300 DA facts for NBDE I (*updated by Kris*)

DENTITION TERMS

1. **Human** dentition described in 2 ways:
    a. **Heterodont** = "different teeth" (molars, premolars, canines, incisors)
    b. **Diphyodont** = "two sets of teeth" (primary & permanent)
2. Monophyodont = "one set of teeth"
3. Polyphyodont = "teeth continually being replaced" (fish, amphibians, reptiles)
4. Homodont = "teeth are all alike"
5. Hypsodont = "long teeth"

PRIMARY DENTITION

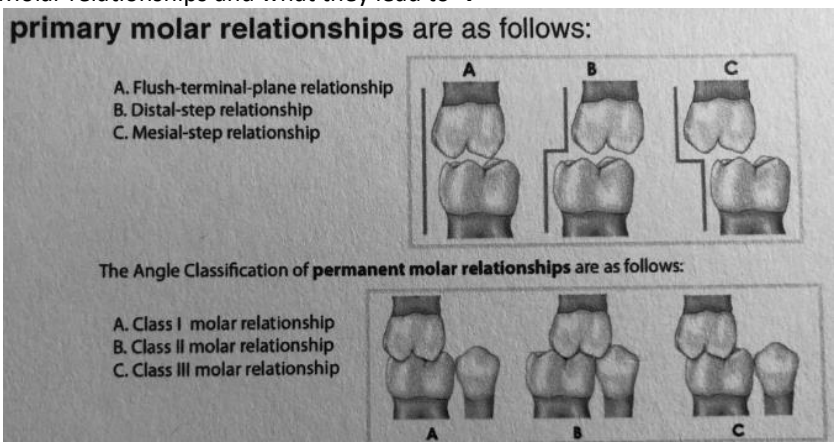
6. **4 months in utero = development of hard tissues**
7. 20 Teeth; 5 in each quadrant: CI, LI, K9, M1, M2
    a. aj → kt
        i. Maxillary: abcde_fghij
        ii. Mandibular: tsrqp_onmlk

INITIATION (Tooth buds from lamina dura)		**MINERALIZATION**		**ERUPTION** CI → LI → M1 → K9 → M2	
Tooth	**Weeks in utero**	**Tooth**	**Weeks post-partum**	**Tooth**	**Months**
CI	6	CI	14	Mand CI	6-10
LI	6	M1	15	Max CI	8-12
M1	6	LI	16	*Max LI*	*9-13*
K9	7	K9	17	*Mand LI*	*10-16*
M2	8	M2	19	*Max M1*	*13-19*
				Mand M1	*14-18*
		Cusps	*MB, ML, DB, DL* *One mineralization center for anterior teeth	Mand K9	16-22
				Max K9	17-23
				Mand M2	21-31
				Max M2	25-33

8. Less mineralized = more worn
9. **Root apex is funnel shaped post-eruption**
10. **Root formation completed 1.5-years post-eruption**
11. **Calcification primary roots normally completed at 3-4 years of age**
12. Larger pulps and pulp horns than permanent teeth
13. Thinner enamel & dentin than permanent teeth
14. **The direction of primary enamel rods in the cervical third is in an occlusal direction**
15. Cervical ridge/bulge
    a. Anterior: F & L
    b. Posterior: F
16. **PRIMARY CROWNS ARE WIDER MD THAN IC**
17. The primary spacing for anterior teeth most frequently caused by growth of arches
18. **Primate space in maxilla: between lateral and canine**
19. **Primate space in mandible: between canine and M1**
20. Difference in space from the primary to permanent is 2-4mm
21. Incisor liability: difference in width between primary and permanent incisors (7mm/5mm)
    a. Baume Type 1 (spaced)
    b. Baume Type 2 (non-spaced)
    c. Primary spacing & outcome predictors
        i. Spacing 3-6mm= no transitional crowding
        ii. Spacing <3mm = 20% incisor crowding
        iii. No spacing= 50% incisor crowding
        iv. Crowded incisors= 100% crowding
22. In delayed resorption of primary incisors, the permanent incisors usually erupt lingually (shark teeth)
23. The primary mandibular central incisor has the smallest FL crown dimension
24. The primary and permanent mandibular central incisor is the most bilaterally symmetrical tooth
25. The primary maxillary central incisor exhibits a prominent cervical ridge (on both the F and L surfaces)
26. From the F, the crown of a primary maxillary canine has a MI slope longer than the DI

a. The cusp tip of the primary canine is generally off set to the distal

27. Permanent premolar buds develop in the furcation of primary molars
28. Primary Molar relationships and what they lead to →

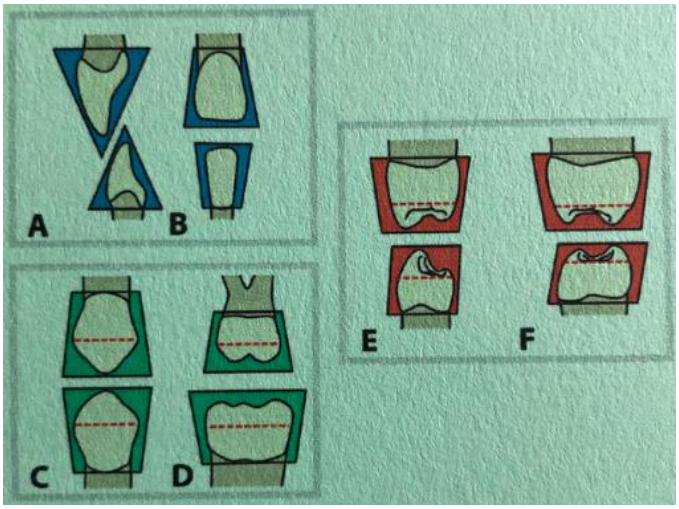


a.
b. Mesial step → *Class I or Class III
    i. Ideal situation
    ii. Only a small amount become class III
c. Distal step → Class II
d. Flush terminal plane → end-on-end

29. Primary molars' roots are longer, slender, and more divergent than permanent molars
    a. Primary maxillary 2nd molars are the hardest to extract because it is easy to fracture roots
30. **PRIMARY MOLARS LACK AN IDENTIFIABLE ROOT TRUNK**
31. **Primary molars are wider than permanent premolars MD (LEEWAY SPACE: 0.9 mm-1.7mm)**
32. The primary maxillary 1st molar has a crown that somewhat resembles a permanent maxillary premolar
33. **The primary maxillary 1st molar has roots that resembles a permanent maxillary molar**
34. **For primary maxillary teeth, the most prominent cervical ridge is the MF surface of the 1st molar**
35. Primary maxillary 2nd molar is an isomorph of the permanent maxillary 1st molar:
    a. **only primary posterior tooth to have OBLIQUE & TRANSVERSE ridges, and DL groove**
    b. **generally exhibits CUSP OF CARABELLI**
36. The last primary tooth to erupt is the maxillary 2nd molars
37. The primary mandibular 2nd molars exhibit more cusps than the primary 1st molars
38. **THE PRIMARY TOOTH THAT IS LIKE NO OTHER PERMANENT TOOTH IS THE MANDIBULAR 1ST MOLARS**
39. **THE PRIMARY TOOTH THAT HAS THE MOST DISTINCTLY PROMINENT FACIAL CERVICAL RIDGE IS MANDIBULAR 1ST MOLAR**
40. From the F, the CEJ of a primary mandibular 1st molar is most apical (lower) on the mesial 1/3
41. The primary mandibular 1st molar usually exhibits a distal triangular fossa
    a. Central fossa usually displaced to the distal.
    b. Some sources call it a distal or a "main" fossa rather than central
42. **THE PRIMARY MANDIBULAR 1ST MOLAR HAS THE MOST DISTINCT TRANSVERSE RIDGE**
43. **The highest and sharpest cusp on a primary mandibular 1st molar is the ML cusp ("Ouch!" cusp)**

PERMANENT DENTITION

44. Most teeth develop from 4 lobes (F, L, M, D)
    a. All anterior teeth
    b. Maxillary 1st and 2nd premolars
    c. Mandibular 1st premolars
    d. **EXCEPTIONS:
        i. Permanent mandibular 1st molar and 2nd premolar 3-cusp type → 5 lobes (F, L, M, D, DL)
        ii. 3rd molars may develop from 4 or 5 lobes
    e. Lobes are usually separated by readily identifiable developmental grooves
45. Developmental grooves separate cusp ridges from marginal ridges
46. A transverse ridge results from the union of the F and L triangular ridges
47. When viewed from the occlusal, the arrangement of the teeth is parabolic
48. Transition of Maxillary = Maxillary canine
49. Transition of Mandibular = Mandibular 1st premolar

50. All Taper towards the L
    a. **EXCEPTIONS (Taper towards the F): Maxillary 1st molar & Mandibular 2nd premolar 3-cusp type
51. Mesial and Distal Contacts from the occlusal view
    a. Anterior → Middle
    b. Posterior → Facial
        i. ****EXCEPTION: Maxillary 2nd molars & 3rd molars → Middle**
        ii. ****EXCEPTION: Distal of Maxillary 1st molar → Middle**
52. F height of contour
    a. All teeth: cervical 1/3
53. L height of contour
    a. All Anterior teeth: cervical 1/3 (cingula)
    b. All Posterior teeth: middle 1/3
        i. ****EXCEPTION: mandibular 2nd premolar → occlusal 1/3**
54. The proximal CEJs dip (coronally) deeper on
    a. **M** than D of all teeth
    b. **Anterior** teeth than posterior teeth
    c. **Maxillary** than mandibular
    d. *Deepest overall on M of the maxillary central incisor
55. F and L CEJs dip apically
56. Mamelons (only on permanent teeth) that remain beyond age 10 indicates open bite
57. Cutting arms always D >M
    a. **EXCEPTIONS: Maxillary 1st premolars & Primary maxillary canines
58. MMR > DMR (length)
    a. **EXCEPTIONS: All 1st premolars
59. MMR > DMR (height)
    a. Mandibular 1st molar MMR = 2x DMR
    b. **EXCEPTIONS (MMR < DMR):
        i. Mandibular 1st premolars
        ii. Maxillary canines = M < D < L
        iii. Mandibular canines = M < L < D
    c. **EXCEPTION: Maxillary 2nd premolars are = (most symmetrical premolar)
60. The occlusal table of a posterior tooth makes up 55-65% of the total FL dimension
61. All posterior teeth cusps have 1 triangular ridge
    a. **EXCEPTION** ML on Max Molars has 2 triangular ridges
62. Viewed from the occlusal, the mandibular posterior teeth are aligned in a straight line in each arch
63. **Schematic Outlines:**
    a. 

        i. **ALL F OUTLINES = TRAPEZOIDAL**
        ii. **Proximal outlines**
            1. **All Anterior = Triangular**
            2. **Posterior Maxillary = Trapezoidal**
            3. **Posterior Mandibular = Rhomboidal**

64. Fluoride Effects:
    a. In Utero → nothing
    b. Birth- 1-year → White-brown mottling of permanent incisors & 1st molars
    c. 1-4-years → White-brown mottling of permanent premolars & 2nd molars
    d. 4-7-years → Nothing

65.

INITIATION (Tooth buds from lamina dura)		**MINERALIZATION**		**ERUPTION**	
Tooth	**Time**	**Tooth**	**Time**	**Tooth**	**Time**
CI	5 months in utero	**Max & Mand M1*	*Birth*	Mand M1	6-7 years
LI	5 months in utero	Max & Mand CI, & Mand LI	3-4 months post-partum	Max M1	6-7 years
K9	5 months in utero	Max & Mand K9	4-5 months post-partum	Mand CI	6-7 years
PM1	5 months in utero	**Max LI*	*10 months post-partum*	Max CI	7-8 years
M1	5 months in utero	Max & Mand PM1	1.5-2 years	Mand LI	7-8 years
PM2	10 months post-partum	Max & Mand PM2	2-2.5 years	Max LI	8-9 years
M2	10 months post-partum	Max & Mand M2	2.5-3 years	Mand K9	9-10 years
M3	5-years old	Max & Mand M3	8-9 years	*Max PM1*	*10-11 years*
				Max PM2	*10-11 years*
				Mand PM1	*10-12 years*
				Mand PM2	*11-12 years*
				Max K9	11-12 years
				Mand M2	11-13 years
				Max M2	13 years
				Mand M3	17-21 years
				Max M3	17-21 years

66. Root formation is guided by **Hertwig's epithelial root sheath (HERS)**
67. Root Formation ~ 50% of permanent completed at the time of eruption & completed at 3-years POST-eruption
68. Root Depressions: ***BOLDER** = greater depression

		CI	LI	K9	PM1	PM2	Molars
Max	**M root**	Flat w. Dep	Flat w. Dep	Dep	**DEP**	Dep	Dep & Furcal **DEP**
	D root	Convex	Flat	**DEP**	Dep	**DEP**	Dep
	P root	-	-	**-**	-	**-**	L Dep
Mand	**M root**	Convex w. Dep	Convex w. Dep	Dep	Dep	Dep	Dep
	D root	Flat w. **DEP**	Flat w. **DEP**	**DEP**	**DEP**	**DEP**	**DEP**

69. # of Pulp Horns & # of Root Canals:

	Pulp Horns		**Root Canals**	
	Max	Mand	Max	Mand
CI	3	1; 0	1	1
LI	2	Variable	1	1
K9	1	1	1	1; 2
PM1	2	1	2	1
PM2	2	2	1	1
M1	4	5	4	3; 4 (35%)
M2	4; 3	4	4	3; 4 (8%)
M3	4	4	-	-

70. Crown:Root Ratios:

	CI	LI	K9	PM1	PM2	Molars
Max	11:13	10:13	10:17	9:13	8:14	8:14, 13, 12
Mand	9:13	10:14	11:16	9:14	8:15	7: 13, 12

71. M and D Outlines from incisal/occlusal to apex:

		CI	LI	K9	PMs
Max	**M outline**	Straight	Round	Convex/ straight	Convex/concave
	D outline	Little round	Very Round	Convex/ concave	
Mand	**M outline**	Straight	Straight	Straight	
	D outline	Straight	Straight	Crown tilt D	

72. Cingulum Locations:

	CI	LI	K9
Max	D	C	C
Mand	C	D	D

73. Crown wider MD or FL:

	CI	LI	K9	PM1	PM2	M1	M2
Max	**MD**	**MD**	**FL**	**FL**	**FL**	**FL**	**FL**
Mand	**FL**	**FL**	**FL**	**FL**	**FL**	**MD**	**MD**

74. Coronal Proximal Grooves: ** = NO PIT

		M1	M2	M3
Max	**Proximal Grooves**	**F** (5) **L** (1)	**F** (6) **L** (only 4 cusps)	**F**
Mand	**Proximal Grooves**	**MF** (2) **DF** (4) **L****	**F** (3) **L****	**F** **L**

75. Geometric Shapes from the occlusal view & Occlusal Tables:

		CI	LI	K9	PM1	PM2	PM2 *3cusp	M1	M2	M2 *3cusp
Max	**Geometric Shape**	Triangle	Round	Diamond	Tapered Hexagon	Oval	-	Rhomboid	Rhomboid	Heart
	Occlusal Table	-	-	-	Trapezoid	Rectangle	-	Triangle	Triangle	-
Mand	**Geometric Shape**	Diamond	Diamond	Diamond	Diamond	Pentagon	Square	Pentagon	Rectangle	-
	Occlusal Table	-	-	-	Triangle	Rectangle	Square	Hexagon	Rectangle	-

76. Occlusal Fossa, Pits, & Grooves:

		PM1	PM2	PM2 *3cusp	M1	M2
Max	**Fossa**	**M, D**	**M, D**	**-**	**M, C,** **D triangle,** D oblique	**M, C, D,** *D oblique (only w. 4 cusps)*
	Pits	**M, D**	**M, D**	**-**	**M, C,** **D triangle**	**M, C, D,** *D oblique (only w. 4 cusps)*
	Grooves	Central, MMG	Central	-	F, C, D oblique, Transverse	F, C *D oblique (only w. 4 cusps)*
Mand	**Fossa**	**M, D**	**M, D**	**M, D**	**M, C, D**	**M, C, D**
	Pits	**M, D**	**M, D**	**M, D**	**M, C, D**	**M, C, D**
	Grooves	ML	Central (H- & U-grooves)	Central, Lingual (Y-groove)	MF, DF, C, L (y-groove)	F, L, C (+ groove)

INSICORS

77. **CEJ** dips deeper on:
    a. Anterior than posterior teeth
    b. Maxillary than mandibular
    c. Mesial side than distal
    d. Greatest on mesial of maxillary CI of any other tooth
78. **The maxillary central incisor has the greatest FL axial inclination**
79. **Maxillary incisors are the only anterior teeth that are wider MD than FL**
80. Maxillary central incisor has WIDEST crown dimension of any other ANTERIOR tooth
81. Maxillary central incisor has measurement that is nearly identical for IC vs. MD
82. The non-molar tooth that is least likely to have a bifurcated root (one root) is the maxillary central incisor
83. The non-molar tooth that most frequently has a mesial and distal pulp horn is the maxillary central incisor
84. The contact between a maxillary central and lateral incisor → L embrasure larger than the F
85. The curve of the CEJ on the mesial surface has the greatest curvature on the maxillary central incisor
86. The MD width of the maxillary lateral incisor is narrower than the maxillary central incisor
87. Maxillary lateral incisor has MOST crown shape variations
88. Except for 3rd molars, the maxillary lateral incisor exhibits the most deviation in crown morphology
89. Other than 3rd molars, the tooth that is most often congenitally missing is the maxillary lateral incisor
90. The maxillary lateral incisor most often is in abnormal relation and contact with adjacent teeth
91. Maxillary lateral incisors have the most distinct and deepest lingual fossae of all anterior teeth
92. The anterior tooth that most likely would demonstrate lingual pit caries is maxillary lateral incisor
93. The DL groove of a maxillary lateral incisor is an anatomical feature that complicates root planning
94. The DI angle of the maxillary lateral incisor has the greatest convexity of all maxillary anterior teeth
95. **The maxillary lateral incisors generally have the most prominent marginal ridges of all anterior teeth**
96. Maxillary lateral MD crown width SMALLEST of any MAXILLARY tooth
97. Maxillary lateral has MD measurement that is nearly identical to FL—closest of all ANTERIOR teeth
98. **Maxillary lateral incisor has distal contact that is farthest cervically of any INCISOR**
99. Maxillary lateral incisor has distal contact centered both IC and FL
100. Mandibular central incisors distinguished from each other by cervical curvature→ deeper on the mesial
101. **MANDIBULAR CENTRAL INCISOR: SMALLEST CROWN DIMENSIONS OF ANY TOOTH**
102. Mandibular central incisor: most symmetrical crown
103. Mandibular central incisor: has sharpest set of incisal angles
104. Mandibular central incisor: proximal contacts at the same level
105. Mandibular central incisors' proximal contacts at approximately the same levels on mesial and distal
106. The mandibular central incisors have contact points at the same IC level
107. The first SUCCEDANEOUS tooth the erupt in the mouth is the permanent mandibular central incisor (remember permanent M1 is NOT succedaneous)
108. **Mandibular central incisors and maxillary 3rd molars generally occlude with ONLY ONE opposing tooth**
109. The mandibular centrals and laterals most frequently have concave areas on mesial and distal root surfaces
110. Buccal and lingual embrasures may be same size
111. From the incisal view, the crown of the mandibular lateral incisor has a "distal twist" in relation to long axis
    a. Can see DMR from mesial aspect

CANINES

112. Maxillary canine has GREATEST cervical prominence of any ANTERIOR tooth
113. The maxillary canine from a proximal view tends to be positioned with the most nearly vertical axis
114. Maxillary canine has the GREATEST OVERALL total tooth length
115. MAXILLARY CANINE HAS LONGEST ROOT OF ANY OTHER TOOTH
116. Maxillary canine is the most stable tooth (large, long root with depressions) → usually last tooth to fall out
117. Maxillary canine has GREATEST FL crown dimension of any ANTERIOR tooth
118. Maxillary canine distal contact is centered
119. Maxillary canine has a "distal pinch" (Mesial and Distal are asymmetric)
120. Maxillary canine cusp tip located F to long axis
    a. Centered or slightly F, so L is more visible from incisal view
121. From the F view, the cusp of the maxillary canine accounts for 1/3 of crown
122. The middle facial lobe of the maxillary canine includes the cusp tip (opposite to mandibular canine)
123. The crown form of canines from a facial view is pentagonal
124. When compared to a maxillary canine, the mandibular canine has contact areas located more incisal (think of

mandibular incisors)

125. The mandibular canine has a less prominent cingulum than the maxillary canine
126. The mandibular canine is narrower MD than the maxillary canine
    a. Think of the maxillary canine distal bulge ("pinch") and the MD canine flat mesial
127. Mandibular canine has incisal edge L to long axis (opposite to maxillary canine!)
128. Mandibular canine has straightest mesial alignment of crown to root
129. The mesial surface of the crown of the mandibular canine is almost parallel to the long axis
130. MANDIBULAR CANINE HAS THE LONGEST CROWN DIMENSION OF ANY OTHER TOOTH
131. The mandibular canine is the anterior tooth that most frequently exhibits a bifurcated root
    a. If bifurcated, the mandibular canine roots create F and L roots
132. Mandibular canine has the LONGEST ROOT length of any MANDIBULAR tooth
133. Mandibular canine makes a C shape (continuous convex facial surface) from crown tip to root apex
134. In cross section, the root of the mandibular canine is IRREGULARLLY OVAL
135. The cross section of the mandibular canine at the CEJ
    a. is OVOID but wider MD at the labial
    b. is flattened in a MD direction

PREMOLARS

136. The maxillary 1st premolar has the most pronounced developmental marginal groove of any MAXILLARY tooth
137. The maxillary 1st premolar has a **MESIAL CONCAVITY** that makes is difficult to adapt a matrix band
138. The cervical cross section of the maxillary 1st premolar exhibits a
    a. kidney shaped root outline
    b. kidney shaped pulp chamber floor
139. The NON-MOLAR TOOTH that most frequently exhibits THREE ROOTS is the maxillary 1st premolar
140. The premolar with the steepest cusp inclines is the maxillary first premolar
141. Maxillary 1st premolar has a longer MF cusp ridge than DF cusp ridge; The FACIAL cusp of the maxillary 1st premolar is offset to the distal.
    a. ONLY PREMOLAR WITH LONGER MESIAL CUSP RIDGES (SAME FOR PRIMARY MAXILLARY CANINE)
142. MAXILLARY PREMOLAR LINGUAL CUSPS ARE OFF SET TO THE MESIAL
143. The maxillary 1st premolar is the posterior tooth that has the greatest cervico-occlusal crown height
144. Maxillary 1st premolar is the non-molar tooth with the sharpest demarcation between pulp chamber and canal
145. Maxillary 2nd premolar is the most symmetrical premolar
    a. Size and position of the cusps are more identical for the maxillary 2nd premolar than the 1st
    b. Maxillary 2nd premolar has fossae that are closest in size compared to any other posterior tooth
146. The maxillary 2nd premolar has a **WRINKLY** appearance (short central groove with a lot of supplemental grooves)
147. The mandibular 1st premolar has a uniquely prominent triangular ridge
    a. SNAKE EYES (separate mesial and distal pit)
    b. No central groove
148. MANDIBULAR 1ST PREMOLAR IS THE ONLY TOOTH WITH A ML GROOVE (identifying characteristic)
    a. originates from the occlusal pit
    b. extends onto the proximal surface
    c. MAKES MESIAL MARGINAL RIDGE RUN AT A 45-DEGREE ANGLE
149. THE MANDIBULAR 1ST PREMOLAR HAS ITS MMR < DMR
150. More of the occlusal surface can be seen from the mesial than distal for a mandibular 1st premolar
151. In the RARE event of a second canal for a mandibular 1st premolar it is most likely located to the LINGUAL
152. The mandibular 1st premolar is the only premolar that frequently only has ONE PULP HORN
153. The L cusp of the mandibular 1st premolar is approximately 2/3 the height of the F cusp
154. The L cusp of the mandibular 1st premolar is similar in development to the cingulum of a canine
155. THE L CUSP OF THE MANDIBULAR 1ST PREMOLAR IN NORMAL OCCLUSION DOES NOT OCCLUDE
156. Mandibular 1st premolar has the most variation in F vs. L cusp height of all POSTERIOR teeth
157. Mandibular 1st premolar is the smallest FL of any posterior tooth
158. Mandibular 1st premolar is closest of all MANDIBUAR TEETH in FL vs. MD diameter
159. THE SHORTEST INTERDENTAL PAPILLA IS BETWEEN THE MANDIBULAR 2ND PREMOLAR AND 1ST MOLAR
160. The premolar that is most likely to have a **CRESCENT**-shaped CENTRAL DEVELOPMENTAL GROOVE is mandibular 2nd premolar
161. The **Y type** mandibular 2nd premolar has 3 cusps: one F and two L
162. THE Y TYPE MANDIBULAR 2ND PREMOLAR IS THE ONLY PREMOLAR THAT CAN HAVE MULTIPLE L CUSPS
163. THE **Y TYPE** MANDIBULAR 2ND PREMOLAR IS THE **ONLY PREMOLAR WITH A L GROOVE**

164. The premolar that most frequently has a single CENTRAL PIT is the y-type mandibular 2nd premolar

a. Same # of occlusal pits as the maxillary 1st molar

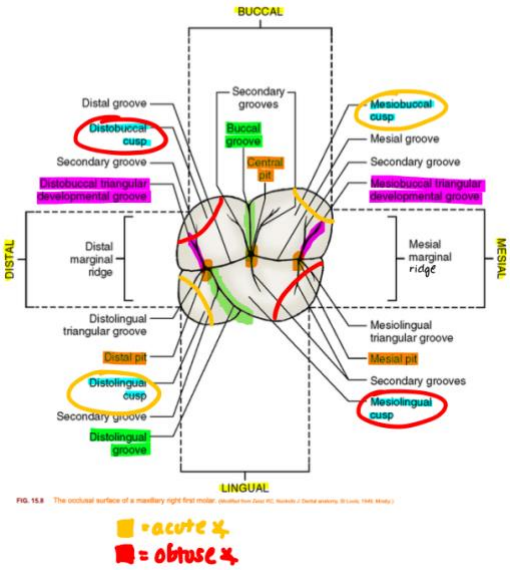
165. MANDIBULAR 2ND PREMOLAR IS THE ONLY PREMOLAR WITH A **CENTRAL FOSSA**

166. In a mandibular 2nd premolar, the length of the root (15 mm) is almost 2 x the length of the crown (8 mm)

167. MOST CONGENITALLY MISSING PREMOLAR IS THE MANDIBULAR 2ND PREMOLAR

MOLARS

168. In maxillary molars,



a.

b. MF and DL angles from the occlusal outline tend to be ACUTE ANGLES

c. ML and DF angles from the occlusal outline tend to be OBTUSE ANGLES

i. The obtuse corners coincide with the direction of the oblique ridge

169. The oblique ridge connects the ML and DB cusps (“Mother Loves Dear Boy”)

170. The oblique ridge of maxillary molars forms the distal boundary of the central fossa

171. The ML cusp of the maxillary molars is its largest and longest cusp

172. THE ML CUSP OF THE MAXILLARY MOLARS OCCLUDES IN THE CENTRAL FOSSA OF THE MANDIBULAR MOLARS

173. The DL cusp of maxillary molars is the only one that is not part of the molar cusp triangle

174. If DL cusp is not present = 3 cusp type heart shape

175. The smallest root of the maxillary molars is the distobuccal

176. The largest root of the maxillary molars is the palatal

177. In maxillary molars, the apex of the palatal root

a. from the F view, is in line with the F groove of the tooth

b. from the L, is in line with the midpoint of MD diameter of the tooth

178. When a 4th pulp canal is present in a maxillary 1st molar, it is located in the MB canal

179. In the maxillary 1st molar the F embrasures are larger than L (Tooth tapers toward the F)

180. Distance of 3 furcations from cervical line of a maxillary 1st molar

a. M < B < D

b. You get further away the more distal you go

181. The center of the oblique ridge on a maxillary 1st molar is at the same level with the marginal ridge

182. THE MAXILLARY 1ST MOLAR HAS THE GREATEST FL CROWN DIAMETER OF ALL TEETH

a. Think of cusp of carabelli!

183. Maxillary 1st molar is the closest in size FL vs. MD of any MAXILLARY POSTERIOR tooth

184. The tooth that is most likely forced into the maxillary sinus during an extraction is the maxillary 1st molar

185. The maxillary 1st molar has a D concavity that can pose problems in matrix placement

186. The crown of the maxillary 1st molar has a shorter DL groove than the 2nd molar

187. The roots of the maxillary 2nd molar tend to be less divergent and have greater distal inclinations than the 1st (“ballerina” type roots)

188. The cross-sectional outline at the cervical is roughly triangular for the maxillary 2nd molar

189. MAXILLARY 3RD MOLAR HAS A SINGLE ANTAGONIST IN ICP

a. MANDIBULAR CENTRALS ALSO OCCLUDE WITH ONLY 1 TOOTH

190. The maxillary 3rd molar is the molar that most frequently has only 3 cusps (heart-shaped) → missing the DL cusp

191. 3RD MOLARS HAVE GREATEST MORPHOLOGICAL VARIATION IN OF ANY TOOTH (crown and root)
192. The most prone surfaces of molars are the L of maxillary and F of mandibular (b/c of supporting cusps)
193. **ROOT TRUNKS OF MANDIBULAR MOLARS ARE SHORTER THAN MAXILLARY MOLARS**
194. The F surfaces of mandibular molars are located medial to the border of the ascending ramus
195. Mandibular molars are the only MANDIBULAR teeth that are wider MD than FL
196. Mandibular molars are the only POSTERIOR teeth that are wider MD than FL (Maxillary central incisor is anterior)
197. Mandibular molars have root apices F and crowns L in relation to their long axis
198. **MANDIBULAR 1ST MOLAR HAS THE LARGEST MD CROWN DIAMETER (~11 mm) OF ALL TEETH** (think of 3 buccal cusps)
199. Mandibular 1st molar has the LARGEST FL crown dimension of ANY other MANDIBULAR tooth
200. Mandibular 1st molar has the LARGEST occluso-cervical crown dimension of any MANDIBULAR molar
201. **The groove pattern for the mandibular 1st molar is considered a Y or DRYOPETHICUS pattern**
202. Key feature differentiating mandibular 1st and 2nd molar is the # of developmental grooves → 1st has 2 buccal (M & DF (*not called D)); 2nd has 1 buccal
203. Mandibular 1st molar has three F cusps
204. **Cusp Heights of mandibular 1st molars = MF > ML > DL > DF > D [all cusp tipd can be seen from F aspect]**
205. **DB CUSP OF THE MANDIBULAR 1st MOLARS OCCLUDES IN THE CENTRAL FOSSA OF THE MAXILLARY 1st MOLARS**
206. Mandibular 1st molar usually has two roots and three canals (1 in D root & 2 in M root)
207. **Mandibular 1st molar has the LONGEST M root of any other MOLAR**
208. **Mandibular 1st molar has GREATEST root separation of ANY other tooth**
209. Apex of M root of mandibular 1st molar is in line with or just distal to the MB groove
210. At mid root cross section of mandibular 1st molars, the larger root is the M (need room for MB2)
211. Mandibular 1st molar's M root has the GREATEST FL dimension of any other root (need room for MB2)
212. The ideal position and height of lingual cusps of mandibular 1st molar accommodates working movement
213. **THE SHORTEST INTERDENTAL PAPILLA IS BETWEEN THE MANDIBULAR 2ND PREMOLAR AND 1ST MOLAR**
214. The occlusal groove pattern for the mandibular 2nd molar is considered a cross/cruciform (+) pattern
215. The crown of the mandibular 2nd molar inclines to the M and L (think of the larger M cusps weighing it down)
    a. From the occlusal view, the greatest FL diameter of a mandibular 2nd molar is in the mesial 1/3
216. Mandibular 3rd molar has the GREATEST D root inclination of any other tooth
217. MANDIBULAR 3RD MOLAR HAS THE SHORTEST ROOT OF ANY MANDIBULAR TOOTH

ENAMEL

218. ***Ectodermal* origin;** Formed by ameloblasts (Tomes Process)
219. The hardest dental tissue
220. The main component (96%) of enamel is **hydroxyapatite**, an inorganic matter
    a. *Higher acid solubility than fluoroapatite
221. The organic matrix is mainly proteins (**amelogenins**) and rich in **proline**
222. There is no collagen!
223. The direction of enamel rods in cervical 1/3 of permanent teeth is in the gingival direction
224. Striae of Retzius extends from the DEJ (*inside* the tooth) to the outer surface ending in shallow pits known as perikymata (a result of normal enamel apposition—*outside* tooth)

DENTIN

225. ***Ectomesenchymae* origin;** Formed by odontoblasts (Tomes Fibers)
226. **The PRIMARY function of the dental pulp is to form dentin**
227. Dentin is also formed by dental papilla
    a. Odontoblasts are dentopapilla cells in contact with inner enamel epithelium
228. The DEJ occurs at the junction of the dental papilla and the inner enamel epithelium
229. 20-30% is organic (more than enamel)
    a. 90% is Type I collagen
    b. Also have Type III (VonKorff fibers) and V collagen
230. For multirooted teeth, dentin continues to form MOST rapidly at the floor and roof of the pulp chamber
231. The dentin that is most highly mineralized is intra or peritubular dentin
232. Caries/Trauma stimulate the production of tertiary dentin

CEMENTUM

233. HERS is displaced away from the dentin surface and is eventually fragmented into epithelial **cell rests of Malassez**
234. ***Ectomesenchymal*** cells close to the dentin surface differentiate into cementoblasts & form the cementum layer
235. The softest dental tissue but **less susceptible to resorption than dentin**
236. Closely mimics bone but is **AVASCULAR** (little turnover)

237. Main function is to anchor teeth to adjacent alveolar bone via Sharpey PDL Fibers
238. Two types:
    a. **Acellular** → Coronal 2/3
    b. **Cellular** → Apical 1/3 (cells are where the blood supply is)

PERIODONTIUM & PULP

239. Periodontium = gingiva + PDL + cementum + alveolar bone
    a. The epithelial attachment (junctional epithelium) is often considered part of a tooth's periodontium
240. GINGIVAL fibers attach tooth (cementum) to gingiva
241. TRANS-SEPTAL fibers (extend from tooth to tooth) are not PDL fibers they are gingival fibers
242. PDLs attach tooth (cementum) to dental alveolar bone
243. **Type 1 collagen** is the predominant connective tissue for PDLs
244. PDL IS 0.2MM WIDE
    a. As you age, thickness decreases to 0.1mm due to deposition of cementum and bone
245. The most prevalent PDL fibers: OBLIQUE fibers
    a. most likely to be found in the middle 1/3 of root
    b. major support for a tooth during VERTICAL masticatory stresses→ reduce the likelihood of forceful impaction into the alveolus
246. Alveolar Crest Fibers
    a. Prevent tooth extrusions
    b. Resist LATERAL tooth movements
247. The pulp chamber of a mature tooth contains blood vessels and nerves
    a. As you age, the chamber (and root canals) decreases in size because the # of cells decrease and # of collagen fibers (dentin/cementum) increases
248. The function of the pulp is to form and supply nutrients to dentin and transmit sensory stimuli
    a. Don't get tricked if they ask PRIMARY function → to form dentin (by odontoblasts)

CURVE OF SPEE

249. The curve of Spee is the anterior-posterior curvature of the occlusal surfaces as seen in a F view
250. The usual overjet is 2-4mm
251. Overjet = horizontal overlap
252. Overbite = vertical overlap
253. Combined with the Curve of Wilson = Sphere of Monson

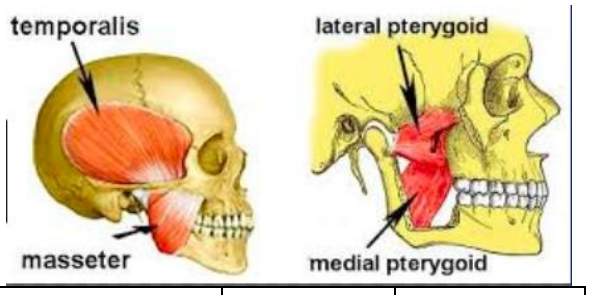
BENNETT MOVEMENT and ISS

254. The Bennett movement is the bodily shift of the mandible toward the working condyle
255. Bennett movement occurs during the earliest stage of lateral movement
256. Condyles farther from medial wall = Larger Bennett angle = more Bennett movement = more distal pathway flatter cusps
257. Less potential for interference with later ISS than early ISS
    a. Speed determined by ligament tightness

TMJ, MUSCLES, & LIGAMENTS

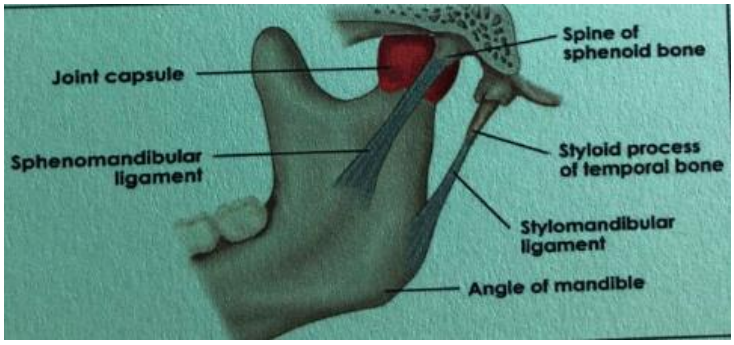
258. In Pousselt's envelope of motion, MICP is the most superior point
259. When the mandible moves from centric occlusion (MICP) to edge to edge, the condyles move forward & downward
    a. The nonworking condyle moves downward, forward, and medially
260. Anterior guidance plays the greatest role in discluding the posterior teeth in latero-protrusive
261. Teeth are in contact in intercuspal position during NON-masticatory swallowing
262. Tooth contact almost exclusively determines intercuspal position
    a. Intercuspal position = centric occlusion = MICP
263. Centric relation is a LIGAMENT guided position
264. Centric occlusion is a TOOTH guided position
265. Rest is a MUSCLE guided position
266. Physiological rest position is also known as Postural Position (PP)
    a. 2-4mm below ICP/CO
    b. NOT a border position (not on envelope)
    c. Determined almost exclusively by the behavior of the mandibular musculature
    d. If you move from the PP to CO you will be using ANTERIOR FIBERS OF THE TEMPORALIS

267. Muscles of Mastication:



Muscle		Origin	Insertion	Innervation	Action
MASSETER	Superficial Head	Zygomatic bone (maxillary process) and Zygomatic arch (lateral aspect of anterior 2/3)	Mandibular angle and Ramus (inferior lateral surface)	Masseteric Nerve (anterior dividion of CN V3)	Elevates Mandible
	Middle Head	Zygomatic arch (medial aspect of anterior 2/3)	Mandibular Ramus (central part of occlusal 1/3)		
	Deep Head	Zygomatic arch (deep surface of posterior 1/3)	Mandibular Ramus (superior lateral surface) and inferior Coronoid process		
TEMPORALIS	Superficial Head	Temporal fossa	Coronoid process of mandible (apex, medial surface, and anterior surface of mandibular ramus)	Deep temporal nerve (anterior division of CN V3)	- Vertical (anterior) fibers Elevate the mandible. - Horizontal (osterior fibers Retrude the mandible. - Unilateral: lateral movements of mandible (chewing)
	Deep Head	Temporal fossa (inferior temporal line)			
LATERAL PTERYGOID	Superior Head	Greater wing of sphenoid bone (infratemporal crest)	Mandible (pterygoid fovea) and TMJ (articular disc)	Mandibular nerve (anterior dividion of CN V3) via lateral pterygoid nerve	- Bilateral: Protrudes the mandible (pulls disk forward) - Unilateral: Lateral movements of the mandible (chewing)
	Inferior Head	Lateral pterygoid plate (lateral surface)	Mandible (pterygoid fovea and condylar process)		
MEDIAL PTERYGOID	Superficial Head	Maxilla (maxillary tuberosity) and palatine bone (pyramidal process)	Pterygoid rugosity on medial surface of the mandibular angle	Mandibular nerve (anterior division of CN V3) via medial pterygoid nerve	Elevates (adducts) the mandible
	Deep Head	Medial surface of lateral pterygoid plate and pterygoid fossa			

268. Ligaments:



a. Sphenomandibular
    i. Attached to lingual of mandible
    ii. Limit excessive opening
b. Stylomandibular
    i. Attached to the angle of the mandible
    ii. Limit excessive opening
c. Temporomandibular (main stabilizing ligament of TMJ)
    i. Runs from articular eminence to mandibular condyle
    ii. Provides lateral reinforcement for capsule
    iii. Prevents posterior and inferior displacement of condyle
d. Collateral (Medial & Lateral)
    i. "discal ligaments"
    ii. Arise from periphery of disc, stabilizing it on top of the condyle during function
    iii. Composed of collagenous connective tissue (do not stretch)

PATHOLOGY & ANOMOLIES

269. **HYPERCEMENTOSIS** is an excess of calcified tissue (cementum) formation at the root apex
270. **CONCRESCENCE** when cementum of two teeth join together
271. **ANKYLOSIS**
    a. Fusion of cementum to bone
    b. Etiology unknown
    c. Primary mandibular 1st molar most affected
    d. Build up with composite so that opposing tooth doesn't supraerupt
    e. Most likely will need to extract if it is maxillary
272. FUSION = 2 roots, 1 crown (fused)
273. GEMINATION = 1 root, 2 crowns (need x-ray to differentiate from fusion)
274. **ECTOPIC** (abnormal place/position) eruption:
    a. Permanent 1st molars
    b. Smaller maxilla
    c. Posterior position of maxilla in relation to cranial base (Class III)
    d. Abnormal angulation of K9's
    e. Self-corrects (60% of the time; only 22% in cleft lip/palate patients)
275. **HYPERDONTIA (SUPERNUMERARY)** teeth
    a. In the maxilla are usually found between the centrals (mesiodens) or as 4th molars (distomolars)
    b. In the mandible are usually found in premolar area (peridens)
    c. Pronounced in permanent dentition in patients with ***CLEIDOCRANIAL DYSPLASIA***
276. **HYPODONTIA** is the absence of one or more teeth (< 6, not including 3rd molars) & **OLIGODONTIA** is the absence of > 6 permanent teeth
    a. **Commonly affects**
        i. **Permanent 3rd molars, maxillary lateral incisors*, and mandibular 2nd premolars**
        ii. Primary mandibular lateral incisors and mandibular canines
277. **ANODONTIA** is the condition of missing all teeth (primary / permanent)
    a. Associated with **HEREDITARY ECTODERMAL DYSPLASIA**
    b. Less common than hypodontia and oligodontia
278. **Teething**
    a. > 50% babies will have one or more symptoms (Fever, pain, etc.) during teething
        i. but no cause-effect relationship
279. Premature teeth
    a. < 3 months old
    b. Natal = present at birth
    c. Neonatal = present within the first 30 days (newborn)
    d. Etiology unknown (may be bud that formed really close to the surface?)
    e. 90% are true primary teeth
    f. Different from:
        i. Bohn's nodules: **mucous gland cysts**; firm, small, grayish-white nodules; F or L aspects of alveolar ridge; most resolve spontaneously
        ii. **Dental lamina cyst**: remnants of dental lamina; small, white/pink nodules, often multiple; crest of the ridge
        iii. Epstein pearls: **gingival cysts** during development; small, yellowish-white papules/nodules filled with keratin; gums and palate; common/harmless and resolve within few weeks
280. Accelerated eruption of primary and permanent teeth
    a. Local causes: early loss of primary tooth (after age 8)
    b. Systemic conditions: hemifacial hypertrophy, precocious puberty, hyperthyroidism
281. Premature exfoliation of primary teeth
    a. Diseases of bones: fibrous dysplasia
    b. Diseases of periodontium: aggressive periodontitis, Papillon-LeFevre
    c. Diseases of metabolism: hypophosphatasia
282. Delayed primary exfoliation
    a. Local causes: trauma, impaction, ankyloses
    b. Systemic condition: syndromes, hypothyroidism, hypopituitarism
283. Peg-shaped laterals = developmental anomaly
284. **Enamel Hypoplasia**: a developmental defect where enamel is THIN & HARD

a. **Dental manifestation of HYPOPARATHYROIDISM and can be prevented by early tx with vit D**

285. **Enamel Hypocalcification: a hereditary defect causing defective maturation of ameloblasts→ enamel is soft and undercalcified but normal in quantity (thickness)**
    a. Teeth are chalky, surfaces worn rapidly, yellow-brown stain in underlying dentin is exposed
    b. Affects both primary and permanent dentition
286. **Dentinogenesis imperfecta** and **Amelogenesis imperfecta** occur during the BELL-stage
287. Fluorosis = mottled discoloration and pitting of enamel
    a. Can affect primary and permanent dentition
288. *Prevotella Intermedia* leads to **NUG** (necrotizing ulcerative gingivitis)

Teratogen	Effect
289. Aspirin, Valium, Dilantin, and Cigarette smoke (hypoxia)	Cleft Lip and Palate
290. Cytomegalovirus, Toxoplasma	Microcephaly, hydrocephaly, microphthalmia (eyes abnormally small and have anatomic malformations)
291. Ethyl alcohol	Central mid-face discrepancy
292. Rubella virus	Microphthalmia, cataracts, deafness
293. X-radiation	Microcephaly
294. Vitamin D excess	Premature suture closure

295. Torus mandibularis & Torus palatinus
296. Exostoses in maxillary mucobuccal fold
297. Linea Alba = hyperkeratinized tissue on buccal mucosa and tongue; indicative of parafunctional habits; no tx
298. Erosion = loss of tooth structure from NON-MECHANICAL means
    a. Acidic foods/drinks
    b. Lingual aspect in patients with bulimia
299. Attrition = wearing of enamel and dentin from normal function or bruxism; polished facets, flat incisal edges, discolored surfaces of teeth, and exposed dentin
300. Abrasion
    a. Toothbrush Abrasion = V-shaped wedges at cervical margin
    b. Occlusal Abrasion = flattened cusps on all posterior teeth and worn incisal edges caused by chewing or biting hard foods or objects or chewing tobacco