

## Set Intersection

We'll start with set intersection. There's no need to get worried, you have probably used the concept of set intersection many times in your life, we're just going to describe it mathematically now. Excited?

Let's say a college representative wants to send information to all students that are enrolled in calculus and physics. To do this, they would have to identify students taking both classes. That group of students would be identified as the intersection of the two sets – kids taking calculus, C and the other set, kids taking physics, P.

Mathematically, we'd write the intersection of two sets C and P, written  $C \cap P$ , is the set of all members common to both C and P.

$$C \cap P = \{x / x \in C \text{ and } x \in P\}$$

Students not enrolled in both classes would not be in the intersection.

The key in the definition of intersection is the word **and**. In everyday language, as it is in math, and means both conditions must be met.

If sets such as C and P have no members in common, they are called **disjoint** sets. In other words, their intersection is the null set,  $C \cap P = \emptyset$