

Sample Space Diagrams

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

Name _____

Total marks: **26**

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

1 In a café, Tia picks one main and one dessert.

Mains: sandwich (S), burger (B), pasta (P)

Desserts: yogurt (Y), grapes (G)

(a) List all the possible outcomes.

(2)

(b) Each outcome is equally likely.

Write down the probability that Tia picks a sandwich and a yogurt.

.....
(1)

(Total for Question 1 is 3 marks)

2 A sandwich bar has four fillings: ham (H), cheese (C), egg (E) and tuna (T).

Priya chooses two **different** fillings.

Write down all the possible combinations of fillings that Priya can choose.

(2)

(Total for Question 2 is 2 marks)

- 3** (a) Kemi spins a fair spinner with 5 equal sections numbered 1, 2, 3, 4 and 5
She says,
“A number is either even or odd, so the probability of getting an even number is $\frac{1}{2}$ ”
Is Kemi correct?
You must explain your answer.

(1)

- (b) Kemi throws two fair coins.
She says,
“The results can be two heads, two tails or one of each, so the probability of two heads is $\frac{1}{3}$ ”
Is Kemi correct?
You must explain your answer.

(1)

(Total for Question 3 is 2 marks)

- 4** Hana has a fair 4-sided spinner numbered 0, 1, 2, 3 and an ordinary fair 6-sided dice. She spins the spinner and rolls the dice, then multiplies the two numbers to get her score.

The rows of the diagram show the spinner.

- (a) Complete the possibility space diagram.

Dice

	1	2	3	4	5	6
0	0	0	0	0	0	0
1						
2	2	4				
3						

(1)

- (b) Find the probability that Hana gets a score of 0

.....
(1)

- (c) Find the probability that Hana gets a score of 12 or more.

.....
(1)

(Total for Question 4 is 3 marks)

- 5** Grace has three cards numbered 1, 2 and 3 and a fair 4-sided spinner numbered 2, 4, 6 and 8
She takes a card at random and spins the spinner.
She multiplies the number on the card by the number on the spinner.
Work out the probability that the product is greater than 10

.....

(2)

(Total for Question 5 is 2 marks)

- 6** Ravi rolls two fair six-sided dice.
He works out the difference between the two scores.

	1	2	3	4	5	6
1	0	1				
2		0				
3						
4						
5						
6						0

- (a) Complete the sample space diagram.

(2)

- (b) Work out the probability that the difference is 0

.....
(1)

- (c) Work out the probability that the difference is more than 3

.....
(2)

(Total for Question 6 is 5 marks)

- 7** A fair 4-sided spinner, numbered 1 to 4, is spun and a fair six-sided dice is rolled. The two numbers are added to give a total.

Show that the probability that the total is 5 is $\frac{1}{6}$

(3)

(Total for Question 7 is 3 marks)

- 8** Spinner X has 3 equal sections coloured red, blue and green.
Spinner Y has 4 equal sections coloured red, blue, green and yellow.
Both spinners are spun.

Work out the probability that both spinners land on the same colour.

.....
(3)

(Total for Question 8 is 3 marks)

- 9 Alex rolls two fair six-sided dice.
He multiplies the two scores.
He wins a prize if the product is a multiple of 5

Alex says,

“The probability that I win a prize is more than $\frac{1}{3}$ ”

Is Alex correct?

You must show how you get your answer.

(3)

(Total for Question 9 is 3 marks)
