

Write your name here									
Surname	Other names								
Centre Number	Candidate Number								
Pearson Edexcel Level 1/Level 2 GCSE (9–1)	<table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> <td style="width: 12.5%;"></td> </tr> </table>								
<h1 style="margin: 0;">Mathematics</h1> <h2 style="margin: 0; color: #0070C0;">Cards Dice Coins and Spinners</h2>									
Foundation Tier	Paper Reference 1MA1								
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.	Total Marks <div style="border: 1px solid black; width: 100%; height: 30px;"></div>								

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is **36**. There are **12** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

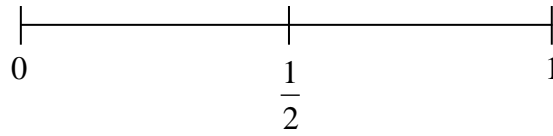
Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

1MA1 Foundation themed papers: Cards Dice Coins and Spinners

1 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)

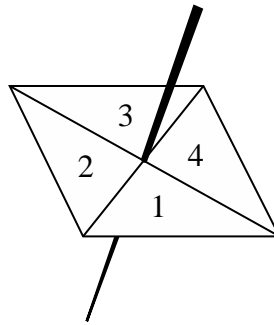
(b) Write down the probability that the dice lands on a number greater than 4

.....
(1)

(Total for Question 1 is 2 marks)

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2 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 2 is 4 marks)

3 Bert has 100 cards.
There is a whole number from 1 to 100 on each card.

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No cards have the same number.

Bert puts a star on every card that has a multiple of 3 on it.

He puts a circle on every card that has a multiple of 5 on it.

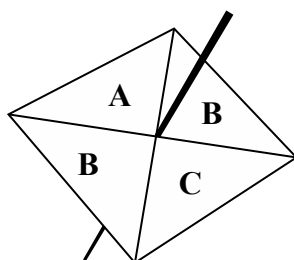
Work out how many cards have both a star and a circle on them.

.....
(Total for Question 3 is 3 marks)

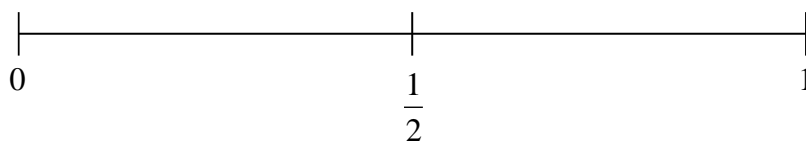
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4 Sammy spins a fair 4-sided spinner.

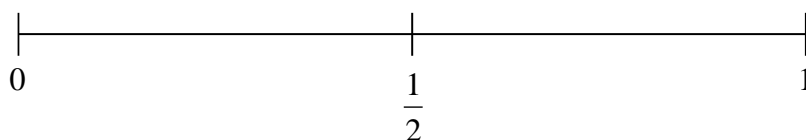


(i) On the probability scale, mark with a cross (×) the probability that the spinner will land on **B**.



(1)

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



(1)

(Total for Question 4 is 2 marks)

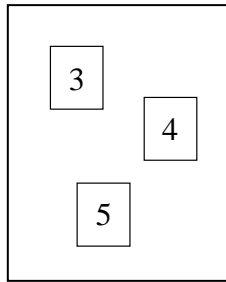
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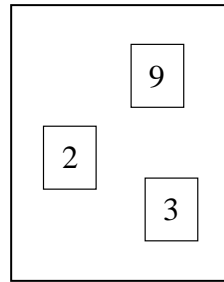
5

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

Box A



Box B



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 5 is 2 marks)

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6 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 6 is 5 marks)

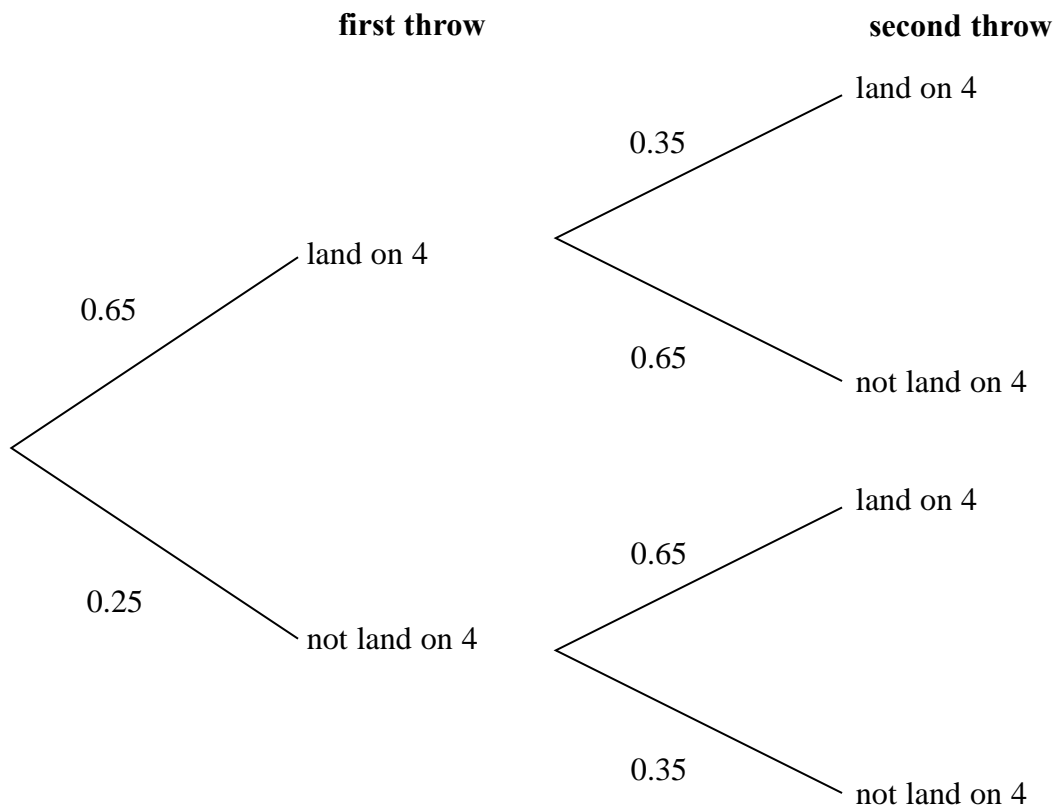
7 When a biased 6-sided dice is thrown once, the probability that it will land on 4 is 0.65

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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 7 is 2 marks)

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8 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.

.....
(Total for Question 8 is 3 marks)

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9

Mason throws a coin 3 times.
The outcome of each throw is either Heads or Tails.

List all the possible outcomes of the 3 throws.

.....

.....

.....

(Total for Question 9 is 2 marks)

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10 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 10 is 2 marks)

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11 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 11 is 4 marks)

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-  **12** 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 12 is 5 marks)

TOTAL MARKS FOR PAPER: 36