

Probability Toolkit

Question Paper

Course	Edexcel IGCSE Maths
Section	6. Statistics & Probability
Topic	Probability Toolkit
Difficulty	Medium

Time allowed: 70
Score: /51
Percentage: /100

Question 1

One of the teachers at a school is chosen at random.

The probability that this teacher is female is $\frac{3}{5}$

There are 36 **male** teachers at the school.

Work out the total number of teachers at the school.

[3 marks]

Question 2a

There are only red counters, blue counters, white counters and black counters in a bag.

The table shows the probability that a counter taken at random from the bag will be red or blue.

Colour	red	blue	white	black
Probability	0.2	0.5		

The number of white counters in the bag is the same as the number of black counters in the bag.

Tania takes at random a counter from the bag.

Work out the probability that Tania takes a white counter.

[2 marks]

Question 2b

There are 240 counters in the bag.

Work out the number of red counters in the bag.

[2 marks]

Question 3

Rhiana plays a game.

The probability that she will lose the game is 0.32

The probability that she will draw the game is 0.05

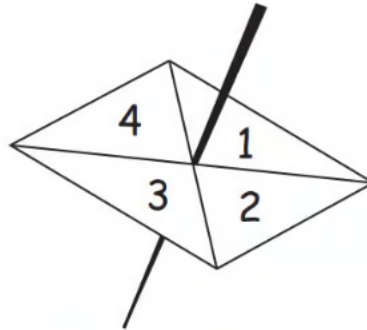
Rhiana is going to play the game 200 times.

Work out an estimate for the number of times Rhiana will win the game.

[3 marks]

Question 4a

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

Work out the probability that the spinner will land on 4.

[3 marks]

Question 4b

Shunya is going to spin the spinner 200 times.

Work out an estimate for the number of times the spinner will land on 3.

[2 marks]

Question 5

Carol spins a spinner 80 times.

The table shows information about her results.

Outcome	Frequency
J	39
K	25
L	16

Dan spins this spinner 300 times.

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

[3 marks]

Question 6

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	3	4	5	6
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.

[3 marks]

Question 7

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.

[2 marks]

Question 8a

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.

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 mark]

Question 8b

Stuart is going to drop the drawing pin twice.

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 marks]

Question 9a

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.

Complete the table.

[2 marks]

Question 9b

There are 12 blue cubes in the box.

Work out the total number of cubes in the box.

[2 marks]

Question 10a

$\xi = \{\text{even numbers}\}$

$A = \{\text{factors of } 8\}$

$B = \{\text{factors of } 20\}$

List the members of the set $A \cup B$.

[2 marks]

Question 10b

A number is chosen at random from set B .

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

[2 marks]

Question 11a

$\xi = \{\text{whole numbers}\}$

$A = \{\text{factors of } 100\}$

$B = \{\text{multiples of } 5\}$

List the members of the set $A \cap B$.

[2 marks]

Question 11b

A number is chosen at random from set A .

Find the probability it is not in set B .

[2 marks]

Question 12

The table gives information about the amounts of money, in euros, that 70 of Anjali's friends spent last Saturday.

Money spent (S euros)	Frequency
$0 < S \leq 8$	6
$8 < S \leq 16$	14
$16 < S \leq 24$	19
$24 < S \leq 32$	25
$32 < S \leq 40$	6

One of Anjali's 70 friends is going to be chosen at random.

Find the probability that this friend spent more than 24 euros last Saturday.

[1 mark]

Question 13

Toy cars are made in a factory.

The toy cars are made for 15 hours each day.

5 toy cars are made every 12 seconds.

For the toy cars made each day, the probability of a toy car being faulty is 0.002

Work out an estimate of the number of faulty toy cars that are made each day.

[4 marks]

Question 14a

In a bag there are only red bricks, blue bricks, green bricks and orange bricks.

The number of green bricks in the bag is the same as the number of orange bricks.

Jiao takes at random a brick from the bag.

The table gives the probability that Jiao takes a red brick and the probability that he takes a blue brick.

Colour	red	blue	green	orange
Probability	0.26	0.3		

Work out the probability that Jiao takes an orange brick.

[3 marks]

Question 14b

Jiao puts the brick back into the bag.

There are 91 red bricks in the bag.

Jiao is going to build a tower using all the red bricks and all the blue bricks but no other bricks.

The tower will be in the shape of a cuboid.

There will be 4 bricks in each layer of the tower.

Work out how many layers the tower will have.

[3 marks]

Question 15

Antonio rolls two fair six-sided dice and calculates the **difference** between the scores.
For example, if the two scores are 2 and 5 or 5 and 2 then the difference is 3.

Complete the sample space diagram to show the possible outcomes from Antonio's dice.

		Dice 2						
		difference	1	2	3	4	5	6
Dice 1	1	0						
	2						3	
	3			1				
	4							
	5			3				
	6							

[2 marks]