

Product Rule for Counting

For AQA Level 2 Certificate in Further Mathematics (8365)

Name _____

Total marks: **21**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You may use a calculator.

- 1** A suitcase lock has three wheels.
Each wheel can be set to any digit from 0 to 9
How many different codes can be set on the lock?
Circle your answer.

[1 mark]

30

720

999

1000

- 2** Nine runners take part in a race.
There are no ties.
In how many different ways can the first, second and third places be filled?

[2 marks]

Answer _____

3 Four-digit integers are made using the digits

1 2 4 5 7 9

No digit is used more than once in an integer.

(a) How many different integers can be made?

[1 mark]

Answer _____

(b) How many of the integers are greater than 5000 **and** even?

[2 marks]

Answer _____

4 How many four-digit integers have four different digits?

[2 marks]

Answer _____

5 Six friends, including Priya and Tom, sit in a row of six seats at the cinema.

- (a) Priya and Tom sit in the two end seats.
In how many different ways can the six friends sit?

[2 marks]

Answer _____

- (b) Priya and Tom sit next to each other.
In how many different ways can the six friends sit?

[2 marks]

Answer _____

6 A netball club's kit is one shirt and one pair of shorts.
The shirts come in n colours.
The shorts come in $(n - 4)$ colours.
There are 96 different kits possible.
Work out the value of n .
You must show your working.

[3 marks]

Answer $n =$ _____

- 7** Five-digit integers are made using each of these digits exactly once.

0 3 4 7 8

How many of the integers are even?

You must show your working.

[3 marks]

Answer _____

- 8** How many odd integers between 3000 and 7000 have four different digits?

You must show your working.

[3 marks]

Answer _____