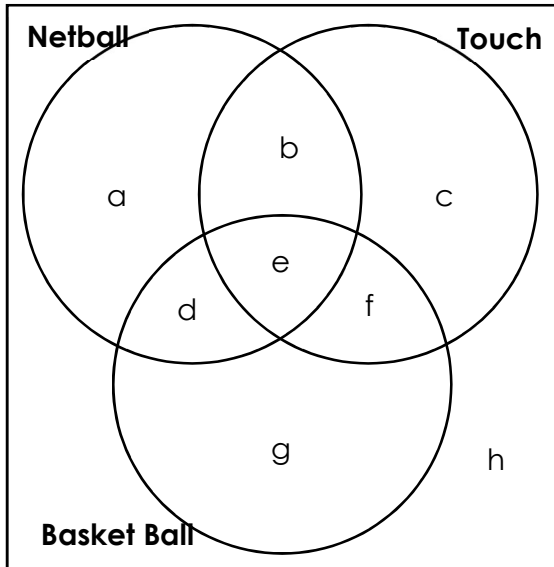


Part 5.2: Three Way Venn Diagrams

Venn diagrams do not always have 2 circles in them. They can have 3 (or more).

Let's look at an example with 3 circles:

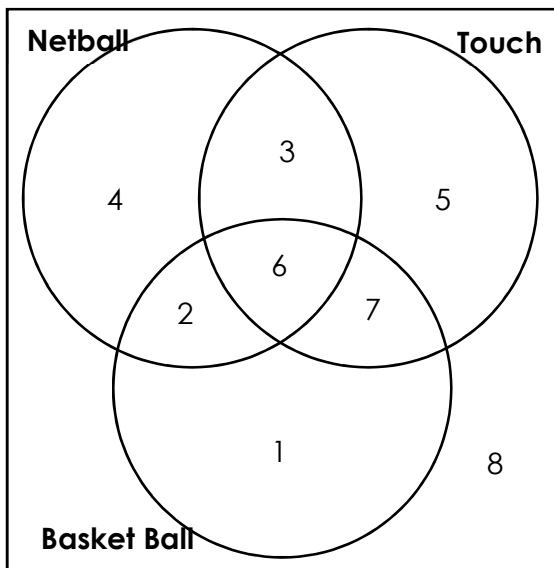


We are given the following information about what sports are played at a school:

- 6 students play netball, touch and basketball
- 8 students play netball and basketball
- 13 students play touch and basketball
- 18 students play more than 1 sport
- 15 students play netball
- 27 students netball and or touch
- 8 students don't play anything
- There are 36 students in total

Let's start by completing the Venn diagram:

- $e = 6$ (as 6 students play all 3 sports)
- $d = 2$ (as 8 students play netball and basketball)
- $f = 7$ (as 13 students play touch and basketball)
- $b = 3$ (as 18 students play more than 1 sport)
- $a = 4$ (as 15 students play netball)
- $c = 5$ (as 27 students play netball and or touch)
- $h = 8$ (as 8 students don't play anything)
- $g = 1$ (as there are 36 students in total)



In this example we could work through the information in order to fill in all the blanks. Often you will need to pick and choose which pieces of information you can use in order to be able to fill in the whole diagram.

Let's answer some questions about this Venn diagram:

- How many students play exactly 2 sports?
There are $2 + 3 + 7 = 12$ students
- How many students play only 1 sport?
There are $4 + 5 + 8 = 17$ students
- What is the probability a randomly chosen student plays no sports?
There are 8 students out of 36 in total, so $8/36$ or 0.222 (3sf)