that the card drawn is a black queen?

- (a) $\frac{1}{26}$ (b) $\frac{1}{52}$ (c) $\frac{1}{13}$ (d) $\frac{3}{52}$

Q8. Which of the following cannot be the probability of an event?

- (a) 0.15 (b) -0.3 (c) 0 (d) 0.7

Q9. There are 30 cards numbered 1 to 30. A card is drawn at random. The probability that the number on the drawn card is a multiple of 3 or 5 is:

- (a) $\frac{1}{3}$ (b) $\frac{2}{5}$ (c) $\frac{3}{5}$ (d) $\frac{8}{15}$

Q10. A lot of 25 bulbs contain 5 defective ones. One bulb is drawn at random. The probability that the drawn bulb is NOT defective is:

- (a) $\frac{1}{5}$ (b) $\frac{4}{5}$ (c) $\frac{3}{5}$ (d) $\frac{2}{5}$

Q11. Two dice are thrown together. The probability of getting a sum greater than 9 is:

- (a) $\frac{1}{6}$ (b) $\frac{5}{18}$ (c) $\frac{1}{12}$ (d) $\frac{1}{4}$

Q12. A card is drawn at random from a well-shuffled deck of 52 cards. The probability that it is either a king or a queen is:

- (a) $\frac{1}{13}$ (b) $\frac{2}{13}$ (c) $\frac{4}{13}$ (d) $\frac{8}{52}$

Q13. The probability that a leap year selected at random will have 53 Sundays is:

- (a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) $\frac{5}{7}$

Q14. If $P(E) = 0.35$, then $P(\text{not } E)$ is:

- (a) 0.35 (b) 0.65 (c) 1.35 (d) 0

Q15. A bag contains 5 red and 8 blue marbles. A marble is drawn at random. What is the probability that it is blue?

- (a) $\frac{5}{13}$ (b) $\frac{8}{13}$ (c) $\frac{8}{5}$ (d) $\frac{3}{13}$

Q16. A number is chosen at random from the integers 1 to 20. What is the probability that it is a prime number?

- (a) $\frac{2}{5}$ (b) $\frac{1}{4}$ (c) $\frac{9}{20}$ (d) $\frac{2}{10}$

Q17. A box contains 90 discs numbered 1 to 90. One disc is drawn at random from the box. What is the probability that it bears a two-digit number?

- (a) $\frac{7}{9}$ (b) $\frac{1}{9}$ (c) $\frac{9}{10}$ (d) $\frac{81}{90}$

Q18. The probability of getting at least one head when three coins are tossed simultaneously is:

- (a) $\frac{3}{8}$ (b) $\frac{7}{8}$ (c) $\frac{5}{8}$ (d) $\frac{1}{2}$

Q19. A card is drawn from a well-shuffled pack of 52 cards. What is the probability that the card is an ace of spades?

- (a) $\frac{1}{52}$ (b) $\frac{4}{52}$ (c) $\frac{1}{26}$ (d) $\frac{1}{13}$

Q20. From a group of 3 boys and 2 girls, one student is selected at random for a quiz competition. The probability that the selected student is a girl is:

- (a) $\frac{2}{3}$ (b) $\frac{3}{5}$ (c) $\frac{2}{5}$ (d) $\frac{1}{5}$

Direction: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer from the options given below:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is NOT the correct explanation of Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

Q21.

Assertion (A): The probability of an impossible event is 0.

Reason (R): Probability of an event always lies between 0 and 1 (both inclusive).

Q22.

Assertion (A): If $P(E) = 0.7$, then $P(\text{not } E) = 0.3$.

Reason (R): $P(E) + P(\text{not } E) = 1$ for any event E.

Q23.

Assertion (A): When two dice are rolled, the probability of getting a sum of 7 is $1/6$.

Reason (R): There are 36 equally likely outcomes when two dice are rolled, and 6 of them give a sum of 7: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1).

Q24.

Assertion (A): The probability that a non-leap year has 53 Sundays is $2/7$.

Reason (R): A non-leap year has 365 days = 52 complete weeks and 1 extra day, and there is only 1 favourable case (if the extra day is a Sunday) out of 7 equally likely cases.

Q25.

Assertion (A): The probability of selecting a red card from a standard deck of 52 playing cards is $1/2$.

Reason (R): There are 26 red cards (13 hearts and 13 diamonds) in a standard deck of 52 cards.

Q26.

Assertion (A): If a die is thrown once, the probability of getting a number greater than 6 is 1.

Reason (R): The sample space of throwing a die is {1, 2, 3, 4, 5, 6}.

Q27.

Assertion (A): From a bag containing 4 red and 6 blue balls, the probability of drawing a red ball is $2/5$.

Reason (R): Theoretical probability $P(E) = \text{Number of outcomes favourable to } E / \text{Total number of equally likely outcomes}$.

Q28.

Assertion (A): When a coin is tossed twice, the probability of getting exactly one head is $1/2$.

Reason (R): The sample space when two coins are tossed is $\{HH, HT, TH, TT\}$, and the favourable outcomes for exactly one head are HT and TH.

Q29.

Assertion (A): The probability of drawing a card of spades from a well-shuffled deck of 52 cards is $1/4$.

Reason (R): Probability of a certain event (sure event) is always 1.

Q30.

Assertion (A): For any event E, $P(E)$ can be negative.

Reason (R): Probability is a measure of likelihood and is always a non-negative number.