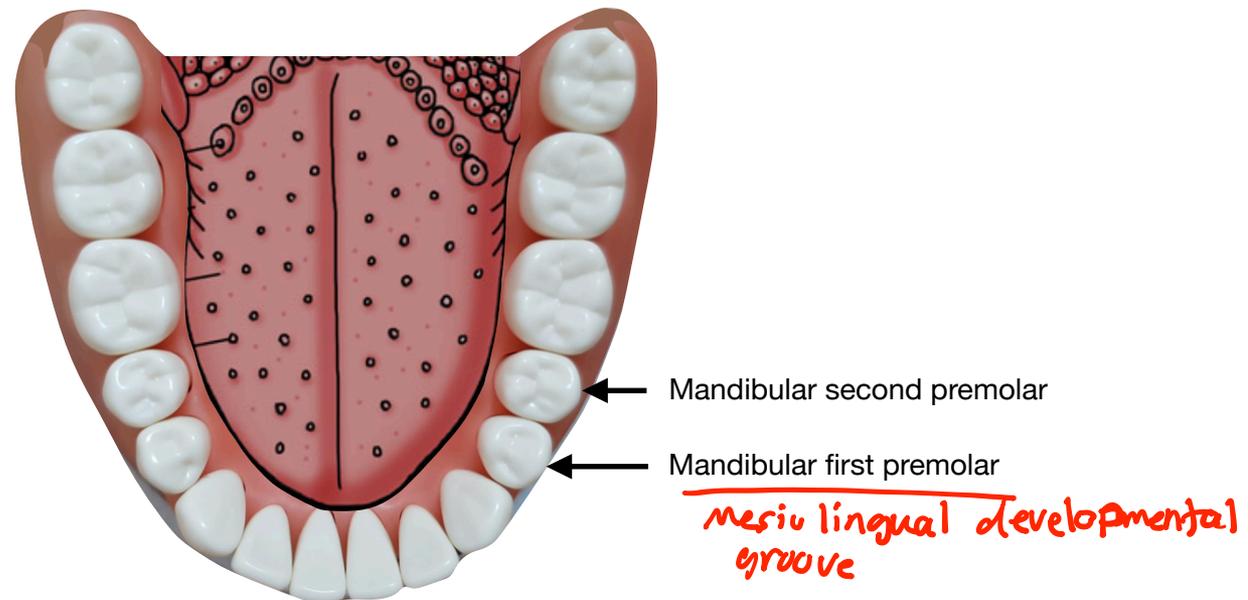


Mandibular Premolars

* General knowledge:

- Each quadrant of the mandible has first and second premolars.
- The first premolar is distal to canine, then the second premolar is distal the first one.
- Premolars are succedaneous teeth that replace the primary first and second deciduous molars.
- The buccal surface of the premolars contain buccal ridge in the center of the crown.

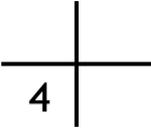
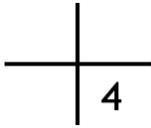


Mandibular First Premolar

Chronology

Begin Of Dental Organ	7 M.I.U.
Begin Of Calcification	1.75 - 2 Years
Crown Completed	5 Years.
Eruption	10-11 Years.
Root Completed	13 Years.

Numbering system

Mandibular right first premolar	Mandibular left first premolar
	
28	21
# 44	# 34

Buccal Aspect

- ❑ **Geometrical outline:** Trapezoid.
 - Short side is directed cervical and long side is directed occlusal.
- ❑ **Mesial outline:**
 - Slightly concave from cervical line to contact area.
 - Mesial contact area set between occlusal and middle thirds.
- ❑ **Distal outline:**
 - Slightly concave from cervical line to contact area.
 - Distal contact area set at the middle third.
- ❑ **Occlusal outline:** One buccal cusp.
 - The mesial slope is shorter than the distal slope.
 - The buccal cusp tip lie mesial to the center of the tooth.
- ❑ **Crown elevations:** Cervical ridge and buccal ridge.
- ❑ **Crown depressions:** Two buccal developmental grooves.
- ❑ **Root:** One root seen buccally (cone shape with distal inclination).

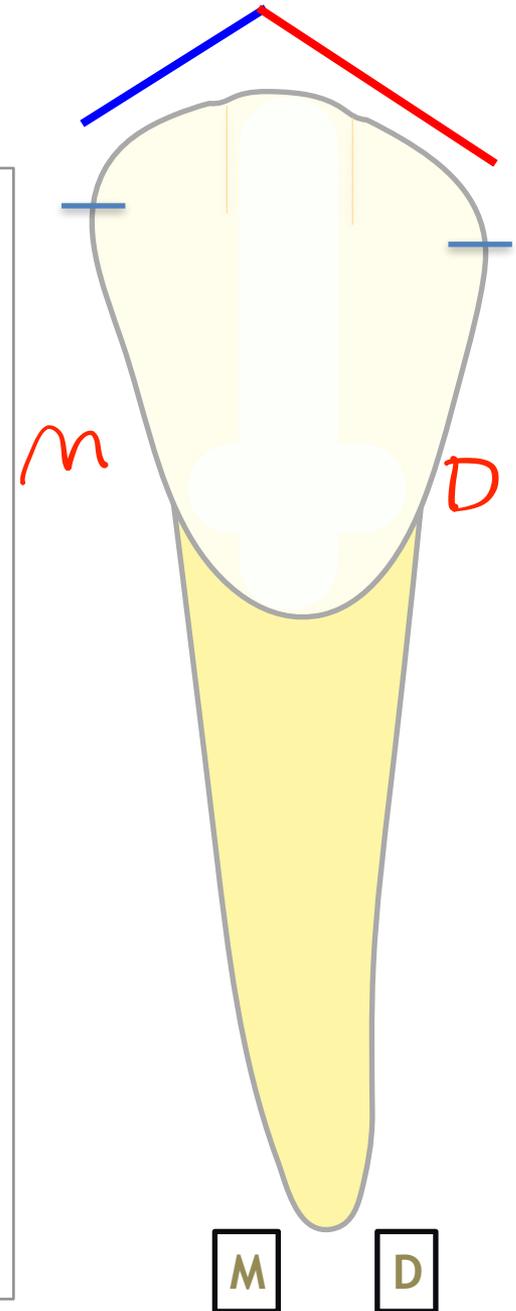
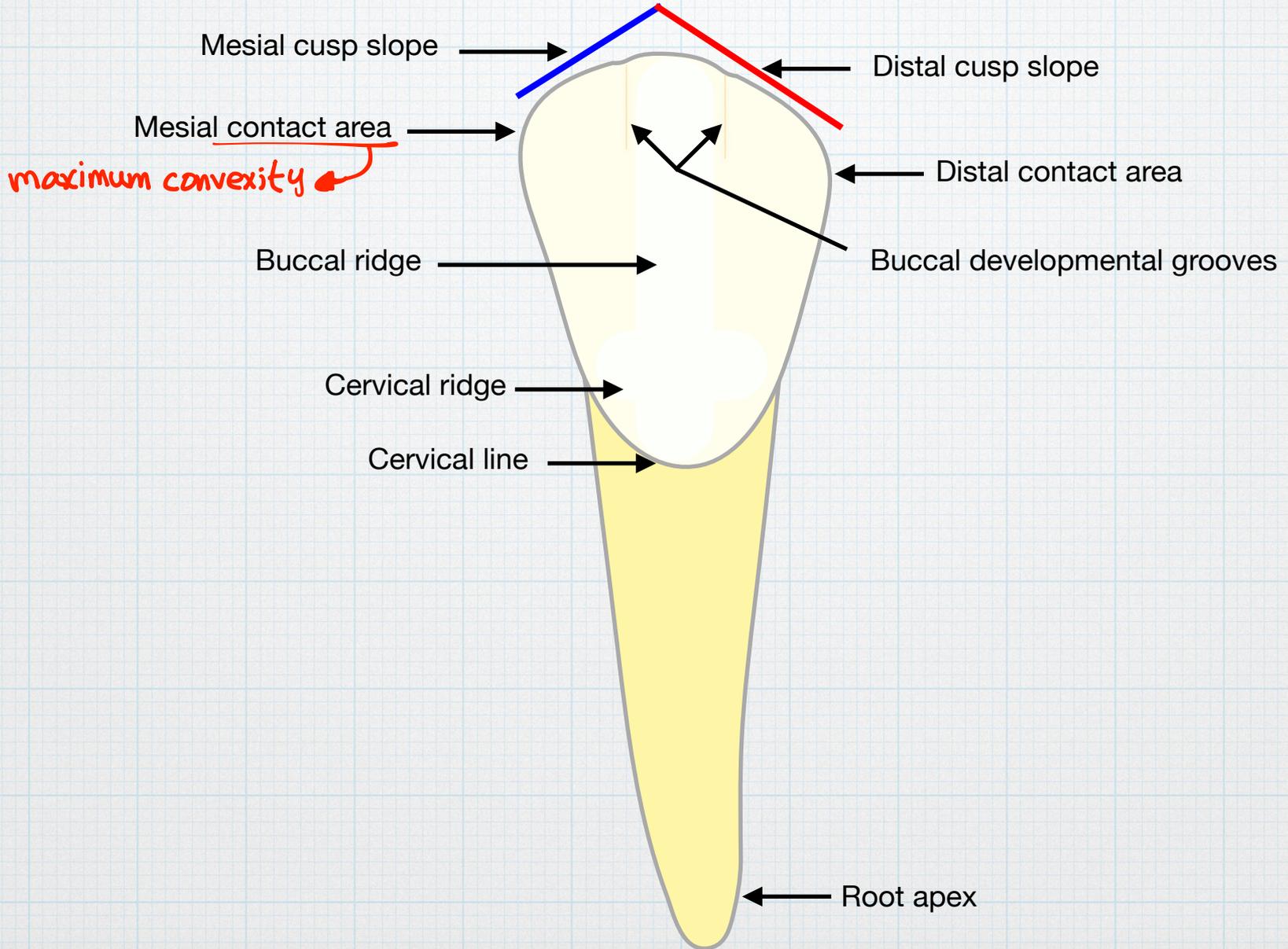


Diagram of buccal aspect



Lingual Aspect

□ Similar to the buccal aspect ' except:

- The crown more converge Lingually.
- The lingual cusp is about 2/3 of buccal cusp length.
- The mesial and distal triangular fossae on the occlusal can be seen.
- The lingual surface is spheroid.
- Cervical line is slightly convex toward root or straight.
- A characteristic feature of the lingual surface is presence of:----

Mesiolingual Developmental Groove.

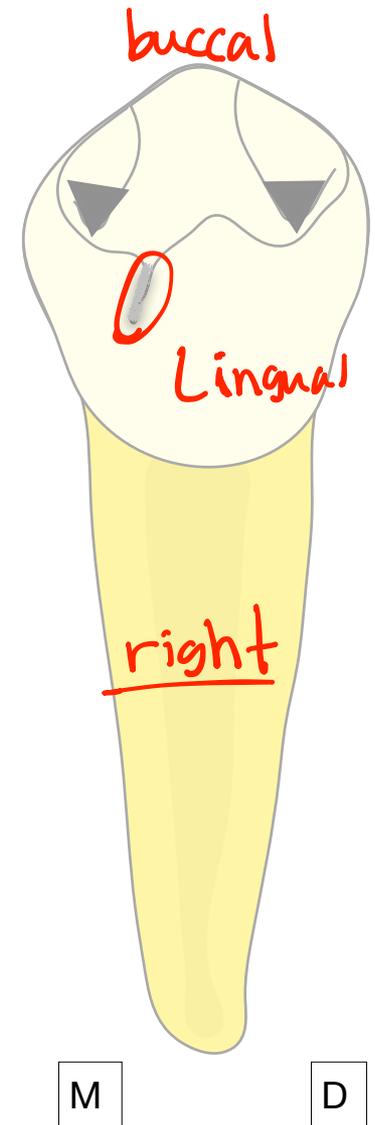
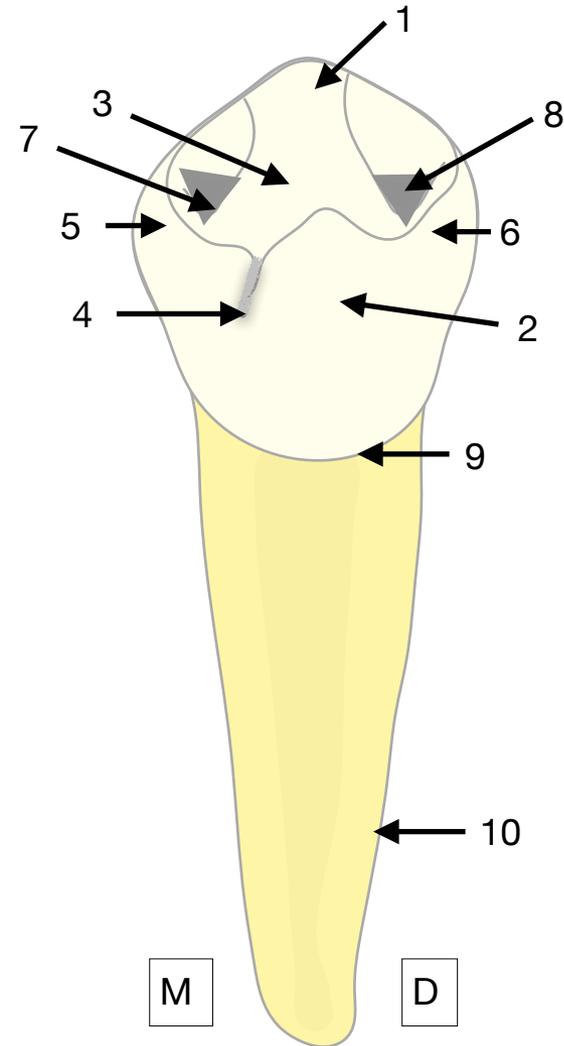


Diagram of lingual aspect

1. Buccal cusp.
2. Lingual cusp.
3. Transverse ridge.
4. Mesiolingual developmental groove.
5. Mesial marginal ridge.
6. Distal marginal ridge.
7. Mesial triangular fossa.
8. Distal triangular fossa.
9. Cervical line.
10. Root.



Mesial Aspect

contact area of anterior teeth?
centered in labiolingual direction

- ❑ **Geometric Shape:** Rhomboidal in shape. *لوانة الجوانب اللسانية*
- Rhomboid in shape due to the lingual inclination.

- ❑ **Buccal outline:**

- Convex with the maximum convexity at cervical 3rd.

- ❑ **Lingual outline:**

- Convex with the maximum convexity at the middle 3rd.

- ❑ **Occlusal outline:**

- Both buccal and lingual Cusps Are Seen.
- The lingual cusp is 2/3 of the buccal cusp length.
- Buccal cusp tip is in line with the root apex.
- The lingual cusp tip is in line with the lingual surface of the root.

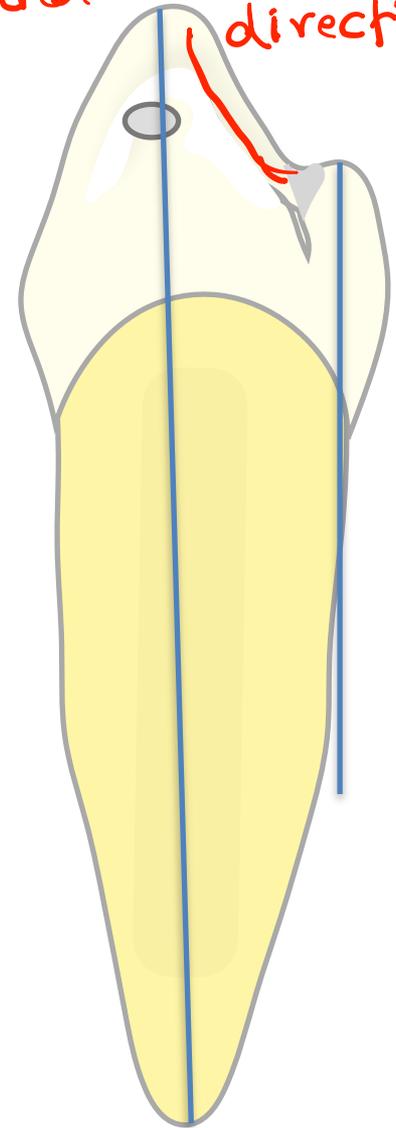
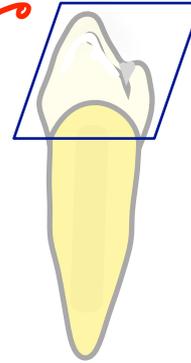
- ❑ **Contact area:**

- Located at the junction between occlusal and middle third.
- Contact area is located more buccally in line with buccal cusp tip.

- ❑ **Mesial marginal ridge:** Sloped lingually.

- ❑ **Mesio-lingual developmental groove:** Seen from the mesial aspect.

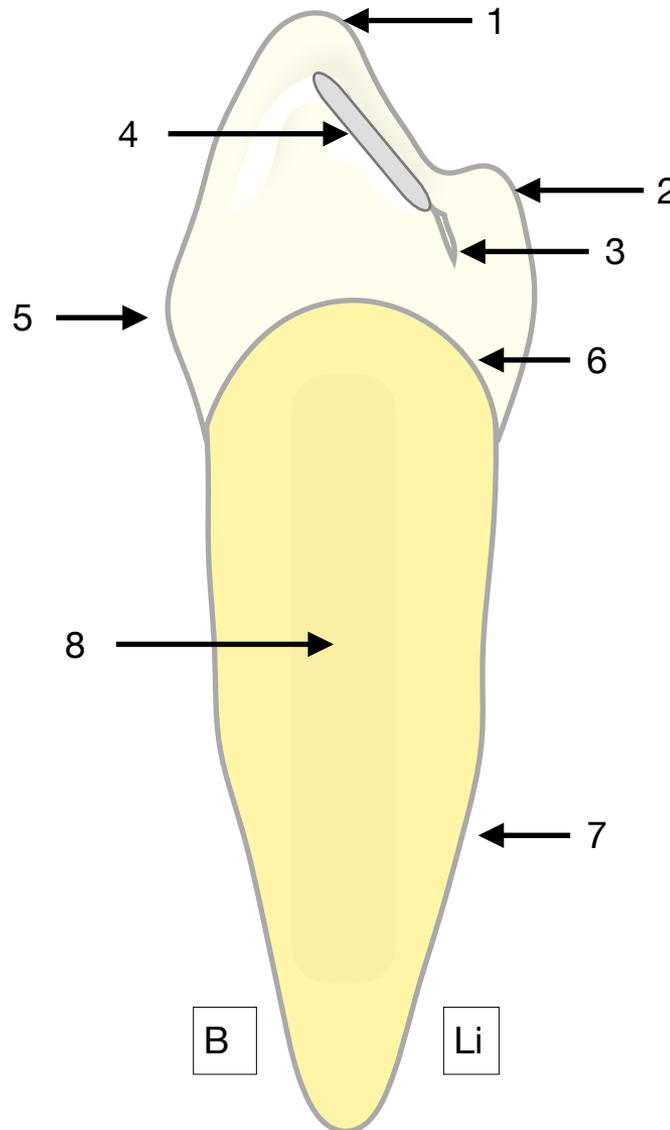
- ❑ **Cervical line:** Convex toward the crown.



زاوية الحافة اللسانية الحادة mca
cervico buccal angle / occluso lingual angle

Diagram of mesial aspect

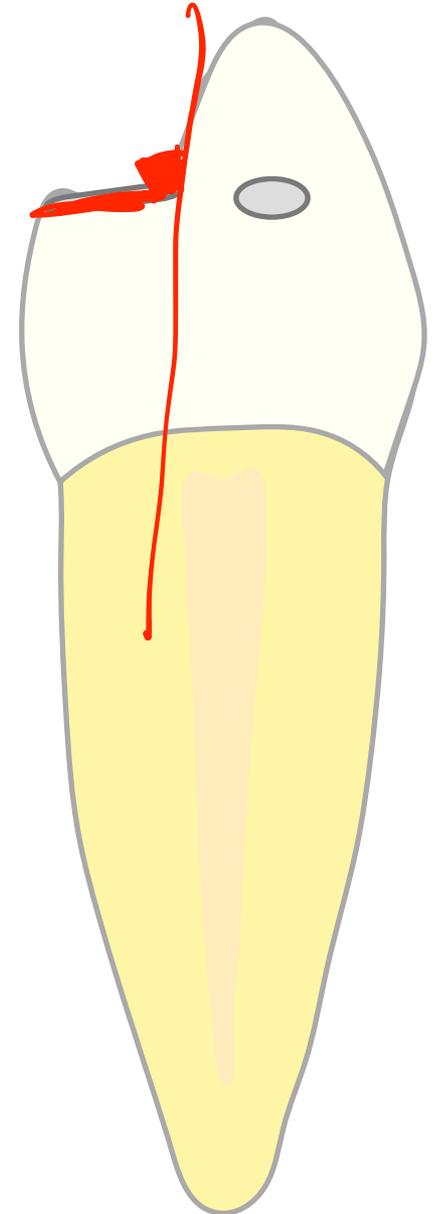
1. Buccal cusp.
2. Lingual cusp.
3. MLDG.
4. Mesial marginal ridge.
5. Cervical ridge
6. Cervical line.
7. Root.
8. MDD.



Distal Aspect

Differs from mesial aspect in :

- 1- Distal marginal ridge is straight and perpendicular to the long axis of the tooth.
- 2- No mesiolingual developmental groove.
- 3- The contact area is broader and more cervically than in mesial.
- 4- Cervical line is less curved.



Occlusal Aspect

❑ Geometrical shape:

- Round in shape → similar to maxillary second premolar

❑ Crown Elevations:

1. Buccal and Lingual cusps.
2. Mesial and Distal marginal ridges.
3. Transverse ridge connect between buccal and lingual cusps.

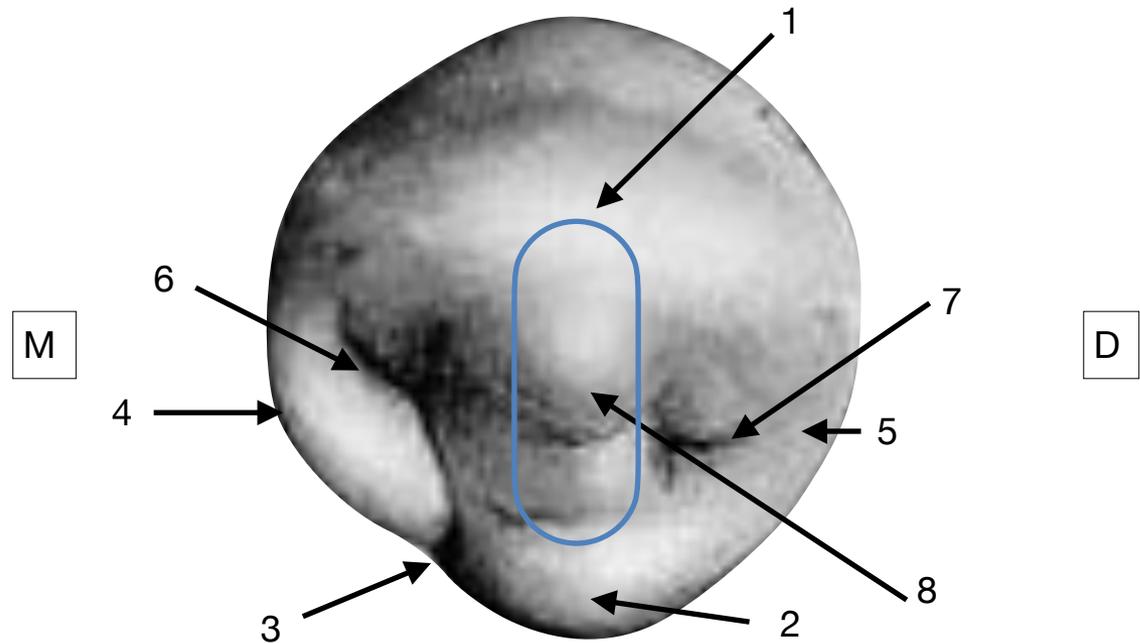
❑ Crown Depressions:

1. Central developmental groove may cross the transverse ridge.
2. Distal and mesial triangular fossa.
3. Distal and mesial developmental pit.
4. Mesiolingual developmental groove.



Diagram of occlusal aspect

1. Buccal cusp.
2. Lingual cusp.
3. MLDG.
4. Mesial marginal ridge.
5. Distal marginal ridge
6. Mesial triangular fossa.
7. Distal triangular fossa.
8. Transverse ridge.

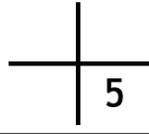


Mandibular second Premolar

3 cusp:

1 buccal → 3 lobe
 2 lingual → 2 lobe → 5 lobes

Chronology	
Begin Of Dental Organ	8 M.I.U.
Begin Of Calcification	2.25 - 2.5 Years
Crown Completed	5-6 Years.
Eruption	10-12 Years.
Root Completed	13 Years.

Numbering system	
Mandibular right second premolar	Mandibular left second premolar
	
29	20
# 45	# 35

root

Buccal Aspect

* Geometrical outline: Trapezoid.

- Short side is located cervically and long side is occlusally.

* Mesial and Distal Outline:

- Slightly concave from cervical line to contact area.
- Both mesial and distal contact area set at the occlusal third.

* Occlusal Outline:

- One buccal cusp is seen.
- The mesial slope is shorter than the distal slope.
- The buccal cusp tip lie mesial to the center of the tooth.

* Surface anatomy:

- Convex at buccal ridge and cervical ridge.
- Mesiobuccal and distobuccal developmental grooves.

- * Root: one conical root show distal inclination.

mandibular central incisor
الفردق أنه بار incisur بنفكي
• incisal 1/3



Lingual Aspect

* Types of mandibular second premolar:

1. Three Cusp Type (one buccal and two lingual cusps).
2. Two Cusp Type (one buccal and one lingual cusps).

* Crown outlines: similar to the buccal aspect.

* Crown is less converge Lingually: than first premolar.

* Lingual cusps: shorter than the buccal cusp.

* In case of three cusp type:

- Mesiolingual cusp is larger and wider than distolingual cusp.
- The two lingual cusps are separated by lingual developmental groove.

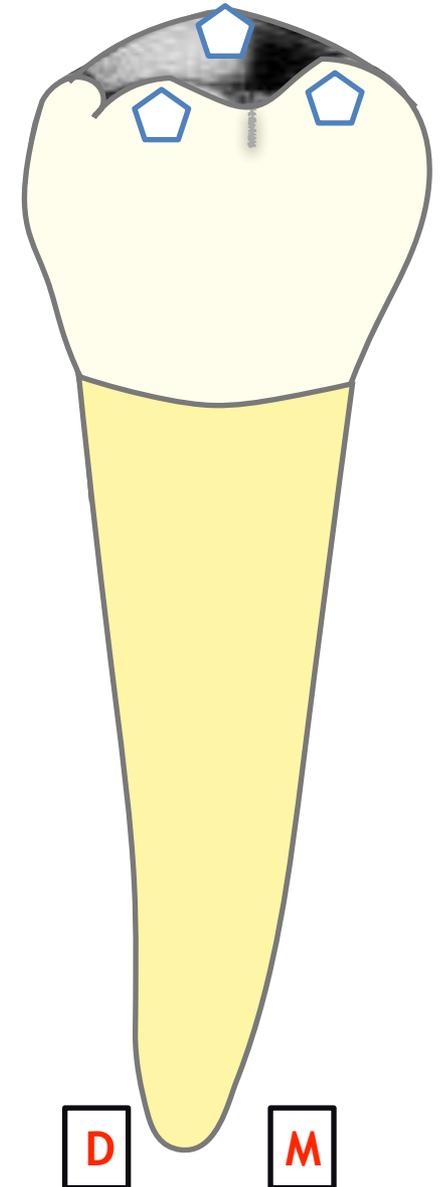
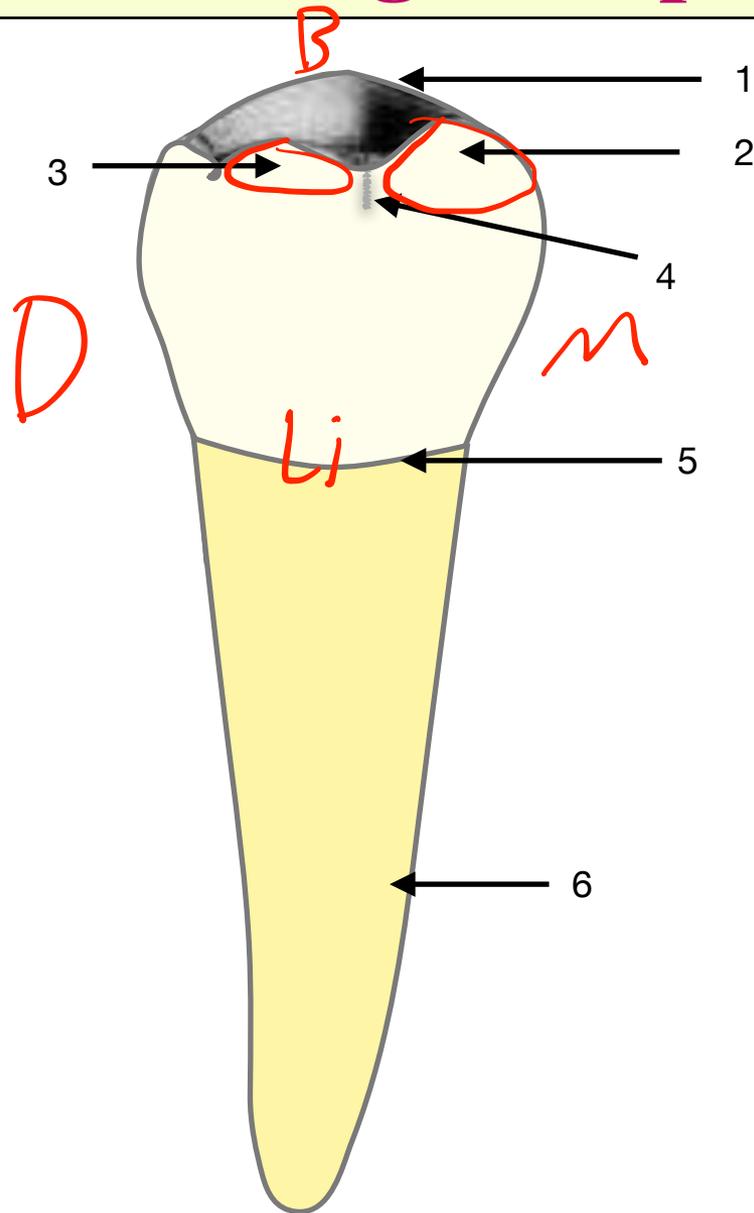


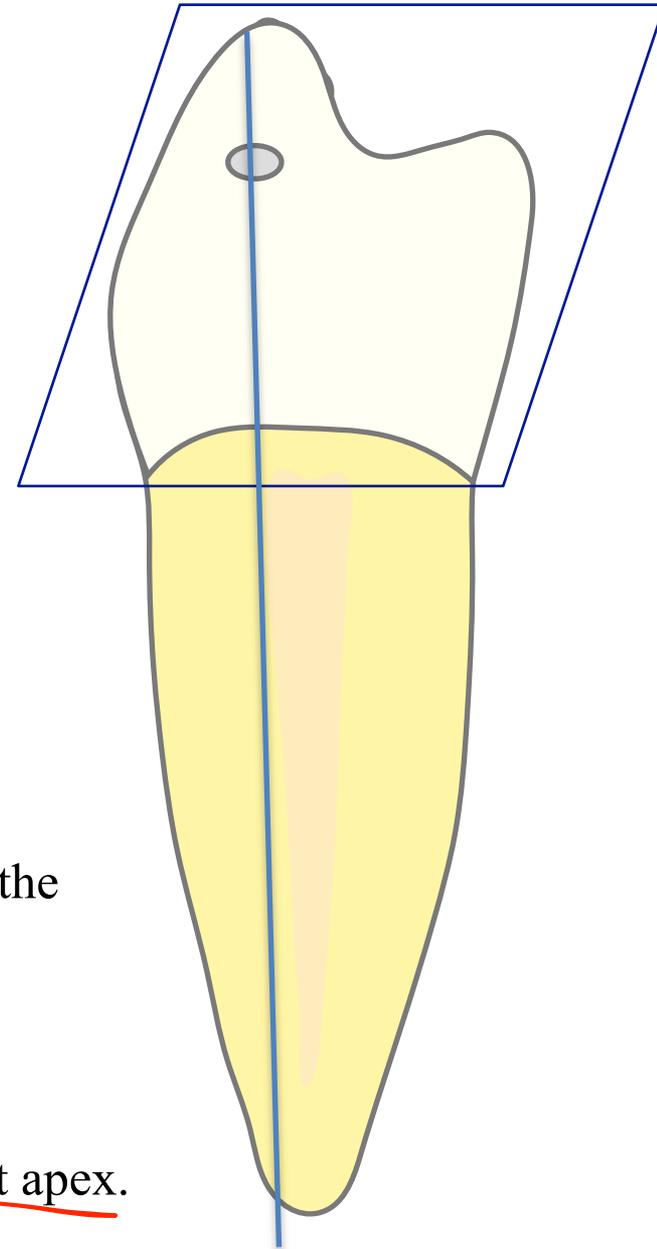
Diagram of lingual aspect



1. Buccal cusp.
2. Mesiolingual cusp.
3. Distolingual cusp.
4. LDG.
5. Cervical line.
6. Root.

Mesial Aspect

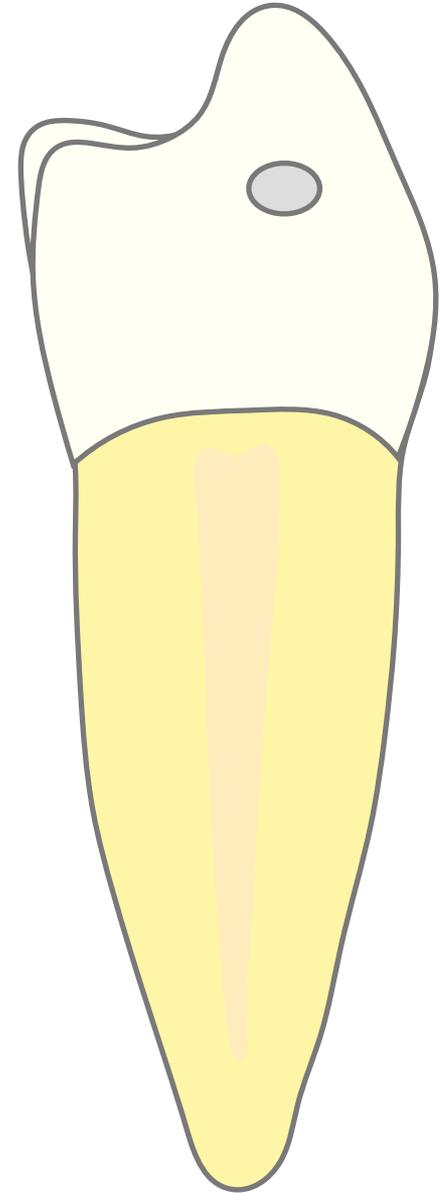
- * **Geometric Shape:** *mandibular first premolar 5 j*
- * **Rhomboid** in shape due to the **lingual inclination**.
- * **Buccal outline:**
 - Convex , Maximum at cervical third.
- * **Lingual outline:** Convex, maximum at occlusal third.
- * **Buccal cusp tip:** Lie buccal to root apex.
- * **Lingual cusp:** Well developed.
- * **Mesial marginal ridge:** Is straight and perpendicular to the long axis.
- * **Mesial contact area:** Broad and located buccally.
- * **Root:** is longer than mandibular first premolar with blunt apex.



Distal Aspect

*Similar to the mesial surface but differs in:

1. In Three cusp type: all cusps are seen.
2. The distal marginal ridge present more cervically.
3. The contact area is broader and more cervically.
4. The distal cervical line is less curved.



Three Cusp Type

السنة الوحيدة شكلها square



● Geometrical Shape: Square.

● Crown Elevations:

1. **Three cusps:**

- It has three cusps (buccal, mesiolingual and distolingual)
- Buccal cusp is the widest one.
- The mesiolingual cusp is larger than the distolingual cusp.

2. **Transverse ridge:** mca

Run between buccal and mesiolingual cusps.

3. **Mesial and Distal marginal ridges.**

● Crown depressions:

1. Central developmental groove.

2. Lingual developmental groove.

• Both grooves make Y shaped grooves.

3. Central fossa and pit.

4. Mesial and distal triangular fossae and pits.

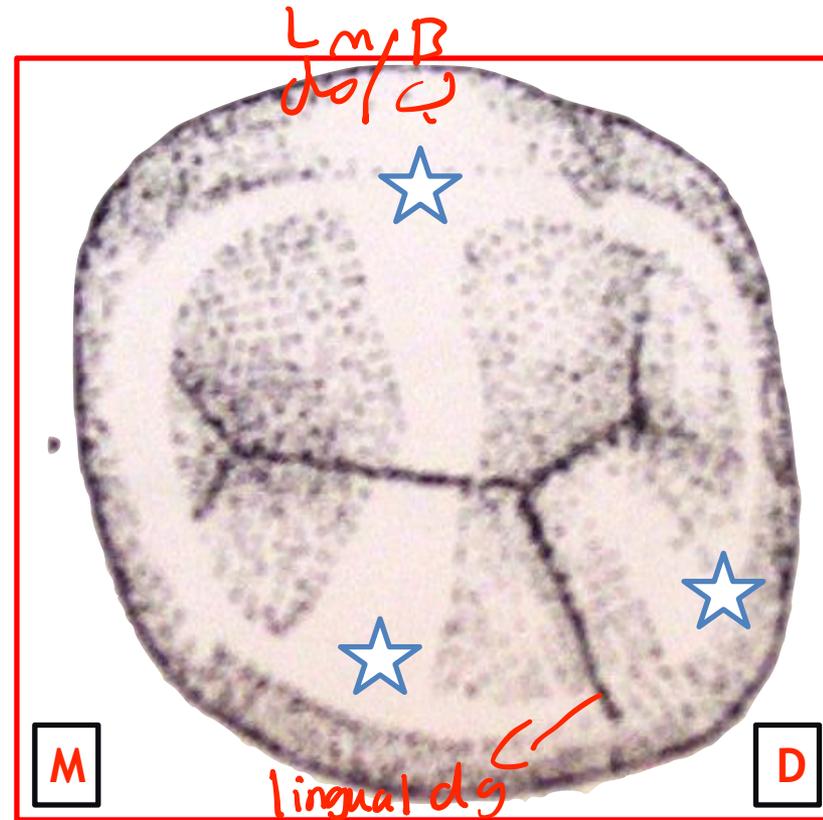
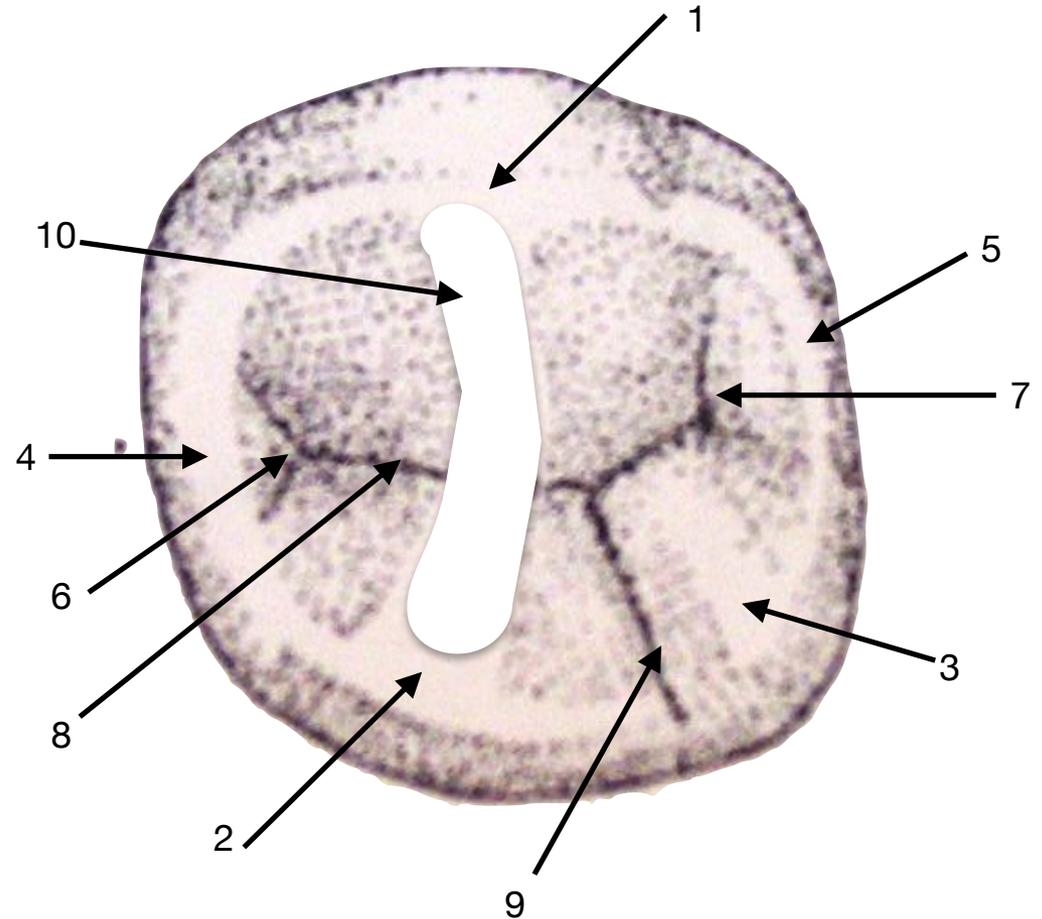


Diagram of occlusal aspect with three cusps

1. Buccal cusp.
2. Mesiolingual cusp.
3. Distolingual cusp.
4. Mesial marginal ridge.
5. Distal marginal ridge
6. Mesial triangular fossa.
7. Distal triangular fossa.
8. Central developmental groove.
9. Lingual developmental groove.
10. Transverse ridge.



M

D

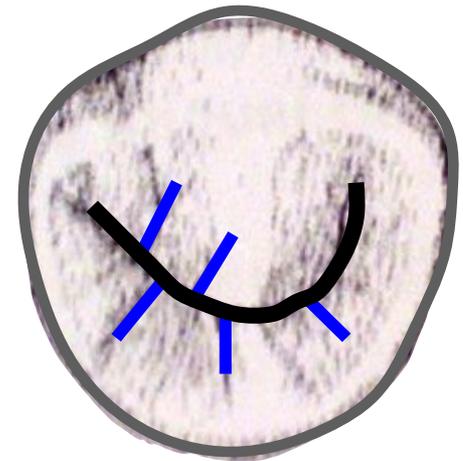
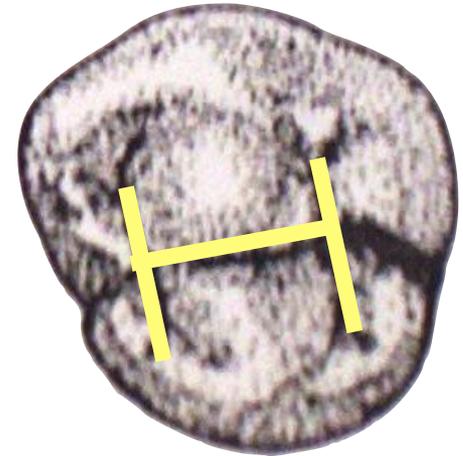
Two Cusp Type

- Geometrical Shape: Round.

- It has one large buccal cusp and other small lingual cusp.
- There is lingual convergence.
- Transverse ridge run between buccal and lingual cusps.

mca

- Central developmental groove: may be H or U shape.
- Occlusal surface has supplemental grooves.
maxillary second premolar 5j
- The mesial and distal fossae are round.



CA: Contact Area

Mandibular first premolar

- ① MCA → junction between occlusal and middle 1/3
- ② DCA → middle 1/3
- ③ Mesial aspect → m marginal ridge sloped lingually
- ④ D marginal ridge → straight and perpendicular to tooth axis
- ⑤ Lingual aspect → has mesio lingual developmental groove
- ⑥ root is shorter
- ⑦ crown lingual convergence is more than 2 premolar
- ⑧ occlusal aspect → round

Note: occlusal aspect → round in:

- ① Mandibular first premolar
 - ② Maxillary second premolar
 - ③ Mandibular second premolar (2 cusp type)
- * a tooth that can be extracted using a rotational movement → Mandibular first premolar

Mandibular second premolar

- MCA → occlusal 1/3 → buccally
- DCA → occlusal 1/3
- Mesial aspect → m marginal ridge straight and perpendicular to tooth axis
- D marginal ridge → more cervically
- NO mesio lingual developmental groove
- root is longer
- Crown lingual convergence is less than 1 Premolar
- occlusal aspect → 3 cusp type → square
→ 2 cusp type → round

Note → in canines, premolars either mandibular or maxillary the mesial slope is shorter than distal slope except:

- * Maxillary first premolar → mesial slope is longer than distal slope.

☆ Labio-lingual thickness is greater than mesio-distal diameter in all teeth except:

Maxillary central incisor → smaller يتكون.