

Probability - Sample Spaces and Two-Way Tables - Higher

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **28**

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

- 1** Two ordinary fair dice are rolled.
The two scores are multiplied.

(a) Work out the probability that the product is an odd number.

[1 mark]

Answer _____

(b) Work out the probability that the product is 20 or more.

[1 mark]

Answer _____

- 2 The table shows the language studied by 120 students.

	French	Spanish	German	Total
Year 10	20	21	19	60
Year 11	20	24	16	60
Total	40	45	35	120

- (a) Work out the probability that a student chosen at random studies French.

[1 mark]

Answer _____

- (b) A student who studies Spanish is chosen at random.
Work out the probability that the student is in Year 11.

[2 marks]

Answer _____

- (c) Two different students are chosen at random from the Year 10 students.
Work out the probability that both study German.

[3 marks]

Answer _____

- 3** Two fair spinners are each numbered 1 to 5
Both are spun and the numbers are multiplied.
Work out the probability that the product is a multiple of 4

[3 marks]

Answer _____

- 4** A holiday club runs one activity in the morning and one activity in the afternoon.
There are 5 morning activities and 6 afternoon activities.
Swimming is one of the morning activities and also one of the afternoon activities.
Each child chooses one morning activity and one afternoon activity.
A child cannot choose swimming for both.

- (a) How many different choices of one morning activity and one afternoon activity are there?

[2 marks]

Answer _____

- (b) 2 of the morning activities and 4 of the afternoon activities take place outdoors.
Swimming takes place indoors.
Zainab picks one of the possible choices at random.
Work out the probability that both of her activities take place outdoors.

[2 marks]

Answer _____

- 5** 25 members of a running club were asked whether they prefer running on roads or on trails.
The table shows the results.

	Roads	Trails
Under 40	5	9
40 and over	8	3

- (a) A member who prefers trails is chosen at random.
Work out the probability that this member is under 40

[2 marks]

Answer _____

- (b) Two different members are chosen at random from the whole club.
Work out the probability that one of them prefers roads and the other prefers trails.

[3 marks]

Answer _____

- 6 At a school fair there are two games.
- Game A:** roll two fair six-sided dice. You win if the total is 10 or more.
- Game B:** spin a fair four-sided spinner, numbered 1 to 4, twice.
You win if the product of the two numbers is exactly 4

Which game gives a better chance of winning?

Tick a box.

Show working to support your answer.

[4 marks]

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Game A

☐

Game B

- 7 A bag contains the eight number tiles shown below.

1	1	2	2	2	3	4	4
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Anouk takes two tiles from the bag at random, without replacement.

Work out the probability that the numbers on her two tiles differ by exactly 1

[4 marks]

Answer _____