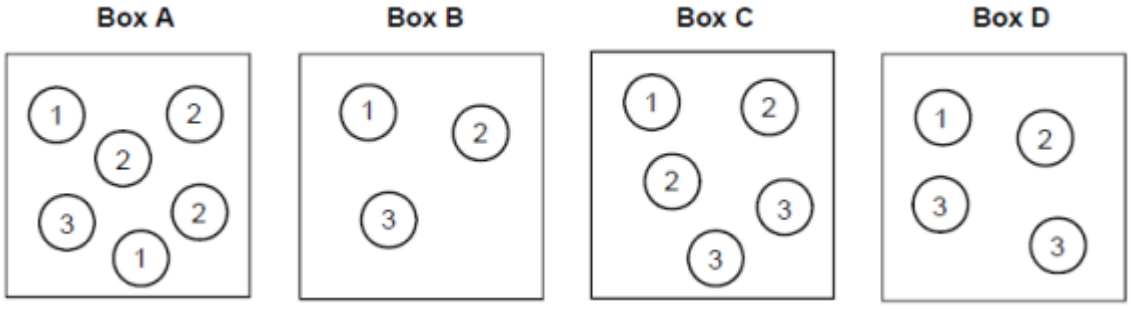
Q1.

Boxes A, B, C and D contain balls with numbers on them.



A ball is picked at random from each box.

(a) Which box gives the **greatest** chance of picking a 3?

You **must** show your working.

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Box .....

(2)

(b) Which two boxes give the **same** chance of picking a 1?

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Box ..... and Box .....

(1)

(Total 3 marks)

Q2. In a game, players roll two ordinary, fair six-sided dice.
The numbers rolled are added to get a score.

(a) Complete the table of possible scores.

		Dice 2					
	+	**1**	**2**	**3**	**4**	**5**	**6**
	1	2	3	4	5	6	7
	2	3	4	5	6	7	8
Dice 1	**3**	4	5	6	7	8	
	4	5	6	7	8		
	5	6	7	8			
	6	7	8				

(1)

(b) What is the most likely score?

Answer .....

(1)

(c) To win a prize a player must score 8.

Work out the probability of winning a prize.

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Answer .....

(2)
(Total 4 marks)

Q3.

(a) In a statistical experiment a fair, ordinary dice is rolled.

Tick a box to show the correct ending to the sentence below.

When this statistical experiment is repeated you will

always get the same outcome ☐

usually get the same outcome ☐

usually get a different outcome ☐

always get a different outcome ☐

(1)

(b) Tick a box to show the correct ending to the sentence below.

An estimate of probability based on a statistical experiment is more reliable with

more trials ☐

fewer trials ☐

more time between trials ☐

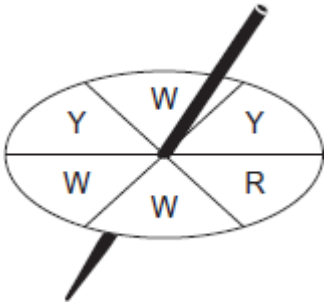
less time between trials ☐

(1)
(Total 2 marks)

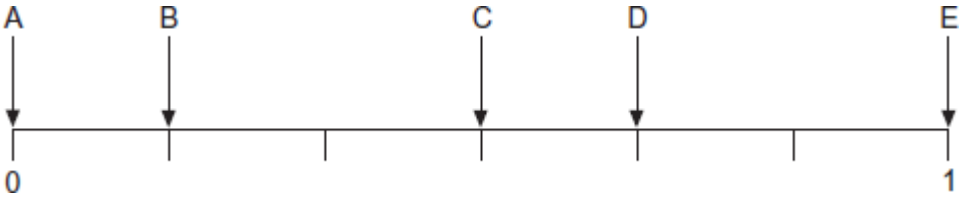
Q4.

Here is a fair 6-sided spinner.

One section is red (R), two sections are yellow (Y), and three sections are white (W).



Five probabilities are shown on this probability scale.



(a) Circle the letter that matches each of these events.

(i) The spinner lands on red.

A B C D E

(1)

(ii) The spinner lands on white.

A B C D E

(1)

(iii) The spinner does **not** land on yellow.

A B C D E

(1)

(iv) The spinner lands on purple.

A B C D E

(1)

(b) The spinner is used in a game.

Red scores 5 points.
Yellow scores 2 points.
White scores 1 point.

Raj and Ben each have 10 spins.
The person with the most points wins the game.

Raj scores 22 points.

The table shows the results for Ben.

Colour	Frequency
Red	3
Yellow	1
White	6

Who wins the game?
You **must** show your working.

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Answer .....

(3)
(Total 7 marks)

Q5.(a) A school has 400 boys and 500 girls.

The probability that a boy is vegetarian is 0.1
The probability that a girl is vegetarian is 0.2

Estimate the total number of vegetarians in the school.

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Answer .....

(3)

(b) There are ten prefects in the school.
Four of the prefects are vegetarian.

Two of the prefects are chosen at random to have lunch with a visitor.

Show that the probability that they are **both** vegetarian is $\frac{2}{15}$

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(2)
(Total 5 marks)

Q6. An ordinary fair dice is rolled 120 times.

How many times would you expect to roll a 6?

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Answer .....

(Total 2 marks)

Q7.

Sweets come in four flavours.

Flavour	Lime	Orange	Melon	Cherry
Probability	0.2	0.15	0.3	

(a) What is the probability that a sweet is **cherry** flavour?

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Answer .....

(2)

(b) There are 200 sweets altogether.

How many are **orange** flavour?

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Answer .....

(2)

(Total 4 marks)

Q8.

There are 30 students in a class.
A student is chosen at random.

(a) Is the probability that a boy is chosen equal to the probability that a girl is chosen?

Tick a box.
Give a reason for your answer.

Yes ☐ No ☐ Cannot say ☐

Reason .....

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(1)

(b) 7 of the 30 students have blue eyes.

What is the probability that the student chosen has blue eyes?

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Answer .....

(1)
(Total 2 marks)

Q9. 150 boys and 160 girls sit an examination.
The table shows some of the probabilities that they came with or without a calculator.

	With calculator	**Without calculator**
Boy	0.92	0.08
Girl	0.95	

(a) What is the probability that a girl came **without** a calculator?
Write your answer in the table.

(1)

(b) How many of the 150 boys came **with** a calculator?

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Answer .....

(2)
(Total 3 marks)

Q10.

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.

L	M	P

(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)

Q11. Here are two events.

A A ticket wins the National Lottery.
B A fair coin lands on heads five times in a row.

The probability of **A** happening is 7.15×10^{-8}.

How many more times likely is **B** than **A**?
Give your answer in standard form to 2 significant figures.

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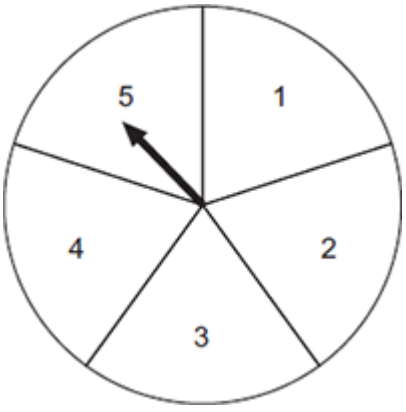
Answer .....

(Total 3 marks)

Q12. Matt made this spinner.
He spins the arrow 200 times.



(a) How many times would you expect the arrow to stop on the number 5 if the spinner is fair?

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Answer .....

(2)

(b) The table shows the number of times the arrow stops on each number.

Stops on	1	2	3	4	5
Number of times	32	41	65	27	35

Do you think the spinner is fair?
Give a reason for your answer.

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(2)
(Total 4 marks)

Q13. The table shows the probabilities that I am on time or late for work each day.

It also shows the amount of pay deducted for being late each day.

	On time	**Up to 30 minutes late**	**30 minutes to 1 hour late**
Probability	0.6	0.3	0.1
Amount deducted	———	£8	£16

Work out the probability that I have exactly £16 deducted **over two days**.

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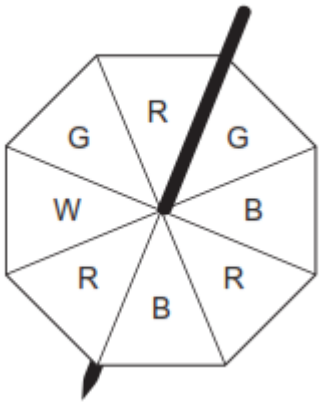
Answer .....

(Total 5 marks)

Q14.(a) Fair spinner X has eight equal sections.
The sections are either red (R), blue (B), green (G) or white (W).

Spinner X



(i) The spinner is spun.

On which colour is it least likely to land?

Answer .....

(1)

(ii) Write down the probability that the spinner lands on green.
Give your answer in its simplest form.

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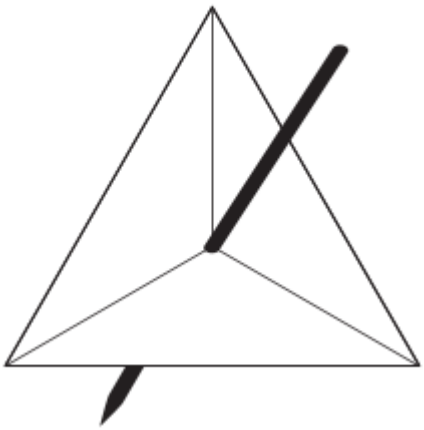
Answer .....

(2)

(b) Fair spinner Y has three equal sections.
It is certain to land on red (R).

Label spinner Y.

Spinner Y



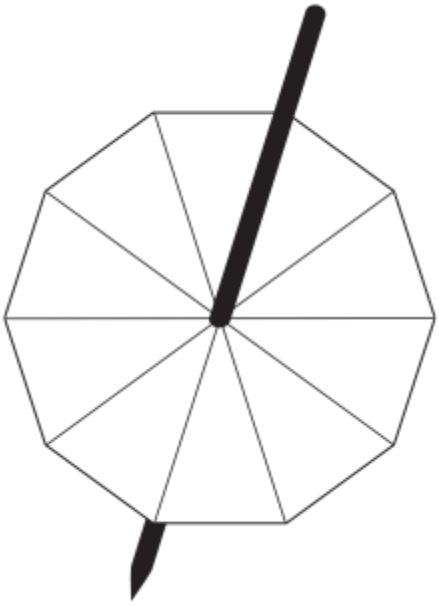
(1)

(c) Fair spinner Z has 10 equal sections.

Label spinner Z so that

it has the same four colours as spinner X
white is less likely than on spinner X
white and green are equally likely on spinner Z
red and blue are equally likely on spinner Z.

Spinner Z



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(2)
(Total 6 marks)

Q15.(a) A shop sells red roses and white roses in the ratio 7 : 2
One day 392 red roses are sold.

How many white roses are sold?

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Answer .....

(2)

(b) A different shop sells red roses and white roses in the ratio 8 : 3

What is the probability that a rose, sold at random, is red?

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Answer .....

(1)
(Total 3 marks)