Unit 14 · Probability

WORKSHEET

Full marks 32.5

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 32.5

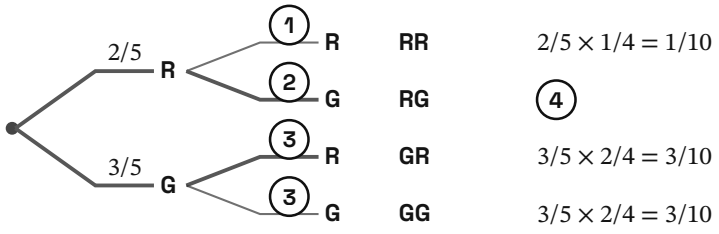
1 Key words [2.5]

Match each word in Column A with its meaning in Column B. Write the letter in the box. One meaning in Column B is not needed. Each match carries 0.5 mark.

Column A		Column B
1. sample space	☐	**a.** events that cannot happen together
2. mutually exclusive events	☐	**b.** events where the first changes the chance of the second
3. independent events	☐	**c.** branches showing every outcome, stage by stage, with its probability
4. dependent events	☐	**d.** an event that is sure to happen
5. tree diagram	☐	**e.** the set of all possible outcomes of an experiment
		f. events where one happening doesn't change the chance of the other

2 Complete the tree [2]

Two balls are drawn one after the other, without replacement, from a bag of 2 red (R) and 3 green (G) balls. Write the missing probability or result in each numbered box.



1. _____ **2.** _____

3. _____ **4.** _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. A die is thrown once. What is the probability of getting a number greater than 4? [1]

a. 1/6 **b.** 1/3

c. 1/2 **d.** 2/3

ii. One card is drawn from a pack of 52. Which two events are mutually exclusive? [1]

a. a king and a heart **b.** a red card and a spade

c. a face card and a king **d.** an ace and a red card

iii. A and B are independent, $P(A) = 0.3$ and $P(B) = 0.5$. What is $P(A \cap B)$? **[1]**

a. 0.8 **b.** 0.15

c. 0.2 **d.** 0.35

iv. A bag has 4 red and 6 blue balls. Two are drawn without replacement. On the tree, what is the probability on the branch "red" after a red first ball? **[1]**

a. 4/10 **b.** 3/9

c. 4/9 **d.** 3/10

v. Two coins are tossed. What is the probability of at least one tail? **[1]**

a. 1/4 **b.** 1/2

c. 3/4 **d.** 1

4 Very short answers **[3]**

Write very short answers to the following questions.

a. Write the addition law of probability for two mutually exclusive events A and B. **[1]**

b. The probability that it rains tomorrow is 0.35. What is the probability that it doesn't rain? **[1]**

c. A coin is tossed three times. How many outcomes are in the sample space? **[1]**

5 Short answers **[6]**

Write short answers to the following questions.

a. Ramesh found the probability of drawing a king or a heart from a pack of 52 cards like this: "$P(K \cup H) = \frac{4}{52} + \frac{13}{52} = \frac{17}{52}$." Find his mistake and the correct probability. **[2]**

b. Two balls are drawn one after the other from a bag. Explain why the two draws are independent if the first ball is put back, but dependent if it isn't. **[2]**

c. Cards numbered 1 to 20 are shuffled and one is drawn. Find the probability that its number is a multiple of 3 or of 7. **[2]**

6 Problems [12]

Solve. Show your working.

a. A bag has 5 white (W) and 3 black (B) balls of the same size. Two balls are drawn one after the other without replacement. **[4]**

i. Show the probabilities of all the outcomes in a tree diagram.

ii. Find the probability that both balls are the same color.

Answer:

b. A die is thrown and a coin is tossed. Find the probability of an even number and a head. **[2]**

Answer:

c. The probability that Sita passes Mathematics is 0.8 and that she passes Science is 0.7, independently. Find the probability that she passes **[3]**

i. both,
ii. neither,
iii. at least one.

Answer: _____

d. A bag has some red balls and 4 green balls. The probability that a ball drawn at random is green is 1/3. **[3]**

i. How many red balls are there?
ii. Two balls are drawn without replacement. Find the probability that both are green.

Answer: _____

7 Think **[2]**

Think, then answer.

A coin has landed heads 6 times in a row. Rina says the next toss is more likely to be tails, because "tails is due". Is she right? Explain.

8 Activity: Two coins, 40 times

(not marked)

Toss two coins together 40 times. Make a tally of the number of heads each time and fill in the table.

Heads	Tally	Frequency	Relative frequency	Probability from a tree
0				
1				
2				

Which number of heads came most often? Are your relative frequencies close to the probabilities?