

Sample Space Diagrams

For AQA GCSE Mathematics (8300) • Foundation tier

Name _____

Total marks: **30**

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

- 1** Spinner *A* is numbered 1, 2 and 3
Spinner *B* is numbered 1, 2, 3 and 4
Both spinners are spun and the numbers are added to give a total.
The rows of the table show spinner *A*.

- (a) Complete the table to show all the possible totals.
Spinner *B*

	1	2	3	4
1	2	3		
2	3			
3				7

[2 marks]

- (b) Work out the probability that the total is 5

[1 mark]

Answer _____

- (c) Work out the probability that the total is greater than 5

[1 mark]

Answer _____

2 A fair coin is thrown and a fair six-sided dice is rolled.

(a) List all the possible outcomes.

[2 marks]

(b) Work out the probability of getting a head and an even number.

[1 mark]

Answer _____

3 Ben has two bags of cards.
Bag 1 has cards labelled A , B and C .
Bag 2 has cards labelled 1 and 2
He takes one card from each bag.

Is the probability of getting A and 2 equal to $\frac{1}{5}$? Tick a box.
You must show your working.

[2 marks]

☐ Yes

☐ No

4 Two fair six-sided dice are rolled and the scores are added.

(a) Complete the sample space diagram to show all the possible totals.

+	1	2	3	4	5	6
1	2	3				
2	3	4				
3						
4						
5						
6						

[1 mark]

(b) Which total is most likely?
Give the probability of getting this total.

[2 marks]

Answer _____

- 5** Lena has two bags of number tiles.
 Bag *A* has tiles numbered 2, 3 and 5
 Bag *B* has tiles numbered 1, 4, 6 and 7
 She takes one tile at random from each bag and multiplies the two numbers to get a score.
 The rows of the table show bag *A*.

- (a) Complete the table to show all the possible scores.

Bag *B*

×	1	4	6	7
2	2			
3			18	
5				

[2 marks]

- (b) Work out the probability that the score is an odd number.

[1 mark]

Answer _____

- (c) Lena plays the game 60 times.
 Estimate the number of times the score is an odd number.

[2 marks]

Answer _____

- 6** In a game, a fair coin is thrown and a fair four-sided spinner numbered 1, 2, 3 and 4 is spun.

If the coin shows Heads, the score is the spinner number multiplied by 2

If the coin shows Tails, the score is the spinner number add 3

- (a) Complete the table to show all the possible scores.

Spinner

	1	2	3	4
Heads	2			
Tails				7

[2 marks]

- (b) Write down the probability that the score is 6

[1 mark]

Answer _____

- (c) Kai says,

"The score is just as likely to be odd as even."

Is Kai correct?

Tick a box.

You must show your working.

[2 marks]

☐

Yes

☐

No

- 7** Two fair four-sided dice are each numbered 1, 2, 3 and 4
Both dice are rolled.
The score is the larger of the two numbers. If the numbers are the same, the score is that number.
The rows of the table show the first dice.

- (a) Complete the table to show all the possible scores.
Second dice

	1	2	3	4
1	1	2		
2				
3		3		
4				

[2 marks]

- (b) Work out the probability that the score is 4

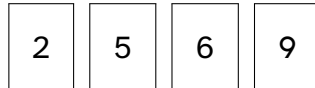
[1 mark]

Answer _____

- (c) Mia says,
“The scores 1, 2, 3 and 4 are all equally likely.”
 Is Mia correct?
 Give a reason for your answer.

[2 marks]

8 Here are four number cards.



Two of the cards are picked at random and put side by side to make a two-digit number.

Work out the probability that the number is even **and** greater than 50

[3 marks]

Answer _____