EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
48	1 hour 15 minutes	4

Name: ..... Class: .....

Date: .....

MARK ____ / 48

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 On a tree diagram, the probabilities on the branches leaving any one point add up to ... (1)

A) 0 **B)** 1

C) 0,5 **D)** the number of branches

1.2 To find the probability of one complete PATH through a tree diagram, you ... (1)

A) multiply and then subtract from 1 **B)** take the largest branch probability

C) add along the branches **D)** multiply along the branches

1.3 Two coins are tossed. P(exactly one head) = ... (1)

A) $\frac{1}{4}$ **B)** $\frac{3}{4}$

C) $\frac{1}{2}$ **D)** $\frac{1}{3}$

1.4 A bag holds 3 red and 2 green sweets. Two are taken WITHOUT replacement. P(red then green) = ... (1)

A) $\frac{3}{5}$ **B)** $\frac{3}{10}$

C) $\frac{1}{2}$ **D)** $\frac{6}{25}$

1.5 In a two-way table, the row totals added together give ... (1)

A) the number of rows **B)** the largest single cell

C) 1 **D)** the grand total

1.6 Of 200 people, 120 own a car, 90 own a bicycle and 40 own both. P(owns a car OR a bicycle) = ... (1)

A) 0,85 **B)** 1,05

C) 0,6 **D)** 0,2

1.7 For that survey, are 'owns a car' and 'owns a bicycle' INDEPENDENT? (1)

A) no — 0,2 does not equal $0{,}6 \times 0{,}45$ **B)** yes — both probabilities are less than 1

C) yes — 40 divides into 200 exactly **D)** it cannot be decided from a two-way table

1.8 A tree diagram is more useful than a Venn diagram when ... (1)

A) the events are mutually exclusive **B)** the events happen in stages, one after another

C) all the probabilities are equal **D)** there are exactly two events

1.9 Events A and B are independent, with P(A) = 0,4 and P(B) = 0,5. Then P(A or B) equals ... (1)

A) 0,9 **B)** 0,2

C) 0,7 **D)** 0,1

1.10 Three coins are tossed. P(all three the same) = ... (1)

A) $\frac{1}{8}$ **B)** $\frac{1}{2}$

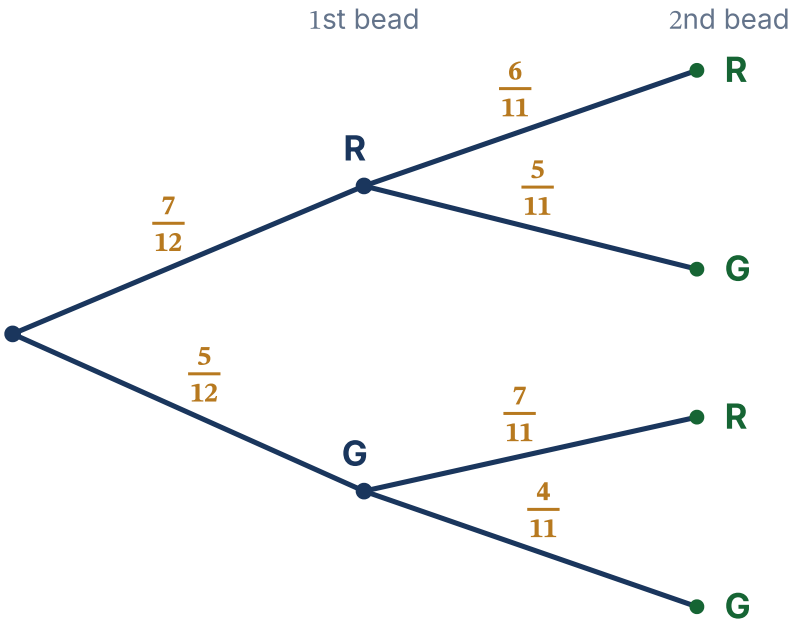
C) $\frac{3}{8}$ **D)** $\frac{1}{4}$

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 **[15 MARKS]**

A bag contains 7 red beads and 5 green beads. Two beads are drawn from the bag, one after the other, WITHOUT replacement. The tree diagram below shows the possible outcomes, where R is a red bead and G is a green bead.



2.1 Calculate the probability that both beads drawn are red. Leave your answer as a common fraction in its simplest form. **(3)**

2.2 Calculate the probability that the two beads are of DIFFERENT colours. **(4)**

2.3 Calculate the probability that AT LEAST ONE of the beads is green. **(4)**

2.4 Suppose instead that the first bead is REPLACED before the second is drawn. Calculate the probability that both beads are red, and explain why this answer differs from your answer above. **(4)**

QUESTION 3 [13 MARKS]

The two-way table below records how 200 learners at a school travel to school each morning.

	Bus	Taxi	Walks	TOTAL
Male	48	36	26	a
Female	42	30	18	b
TOTAL	90	66	c	200

3.1 Write down the values of a, b and c. **(3)**

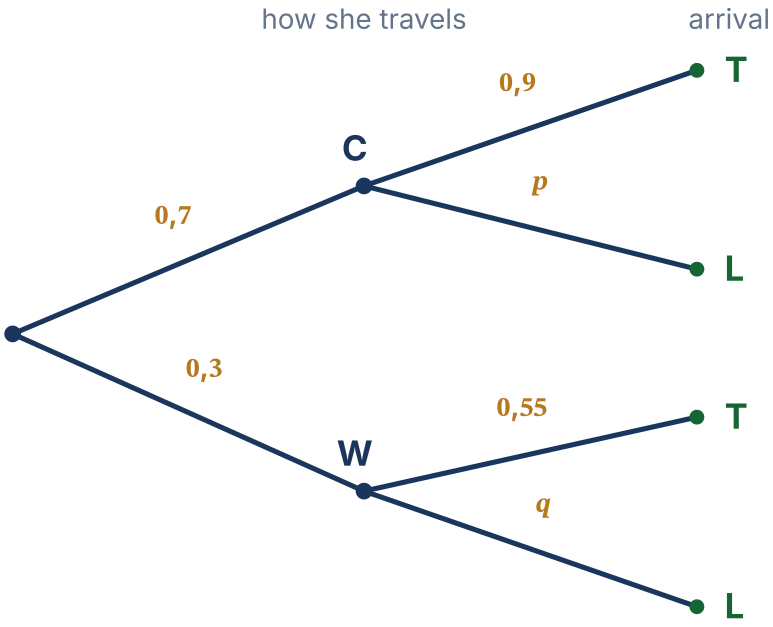
3.2 Calculate the probability that a learner chosen at random is female AND travels by taxi. **(3)**

3.3 Calculate the probability that a learner chosen at random is male OR walks to school. **(3)**

3.4 Determine, showing ALL calculations, whether the events "the learner is male" and "the learner travels by bus" are independent. **(4)**

QUESTION 4 [10 MARKS]

Lerato either cycles (C) to school or walks (W). The probability that she cycles on any given day is $0{,}7$. If she cycles, the probability that she arrives on time (T) is $0{,}9$; if she walks, the probability that she arrives on time is only $0{,}55$. L means she is late. The tree diagram below represents this information.



4.1 Write down the values of p and q on the tree diagram, and hence calculate the probability that Lerato cycles AND is late on a given day. (3)

4.2 Calculate the probability that Lerato arrives at school on time on a given day. (4)

4.3 A school term is 60 school days long. Determine how many of those days Lerato can be expected to arrive LATE. **(3)**

TOTAL: 48 marks

This question paper consists of 4 questions.

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