Section 1: Products, tree diagrams and Venn diagrams

Exercise

1. Write down 3!, 4! And 5!

2. How many strings of three upper case letters are there is repeated letters are allowed.

3. A clothes shop is putting together suit and tie sets. There are 8 different colours of shirt and 6 different colours of tie. How many distinct sets are there?

4. A pancake is being made with two fruit ingredients and a choice of either sugar or maple syrup topping. One fruit must be chosen from the first column in the below and the other fruit from the second column. Represent this as a tree diagram. How many different pancakes can be made? Draw a tree diagram to represent this. List the different pancakes.
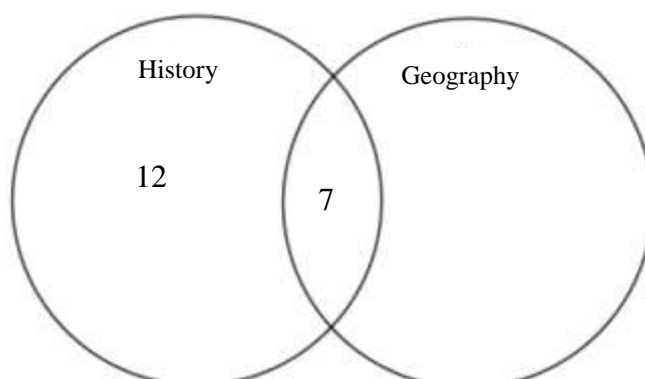
Apples Pears Bananas	Strawberries Raspberries

5. Car number plates in a country have the form

    NNN LLL

   where the character in the position marked N is a digit from 0 – 9 and the character in the position marked LLL is an upper-case letter from A – Z. How many number plates are there is
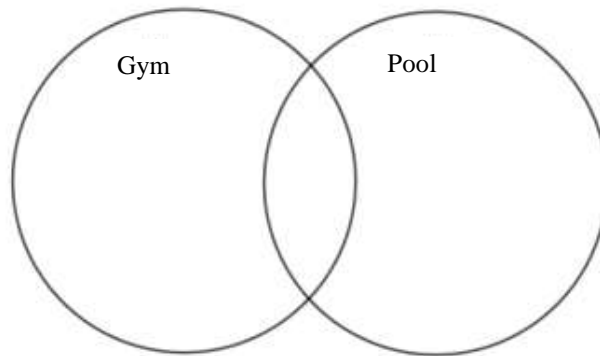
   (a) Repeated digits and letters are allowed
   (b) No repeated digits or repeated letters are allowed.
   (c) The first digit cannot be zero but repeated digits and letters are allowed.

6. Alice, Bob, Charlie, Dave and Erin are sat on bench in this order. In how many other **different** arrangements could they be sat on the bench?

7.

In a school there are 12 students studying History but not Geography. There are 7 students studying both History and Geography. If there are 52 students studying either History or Geography or both, then how many students are studying only Geography?

8.

At a leisure centre the number of members who use either the gym or the pool or both is 40. The number of members who use the gym is 25. The number of members who use the pool is 20. How many members use both the gym and the pool?

9. 34 people are eating in a restaurant. 15 have a nut allergy and 23 are vegetarian. How many vegetarians have a nut allergy?

10. A school starting in has three terms: September to December (Term 1), January to April (Term 2) and May to August (Term 3). Last year, 22 students joined the school between the start of term 1 and the end of term 2. 15 students joined the school between the start of term 2 and end of term 3. 12 students joined the school in term 2. How many students joined the school last year in total?