EXPERT TUITION

Maths Questions By Topic:

Probability

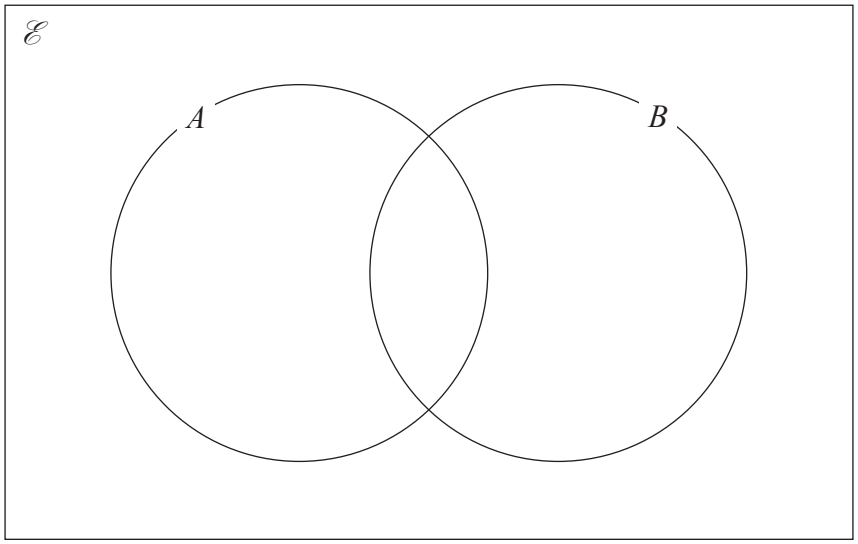
Edexcel GCSE (Foundation)

0207 060 4494
www.expert-tuition.co.uk
online.expert-tuition.co.uk
enquiries@expert-tuition.co.uk
The Foundry, 77 Fulham Palace Road, W6 8JA

Table Of Contents

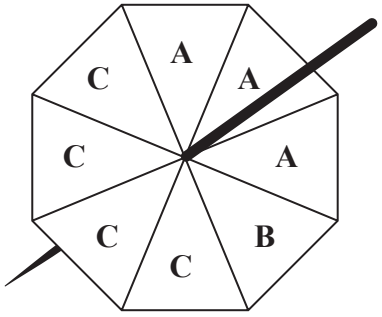
1 $\mathscr{E}$ = {even numbers less than 19}
A = {6, 12, 18}
B = {2, 6, 14, 18}

Complete the Venn diagram for this information.

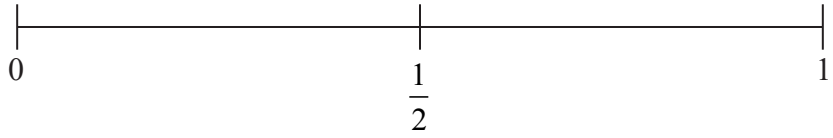


(Total for Question 1 is 3 marks)

2 Gita spins a fair 8-sided spinner.

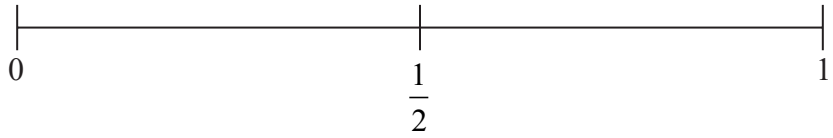


(a) On the probability scale, mark with a cross (×) the probability that the spinner will land on **C**.



(1)

(b) On the probability scale, mark with a cross (×) the probability that the spinner will land on **D**.



(1)

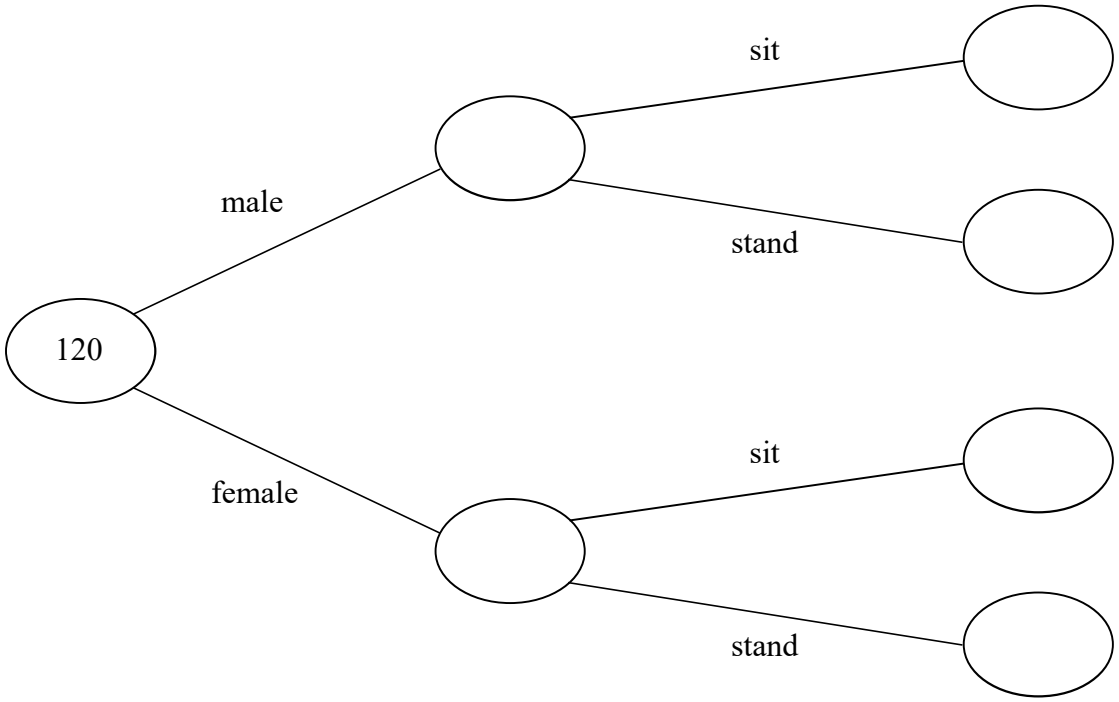
(Total for Question 2 is 2 marks)

3 120 people were at a hockey match.

Each person was asked if they wanted to stand or to sit to watch the match.

75 of the people were female
29 of the males wanted to stand
30 of the people wanted to sit

(a) Use this information to complete the frequency tree.



(3)

One of the 120 people is chosen at random.

(b) Write down the probability that this person is a male who wanted to stand.

.....

(1)

(Total for Question 3 is 4 marks)

4 Stuart throws a biased coin 10 times.
He gets 7 Tails.

Maxine throws the same coin 50 times.
She gets 30 Tails.

Prasha is going to throw the coin once.

(i) Whose results will give the better estimate for the probability that she will get Tails, Stuart's or Maxine's?
You must give a reason for your answer.

.....

.....

.....

(1)

(ii) Use Stuart's and Maxine's results to work out an estimate for the probability that Prasha will get Tails.

.....

(1)

(Total for Question 4 is 2 marks)

5 There are only blue cubes, red cubes and yellow cubes in a box.

The table shows the probability of taking at random a blue cube from the box.

Colour	blue	red	yellow
Probability	0.2		

The number of red cubes in the box is the same as the number of yellow cubes in the box.

(a) Complete the table.

(2)

There are 12 blue cubes in the box.

(b) Work out the total number of cubes in the box.

.....

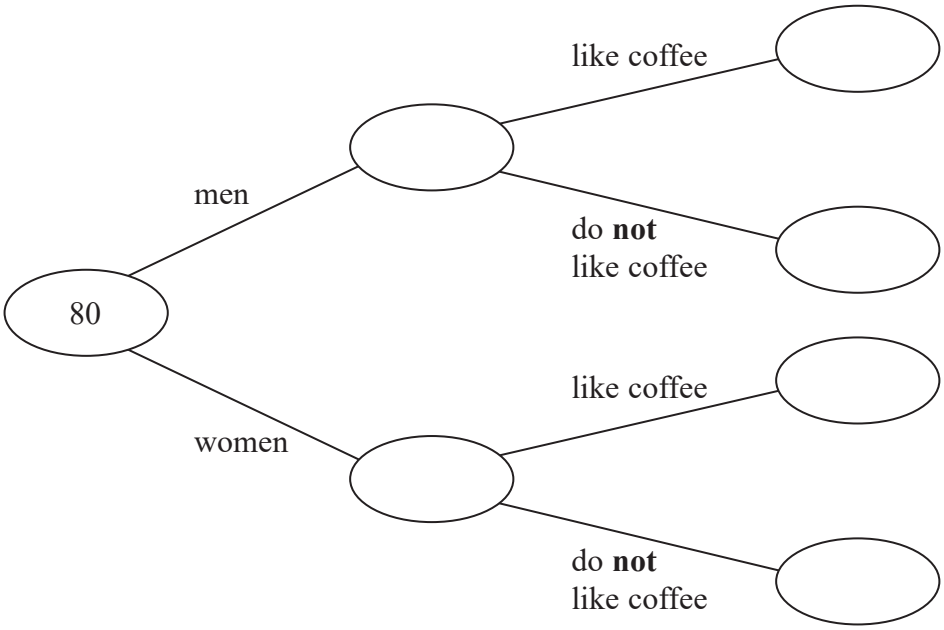
(2)

(Total for Question 5 is 4 marks)

6 80 people are asked if they like coffee.

48 of these people are women.
61 of the 80 people like coffee.
8 of the men do **not** like coffee.

(a) Use this information to complete the frequency tree.



(3)

One of the people who like coffee is chosen at random.

(b) Find the probability that this person is a woman.

.....

(2)

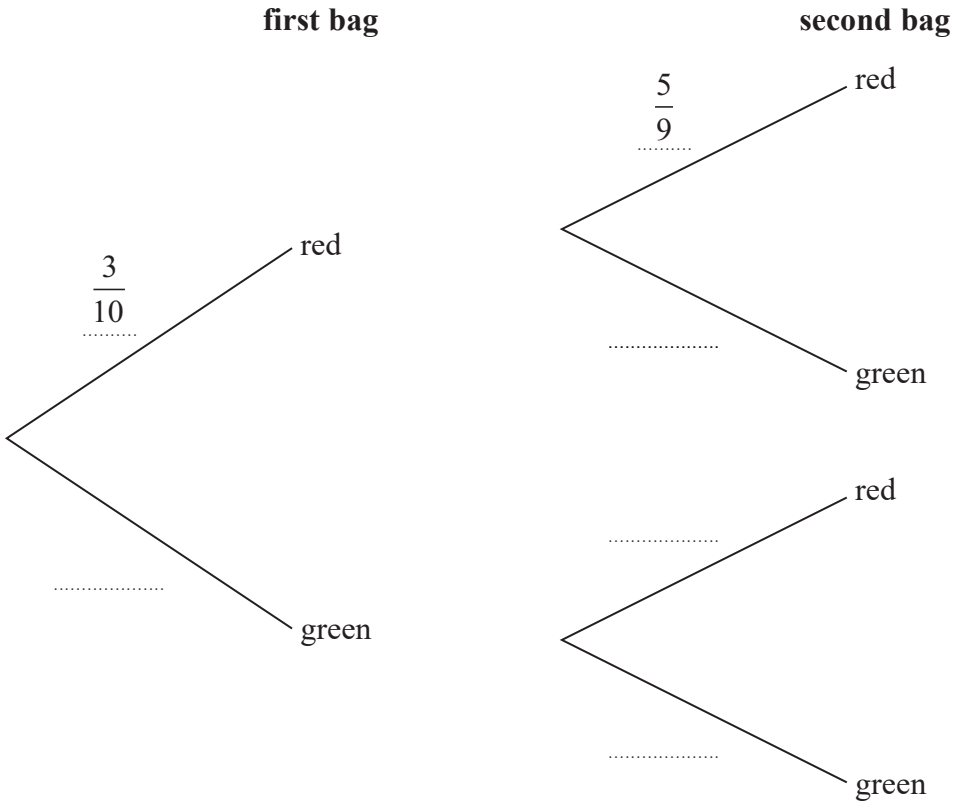
(Total for Question 6 is 5 marks)

7 Amina has two bags.

In the first bag there are 3 red balls and 7 green balls.
In the second bag there are 5 red balls and 4 green balls.

Amina takes at random a ball from the first bag.
She then takes at random a ball from the second bag.

(a) Complete the probability tree diagram.



(2)

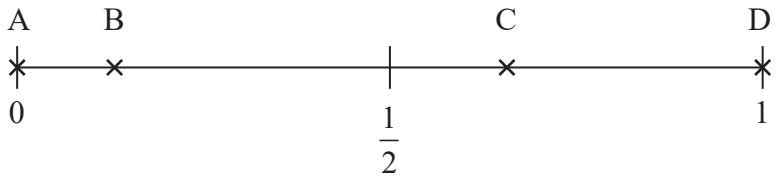
(b) Work out the probability that Amina takes two red balls.

.....

(2)

(Total for Question 7 is 4 marks)

8 Here is a probability scale.
It shows the probability of each of the events A, B, C and D.



(a) Write down the letter of the event that is certain.

.....

(1)

(b) Write down the letter of the event that is unlikely.

.....

(1)

There are 12 counters in a bag.

3 of the counters are red.
1 of the counters is blue.
2 of the counters are yellow.
The rest of the counters are green.

Caitlin takes at random a counter from the bag.

(c) Show that the probability that this counter is yellow or green is $\frac{2}{3}$

(3)

(Total for Question 8 is 5 marks)

9 A = {multiples of 5 between 14 and 26}

B = {odd numbers between 14 and 26}

(a) List the members of $A \cup B$

.....

(2)

(b) Describe the members of $A \cap B$

.....

(1)

(Total for Question 9 is 3 marks)

10 Emma has 45 rabbits.

30 of the rabbits are male.
8 of the female rabbits have short hair.
12 of the rabbits with long hair are male.

(a) Use the information to complete the two-way table.

	Male	**Female**	**Total**
Long hair			
Short hair			
Total			

(3)

One of Emma's rabbits is chosen at random.

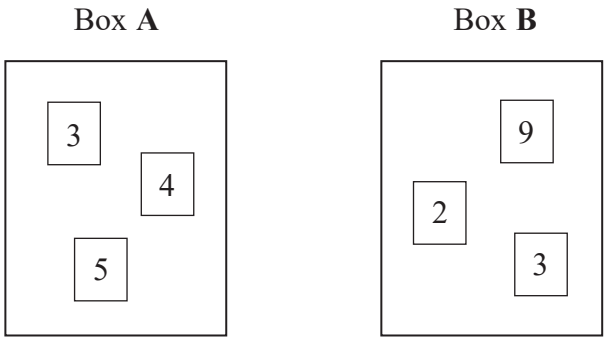
(b) Write down the probability that this rabbit is a female with short hair.

.....

(1)

(Total for Question 10 is 4 marks)

11 There are 3 cards in Box **A** and 3 cards in Box **B**.
There is a number on each card.



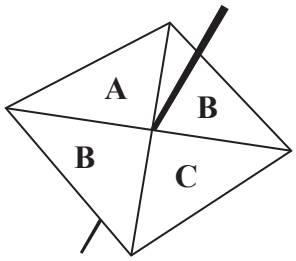
Ryan takes at random a card from Box **A** and a card from Box **B**.
He adds together the numbers on the two cards to get a total score.

Work out the probability that the total score is an odd number.

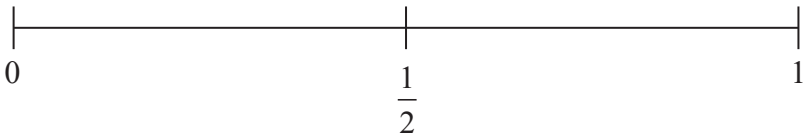
.....

(Total for Question 11 is 2 marks)

12 Sammy spins a fair 4-sided spinner.

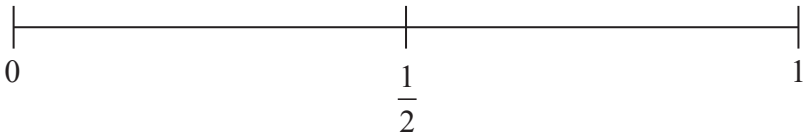


(i) On the probability scale, mark with a cross (×) the probability that the spinner will land on **B**.



(1)

(ii) On the probability scale, mark with a cross (×) the probability that the spinner will land on **F**.



(1)

(Total for Question 12 is 2 marks)

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13 There are only 7 blue pens, 4 green pens and 6 red pens in a box.

One pen is taken at random from the box.

Write down the probability that this pen is blue.

.....

(Total for Question 13 is 2 marks)

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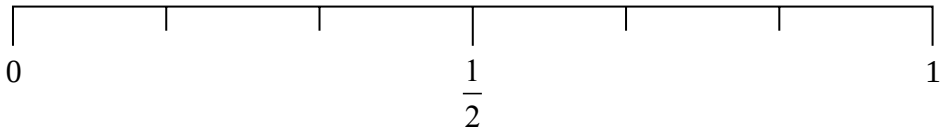
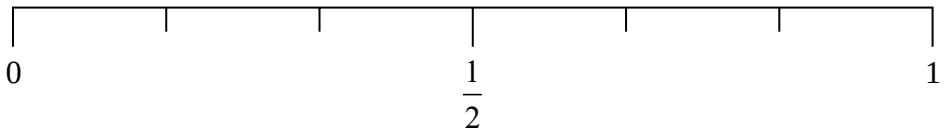
14 Greg rolls a fair ordinary dice once.

(i) On the probability scale, mark with a cross (×) the probability that the dice will land on an odd number.



(ii) On the probability scale, mark with a cross (×) the probability that the dice will land on a number less than 5



(Total for Question 14 is 2 marks)

15 There are 3 red beads and 1 blue bead in a jar.
A bead is taken at random from the jar.

What is the probability that the bead is blue?

.....

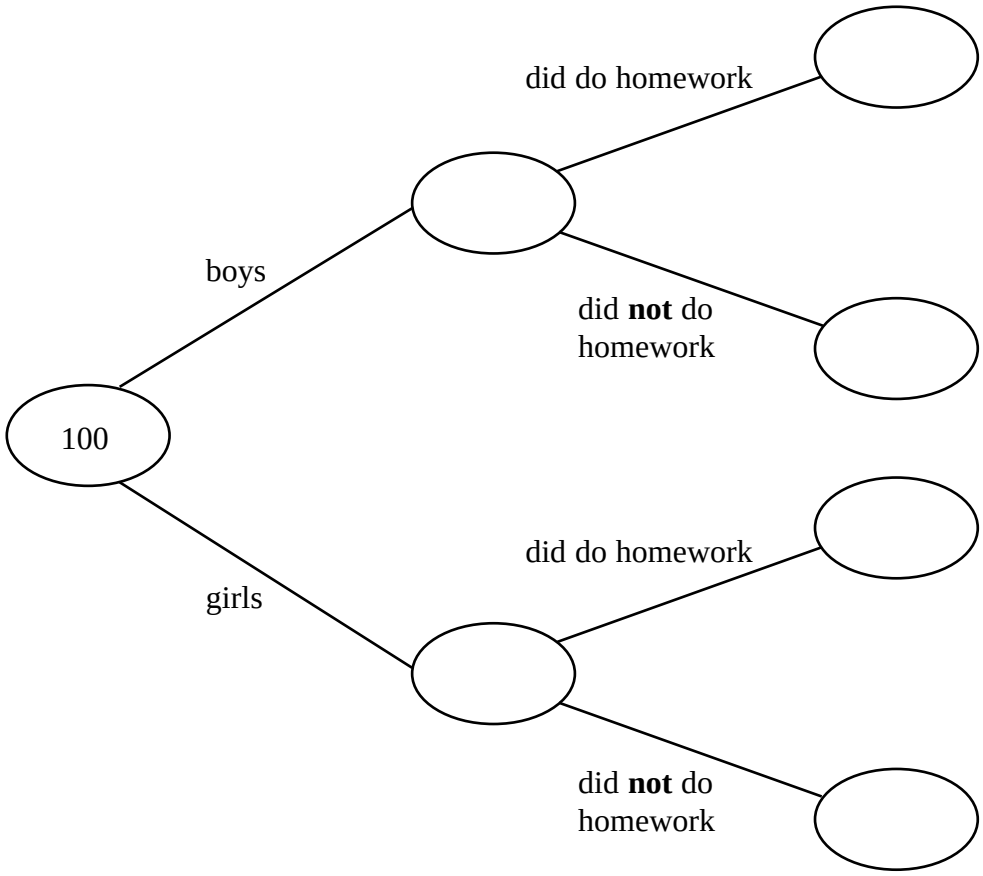
(Total for Question 15 is 1 mark)

16 100 students had some homework.

42 of these students are boys.
8 of the 100 students did **not** do their homework.
53 of the girls did do their homework.

(a) Use this information to complete the frequency tree.

(3)



One of the girls is chosen at random.

(b) Work out the probability that this girl did **not** do her homework.

.....

(2)

(Total for Question 16 is 5 marks)

17 There are only red counters, blue counters, green counters and yellow counters in a bag.

The table shows the probabilities of picking at random a red counter and picking at random a yellow counter.

Colour	red	blue	green	yellow
Probability	0.24			0.32

The probability of picking a blue counter is the same as the probability of picking a green counter.

Complete the table.

(Total for Question 17 is 2 marks)

18 Four friends each throw a biased coin a number of times.
The table shows the number of heads and the number of tails each friend got.

	Ben	**Helen**	**Paul**	**Sharif**
heads	34	66	80	120
tails	8	12	40	40

The coin is to be thrown one more time.

(a) Which of the four friends' results will give the best estimate for the probability that the coin will land heads?
Justify your answer.

.....

.....

.....

(1)

Paul says,

"With this coin you are twice as likely to get heads as to get tails."

(b) Is Paul correct?
Justify your answer.

.....

.....

.....

(2)

The coin is to be thrown twice.

(c) Use all the results in the table to work out an estimate for the probability that the coin will land heads both times.

.....

(2)

(Total for Question 18 is 5 marks)

19 In a box there are three types of chocolates.

There are 6 plain chocolates,
8 milk chocolates
and 10 white chocolates.

Ben takes at random a chocolate from the box.

(a) Write down the probability that Ben takes a plain chocolate.

.....

(2)

Deon takes 2 chocolates from the box.

(b) Write down all the possible combinations of types of chocolates that Deon can take.

.....

.....

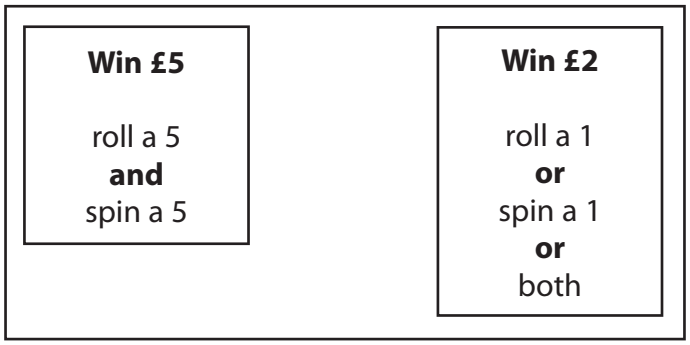
.....

(2)

(Total for Question 19 is 4 marks)

20 David has designed a game.
He uses a fair 6-sided dice and a fair 5-sided spinner.
The dice is numbered 1 to 6
The spinner is numbered 1 to 5

Each player rolls the dice once and spins the spinner once.
A player can win £5 or win £2



David expects 30 people will play his game.
Each person will pay David £1 to play the game.

(a) Work out how much profit David can expect to make.

£.....

(4)

(b) Give a reason why David's actual profit may be different to the profit he expects to make.

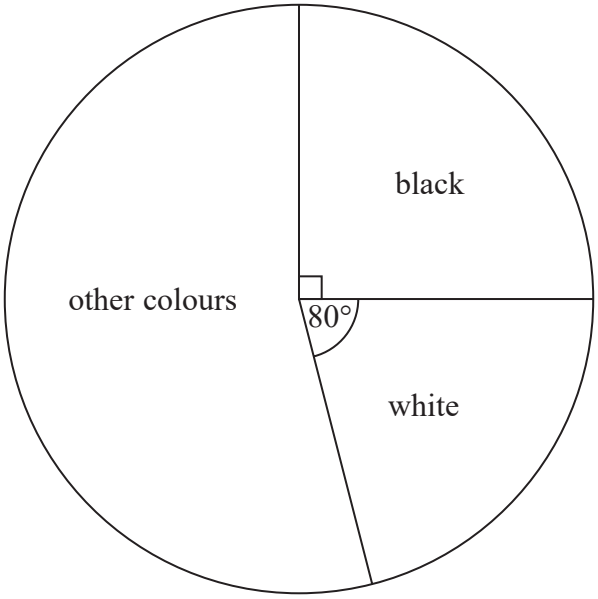
.....

.....

(1)

(Total for Question 20 is 5 marks)

21 The pie chart gives information about the colour of each car in a car park.



There are 135 black cars in the car park.

(a) Work out the number of white cars in the car park.

.....

(3)

There are 50 grey cars in the car park.

A car in the car park is picked at random.

(b) Find the probability that this car is grey.

.....

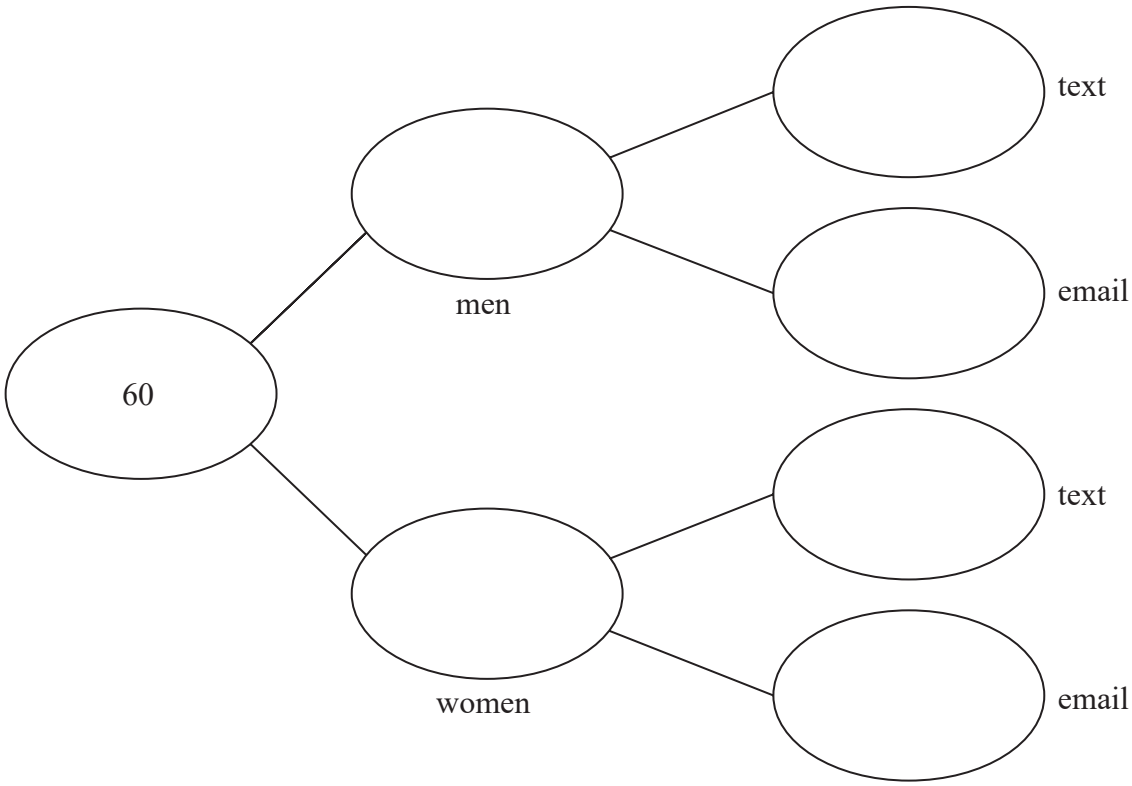
(2)

(Total for Question 21 is 5 marks)

22 60 people are asked if they prefer to text or to email their friends.

38 of the people are women and the rest are men.
15 of the men prefer to email their friends.
60% of the people prefer to text their friends.

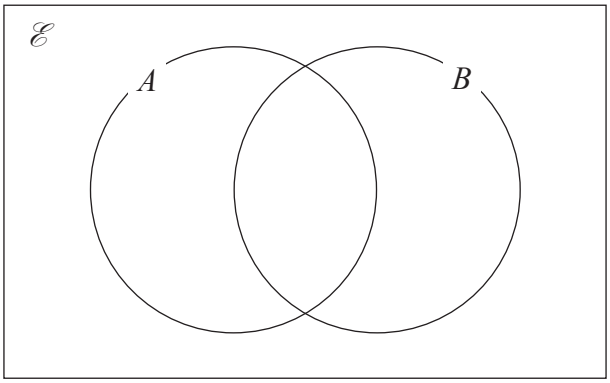
Complete the frequency tree for this information.



(Total for Question 22 is 5 marks)

23 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{even numbers}\}$
$B = \{\text{factors of } 10\}$

(a) Complete the Venn diagram for this information.



(3)

A number is chosen at random from the universal set, $\mathscr{E}$

(b) Find the probability that this number is in the set $A \cap B$

.....

(2)

(Total for Question 23 is 5 marks)

24 Here is a list of numbers.

6 4 8 9 4 3

(a) Work out the median.

.....

(2)

Aisha picks at random one of the numbers.

(b) What is the probability that she picks an odd number?

.....

(2)

Clara has five cards.
There is a number on each card.
Two of the numbers are hidden.

3	?	8	5	?

The mode of the five numbers is 3
The mean of the five numbers is 5

(c) Work out the two numbers that are hidden.

..... , ...

(2)

(Total for Question 24 is 6 marks)

25 Four biased coins, A, B, C and D are thrown.

The probability that each coin will land on Heads is shown in the table.

Coin	Probability
A	0.33
B	0.033
C	$\frac{1}{3}$
D	30%

(a) (i) Which coin is least likely to land on Heads?

.....

(1)

(ii) Which coin is most likely to land on Heads?

.....

(1)

Julie says,

> "The probability that coin C will land on Heads is the same as the probability that coin C will land on Tails."

(b) Is she correct?
Give a reason for your answer.

.....

.....

.....

(1)

Coin B is going to be thrown 4000 times.

(c) Work out an estimate for the number of times coin B will land on Heads.

.....

(2)

(Total for Question 25 is 5 marks)

26 There are 49 counters in a bag.

20 of the counters are red.
The rest of the counters are blue.

One of the counters is taken at random.

Find the probability that the counter is blue.

.....

(Total for Question 26 is 2 marks)

27 Victoria throws an ordinary fair 6-sided dice once.

She says,

"The probability of getting a 3 is half the probability of getting a 6"

(a) Is Victoria correct?
You must explain your answer.

.....

.....

(1)

Andy throws the dice twice.
He says,

"The probability of getting a 6 on both throws is $\frac{2}{6}$"

(b) Is Andy correct?
You must explain your answer.

.....

.....

(1)

Indre throws the dice once.
She also throws a coin to get Heads or Tails.

(c) List all the possible outcomes she can get.

.....

.....

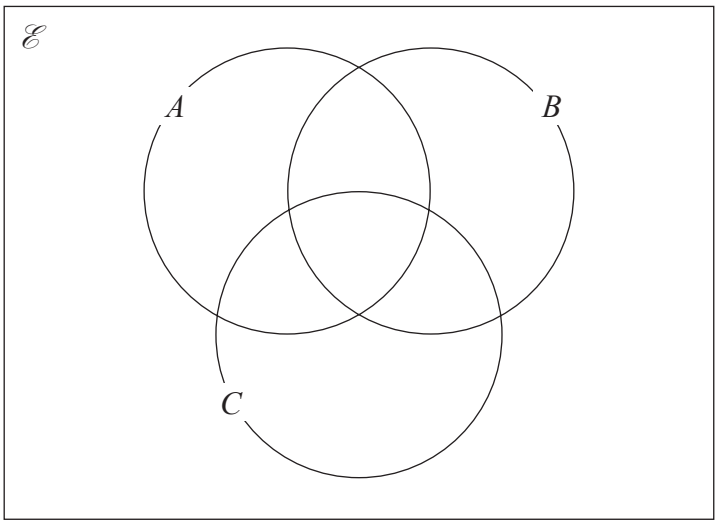
.....

(2)

(Total for Question 27 is 4 marks)

28 $\mathscr{E}$ = {even numbers between 1 and 25}
A = {2, 8, 10, 14}
B = {6, 8, 20}
C = {8, 18, 20, 22}

(a) Complete the Venn diagram for this information.



(4)

A number is chosen at random from $\mathscr{E}$.

(b) Find the probability that the number is a member of $A \cap B$.

.....

(2)

(Total for Question 28 is 6 marks)

29 A scout group has a raffle to raise money for charity.
There is 1 prize to be won in the raffle.

Laura buys 12 raffle tickets.
A total of 350 raffle tickets are sold.

Find the probability that Laura does **not** win the prize.

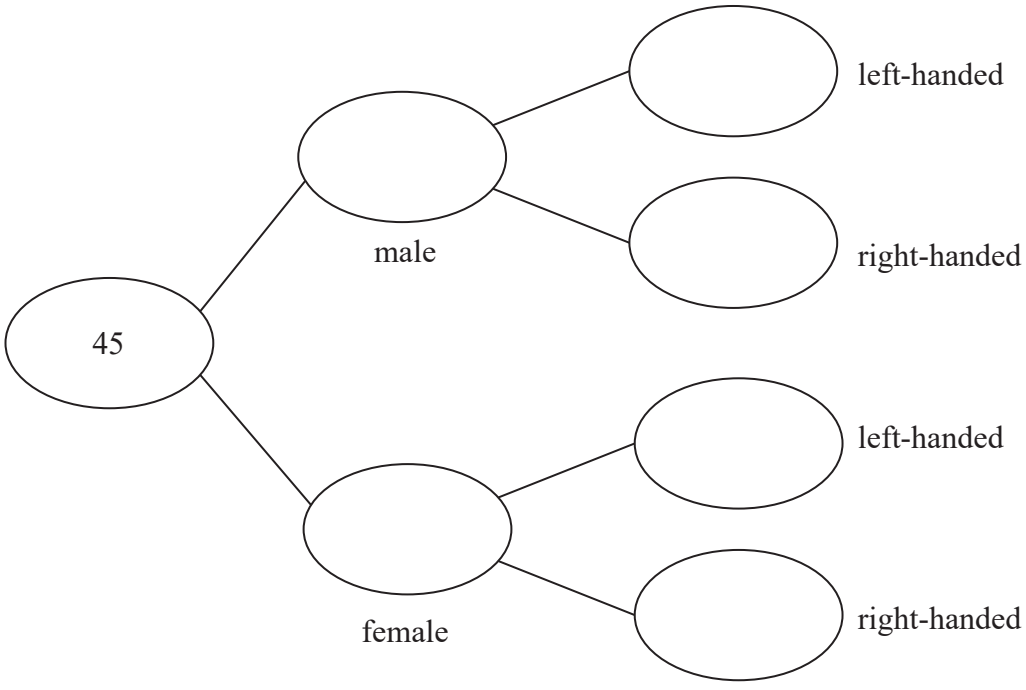
.....

(Total for Question 29 is 2 marks)

30 Each worker in a factory is either left-handed or right-handed.

22 of the 45 workers are male.
16 of the 34 right-handed workers are female.

Complete the frequency tree for this information.

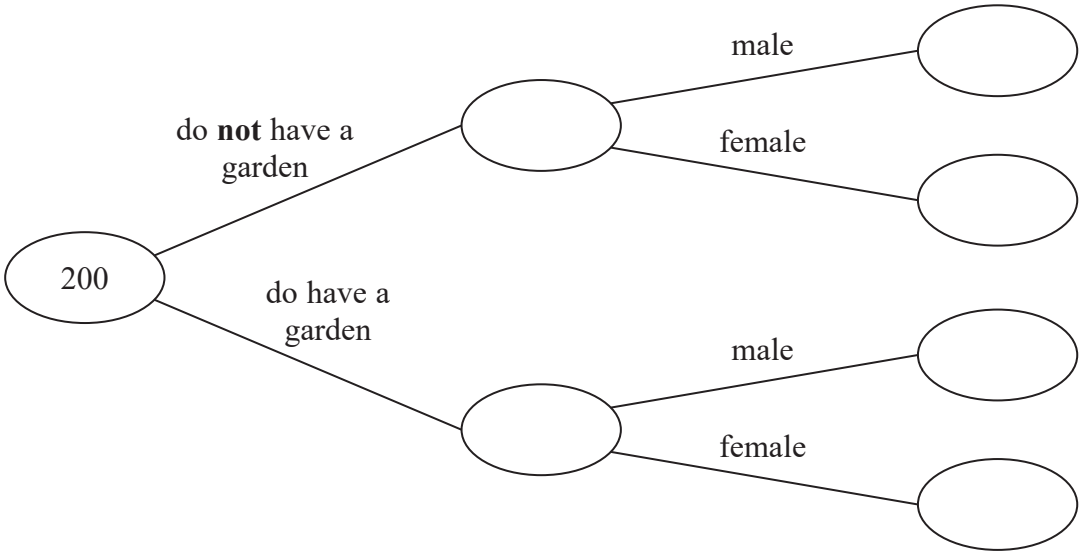


(Total for Question 30 is 3 marks)

31 200 people live in a village.

23 people do **not** have a garden.
10 males do **not** have a garden.
95 people are male.

(a) Use this information to complete the frequency tree.



(3)

One of the people who does **not** have a garden is chosen at random.

(b) Write down the probability that this person is female.

.....

(2)

(Total for Question 31 is 5 marks)

32 The probability that a new fridge has a fault is 0.015

What is the probability that a new fridge does **not** have a fault?

.....

(Total for Question 32 is 1 mark)

33 The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	**1**	**2**				
Probability		0.17	0.18	0.09	0.15	0.1

Neymar rolls the biased dice 200 times.

Work out an estimate for the total number of times the dice will land on 1 or on 3

.....

(Total for Question 33 is 3 marks)

34 There are some boys and girls in a classroom.

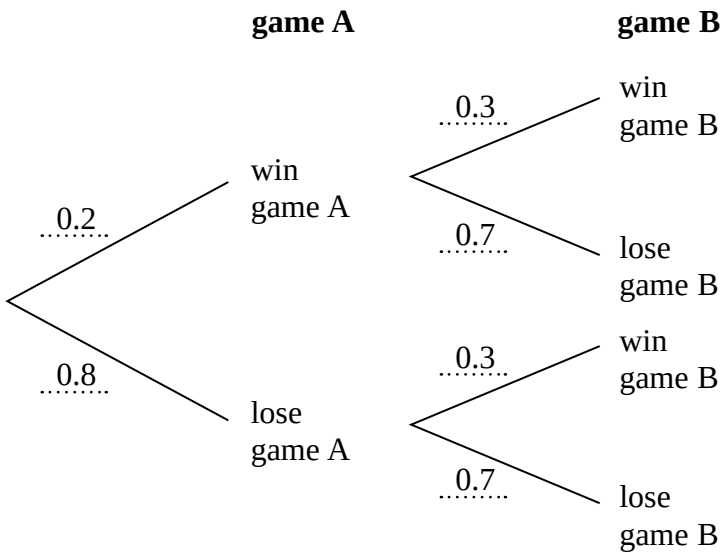
The probability of picking at random a boy is $\frac{1}{3}$

What is the probability of picking a girl?

.....

(Total for Question 34 is 1 mark)

35 Here is a probability tree diagram.



Work out the probability of winning both games.

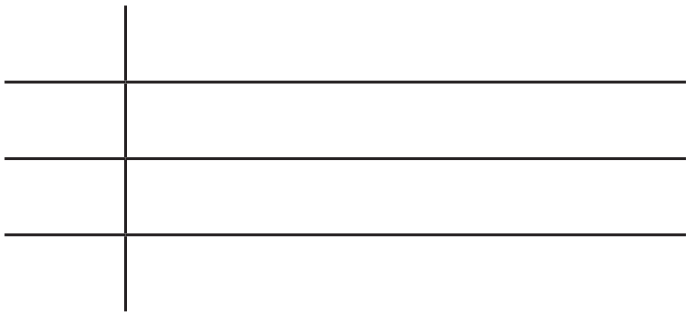
.....

(Total for Question 35 is 2 marks)

36 Here are the heights, in centimetres, of 15 children.

123	147	135	150	147
129	148	149	125	137
133	138	133	130	151

(a) Show this information in a stem and leaf diagram.



(3)

One of the children is chosen at random.

(b) What is the probability that this child has a height greater than 140 cm?

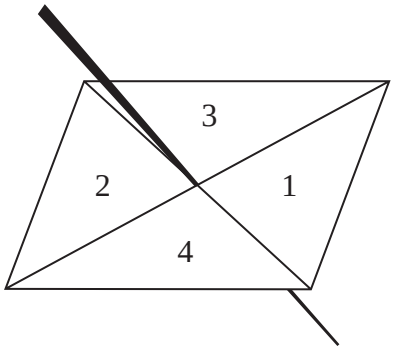
.....

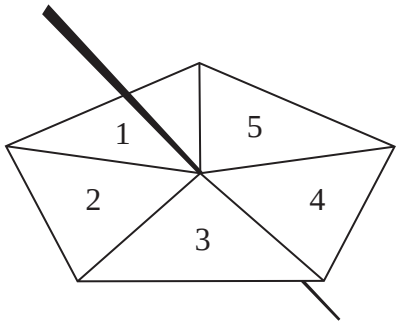
(2)

(Total for Question 36 is 5 marks)

37 Here are a 4-sided spinner and a 5-sided spinner.

The spinners are fair.





Jeff is going to spin each spinner once.
Each spinner will land on a number.
Jeff will get his score by adding these two numbers together.

(a) Complete the possibility space diagram for each possible score.

5-sided spinner

4-sided spinner	**1**	**2**	**3**	**4**	**5**
1	2	3	4	5	6
2	3				
3	4				
4	5				

(1)

Jeff spins each spinner once.

(b) Find the probability that Jeff gets

(i) a score of 3

.....

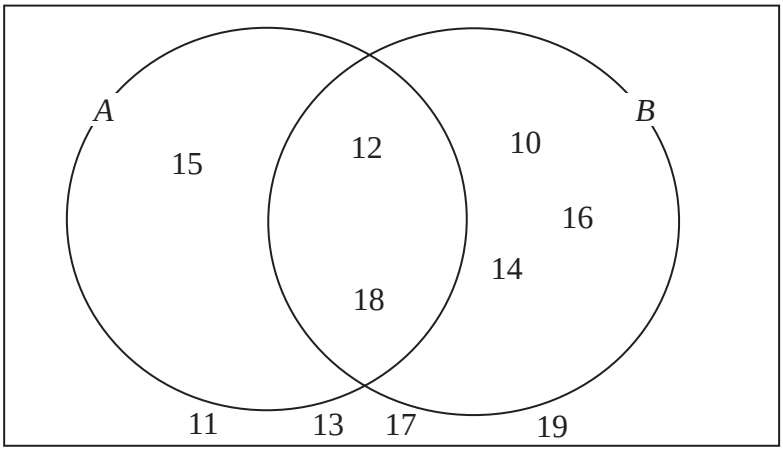
(ii) a score of 5 or more.

.....

(2)

(Total for Question 37 is 3 marks)

38 Here is a Venn diagram.



(a) Write down the numbers that are in set

(i) $A \cup B$

.....

(ii) $A \cap B$

.....

(2)

One of the numbers in the diagram is chosen at random.

(b) Find the probability that the number is in set A'

.....

(2)

(Total for Question 38 is 4 marks)

39 On a farm

the number of cows and the number of sheep are in the ratio 6 : 5
the number of sheep and the number of pigs are in the ratio 2 : 1

The total number of cows, sheep and pigs on the farm is 189

How many sheep are there on the farm?

.....

(Total for Question 39 is 3 marks)

40 In a bag there are only red counters, blue counters, green counters and pink counters.
A counter is going to be taken at random from the bag.

The table shows the probabilities of taking a red counter or a blue counter.

Colour	red	blue	green	pink
Probability	0.05	0.15	.....	.....

The probability of taking a green counter is 0.2 more than the probability of taking a pink counter.

(a) Complete the table.

(2)

There are 18 blue counters in the bag.

(b) Work out the total number of counters in the bag.

.....

(2)

(Total for Question 40 is 4 marks)

41 There are only 5 blue cards, 2 green cards and 4 red cards in a pack.

Isabella is going to take at random one card from the pack.

(a) Write down the probability that Isabella will take a blue card.

.....

(2)

Ken is going to throw a biased dice once.
The probability that the dice will land on six is 0.3

(b) What is the probability that the dice will **not** land on six?

.....

(1)

(Total for Question 41 is 3 marks)

42 Malik is going to throw a fair coin 50 times.

(a) Write down an estimate for the number of times the coin will land on heads.

.....

(1)

Paula and Simon are trying to find out if a different coin is biased.

Paula throws this coin 10 times.
She records the number of times the coin lands on heads.

Simon throws the same coin 100 times.
He records the number of times the coin lands on heads.

(b) Whose results will be more useful in deciding if the coin is biased?
Give a reason for your answer.

.....

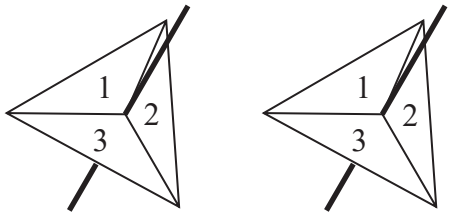
.....

.....

(1)

(Total for Question 42 is 2 marks)

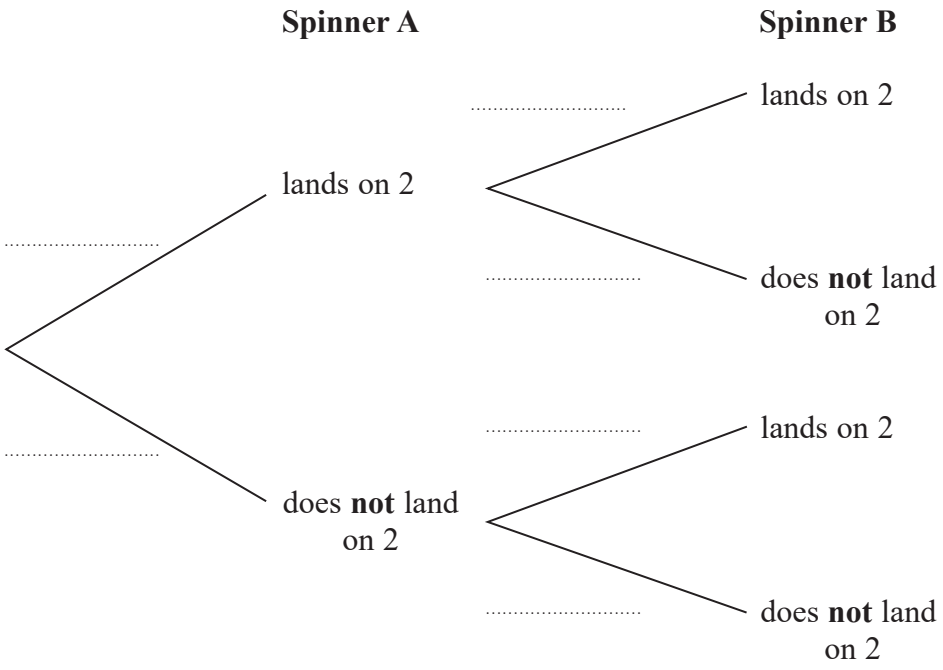
43 Amanda has two fair 3-sided spinners.



Spinner A **Spinner B**

Amanda spins each spinner once.

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that Spinner A lands on 2 and Spinner B does **not** land on 2

.....

(2)

(Total for Question 43 is 4 marks)

44 In a bag there are only red counters, blue counters, green counters and yellow counters.
A counter is taken at random from the bag.

The table shows the probabilities of getting a red counter or a yellow counter.

Colour	red	blue	green	yellow
Probability	0.4	.....	.....	0.25

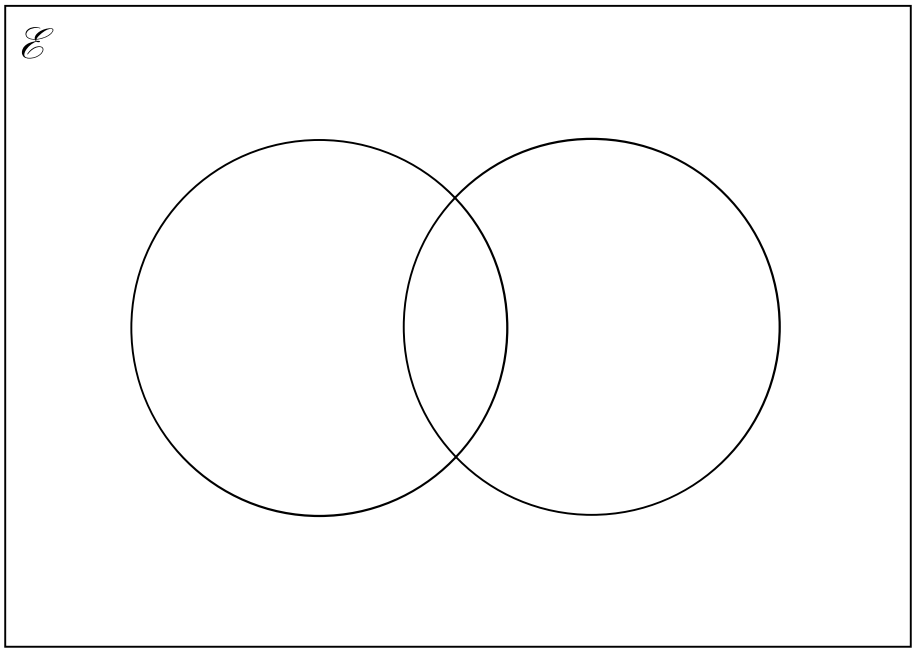
the number of blue counters : the number of green counters = 3 : 4

Complete the table.

(Total for Question 44 is 4 marks)

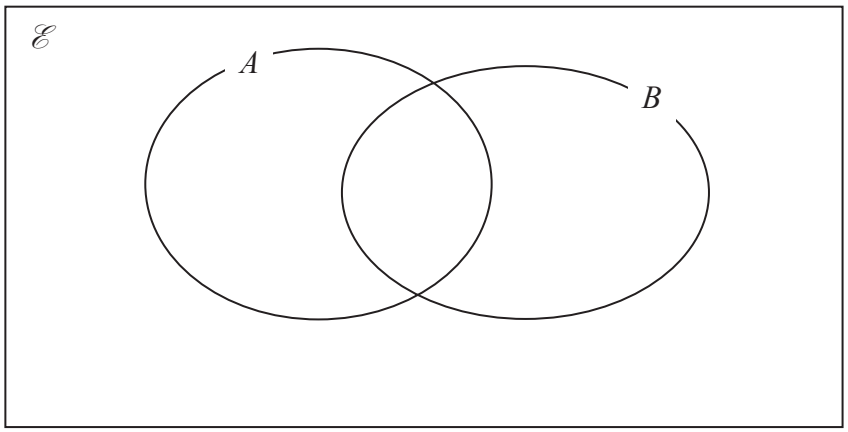
45 $\mathscr{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13}
A = {multiples of 3}
B = {even numbers}

Complete the Venn diagram for this information.



(Total for Question 45 is 4 marks)

46 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
$A = \{1, 5, 6, 8, 9\}$
$B = \{2, 6, 9\}$



(a) Complete the Venn diagram to represent this information.

(3)

A number is chosen at random from the universal set $\mathscr{E}$.

(b) Find the probability that the number is in the set $A \cap B$

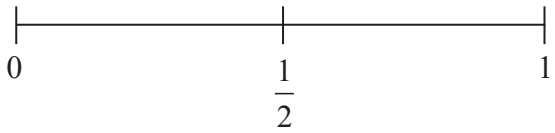
.....

(2)

(Total for Question 46 is 5 marks)

47 An ordinary fair dice is thrown once.

(a) On the probability scale below, mark with a cross (×) the probability that the dice lands on an odd number.



(1)

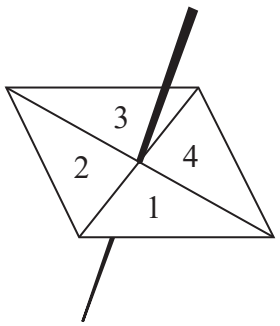
(b) Write down the probability that the dice lands on a number greater than 4

.....

(1)

(Total for Question 47 is 2 marks)

48 Here is a 4-sided spinner.



The table shows the probabilities that when the spinner is spun it will land on 1, on 3 and on 4

Number	1	2	3	4
Probability	0.2		0.4	0.1

The spinner is spun once.

(a) Work out the probability that the spinner will land on 2

.....

(1)

(b) Which number is the spinner least likely to land on?

.....

(1)

Jake is going to spin the spinner 60 times.

(c) Work out an estimate for the number of times the spinner will land on 1

.....

(2)

(Total for Question 48 is 4 marks)

49 Here are the marks 20 students got in a French test.

76	82	84	69	80	64	70	81	75	91
87	67	80	70	94	76	81	69	71	77

(a) Show this information in a stem and leaf diagram.

(3)

One of these students is going to be chosen at random.

The pass mark in the French test is 71

Omar writes,

The probability that this student failed the French test is $\frac{1}{4}$

Omar is wrong.

(b) Explain why.

.....

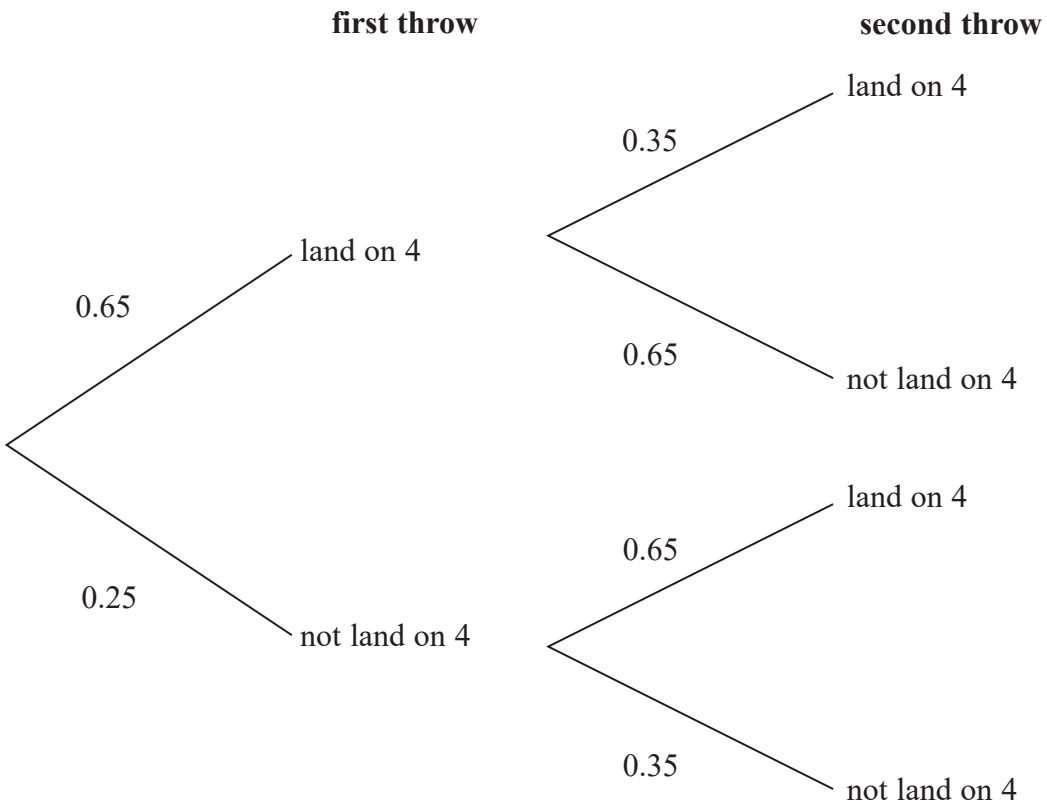
.....

(2)

(Total for Question 49 is 5 marks)

50 When a biased 6-sided dice is thrown once, the probability that it will land on 4 is 0.65
The biased dice is thrown twice.

Amir draws this probability tree diagram.
The diagram is **not** correct.



Write down **two** things that are wrong with the probability tree diagram.

1 .....

.....

2 .....

.....

(Total for Question 50 is 2 marks)

51 There are some counters in a bag.
The counters are red or white or blue or yellow.

Bob is going to take at random a counter from the bag.

The table shows each of the probabilities that the counter will be blue or will be yellow.

Colour	red	white	blue	yellow
Probability			0.45	0.25

There are 18 blue counters in the bag.

The probability that the counter Bob takes will be red is twice the probability that the counter will be white.

(a) Work out the number of red counters in the bag.

.....

(4)

A marble is going to be taken at random from a box of marbles.
The probability that the marble will be silver is 0.5

There must be an even number of marbles in the box.

(b) Explain why.

.....

.....

(1)

(Total for Question 51 is 5 marks)

52 When a drawing pin is dropped it can land point down or point up.

Lucy, Mel and Tom each dropped the drawing pin a number of times.

The table shows the number of times the drawing pin landed point down and the number of times the drawing pin landed point up for each person.

	Lucy	**Mel**	**Tom**
point down	31	53	16
point up	14	27	9

Rachael is going to drop the drawing pin once.

(a) Whose results will give the best estimate for the probability that the drawing pin will land point up?
Give a reason for your answer.

.....

.....

(1)

Stuart is going to drop the drawing pin twice.

(b) Use all the results in the table to work out an estimate for the probability that the drawing pin will land point up the first time and point down the second time.

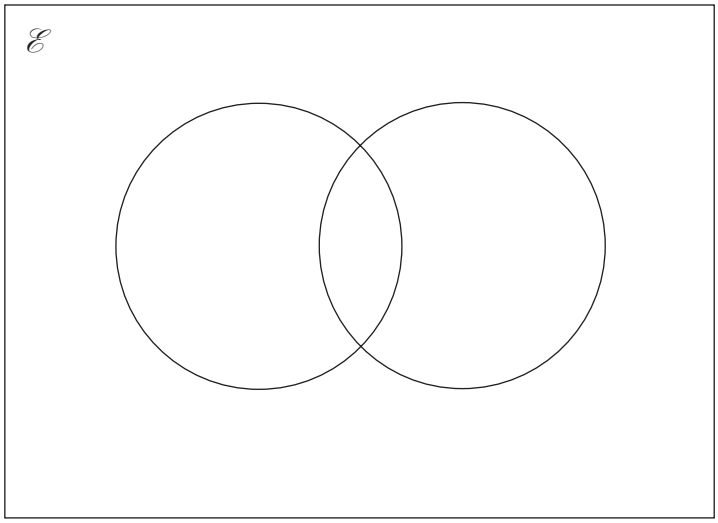
.....

(2)

(Total for Question 52 is 3 marks)

53 $\mathscr{E}$ = {odd numbers less than 30}
A = {3, 9, 15, 21, 27}
B = {5, 15, 25}

(a) Complete the Venn diagram to represent this information.



(4)

A number is chosen at random from the universal set, $\mathscr{E}$.

(b) What is the probability that the number is in the set $A \cup B$?

.....

(2)

(Total for Question 53 is 6 marks)

54 The table shows some information about the dress sizes of 25 women.

Dress size	Number of women
8	2
10	9
12	8
14	6

(a) Find the median dress size.

.....

(1)

3 of the 25 women have a shoe size of 7

Zoe says that if you choose at random one of the 25 women, the probability that she has either a shoe size of 7 or a dress size of 14 is $\frac{9}{25}$ because

$$\frac{3}{25} + \frac{6}{25} = \frac{9}{25}$$

(b) Is Zoe correct?
You must give a reason for your answer.

.....

.....

(1)

(Total for Question 54 is 2 marks)

55 There are 25 boys and 32 girls in a club.

$\frac{2}{5}$ of the boys and $\frac{1}{2}$ of the girls walk to the club.

The club leader picks at random a child from the children who walk to the club.

Work out the probability that this child is a boy.

.....

(Total for Question 55 is 3 marks)

56 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{multiples of } 2\}$
$A \cap B = \{2, 6\}$
$A \cup B = \{1, 2, 3, 4, 6, 8, 9, 10\}$

Draw a Venn diagram for this information.

(Total for Question 56 is 4 marks)

57 The stem and leaf diagram gives information about the speeds of 27 cars.

3	8
4	1 3 4 6 7 8 8 9 9
5	2 2 4 6 7 7 8 8 9
6	1 1 2 2 2 2 3
7	0

Key:
3 | 8 means 38 miles per hour

(a) Find the median speed.

..... miles per hour
(1)

(b) Work out the range.

..... miles per hour
(1)

One of the cars is chosen at random.

Jack says,

"The probability that the speed of this car is more than 60 miles per hour is $\frac{1}{3}$"

(c) Jack is wrong.
Explain why.

.....

.....

(2)

(Total for Question 57 is 4 marks)

58 There are only blue counters, green counters, red counters and yellow counters in a bag. George is going to take at random a counter from the bag.

The table shows each of the probabilities that George will take a blue counter or a green counter or a yellow counter.

Colour	blue	green	red	yellow
Probability	0.5	0.2		0.25

(a) Work out the probability that George will take a red counter.

.....

(1)

There are 120 counters in the bag.

(b) Work out the number of green counters in the bag.

.....

(2)

(Total for Question 58 is 3 marks)

59 There are 5 girls, 6 boys and some adults in a room.
Jenny selects at random one of these people.

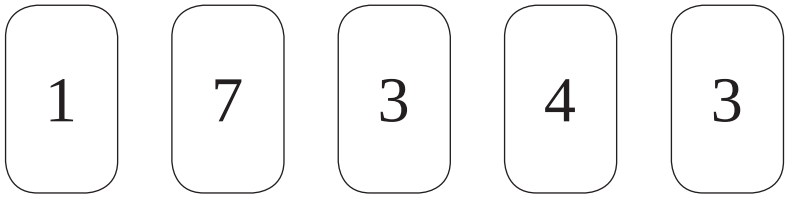
The probability that Jenny selects a girl is $\frac{1}{3}$

Work out the probability that Jenny selects an adult.

.....

(Total for Question 59 is 3 marks)

60 Sonia has five number cards.



Sonia puts all five cards on the table to make a number.

(a) Write down the smallest number Sonia can make with the five cards.

.....

(1)

(b) Write down the largest **even** number Sonia can make with the five cards.

.....

(2)

Sonia takes at random one of the cards.

(c) Write down the probability that the card will have the number 7 on it.

.....

(1)

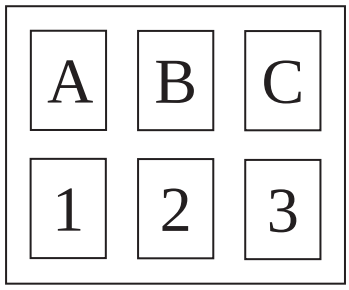
(d) Write down the probability that the card will **not** have the number 7 on it.

.....

(1)

(Total for Question 60 is 5 marks)

61 The diagram shows a security lock.



You have to enter the correct code to open the lock.
The correct code is B3

Dan does **not** know the code.

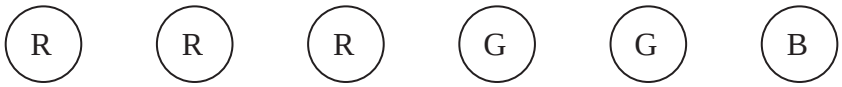
He enters at random one of the letters.
He then enters at random one of the numbers.

Work out the probability that Dan enters the correct code.

.....

(Total for Question 61 is 3 marks)

62 There are six counters in a bag.
Three counters are red, two counters are green and one counter is blue.



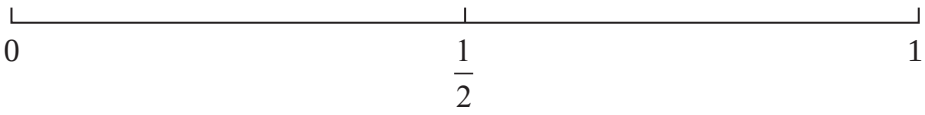
Nick takes at random a counter from the bag.

(a) Circle the word that best describes the likelihood that Nick takes a blue counter.

impossible unlikely even likely certain

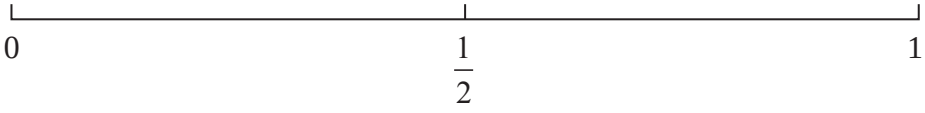
(1)

(b) On the probability scale, mark with a cross (×) the probability that Nick takes a red counter.



(1)

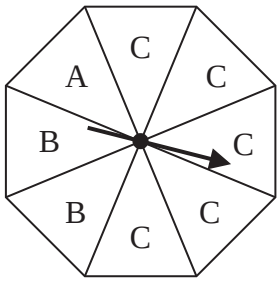
(c) On the probability scale, mark with a cross (×) the probability that Nick takes a white counter.



(1)

(Total for Question 62 is 3 marks)

63 The diagram shows a **fair** eight-sided spinner.



Beth is going to spin the spinner 400 times.

(a) Work out an estimate for the number of times that Beth will get a C.

.....

(2)

Carol spins a **different** spinner 80 times.

The table shows information about her results.

Outcome	Frequency
J	39
K	25
L	16

Dan spins this spinner 300 times.

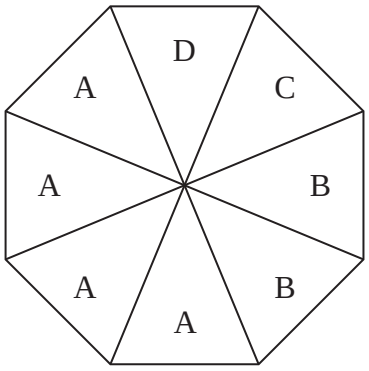
(b) Work out an estimate for the number of times that Dan will get an L.

.....

(3)

(Total for Question 63 is 5 marks)

64 Zak has a fair 8-sided spinner for a game.



Zak is going to spin the spinner once.
The spinner will land on A or on B or on C or on D.

impossible	unlikely	evens	likely	certain

(a) From the list above, write down the word that best describes the likelihood

(i) that the spinner will land on C,

.....

(ii) that the spinner will land on F,

.....

(iii) that the spinner will land on A.

.....

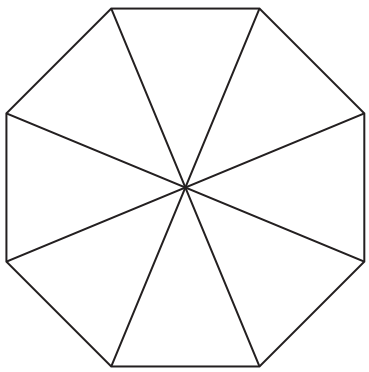
(3)

Jill is making a different fair 8-sided spinner.
She uses the letters J, K, L and M.

The probability that the spinner will land on J
is the same as the probability that it will land on K.

The probability that the spinner will land on L
is twice the probability that it will land on M.

(b) Write the letters on the spinner.



(2)

(Total for Question 64 is 5 marks)

65 There are only black counters, red counters and white counters in a box.
There are only green counters and orange counters in a bag.

One counter is taken from the box.
Then one counter is taken from the bag.

Write down all the possible combinations of colours that can be taken.

.....

.....

.....

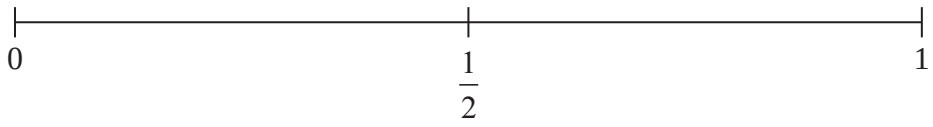
(Total for Question 65 is 2 marks)

66 Tara rolls a fair 6-sided dice once.

(a) (i) Circle the word below that best describes the probability of Tara getting a number less than 6

impossible unlikely evens likely certain

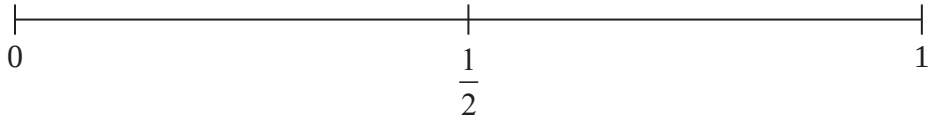
(ii) On the probability scale below, mark with a cross (×) the probability that Tara gets a 10



(2)

Olga throws a fair coin once.

(b) On the probability scale below, mark with a cross (×) the probability that she gets tails.



(1)

Yasmin rolls a fair 6-sided dice once.
She then throws a fair coin once.

(c) List all the possible combinations Yasmin can get.

.....

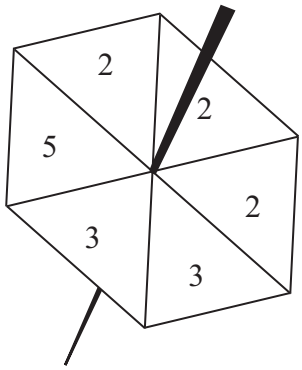
.....

.....

(2)

(Total for Question 66 is 5 marks)

67 Meela has a fair 6-sided spinner.
The sides of the spinner are numbered 2, 2, 2, 3, 3, 5



Meela spins the spinner once.

(a) Which number is the spinner **least** likely to land on?

.....

(1)

(b) From the following list, choose the word that best describes the likelihood that the spinner will land on 2

impossible unlikely evens likely certain

.....

(1)

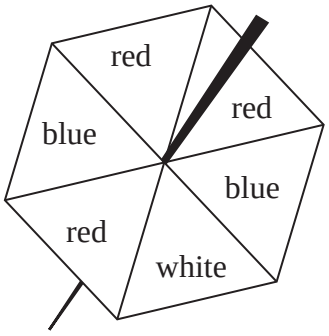
(c) Write down the probability that the spinner will land on 3

.....

(2)

(Total for Question 67 is 4 marks)

68 Here is a fair 6-sided spinner.



Ryan is going to spin the spinner once.

(a) Which colour is the spinner most likely to land on?

.....

(1)

(b) Choose the word that best describes the probability that the spinner will land on white.

impossible unlikely evens likely certain

.....

(1)

(c) Choose the word that best describes the probability that the spinner will land on green.

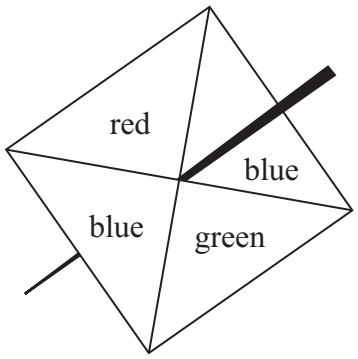
impossible unlikely evens likely certain

.....

(1)

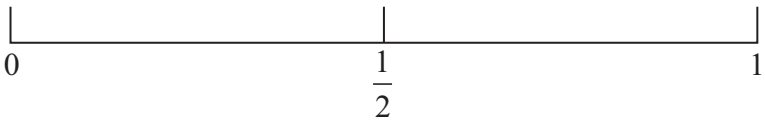
(Total for Question 68 is 3 marks)

69 Here is a fair 4-sided spinner.



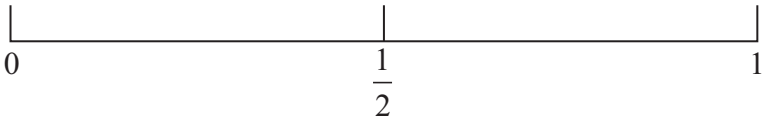
Lily will spin the spinner once.
The spinner will land on one of the colours.

(a) On the probability scale, mark with a cross (×) the probability that the spinner will land on green.



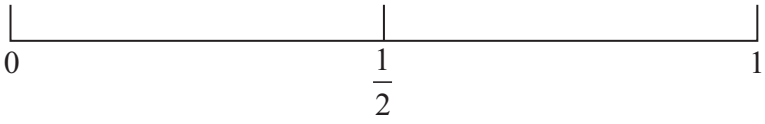
(1)

(b) On the probability scale, mark with a cross (×) the probability that the spinner will land on blue.



(1)

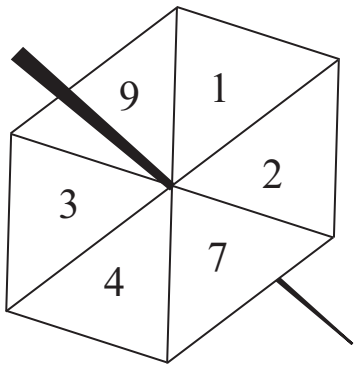
(c) On the probability scale, mark with a cross (×) the probability that the spinner will land on yellow.



(1)

(Total for Question 69 is 3 marks)

70 Here is a fair 6-sided spinner.



Jake is going to spin the spinner once.

(a) Write down the probability that the spinner will land

(i) on 4

.....

(ii) on a number greater than 10

.....

(2)

Liz is going to spin the spinner 120 times.

(b) Work out an estimate for the number of times the spinner will land on 7

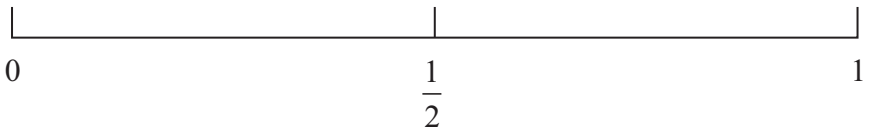
.....

(2)

(Total for Question 70 is 4 marks)

71 Liam throws a fair coin once.

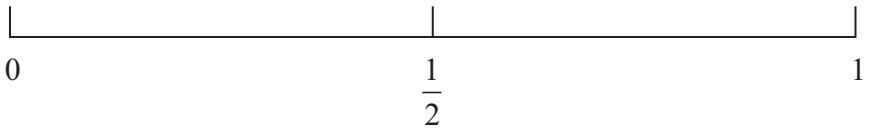
(a) On the probability scale below, mark with a cross (×) the probability that he gets a head.



(1)

Ann rolls a fair dice once.

(b) On the probability scale below, mark with a cross (×) the probability that she gets a 7



(1)

Fred throws a fair coin and rolls a fair dice.

(c) (i) List all the possible combinations.
The first one has been done for you.

(H, 1).....

.....

.....

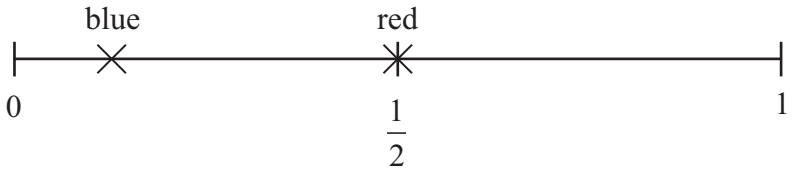
(ii) Write down the probability that Fred gets a head and an even number.

.....

(4)

(Total for Question 71 is 6 marks)

72 (a) The probability scale shows the probability that a spinner will land on red.
It also shows the probability that the spinner will land on blue.



Tony says the spinner is more likely to land on blue than on red.

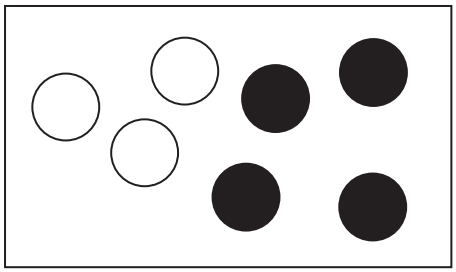
Is he right?
Explain your answer.

.....

.....

(1)

(b) There are 3 white counters and 4 black counters in a box.



Jenny is going to take at random a counter from the box.

(i) Write down the probability that Jenny will take a black counter.

.....

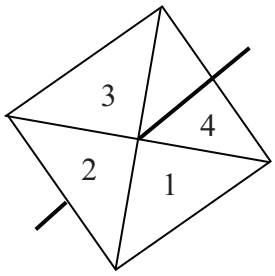
(ii) Write down the probability that Jenny will take a yellow counter.

.....

(2)

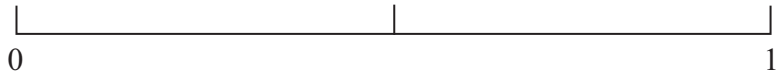
(Total for Question 72 is 3 marks)

73 Here is a fair 4-sided spinner.



Simon is going to spin the spinner once.
The spinner will land on 1 or on 2 or on 3 or on 4

(a) On the probability scale, mark with a letter **A** the probability that the spinner will land on the number 6



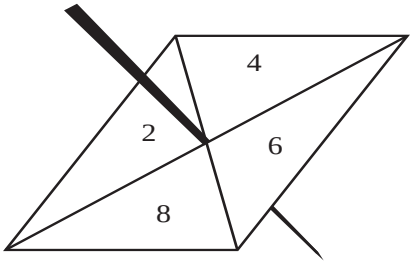
(1)

(b) On the probability scale, mark with a letter **B** the probability that the spinner will land on the number 3

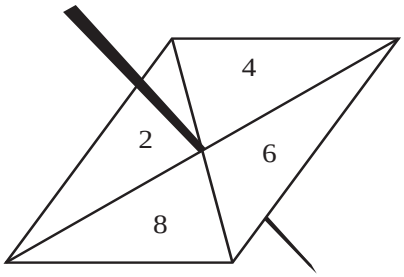
(1)

(Total for Question 73 is 2 marks)

74 Here are two **fair** 4-sided spinners.
One is a Blue spinner and one is a Red spinner.



Blue Spinner



Red Spinner

Each spinner has four sections numbered 2, 4, 6 and 8.

Each spinner is to be spun once.

Total score = Blue spinner score + Red spinner score

(a) List the different ways that the total score can be 8

(2)

.....

Ali and Shazia play a game.
In each round of the game, Ali spins the Blue spinner once and Shazia spins the Red spinner once.
Ali wins when the Blue spinner score is greater than the Red spinner score.

(b) Work out the probability that Ali will win the first round.

(4)

.....

(Total for Question 74 is 6 marks)

75 A bag contains red, yellow and blue balls.

The probability of drawing a red ball at random is $\frac{1}{2}$.

The probability of drawing a yellow ball at random is x.
The probability of drawing a blue ball at random is $4x$.

Work out the probability that a blue ball is selected.
Give your answer as a numerical value.

.....

(Total for Question 75 is 3 marks)

76 This spinner is used at a fairground.

When the spinner lands on a **W**, the customer wins a prize.

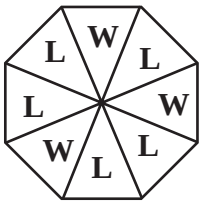


Diagram **NOT** accurately drawn

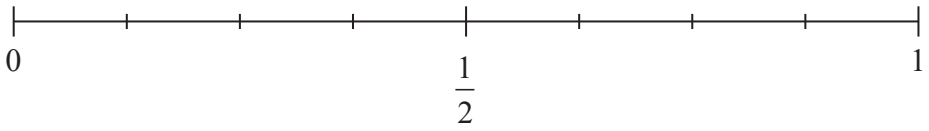
The fairground owner expects a 1000 customers to have a go.
Estimate the number of prizes the owner should buy.
Give reasons for your answer.

(Total for Question 76 is 3 marks)

77 Luke has a fair 8-sided dice.
The dice is labelled 1, 2, 3, 4, 5, 6, 7 and 8

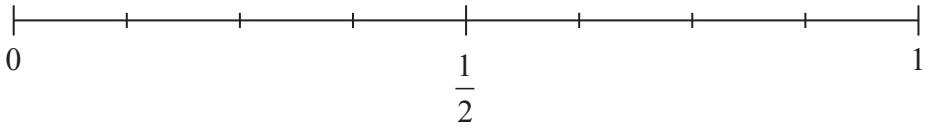
Luke rolls the dice once.

(a) On the probability scale below, mark with a cross (×) the probability that Luke gets an even number.



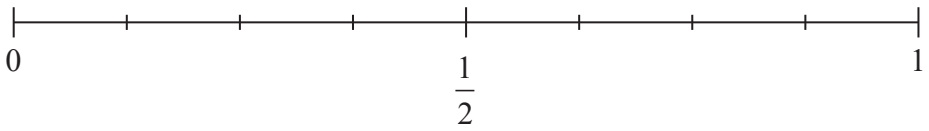
(1)

(b) On the probability scale below, mark with a cross (×) the probability that Luke gets a number less than 10



(1)

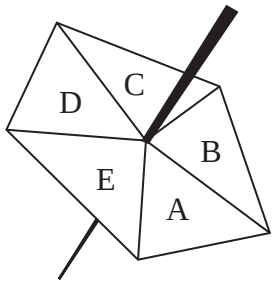
(c) On the probability scale below, mark with a cross (×) the probability that Luke gets a number greater than 6



(1)

(Total for Question 77 is 3 marks)

78 Here is a five-sided spinner.



The table shows the probabilities that the spinner will land on A or on B or on C or on D.

Letter	A	B	C	D	E
Probability	0.25	0.10	0.20	0.15	

Kirsty spins the spinner once.

(a) Work out the probability that the spinner will land on E.

.....

(2)

Chris is going to spin the spinner 60 times.

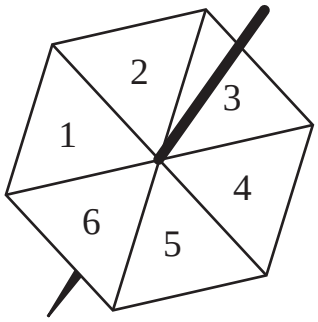
(b) Work out an estimate for the number of times the spinner will land on B.

.....

(2)

(Total for Question 78 is 4 marks)

79 Becky has a fair 6-sided spinner.



Becky will spin the spinner once.

(a) Write down the probability that the spinner will land on the number 4

.....

(1)

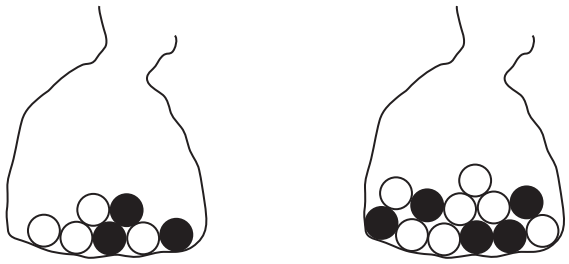
(b) Write down the probability that the spinner will land on a number less than 10

.....

(1)

(Total for Question 79 is 2 marks)

*80 There are only black balls and white balls in bag **A** and in bag **B**, as shown in the diagram.



A **B**

Heidi is going to take at random a ball from bag **A** and a ball from bag **B**.

Which bag gives Heidi the greater probability of taking a black ball, bag **A** or bag **B**?
You must show how you get your answer.

(Total for Question 80 is 3 marks)

81 There are 105 cars in a college car park.

Teachers own 68 of the cars.
Students own 15 of the cars.

One of the cars in the car park is chosen at random.

(a) Write down the probability that this car is owned by a teacher.

.....

(1)

(b) Work out how many of the cars are **not** owned by either a teacher or by a student.

.....

(2)

(c) Work out what percentage of the cars in the car park are owned by students.
Give your answer correct to 1 decimal place.

.....%

(2)

(Total for Question 81 is 5 marks)

82 Uditi has a bag of chocolate sweets.

There are 30 sweets in the bag.

This table shows the types of sweets in the bag.

	Strawberry	**Caramel**	**Nut**
Dark chocolate	3	1	6
Milk chocolate	4	5	2
White chocolate	1	4	4

Uditi takes at random a sweet from the bag.

(a) Write down the probability that the sweet is a dark chocolate caramel.

.....

(1)

(b) Work out the probability that the sweet is a white chocolate.

.....

(2)

There are some dark chocolates, some milk chocolates and some white chocolates in a box.

The table below shows the probabilities that a chocolate taken at random from the box is a dark chocolate or is a milk chocolate.

	Dark chocolate	**Milk chocolate**	**White chocolate**
Probability	0.35	0.17	

A chocolate is taken at random from the box.

(c) Work out the probability that the chocolate is a white chocolate.

.....

(2)

(Total for Question 82 is 5 marks)

83 Here is some information about flower bulbs.

Flower bulb	Planting season	Flowering season
alium	autumn	summer
amaryllis	spring	autumn
daffodil	autumn	spring
nerine	autumn	autumn
sternbergia	spring	autumn
tulip	winter	spring

(a) What is the planting season for tulip bulbs?

.....

(1)

(b) Sternbergia has the same planting season as one other flower bulb.

Which flower bulb?

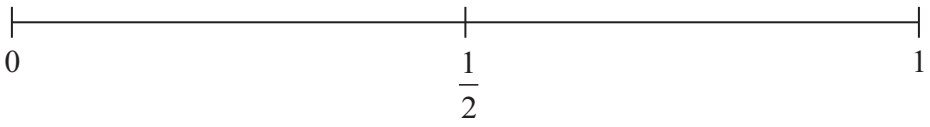
.....

(1)

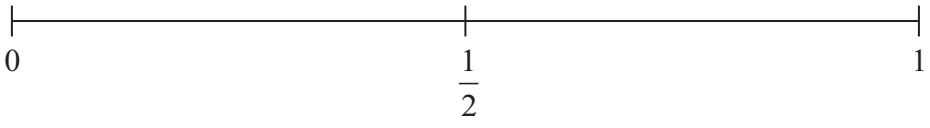
There is one of each of the six flower bulbs in a bag.

Carol takes at random a bulb from the bag.

(c) (i) On the probability scale below, mark with a cross (×) the probability that the bulb has a flowering season in winter.



(ii) On the probability scale below, mark with a cross (×) the probability that the bulb has a flowering season in autumn.



(2)

(Total for Question 83 is 4 marks)

84 100 students each chose one activity.
Each student chose bowling or karting or ice skating.

The two-way table shows some information about the activities the students chose.

	Bowling	Karting	Ice skating	Total
Boys		13		47
Girls			34	
Total	26	20		100

(a) Complete the two-way table.

(3)

One of the boys is chosen at random.

(b) What is the probability that this boy chose karting?

.....

(2)

(Total for Question 84 is 5 marks)

85

likely	impossible	certain	evens	unlikely

(a) Use a word from the box which best describes the probability of each of the following events.

(i) When you throw an ordinary coin you get a tail.

.....

(ii) When you throw an ordinary dice you get a number less than 7

.....

(2)

Bill has some counters in a bag.

3 of the counters are red.
7 of the counters are blue.
The rest of the counters are yellow.

Bill takes at random a counter from the bag.

The probability that he takes a yellow counter is $\frac{2}{7}$

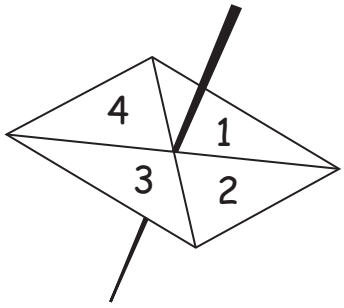
(b) How many yellow counters are in the bag before Bill takes a counter?

.....

(2)

(Total for Question 85 is 4 marks)

86 Here is a four sided spinner.
The spinner is biased.



The table shows the probabilities that the spinner will land on 1 or on 3

Number	1	2	3	4
Probability	0.2		0.1	

The probability that the spinner will land on 2 is the same as the probability that the spinner will land on 4

(a) Work out the probability that the spinner will land on 4

.....

(3)

Shunya is going to spin the spinner 200 times.

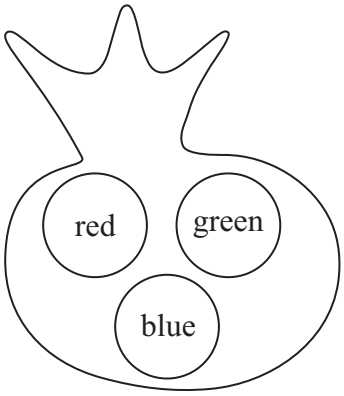
(b) Work out an estimate for the number of times the spinner will land on 3

.....

(2)

(Total for Question 86 is 5 marks)

87 There are 3 counters in a bag.



One counter is red.
One counter is green.
One counter is blue.

Mike takes at random a counter from the bag.
He puts the counter back in the bag.

Then Ellie takes at random a counter from the bag.

(a) Is Ellie more likely to take a blue counter from the bag than Mike?
You must explain your answer.

.....

.....

(1)

(b) Write a list of all the possible combinations of the two counters that Mike and Ellie can take.

.....

.....

(2)

(c) Find the probability that Mike takes a blue counter and then Ellie takes a green counter.

.....

(1)

(Total for Question 87 is 4 marks)

88 Hannah has a biased coin.
She is going to throw the coin once.
The probability of getting heads is 0.7

(a) Work out the probability of getting tails.

.....

(2)

Jamal is going to throw this coin 200 times.

(b) Work out an estimate for the number of heads Jamal will get.

.....

(2)

(Total for Question 88 is 4 marks)

89 Sue has a bag of 18 sweets.

5 of the sweets are blue
7 of the sweets are red
6 of the sweets are green

Sue takes at random a sweet from the bag.

Write down the probability that Sue

(i) takes a red sweet,

.....

(ii) does **not** take a green sweet,

.....

(iii) takes a yellow sweet.

.....

(Total for Question 89 is 3 marks)