Hello everyone, I am miss Gautami Manakikar from Parvatibai Chowgule college and this is unit 3 that is the digestive system and the module is dentition part 2 module number 32. In this we'll study the types of teeth, types of cheek teeth and also the dental formula. At the end of this module we'll be able to distinguish between the different types of teeth, compare the types of cheek teeth and also determine the dental formula in heterodont condition. In vertebrates, the teeth are of different types. There are four main types of teeth, that is, the incisors, canines, premolars and the molars. The premolars and the molars are collectively called the cheek teeth. The first type is incisors. These are single rooted and monocuspid. The incisors are mainly used for biting and cutting. The incisors may be completely absent in some animals such as the sloth or they may be absent only on the upper jaws as in the case of sheep, In rodents and lagomorphs, the incisors are open rooted, that is, they continue to grow throughout their life. The incisors are then followed by canines. The canines are pointed, have a long crown with a single root. These are mainly used for piercing and tearing. Canines are completely absent in rodents and lagomorphs. They have this space which is present between the incisors and the premolars and the space is called the diastema. In animals such as the musk deer, the teeth are present only on the upper jaw in males. So, in musk deer, dentition is used to exhibit sexual dimorphism. The third type are the premolars. The canines are followed by premolars. Premolars have two roots and two cusps. These are mainly used for grinding the food. Behind the premolars are the molars. They have two or more roots and several cusps. The molars are used for crushing the food. The premolars and the molars are collectively known as the cheek teeth. The cheek teeth may have tiny raised ridges on their surface and these are termed as cusp. Depending on the number, shape and the arrangement of the cusps, there are six main types of cheek teeth. The types of cheek teeth are triconodont, trituberculate, bunodont, secodont, selenodont and lophodont. The first type is triconodont. In this, the cheek teeth have three cones which are arranged in a linear or a straight line. This type of cheek teeth are commonly found in fossil mesozoic mammals. The second type of cheek teeth are trituberculate. In this, the cheek teeth have three cones and these cones or cusps are arranged in the form of triangle. This type of cheek teeth were found in fossil mesozoic mammals. The third type is bunodont. In this type, the cheek teeth are small, separate and they have rounded cusps and these are mainly used for grinding. Men and monkey have this type of cheek teeth. Next is secodont. In these, the cusps are pointed and they form sharp cutting crowns which are mainly used for tearing flesh. This type of cheek teeth are mainly seen in carnivorous mammals. Selenodont teeth. In this, the teeth are square in shape and they have vertical crescent-shaped cusps. Cattles and horses are known to have this type of cheek teeth. The last type is lophodont. When the cusps join to form bridges they are called loph. When the cheek teeth have these lophs, they are termed as lophodont teeth. Example, Elephants and tapis are known to have this type of cheek teeth. The next part is the dental formula. The number of teeth in a particular species always remains constant and that can be expressed with the help of dental formula. In this, we first identify the different types of teeth, that are present in each half of the upper and the lower jaw. We find the different types of teeth that are present in one half of the upper and the lower jaw. So, the different types of teeth which are present on one half of the upper jaw are written as the numerator and the number of teeth that are present in one half of the lower jaw are written as the denominator. The numerator and the denominator are then separated by a horizontal line. We always note down the number of teeth that are present on one half of the jaw as the jaws are identical. The teeth are indicated by the initial letters that is i, c, pm and m which stands for incisors, canines, premolars and molars respectively. When a certain type of tooth is absent, a zero is used in place of it. So, to determine the dental formula, we first write the number of teeth in one half of the lower jaw and then in the denominator. We write the number of teeth that is present in the same half on the lower jaw and then we multiply it by 2 to find the total number of teeth that is present in a particular animal. So, we note down the incisors, canines, premolars and the molars

that are present on the upper jaw and the lower jaw and then multiplied by two. So, let us try to understand how to determine the dental formula with the help of two examples. The first example are eutherian mammals. They are known to have 44 teeth. So, first what we do is note down the number of incisors, canines, premolars and molars that are present in this animal. In this case they have three incisors, one canine, four premolars and three molars. So, it is written as 3, 1, 4, 3 in the numerator and similarly 3, 1, 4, 3 in the denominator. So this total comes up to 22 which is the total number of teeth that are present on one half of the upper jaw and the lower jaw. This total is then multiplied by two to get the total number of teeth that is present in the eutherian mammals. In this case 22 is multiplied by 2 to get 44 which is the total number of teeth in the eutherian mammals. The second example is that of humans. Humans have 32 teeth so in this case, we have two incisors, one canine, two premolars and three molars. So, the dental formula is written as 2, 1, 2, 3 in the numerator and similarly 2, 1, 2, 3 in the denominator. The total comes up to 16 which is then multiplied by 2 so we get 32, which is the total number of teeth that is present in humans. So, to summarize this presentation,in heterodont condition,there are four main types of teeth, that is, incisors, canines, premolars and molars. Then the types of cheek teeth are divided into six main types which are triconodont, trituberculate, secodont,selenodont, bunodont and the last one that is lophodont. The last part is the dental formula which is used to determine the total number of teeth that are found in any species. With this we conclude the second part of the dentition and these are the references. Thank you.