Discrete Mathematics

Let Us Count

Rule of Sum and Rule of Product

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Overall it is very unlikely that you solved this puzzle. This is non-trivial concept and requires some thinking. We will be seeing the solution of this very question at the fag end of this chapter. So for now let us forget this question and move on.

Let us go ahead and learn a basic counting principle which happens to be the highlight of this chapter and is an important concept. So please concentrate.

As you may walk into a restaurant, a restaurant that sells pizzas and burgers. There are four different types of pizzas and three different types of burgers. And I plan to eat one item only either pizza or burger. So I have four items to choose from pizza or four varieties to choose from pizza and three varieties from burger. So in total I can order one of these seven items. One of these four plus three; seven items. Let me now change this problem onto the following.

I enter the restaurant and I decide to buy myself one pizza and one burger. Okay. It's not just one item but two items but I am sure I will be buying one pizza and one burger. In how many ways can I make my order? It is going to be the following, in the sense that first pizza, first burger and order. First pizza, second burger, a possible second option. First pizza and third burger, third option. Second pizza, first burger. Second pizza, second burger. So on and so forth. So in how many ways can I make my order? Clearly it is four times three. Please remember the last time it was four plus three. This time it is four into three. So it's only common sensical to know when to

add and when to multiply. Previous case was addition. This case was multiplication. This goes by the title the rule of sum and rule of products.