

## COMBINATIONS

Pearson Edexcel - Tuesday 21 May 2019 - Paper 1 (Non-Calculator) Higher Tier

1.

- 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)

Pearson Edexcel - Thursday 8 November 2018 - Paper 2 (Calculator) Higher Tier

2.

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.

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(Total for Question 11 is 3 marks)

Pearson Edexcel - Tuesday 13 June 2017 - Paper 3 (Calculator) Higher Tier

3.

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.

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(Total for Question 11 is 2 marks)

Pearson Edexcel - Specimen Papers Set 2 - Paper 2 (Calculator) Higher Tier

4.

12 Marie has 25 cards.

Each card has a different symbol on it.

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

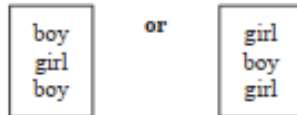
(a) In how many different ways can Marie do this?

.....  
(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



(b) How many different lists can David write?

.....  
(3)

.....  
(Total for Question 12 is 5 marks)

**Pearson Edexcel - Specimen Papers Set 1 - Paper 3 (Calculator) Higher Tier**

**5.**

13 There are 14 boys and 12 girls in a class.

Work out the total number of ways that 1 boy and 1 girl can be chosen from the class.

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(Total for Question 13 is 2 marks)

**Pearson Edexcel - Sample Paper 3 - (Calculator) Higher Tier**

**6.**

- 15** 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.

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(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.

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(1)

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**(Total for Question 15 is 3 marks)**

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**Pearson Edexcel - Thursday 26 May 2016 - Paper 1 (Non-Calculator) Higher Tier**

**7.**

- 11 66 people went on a day trip.  
Each person did only one activity on the trip.
- Each person went skating or went to an art gallery or went bowling.
- 43 of the people are female.  
4 of the 10 people who went skating are male.  
20 of the people went to the art gallery.  
10 males went bowling.
- Work out the number of females who went to the art gallery.

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(Total for Question 11 is 4 marks)

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8 Milk is sold in  $\frac{1}{2}$  pint bottles, in 1 pint bottles and in 2 pint bottles.

One weekend a shop sold 100 bottles of milk.

46 of the bottles were sold on Sunday.

15 of the bottles sold on Sunday were 2 pint bottles.

31 of the bottles sold on Saturday were  $\frac{1}{2}$  pint bottles.

22 of the bottles sold were 2 pint bottles.

30 of the bottles sold were 1 pint bottles.

How many 1 pint bottles were sold on Sunday?

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(Total for Question 8 is 4 marks)

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Pearson Edexcel - Monday 9 June 2014 - Paper 1 (Non-Calculator) Higher Tier

9.

3 50 people each did one activity at a sports centre.

Some of the people went swimming.

Some of the people played squash.

The rest of the people used the gym.

21 of the people were female.

6 of the 8 people who played squash were male.

18 of the people used the gym.

9 males went swimming.

Work out the number of females who used the gym.

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(Total for Question 3 is 4 marks)

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OCR GSCE – Tuesday 5 November 2019 – Paper 4 (Calculator) Higher Tier

10.

- 13 (a) A transport lorry consists of a cab and a trailer.  
The trailer has a volume of  $90\text{ m}^3$ .  
Alfie makes a model of this lorry using a scale of 1 : 72.

Work out the volume of the trailer in Alfie's model, giving your answer in  $\text{cm}^3$ .

(a) .....  $\text{cm}^3$  [3]

- (b) Alfie paints his model lorry.  
He has eight colours available.

He decides to paint the cab in one colour and the trailer in a different colour.

He then wants to paint his name on the trailer.  
The name must be in a different colour to the trailer.

In how many different ways can Alfie paint his model lorry?

(b) ..... [3]



OCR GSCE – Monday 11 November 2019 – Paper 6 (Calculator) Higher Tier

11.

- 6 The table shows the children nominated to win the subject prize in Mathematics and the subject prize in English.

Mathematics	English
Alice	Alice
Ben	Claire
Emma	Gabi
Paddy	Simon

The winner of each subject prize is picked at random.  
It is possible for Alice to win both prizes.

In what percentage of the combinations of prize winners does Alice win **at least** one prize?

..... % [4]

OCR GSCE – Tuesday 2 November 2017 – Paper 4 (Calculator) Higher Tier

12.

- 8 Diners choose one starter and one main from the options given in the table below. Vegetarian dishes are indicated with a (v).

Starter	Main
Cheese salad (v)	Steak and chips
Prawn cocktail	Fish and chips
Mozzarella sticks (v)	Tomato pizza (v)
	Pork chops
	Nut cutlet (v)

- (a) Work out the fraction of all the meal combinations which have at least one vegetarian option.

(a) ..... [3]

- (b) Diners also choose one of 6 dessert options.

How many different three-course meal combinations are available?

(b) ..... [2]

OCR GSCE – Thursday 8 June 2017 – Paper 5 (Non - Calculator) Higher Tier

13.

14 John has

- 8 different shirts
- 6 different hats
- 4 different scarves.

(a) On Monday, he picks a shirt, a hat and a scarf.

Show that there are 192 different combinations he can pick.

..... [1]

(b) John thinks that if he picks **just two** of the three items of clothing there will be more than 192 combinations.

Is he correct?  
Show your reasoning.

.....  
..... [3]

OCR GSCE – Sample Papers – Paper 4 (Calculator) Higher Tier

14.

17 A restaurant menu has 8 starters, 12 mains and 6 desserts.  
A customer can choose from the following meals

- a starter and a main,
- a main and a dessert,
- a starter, a main and a dessert.

Show that there are 744 different ways of choosing a meal at this restaurant. [3]

**AQA GCSE – Thursday 4 June 2020 – Paper 2 (Calculator) Higher Tier**

**15.**

**16** On a restaurant menu there are

22 main dishes, of which  $\frac{4}{11}$  are gluten-free

7 rice dishes, which are all gluten-free

5 naan breads, of which 40% are gluten-free.

This Meal Deal is on the menu.

Choose one main dish, one rice dish and one naan bread

How many of the possible Meal Deals are totally gluten-free?

**[3 marks]**

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Answer \_\_\_\_\_

**AQA GCSE – Thursday 2 November 2017 – Paper 1 (Non - Calculator) Higher Tier**

16.

15

**Meal Deal**  
Choose one sandwich, one drink and one snack

There are

7 different sandwiches

5 different drinks

and

3 different snacks.

**15 (a)** How many different Meal Deal combinations are there?

**[2 marks]**

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Answer \_\_\_\_\_

**15 (b)** Two of the sandwiches have cheese in them.

Three of the drinks are fizzy.

Eva picks a Meal Deal at random.

Work out the probability that the sandwich has cheese in it **and** the drink is fizzy.

Give your answer as a fraction.

**[2 marks]**

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Answer \_\_\_\_\_

**AQA GCSE – Sample Paper 2 (Calculator) Higher Tier**

**17.**

**15** Ann picks a 4-digit number.

The first digit is **not** zero.

The 4-digit number is a multiple of 5

How many different 4-digit numbers could she pick?

**[3 marks]**

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Answer \_\_\_\_\_