Non-Calculator

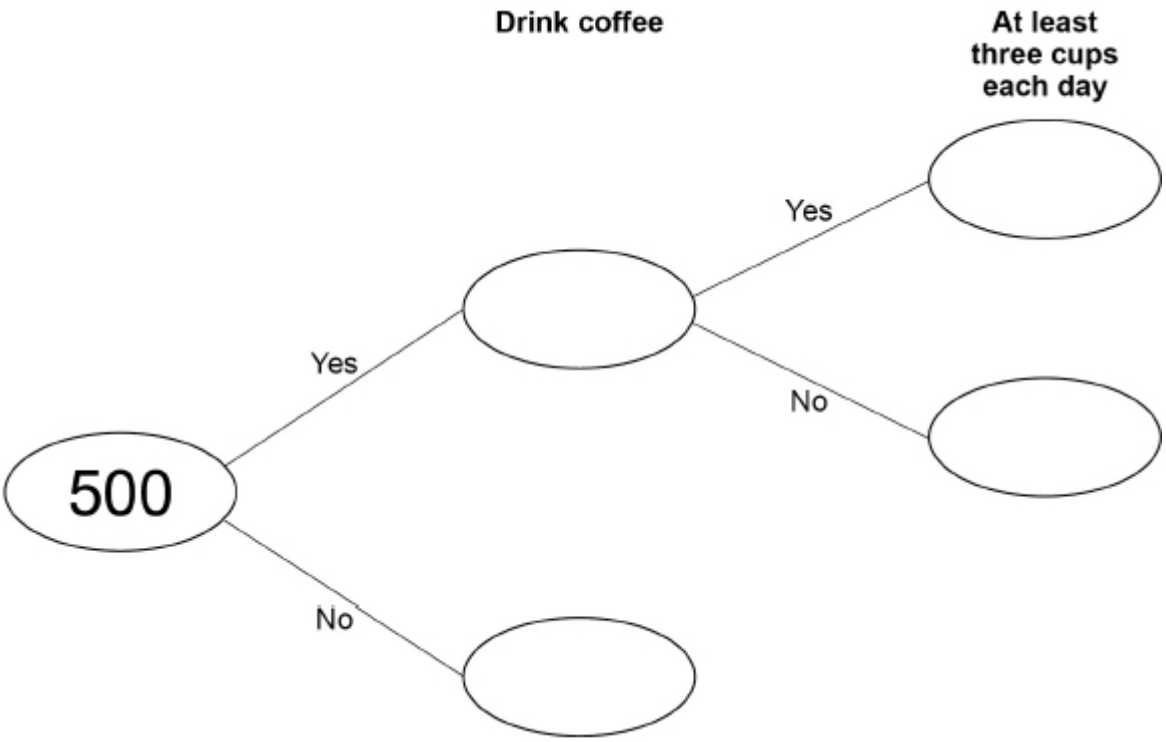
Q1.

500 people are asked if they drink coffee.

$\frac{9}{10}$ say Yes.

20% of the people who say Yes drink at least three cups each day.

(a) Complete the frequency tree.



(4)

(b) What fraction of the 500 people drink at least three cups of coffee each day?

Give your answer in its simplest form.

_____

_____

Answer _____

(2)

(Total 6 marks)

Q2.

There are 25 counters in a bag.
12 are red, 5 are green and the rest are white.

A counter is chosen at random.

Work out the probability that it is white.

Answer _____

(Total 2 marks)

Q3.

A spinner has four sections A, B, C and D.
The table shows the probabilities of the spinner landing on A, B or C.

Outcome	A	B	C	D
Probability	0.2	0.3	0.15	

Work out the probability of landing on D.

Answer _____

(Total 2 marks)

Q4.

The four possible outcomes of a trial are A, B, C and D.

	A	B	C	D
Probability	0.3	0.25	0.1	

(a) What is the probability that the outcome of the trial is D?

Answer _____

(2)

(b) What is the probability that the outcome of the trial is A **or** C?

Answer _____

(1)

(Total 3 marks)

Q5.

A prime number between 300 and 450 is chosen at random.

The table shows the probability that the number lies in different ranges.

Prime number, n	Probability
$300 \leq n < 330$	0.16
$330 \leq n < 360$	0.24
$360 \leq n < 390$	x
$390 \leq n < 420$	0.16
$420 \leq n < 450$	0.24

(a) Work out the value of x.

Answer _____

(2)

(b) Work out the probability that the prime number is greater than 390

Answer _____

(1)

(c) There are four prime numbers between 300 and 330

How many prime numbers are there between 300 and 450?

Answer _____

(2)

(Total 5 marks)

Calculator

Q6.

The sections of a fair spinner are red, white or blue.

(a) The spinner is spun 40 times.

Red	White	Blue	Total
28	9	3	40

Write down the relative frequency of the spinner landing on red.

Answer _____

(1)

(b) The spinner has 10 equal sections.

Work out the most likely number of sections for each colour.

Red	White	Blue	Total
			10

(2)

(Total 3 marks)

Q7.

An experiment has four outcomes.

Outcome	A	B	C	D
Probability	0.1		0.2	0.3

Circle the probability of outcome B.

0.15 0.25 0.4 0.6

(Total 1 mark)

Q8.

A 10p coin and a 2p coin are tossed.

List **all** the possible outcomes.
Use H for heads and T for tails.

_____

_____

_____

(Total 2 marks)

Q9.

There are three types of Easter eggs.

Milk chocolate	M
Dark chocolate	D
White chocolate	W

The eggs come in three sizes.

Small	S
Large	L
King size	K

(a) List **all** possible combinations of chocolate type and size.
The first one has been done for you.

_____

_____

_____

(3)

(b) A box contains equal numbers of each egg.
One egg is chosen at random.

What is the probability that a small milk chocolate egg is chosen?

Answer _____

(1)

(Total 4 marks)

Q10.

(a) Which of these values could represent a probability?
Circle your answer.

−0.2 1.1 0.8 $\frac{6}{5}$

(1)

(b) A fair ordinary dice is rolled once.
Circle the probability of rolling a 3 or a 4

$\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{4}{6}$

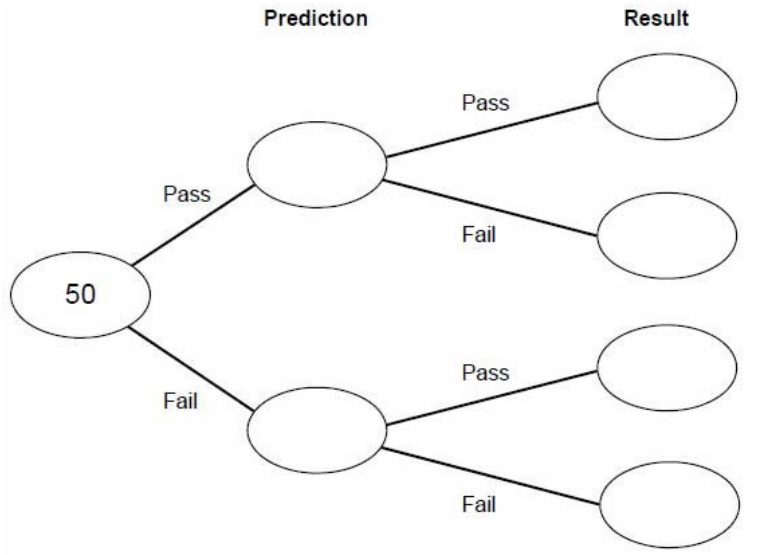
(1)
(Total 2 marks)

Q11.

50 people took a test.
Before the test, they predicted whether they would pass or fail.

30 people predicted they would pass.
26 of the people who predicted they would pass did pass.
37 people passed altogether.

Complete the frequency tree.



(Total 2 marks)

Q12.

The four possible outcomes of an experiment are A, B, C and D.

P(A) = 0.28
P(B) = 2P(A)
P(C) = P(D)

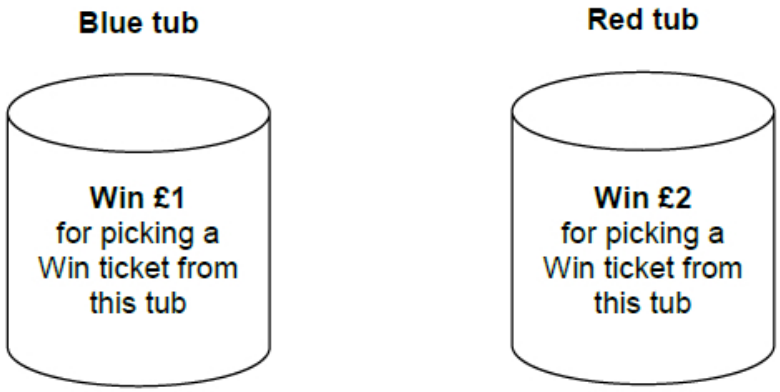
Work out P(D)

Answer _____

(Total 3 marks)

Q13.

Jack makes a game for a school fair.
Players can win money by picking a 'Win' ticket from a tub.
A player chooses a tub by picking a blue disc or a red disc out of a bag.



400 people play the game at the fair.
The frequency tree shows some of the outcomes.

(a) Complete the frequency tree.

(2)

(b) A player has one go at Jack's game.

Use the frequency tree to estimate the probability that the player wins some money.

_____

_____

Answer _____

(2)

(c) Jack makes a profit of £25 from his game.

Work out how much Jack charges players to have a go at his game.

_____

_____

_____

_____

Answer _____

(3)

(Total 7 marks)

Q14.

Here is some information about a group of 20 children.

	Boys	Girls
Left-handed	4	1
Right-handed	7	8

(a) What fraction of the 20 children are right-handed?
Write your fraction in its simplest form.

Answer _____

(3)

(b) A child is chosen at random from the group.

Work out the probability that the child is a girl.

Answer _____

(2)

(Total 5 marks)

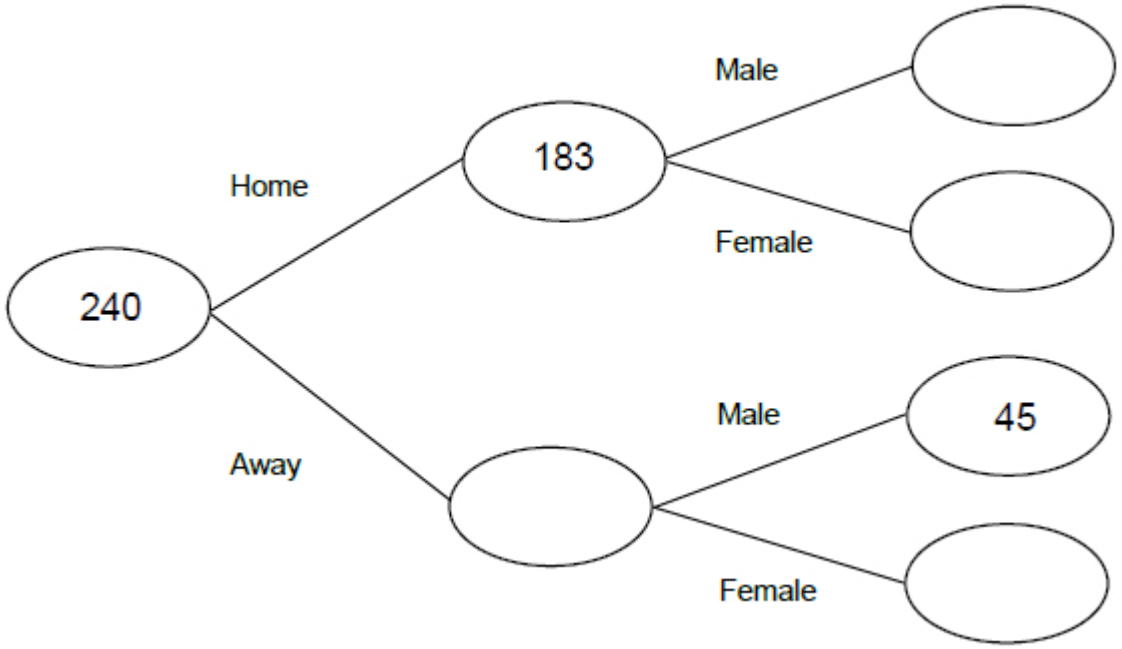
Q15.

240 people go to a rugby match.

183 of the people support the home team.
The other people support the away team.

162 of the supporters are male.
45 of the **away** supporters are male.

Complete the frequency tree.

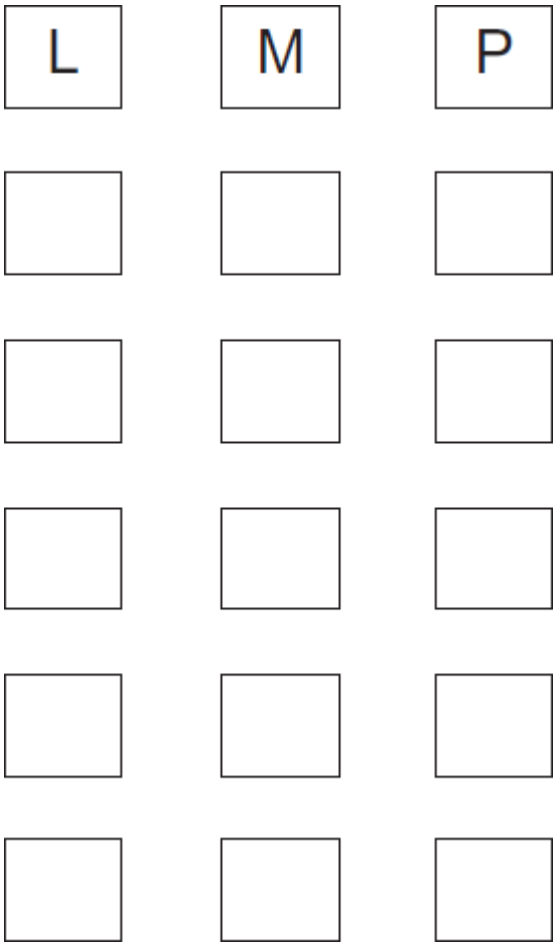


(Total 4 marks)

Q16.

Cards with the letters L, M and P are placed next to each other.

(a) List all the possible orders of the letters.
One has been done for you.



(2)

(b) The three cards are placed next to each other at random.

What is the probability that L is the middle letter?

Answer _____

(1)

(Total 3 marks)

Q17.

The following letter cards are put in a bag.

P	A	R	A	L	L	E	L

A card is picked at random.

(a) Write down the probability that it has the letter L on it.

Answer _____

(2)

(b) Write down the probability that it does **not** have the letter P on it.

_____

Answer _____

(2)

(Total 4 marks)

Q18.

Fair spinner A has five equal sections labelled 1, 2, 3, 4, 5.
Fair spinner B has five equal sections labelled 6, 7, 8, 9, 10.

Each spinner is spun once and the numbers are added.

Work out the probability that the total is 12 or more.

_____

_____

_____

_____

Answer _____

(Total 5 marks)

Q19.

People in a town voted in an election.
The probability a vote was given to a particular party is shown.
One value is missing.

Party	Probability
Conservative	0.41
Labour	0.24
Liberal Democrat	0.22
UKIP	
Other	0.04

(a) Complete the table.

_____

_____

(2)

(b) There are 15 000 people in the town.
8000 voted.

How many people in the town did **not** vote Conservative?

_____

_____

_____

Answer _____

(3)

(Total 5 marks)

Q20.

(a) A bag contains 3 red, 5 white and 8 blue counters.
One counter is chosen at random.

What is the probability of choosing a blue counter?

_____

_____

Answer _____

(2)

(b) A different bag contains only black counters, pink counters and white counters.
When one counter is chosen at random, each colour is equally likely.

Write down **two** possible values for the total number of counters in this bag.

_____

_____

Answer _____ and _____

(2)

(c) Another bag contains only green counters and yellow counters.
There are more than 10 counters in the bag.
When one counter is chosen at random, the probability of choosing a green counter is $\frac{3}{4}$.

Write down **two** possible values for the total number of counters in this bag.

_____

_____

Answer _____ and _____

(2)

(Total 6 marks)

Q21.

Lee works at a leisure centre.

(a) He surveys a sample of 40 children.

	Can swim	Cannot swim	Total
Children	24	16	40

The council claims that more than 2/3 of children in the area can swim.

Do Lee's results support this claim?

You **must** show your working.

_____

_____

_____

_____

(3)

(b) He also wants to know the proportion of **all** adults who can swim.

He surveys a sample of 50 adults at the leisure centre.

State one way that Lee can make his sample more reliable.

_____

_____

(1)

(Total 4 marks)

Q22.

Two ordinary fair dice are thrown.
One dice shows a number greater than 3.
The other dice shows a number less than 3.

Put these statements in order, starting with the least likely.

A Both dice show an even number.

B Both dice show an odd number.

C One dice shows an odd number and one dice shows an even number.

You **must** show your working.

Answer _____, _____, _____

(Total 3 marks)