

Name: \_\_\_\_\_

## GCSE (1 – 9)

# The Product Rule for Counting

### Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

### Information

- The marks for each question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

- 1** There are 12 boys and 15 girls in a class.  
One boy and one girl will be selected to represent the class on the student council.  
Work out the total number of ways of choosing a boy and a girl.

.....  
**(Total for question 1 is 2 marks)**

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- 2** There are 17 boys and 14 girls in a choir.  
One boy and one girl will be selected to sing a duet.  
Work out the total number of ways of choosing a boy and a girl.

.....  
**(Total for question 2 is 2 marks)**

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- 3** There are 14 boys and  $x$  girls in a choir.  
One boy and one girl will be selected to sing a duet.  
Taylor says there are 152 different ways of choosing a boy and a girl.  
  
Could Taylor be correct?  
You must show your working.

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**(Total for question 3 is 2 marks)**

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4 There are 5 starters and 6 main courses in a restaurant.

Work out the total number of ways of choosing a starter and a main course.

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**(Total for question 4 is 2 marks)**

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5 There are 4 starters, 7 main courses and 4 desserts in a restaurant.

Work out the total number of ways of choosing a starter, a main course and a dessert.

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**(Total for question 5 is 2 marks)**

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6 There are 5 starters, 6 main course and  $x$  desserts in a restaurant.

Riley says there are 130 different ways of a starter, a main course and a dessert.

Could Riley be correct?

You must show your working.

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**(Total for question 6 is 2 marks)**

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- 7 A meal deal includes a sandwich and a drink.  
There are 5 sandwiches and 7 drinks to choose from.

Work out the total number of ways of choosing a sandwich and a drink.

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**(Total for question 7 is 2 marks)**

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- 8 Mr Idris has 5 pairs of trousers, 9 shirts and 3 ties.

Work out the total number of ways of choosing a pair of trousers, a shirt and a tie.

.....  
**(Total for question 8 is 2 marks)**

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- 9 There are 8 sandwiches and  $x$  drinks to choose from for lunch.

Pat says there are 96 different ways to choose a sandwich and a drink.

Could Pat be correct?

You must show your working.

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**(Total for question 9 is 2 marks)**

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- 10** There are 52 cards in a deck.  
Peter is going to give one card to Casper and one card to Kelly.

How many different ways are there of going this?

.....  
**(Total for question 10 is 2 marks)**

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- 11** There are 52 cards in a deck.  
Angel is going to give one card to Ben and one card to Chris and one card to Dylan.

How many different ways are there of going this?

.....  
**(Total for question 11 is 2 marks)**

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- 12** There are 52 cards in a deck.  
Tom is going to give two cards to Jay.

How many different pairs of cards could Jay get?

.....  
**(Total for question 12 is 2 marks)**

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- 13** There are 30 students in a class.  
Two students are going to be selected to receive a prize.

How many different pairs of students could be selected?

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**(Total for question 13 is 2 marks)**

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- 14** There are 10 teams in a football league.  
Two teams are going to be chosen at random to play a match.

Work out the number of different matches that could take place.

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**(Total for question 14 is 2 marks)**

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- 15** There are 8 teams in a competition.  
Each team will play every other team once.

Work out the total number of games played.

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**(Total for question 15 is 2 marks)**

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- 16** There are 10 people in a room.  
Each person shakes each other person's hand once.

Work out the number handshakes that take place.

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**(Total for question 16 is 2 marks)**

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- 17** There are 20 people in a room.  
Each person shakes each other person's hand once.

Work out the number handshakes that take place.

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**(Total for question 17 is 2 marks)**

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