

Probability

Review Exercise 12 — Multiple Choice Questions

Class 10th Mathematics

MCQs with answers and worked solutions

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REVIEW EXERCISE 12

1. Four possible answers are given for the following questions. Choose the correct answer.
 - (i) The probability of impossible event is:
 (a) 0 (b) 1 (c) 2 (d) -1
 - (ii) What is the probability of getting a head when a fair coin is tossed once?
 (a) 0 (b) 0.25 (c) 0.5 (d) 1
 - (iii) The sum of probabilities of all possible outcomes of an experiment is:
 (a) 0.5 (b) 0.25 (c) 1 (d) 0.4
 - (iv) If $P(A) = 0.6$, then the probability of event A not happening is:
 (a) 0.4 (b) 0.6 (c) 1 (d) 1.6
 - (v) Two events are said to be mutually exclusive if:
 (a) they can happen at the same time.
 (b) one affects the other.
 (c) they cannot happen together.
 (d) they are always equal.
 - (vi) If one coin is tossed and one dice is rolled, then the number of sample point are:
 (a) 3 (b) 6 (c) 2 (d) 12
 - (vii) What is the probability of sure event?
 (a) 1 (b) 0 (c) $\frac{2}{3}$ (d) $\frac{4}{5}$
 - (viii) The probability of getting a number greater than 6 on dice is:
 (a) 0.33 (b) 1 (c) 0 (d) 0.5
 - (ix) _____ outcomes are possible when we draw a card from deck of cards.
 (a) 13 (b) 1 (c) 52 (d) 26
 - (x) If $P(E) = 0.07$, then the probability of 'not E ' is:
 (a) 0.95 (b) 0.89 (c) 0.93 (d) 0.90
2. Arshia selects a day from (Tuesday, Wednesday) and a time from (Morning, Evening). Draw a possibility diagram. Also sketch a tree diagram.
3. A card is drawn from a deck of cards. Find the probability of getting an ace or a spade card.
4. Fatima dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that both cards are red.
5. If two dice are rolled, then find the probability of getting the product of face values 6 or the difference of face values 5.
6. A bag contains 7 orange and 5 purple marbles. Two marbles are drawn one after the other without replacement. Find the probability that the first marble is orange and the second marble is also orange.

REVIEW EXERCISE 12 - Multiple Choice Questions

Question 1(i)

The probability of impossible event is

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Solution:

An impossible event has no chance of occurring, so its probability is **0**.

Answer: (a) 0 ✓

Question 1(ii)

What is the probability of getting a head when a fair coin is tossed once?

Solution:

A fair coin has two equally likely outcomes: Head (H) or Tail (T).

Answer: (c) 0.5 ✓

Question 1(iii)

The sum of probabilities of all possible outcomes of an experiment is:

Solution:

The total probability of all possible outcomes in any random experiment is always **1** (or 100%).

Answer: (c) 1 ✓

Summary Table

Question	Answer	Option
(i)	0	(a)
(ii)	0.5	(c)
(iii)	1	(c)

Key Concepts Summary

Probability Range:

Type of Event	Probability
Impossible Event	0
Certain Event	1
Any Event	Between 0 and 1

Basic Probability Formula:

Properties:

- 1.
- 2.
3. Sum of probabilities of all outcomes = 1
- 4.

Part 1: Multiple Choice Questions (Continued)**Question 1(iv)**

If , then the probability of event not happening is:

Solution:

Answer: (a) 0.4 ✓

Question 1(v)

Two events are said to be mutually exclusive if:

Solution:

Mutually exclusive events are events that **cannot happen at the same time**.

Answer: (c) they cannot happen together. ✓

Question 1(vi)

If one coin is tossed and one dice is rolled, then the number of sample points are:

Solution:

- Coin: 2 outcomes (H, T)
- Dice: 6 outcomes (1, 2, 3, 4, 5, 6)

Total sample points =

Answer: (d) 12 ✓

Question 1(vii)

What is the probability of sure event?

Solution:

A sure event is certain to happen, so its probability is **1**.

Answer: (a) 1 ✓

Question 1(viii)

The probability of getting a number greater than 6 on dice is:

Solution:

A die has numbers 1 to 6 only. There is no number greater than 6.

Probability = 0

Answer: (c) 0 ✓

Question 1(ix)

_____ outcomes are possible when we draw a card from deck of cards.

Solution:

A standard deck has **52** cards.

Answer: (c) 52 ✓

Question 1(x)

If , then the probability of 'not ' is:

Solution:

Answer: (c) 0.93 ✓

Question 2

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Arshia selects a day from {Tuesday, Wednesday} and a time from {Morning, Evening}. Draw a possibility diagram and a tree diagram.

Possibility Diagram:

text

```

      Time
    Morning Evening
+-----+-----+
T | (T, M) | (T, E) |
u +-----+-----+
e | (W, M) | (W, E) |
s +-----+-----+
d
a
y

```

Tree Diagram:

text

```

      Start
      |
+-----+-----+
|         |         |
Tuesday   Wednesday
|         |         |
+-----+ +-----+
|         |         |         |
Morning Evening Morning Evening

```

Sample Space:

Total Outcomes = 4

Question 3

A card is drawn from a deck of cards. Find the probability of getting an ace or a spade card.

Solution:

Step 1: Define events.

- = event of getting an ace
- = event of getting a spade

Step 2: Count favorable outcomes.

- Number of aces = 4
- Number of spades = 13
- Number of cards that are both ace and spade = 1 (Ace of spades)

Step 3: Use addition rule:

Answer:

Question 4

Fatima dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that both cards are red.

Solution:

Step 1: Number of red cards = 26

Step 2: Probability of first card being red:

Step 3: Probability of second card being red (without replacement):

Step 4: Multiply:

Answer:

Question 5

If two dice are rolled, find the probability of getting the product of face values 6 or the difference of face values 5.

Solution:

Step 1: Total outcomes = 36.

Step 2: Outcomes with product = 6:

Step 3: Outcomes with difference = 5:

Step 4: Outcomes that satisfy both (product = 6 and difference = 5):

Step 5: Apply addition rule:

Answer:

Question 6

A bag contains 7 orange and 5 purple marbles. Two marbles are drawn one after the other without replacement. Find the probability that the first marble is orange and the second marble is also orange.

Solution:

Step 1: Total marbles =

Step 2: Probability of first marble being orange:

Step 3: After removing one orange marble:

- Orange left = 6
- Total left = 11

Step 4: Multiply:

Answer:

Summary Table

MCQs:

Question	Answer	Option
(iv)	0.4	(a)

Question	Answer	Option
(v)	they cannot happen together	(c)
(vi)	12	(d)
(vii)	1	(a)
(viii)	0	(c)
(ix)	52	(c)
(x)	0.93	(c)

Word Problems:

Question	Answer
2	4 outcomes: (T,M), (T,E), (W,M), (W,E)
3	
4	
5	
6	

Key Formulas

Formula	Application
	Addition rule
	Complement rule
$(P(A \cap B) = P(A) \times P(B \mid A))$	Multiplication rule (dependent)
	Multiplication rule (independent)

Important Note: Addition Rule with Overlap

When finding "or" probability, always subtract the overlap:

- Ace or Spade: Overlap is Ace of Spades (counted twice)
- Product 6 or Difference 5: Overlap is (1,6) and (6,1)