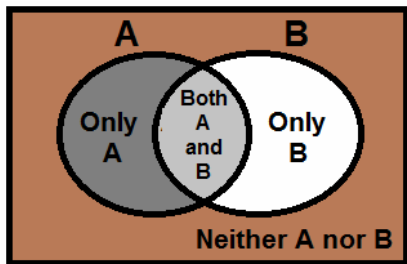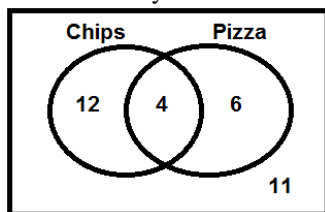**Venn diagrams** – www.m4ths.com
Some help understanding them!
The Venn Diagram below shows what each part represents! The middle is called the intersection of A and B.


Task 1 (Interpreting Venn Diagrams)
(1) The Venn Diagram below shows information about the food people ate at a school one day.

(a) Write down how many people ate chips. (Be careful!)
(b) Write down how many people ate **ONLY** chips. (Part (a) will help!)
(c) Write down how many people ate **ONLY** pizza.
(d) What does the number 4 represent in the diagram?
(e) What does the number 11 represent in the diagram?

(2) There are 54 students in a school. The Venn Diagram below shows information about the subjects they take.
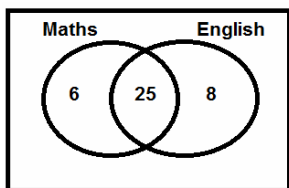
(a) Complete the Venn Diagram.
(b) State how many more students take English than take Maths.
(c) Peter says "8 People chose English". Explain why he is wrong.

(3) 45 Children were asked about the sports they played. **Some** information is shown in the Venn Diagram below.
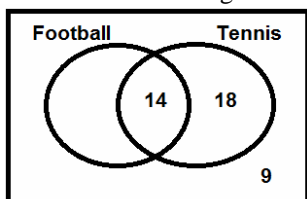
(a) Complete the diagram.
(b) How many children played football?
(c) How many children **didn't** play tennis?

Task 2 'Non intersection Questions'
(1) 45 people go to a party. 22 People take Coke, 14 take Lemonade and 10 take **both** Coke **and** Lemonade.
(a) Draw a Venn Diagram to represent the information.
(b) Find the number of people that take **neither** Coke **nor** Lemonade.
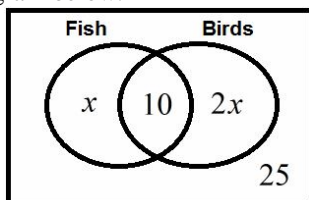(c) Find the number of people who **only** take Coke.

(2) At a school some students study Maths and English. 6 students study both subjects, 14 study maths and 19 study neither subject. Given that there are 48 students at the school:
(a) Find how many study English.
(b) Find the probability that if one student is chosen from random they only study maths.

(3) A survey was conducted about people owning hats and scarfs. 14 people owned only a scarf, 2 owned both and 12 owned a hat. Given that 56 people were surveyed:
(a) Draw a Venn Diagram to represent the information.
(b) Find the number of people who owned neither item of clothing.
(c) State how many more people owned scarfs than owned hats.
(d) Find the probability that if one person was chosen at random they would own a hat but not a scarf.

(4) 50 people took part in a survey about the pets they owned. The information is shown in the Venn Diagram below.

(a) Find the value of x.
(b) Calculate the number of people who owned birds.
(c) Shade the region on the Venn Diagram which represents people who own neither pet **or** only own fish.

Task 3 'Find the Intersection Questions'
(1) In a class there are 30 students. 10 study cooking, 16 study woodwork and 12 study neither subject.
(a) Draw a Venn Diagram to represent the information.
(b) Write down how many students did both cooking and woodwork.
(c) Find out how many students did only cooking.

(2) At a toy factory they make a range of toys. Some toys are fluffy and some toys are pink. Out of the 50 toys sampled 18 were neither fluffy nor pink, 24 were pink and 17 were fluffy.
(a) Draw a Venn Diagram to represent the information.
(b) Find out how many toys were both pink and fluffy.
(c) Write down how many toys were pink but not fluffy.
(d) One toy is chosen at random. Find the probability the toy is fluffy but not pink.

(3) There are 90 people in a social club. 48 of them play darts, only half as many play cards & 37 play neither.
(a) Find out how many people play cards only.
(b) Find out how many people play either darts only or neither game.

Task 4 Mixed Problems
(1) 48 people live together. 23 like to bath, 27 like to shower and 14 like to have both a shower and have a bath.
(a) Draw a Venn Diagram to represent this information.
(b) State the number of people who preferred not to shower or bath.
(c) Find the ratio of those who only used the bath and those who did neither giving your answer in its simplest form.

(2) There are 84 people at a school. 53 eat in the restaurant and 38 eat packed lunch. Given that 27 people don't eat packed lunches nor eat in the restaurant:
(a) Find the number who eat a packed lunch in the restaurant,
(b) Find the number who eat their packed lunch elsewhere.
(c) Find the number who eat in the restaurant but don't eat packed lunch.

(3) 480 people were surveyed about whether they ate burgers or Pizzas. The Venn Diagram shows the information below.
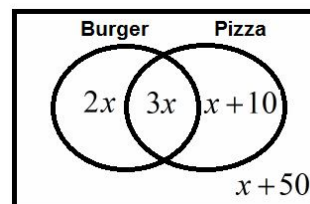
(a) Find the value of x.
(b) Calculate the number of people who ate burgers.
(c) Find out how many more people ate burgers than pizzas.
(d) What does the value of 110 represent in the Venn Diagram?

Task 5 Extension
(1) Place the numbers 1-20 in a Venn Diagram to represent the prime numbers and the factors of 12.