

Relative Frequency and Expected Outcomes

For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

Total marks: **27**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** (a) A fair 6-sided dice is going to be rolled 300 times.
Write down an estimate for the number of times the dice will land on 4

.....
(1)

- (b) Ravi spins a spinner 10 times.
It lands on red 6 times.
Ravi says,
 "The spinner must be biased towards red."
Is Ravi right?
Give a reason for your answer.

(1)

(Total for Question 1 is 2 marks)

- 2** The probability that a train is late is 0.12
There are 250 trains in one week.
Work out an estimate for the number of these trains that are late.

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(2)

(Total for Question 2 is 2 marks)

- 3** A gardener says that 3 out of every 8 seeds in a packet will grow into a flower.
Maria plants 120 of these seeds.
Work out an estimate for the number of flowers that will grow.

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(2)

(Total for Question 3 is 2 marks)

- 4** Ella spins a 4-sided spinner 120 times.
The table shows her results.

Letter	A	B	C	D
Frequency	18	26	36	40

- (a) Work out the relative frequency of the spinner landing on *C*.

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(1)

- (b) Work out an estimate for the number of times the spinner will land on *A* if it is spun 500 times.

.....
(2)

- (c) Is the spinner fair?
You must give a reason for your answer.

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.....
(1)

(Total for Question 4 is 4 marks)

- 5 Kai throws a drawing pin 80 times.
It lands point up 28 times.
Kai is going to throw the drawing pin 200 more times.
Work out an estimate for the number of times it will land point up.

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(2)

(Total for Question 5 is 2 marks)

- 6 A spinner has 5 equal sections, numbered 1 to 5
Jess spins the spinner 25 times. It lands on 1 nine times.
Leo spins the same spinner 250 times. It lands on 1 fifty-two times.

- (a) Jess says the spinner is biased towards 1
Leo says the spinner is fair.
Whose conclusion is more likely to be right?
You must give a reason for your answer.

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(1)

- (b) Leo is going to spin the spinner 1000 times.
Use Leo's results to work out an estimate for the number of times the spinner will
land on 1

.....
(1)

(Total for Question 6 is 2 marks)

- 7 A game at a fair costs £1 to play.
The probability of winning the game is 0.15
If you win, you get £5
200 people play the game.
Work out an estimate for the profit the fair makes.

£
(3)

(Total for Question 7 is 3 marks)

- 8** Here is a biased 5-sided spinner.
The table shows some of the probabilities that the spinner will land on A , B , C , D and E .

Letter	A	B	C	D	E
Probability	0.3	0.15	0.25		

The probability that the spinner will land on D is twice the probability that it will land on E .

- (a) The spinner is going to be spun 300 times.
Work out an estimate for the number of times it will land on D .

.....
(3)

- (b) Freya spins the spinner 300 times.
It lands on D 67 times.
Freya says,
“*This shows the probability in the table for D must be wrong.*”
Is Freya right? Give a reason for your answer.

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(1)

(Total for Question 8 is 4 marks)

- 9** When a bottle top is thrown, it can land open side up or open side down.
Zara throws a bottle top 150 times.
It lands open side up 60 times.

(a) Work out an estimate for the probability that the bottle top will land open side up.

.....
(1)

(b) Callum is going to throw the same bottle top twice.
Use Zara's results to work out an estimate for the probability that it will land open side up both times.

.....
(2)

(Total for Question 9 is 3 marks)

- 10** There are 30 counters in a bag.
Each counter is red, blue or green.
There are 6 red counters.
There are twice as many blue counters as red counters.
Theo takes at random a counter from the bag.
He records its colour and puts the counter back in the bag.
Theo does this 150 times.
Work out an estimate for the number of times he takes a green counter.

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(3)

(Total for Question 10 is 3 marks)
