NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Set Theory

Union and intersections of sets

With
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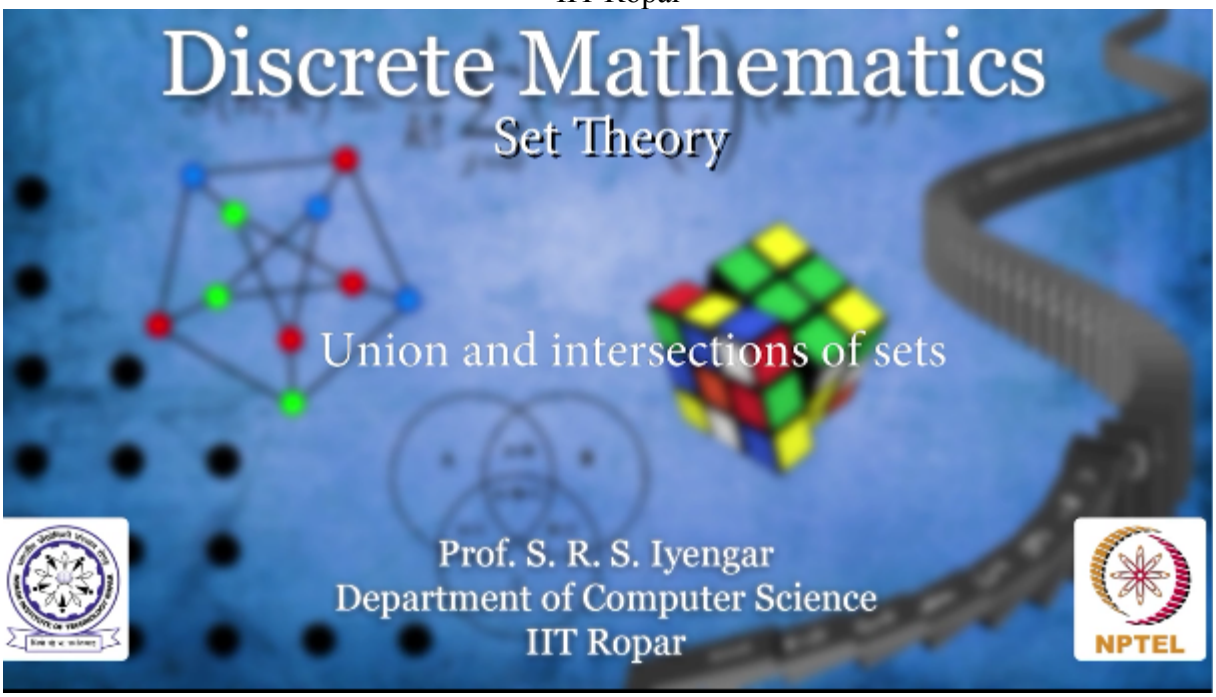
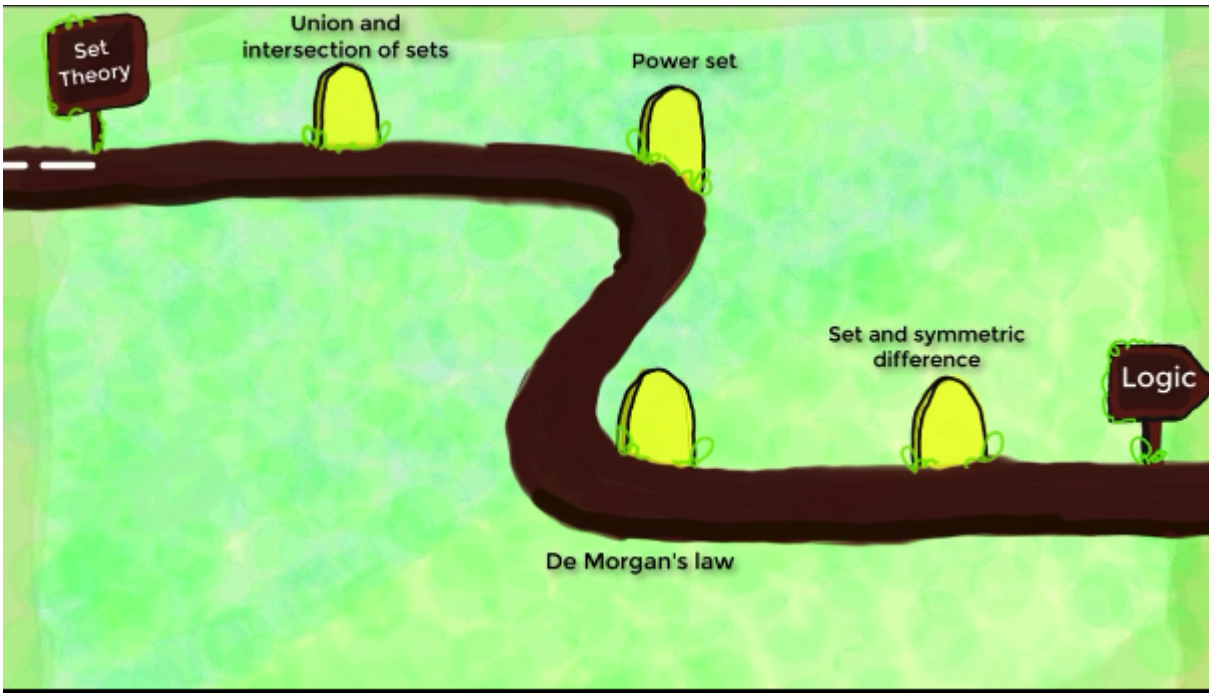
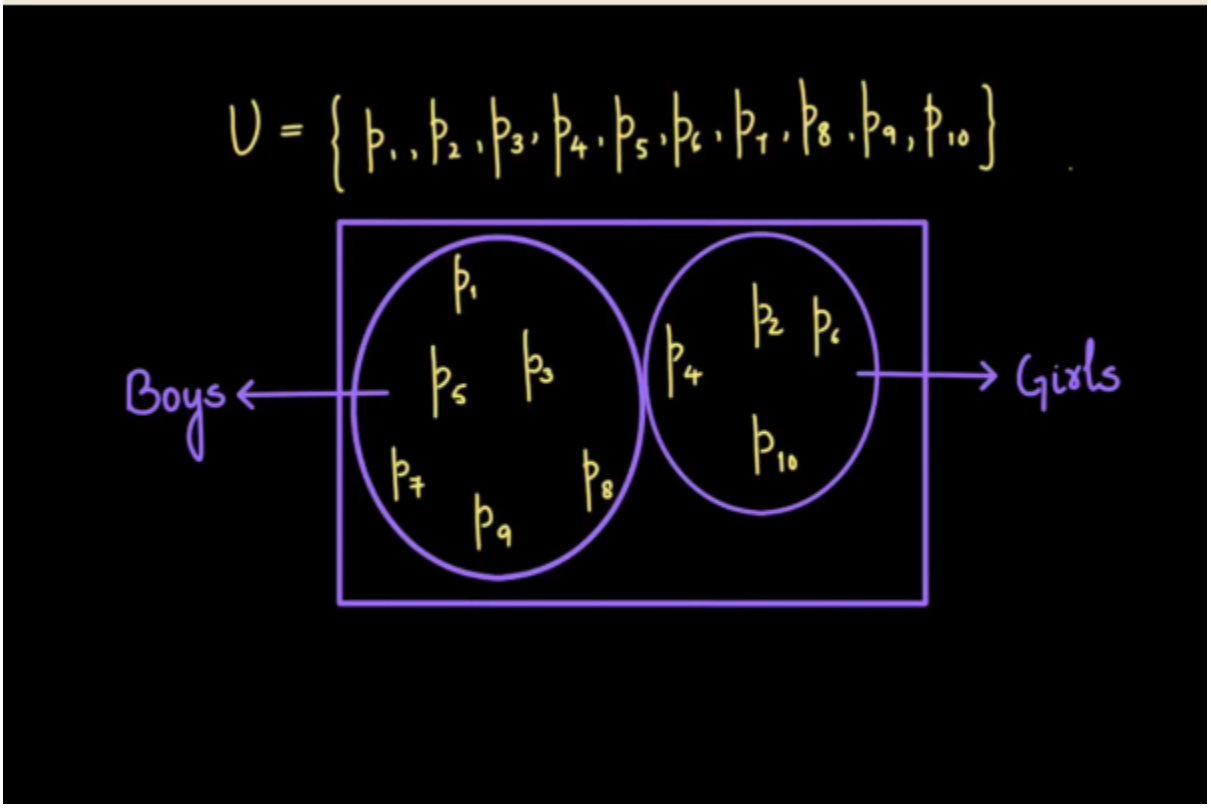


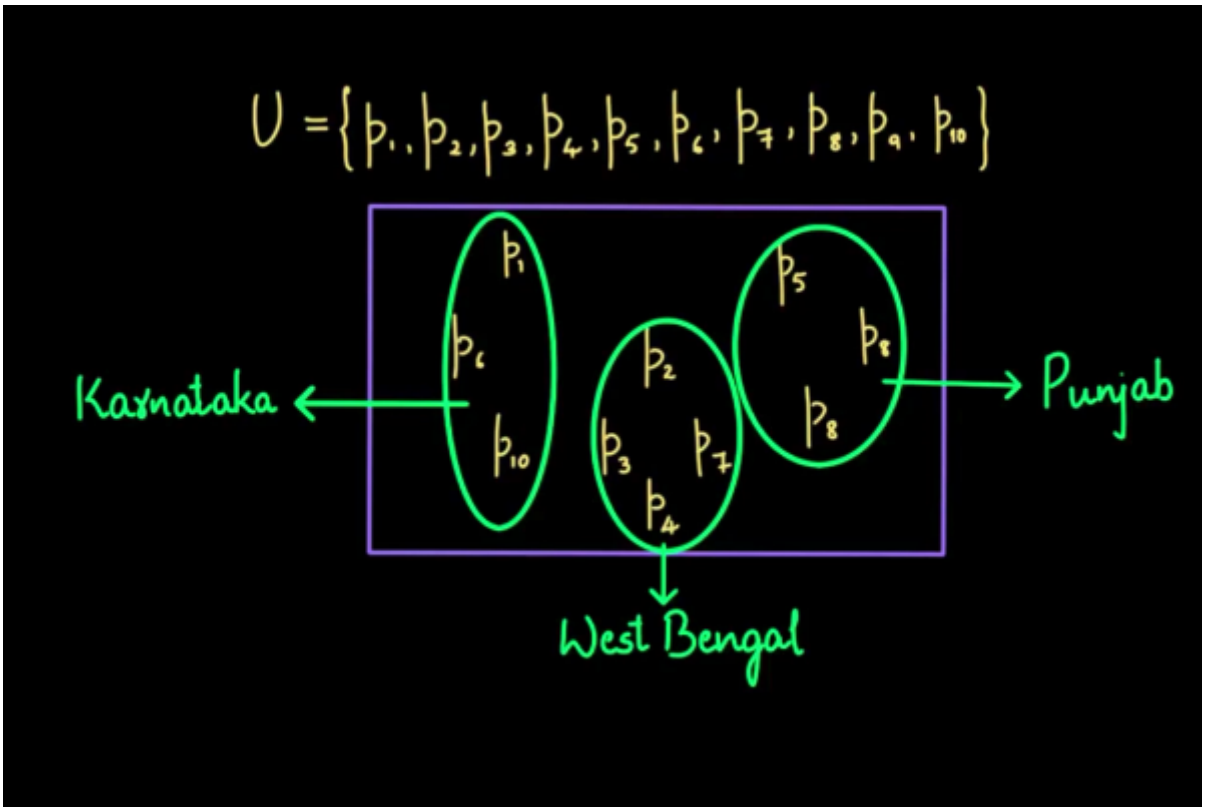
It is now time for us to put our understanding to test, let us now play around with sets by performing a few operations on that.



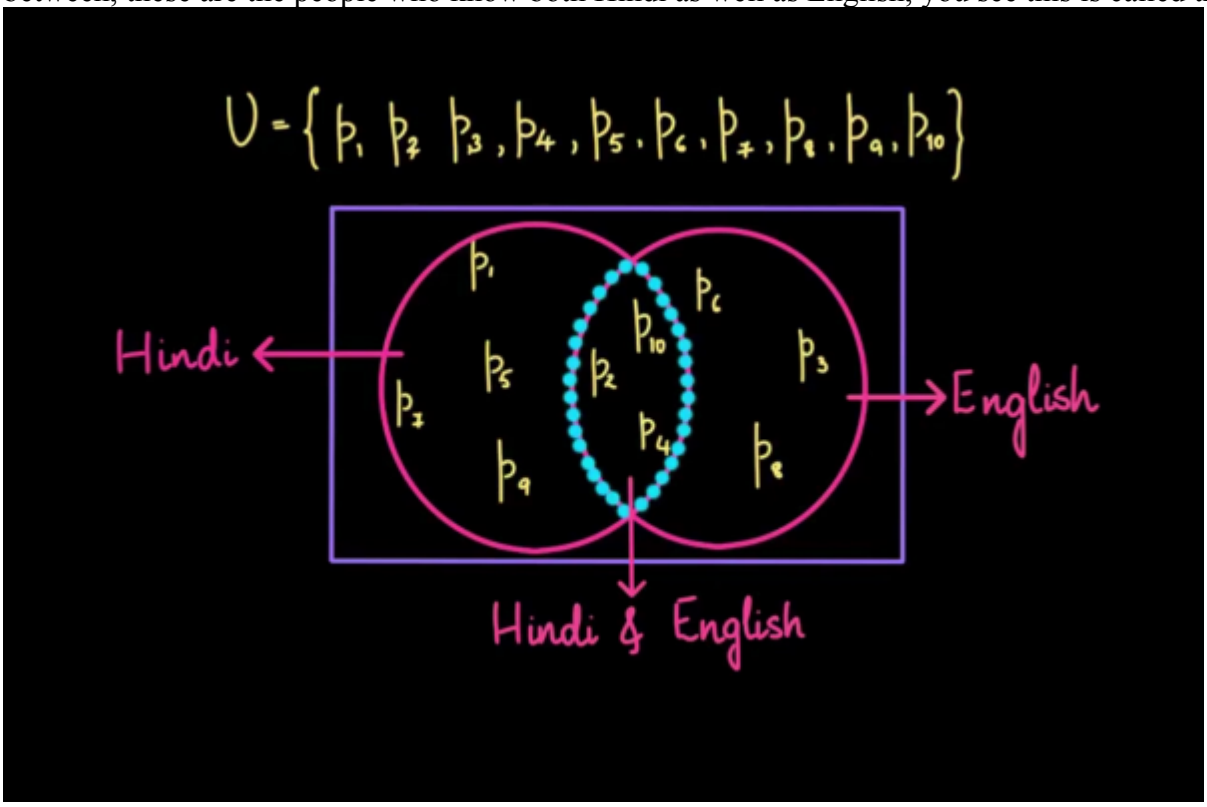
Let me consider a set U with 10 people, and let me represent this people as P1, P2, P3, P4, P5, P6, P7, P8, P9 and P10, right, instead of seeing it as a set I'm going to take a rectangle and put this people here into this rectangle, P1, P2, up to P10, you see in this some of them are boys, and some of them are girls, let's say these 6 people are boys and these 4 people are girls, and



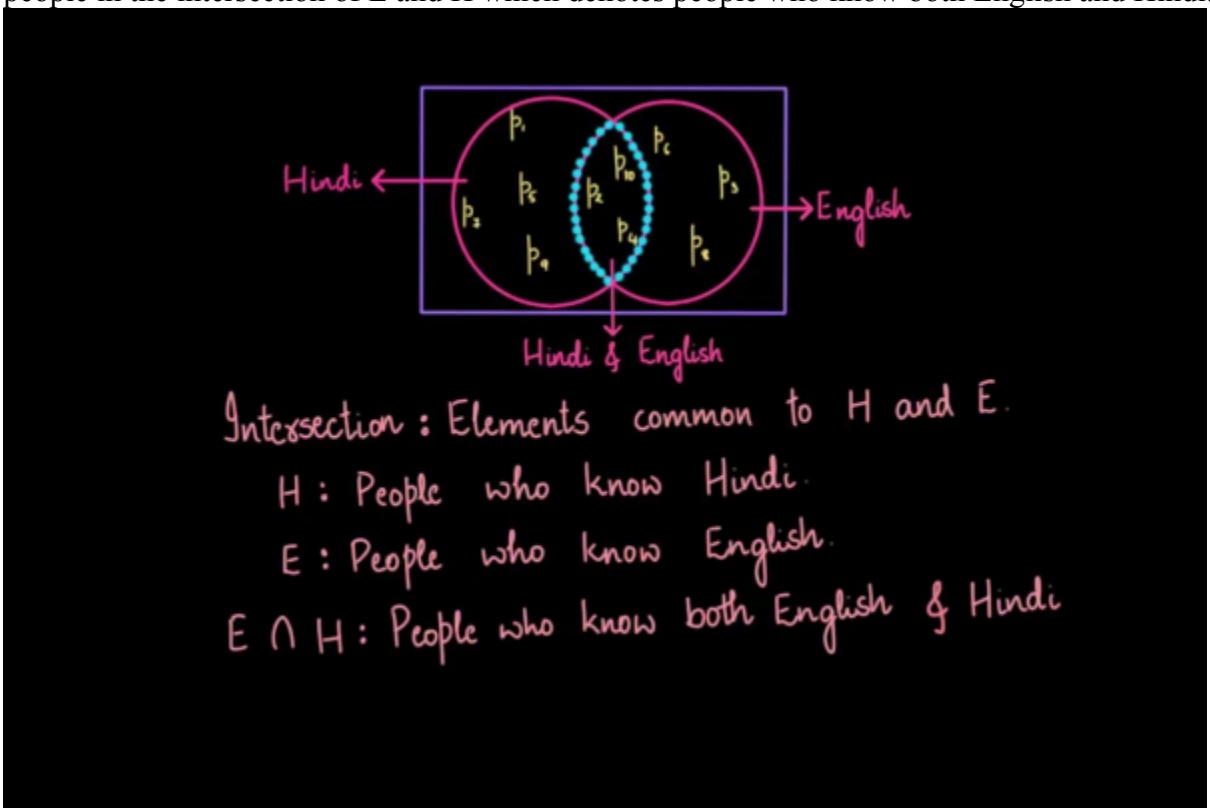
then again you see I'm going to use another circle to represent that these people are from the state Karnataka, and these people are from the state West Bengal, and these are from Punjab, so



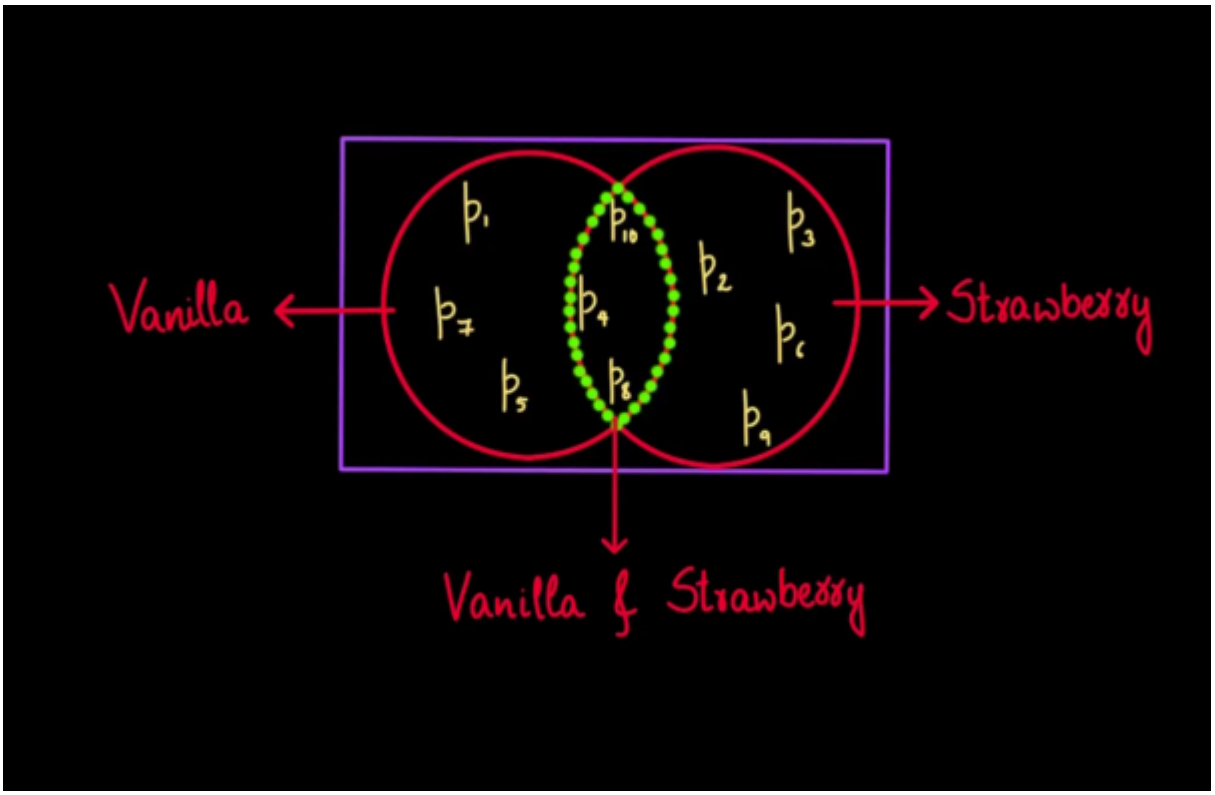
there are these 10 people belong to 3 different states, and then let me go ahead and also tell you that some of them know Hindi, and these many people know English, and guess what is in between, these are the people who know both Hindi as well as English, you see this is called the



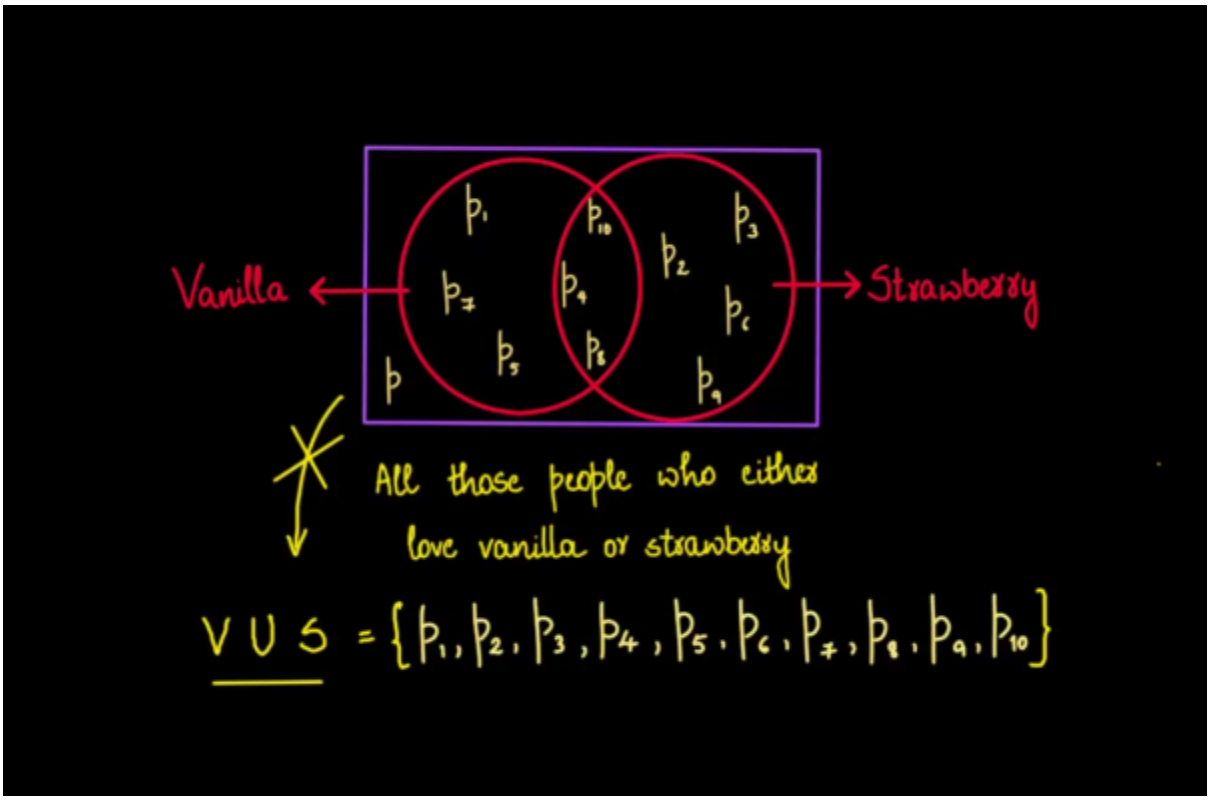
intersection. Intersection which stands for those elements that are common amongst these two sets H and E where H stands for those people who know to speak in Hindi, and E stands for those people amongst these 10 people who know English, and obviously you will find some people in the intersection of E and H which denotes people who know both English and Hindi.



Please note this is a very important symbol, we'll encounter this very often. Amongst these 10 people assume these many people love vanilla ice-cream, and these many love strawberry ice cream, you see there can be people who love both vanilla and strawberry.



Now what does this denote? This entire circle as well as this entire circle, it denotes all those people who love either vanilla or strawberry that is called the union you see, the set V and S it's union comprises of all the people in these circles with simply, will be these people and they all are, what is this set? As you can see V, union, S is the set of all those people who like either vanilla or strawberry, in fact anyone outside these two circles, let's say this person does not belong to this set, for a simple reason that he whether likes vanilla nor strawberry.



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