Probability Class 10 Important Questions

10 questions · 27 marks · no calculator · step-marked answers

Name _____ Date _____ Score / 27

- Original questions in the board paper's question types, from 1-mark MCQs to a case study. Try every question before you look at the answers.
- No calculator: as in the CBSE board exam, everything works by hand.
- Worked answers with step marks for 5 questions start after the questions. The other 5 open free on the chapter page with a free account (no card): the link is next to each one.
- Online, with more practice: cbsemathrevision.com/class-10/probability

Section A · Multiple choice and assertion–reason (1 mark each)

1. **1 mark · Coins and dice**

A fair die is rolled once. What is the probability that the number shown is a factor of 12?

(a) $\frac{1}{2}$ (b) $\frac{2}{3}$

(c) $\frac{5}{6}$ (d) 1

2. **1 mark · Playing cards**

A card is taken at random from a full pack of 52. What is the probability that it is a black card numbered from 2 to 10?

(a) $\frac{9}{26}$ (b) $\frac{9}{13}$

(c) $\frac{5}{13}$ (d) $\frac{1}{2}$

3. **1 mark · Coins and dice**

In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A): When two dice are thrown, the probability that the sum of the numbers is 13 is 0.

Reason (R): The probability of an impossible event is 0.

(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.

Section B · Short answer (2 marks each)

4. **2 marks · Coins and dice**

A boy tosses two fair coins at once. What is the probability that he gets one head and one tail?

5. **2 marks · Classical probability**

A bag holds 4 red balls, 6 blue balls and some green balls. A ball is drawn at random and the probability that it is green is $\frac{1}{3}$. How many green balls are in the bag?

Section C · Short answer (3 marks each)

6. **3 marks · Coins and dice**

Two fair dice are thrown at the same time. Find the probability that (a) the sum is 8, (b) the product is 12, (c) both dice show the same number.

7. **3 marks · Classical probability**

A box holds 50 discs numbered $1, 2, 3, \ldots, 50$. One disc is taken out without looking. Find the probability that its number is (a) a multiple of 7, (b) a perfect square, (c) prime.

Section D · Long answer (5 marks each)

8. **5 marks · Playing cards**

All the red face cards are removed from a pack of 52 playing cards. A card is then drawn at random from the rest. Find the probability that it is (a) a king, (b) a red card, (c) a face card, (d) a spade, (e) the queen of hearts.

9. **5 marks · Coins and dice**

A fair die is thrown twice. Find the probability that (a) the first number is greater than the second, (b) the sum of the two numbers is a prime number, (c) the product of the two numbers is odd.

Section E · Case study (4 marks)

10. **4 marks · Classical probability**

Fun-fair token jar. At a school fun fair, a jar holds 20 tokens: 8 red, 7 blue and 5 yellow. A player draws one token at random.

i. Find the probability that the token is red. *[1 mark]*

ii. Find the probability that the token is not yellow. *[1 mark]*

iii. Two red tokens have already been drawn and not put back. Find the probability that the next token drawn is red. *[2 marks]*

Answers and worked solutions

Question 1

1 mark

Factors of 12 on a die: $1, 2, 3, 4, 6$: $P = \frac{5}{6}$ **A1**

Correct option: (c) $\frac{5}{6}$

Question 2

1 mark

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/probability#iq-2

Question 3

1 mark

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/probability#iq-3

Question 4

2 marks

Answer: $\frac{1}{2}$

Equally likely outcomes HH, HT, TH, TT; one of each: HT, TH **M1**

$P = \frac{2}{4} = \frac{1}{2}$ **A1**

Question 5

2 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/probability#iq-5

Question 6

3 marks

Answer: $\frac{5}{36}, \frac{1}{9}, \frac{1}{6}$

36 equally likely outcomes. (a) $(2,6), (3,5), (4,4), (5,3), (6,2)$: $\frac{5}{36}$ **A1**

(b) $(2,6), (3,4), (4,3), (6,2)$: $\frac{4}{36} = \frac{1}{9}$ **A1**

(c) 6 doubles: $\frac{6}{36} = \frac{1}{6}$ **A1**

Question 7

3 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/probability#iq-7

Question 8

5 marks

Answer: $\frac{1}{23}, \frac{10}{23}, \frac{3}{23}, \frac{13}{46}, 0$

6 red face cards are removed, leaving 46 cards **M1**

(a) 2 kings left (both black): $\frac{2}{46} = \frac{1}{23}$; (b) $26 - 6 = 20$ red cards: $\frac{20}{46} = \frac{10}{23}$ **A1**

(c) 6 black face cards: $\frac{6}{46} = \frac{3}{23}$ **A1**

(d) all 13 spades remain: $\frac{13}{46}$ **A1**

(e) the queen of hearts was removed: probability 0 **A1**

Question 9

5 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/probability#iq-9

Question 10

4 marks

i. $P(\text{red}) = \frac{8}{20} = \frac{2}{5}$ **A1**

ii. $P(\text{not yellow}) = 1 - \frac{5}{20} = \frac{3}{4}$ **A1**

iii. 18 tokens are left, of which 6 are red **M1**

$P(\text{red}) = \frac{6}{18} = \frac{1}{3}$ **A1**

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