Chhetri Academy

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GCSE MATHS

Number

Edexcel 1MA1 | Subtopic collection Topic 10

Listing and the product rule

Higher tier

Past paper question booklet

11	2017-2025	Higher
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

11 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 11 is 2 marks)

15 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.

.....

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(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 15 is 3 marks)

11 In a restaurant there are

9 starter dishes
15 main dishes
8 dessert dishes

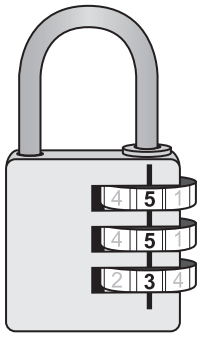
Janet is going to choose one of the following combinations for her meal.

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 11 is 3 marks)

16 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 16 is 4 marks)

14 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 14 is 2 marks)

11 Jack is in a restaurant.
There are 5 starters, 8 main courses and some desserts on the menu.

Jack is going to choose one starter, one main course and one dessert.
He says there are 240 ways that he can choose his starter, his main course and his dessert.

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

(Total for Question 11 is 2 marks)

13 In a school there are 16 teachers and 220 students.
Of these students 120 are girls and 100 are boys.

One teacher, one girl and one boy are going to be chosen to represent the school.

Work out the number of different ways there are to choose one teacher, one girl and one boy.

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(Total for Question 13 is 2 marks)

11 Rayheem has

16 shirts
5 pairs of jeans
3 jackets

Rayheem chooses an outfit to wear.
An outfit is 1 shirt, 1 pair of jeans and 1 jacket.

Work out how many different outfits Rayheem can choose.

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(Total for Question 11 is 2 marks)

15 A pet shop has

7 guppy fish
13 tetra fish
5 angel fish.

David is going to choose one of the following combinations of fish

a guppy fish and an angel fish
or a tetra fish and an angel fish
or a guppy fish, a tetra fish and an angel fish.

Show that there are 555 different ways for David to choose his fish.

(Total for Question 15 is 2 marks)

19 The menu in a restaurant has starters, main courses and desserts.

There are 5 starters.
There are 12 main courses.
There are x desserts.

There are 420 different ways to choose one starter, one main course and one dessert.

Work out the value of x.

$x =$ .....

(Total for Question 19 is 2 marks)

14 There are 15 dogs in a dog show.
One dog is awarded first prize.
A different dog is awarded second prize.

There are 12 cats in a cat show.
One cat is awarded first prize.
A different cat is awarded second prize.

Work out how many different ways these four prizes can be awarded.

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(Total for Question 14 is 3 marks)