N256 Product rule for counting

Q1.

There are 24 girls and 12 boys in a club.
One girl and one boy are going to be chosen to go to a meeting.
Work out the total number of ways of choosing a girl and a boy.

.....

(Total for question = 2 marks)

Q2.

A café owner sells 10 different types of sandwich.
Rayheem buys a different type of sandwich on Monday, on Tuesday and on Wednesday.
In how many ways can he do this?

.....

(Total for question = 2 marks)

Q3.

There are 95 girls and 87 boys in Year 13 at a school.

One girl is going to be chosen for the role of Head Girl.
A different girl is going to be chosen for the role of Deputy Head Girl.
One boy is going to be chosen for the role of Head Boy.
A different boy is going to be chosen for the role of Deputy Head Boy.

Work out how many different ways this can be done.

.....

(Total for question = 3 marks)

Q4.

Jeff is choosing a shrub and a rose tree for his garden.
At the garden centre there are 17 different types of shrubs and some rose trees.

Jeff says,

"There are 215 different ways to choose one shrub and one rose tree."

Could Jeff be correct?
You must show how you get your answer.

(Total for question = 2 marks)

Q5.

Tracey is going to choose a main course and a dessert in a cafe.
She can choose from 8 main courses and 7 desserts.

Tracey says that to work out the number of different ways of choosing a main course and a dessert you add 8 and 7

(a) Is Tracey correct?

You must give a reason for your answer.

.....

.....

(1)

12 teams play in a competition.
Each team plays each other team exactly once.

(b) Work out the total number of games played.

.....

(2)

(Total for question = 3 marks)

Q6.

There are 17 men and 26 women in a choir.
The choir is going to sing at a concert.

One of the men and one of the women are going to be chosen to make a pair to sing the first song.

(a) Work out the number of different pairs that can be chosen.

.....

(2)

Two of the men are to be chosen to make a pair to sing the second song.

Ben thinks the number of different pairs that can be chosen is 136
Mark thinks the number of different pairs that can be chosen is 272

(b) Who is correct, Ben or Mark?
Give a reason for your answer.

.....

.....

(1)

(Total for question = 3 marks)

Q7.

In a restaurant there are

9 starter dishes
15 main dishes
8 dessert dishes

Janet is going to choose one of the following combinations for her meal.

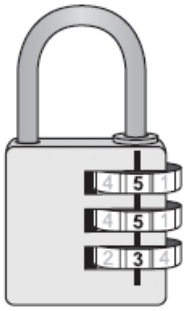
a starter dish and a main dish
or a main dish and a dessert dish
or a starter dish, a main dish and a dessert dish

Show that there are 1335 different ways to choose the meal.

(Total for question = 3 marks)

Q8.

There are three dials on a combination lock.
Each dial can be set to one of the numbers 1, 2, 3, 4, 5
The three digit number 553 is one way the dials can be set, as shown in the diagram.



(a) Work out the number of different three digit numbers that can be set for the combination lock.

.....

(2)

(b) How many of the possible three digit numbers have three different digits?

.....

(2)

(Total for question = 4 marks)

Q9.

Sadia is going to buy a new car.
For the car, she can choose one body colour, one roof colour and one wheel type.

She can choose from

19 different body colours
25 different wheel types

The total number of ways Sadia can choose the body colour and the roof colour and the wheel type is 3325

Work out the number of different roof colours that Sadia can choose from.

.....

(Total for question = 2 marks)

Q10.

There are 16 hockey teams in a league.
Each team played two matches against each of the other teams.

Work out the total number of matches played.

.....

(Total for question = 2 marks)

Q11.

Marie has 25 cards.
Each card has a different symbol on it.

Marie gives one card to Shelley and one card to Pauline.

(a) In how many different ways can Marie do this?

.....

(2)

There are 12 boys and 10 girls in David's class.
David is going to pick three different students from his class and write their names in a list in order.

The order will be

boy girl boy	**or**	girl boy girl

(b) How many different lists can David write?

.....

(3)

(Total for question = 5 marks)