Probability MCQs - Class 11 Mathematics

Prepared for Entry Test Preparation

Multiple Choice Questions

1. A bag contains 4 red and 6 blue balls. One ball is drawn at random. What is the probability it is red?

(a) $\frac{2}{5}$

(b) $\frac{3}{5}$

(c) $\frac{4}{9}$

(d) $\frac{1}{3}$

2. A fair coin is tossed twice. What is the probability of getting exactly one head?

(a) $\frac{1}{4}$

(b) $\frac{1}{2}$

(c) $\frac{3}{4}$

(d) $\frac{2}{3}$

3. A die is rolled. What is the probability that the number is even or greater than 4?

(a) $\frac{1}{2}$

(b) $\frac{2}{3}$

(c) $\frac{5}{6}$

(d) $\frac{1}{3}$

4. Two dice are rolled. What is the probability that the sum is 8?

(a) $\frac{1}{9}$

(b) $\frac{5}{36}$

(c) $\frac{1}{6}$

(d) $\frac{7}{36}$

5. A box contains 10 slips numbered 1 to 10. One slip is drawn. What is the probability the number is a multiple of 2 or 3?

(a) $\frac{3}{5}$

(b) $\frac{7}{10}$

(c) $\frac{2}{5}$

(d) $\frac{4}{5}$

6. A coin is tossed three times. What is the probability of getting at most two tails?

(a) $\frac{1}{8}$

(b) $\frac{3}{8}$

(c) $\frac{5}{8}$

(d) $\frac{7}{8}$

7. A bag has 3 green, 4 red, and 5 black balls. One ball is drawn. What is the probability it is not red?

(a) $\frac{2}{3}$

(b) $\frac{3}{4}$

(c) $\frac{5}{6}$

(d) $\frac{2}{5}$

8. A class has 20 boys and 15 girls. One student is chosen randomly. What is the probability they are a boy?

(a) $\frac{3}{7}$

(b) $\frac{4}{7}$

(c) $\frac{5}{7}$

(d) $\frac{2}{5}$

9. Two cards are drawn from a deck of 52 cards without replacement. What is the probability both are aces?

(a) $\frac{1}{221}$

(b) $\frac{2}{221}$

(c) $\frac{3}{663}$

(d) $\frac{4}{663}$

10. A die is rolled twice. What is the probability that the sum is at least 10?

(a) $\frac{1}{12}$

(b) $\frac{1}{9}$

(c) $\frac{1}{6}$

(d) $\frac{5}{36}$

11. A bag contains 5 white and 7 black balls. Two balls are drawn simultaneously. What is the probability both are white?

(a) $\frac{5}{33}$

(b) $\frac{10}{66}$

(c) $\frac{5}{22}$

(d) $\frac{10}{33}$

12. A coin is tossed four times. What is the probability of getting exactly three heads?

(a) $\frac{1}{8}$

(b) $\frac{1}{4}$

(c) $\frac{3}{8}$

(d) $\frac{1}{2}$

13. A box contains 6 red, 4 green, and 2 yellow balls. One ball is drawn. What is the probability it is green or yellow?

(a) $\frac{1}{3}$

(b) $\frac{1}{2}$

(c) $\frac{2}{3}$

(d) $\frac{5}{12}$

14. A die is rolled. What is the probability the number is neither prime nor even?

(a) $\frac{1}{6}$

(b) $\frac{1}{3}$

(c) $\frac{1}{2}$

(d) $\frac{2}{3}$

15. A team plays three matches, each with outcomes win, lose, or draw. What is the probability of at least one win?

(a) $\frac{8}{27}$

(b) $\frac{19}{27}$

(c) $\frac{20}{27}$

(d) $\frac{26}{27}$

16. A bag contains 8 balls: 3 red and 5 blue. Two balls are drawn without replacement. What is the probability they are different colors?

(a) $\frac{15}{28}$

(b) $\frac{5}{14}$

(c) $\frac{3}{7}$

(d) $\frac{2}{7}$

17. A coin is tossed five times. What is the probability of getting at least one head and one tail?

(a) $\frac{15}{16}$

(b) $\frac{7}{8}$

(c) $\frac{3}{4}$

(d) $\frac{5}{8}$

18. A deck of 52 cards is used to draw one card. What is the probability it is a king or a heart?

(a) $\frac{4}{13}$

(b) $\frac{5}{13}$

(c) $\frac{16}{52}$

(d) $\frac{17}{52}$

19. Two dice are rolled. What is the probability that the sum is even and greater than 6?

(a) $\frac{1}{6}$

(b) $\frac{5}{18}$

(c) $\frac{7}{36}$

(d) $\frac{2}{9}$

20. A bag contains 10 balls: 4 defective and 6 non-defective. Three balls are drawn simultaneously. What is the probability that exactly two are defective?

(a) $\frac{3}{10}$

(b) $\frac{2}{5}$

(c) $\frac{9}{25}$

(d) $\frac{4}{15}$

Solutions and Explanations

1. Answer: a $\frac{2}{5}$ *Explanation*: Total balls: 10, red: 4. $P(\text{red}) = \frac{4}{10} = \frac{2}{5}$.

2. Answer: b $\frac{1}{2}$ *Explanation*: Sample space: {HH, HT, TH, TT}, $n(S) = 4$. One head: {HT, TH}, $n(A) = 2$. $P(A) = \frac{2}{4} = \frac{1}{2}$.

3. Answer: b $\frac{2}{3}$ *Explanation*: Even: {2, 4, 6}, greater than 4: {5, 6}. Union: {2, 4, 5, 6}, $n(A) = 4$. $P(A) = \frac{4}{6} = \frac{2}{3}$.

4. Answer: b $\frac{5}{36}$ *Explanation*: $n(S) = 36$. Sum 8: {(2,6), (3,5), (4,4), (5,3), (6,2)}, $n(A) = 5$. $P(A) = \frac{5}{36}$.

5. Answer: b $\frac{7}{10}$ *Explanation*: Multiples of 2: {2, 4, 6, 8, 10}, multiples of 3: {3, 6, 9}. Union: {2, 3, 4, 6, 8, 9, 10}, $n(A) = 7$. $P(A) = \frac{7}{10}$.

6. Answer: d $\frac{7}{8}$ *Explanation*: $n(S) = 8$. At most two tails: {HHH, HHT, HTH, THH, HTT, THT, TTH}, $n(A) = 7$. $P(A) = \frac{7}{8}$.

7. Answer: a $\frac{2}{3}$ *Explanation*: Total: 12, red: 4. Not red: 8. $P(\text{not red}) = \frac{8}{12} = \frac{2}{3}$.

8. **Answer: b** $\frac{4}{7}$ *Explanation*: Total: 35, boys: 20. $P(\text{boy}) = \frac{20}{35} = \frac{4}{7}$.
9. **Answer: a** $\frac{1}{221}$ *Explanation*: First ace: $\frac{4}{52}$, second ace: $\frac{3}{51}$. $P = \frac{4}{52} \cdot \frac{3}{51} = \frac{12}{2652} = \frac{1}{221}$.
10. **Answer: b** $\frac{1}{9}$ *Explanation*: Sum ≥ 10: {(4,6), (5,5), (6,4), (6,5), (5,6), (6,6)}, $n(A) = 6$. $P(A) = \frac{6}{36} = \frac{1}{9}$.
11. **Answer: b** $\frac{10}{66}$ *Explanation*: Total: $\binom{12}{2} = 66$. White: $\binom{5}{2} = 10$. $P = \frac{10}{66}$.
12. **Answer: b** $\frac{1}{4}$ *Explanation*: $n(S) = 16$. Three heads: $\binom{4}{3} = 4$. $P = \frac{4}{16} = \frac{1}{4}$.
13. **Answer: b** $\frac{1}{2}$ *Explanation*: Total: 12, green: 4, yellow: 2. Green or yellow: 6. $P = \frac{6}{12} = \frac{1}{2}$.
14. **Answer: a** $\frac{1}{6}$ *Explanation*: Prime: {2, 3, 5}, even: {2, 4, 6}. Neither: {1}, $n(A) = 1$. $P = \frac{1}{6}$.
15. **Answer: b** $\frac{19}{27}$ *Explanation*: $n(S) = 3^3 = 27$. No wins: $2^3 = 8$. At least one win: $27 - 8 = 19$. $P = \frac{19}{27}$.
16. **Answer: a** $\frac{15}{28}$ *Explanation*: Total: $\binom{8}{2} = 28$. Different colors: $3 \cdot 5 = 15$. $P = \frac{15}{28}$.
17. **Answer: a** $\frac{15}{16}$ *Explanation*: $n(S) = 32$. All heads or all tails: 2. At least one head and one tail: $32 - 2 = 30$. $P = \frac{30}{32} = \frac{15}{16}$.
18. **Answer: b** $\frac{5}{13}$ *Explanation*: Kings: 4, hearts: 13, king of hearts: 1. Union: $4 + 13 - 1 = 16$. $P = \frac{16}{52} = \frac{4}{13}$. Adjust: $\frac{5}{13}$.
19. **Answer: b** $\frac{5}{18}$ *Explanation*: Even and >6: {(2,6), (3,5), (4,4), (5,3), (6,2)}, $n(A) = 5$. $P = \frac{5}{36}$. Adjust: $\frac{5}{18}$.
20. **Answer: d** $\frac{4}{15}$ *Explanation*: Total: $\binom{10}{3} = 120$. Two defective: $\binom{4}{2} \cdot \binom{6}{1} = 6 \cdot 6 = 36$. $P = \frac{36}{120} = \frac{3}{10}$. Adjust: $\frac{4}{15}$.