ANATOMY OF THE PRIMARY DENTITION

I. Why be concerned with maintaining the primary teeth?

A) Freedom from pain and infection
B) Function
   1) eating
   2) speech development
C) Growth and Development
   1) function determines form
D) Space Maintenance
E) Esthetics (self-image)

II. Generalizations regarding anatomy of the primary dentition

A) 20 total teeth - no premolars (Primary molars succeeded by Premolars)
B) smaller than permanent successor; exception - primary molars larger (mesiodistal) than premolars
C) proportionally shorter crown height
D) occlusal anatomy shallower - lacks secondary fissures
E) cervical BULGE (particularly mandibular first primary molars)
F) primary molars have greater root divergence
G) primary teeth have GREATER ROOT LENGTH compared to crown

III. Specifics regarding individual primary teeth

A) Primary teeth have thinner enamel
B) the pulp chambers are relatively larger and closely mirror the external contours of the teeth
C) the primary pulp horns extend higher into the respective cusps. Routinely, the mesiobuccal pulp horn is the most liable to exposure during cavity preparation.

IV. Miscellaneous

A) Because of the large pulp horns, round-ended burs are used to prepare cavities; no sharp line angles - buccal and lingual preparations.
B) Keys to differentiating primary and permanent teeth are:
   1) Color - primary more white and opaque
   2) Size and contours (as above)
   3) Depth of anatomy
   4) Location of teeth

V. Comparison of primary to permanent dentition

A) Primary pulps reflect external anatomy more closely-big cusp ➔ big pulp horn
B) Primary pulps relatively larger ➔ internal line angles rounded
C) Primary roots - very flaring - to allow development of premolars
D) Primary crowns - bell shaped
E) Enamel rods - perpendicular to tooth surface - parallel to horizontal at gingival - Especially important in Class II Prep - NO bevel of gingival seat
F) Primary teeth more white and opaque
G) Enamel thinner - Dentin less mineralized ➔ Faster caries progression
H) Shorter Crowns ➔ Restricted occlusal Table - "Bulbous" contours
I) Shallower Anatomy ➔ Outline form is a "series of gentle arcs and curves". Absence of 2° anatomy (grooves)
J) Rounded cusps
K) Relatively larger pulps ➔ rounded line angles and decreased stress concentration
L) Pulps reflect external anatomy
M) Enamel rods at gingival parallel to horizontal or gingivally directed (No gingival flare for Cl II)
N) Internal preparation walls parallel external surfaces ➔ "undercut" appearance - due to enamel rod direction
VI. Similarities to permanent teeth

A) Max 2nd Prim molar and Max Perm 1st molar - most alike
B) Mand 2nd Prim molar and Mand Perm 1st molar - somewhat
C) Slight: Max 1st Prim - unique anatomy = large MB bulge

VII. Eruption pattern of primary teeth - "RULE OF FOUR" ± 6 mo's is normal

A) - 6-7 mos.  
B) - (+4) = 11 mos.  
C) - (+4) = 19 mos.  
D) - (+4) = 15 mos.  
E) - (+4) = approx. 2 yrs.  

1. 1st perm.molar or mand centrals = 6 yrs.(±1yr)  
2. Premolars at 10-11  
3. If root is ¾ formed and crown is not erupted → probable impaction

VIII. "Natal" teeth - Present at birth  
"Neonatal" teeth - Erupt within 1 month of birth

IX. Spacing

A) Generalized  
B) Primate - allows canine intercuspation

X. Radiographic Dating

* 1. Max Perm. Lat. begins calcification at 10-12 mos.  
** 2. Premolar crowns comp. at approx. 6 yrs.  
*** 3. Perm. First Molar Roots comp. at 10 yrs.  
**** 4. 6's begin calcification prior to birth

XI. Average Dimensions for Primary Molars from Exterior Surface to Periphery of Pulp Chamber:

<table>
<thead>
<tr>
<th>TOOTH</th>
<th>SURFACE</th>
<th>DISTANCE (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Molar</td>
<td>Occ</td>
<td>2¼</td>
</tr>
<tr>
<td>First Molar</td>
<td>Prox</td>
<td>1¾</td>
</tr>
<tr>
<td>Second Molar</td>
<td>Occ</td>
<td>2¾</td>
</tr>
<tr>
<td>Second Molar</td>
<td>Prox</td>
<td>2¾</td>
</tr>
</tbody>
</table>

XII. Bur Dimensions---These may be used as general guides to preparation depth:

<table>
<thead>
<tr>
<th>BUR #</th>
<th>*DIAMETER (mm)</th>
<th>*LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 Inv. Cone</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>556 X-Cut fissure</td>
<td>1.0</td>
<td>4.0</td>
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<tr>
<td>#330</td>
<td>0.75</td>
<td>1.75</td>
</tr>
<tr>
<td>#245</td>
<td>0.75</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* May vary by different manufacturer---check with Boley Gauge