

Introduction to Dental Anatomy



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Lecturer's introduction

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1. Dental Anatomy.
2. Oral Biology.
3. Oral physiology.
4. Cariology.

Contact

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Dental Art Movie



Classification of living organisms

I. According to tooth types

1. Homodont dentition:

- All teeth are of the same shape and function.
- Seen mostly in lower vertebrates.
- Examples: (Many fishes and reptiles).



2. Heterodont dentition:

- Mammals contains more types of teeth for cutting, tearing, and grinding foods.



Classification of living organisms

II. According to tooth sets

1. Diphyodont:

- Two successive sets of teeth, Deciduous (milk/primary) and Permanent teeth.
- Most mammals, including humans.

2. Monophyodont dentition:

- Only one set of teeth throughout life without replacement.
- Seen in some mammals like certain whales and rodents.

3. Polyphyodont dentition:

- Teeth are replaced continuously throughout life.
- Typical of many reptiles and fishes.

Dental Anatomy

Definition:

Dental anatomy is a course that study the gross anatomy of the teeth and surrounding structure.

Dental Arch

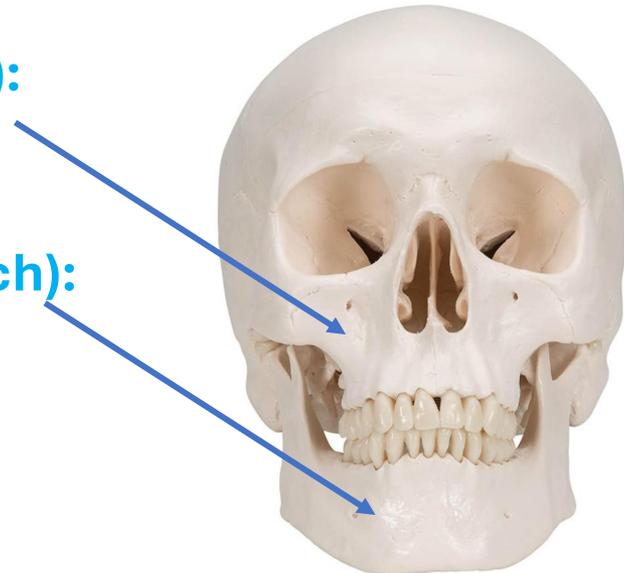
The teeth are arranged in the mouth in two arches termed dental Arches:

1. Upper dental arch (maxillary arch):

Carry the maxillary teeth.

2. Lower dental arch (mandibular arch):

Carry the mandibular teeth.



Midline

Definition:

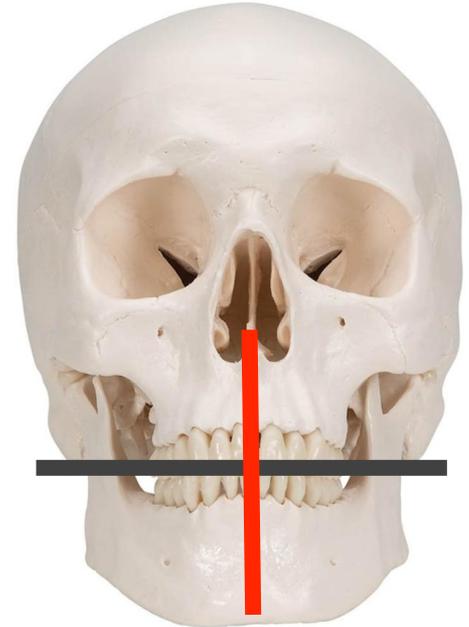
Midline is an imaginary vertical line divide the body into two similar halves (right half and left half).

- This midline divide the dental arch into two similar halves, and divide the oral cavity into **four similar quadrants:**

1. Upper right. 2. upper left.

3. Lower right. 4. lower left.

- Each quadrant contain the same number and types of teeth.

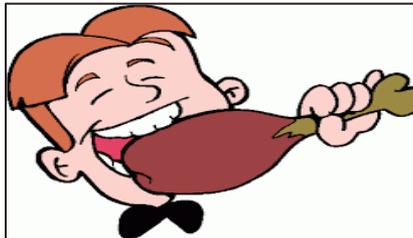


Functions Of Teeth

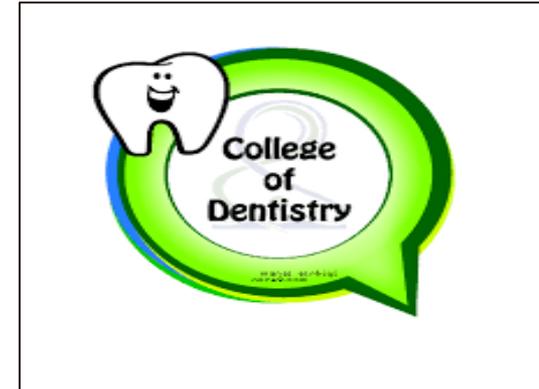
1. Appearance.



2. Eating.



3. Speaking.

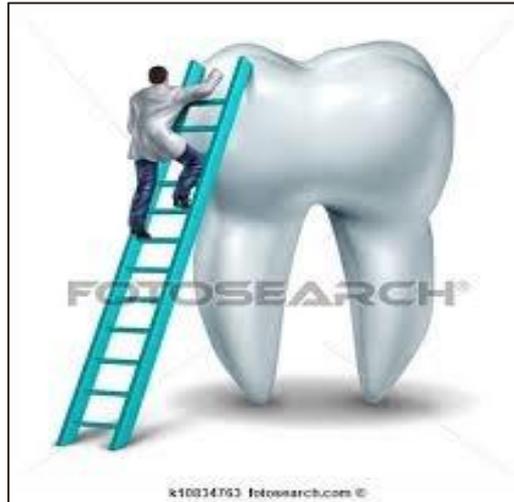


Responsibilities towards your teeth

Cleaning



Discover



Treat



1. Deciduous Dentition

- **Deciduous dentition** means that all the teeth in the oral cavity of the child are of deciduous type.
- Deciduous teeth begin to erupt at about 6 months of age and completed at about 2 - 2.5 years of age.
- Deciduous teeth begin to be eliminated at 6 years of age, so deciduous dentition persists until 6 years.

Number of Deciduous Teeth:

- The oral cavity of children contains **20 deciduous teeth**.
- 10 in the maxilla and 10 in the mandible.
- Each quadrant contains 5 teeth.

Terminology of Deciduous Teeth:

- Temporary teeth, **primary teeth**, milky teeth and **baby teeth**.



Quadrant of Deciduous Dentition

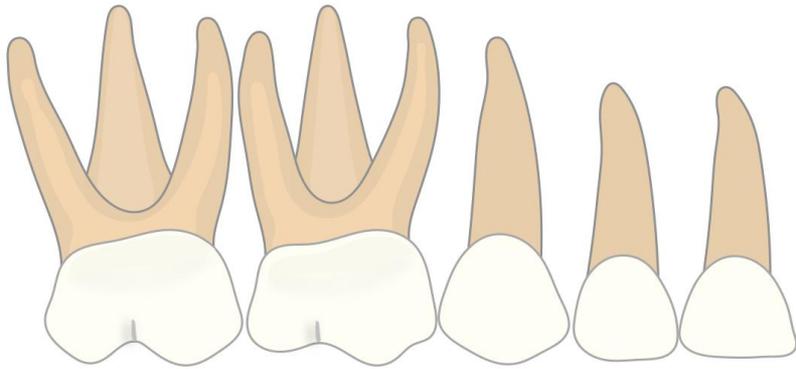
Each quadrant of deciduous teeth contain:

- A) Deciduous central incisor close to midline.
- B) Deciduous lateral incisor next to central incisor.
- C) Deciduous Canine next to lateral incisor.
- D) First deciduous molar: next to canine.
- E) Second deciduous molar: last one.

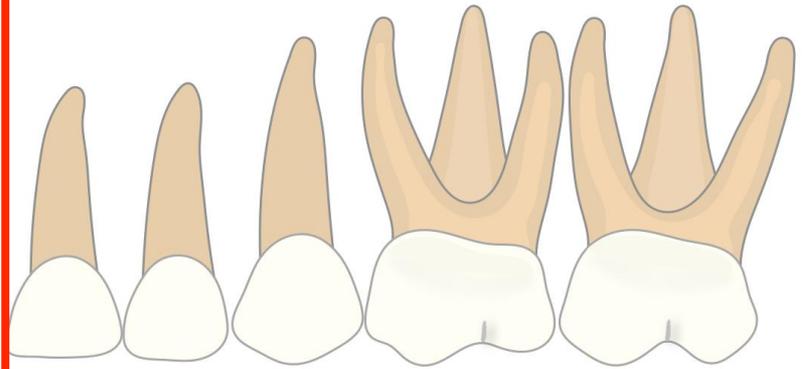


Deciduous teeth

Upper Right



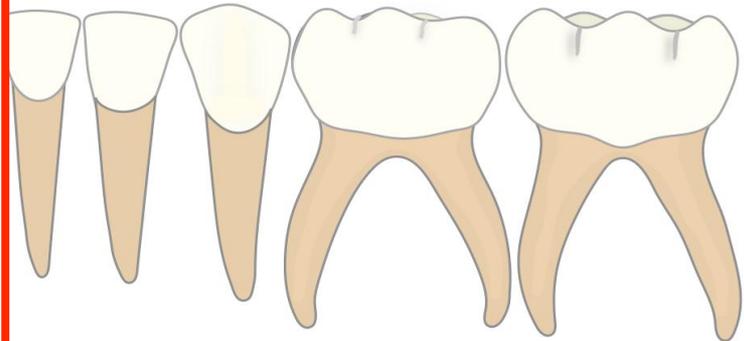
Upper Left



Lower Right



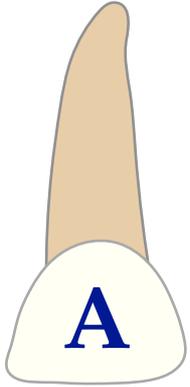
Lower Left



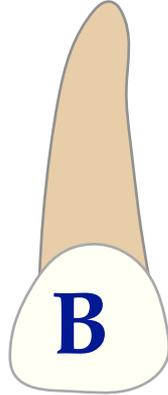
Deciduous teeth

Upper left deciduous teeth

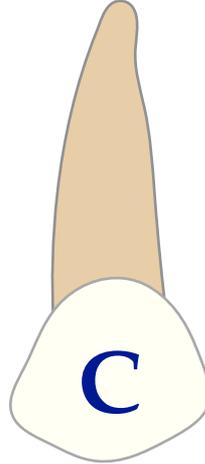
Central incisor



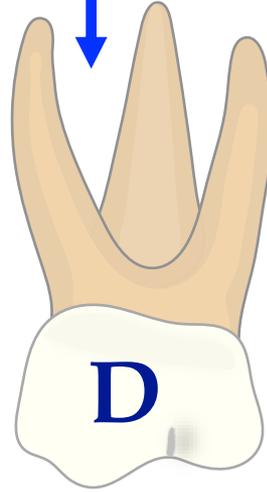
Lateral incisor



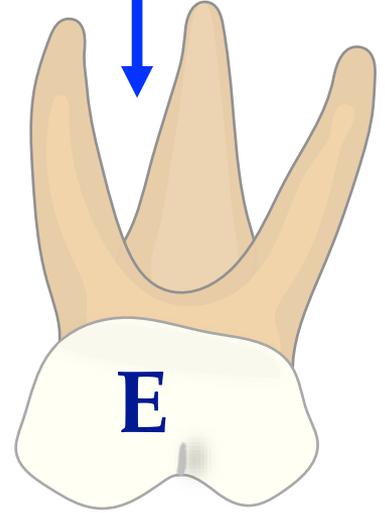
Canine



1st molar

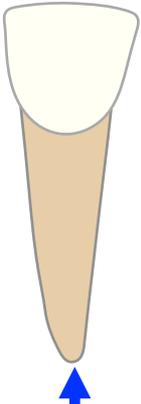


2nd molar

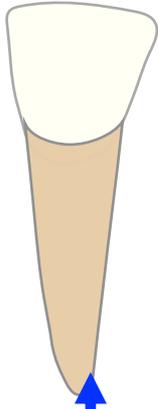


Lower left deciduous teeth

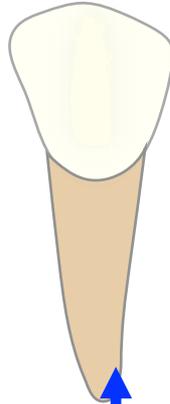
Central incisor



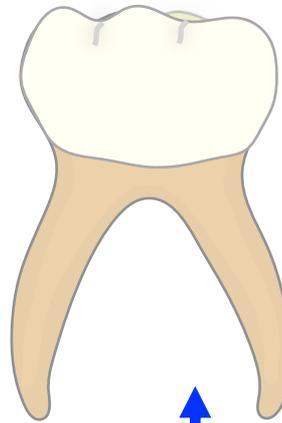
Lateral incisor



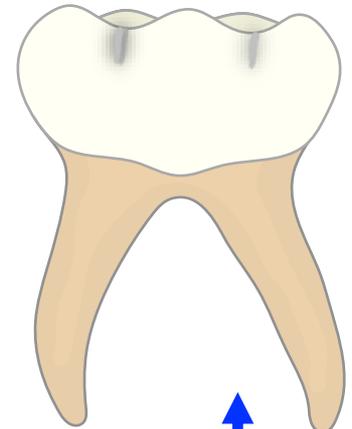
Canine



1st molar



2nd molar



2. Permanent Dentition

Definition:

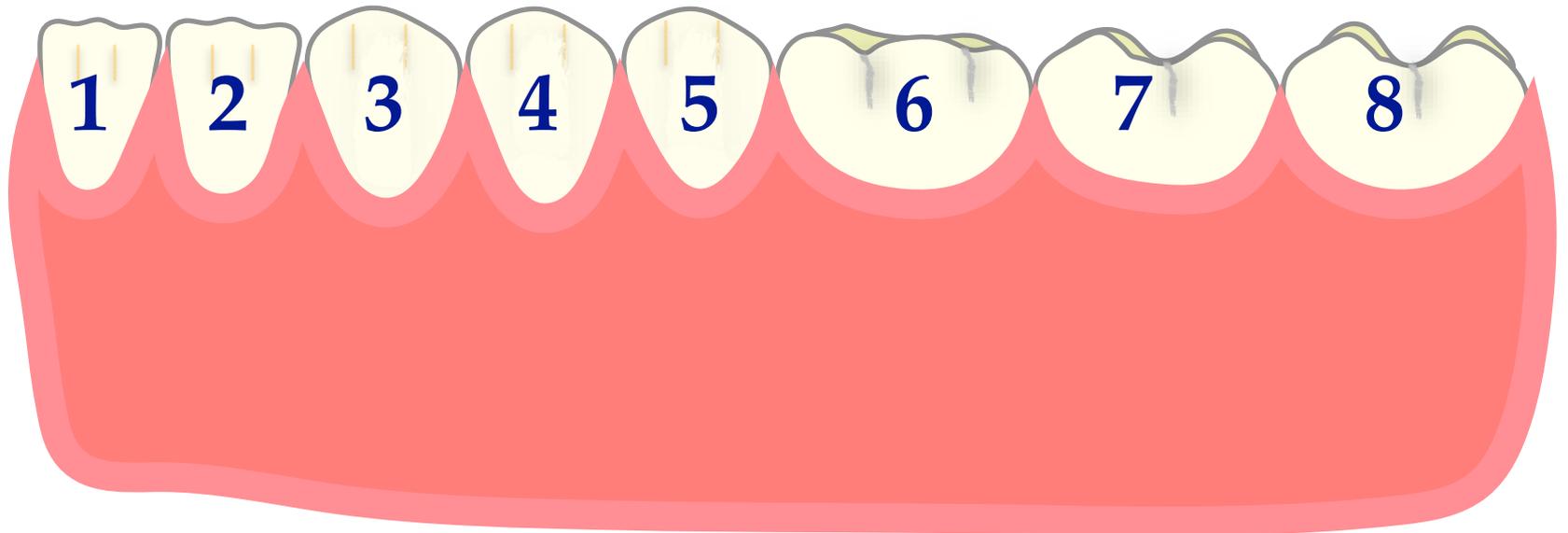
- * Permanent dentition means that the oral cavity contain only permanent teeth .
- * This stage begin from the elimination of the last deciduous tooth at **12 years** of age.

Number of permanent Teeth:

- The oral cavity of adult human contain **32 permanent teeth**.
- 16 in the maxilla and 16 in the mandible.
- Each quadrant contain 8 teeth.
- Each quadrant contain the same number and types of teeth.

Each quadrant of permanent teeth contain:

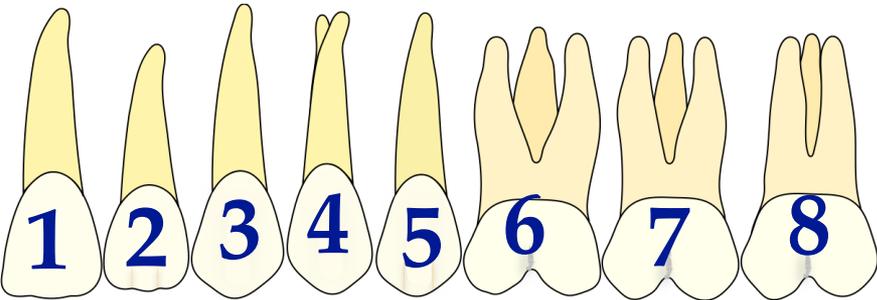
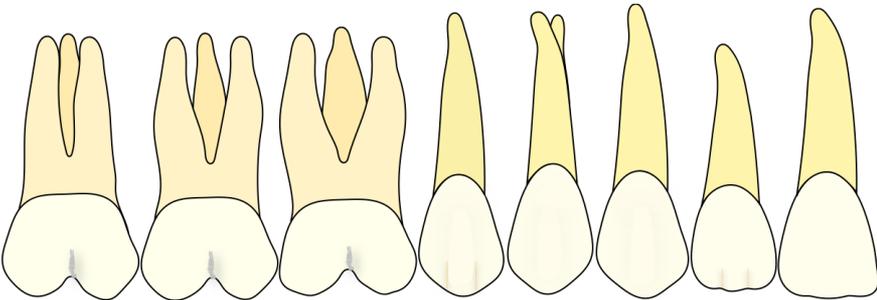
1. Permanent central incisor: close to midline.
2. Permanent lateral incisor: next to central incisor.
3. Permanent canine is found next to incisors.
4. **First Premolar:** next to canine.
5. **Second Premolar:** next to first premolar .
6. First Permanent Molar: is next to premolars.
7. Second Permanent Molar is distal to first permanent molar.
8. **Third Molar** is the last tooth in the oral cavity.



Quadrant of Permanent Dentition

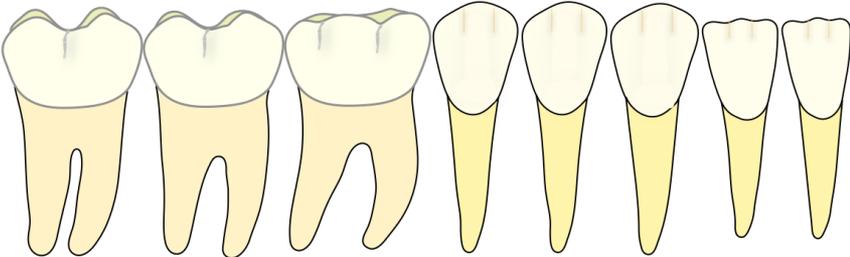
Upper Right

Upper Left



Lower Right

Lower Left



Types of Teeth

1. Deciduous teeth.

Baby teeth.

2. Permanent teeth.

Adult teeth.

Types of Dentition

Deciduous dentition

Until 6 years of age.

Mixed dentition

From 6 to 12 years of age

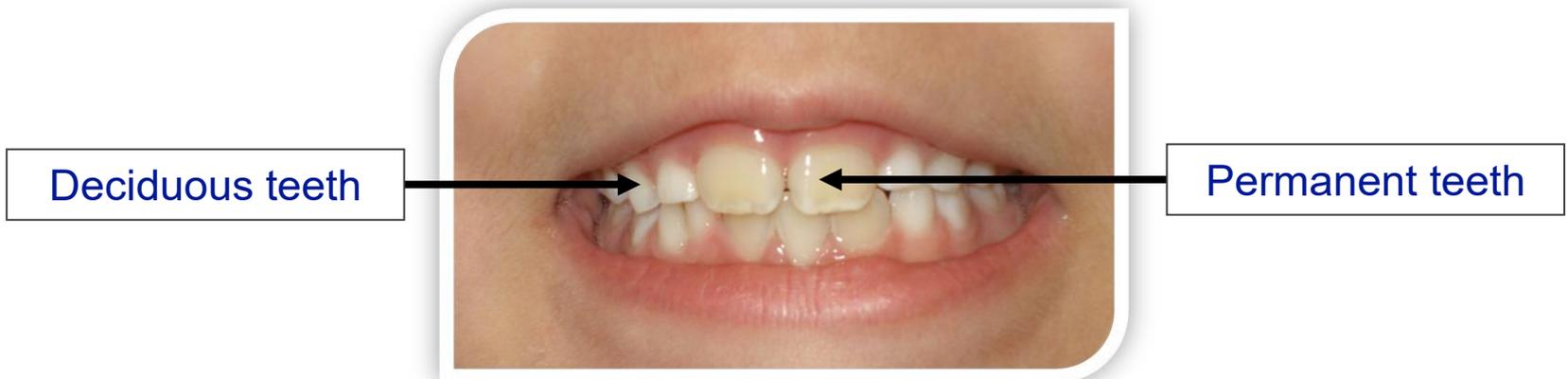
Permanent dentition

12 years of age and above

3. Mixed Dentition

Definition:

- * Mixed dentition means that the oral cavity contain both permanent and deciduous teeth .
- * This stage begin from eruption of first permanent molar at **6 years** and persist until the elimination of the last deciduous tooth at **12 years** of age.
- * At 12 years, all teeth in the mouth are of permanent type and this stage is termed **permanent dentition.**



Predecessors and Successors

Definitions:

- **Predecessors:** are the deciduous teeth.
- **Permanent Successors:** Permanent teeth that replace the deciduous teeth.
- **Non-successors:** Permanent molars not have deciduous predecessors.

Permanent Successors:

1. Deciduous central incisors is replaced by permanent central incisors.
2. Deciduous lateral incisors is replaced by permanent lateral incisors.
3. Deciduous canine is replaced by permanent canine.
4. First deciduous molar is replaced by 1st premolar.
5. Second deciduous molar is replaced by 2nd premolar.

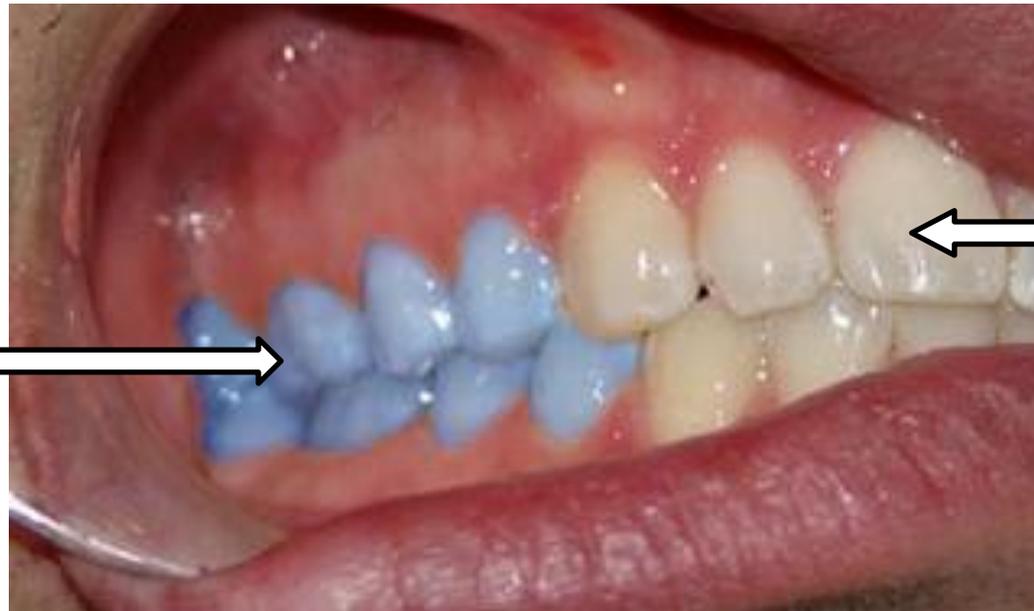
Classification of teeth

Anterior Teeth:

- Anterior Teeth is the teeth seen by the viewer and bounded by the angles of the lip.
- Anterior teeth are incisors and canine.

Posterior Teeth:

- posterior teeth are premolars and molars .



Anterior teeth

Posterior teeth

Macro-anatomy of teeth

Crown:

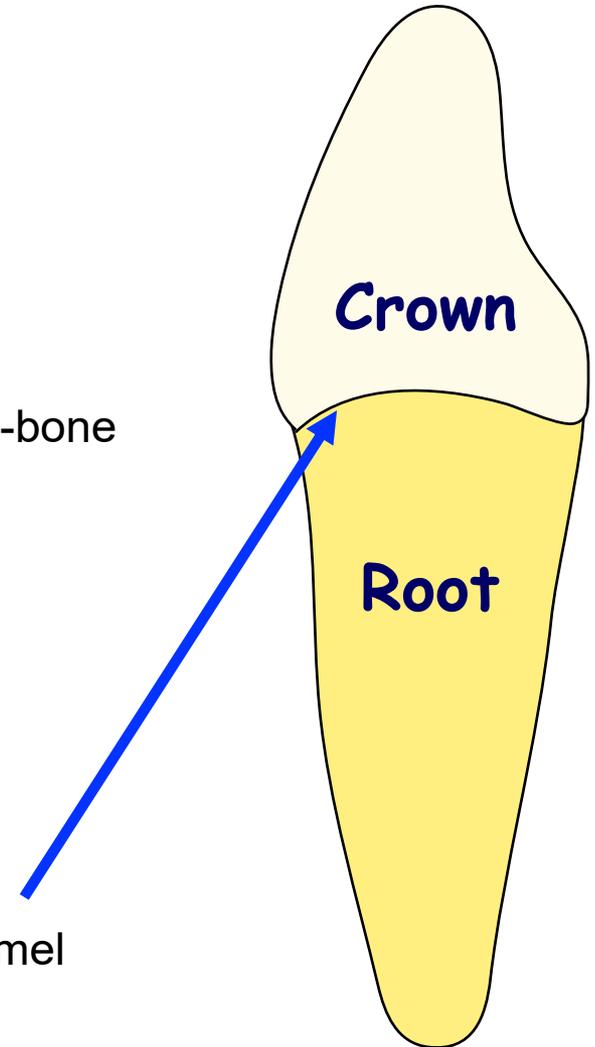
- Crown is the part of the tooth that covered by enamel.
- Crown begin from the tip of the tooth to its neck.

Root:

- Root is the part of the tooth that immersed within the jaw-bone and not seen by the viewer.
- Root is covered by cementum.

Cervical line:

- Cervical line is the line of meeting of crown and root.
- Cervical line is termed neck of the tooth or cemento-enamel junction (CEJ).



Micro-anatomy of teeth

Enamel:

- Enamel is the hard tissue that cover the crown.
- Enamel is the hardest tissue all over the body.

Cementum:

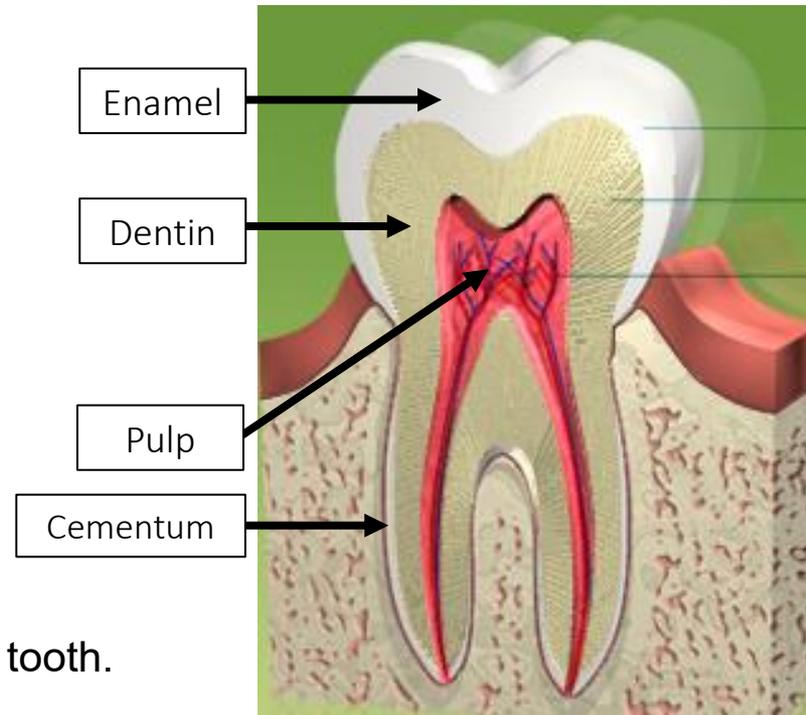
- Cementum is the hard tissue that cover the root.

Dentin:

- Dentin is the hard tissue that form the main bulk of the tooth.
- Dentin is covered by enamel at crown and by cementum at root.
- Dentin surround a central cavity within the tooth termed pulp.

Pulp:

- The dental pulp is a loose delicate connective tissue occupying the cavity in the center of tooth and surrounded by dentin.



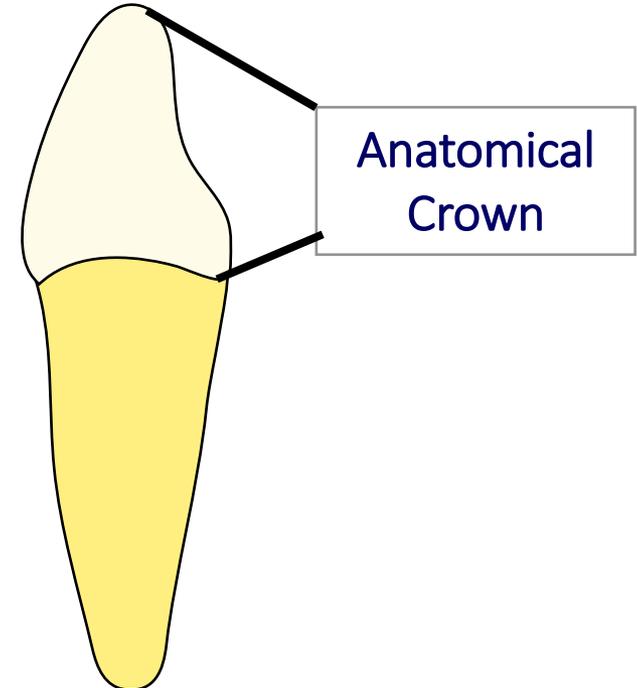
Anatomical crown and clinical crown

Anatomical Crown:

Anatomical crown is the part of the tooth that covered by enamel.

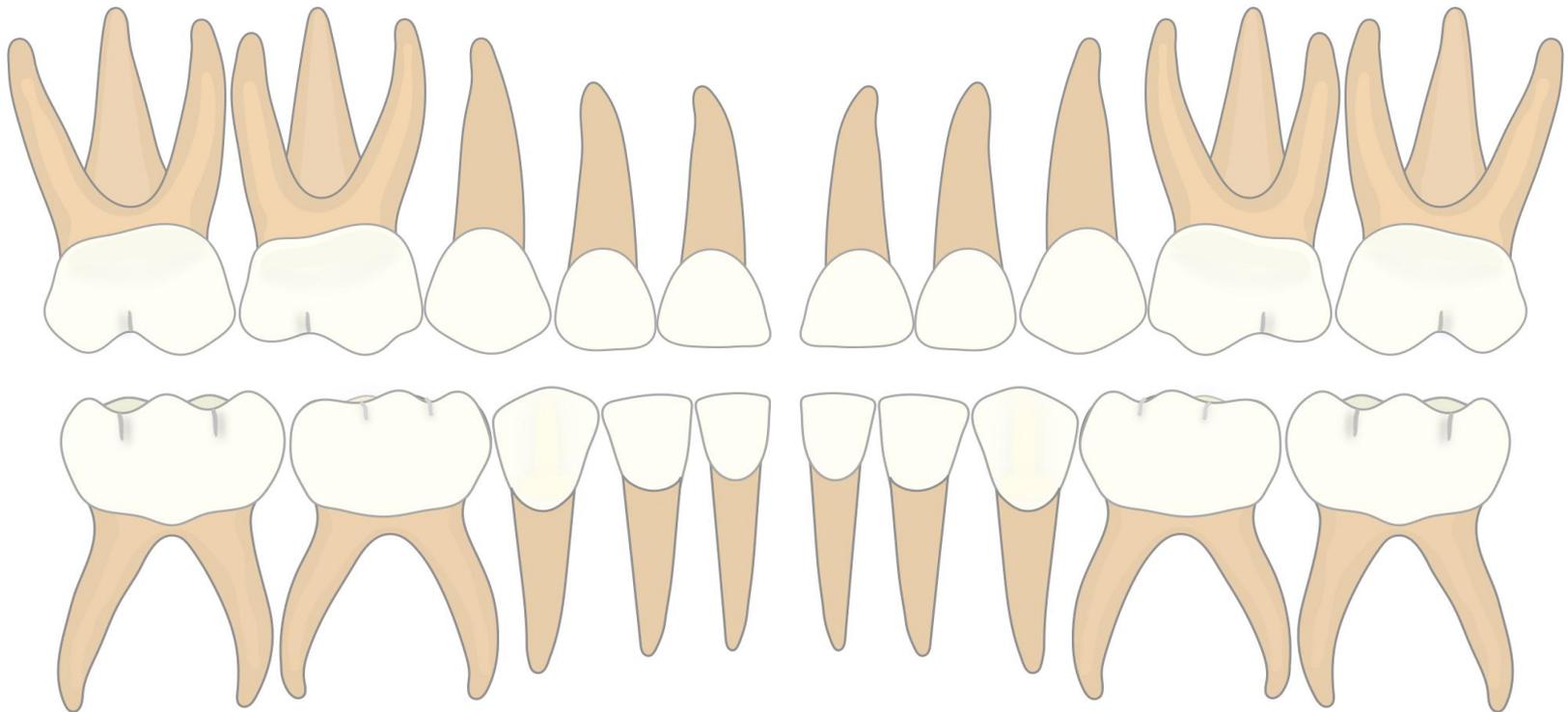
Clinical Crown:

- Clinical crown is the part of the tooth that seen in the oral cavity.
- **Healthy state:** Clinical crown is smaller than anatomical crown.



Root number of deciduous teeth

1. Single rooted teeth: Anterior deciduous teeth.
2. Two rooted teeth: Mandibular deciduous molars.
3. Three rooted teeth: Maxillary deciduous molars.



Root number of permanent teeth

Single rooted teeth:

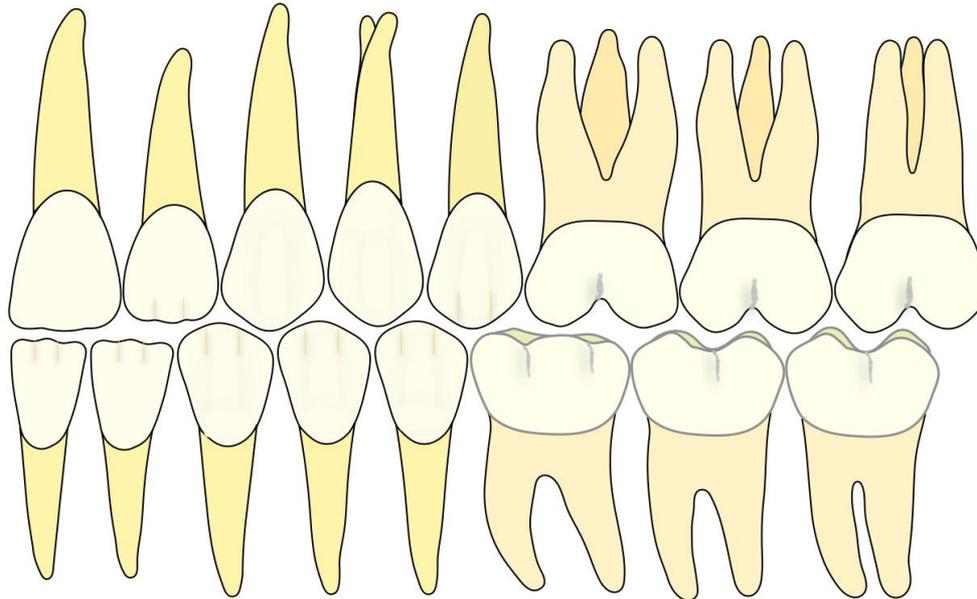
- Anterior permanent teeth.
- Maxillary 2nd premolar.
- Mandibular 1st and 2nd premolars

Two rooted teeth:

- Maxillary 1st premolar.
- Mandibular permanent molars.

Three rooted teeth:

- Maxillary permanent molars.



Surfaces of anterior teeth

- 1. Labial surface:** It is the surface that faced toward the lip.
- 2. Lingual surface:** It is the surface that faced toward the tongue.
- 3. Mesial surface:** It is the surface that faced toward the midline.
- 4. Distal surface:** It is the surface that faced away from midline.
- 5. Incisal surface:** It is the functioning surface of the crown faced toward the opposing teeth.

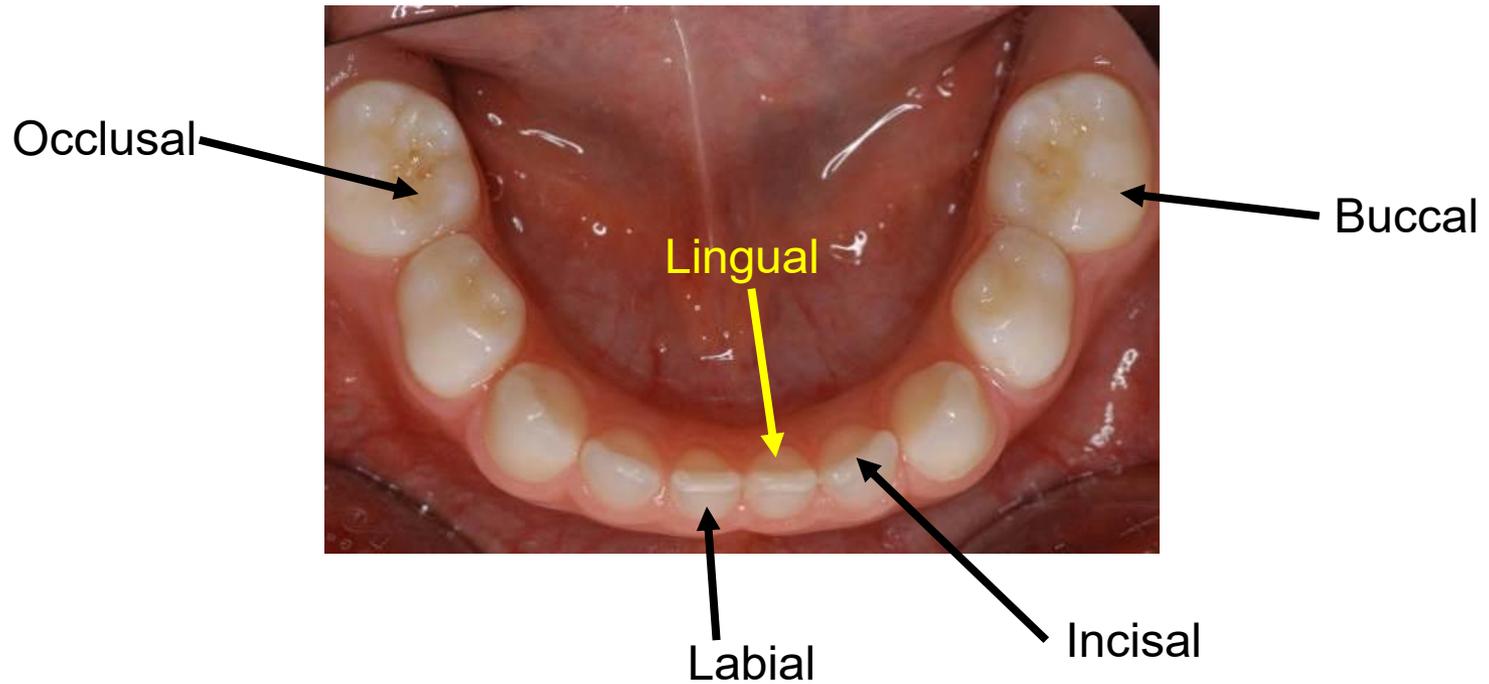
Notes:

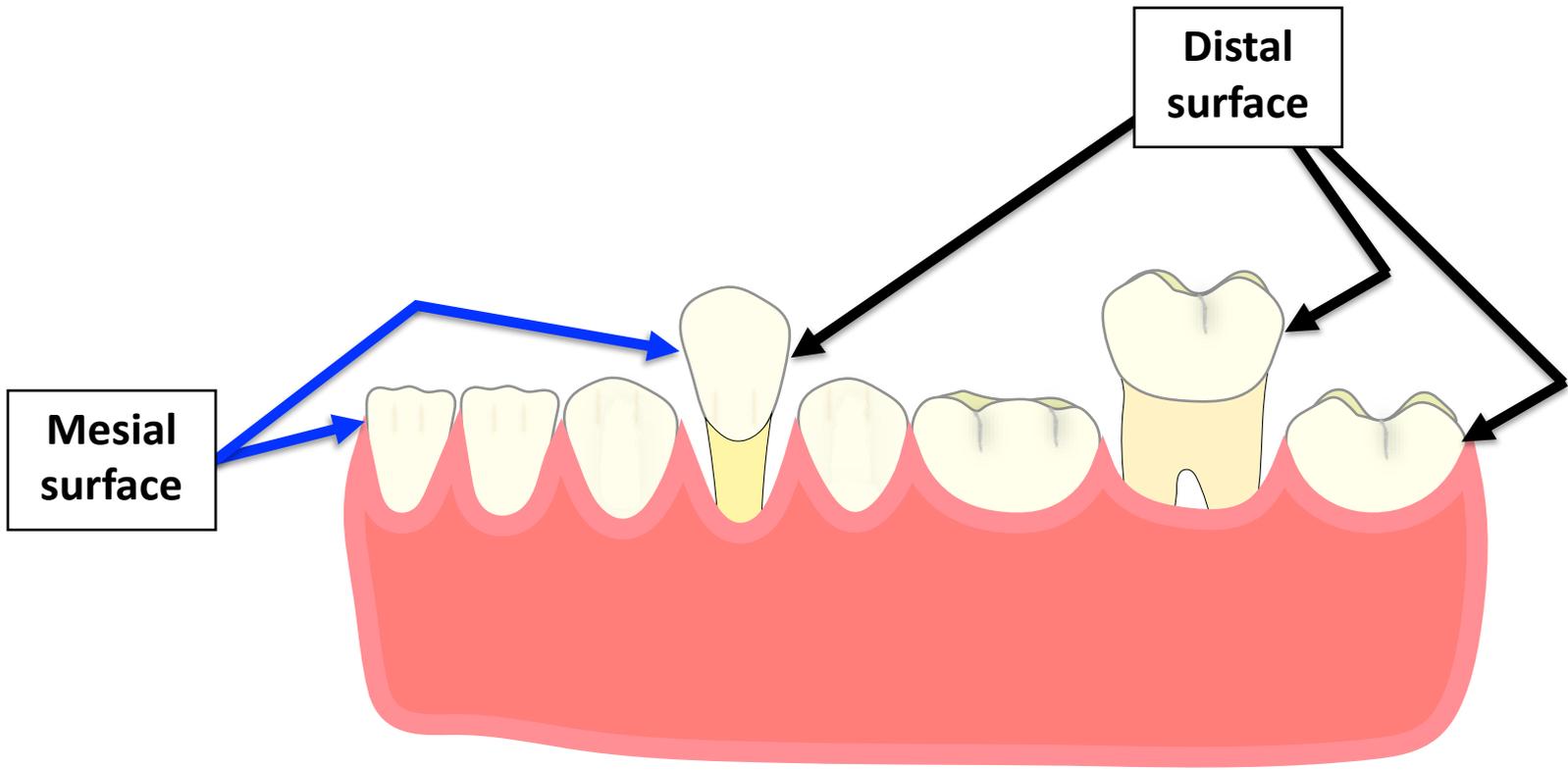
- Both labial and buccal surfaces are termed facial surface.
- All mesial and distal are termed proximal.

Surface anatomy of posterior teeth

1. **Buccal surface:** It is the surface that faced toward the cheek.
2. **Lingual surface:** It is the surface that faced toward the tongue.
3. **Mesial surface:** It is the surface that faced toward the midline.
4. **Distal surface:** It is the surface that faced away from midline.
5. **Occlusal surface:** → That functioning surface of the crown
It is the surface that faced toward the opposing teeth.

Summary of surface anatomy

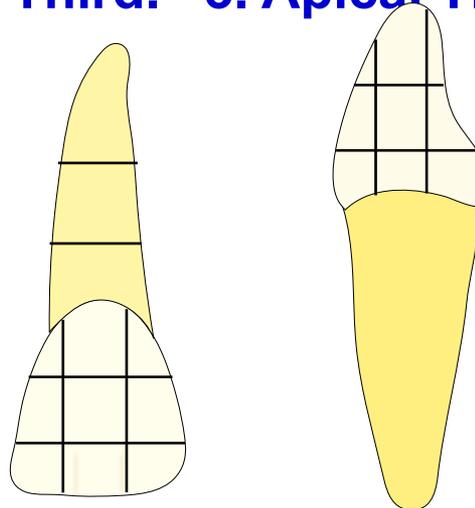




Classification of anterior teeth into thirds

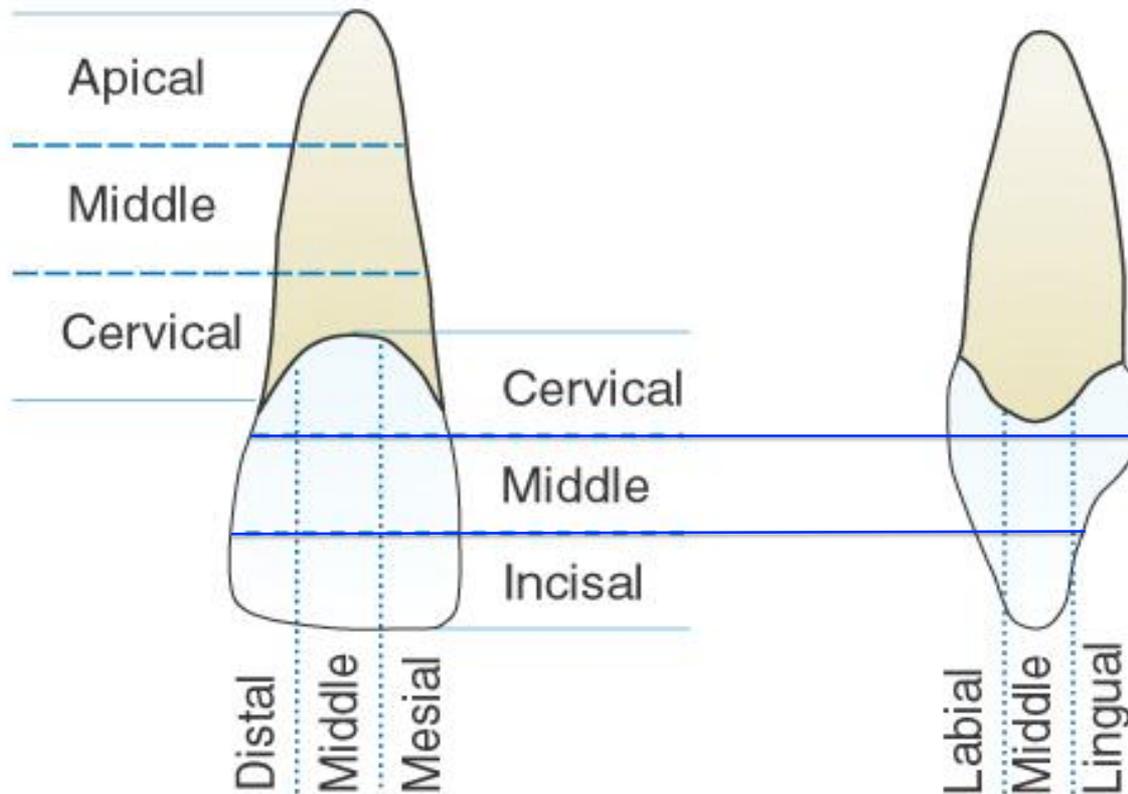
- **Labial and lingual Surfaces**: is classified horizontally into three thirds:
1. Incisal Third. 2. Middle Third. 3. Cervical Third.
- **Labial and lingual Surfaces**: is classified longitudinally into three thirds:
1. Mesial Third. 2. Middle Third. 3. Distal Third.
- **Mesial and distal Surfaces**: is classified horizontally into three thirds:
1. Incisal Third. 2. Middle Third. 3. Cervical Third.
- **Mesial and distal Surfaces**: is classified longitudinally into three thirds:
1. Labial Third. 2. Middle Third. 3. Lingual Third.
- **Root**: is classified horizontally only into three thirds:
1. Cervical Third. 2. Middle Third. 3. Apical Third.

Labial or lingual
surfaces



Mesial or distal
surfaces

Classification Of Anterior Teeth Into Thirds

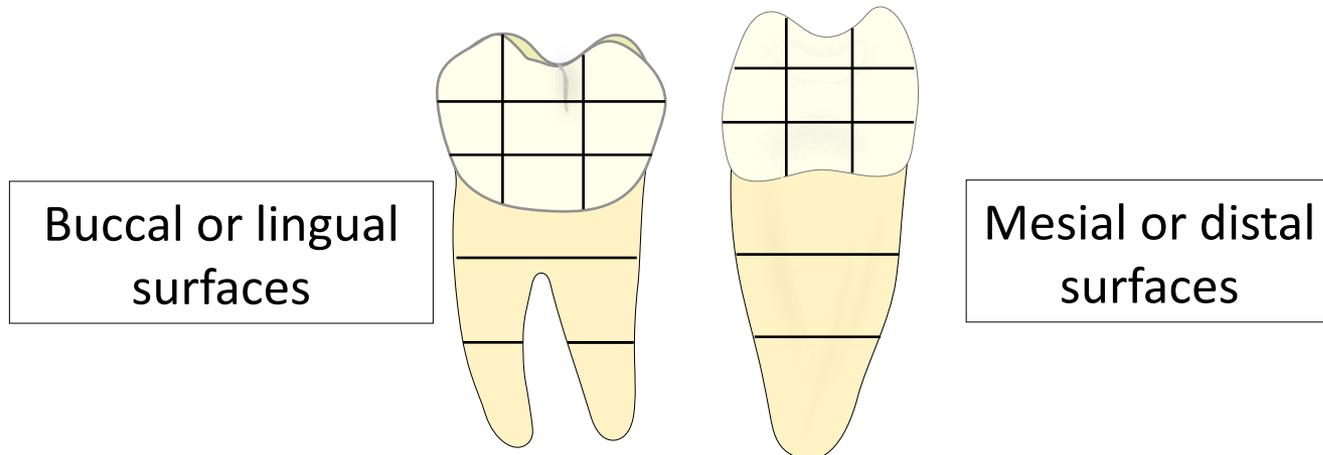


Labial or lingual surfaces

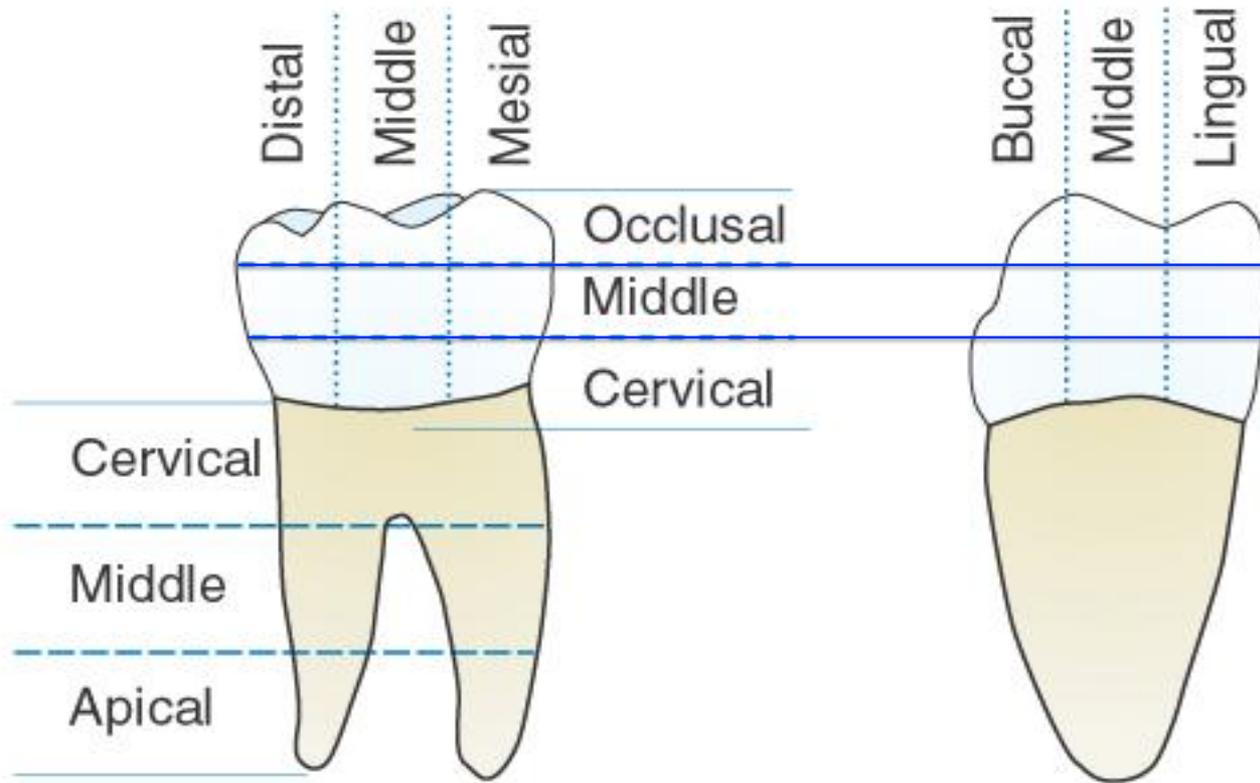
Mesial or distal surfaces

Classification of posterior teeth into thirds

- **Buccal and lingual Surfaces** is classified horizontally into three thirds:
 1. Occlusal Third.
 2. Middle Third.
 3. Cervical Third.
- **Buccal and lingual Surfaces** is classified longitudinally into three thirds:
 1. Mesial Third.
 2. Middle Third.
 3. Distal Third.
- **Mesial and distal Surfaces** is classified horizontally into three thirds:
 1. Occlusal Third.
 2. Middle Third.
 3. Cervical Third.
- **Mesial and distal Surfaces** is classified longitudinally into three thirds:
 1. Buccal Third.
 2. Middle Third.
 3. Lingual Third.
- **Root of all Teeth** is classified horizontally only into three thirds:
 1. Cervical Third.
 2. Middle Third.
 3. Apical Third.



Classification Of Posterior Teeth Into Thirds



Buccal or lingual surfaces

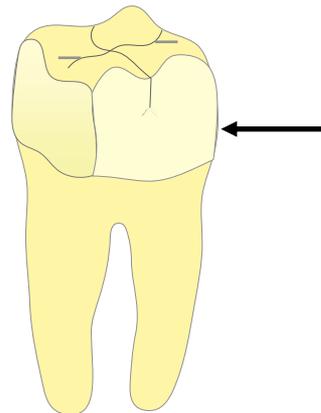
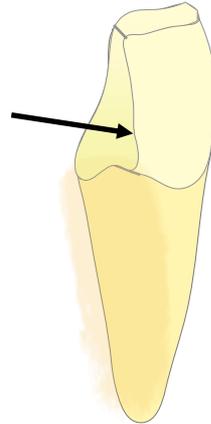
Mesial or distal surfaces

Line angles Of Teeth

- Line angle is the line of meeting of two adjacent surfaces in tooth.
- Line angle is termed by the name to the two surfaces that meet.

Line angles of anterior teeth: 6

1. Mesiolabial line angle.
2. Disto-labial line angle.
3. Mesiolingual line angle.
4. Distolingual line angle.
5. Inciso-labial line angle.
6. Inciso-lingual line angle.



Line angles of posterior teeth: 8

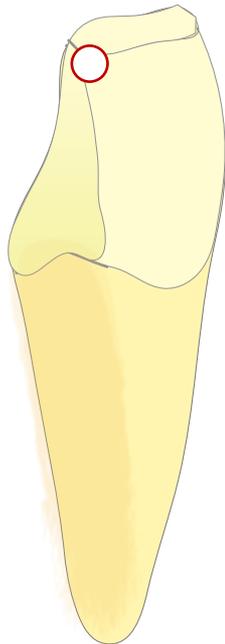
1. Mesio-buccal line angle.
2. Distobuccal line angle.
3. Mesiolingual line angle.
4. Distolingual line angle.
5. Occluso-buccal line angle.
6. Occluso-lingual line angle.
7. Occluso-mesial line angle.
8. Occluso-distal line angle.

Point angles of teeth

Point angle is the **point** of meeting of **three** adjacent surfaces in tooth.

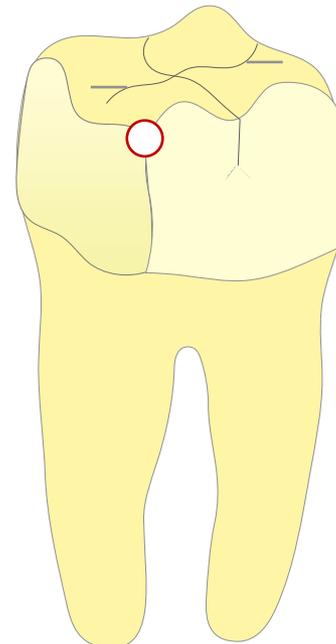
Point angles of anterior teeth: 4

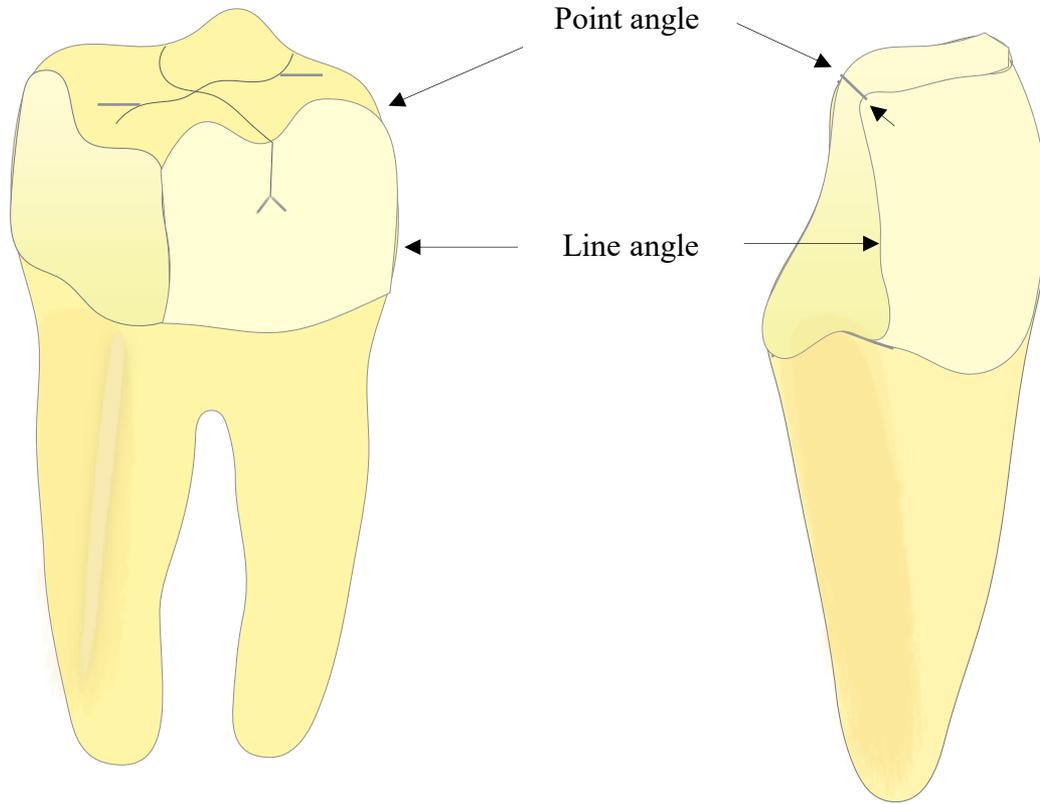
1. Mesio-labio-incisal point angle.
2. Disto-labio-incisal point angle.
3. Mesio-linguo-incisal point angle.
4. Disto-linguo-incisal point angle.



Point angles of posterior teeth: 4

1. Mesio-bucco-occlusal point angle.
2. Disto-bucco-occlusal point angle.
3. Mesio-linguo-occlusal point angle.
4. Disto-linguo-occlusal point angle.





Dental formula

Definition:

Dental formula describe the dentition of right or left side of the mouth (upper and lower).

Aim of the dental formula:

Then dental formula determine the number and types of teeth in both deciduous and permanent dentition.

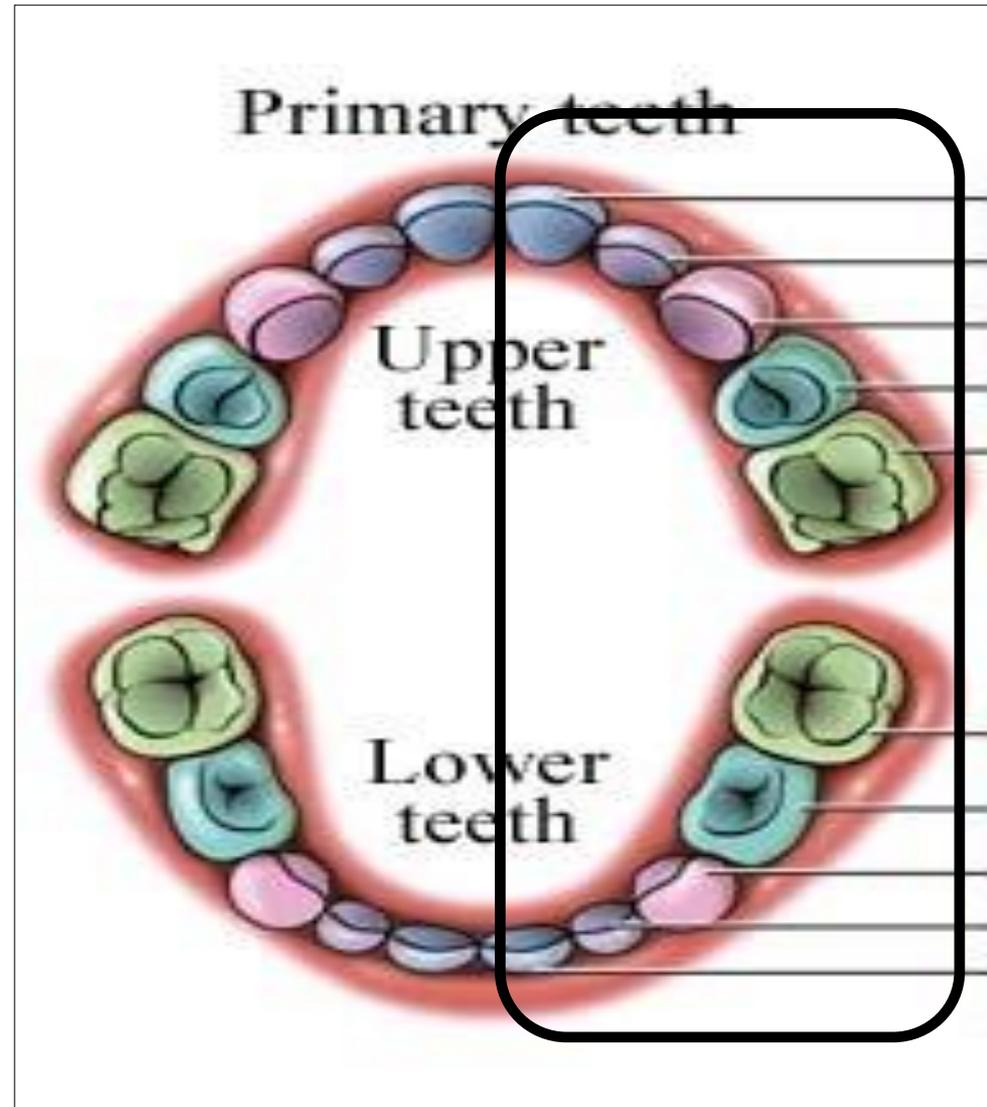
Criteria of dental formula:

Dental formula written by **letter, number and horizontal lines**.

1. The letter designate the type of the teeth eg incisor, canine etc.
2. Horizontal line for each tooth type.
3. Number to designate the teeth in the same type.
 - A) The number above the line mean upper teeth.
 - B) The number below the line mean lower teeth.

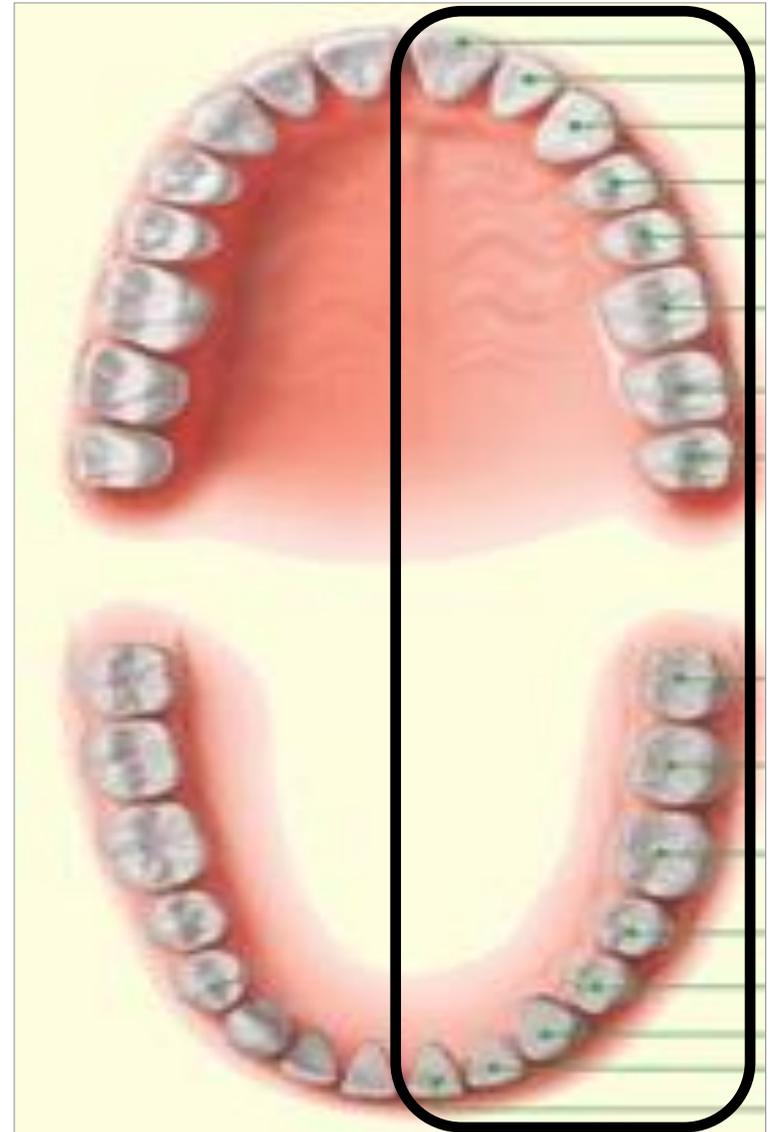
Dental Formula of Deciduous Teeth

$$I \frac{2}{2} \quad C \frac{1}{1} \quad M \frac{2}{2}$$



Dental Formula of permanent Teeth

$$I \frac{2}{2} \quad C \frac{1}{1} \quad P \frac{2}{2} \quad M \frac{3}{3}$$



welcome