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.

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.

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.
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)

5 There are 4 starters, 7 main courses and \( x \) 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)

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.
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.

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

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)

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.

(Total for question 9 is 2 marks)
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?

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(Total for question 10 is 2 marks)

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?

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(Total for question 11 is 2 marks)
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?

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?
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.

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

Work out the total number of games played.
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.

(Total for question 16 is 2 marks)

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.

(Total for question 17 is 2 marks)