

FIRST YEAR BDS PRACTICAL LOGBOOK



Name: _____

Roll No: _____

Session: _____

Department of Oral Biology

FACULTY

Full Name	Designation

Khyber Medical University

1st Year BDS

Oral Biology and Tooth Morphology LogBook



Prepared By:

DR. FARHAN DIL

“This logbook is designed to enable students to systematically identify and describe the anatomical features of the hard and soft tissues of the oral cavity, understand the fundamental concepts of tooth morphology, and correlate structural characteristics with their functional and clinical significance.”

CERTIFICATE

Certified that Mr. / Miss _____

S /o D/o _____

Class No: _____ Exam Roll No. _____

Has fulfilled the requirements of practical work in the subject of Oral

Biology as prescribed by _____.

GRADE: _____ **HEAD / INCHARGE** _____

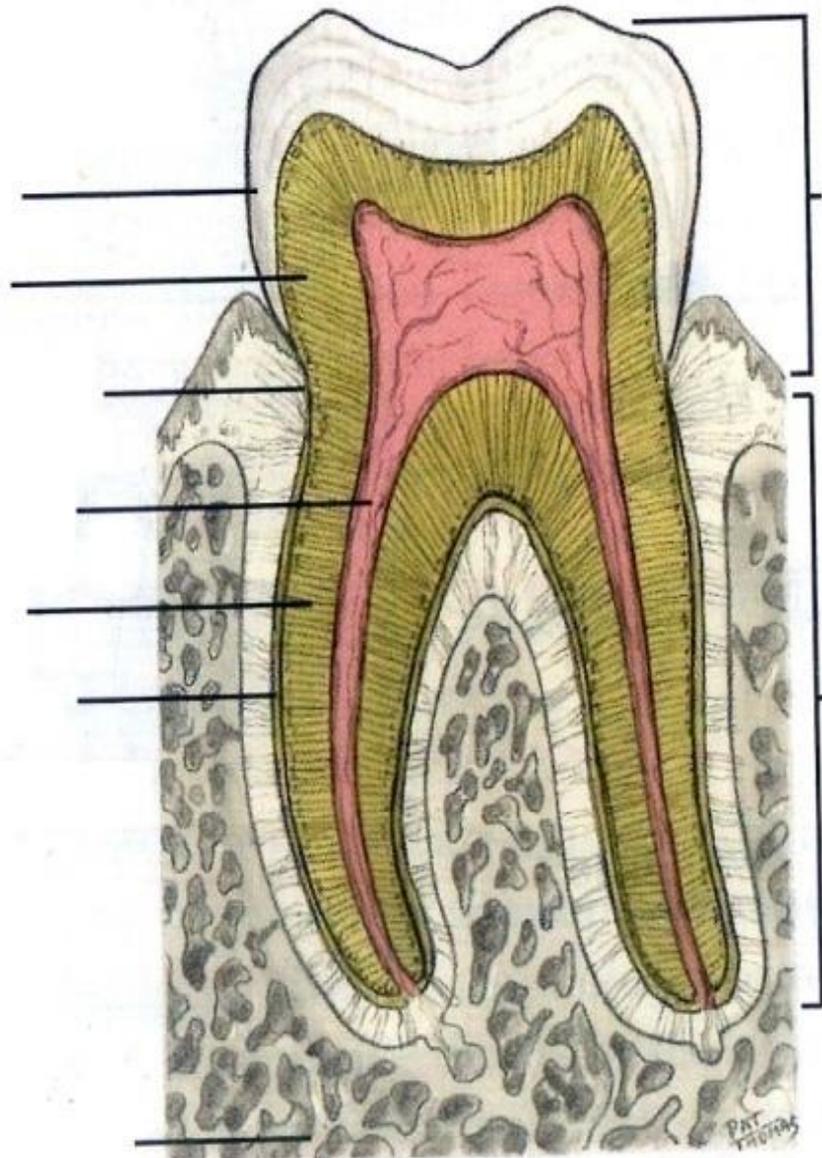
INDEX

FACULTY	2
CERTIFICATE	4
INDEX	5
Block: A.....	7
MODULE 1.....	7
FOUNDATION MODULE	7
ANATOMY OF TOOTH.....	8
DEVELOPMENT OF OROFACIAL STRUCTURES.....	10
TOOTH DEVELOPMENT.....	12
TOOTH DEVELOPMENT.....	14
ROOT DEVELOPMENT	18
BASEMENT MEMBRANE	20
TOOTH MORPHOLOGY	22
LINE ANGLES AND POINT ANGLES.....	25
POINT ANGLES	26
PERMANENT ANTERIOR TEETH	27
PERMANENT POSTERIOR TEETH.....	29
NUMBERING SYSTEM.....	32
NUMBERING SYSTEM.....	34
ENAMEL RODS.....	36
STRIA OF RETZIUS AND NEONATAL LINE	38
DENTINOENAMAL JUNCTION	40
LIFE CYCLE OF AMELOBLASTS	42
GROUND SECTION OF ENAMEL	46
Block: A.....	49
MODULE 2.....	49
BLOOD MODULE	49
Pulp:	50
HISTOLOGY STRUCTURE OF THE PULP	52
FIBERS OF PDL.....	54
PRINCIPLES FIBER OF PERIODONTAL LIGAMENT	56
CEMENTICLES IN PERIODONTAL LIGAMENT	58
STRUCTURE OF ORAL MUCOSA	60
KERATINIZED / NON-KERATINIZED EPITHELIUM:	62
TASTE BUD AND TASTE.....	66
GINGIVAL AND DENTOGINGIVAL JUNCTIONAL TISSUES.....	68
MUCOGINGIVAL JUNCTION.....	70
GINGIVAL FIBER SUBGROUPS	72
Block: B.....	75
MODULE: 3	75
CRANIOFACIAL MODULE	75
STRUCTURE OF ALVEOLAR BONE.....	76
HISTOLOGY OF BONE	78
CREST OF THE ALVEOLAR SEPTA (ALVEOLAR CRESTS).....	80
THE HISTOLOGY OF ALVEOLAR BONE AND REGULATORY FACTORS IN BONE REMODELING	82

FUNCTIONS OF ALVEOLAR BONE	83
GUIDE LINES FOR DRAWING OF TEETH ACCORDING TO ITS MORPHOLOGY	85
MAXILLARY CENTRAL INCISOR	88
MAXILLARY LATERAL INCISOR.....	90
MANDIBULAR CENTRAL INCISOR	94
MANDIBULAR LATERAL INCISOR.....	96
MAXILLARY CANINE.....	100
MANDIBULAR CANINE.....	102
DEVELOPMENT OF MANDIBLE	104
HARD AND SOFT PALATE.....	106
STRUCTURE OF DENTIN	108
TYPES OF DENTIN.....	110
STRUCTURE OF ODONTOBLAST	112
LOCATION, MINERALIZATION AND DEVELOPMENTAL PATTERN OF DENTIN	114
DENTIN SENSITIVITY.....	116
CEMENTUM AND ITS RELATIONSHIP TO TOOTH AND ALVEOLAR BONE.....	118
DIFFERENCE BETWEEN ACELLULAR AND CELLULAR CEMENTUM:	120
MAXILLARY 1 ST PREMOLAR	124
MAXILLARY 2 ND PREMOLAR	126
MAXILLARY SINUS	128
Block C.....	131
MODULE 4.....	131
CERVICOFACIAL MODULE	131
ERUPTION & SHEDDING.....	132
ERUPTION SHEDDING OF DECIDUOUS TEETH.....	134
SHEDDING OF DECIDUOUS TEETH	136
TEMPOROMANDIBULAR JOIN	138
OCCLUSION	140
OCCLUSION.....	142
MANDIBULAR 2 ND PREMOLAR	150
MAXILLARY 1 ST MOLAR	154
MAXILLARY 2 ND MOLAR.....	160
MANDIBULAR 2 ND MOLAR	162
Block C.....	164
MODULE 5, 6 AND 7.....	164
GIT, UGS AND CARDIOPULMONARY.....	164
MAJOR SALIVARY GLANDS AND ITS DUCTS	165
SALIVARY GLAND APPARATUS	166
SALIVARY GLAND SECRETION.....	167
SALIVARY GLAND DUCT.....	168
REFERENCE BOOKS.....	170

Block: A
MODULE 1
FOUNDATION MODULE

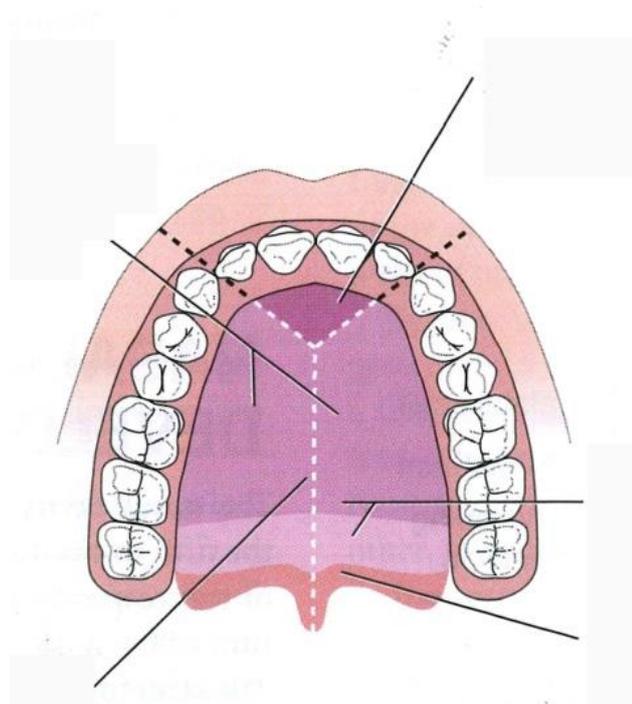
ANATOMY OF TOOTH



DRAW AND LABEL THE DIAGRAM

DEVELOPMENT OF OROFACIAL STRUCTURES

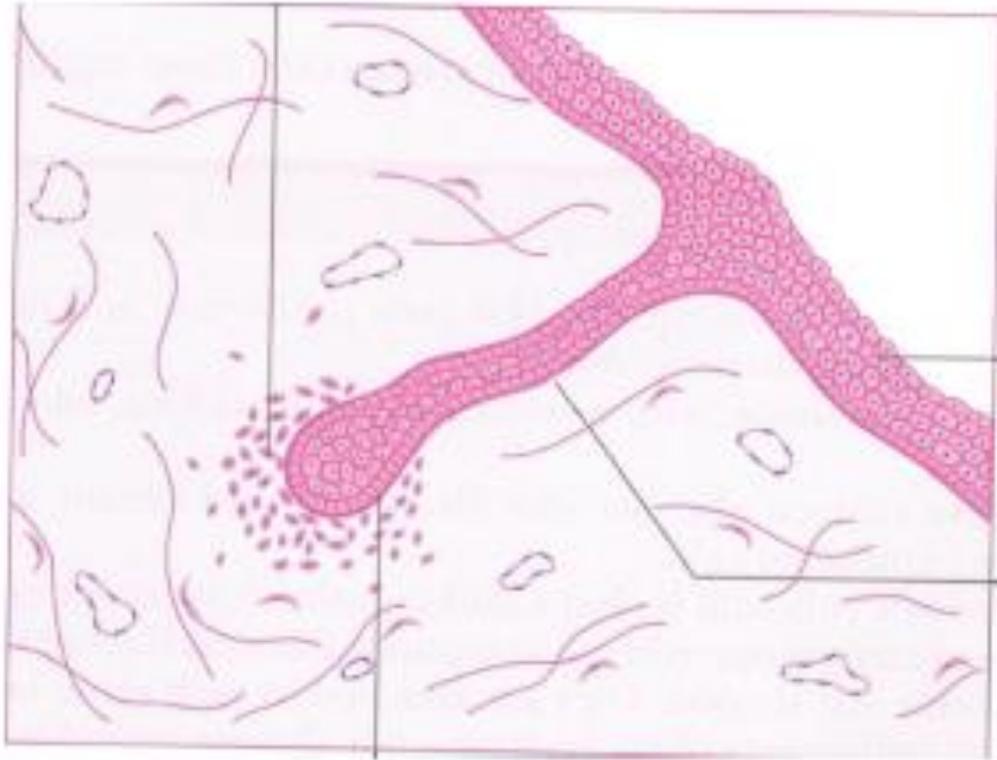
Figure



DRAW AND LABEL THE DIAGRAM

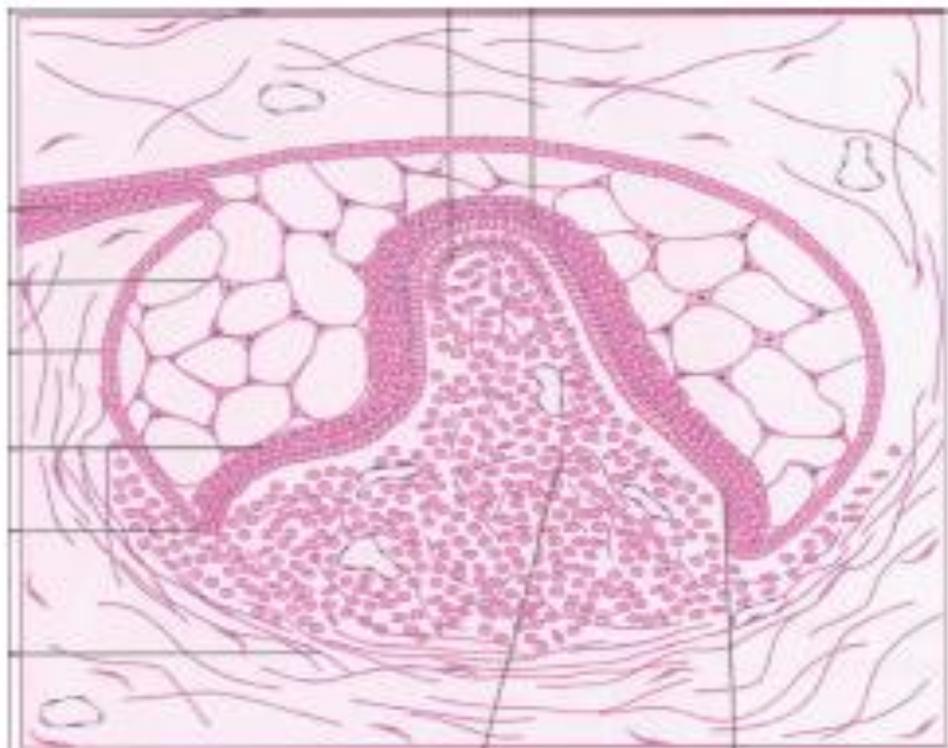
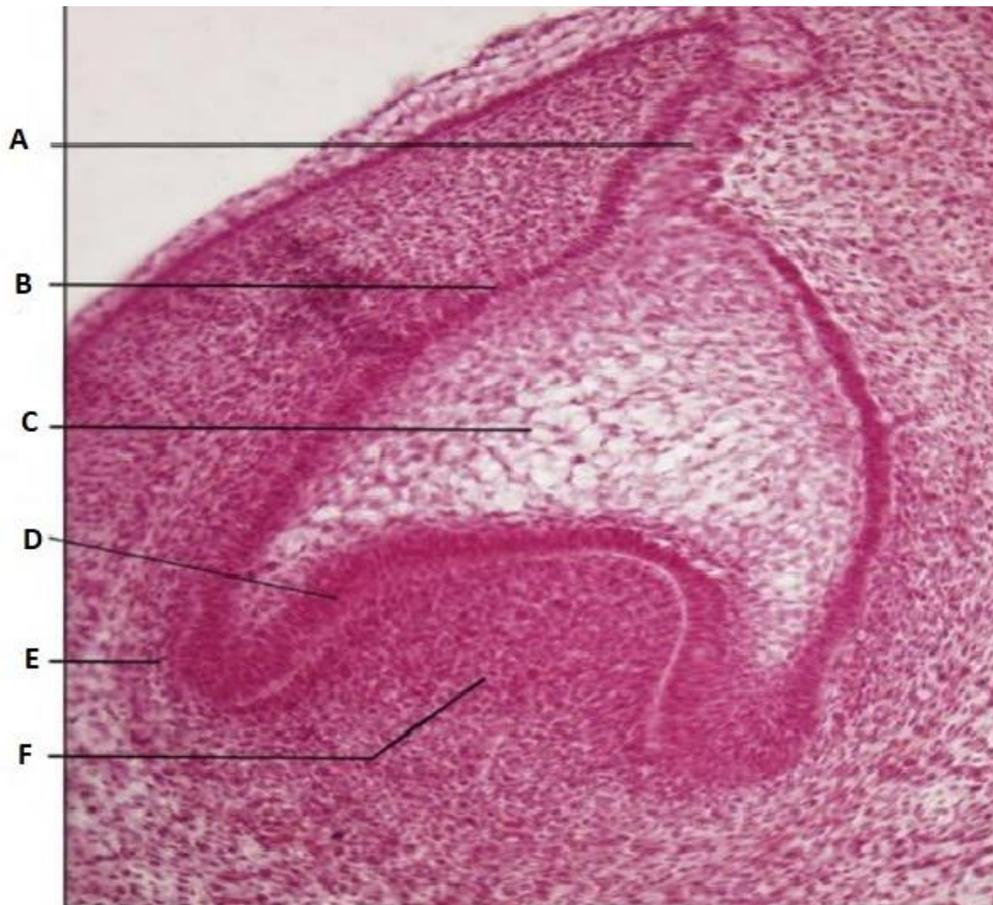
TOOTH DEVELOPMENT

Figure



DRAW AND LABEL THE DIAGRAM

TOOTH DEVELOPMENT



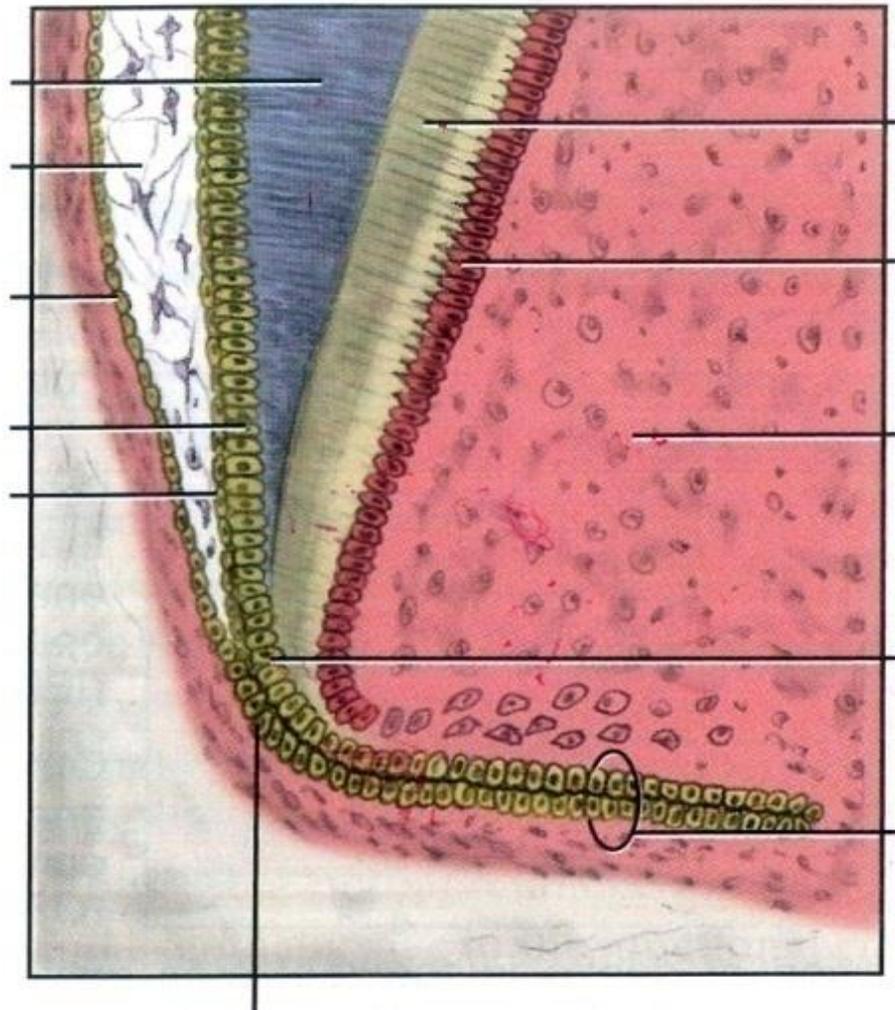
DRAW AND LABEL THE DIAGRAM

Identify the given stages of the tooth development (Bud, Cap & Bell Stage) and briefly write its key events?

Stages of the Tooth Development

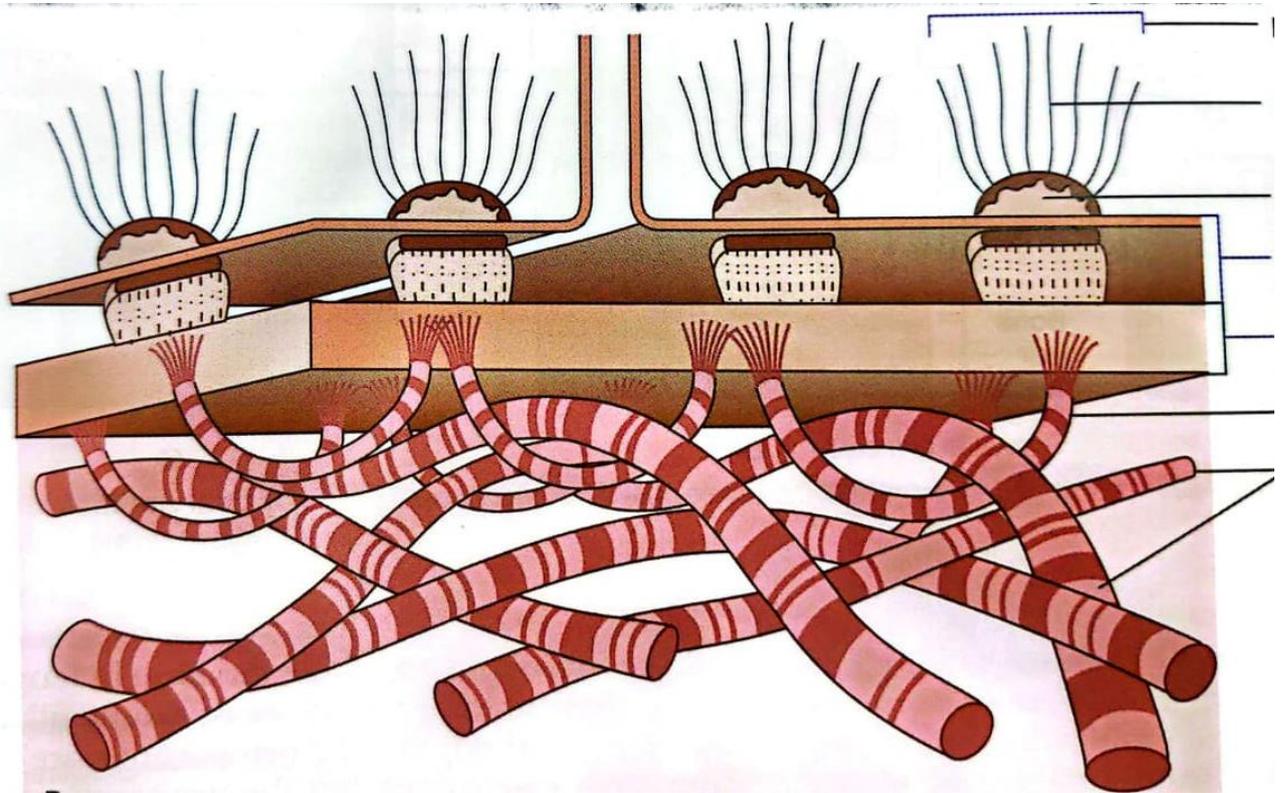
ROOT DEVELOPMENT

Figure



DRAW AND LABEL THE DIAGRAM

BASEMENT MEMBRANE



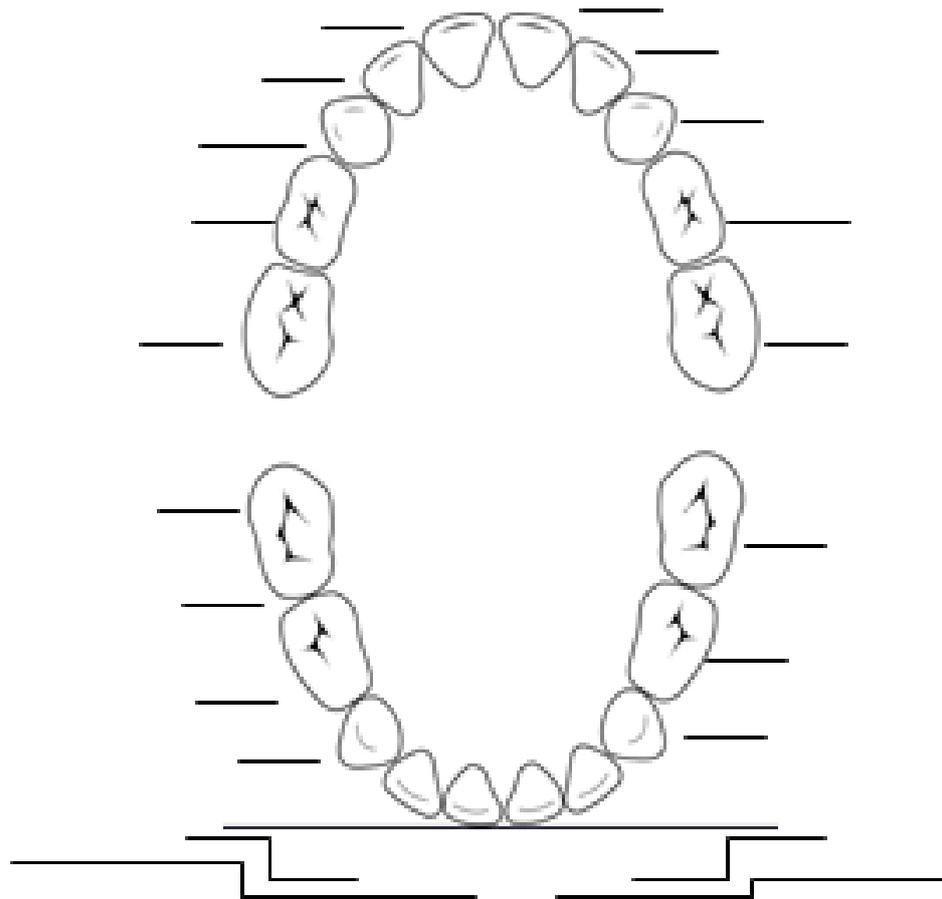
DRAW AND LABEL THE DIAGRAM

LABEL THE DIAGRAM

TOOTH MORPHOLOGY

OVERVIEW OF DENTITIONS

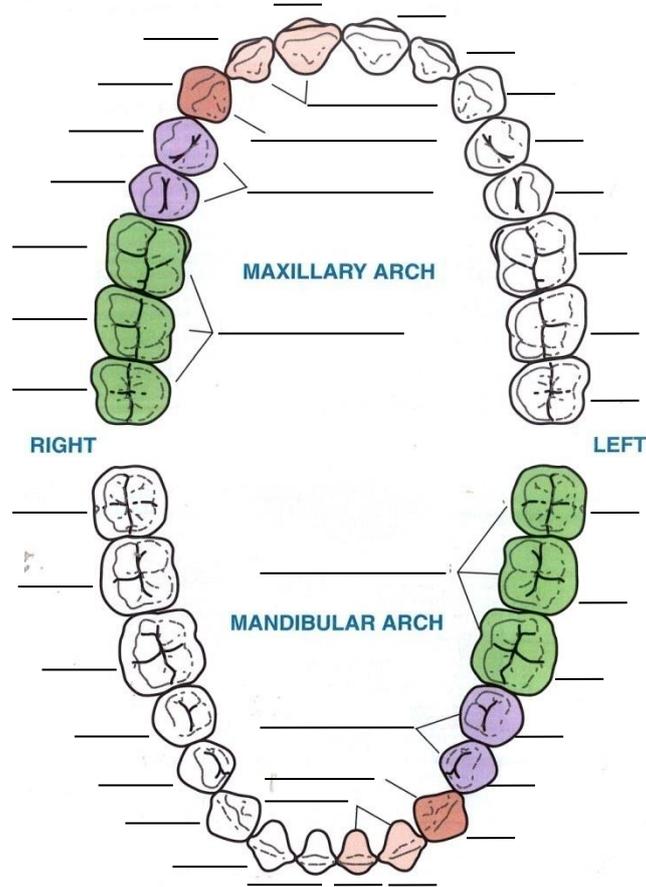
Figure



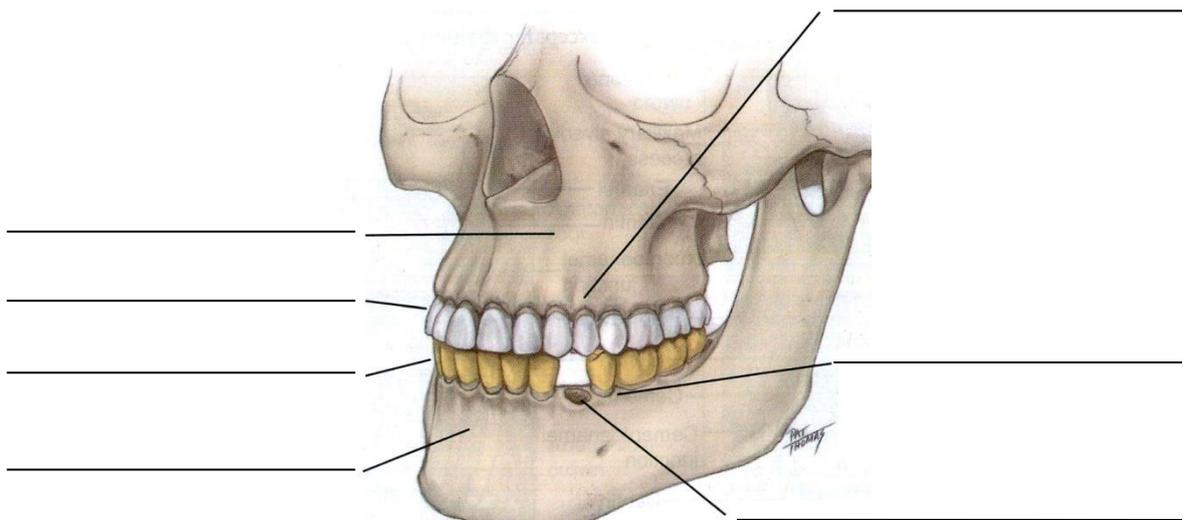
Primary Dentition

LABEL THE DIAGRAM

Figure

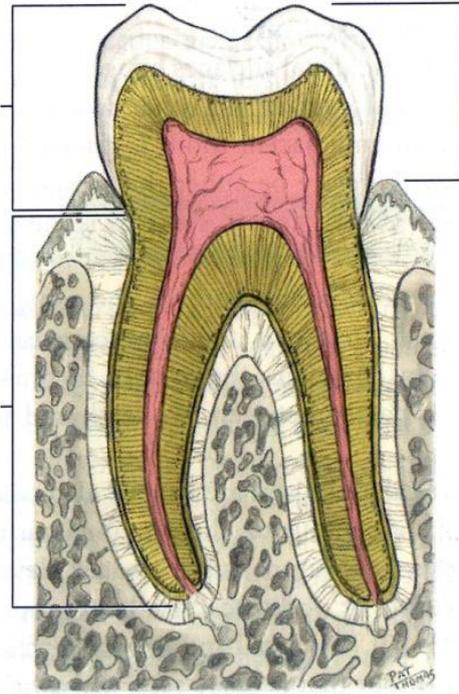


Figure

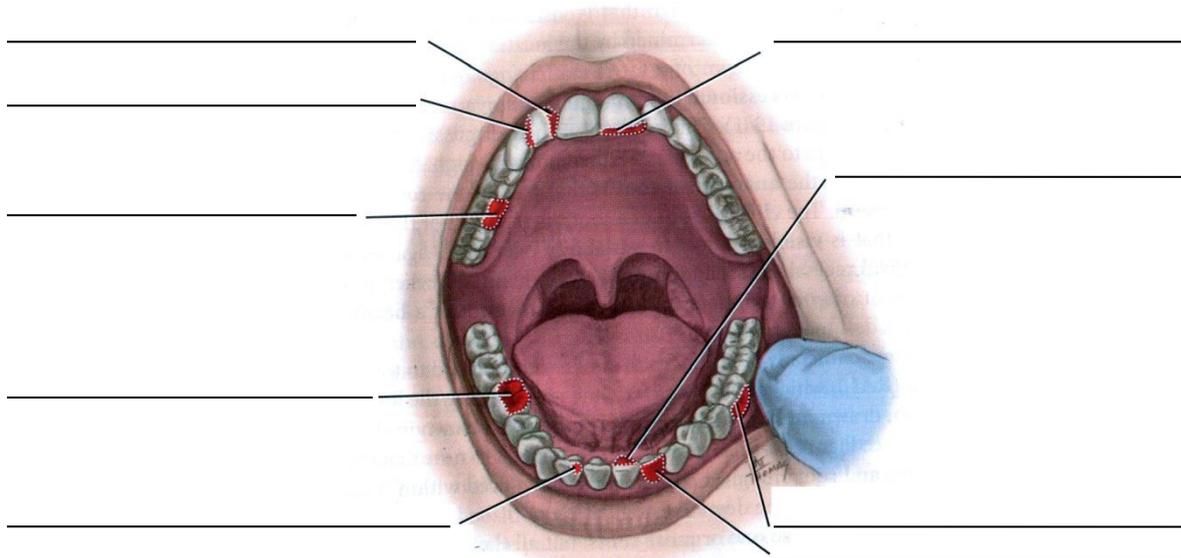


LABEL THE DIAGRAM

Figure



Figure

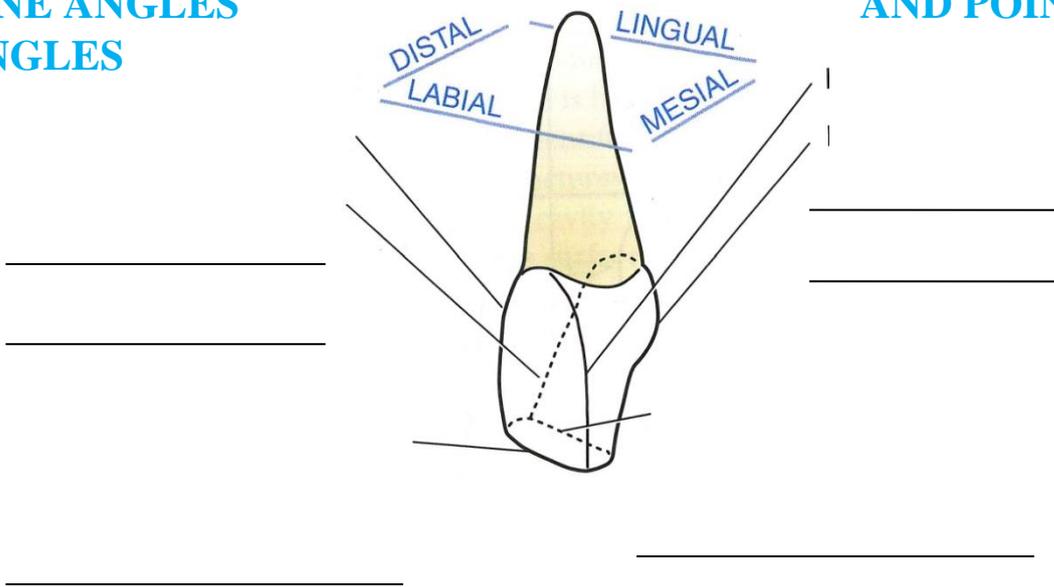


Tooth Surfaces

LABEL THE DIAGRAM

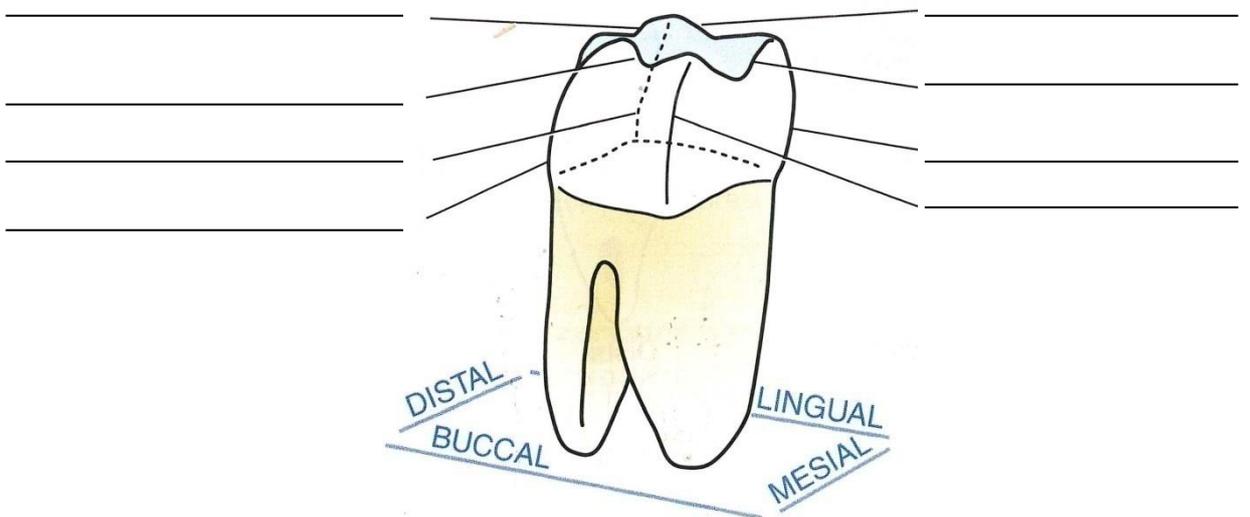
LINE ANGLES
ANGLES

AND POINT



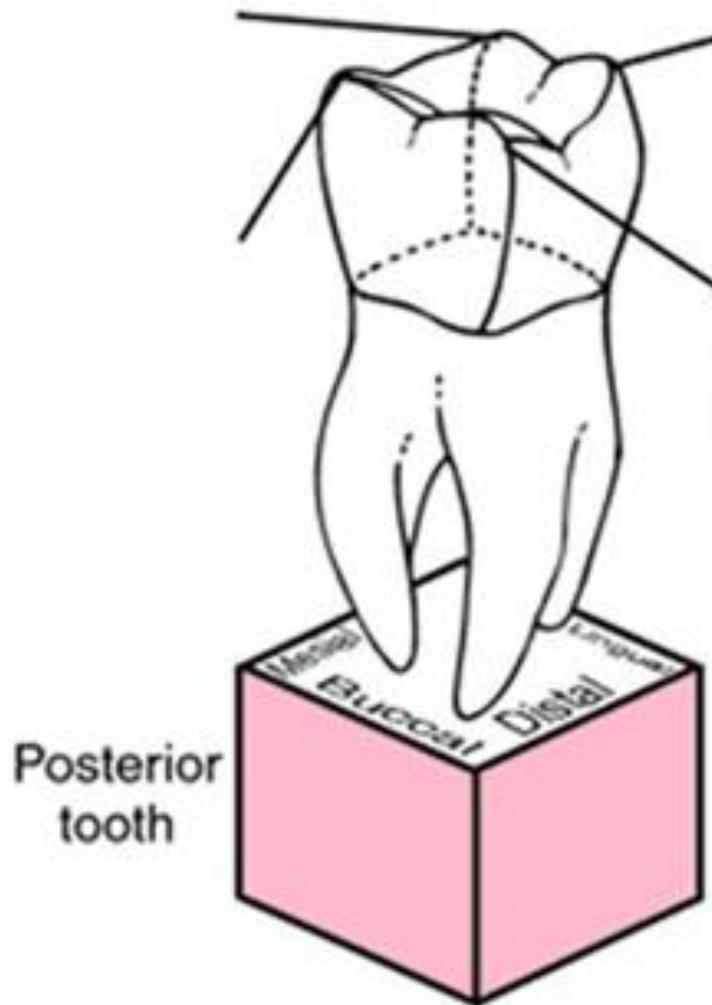
**Anterior Tooth
Line Angles**

Figure



LABEL THE DIAGRAM

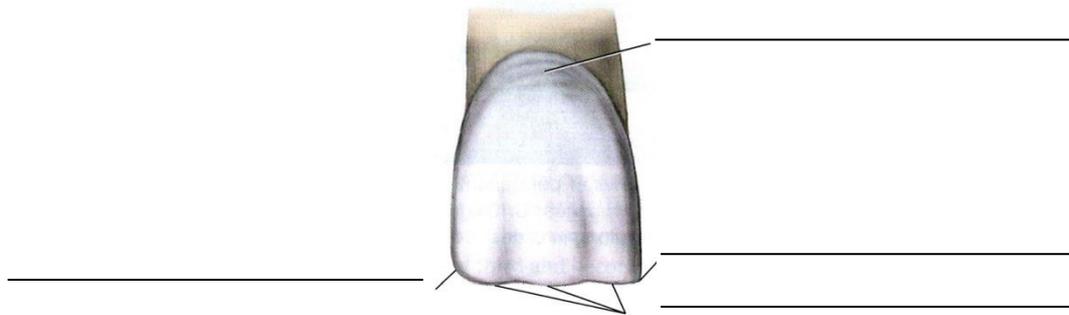
POINT ANGLES



LABEL THE DIAGRAM

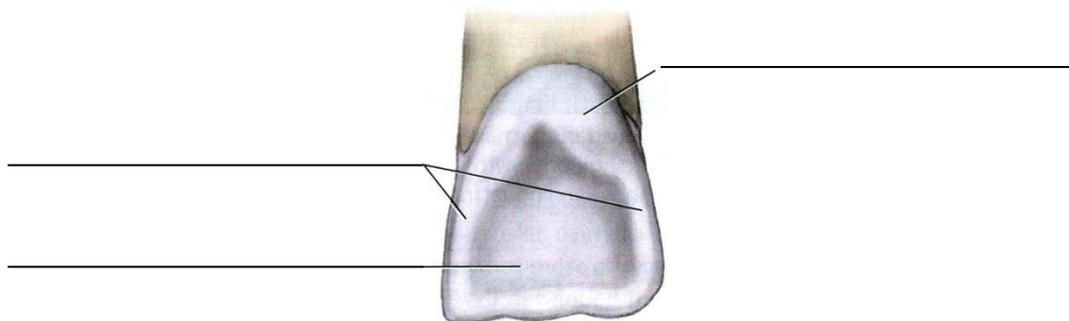
PERMANENT ANTERIOR TEETH

Figure



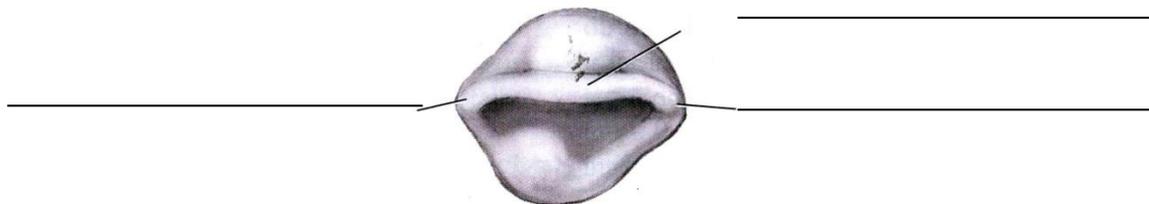
Labial
Permanent Incisor

Figure



Lingual
Permanent Incisor

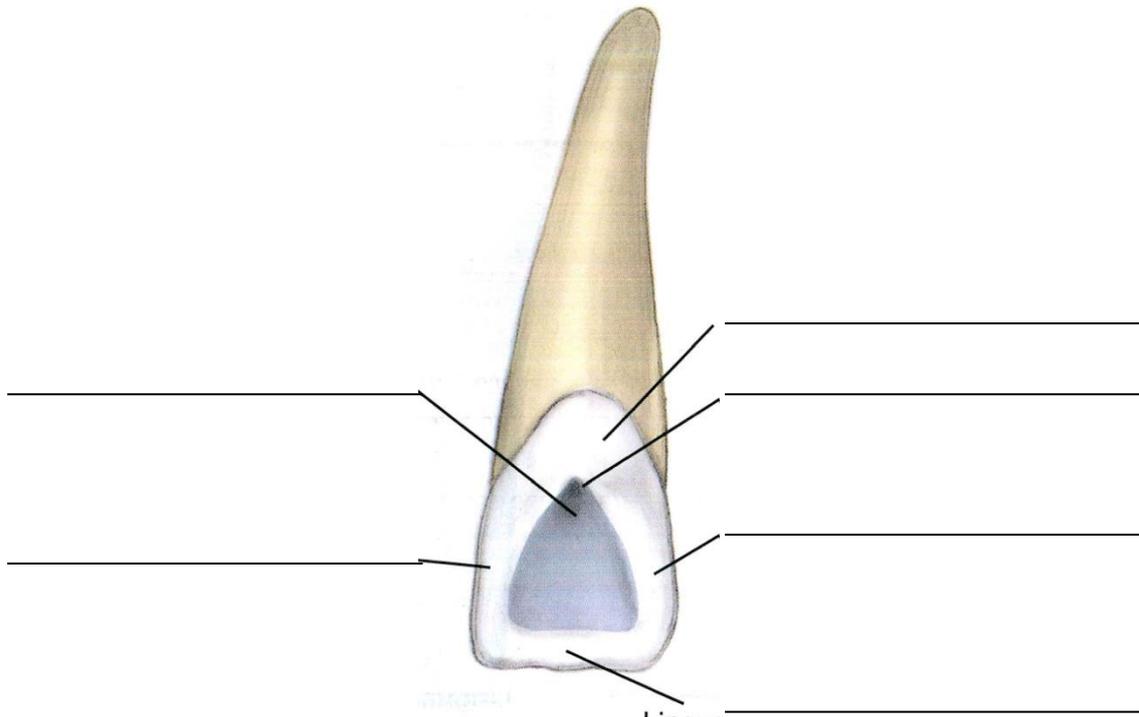
Figure



Incisal

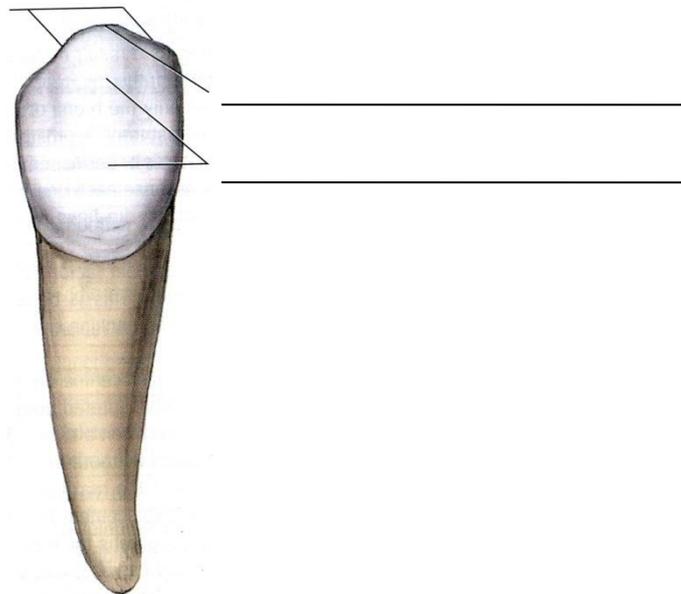
LABEL THE DIAGRAM

Figure



Permanent Maxillary Right Lateral Incisor

Figure



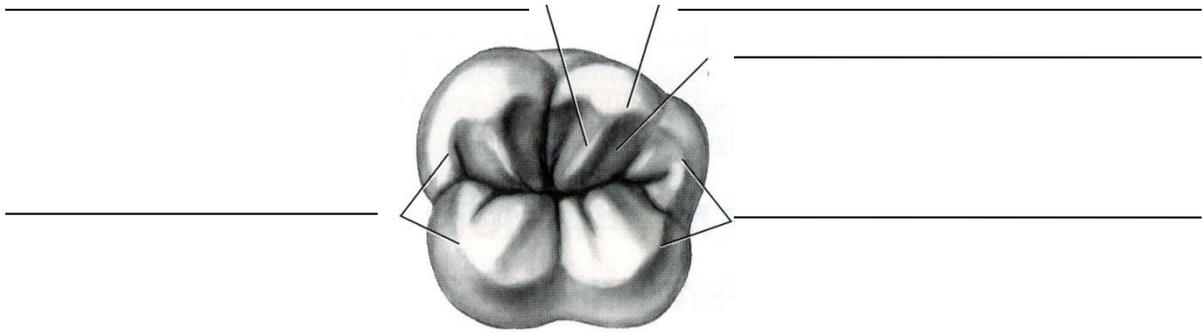
Labial View

Permanent Mandibular Right Canine

LABEL THE DIAGRAM

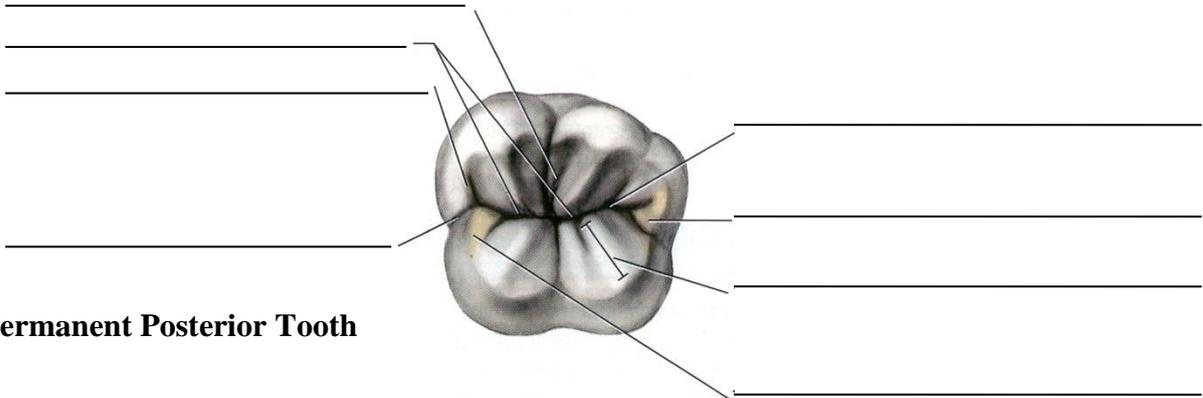
PERMANENT POSTERIOR TEETH

Figure



Permanent Posterior Teeth

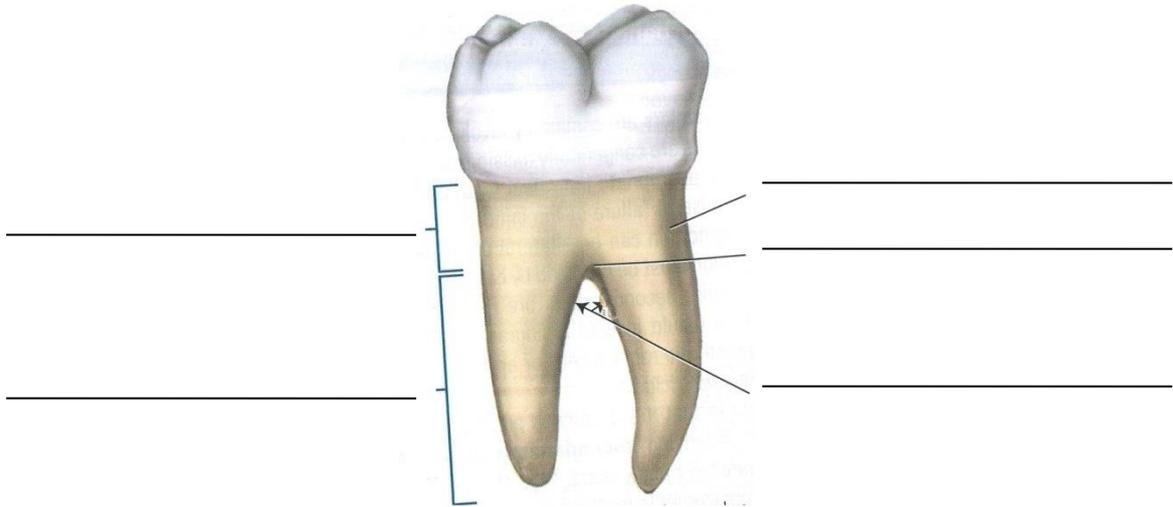
Figure



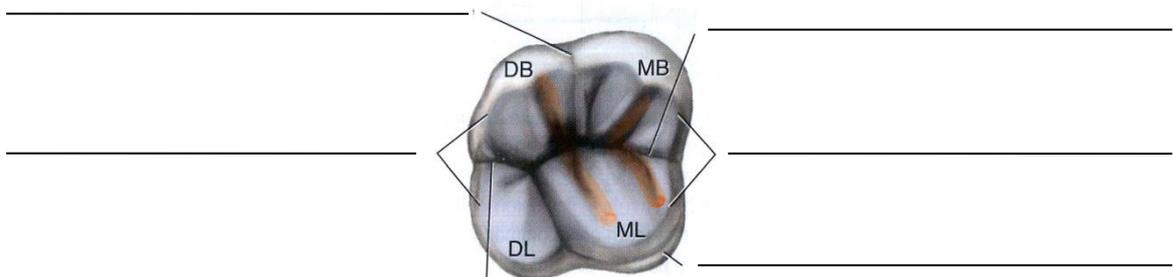
Permanent Posterior Tooth

LABEL THE DIAGRAM

Figure

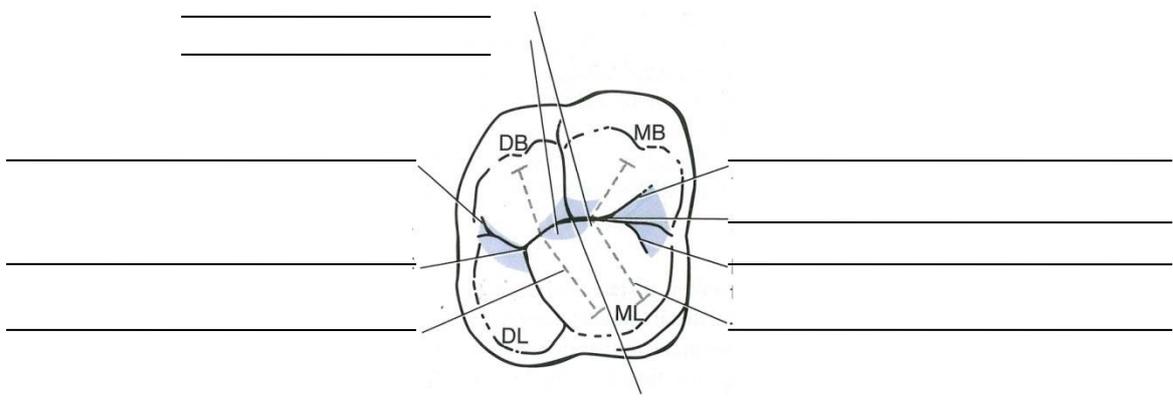


Figure



Permanent Maxillary Right First Motar

Figure



Permanent Maxillary Right First Molar

NUMBERING SYSTEM

Figure

		Molars		Canine	Incisors				Canine	Molars	
Maxillary Arch											
I		A	B	C	D	E	F	G	H	I	J
II		55	54	53	52	51	61	62	63	64	65
III		E	D	C	B	A	A	B	C	D	E
Mandibular Arch											
Right						Left					
III		E	D	C	B	A	A	B	C	D	E
II		85	84	83	82	81	71	72	73	74	75
I		T	S	R	Q	P	O	N	M	L	K

- I Universal Tooth Designation System
- II International Standards Organization Designation System
- III Palmer Notation Method

A

A: Universal Tooth Designation System, International Standards Organization Designation System, and Palmer Notation Method for the primary teeth.

DRAW AND LABEL THE DIAGRAMS

NUMBERING SYSTEM

Figure

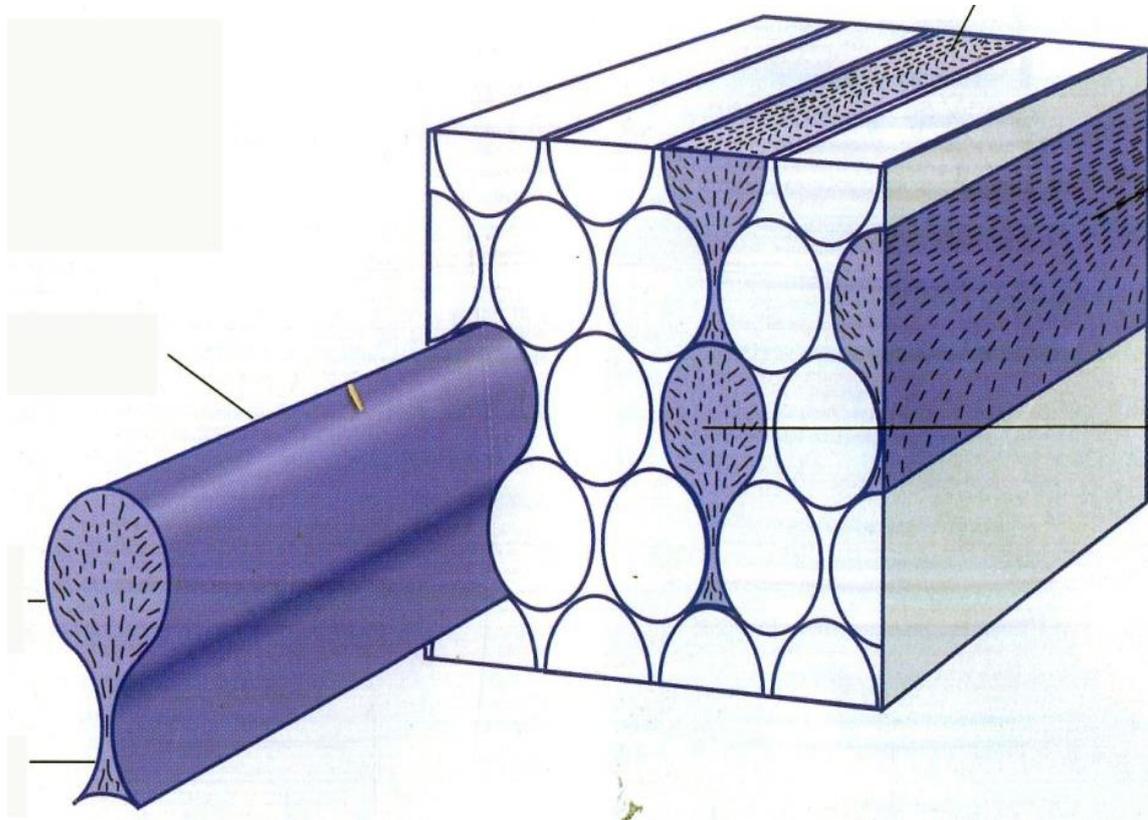
Molars			Premolars		Canine	Incisors		Canine	Premolars		Molars				
Maxillary Arch															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
Mandibular Arch															
Right						Left									
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17

- I Universal Tooth Designation System
- II International Standards Organization Designation System
- III Palmer Notation Method

Universal Tooth Designation System, International Standards Organization Designation System, and Palmer Notation Method for the permanent teeth.

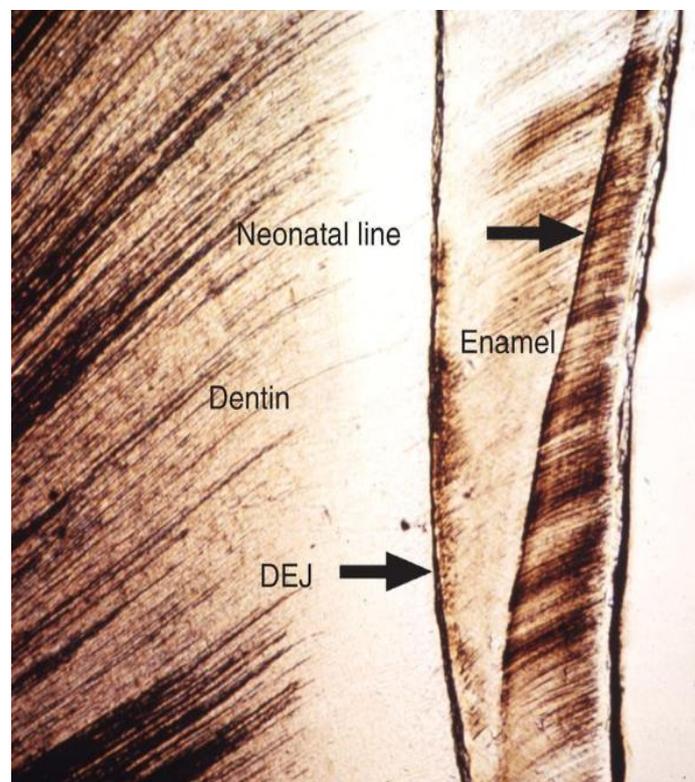
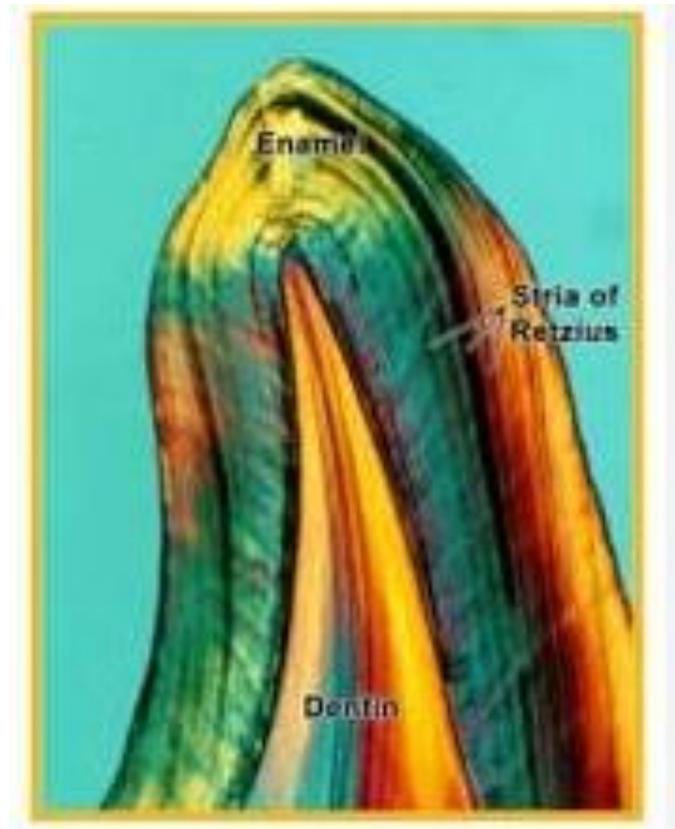
DRAW AND LABEL THE DIAGRAMS

ENAMEL RODS



DRAW AND LABEL THE DIAGRAMS

STRIA OF RETZIUS AND NEONATAL LINE



Briefly Describe Stria of Retzius and Neonatal Line

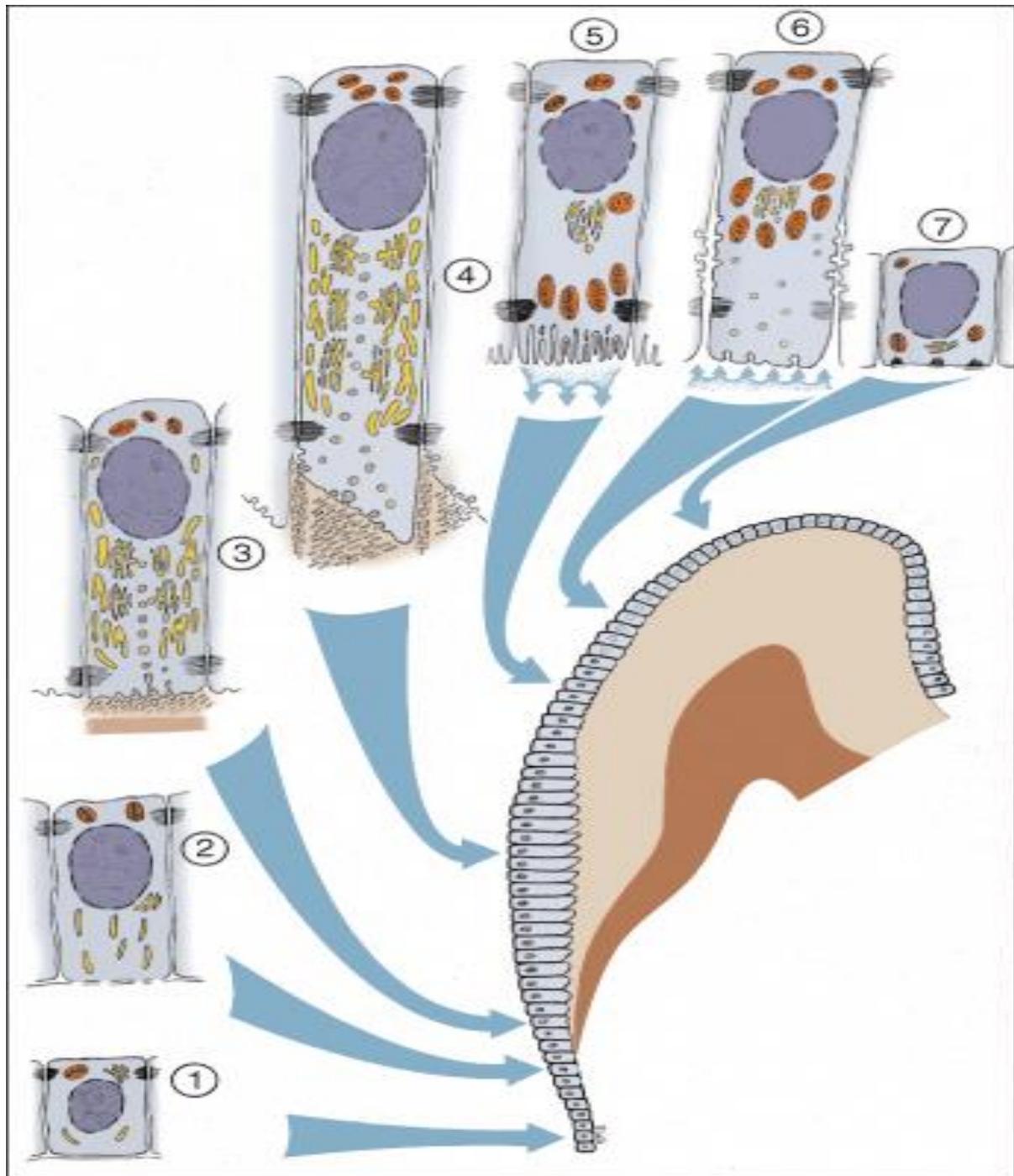
DENTINOENAMAL JUNCTION



DRAW AND LABEL THE DIAGRAM

LIFE CYCLE OF AMELOBLASTS

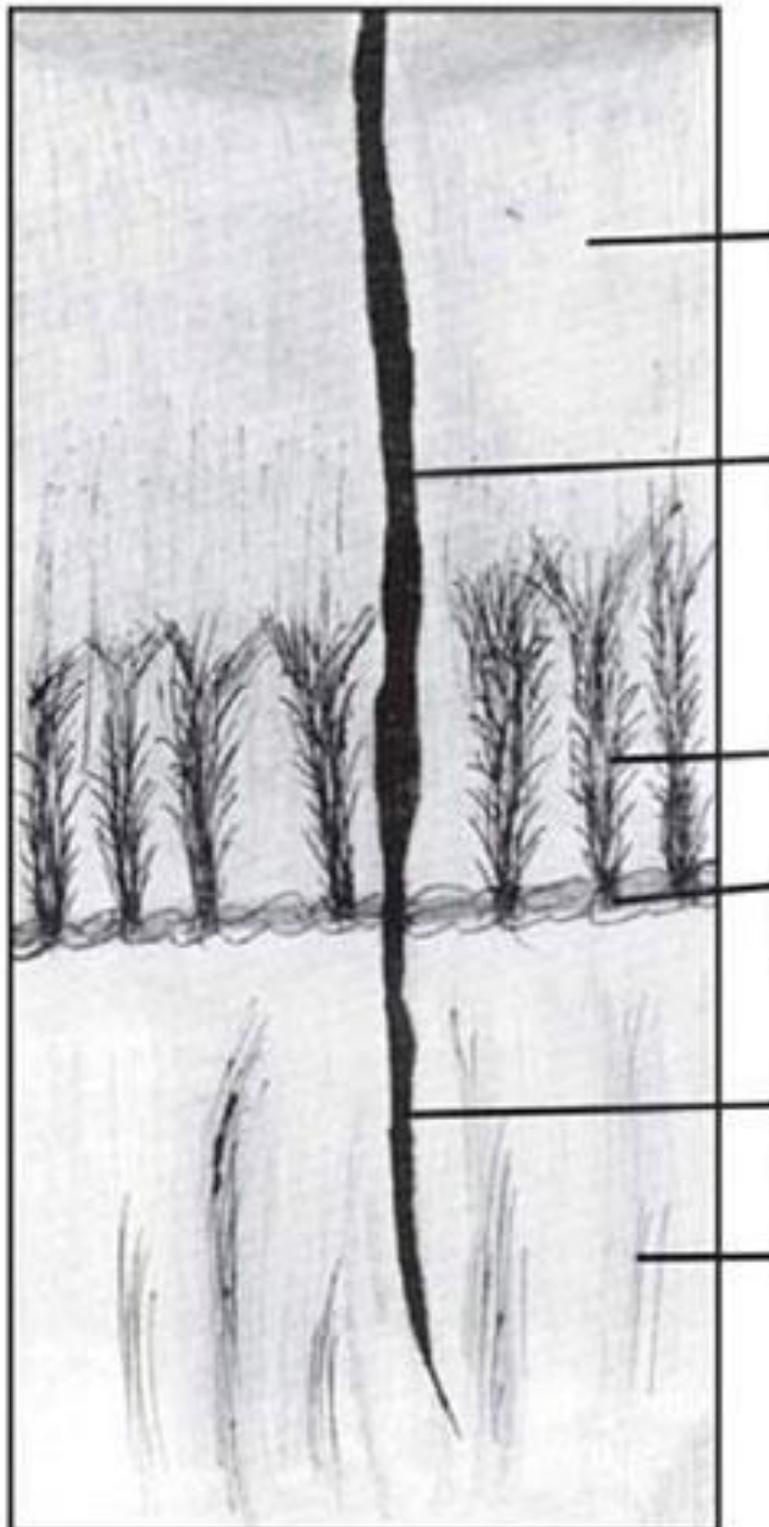
Figure



DRAW AND LABEL THE DIAGRAMS

Q) Write the key events that occur during the stages of lifecycle of ameloblast?

GROUND SECTION OF ENAMEL



DRAW AND LABEL THE DIAGRAMS

Block: A
MODULE 2
BLOOD MODULE

Pulp:

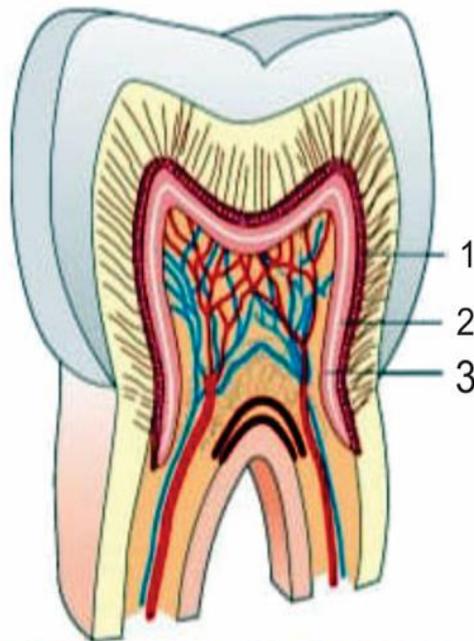


Diagram of pulp organ, illustrating architecture of large central nerve trunks (dark) and vessels (light) and peripheral cell-rich, cell-free, and odontoblast rows. Observe small nerves on blood vessels.

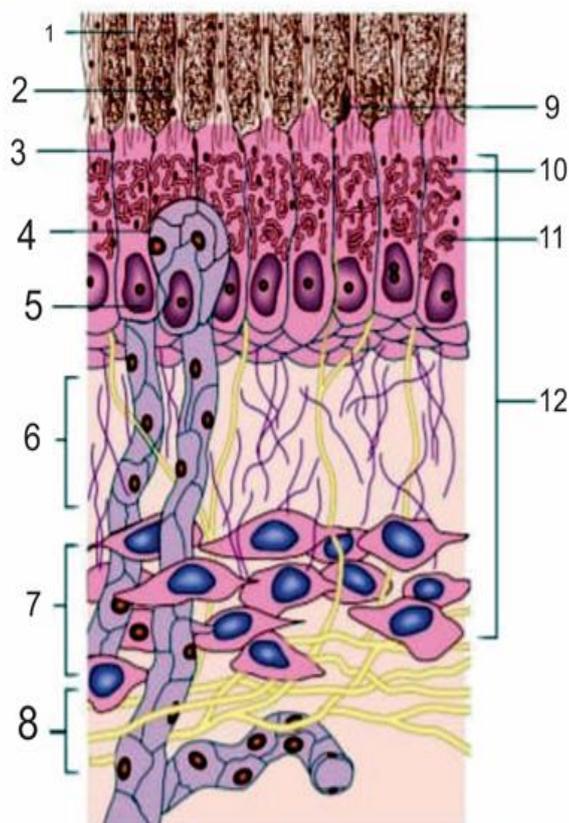
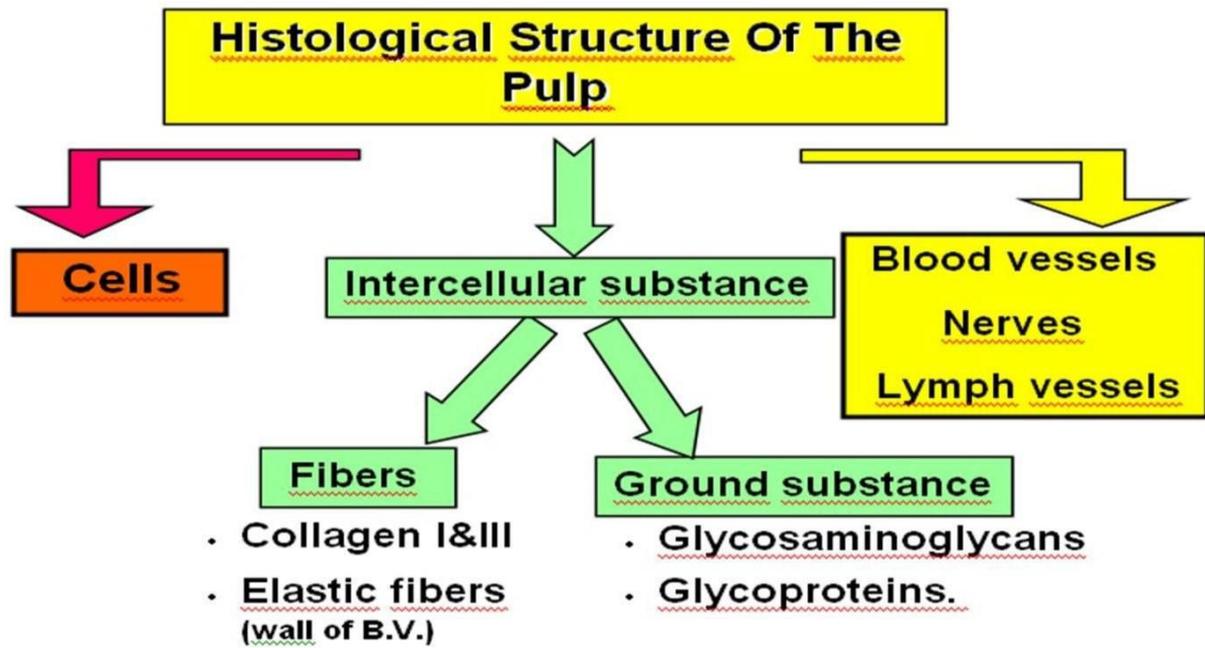


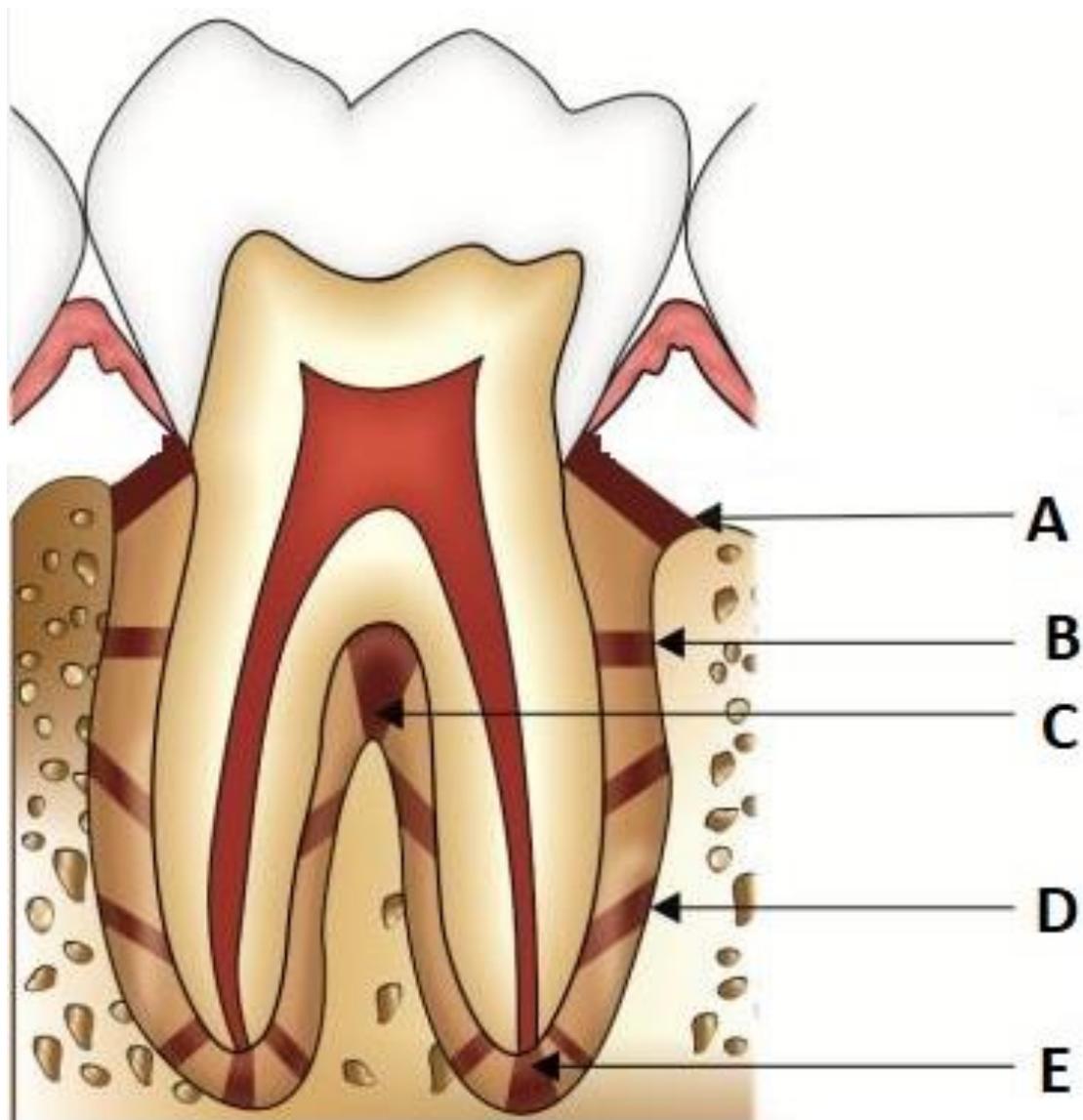
Diagram of odontogenic zone illustrating odontoblast, cell-free, and cell-rich zones, with blood vessels and nonmyelinated nerves among odontoblasts.

DRAW AND LABEL THE DIAGRAMS

HISTOLOGY STRUCTURE OF THE PULP



FIBERS OF PDL



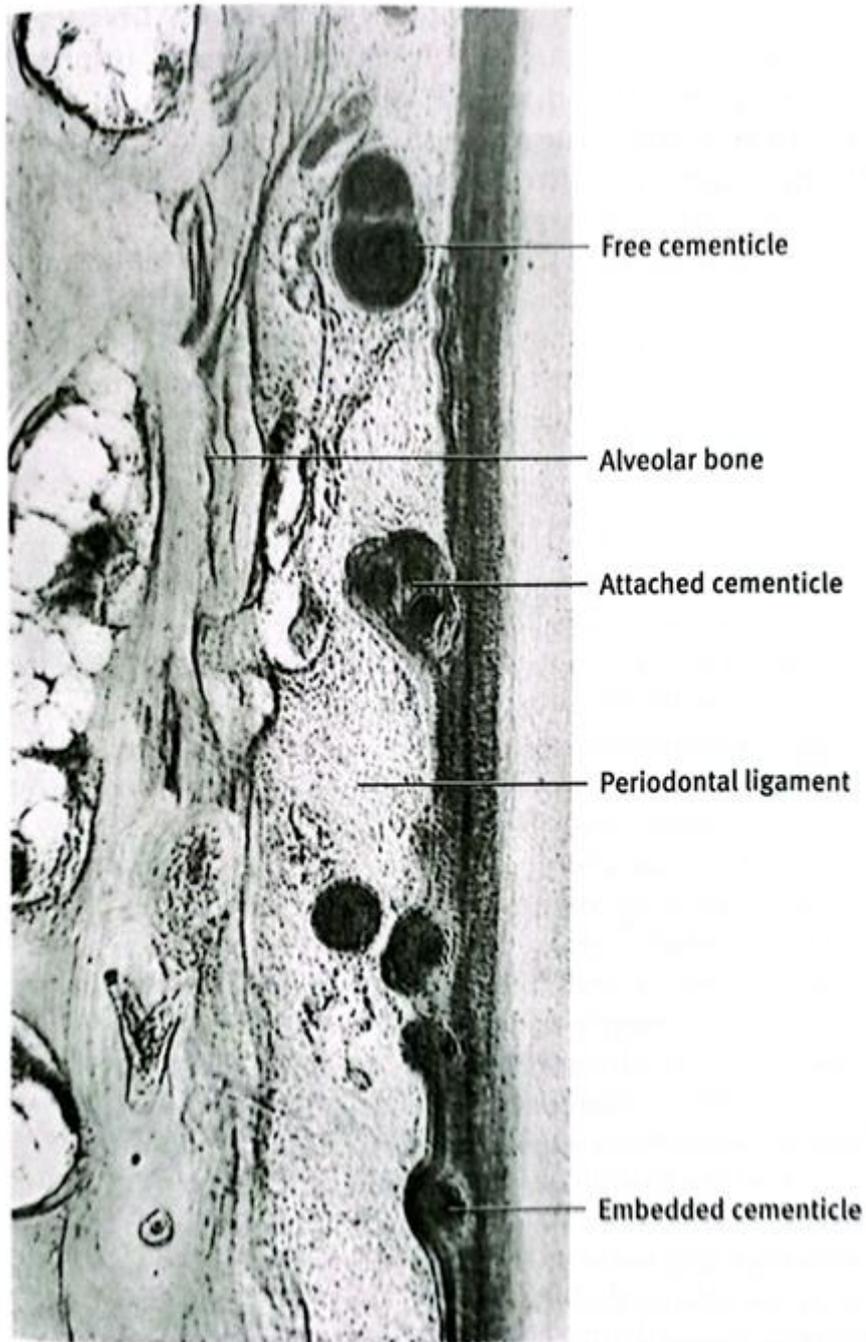
**DRAW AND LABEL THE DIAGRAMS MARKED A, B,
C, D AND E**

PRINCIPLES FIBER OF PERIODONTAL LIGAMENT

Type of Fiber	Origin and Insertion	Function
Alveolar crest group	<ul style="list-style-type: none"> Extend obliquely from cementum just beneath junctional epithelium to alveolar crest Also extend from cementum over the alveolar crest to fibrous layer of periosteum covering alveolar bone 	Resist tilting, intrusive, extrusive and rotational forces
Horizontal group limited to coronal one fourth of pdl space	<ul style="list-style-type: none"> Extend at right angles to the long axis of the tooth from cementum to the alveolar bone and parallel to occlusal plane Gets inserted into alveolar process as Sharpey's fibers 	Resist horizontal and tipping force
Oblique group most numerous and occupy 2/3rd of ligament	Extend into alveolar bone coronal to their attachment to cementum	Resist vertical and intrusive forces
Apical group not seen in incompletely formed roots	Extend from root tip and radiate through the periodontal space into fundus of bony socket	Resist luxation, prevent tooth tipping, protect delicate lymph and blood vessels and nerves traversing the PDL space at the root apex
Interradicular group fibers lost if furcation area is exposed	Extend into cementum from the crest of inter-radicular septum of multirooted teeth	Resist tooth tipping, torque and luxation

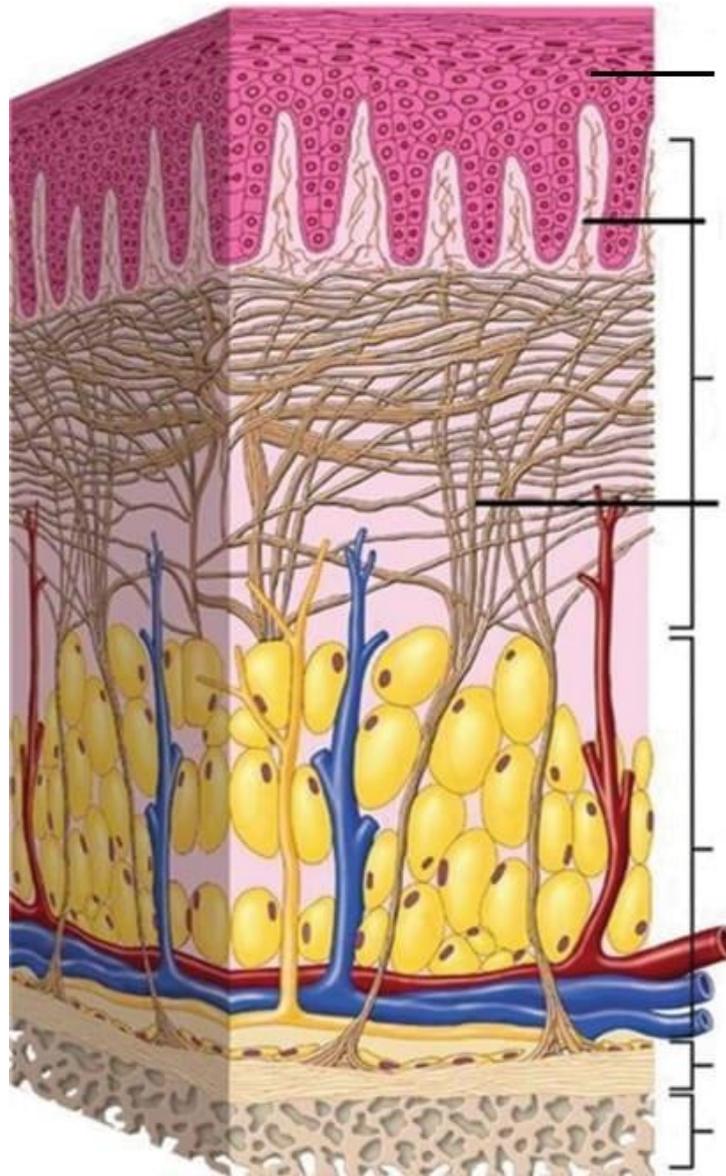
Briefly Describe Functions of Periodontal Ligament.

CEMENTICLES IN PERIODONTAL LIGAMENT



Briefly Describe Cementicles in Periodontal Ligament

STRUCTURE OF ORAL MUCOSA



DRAW AND LABEL THE DIAGRAMS

KERATINIZED / NON-KERATINIZED EPITHELIUM:

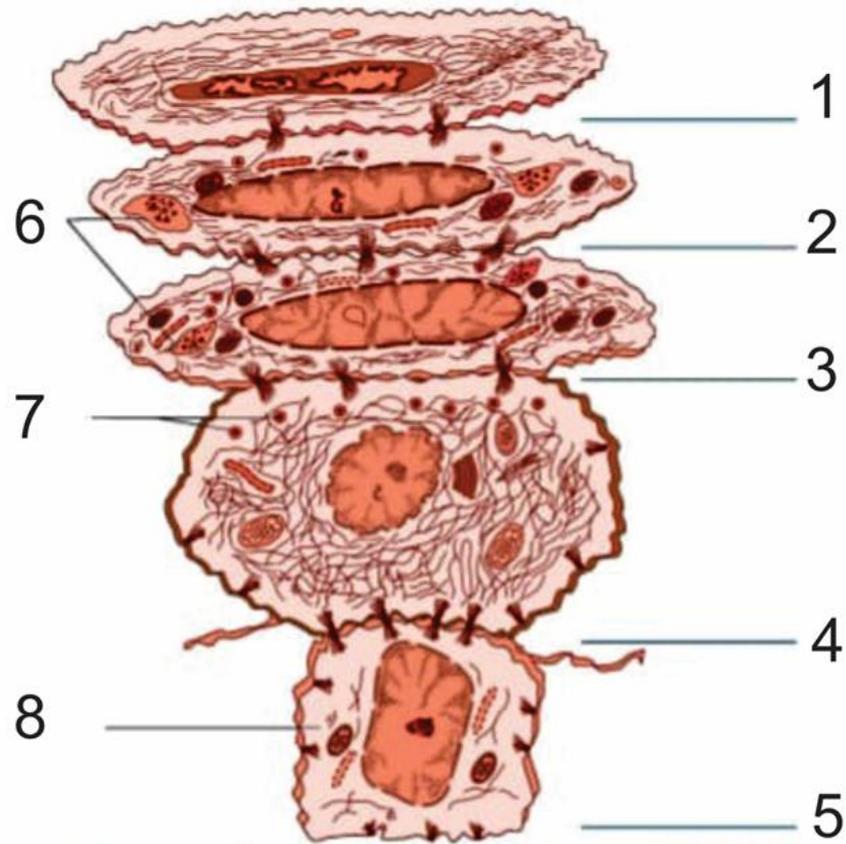


Diagram showing details of the different cell layers of the nonkeratinized epithelium.

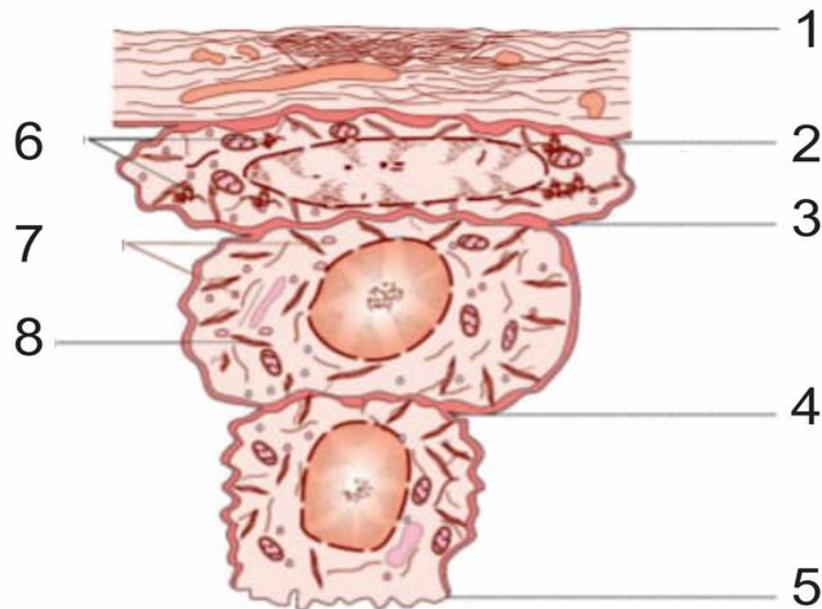


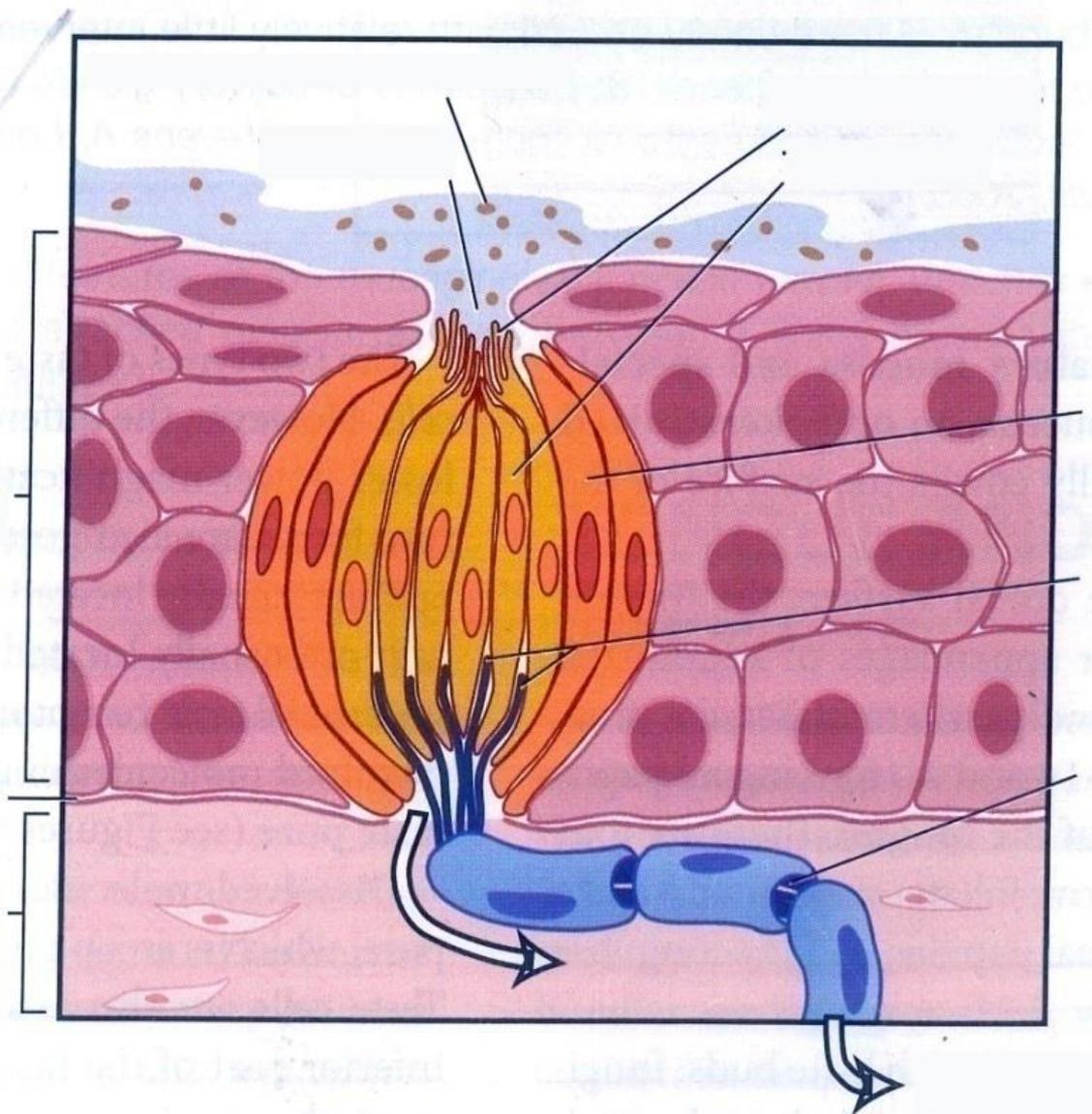
Diagram showing details of the different cell layers of the orthokeratinized epithelium.

DRAW AND LABEL THE DIAGRAMS

Q) Tabulate the differences between keratinized and non-keratinized epithelium.

TASTE BUD AND TASTE

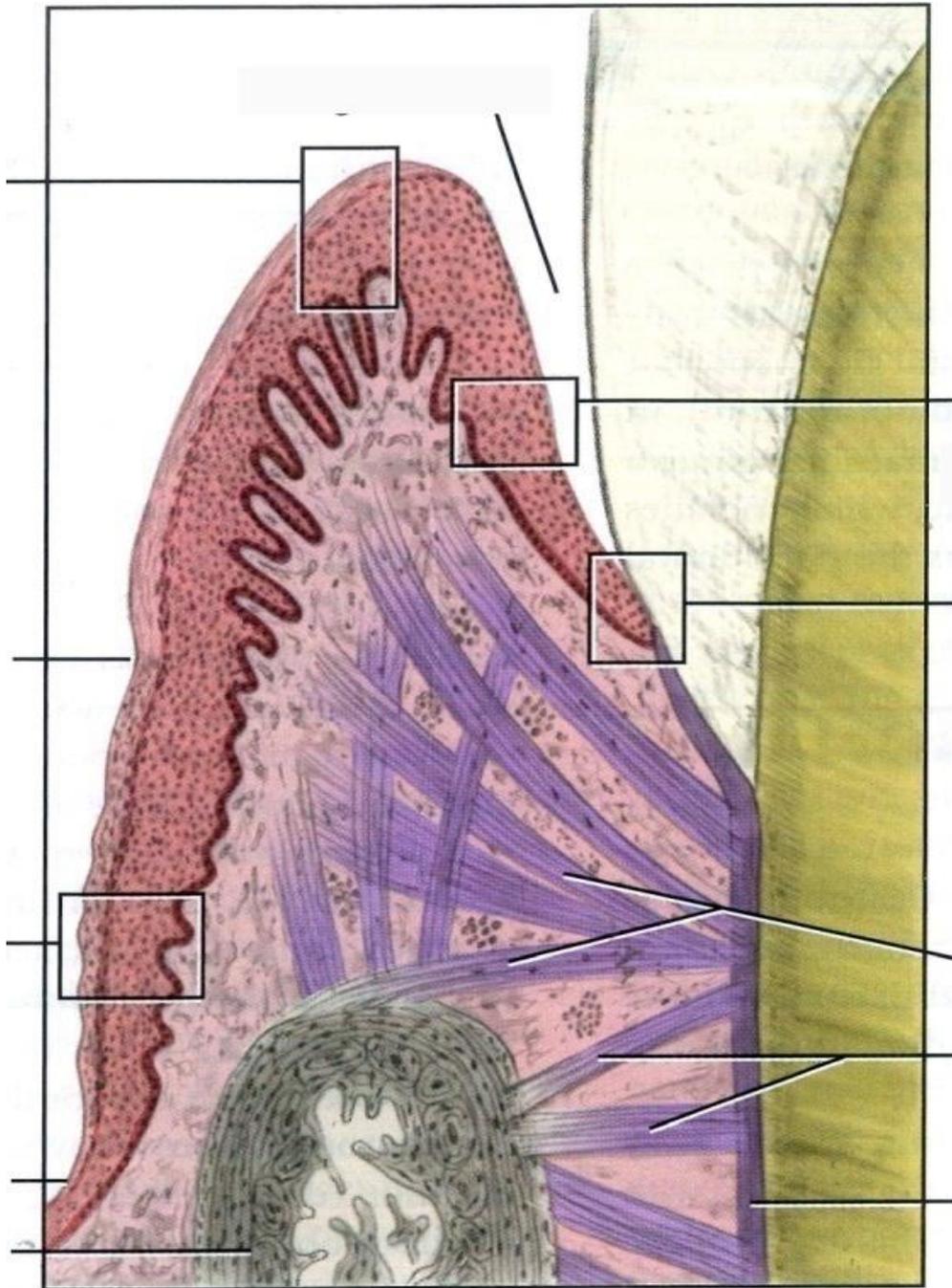
Figure



DRAW AND LABEL THE DIAGRAM

GINGIVAL AND DENTOGINGIVAL JUNCTIONAL TISSUES

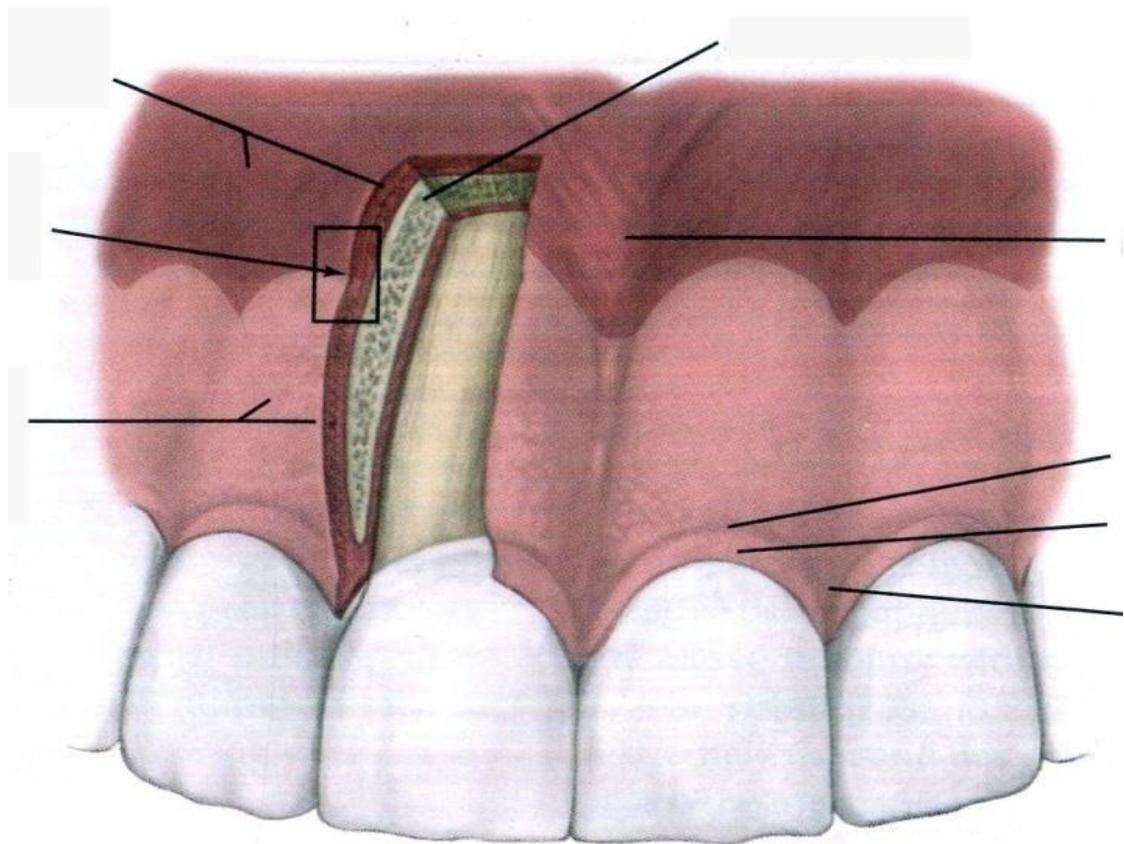
Figure



DRAW AND LABEL THE DIAGRAMS

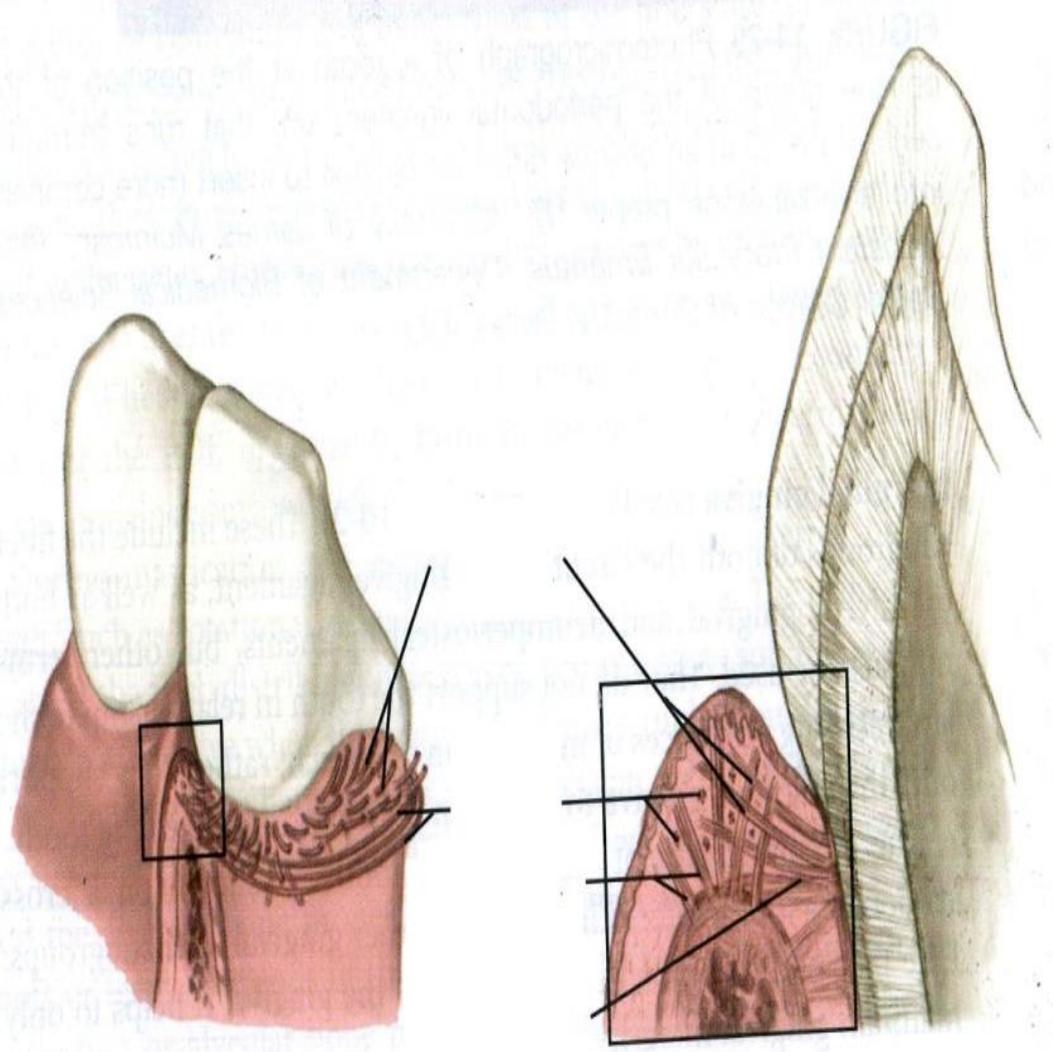
MUCOGINGIVAL JUNCTION

Figure



DRAW AND LABEL THE DIAGRAMS

GINGIVAL FIBER SUBGROUPS

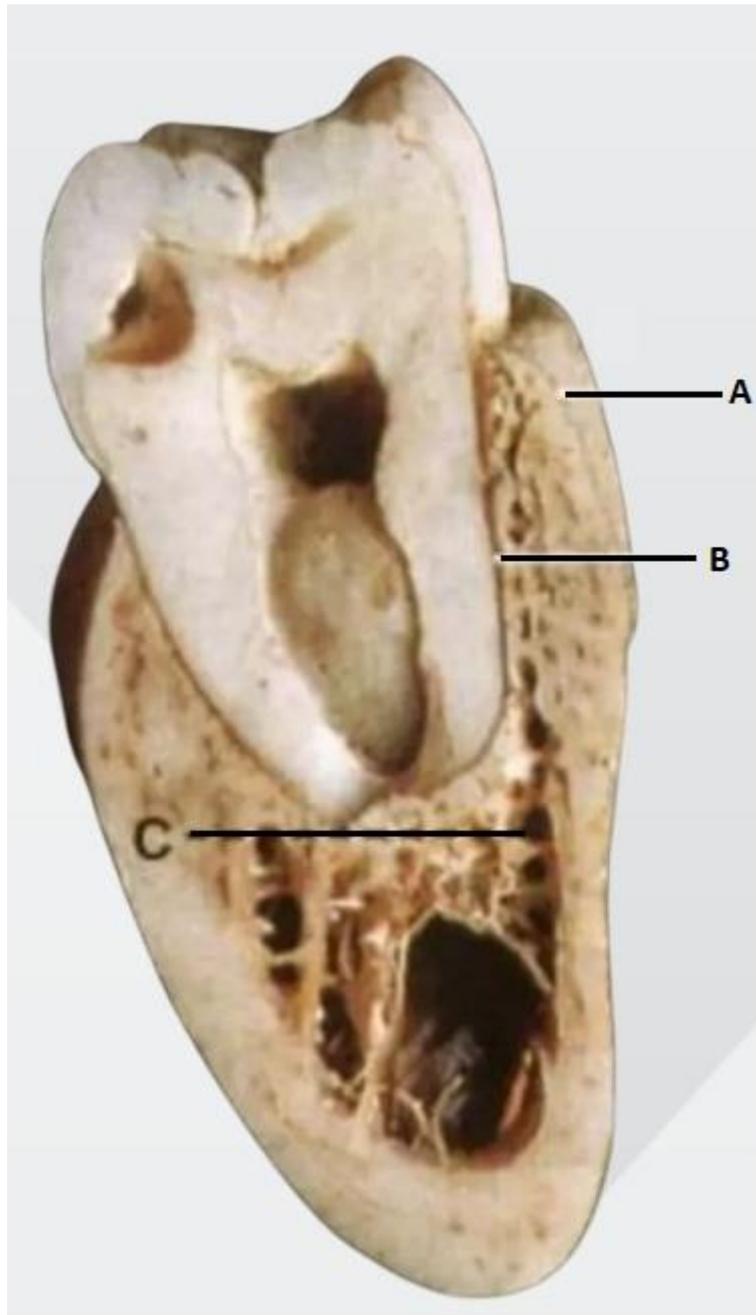


DRAW AND LABEL THE DIAGRAMS

Q) Write the functions of each group of Gingival fibres

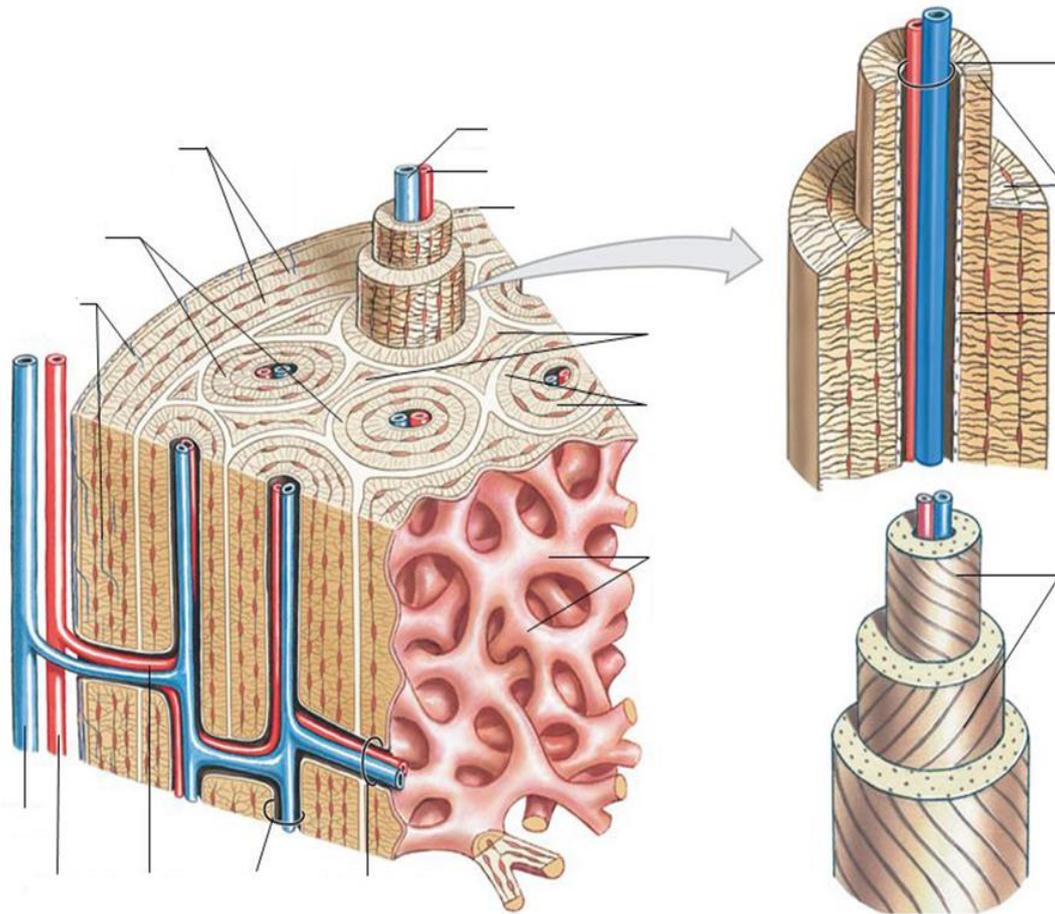
Block: B
MODULE: 3
CRANIOFACIAL MODULE

STRUCTURE OF ALVEOLAR BONE



DRAW AND LABEL THE DIAGRAMS

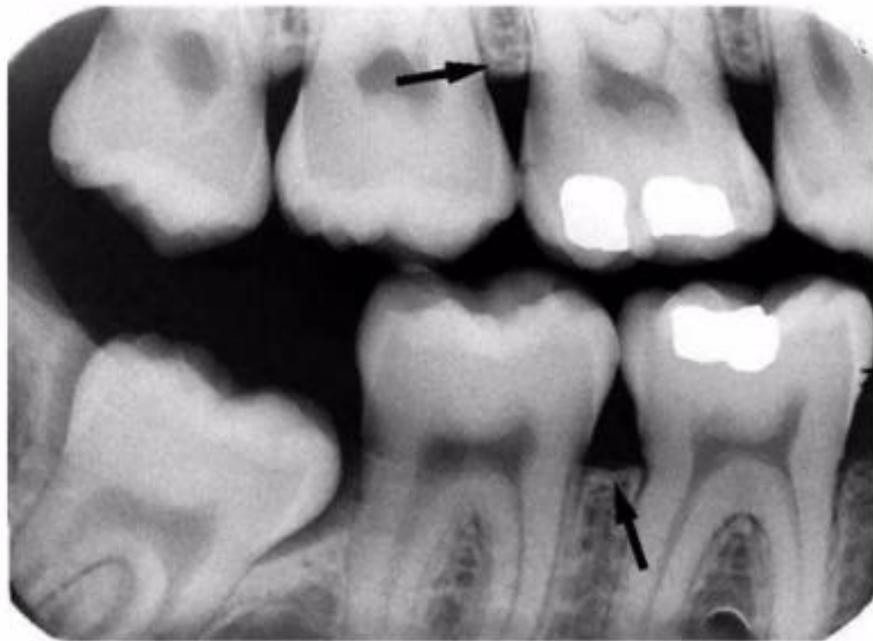
HISTOLOGY OF BONE



a The organization of osteons and lamellae in compact bone

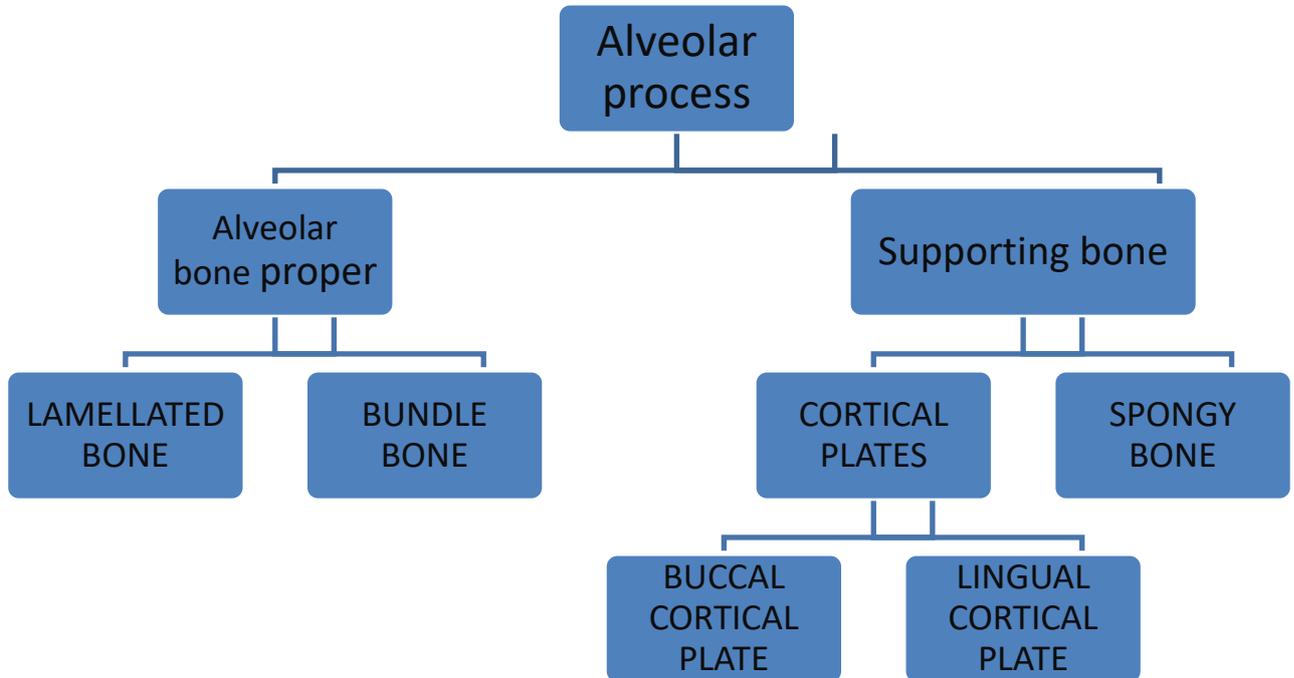
DRAW AND LABEL THE DIAGRAMS

CREST OF THE ALVEOLAR SEPTA (ALVEOLAR CRESTS)



Briefly Describe Crest of the Alveolar Septa (Alveolar Crests)

THE HISTOLOGY OF ALVEOLAR BONE AND REGULATORY FACTORS IN BONE REMODELING



SYSTEMIC FACTORS

1.) HORMONES

- a.) Decrease bone resorption
 - Calcitonin
 - Estrogen
- b.) Increase bone resorption
 - PTH
 - Glucocorticoids
 - Vitamin D (high doses)
- c.) Increase bone formation
 - Growth hormone
 - Vitamin D
 - Insulin
 - Low dose PTH
- d.) Decrease bone formation
 - Glucocorticoids

LOCAL FACTORS

- a.) Growth Factors
 - IGF I & II
 - TGF b
 - FGF
 - PGDF
- b.) Cytokines
 - IL- 1, IL- 6, IL- 11
 - PGE₂

FUNCTIONS OF ALVEOLAR BONE

- Houses the roots of teeth.
- Anchors the roots of teeth to the alveoli, which is achieved by the insertion of Sharpey's fibers into the alveolar bone proper.
- Helps to move the teeth for better occlusion.
- Helps to absorb and distribute occlusal forces generated during tooth contact.
- Supplies vessels to periodontal ligament.
- Houses and protects developing permanent teeth, while supporting primary teeth.
- Organizes eruption of primary and permanent teeth.

GUIDE LINES FOR DRAWING OF TEETH ACCORDING TO ITS MORPHOLOGY

Introduction

Tooth-drawing assignments emphasize fundamental principles in tooth design, which later have direct practical application in clinical coursework of a dental professional. Initial drawings are most likely to be the student's first attempts at capturing any tooth likeness; they will certainly encourage accuracy and discernment of the teeth and hopefully facilitate the recognition of tooth details. *Artistic inclinations are not really needed with these basic technical drawings.*

It is important to also note that these drawings are only two-dimensional and are somewhat limited to fundamental outlines and proportions. However, they will serve to help create mental pictures of teeth in their ideal or composite state. Remember that real specimens in patients' mouths vary considerably.

Activity Steps

1. Locate the two, blank gridded worksheets in the workbook. Any additional gridded worksheets needed can be easily copied for the correct spacing of the grid needed. Correctly label the worksheet at the bottom of the page with the tooth that will be drawn as shown in the smaller professionally drawn figures.
2. Using the attached table of tooth dimensions (same as in the associated textbook's appendices), mark off the overall peripheral tooth measurements for each of the gridded view boxes of the tooth. Note that the grid of the blank worksheet is larger than that shown with the professionally drawn tooth outlines to better enable the student to have room to work. Each square of grid equals 1 mm, so count off as many squares for each peripheral dimension (such as the mesiodistal diameter) as indicated from the table onto the proper area of the gridded worksheet.
3. To establish crown and root proportions, divide each gridded view box into two parts corresponding to these two dimensions, except for the incisal/occlusal view.
4. To indicate the height of contour, locate the approximate area of contact between the adjacent teeth and the area of greatest convexity on the labial/buccal, lingual/mesial, and distal surfaces as mentioned in the associated textbook.
5. To locate the root axis line (RAL), draw a line that exactly bisects the overall gridded box showing the overall crown and root measurements. The cementoenamel junction (CEJ) will then be bisected by the RAL. The root apex may or may not be located on this RAL, depending on the tooth's apex traits.
6. To locate the center of the cingulum or midpoint of the incisal edge, divide the crown and root (if included in that particular gridded view box) into imaginary thirds. Then place the root apex, cingulum, or incisal edge into proper perspective with respect to the other peripheral overall tooth dimensions such as the mesiodistal diameter.
7. To complete the crown outline, connect the heights of contour to the incisal/occlusal edge, to the CEJ, and to the other heights of contour. Any additional anatomical features such as mamelons, lobes, marginal ridges, depressions, and so forth, can be indicated upon completion of the crown outline.
8. To complete the root outline, follow the directions for developing the crown outline with the understanding that the cervical one third to one half of the root width generally approximates the cervical width of the crown before it starts to narrow considerably to form the root apex.
9. Shading or stippling of the features may now be added, if desired. An evaluation form for the drawings for use by both the student and instructor is also included in the workbook. Multiple copies of the form may be copied if needed.

DIMENSIONS OF PERMANENT MAXILLARY LATERAL INCISOR*	
Cervico-incisal Length of Crown	9.0
Length of Root	13.0
Mesiodistal Diameter of Crown	6.5
Mesiodistal Diameter of CEJ	5.0
Labiolingual Diameter	6.0
Labiolingual Diameter of CEJ	5.0
Curvature of CEJ—Mesial	3.0
Curvature of CEJ—Distal	2.0

*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cements enamel junction

CHECKLIST FOR PERMANENT MAXILLARY LATERAL INCISOR	
Features Noted	Features Present
Crown Features	
Incisal edge, mamelons, centered and narrow cingulum, deep lingual fossa, pronounced marginal ridges, and linguoincisor ridge	
Sharper MI incisal angle, rounder DI angle, and more pronounced mesial CEJ curvature	
Height of contour in cervical third	
Mesial contact is just cervical to the junction of occlusal and middle thirds	
Distal contact is at middle third or junction with incisal third	
Root Features	
Single rooted, overall conical shape, root curve to the distal, with sharp apex	
No proximal root concavities and the same or longer than central, yet thinner	

CEJ = cements enamel junction; DI = distoincisor; MI = mesioincisor

DIMENSIONS OF PERMANENT MAXILLARY CENTRAL INCISOR*	
Cervico-incisal Length of Crown ✓	10.5
Length of Root ✓	13.0
Mesiodistal Diameter of Crown ✓	8.5
Mesiodistal Diameter of CEJ	7.0
Labiolingual Diameter	7.0
Labiolingual Diameter of CEJ	6.0
Curvature of CEJ—Mesial	3.5
Curvature of CEJ—Distal	2.5

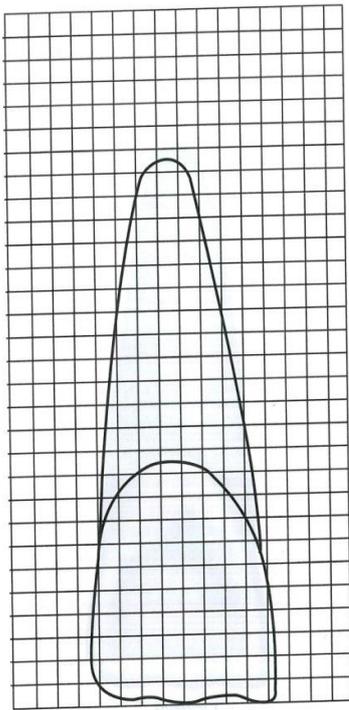
*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cementoenamel junction

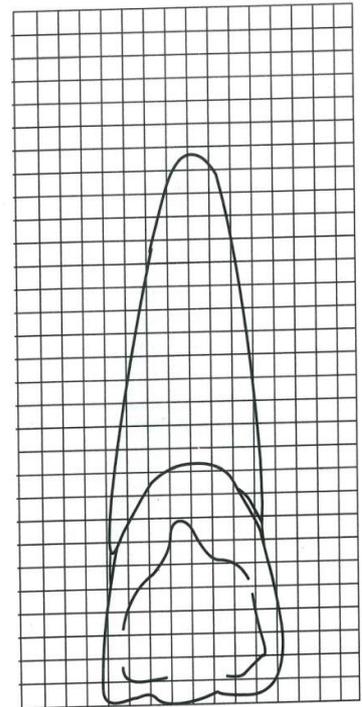
CHECKLIST FOR PERMANENT MAXILLARY CENTRAL INCISOR	
Features Noted	Features Present
Crown Features	
Incisal edge, mamelons, distal offset cingulum, wide and shallow lingual fossa, longer mesial than distal marginal ridges, and linguoincisor edge	
Sharper MI incisal angle, rounder DI angle, and more pronounced mesial CEJ curvature	
Height of contour in cervical third	
Mesial contact is just cervical to the junction of occlusal and middle thirds	
Distal contact is at junction of incisal and middle thirds	
Root Features	
Single rooted, overall conical shape, rounded apex	
No proximal root concavities	

CEJ = cementoenamel junction; DI = distoincisor; MI = mesioincisor

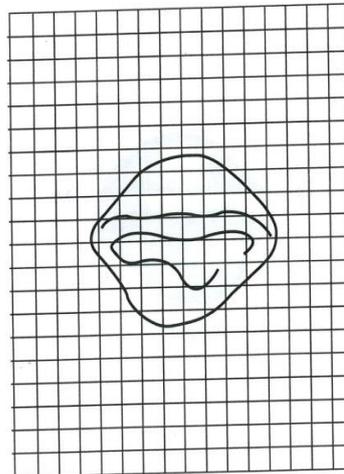
MAXILLARY CENTRAL INCISOR



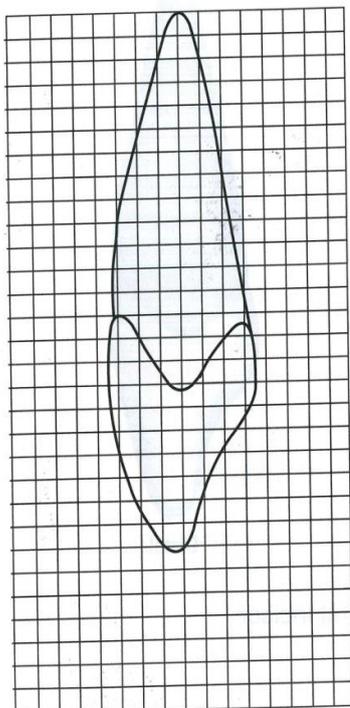
Labial



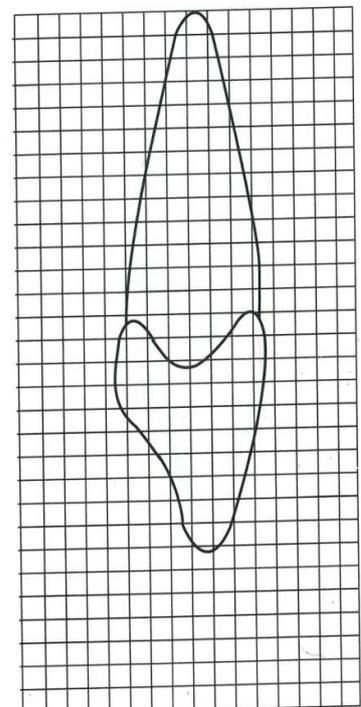
Lingual



Incisal

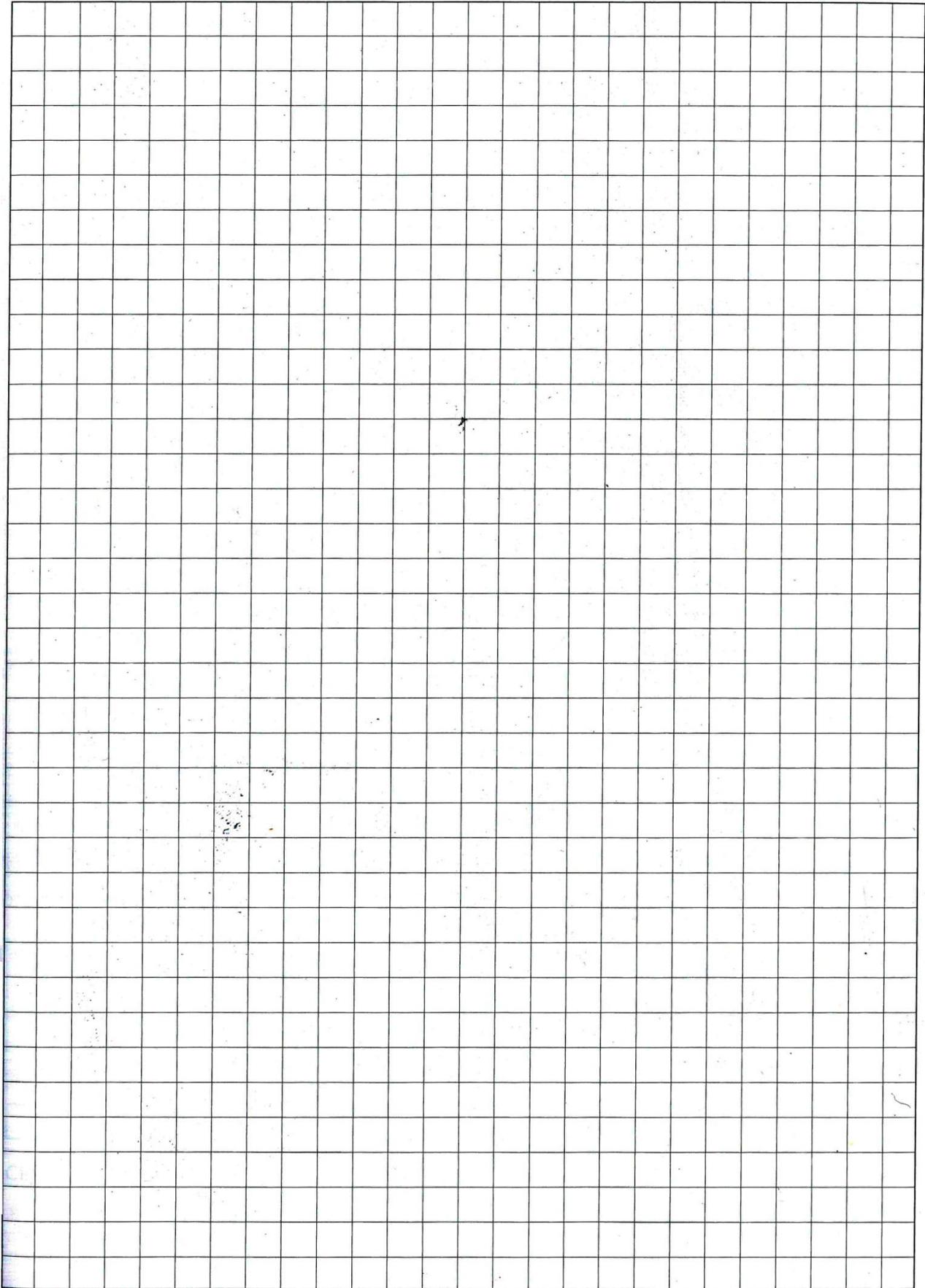


Mesial

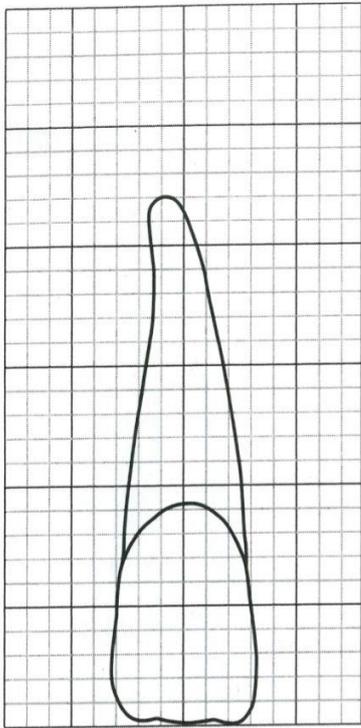


Distal

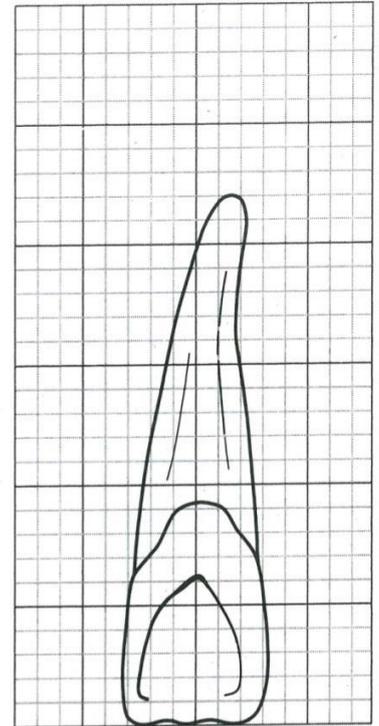
Various Outline Views of a Permanent Maxillary Right Central Incisor



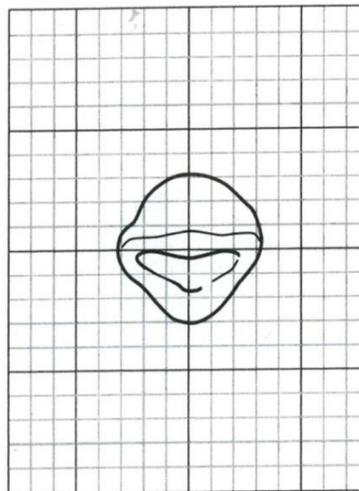
MAXILLARY LATERAL INCISOR



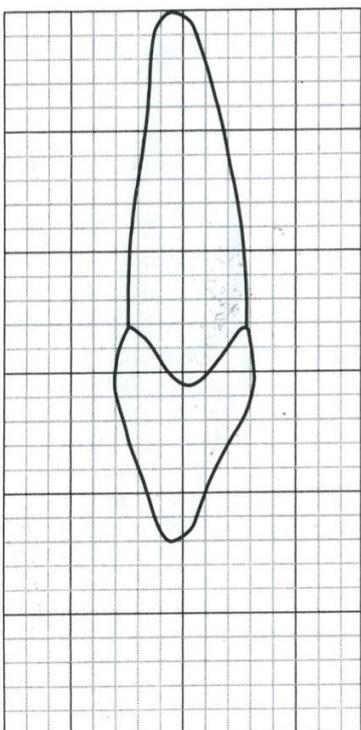
Labial



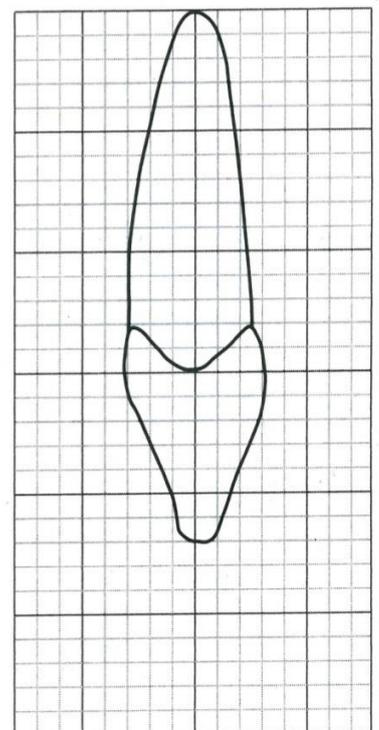
Lingual



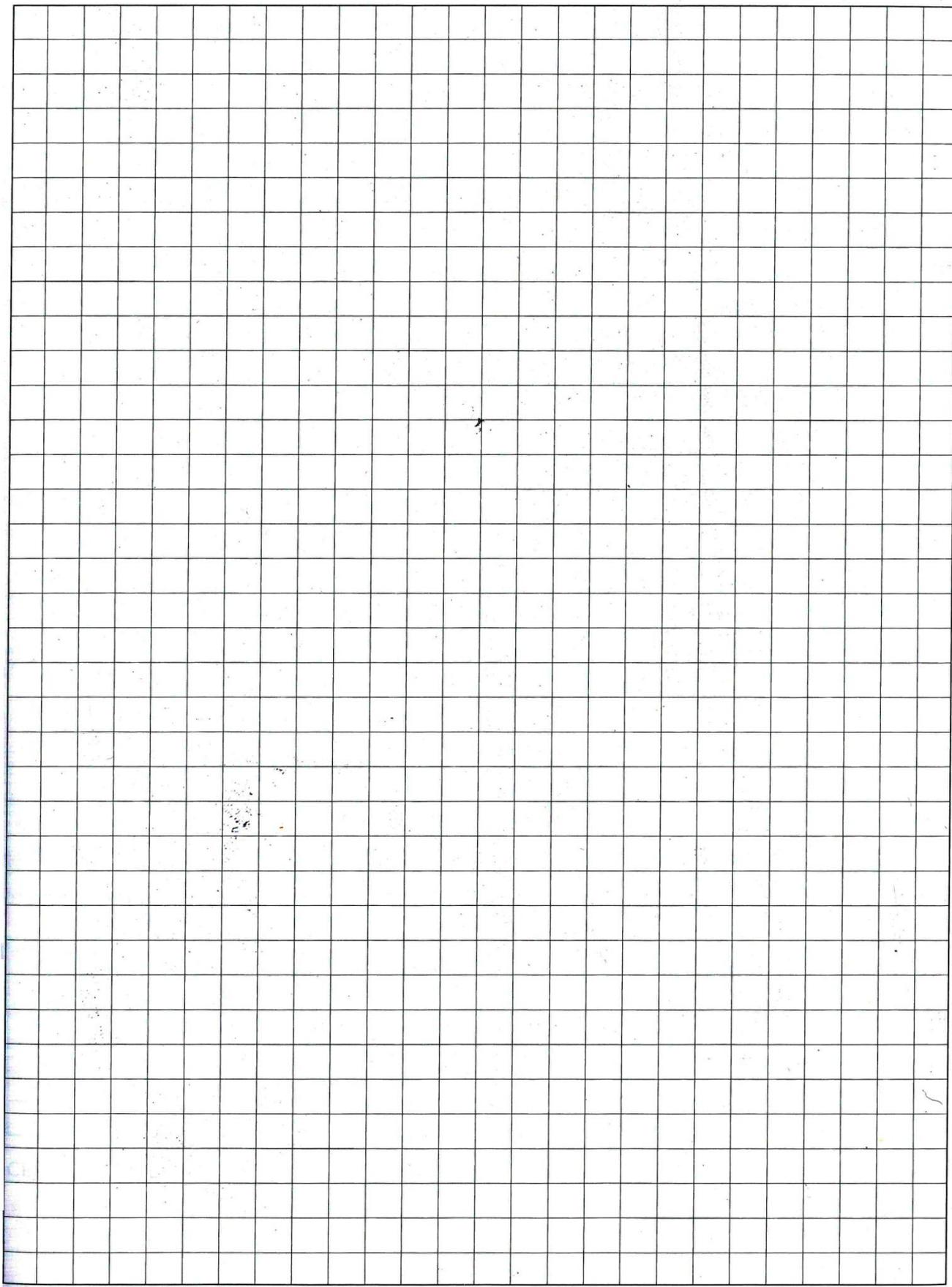
Incisal



Mesial



Distal



DIMENSIONS OF PERMANENT MANDIBULAR CENTRAL INCISOR*		
Cervico-incisal Length of Crown	Buccal: 9.0	Lingual: 9.5
Length of Root	12.5	
Mesiodistal Diameter of Crown	5.0	
Mesiodistal Diameter of CEJ	3.5	
Labiolingual Diameter	6.0	
Labiolingual Diameter of CEJ	5.3	
Curvature of CEJ—Mesial	3.0	
Curvature of CEJ—Distal	2.0	

*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WI Saunders, Philadelphia, 2009.

CEJ = cements enamel junction

CHECKLIST FOR PERMANENT MANDIBULAR CENTRAL INCISOR	
Features Noted	Features Present
Crown Features	
Bilaterally symmetrical	
Incisal edge, mamelons, small centered cingulum, subtle lingual fossa, and equal subtle marginal ridges	
Sharper MI incisal angle, rounder DI angle, and more pronounced mesial CEJ curvature	
Height of contour in cervical third	
Mesial contact is just cervical to the junction of occlusal and middle thirds	
Distal contact is at incisal third	
Root Features	
Single rooted, with root longer than the crown	
Proximal root concavities give double-rooted appearance	

CEJ = cements enamel junction; DI = distoincisor; MI = mesioincisor

DIMENSIONS OF PERMANENT MANDIBULAR LATERAL INCISOR*		
Cervico-incisal Length of Crown	Buccal: 9.5	Lingual: 10.0
Length of Root	14.0	
Mesiodistal Diameter of Crown	5.5	
Mesiodistal Diameter of CEJ	4.0	
Labiolingual Diameter	6.5	
Labiolingual Diameter of CEJ	5.8	
Curvature of CEJ—Mesial	3.0	
Curvature of CEJ—Distal	2.0	

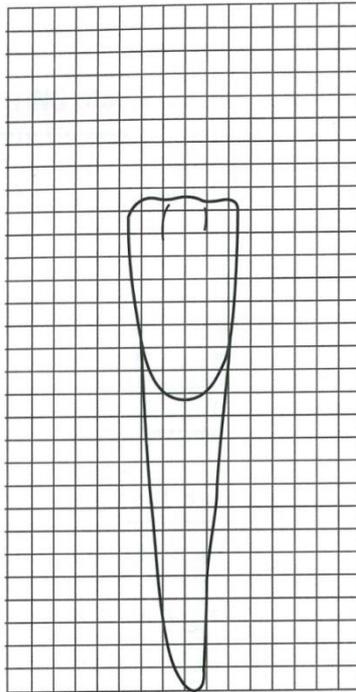
*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cementoenamel junction

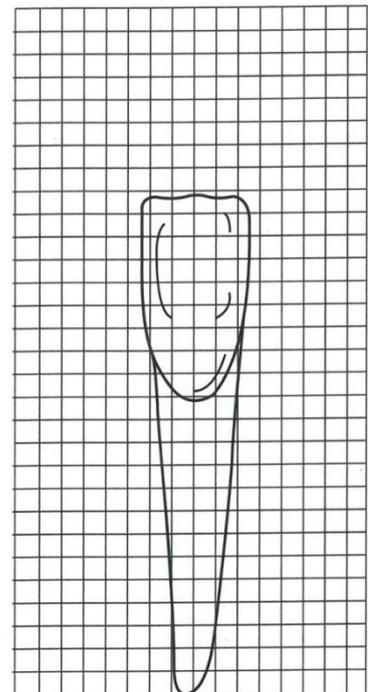
CHECKLIST FOR PERMANENT MANDIBULAR LATERAL INCISOR	
Features Noted	Features Present
Crown Features	
Larger than central and not bilaterally symmetrical, and appears twisted distally	
Incisal edge, mamelons, small distally displaced cingulum, lingual fossa, and moderate mesial marginal ridge longer than distal	
Sharper MI incisal angle, rounder DI angle, and more pronounced mesial CEJ curvature	
Height of contour in cervical third	
Mesial contact is just cervical to the junction of occlusal and middle thirds	
Distal contact is at incisal third	
Root Features	
Single rooted, with root longer than the crown	
Proximal root concavities give double-rooted appearance	

CEJ = cementoenamel junction; DI = distoincisor; MI = mesioincisor

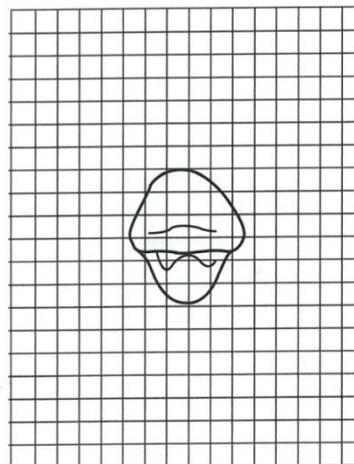
MANDIBULAR CENTRAL INCISOR



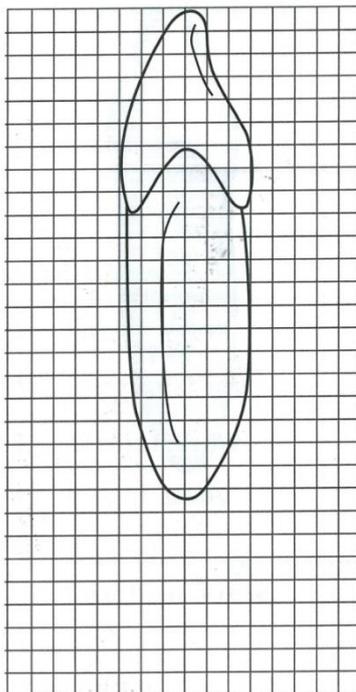
Labial



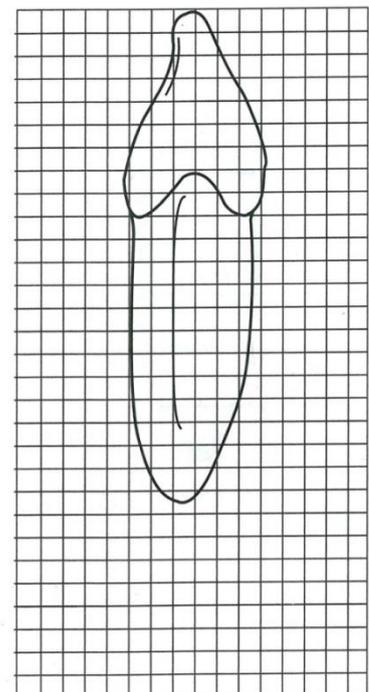
Lingual



Incisal

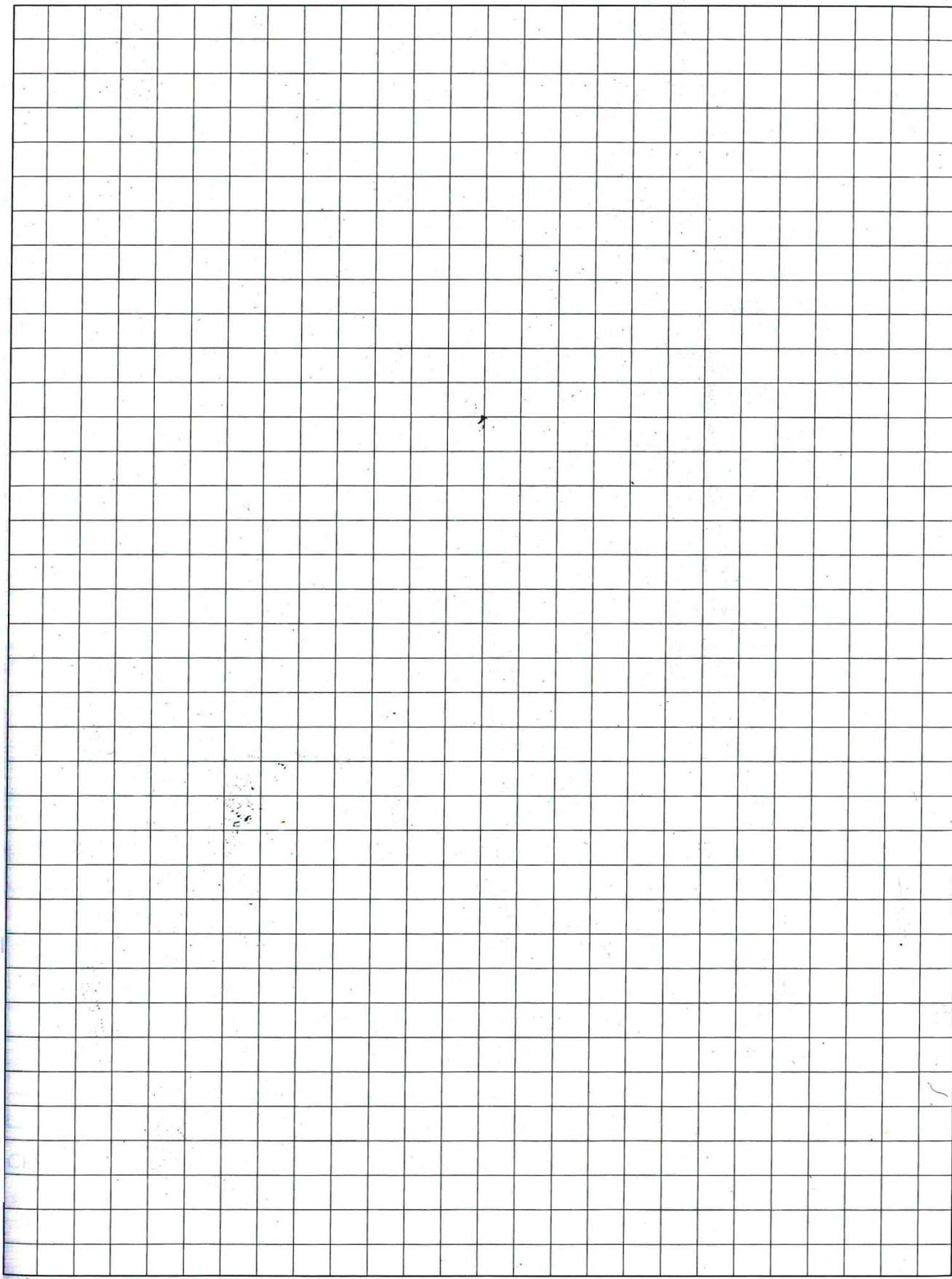


Mesial

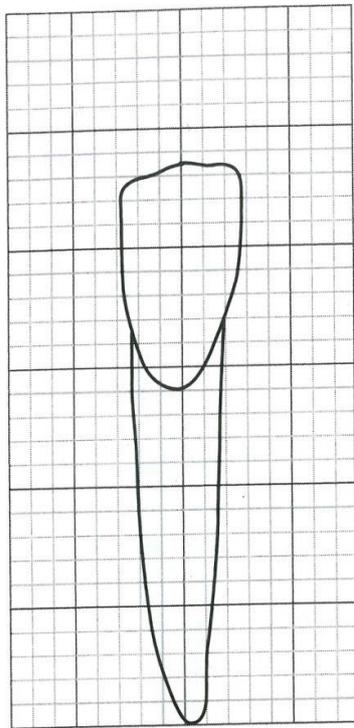


Distal

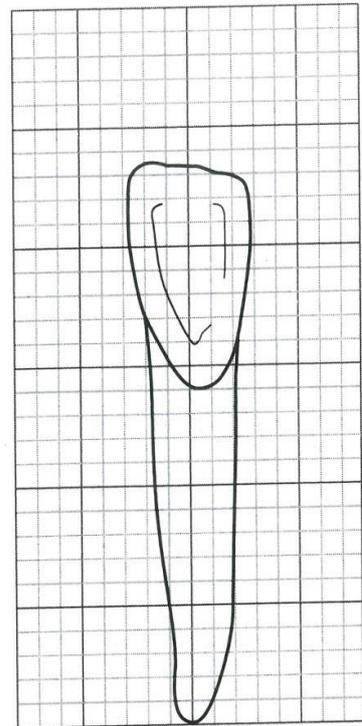
Various Outline Views of a Permanent Mandibular Right Central Incisor



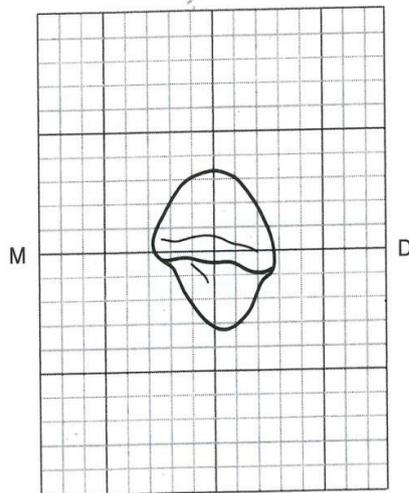
MANDIBULAR LATERAL INCISOR



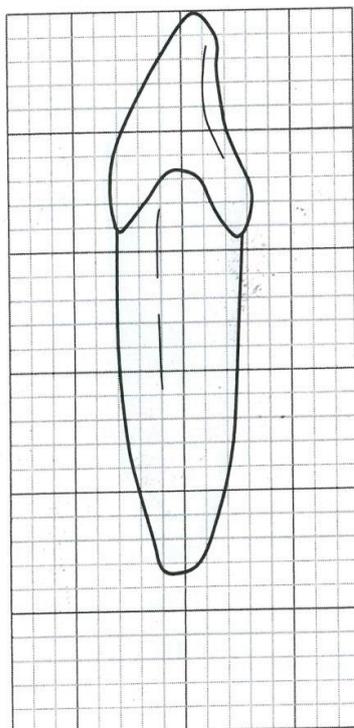
Labial



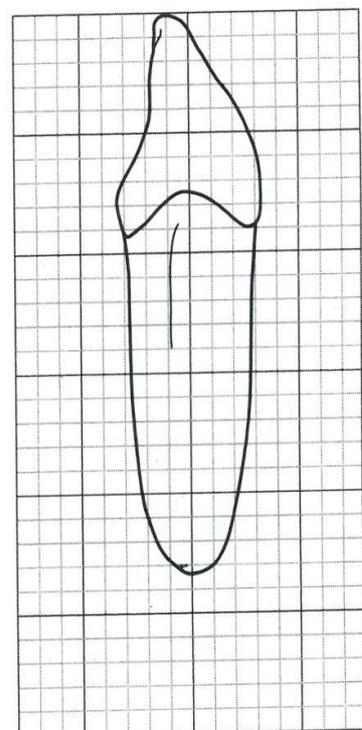
Lingual



Incisal

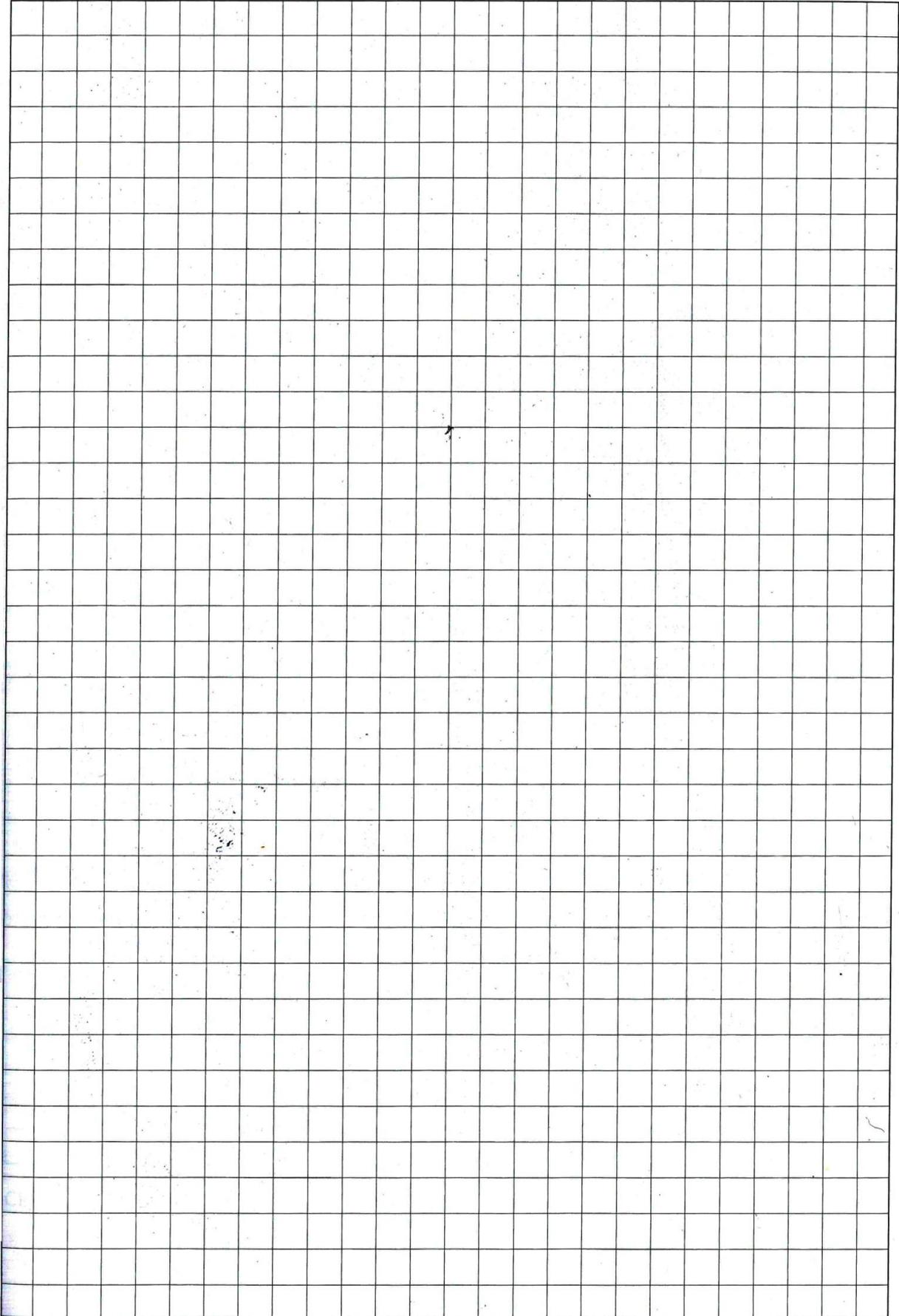


Mesial



Distal

Various Outline Views of a Permanent Mandibular Right Lateral Incisor



DIMENSIONS OF PERMANENT MAXILLARY CANINE*

Cervico-incisal Length of Crown	10.0
Length of Root	17.0
Mesiodistal Diameter of Crown	7.5
Mesiodistal Diameter of CEJ	5.5
Labiolingual Diameter	8.0
Labiolingual Diameter of CEJ	7.0
Curvature of CEJ—Mesial	2.5
Curvature of CEJ—Distal	1.5

*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cements enamel junction

CHECKLIST FOR PERMANENT MAXILLARY CANINE

Features Noted	Features Present
Crown Features	
Single cusp, with sharp cusp tip and slopes, labial ridge	
Shorter mesial cusp slope, more cervical contact on distal, more pronounced mesial CEJ curvature	
Shorter distal outline on labial view with depression between the distal contact and CEJ	
Prominent lingual anatomy with marginal ridges and lingual ridge, cingulum, and lingual fossae	
Height of contour for buccal is cervical third and for lingual is middle third	
Mesial contact is at junction of incisal third and middle thirds	
Distal contact is at middle third	
Root Features	
Long, thick single root with proximal root concavities	
Blunt root apex	

CEJ = cements enamel junction

DIMENSIONS OF PERMANENT MANDIBULAR CANINE*

Cervico-incisal Length of Crown	11.0
Length of Root	16.0
Mesiodistal Diameter of Crown	7.0
Mesiodistal Diameter of CEJ	5.5
Labiolingual Diameter	7.5
Labiolingual Diameter of CEJ	7.0
Curvature of CEJ—Mesial	2.5
Curvature of CEJ—Distal	1.0

*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

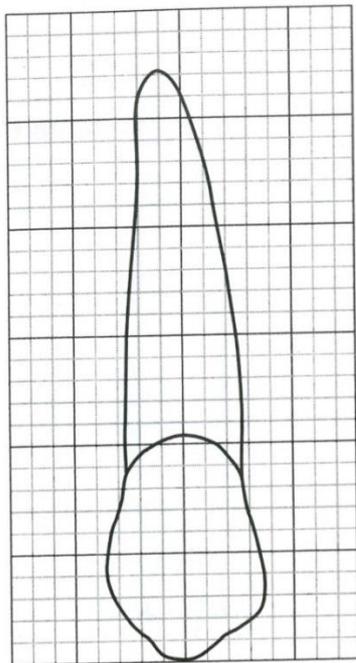
CEJ = cementoenamel junction

CHECKLIST FOR PERMANENT MANDIBULAR CANINE

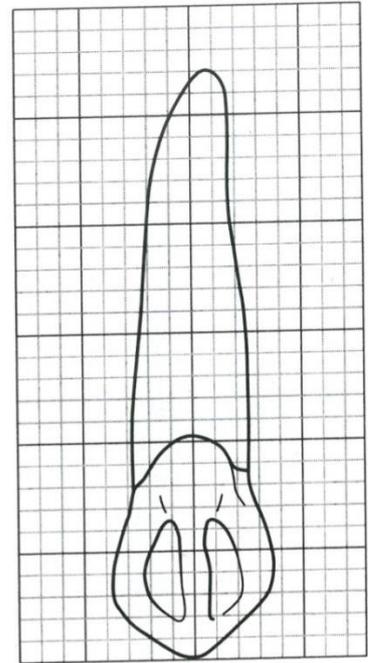
Features Noted	Features Present
Crown Features	
Single cusp, with less sharp cusp tip and slopes, labial ridge	
Shorter mesial cusp slope, more cervical contact on distal, more pronounced mesial CEJ curvature	
Shorter and rounder distal outline on labial view, with a shorter mesial slope than distal	
Smoother lingual anatomy	
Height of contour for buccal is cervical third and for lingual is middle third	
Mesial contact is at incisal thirds	
Distal contact is at junction of incisal and middle thirds	
Root Features	
Long, thick single root with proximal root concavities and with pointed apex	
Developmental depressions on mesial and distal give tooth double-rooted appearance	

CEJ = cementoenamel junction

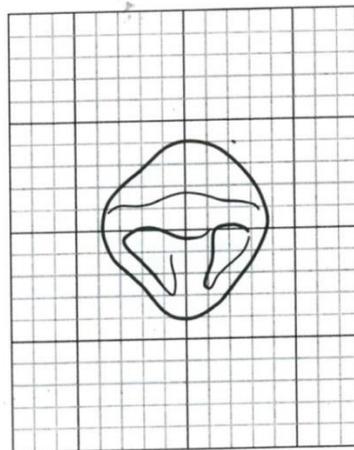
MAXILLARY CANINE



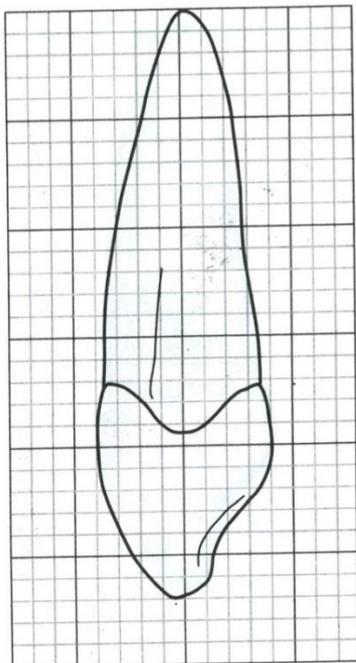
Labial



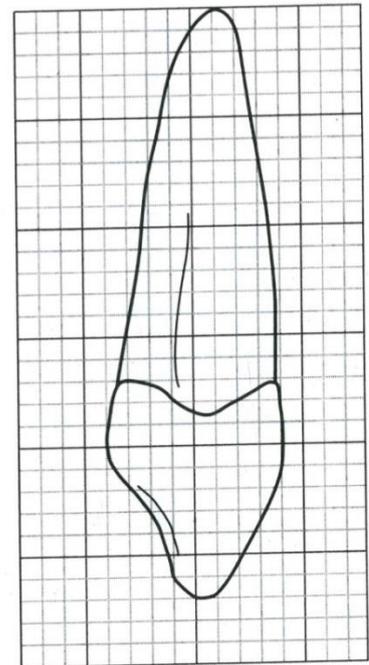
Lingual



Incisal

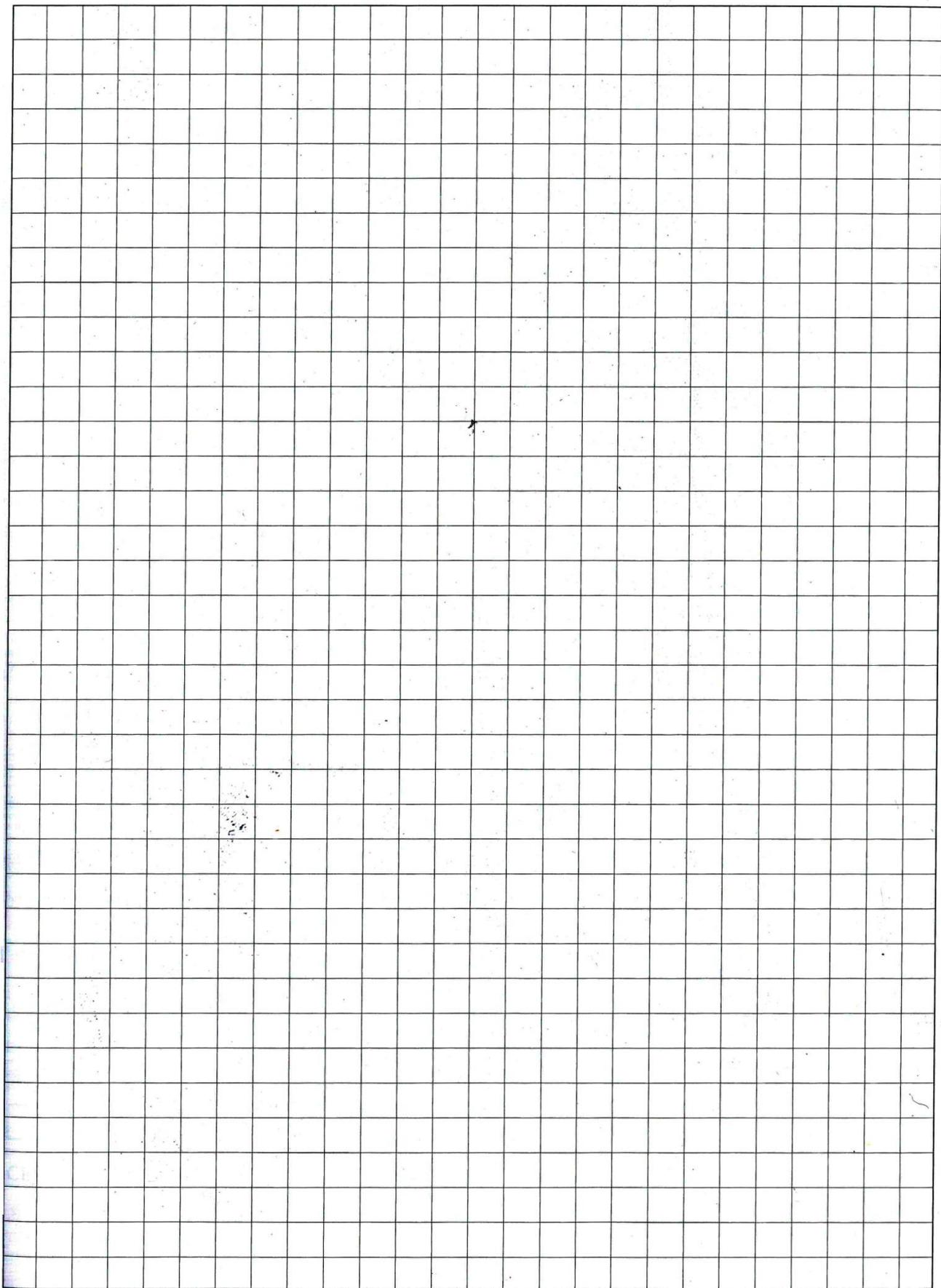


Mesial

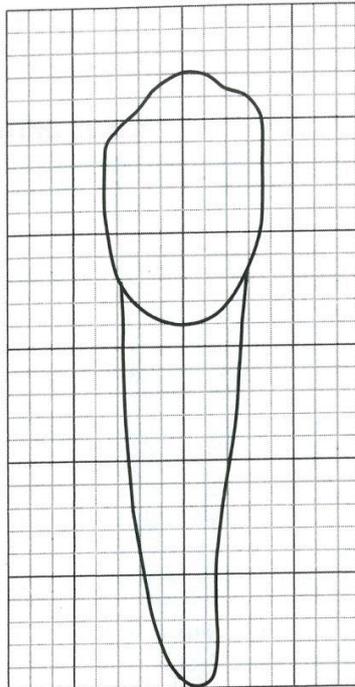


Distal

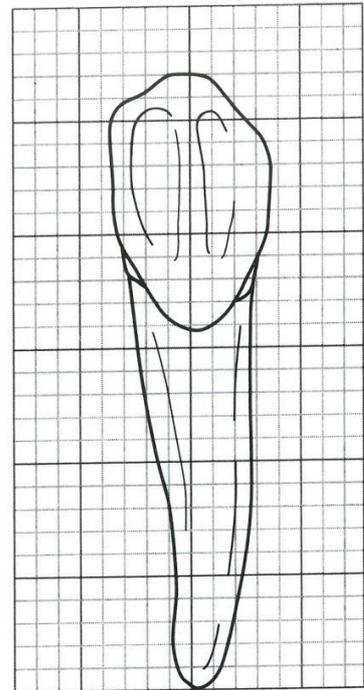
Various Outline Views of a Permanent Maxillary Right Canine



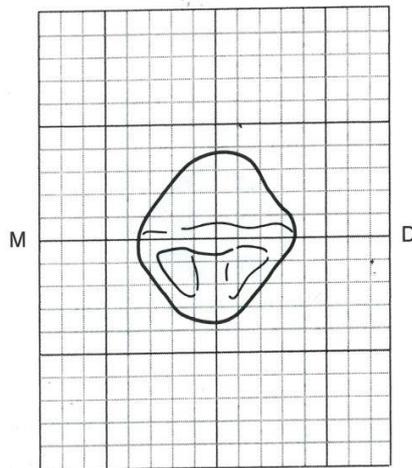
MANDIBULAR CANINE



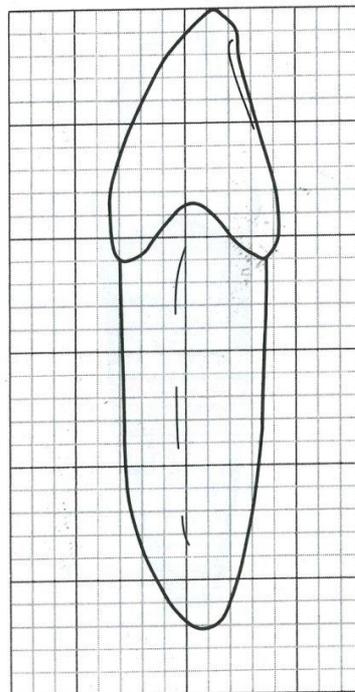
Labial



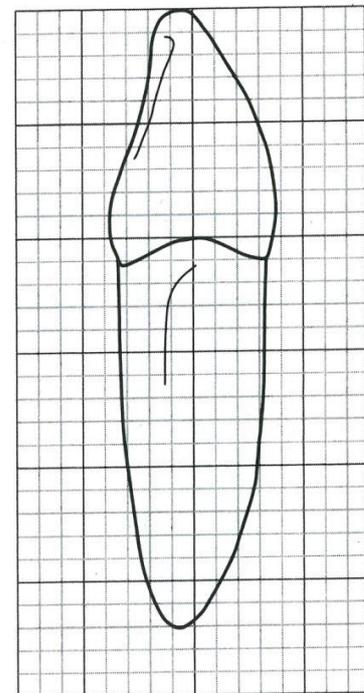
Lingual



Incisal

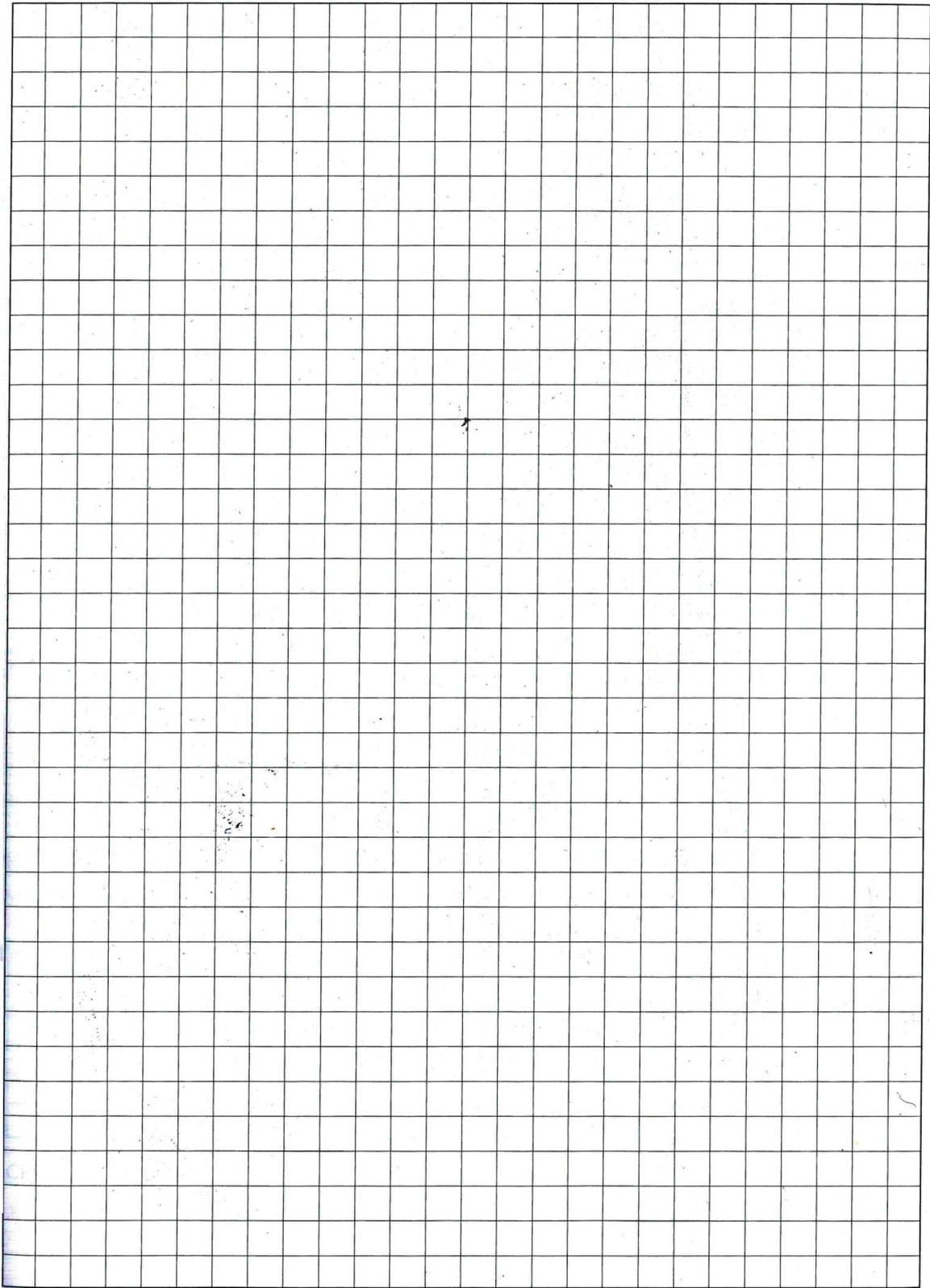


Mesial



Distal

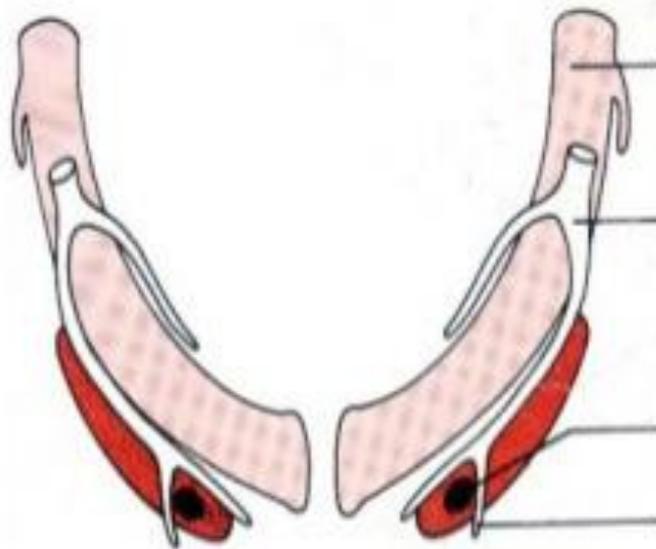
Various Outline Views of a Permanent Mandibular Right Canine



DEVELOPMENT OF MANDIBLE

DEVELOPMENT OF MANDIBLE

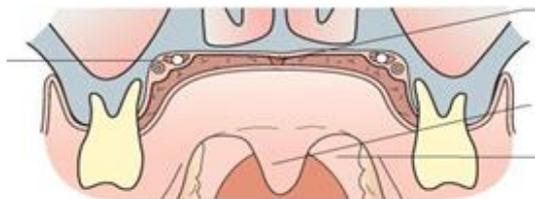
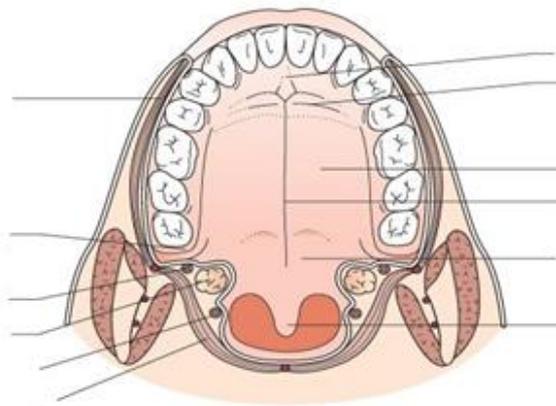
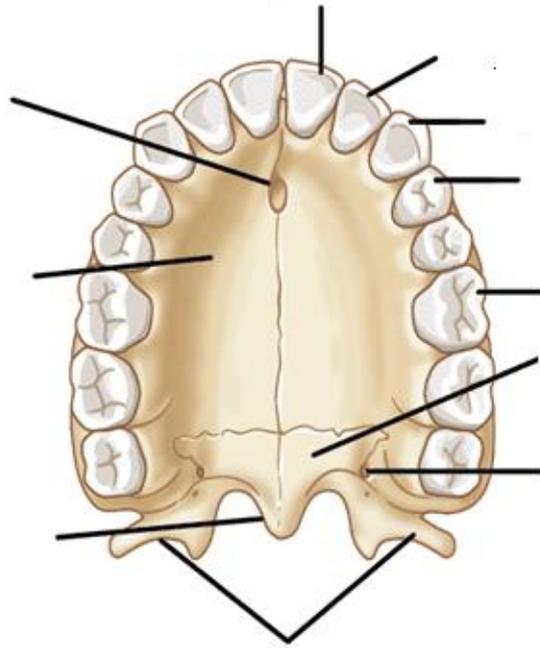
- 2nd bone to ossify
- Intramembranous + endochondrial
- 6th week of intrauterine life



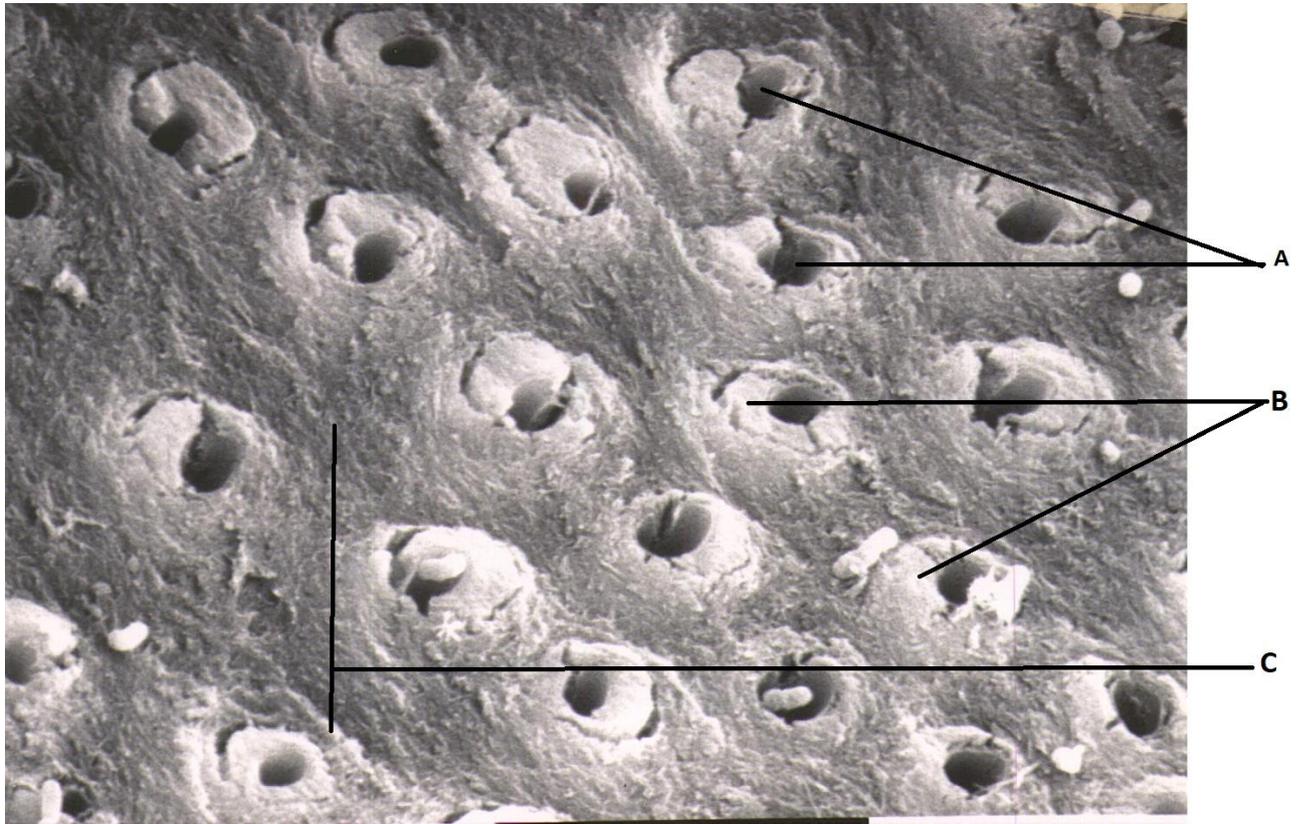
Q) What is the role of Meckle's cartilage in the development of mandible?

LABEL THE FIGURES

HARD AND SOFT PALATE

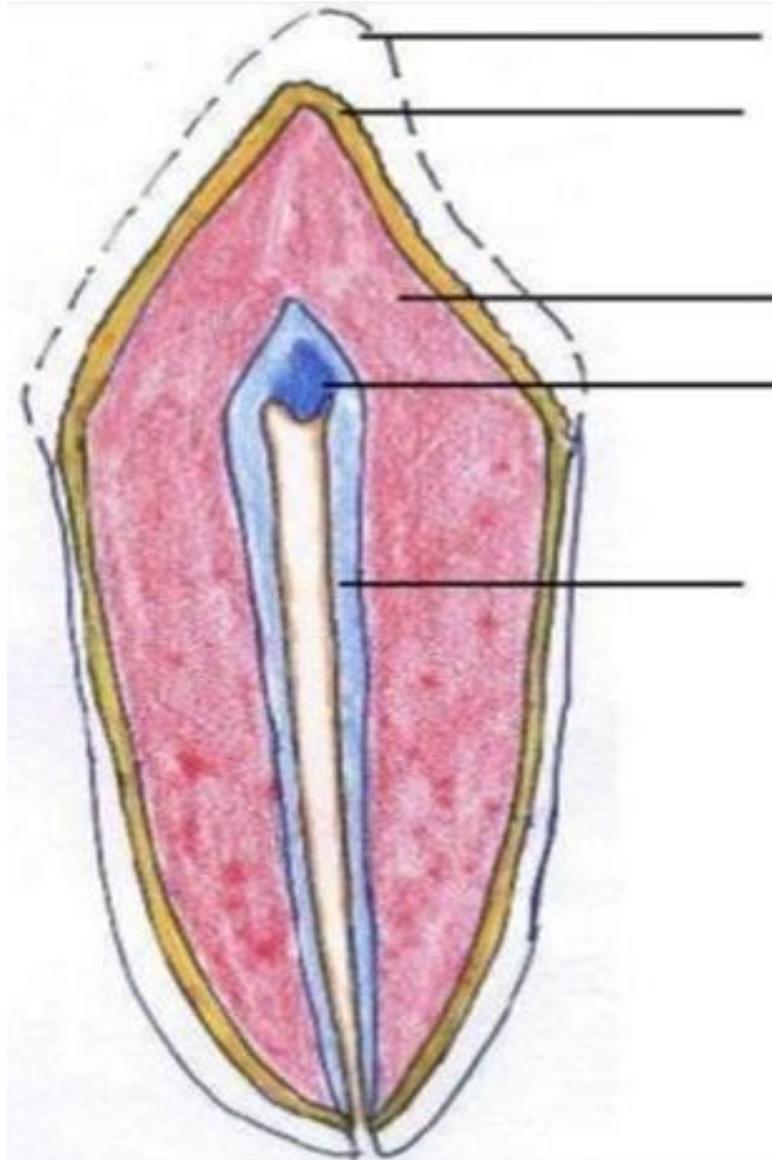


STRUCTURE OF DENTIN



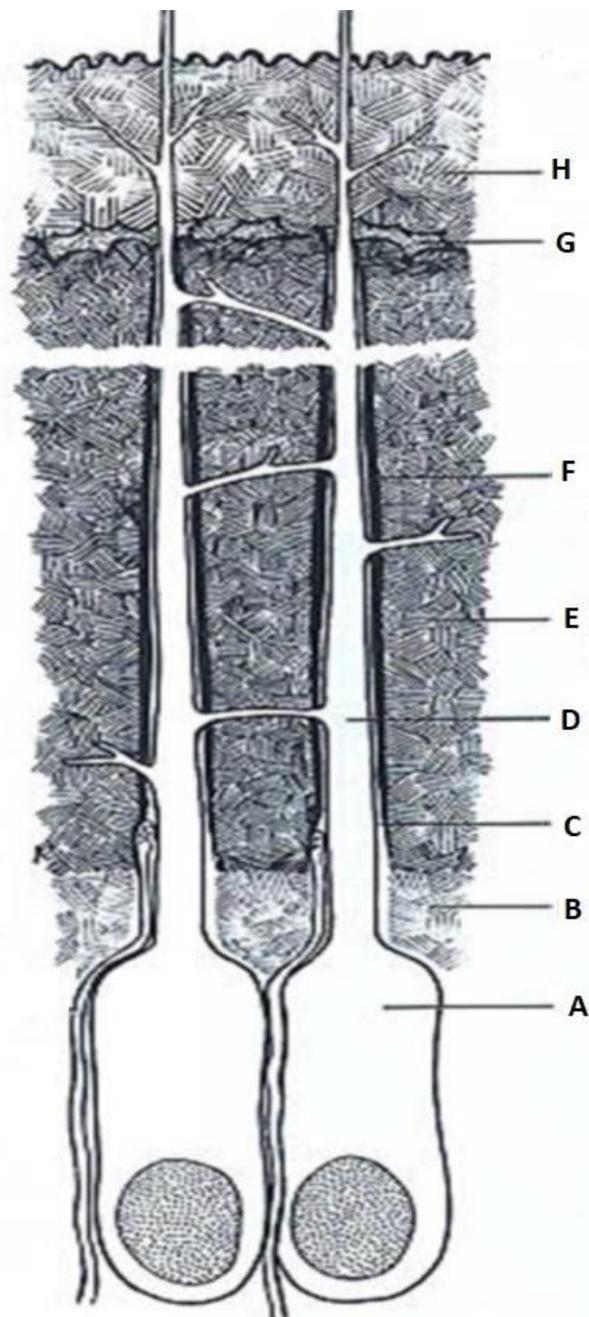
DRAW AND LABEL THE DIAGRAMS

TYPES OF DENTIN



DRAW AND LABEL THE DIAGRAMS

STRUCTURE OF ODONTOBLAST



**DRAW AND LABEL THE DIAGRAMS MARKED A, B,
C, D, E, F, G AND H**

LOCATION, MINERALIZATION AND DEVELOPMENTAL PATTERN OF DENTIN

Location	Pattern of Mineralization	Developmental Pattern
Intertubular dentin: found around and between dentinal tubules	Globular dentin: formed from calcospherites	Primary dentin: formed prior to and during active eruption
Intratubular dentin: found and formed within dentinal tubules; also called peritubular dentin	Interglobular dentin; hypomineralized dentin between mantle and circumpulpal dentin; normally only found in coronal dentin	Secondary dentin; formed when the tooth first comes into occlusion
Mantle dentin: formed initially in the crown; outer coronal dentin	Tomes granular layer; hypomineralized layer in root dentin; similar to interglobular dentin in the crown	Tertiary dentin; formed as a result of a pathologic response; may be reactionary or reparative
Circumpulpal dentin: nearest to the pulp: formed in crown after mantle dentin has been deposited	Sclerotic dentin; hypermineralized, occluding intratubular dentin	

DENTIN SENSITIVITY

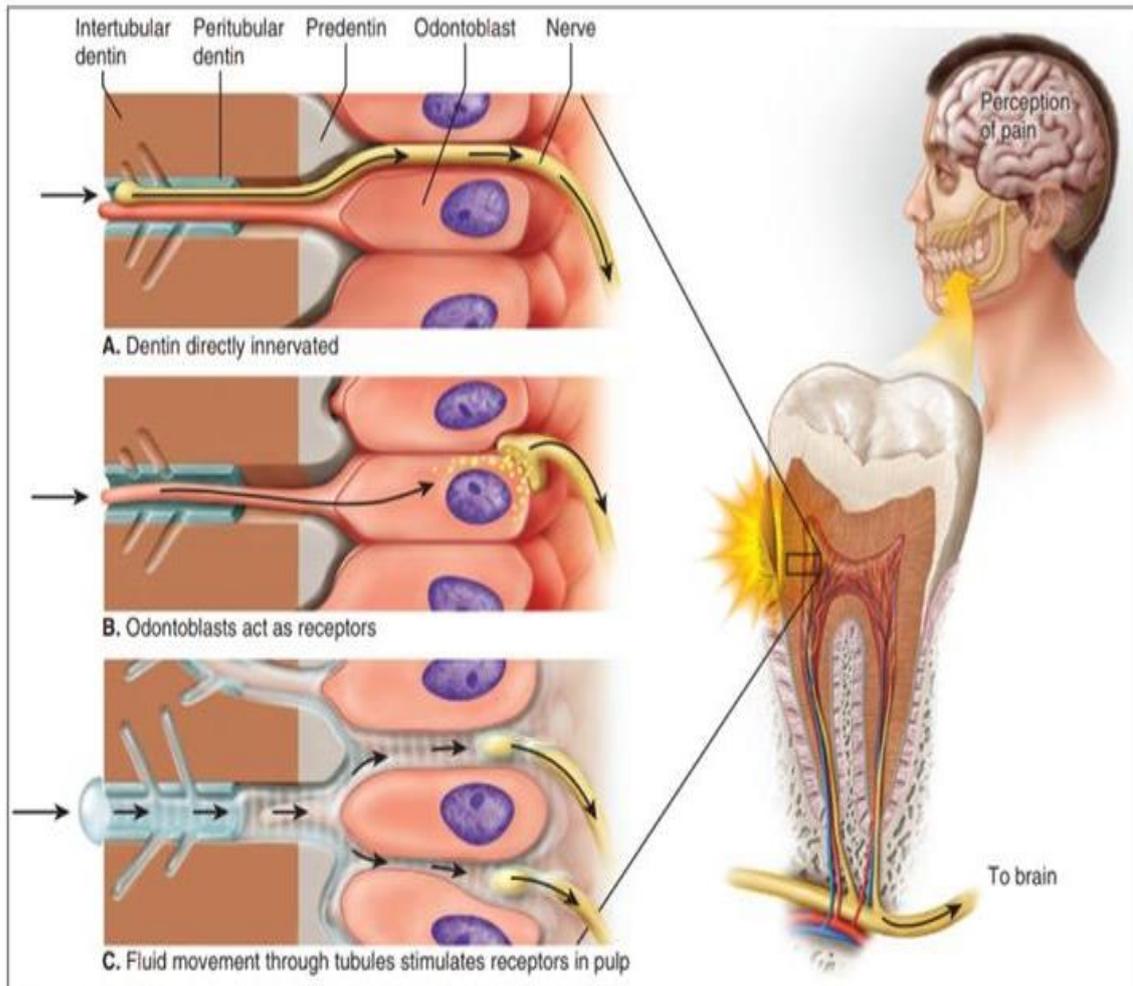
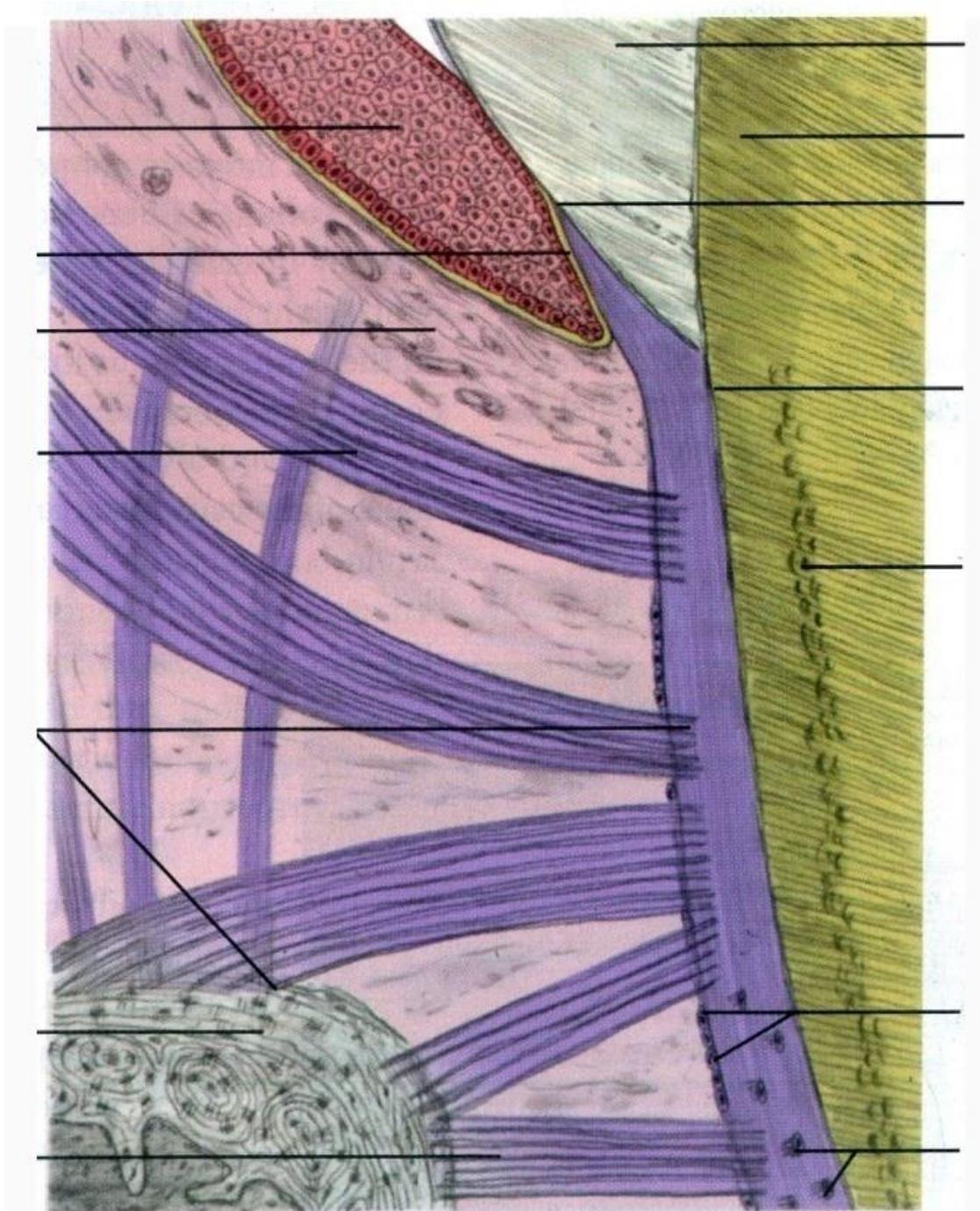


FIGURE 8-66 Three theories of dentin sensitivity. *A* suggests that the dentin is innervated directly. *B* suggests that the odontoblast acts as a receptor. *C* suggests that the receptors at the base of odontoblasts are stimulated directly or indirectly by fluid movement through the tubules.

Q) Briefly describe dentin sensitivity/Pain theories?

CEMENTUM AND ITS RELATIONSHIP TO TOOTH AND ALVEOLAR BONE



DRAW AND LABEL THE DIAGRAMS

DIFFERENCE BETWEEN ACELLULAR AND CELLULAR CEMENTUM:

ACELLULAR CEMENTUM	CELLULAR CEMENTUM
Embedded cementocytes are absent.	Embedded cementocytes present.
Deposition rate is slower.	Deposition rate is faster.
It is first formed layer.	Formed after acellular cementum.
Width is more or less constant.	Width highly variable
Found more on cervical region.	Mainly apical third and inter radicular area.
Also called primary cementum.	Also called secondary cementum.
Sharpey's fibres are well mineralized. Incremental lines are regular.	Sharpey's fibres partially mineralized. Incremental lines are irregular.

GUIDE LINES FOR DRAWING OF TEETH ACCORDING TO ITS MORPHOLOGY

Introduction

Tooth-drawing assignments emphasize fundamental principles in tooth design, which later have direct practical application in clinical coursework of a dental professional. Initial drawings are most likely to be the student's first attempts at capturing any tooth likeness; they will certainly encourage accuracy and discernment of the teeth and hopefully facilitate the recognition of tooth details. *Artistic inclinations are not really needed with these basic technical drawings.*

It is important to also note that these drawings are only two-dimensional and are somewhat limited to fundamental outlines and proportions. However, they will serve to help create mental pictures of teeth in their ideal or composite state. Remember that real specimens in patients' mouths vary considerably.

Activity Steps

1. Locate the two, blank gridded worksheets in the workbook. Any additional gridded worksheets needed can be easily copied for the correct spacing of the grid needed. Correctly label the worksheet at the bottom of the page with the tooth that will be drawn as shown in the smaller professionally drawn figures.
2. Using the attached table of tooth dimensions (same as in the associated textbook's appendices), mark off the overall peripheral tooth measurements for each of the gridded view boxes of the tooth. Note that the grid of the blank worksheet is larger than that shown with the professionally drawn tooth outlines to better enable the student to have room to work. Each square of grid equals 1 mm, so count off as many squares for each peripheral dimension (such as the mesiodistal diameter) as indicated from the table onto the proper area of the gridded worksheet.
3. To establish crown and root proportions, divide each gridded view box into two parts corresponding to these two dimensions, except for the incisal/occlusal view.
4. To indicate the height of contour, locate the approximate area of contact between the adjacent teeth and the area of greatest convexity on the labial/buccal, lingual/mesial, and distal surfaces as mentioned in the associated textbook.
5. To locate the root axis line (RAL), draw a line that exactly bisects the overall gridded box showing the overall crown and root measurements. The cementoenamel junction (CEJ) will then be bisected by the RAL. The root apex may or may not be located on this RAL, depending on the tooth's apex traits.
6. To locate the center of the cingulum or midpoint of the incisal edge, divide the crown and root (if included in that particular gridded view box) into imaginary thirds. Then place the root apex, cingulum, or incisal edge into proper perspective with respect to the other peripheral overall tooth dimensions such as the mesiodistal diameter.
7. To complete the crown outline, connect the heights of contour to the incisal/occlusal edge, to the CEJ, and to the other heights of contour. Any additional anatomical features such as mamelons, lobes, marginal ridges, depressions, and so forth, can be indicated upon completion of the crown outline.
8. To complete the root outline, follow the directions for developing the crown outline with the understanding that the cervical one third to one half of the root width generally approximates the cervical width of the crown before it starts to narrow considerably to form the root apex.
9. Shading or stippling of the features may now be added, if desired. An evaluation form for the drawings for use by both the student and instructor is also included in the workbook. Multiple copies of the form may be copied if needed.

DIMENSION OF MAXILLARY FIRST PREMOLAR

Cervico-occlusal Length of Crown	8.5
Length of Root	14
Mesiodistal Diameter of Crown	7
Mesiodistal Diameter of Crown at Cervix	5
Labio- or Bucco-lingual Diameter of Crown	9
Labio- or Bucco-lingual Diameter of Crown at Cervix	8
Curvature of Cervical Line—Mesial	1
Curvature of Cervical Line—Distal	0

In millimeters: adapted from Nelson Sj: Wheeler's Dental Anatomy, Physiology, and Occlusos, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cementoenamel junction

CHECKLIST FOR MAXILLARY FIRST PREMOLAR

Features Noted	Features Present
Crown Features	
Smaller lingual cusp of two with buccal ridge	
Occlusal table with marginal ridges and cusps, with tips, ridges, inclined planes, and grooves, fossae, pits	
Shorter mesial cusp slope, mesiolingual groove, deeper mesial CEJ curvature	
Mesial and distal contact is just cervical to the junction of occlusal and middle thirds	
Root Features	
Single rooted	
Proximal root concavities	

CEJ = cementoenamel junction

DIMENSIONS OF PERMANENT MAXILLARY SECOND PREMOLAR*	
Cervico-incisal Length of Crown	8.5
Length of Root	14.0
Mesiodistal Diameter of Crown	7.0
Mesiodistal Diameter of CEJ	5.0
Buccolingual Diameter	9.0
Buccolingual Diameter of CEJ	8.0
Curvature of CEJ—Mesial	1.0
Curvature of CEJ—Distal	0.0

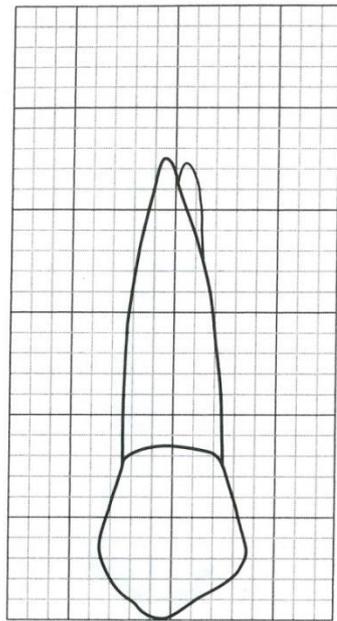
*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cementoenamel junction

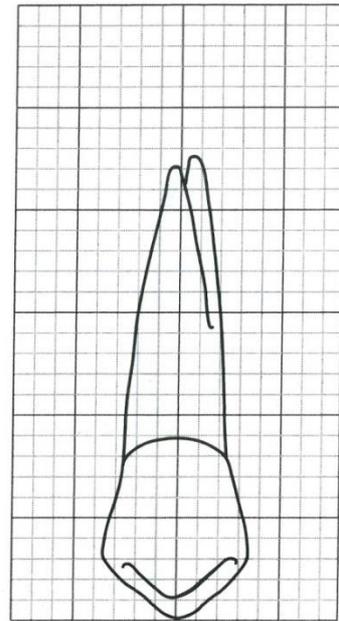
CHECKLIST FOR PERMANENT MAXILLARY SECOND PREMOLAR	
Features Noted	Features Present
Crown Features	
Two cusps same length with buccal ridge	
Occlusal table with marginal ridges and cusps, with tips, ridges, inclined planes, and grooves (short central groove and increased supplemental grooves), fossae, pits	
Lingual cusp offset to the mesial	
Mesial and distal contact is just cervical to the junction of occlusal and middle thirds	
Root Features	
Single rooted	
Proximal root concavities	

CEJ = cementoenamel junction

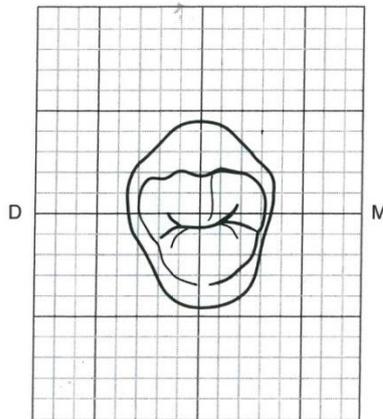
MAXILLARY 1ST PREMOLAR



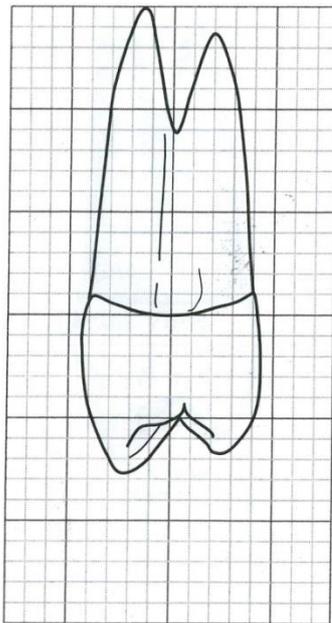
Buccal



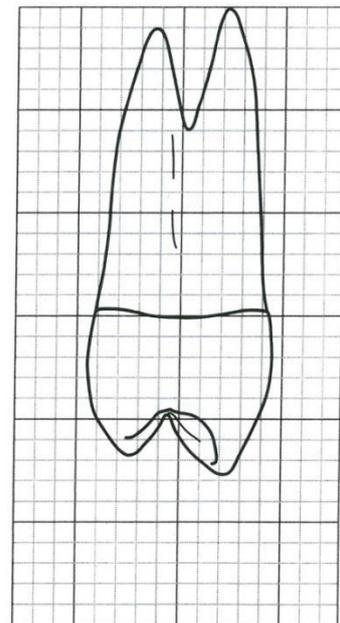
Lingual



Occlusal

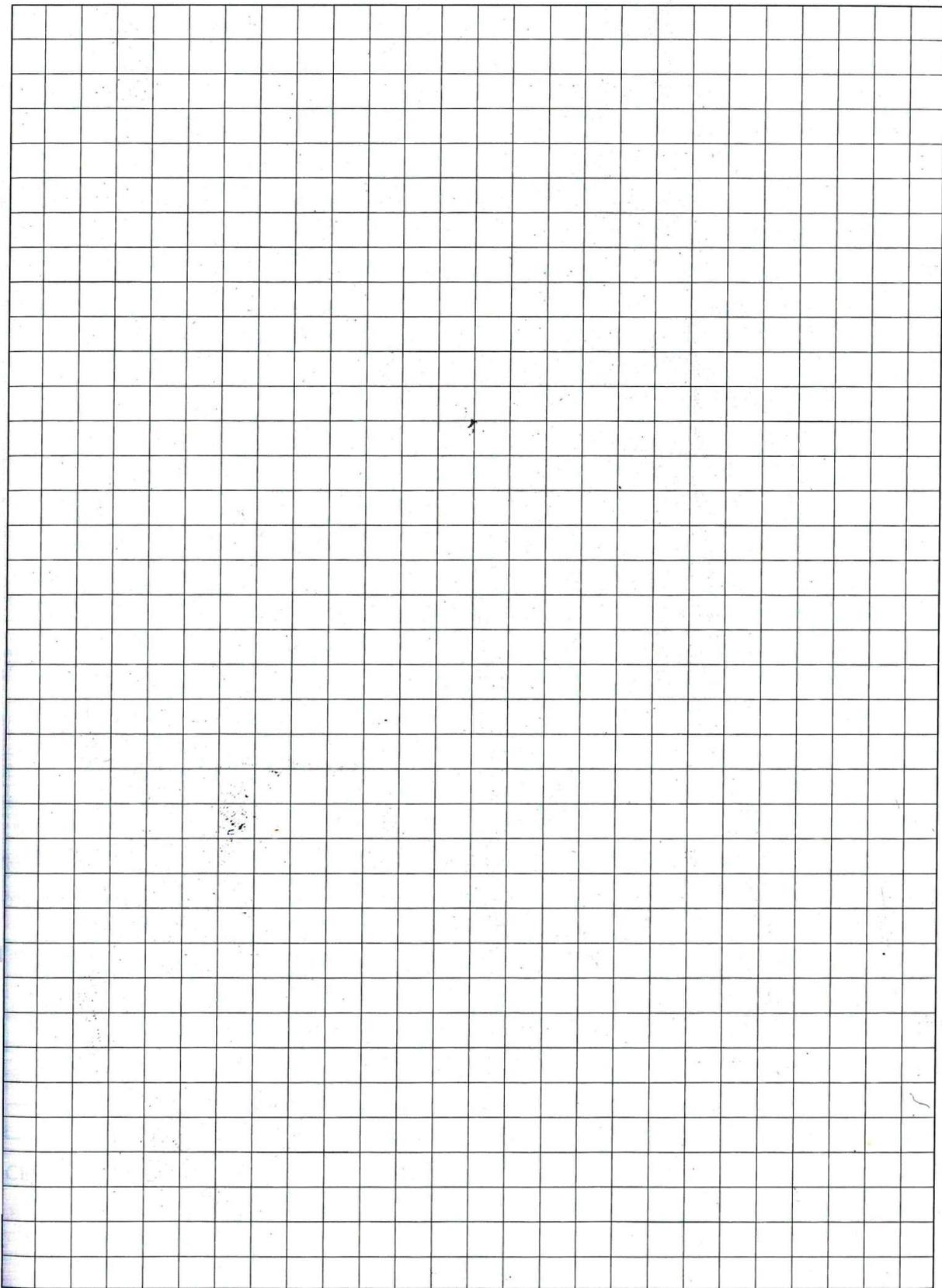


Mesial

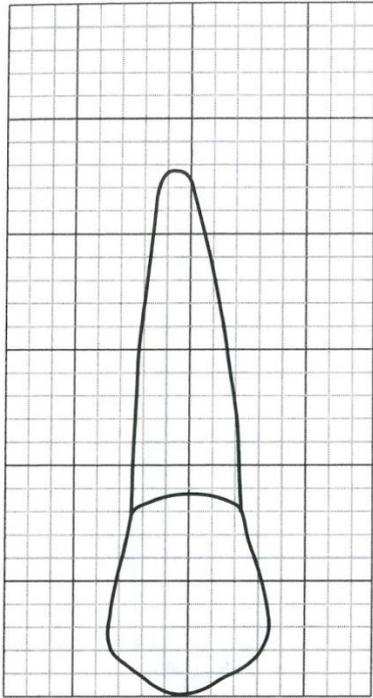


Distal

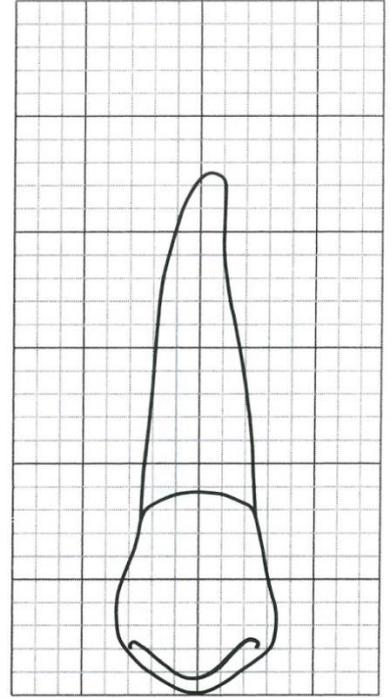
Various Outline Views of a Permanent Maxillary Right First Premolar



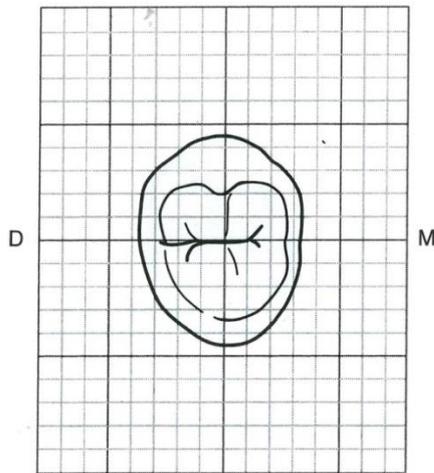
MAXILLARY 2ND PREMOLAR



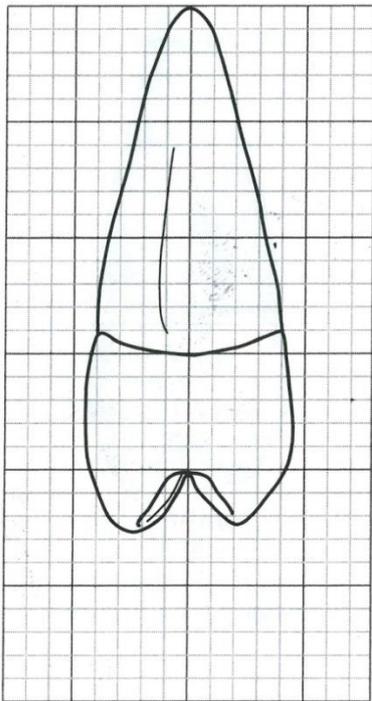
Buccal



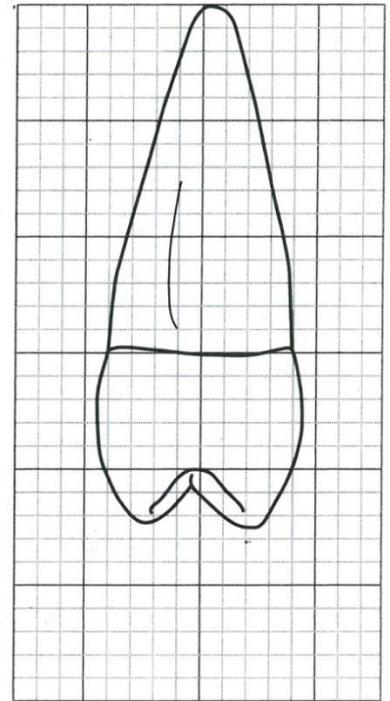
Lingual



Occlusal

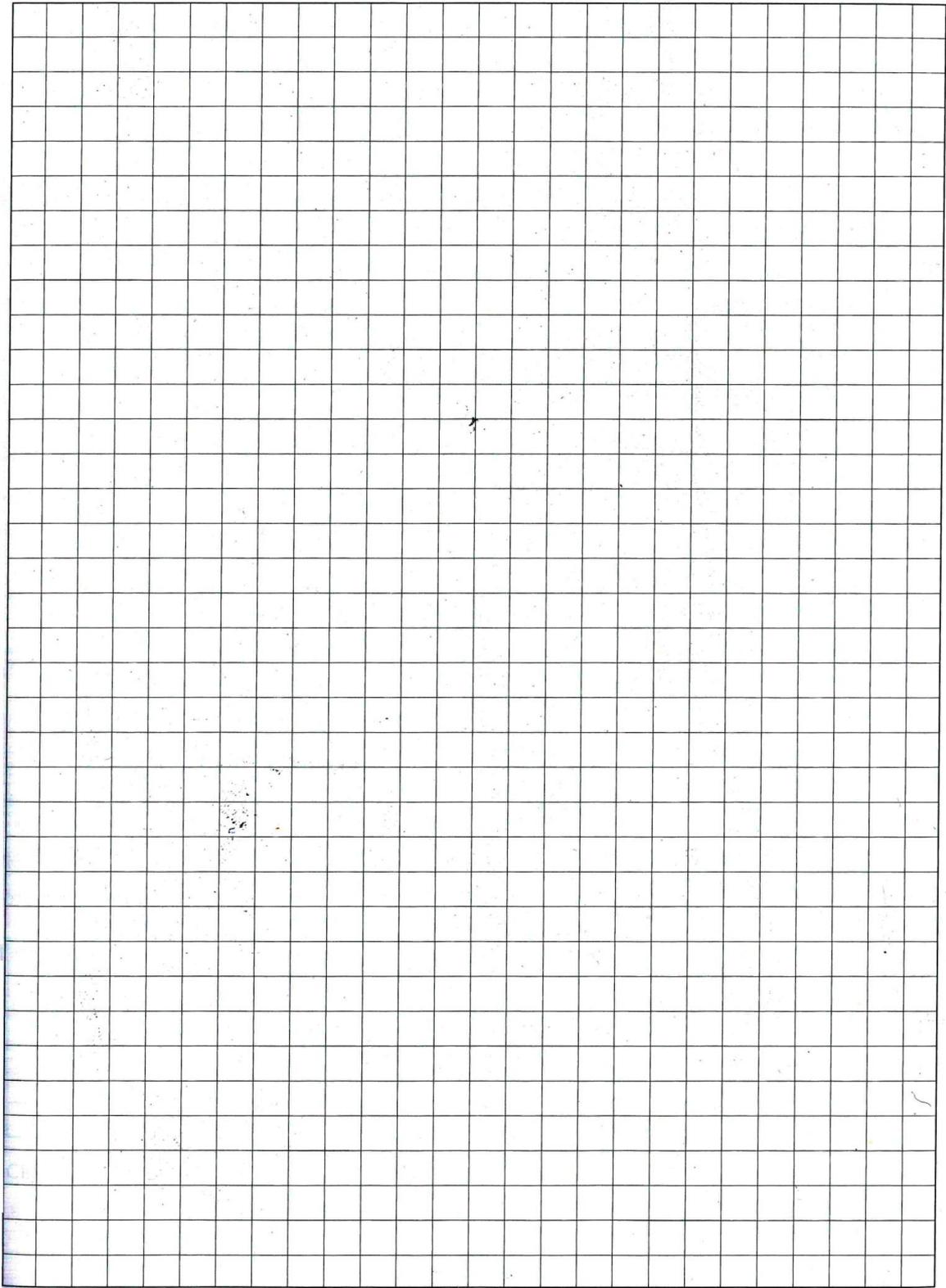


Mesial

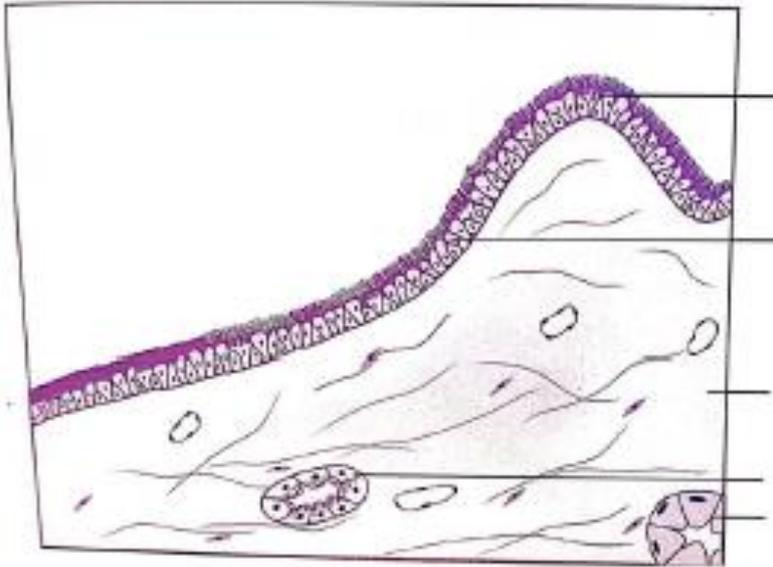
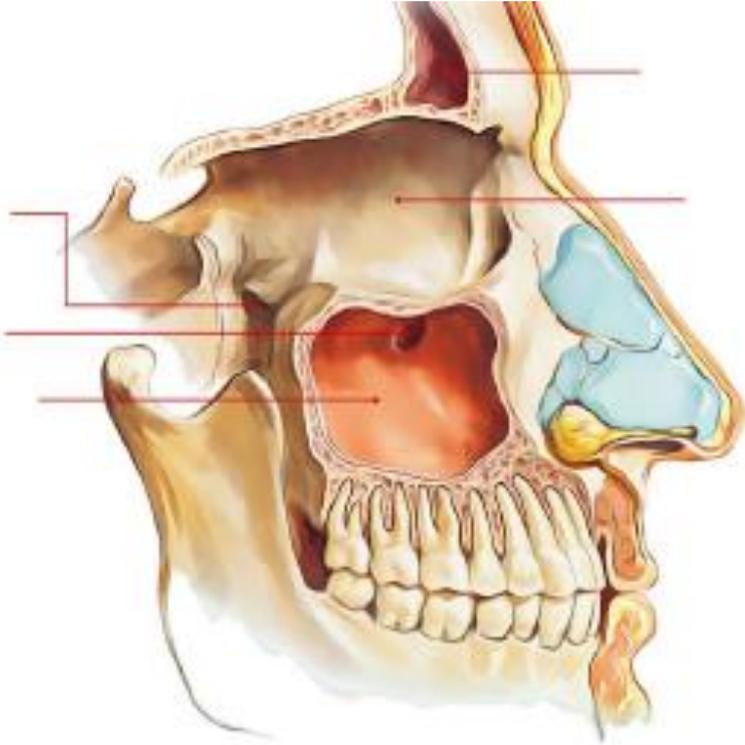


Distal

Various Outline Views of a Permanent Maxillary Right Second Premolar



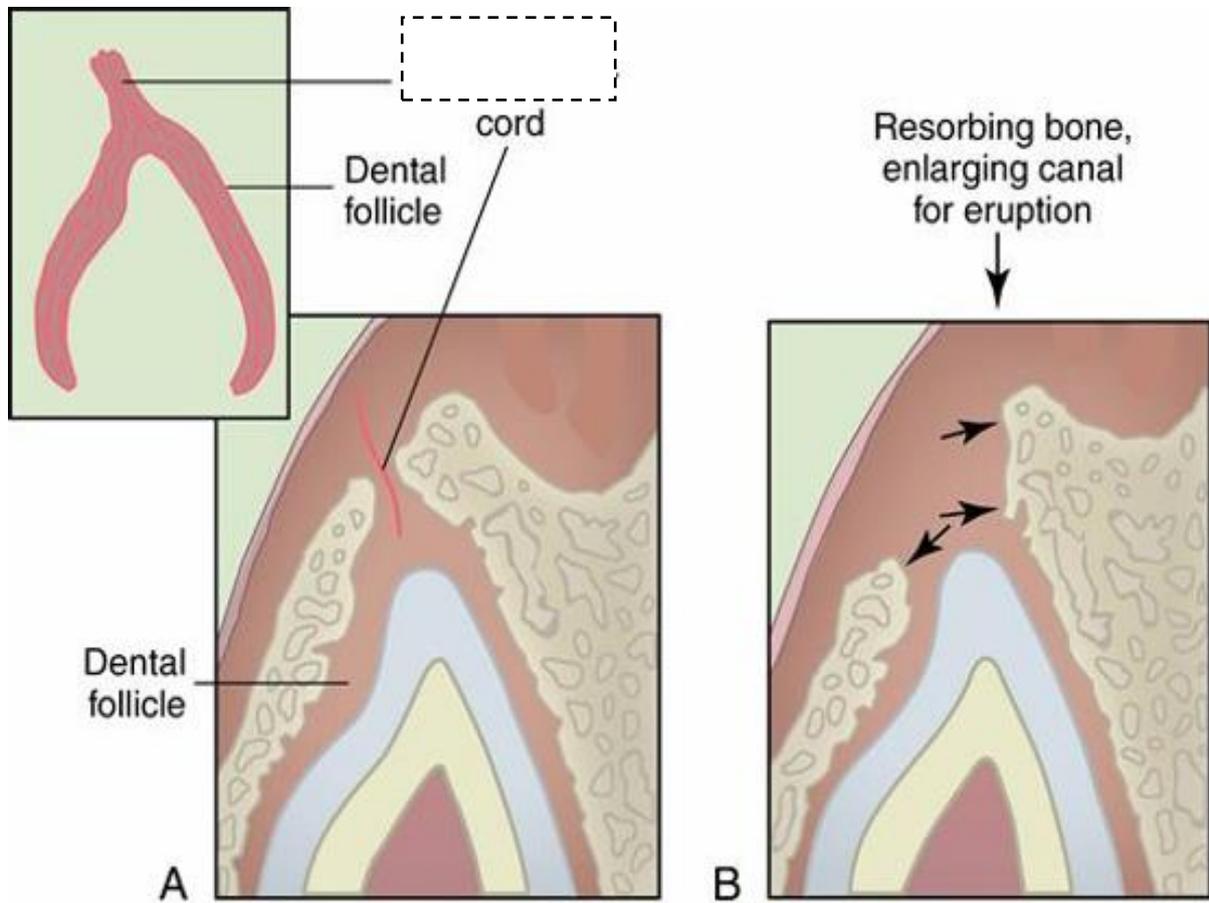
MAXILLARY SINUS



DRAW AND LABEL THE DIAGRAMS

Block C
MODULE 4
CERVICOFACIAL MODULE

ERUPTION & SHEDDING



DRAW AND LABEL THE DIAGRAMS

ERUPTION SHEDDING OF DECIDUOUS TEETH

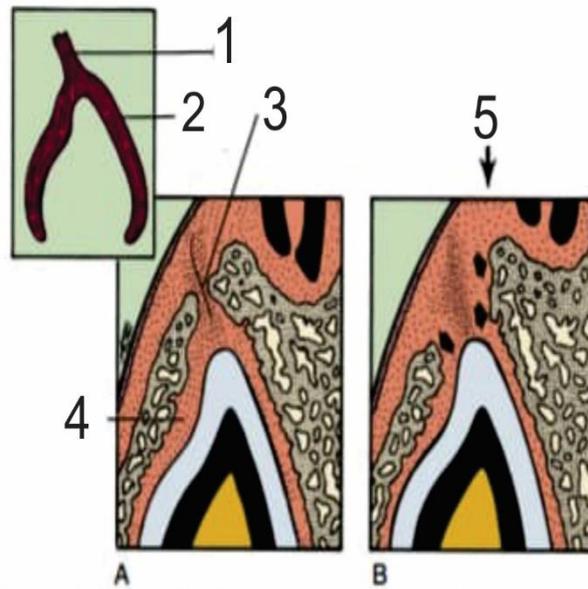
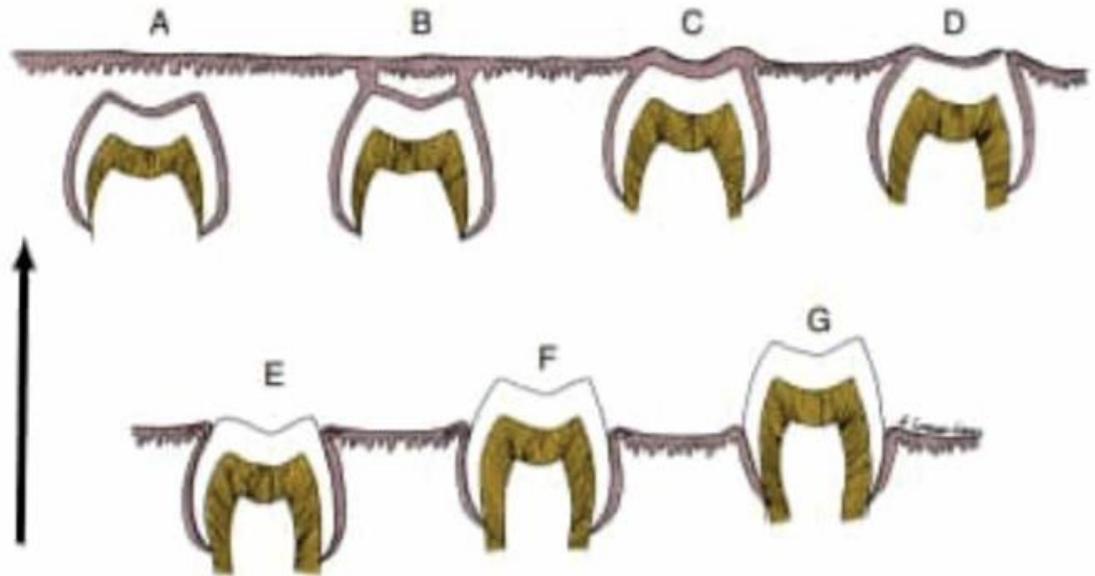


Diagram of a developing eruption pathway. **A**, Early developing eruption pathway **B**, Resorption of bone in eruption pathway (From James K. Avery and Daniel J. Chiego: *Essentials of Oral Histology and Embryology*, 3rd Edition, Mosby).



write stages of tooth eruption from A to G

DRAW AND LABEL THE DIAGRAMS

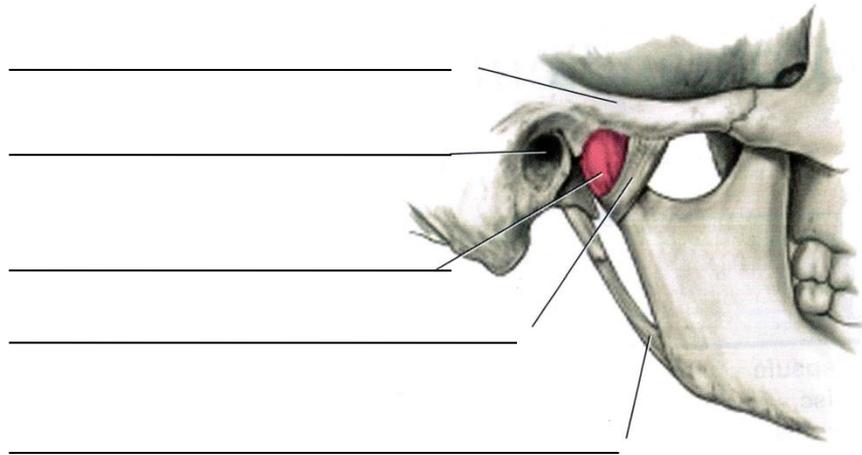
SHEDDING OF DECIDUOUS TEETH



BRIEFLY DESCRIBE PROCESS OF SHEDDING

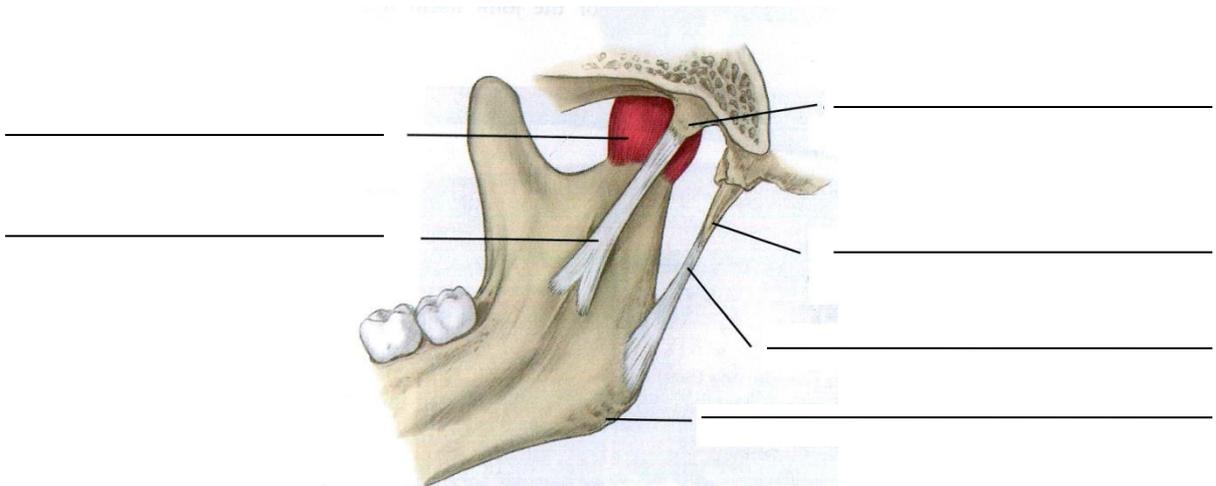
TEMPOROMANDIBULAR JOINT

Figure

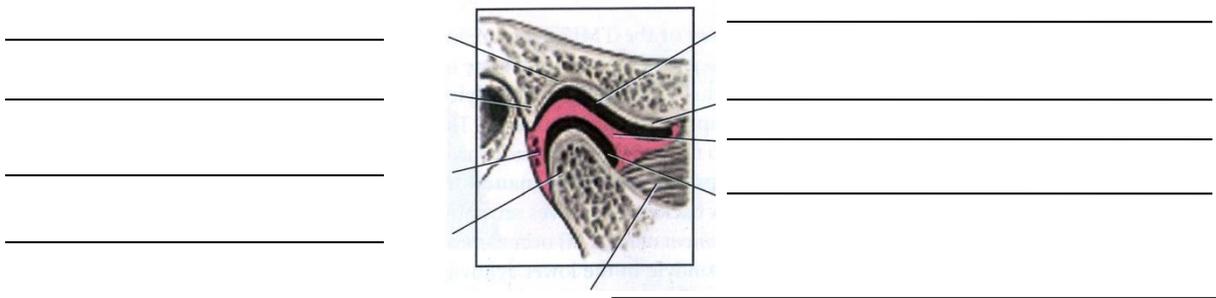


Temporomandibular Joint

Figure



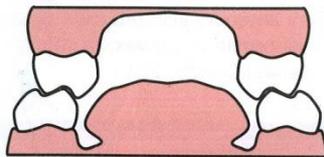
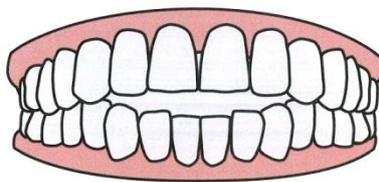
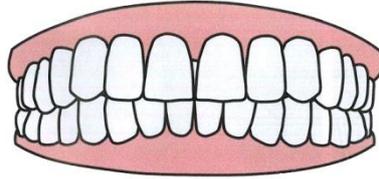
Figure



DRAW AND LABEL THE DIAGRAMS

OCCLUSION

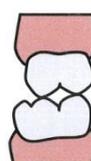
Figure



Posterior (bilateral)



Anterior

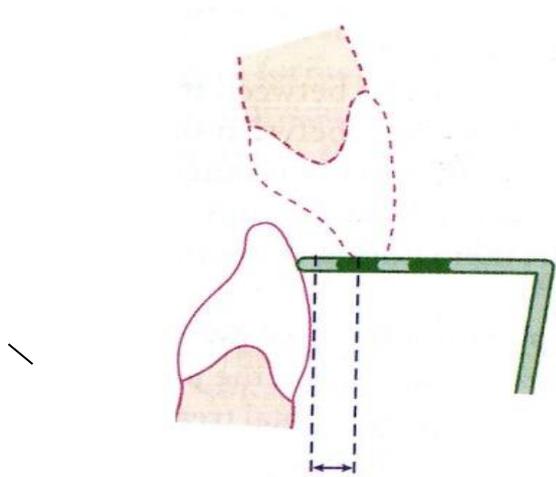


Posterior

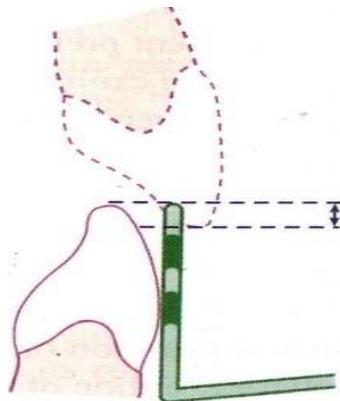
DRAW AND LABEL THE DIAGRAMS

OCCLUSION

Figure



Figure



Define over jet, overbite, canine relationship and molar relationship

DRAW AND LABEL THE DIAGRAMS

GUIDE LINES FOR DRAWING OF TEETH ACCORDING TO ITS MORPHOLOGY

Introduction

Tooth-drawing assignments emphasize fundamental principles in tooth design, which later have direct practical application in clinical coursework of a dental professional. Initial drawings are most likely to be the student's first attempts at capturing any tooth likeness; they will certainly encourage accuracy and discernment of the teeth and hopefully facilitate the recognition of tooth details. *Artistic inclinations are not really needed with these basic technical drawings.*

It is important to also note that these drawings are only two-dimensional and are somewhat limited to fundamental outlines and proportions. However, they will serve to help create mental pictures of teeth in their ideal or composite state. Remember that real specimens in patients' mouths vary considerably.

Activity Steps

1. Locate the two, blank gridded worksheets in the workbook. Any additional gridded worksheets needed can be easily copied for the correct spacing of the grid needed. Correctly label the worksheet at the bottom of the page with the tooth that will be drawn as shown in the smaller professionally drawn figures.
2. Using the attached table of tooth dimensions (same as in the associated textbook's appendices), mark off the overall peripheral tooth measurements for each of the gridded view boxes of the tooth. Note that the grid of the blank worksheet is larger than that shown with the professionally drawn tooth outlines to better enable the student to have room to work. Each square of grid equals 1 mm, so count off as many squares for each peripheral dimension (such as the mesiodistal diameter) as indicated from the table onto the proper area of the gridded worksheet.
3. To establish crown and root proportions, divide each gridded view box into two parts corresponding to these two dimensions, except for the incisal/occlusal view.
4. To indicate the height of contour, locate the approximate area of contact between the adjacent teeth and the area of greatest convexity on the labial/buccal, lingual/mesial, and distal surfaces as mentioned in the associated textbook.
5. To locate the root axis line (RAL), draw a line that exactly bisects the overall gridded box showing the overall crown and root measurements. The cementoenamel junction (CEJ) will then be bisected by the RAL. The root apex may or may not be located on this RAL, depending on the tooth's apex traits.
6. To locate the center of the cingulum or midpoint of the incisal edge, divide the crown and root (if included in that particular gridded view box) into imaginary thirds. Then place the root apex, cingulum, or incisal edge into proper perspective with respect to the other peripheral overall tooth dimensions such as the mesiodistal diameter.
7. To complete the crown outline, connect the heights of contour to the incisal/occlusal edge, to the CEJ, and to the other heights of contour. Any additional anatomical features such as mamelons, lobes, marginal ridges, depressions, and so forth, can be indicated upon completion of the crown outline.
8. To complete the root outline, follow the directions for developing the crown outline with the understanding that the cervical one third to one half of the root width generally approximates the cervical width of the crown before it starts to narrow considerably to form the root apex.
9. Shading or stippling of the features may now be added, if desired. An evaluation form for the drawings for use by both the student and instructor is also included in the workbook. Multiple copies of the form may be copied if needed.

DIMENSIONS OF PERMANENT MANDIBULAR FIRST PREMOLAR*	
Cervico-incisal Length of Crown	8.5
Length of Root	14.0
Mesiodistal Diameter of Crown	7.0
Mesiodistal Diameter of CEJ	5.0
Buccolingual Diameter	7.5
Buccolingual Diameter of CEJ	6.5
Curvature of CEJ—Mesial	1.0
Curvature of CEJ—Distal	0.0

*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusion*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cementoenamel junction

CHECKLIST FOR PERMANENT MANDIBULAR FIRST PREMOLAR	
Features Noted	Features Present
Crown Features	
Smaller lingual cusp of two with buccal ridge	
Occlusal table with marginal ridges and cusps, with tips, ridges, inclined planes, and grooves, fossae, pits	
Shorter mesial cusp slope, mesiolingual groove, deeper mesial CEJ curvature	
Mesial and distal contact is just cervical to the junction of occlusal and middle thirds	
Root Features	
Single rooted	
Proximal root concavities	

CEJ = cementoenamel junction

DIMENSIONS OF PERMANENT MANDIBULAR SECOND PREMOLAR*	
Cervico-incisal Length of Crown	8.0
Length of Root	14.5
Mesiodistal Diameter of Crown	7.0
Mesiodistal Diameter of CEJ	5.0
Buccolingual Diameter	8.0
Buccolingual Diameter of CEJ	7.0
Curvature of CEJ—Mesial	1.0
Curvature of CEJ—Distal	0.0

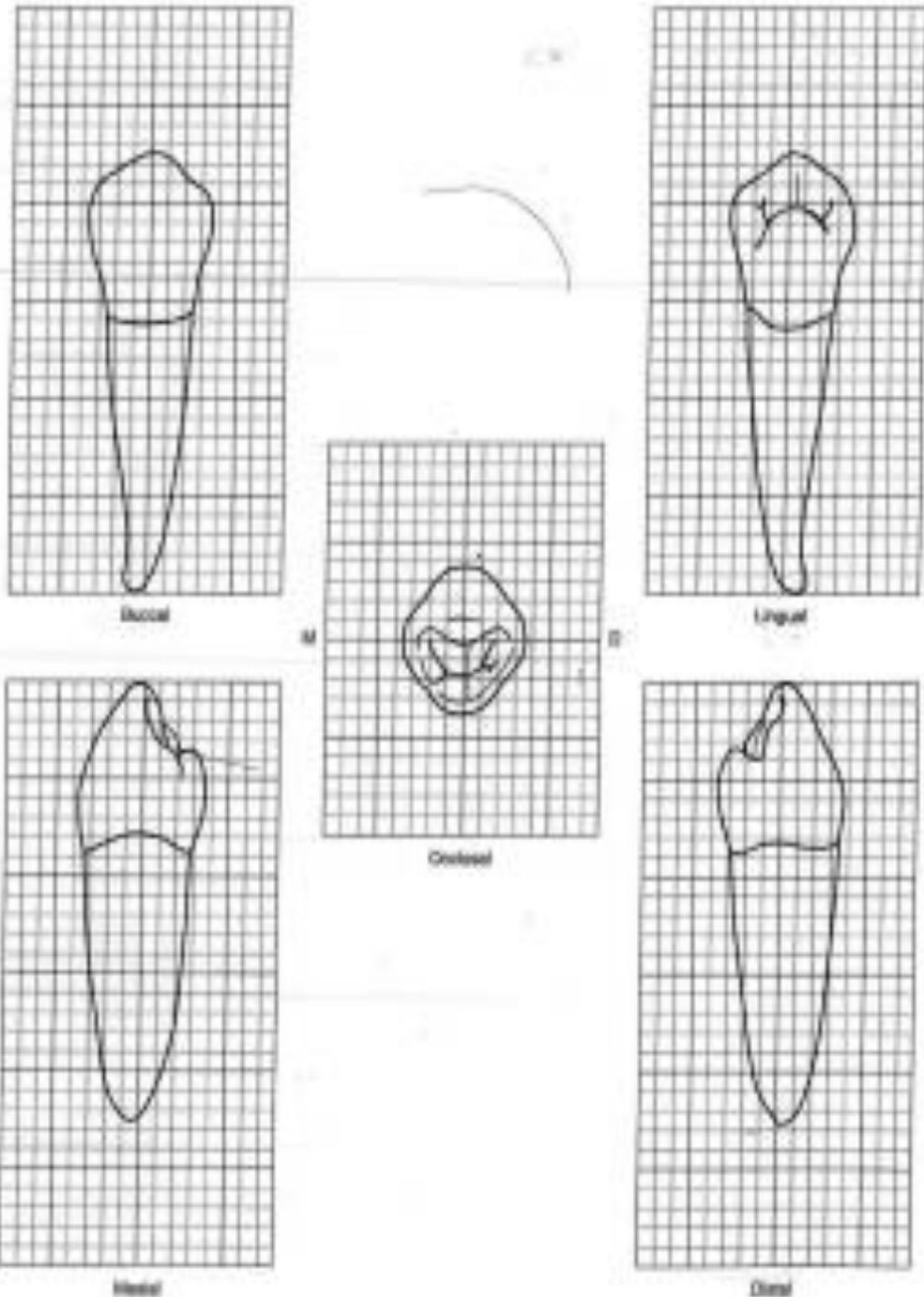
*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CEJ = cementoenamel junction

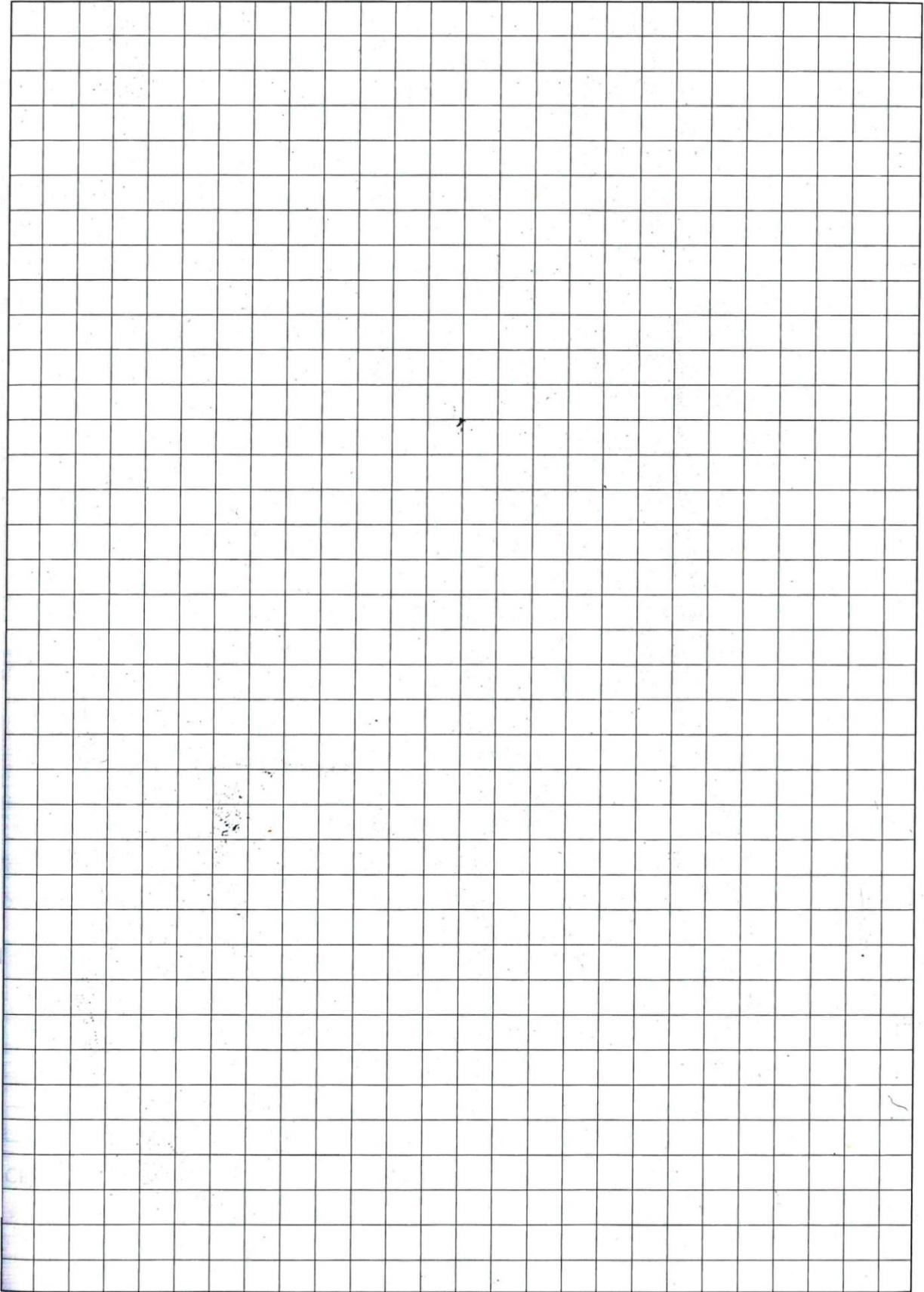
CHECKLIST FOR PERMANENT MANDIBULAR SECOND PREMOLAR	
Features Noted	Features Present
Crown Features	
Usually three cusps present with buccal ridge	
Occlusal table with marginal ridges and cusps, with tips, ridges, inclined planes, and grooves (usually U-shaped groove pattern with increased supplemental grooves), fossae, pits	
Distal marginal ridge more cervically located, so more occlusal surface visible from distal view	
Mesial and distal contact is just cervical to the junction of occlusal and middle thirds	
Root Features	
Single rooted	
Proximal root concavities	

MANDIBULAR 1ST PREMOLAR

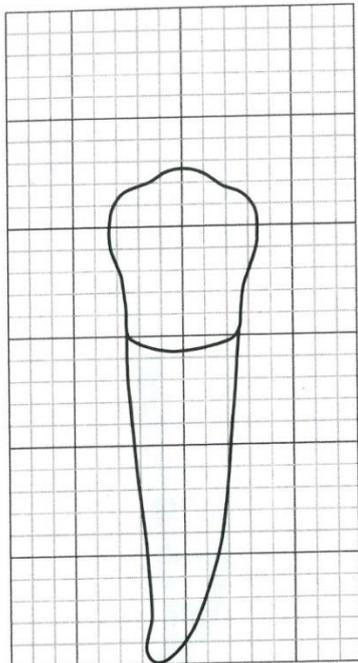
180 GUIDELINES FOR TOOTH DRAWING



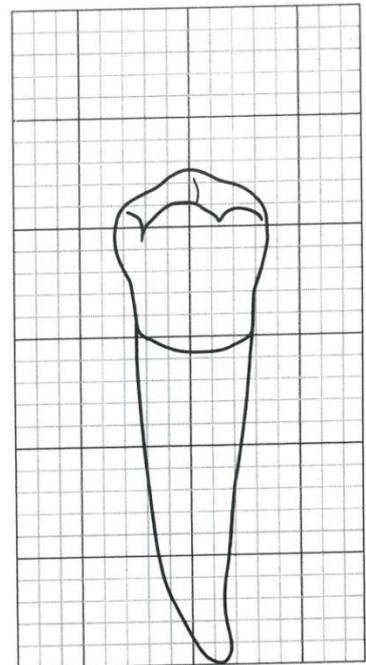
Various Outline Views of a Permanent Mandibular Right First Premolar



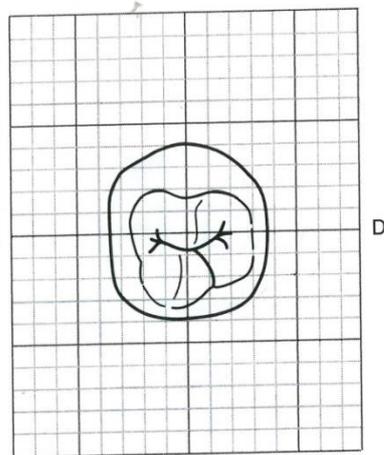
MANDIBULAR 2ND PREMOLAR



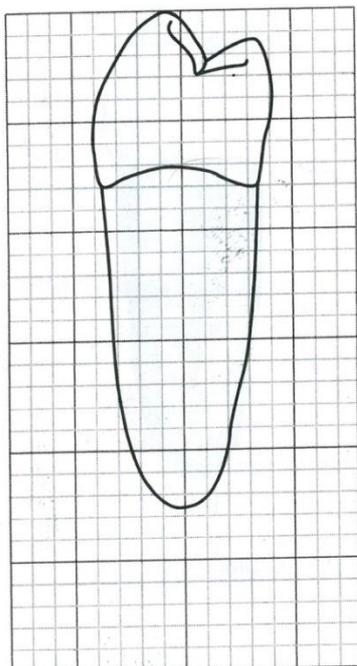
Buccal



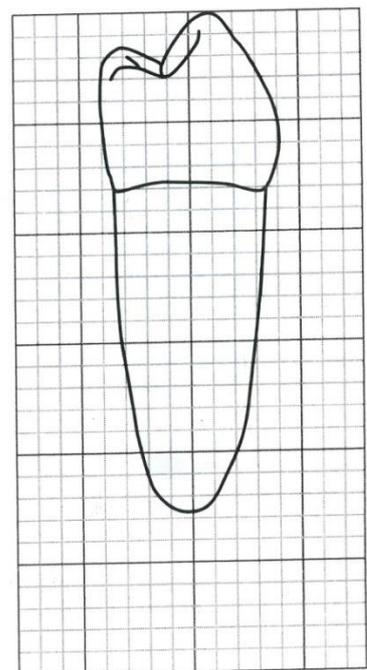
Lingual



Occlusal

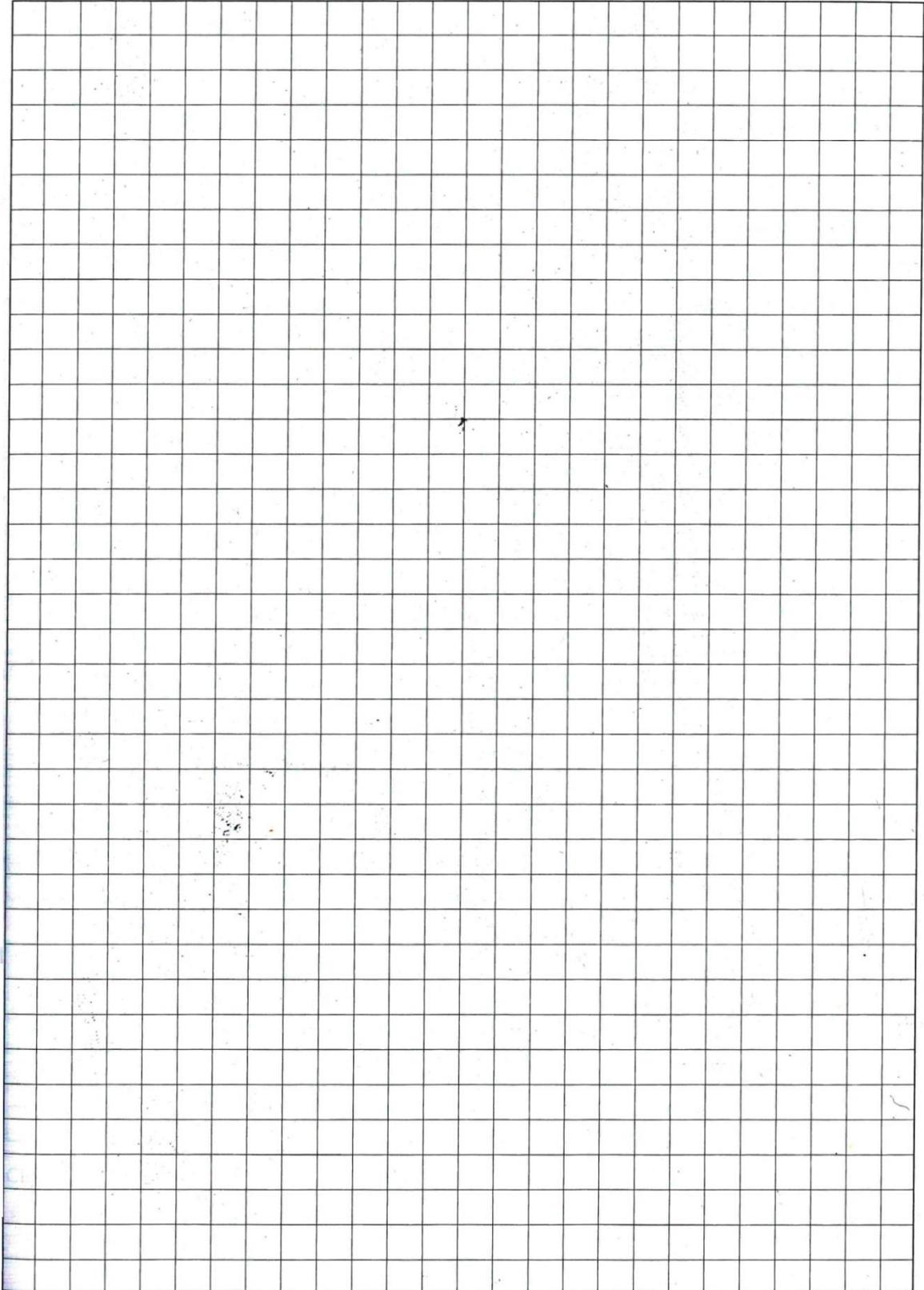


Mesial



Distal

Various Outline Views of a Permanent Mandibular Right Second Premolar



DIMENSIONS OF PERMANENT MAXILLARY FIRST MOLAR*		
Cervico-incisal Length of Crown	Buccal: 7.0	Lingual: 6.0
Length of Root	Buccal: 12	Lingual: 13
Mesiodistal Diameter of Crown	10.0	
Mesiodistal Diameter of CEJ	8.0	
Buccolingual Diameter	11.0	
Buccolingual Diameter of CEJ	10.0	
Curvature of CEJ—Mesial	1.0	
Curvature of CEJ—Distal	0.0	

*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusion*, ed 9, WB Saunders, Philadelphia, 2009.

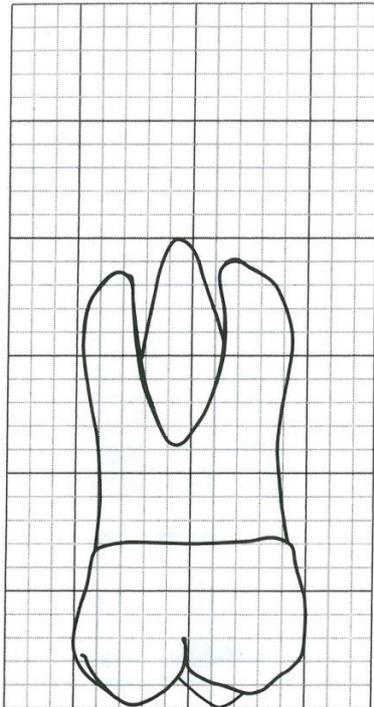
CHECKLIST FOR PERMANENT MAXILLARY FIRST MOLAR	
Features Noted	Features Present
Crown Features	
Four major cusps, with buccal cusps almost equal in height and fifth minor cusp of Carabelli associated with mesiolingual cusp and groove	
Buccal cervical ridge	
Mesiolingual cusp outline longer and larger, but not as sharp as distolingual cusp	
Occlusal table with prominent oblique ridge, marginal ridges and cusps, with tips, ridges, inclined planes, and grooves, fossae, pits	
Mesial contact is at junction of occlusal and middle thirds	
Distal contact at middle third	
Root Features	
Trifurcated roots with furcations, root trunks, and root concavities	
Divergent roots with furcations well removed from the CEJ	

DIMENSIONS OF PERMANENT MANDIBULAR FIRST MOLAR*	
Cervico-incisal Length of Crown	7.5
Length of Root	14.0
Mesiodistal Diameter of Crown	11.0
Mesiodistal Diameter of CEJ	9.0
Buccolingual Diameter	10.5
Buccolingual Diameter of CEJ	9.0
Curvature of CEJ—Mesial	1.0
Curvature of CEJ—Distal	0.0

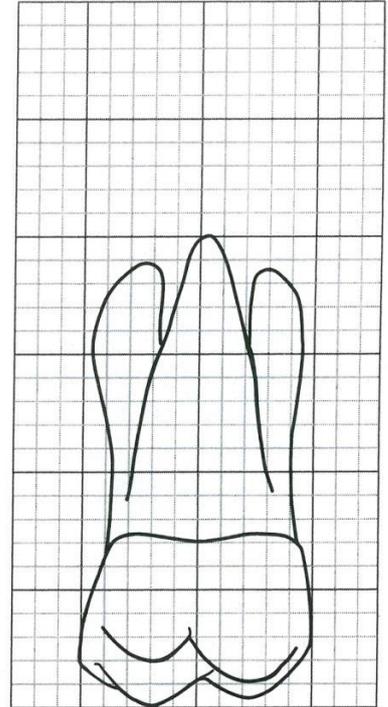
*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CHECKLIST FOR PERMANENT MANDIBULAR FIRST MOLAR	
Features Noted	Features Present
Crown Features	
Five cusps with Y-shaped groove pattern and with buccal groove	
Buccal cervical ridge	
Distal cusp is smallest	
Occlusal table with marginal ridges and cusps, with tips, ridges, inclined planes, and grooves, fossae, pits	
Mesial and distal contact is at junction of occlusal and middle thirds	
Root Features	
Bifurcated roots with furcations, root trunks, and root concavities	
Divergent roots with furcations well removed from the CEJ	

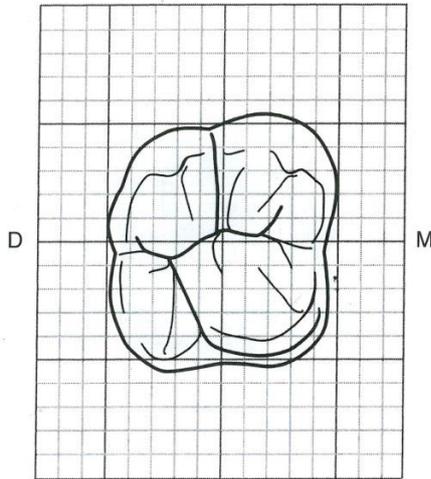
MAXILLARY 1ST MOLAR



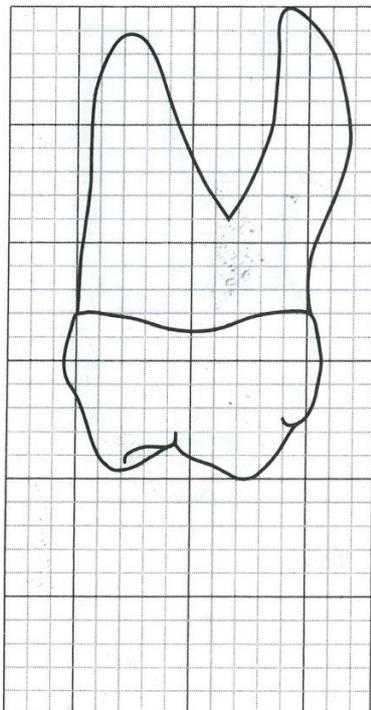
Buccal



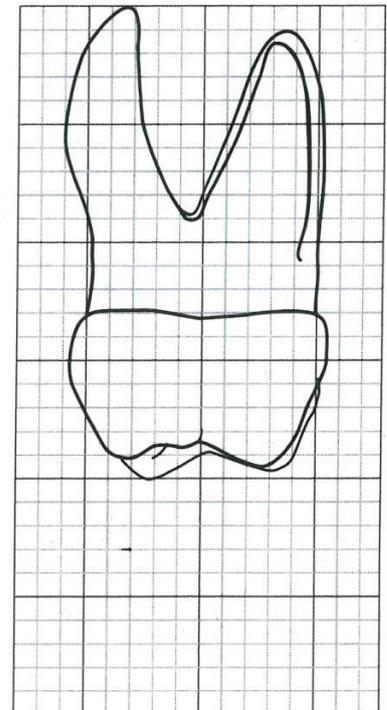
Lingual



Occlusal

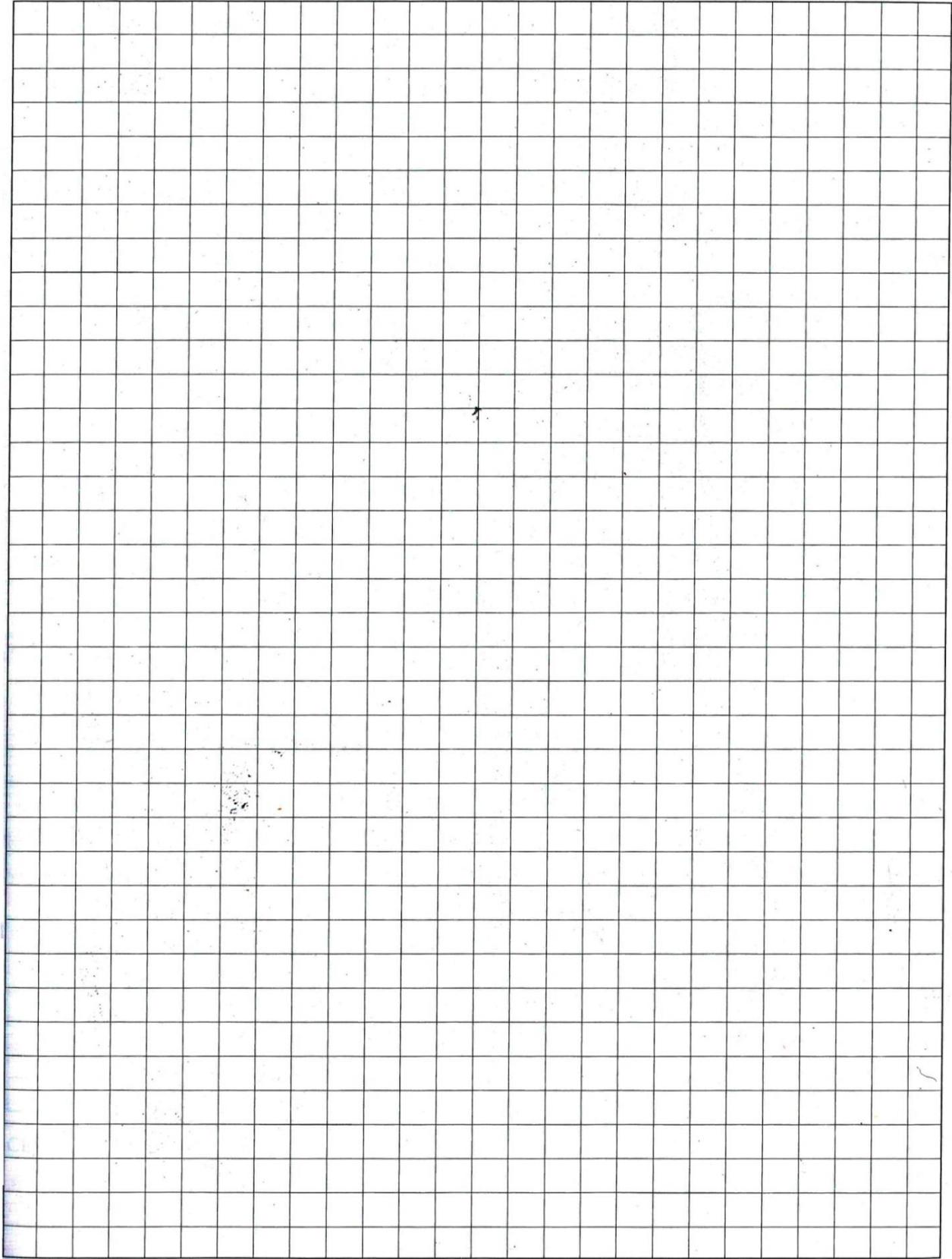


Mesial

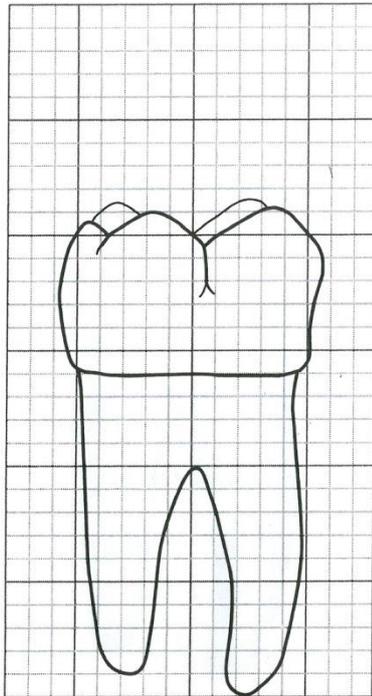


Distal

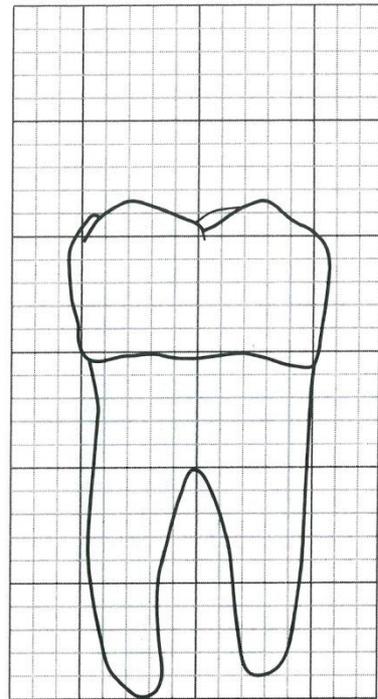
Various Outline Views of a Permanent Maxillary Right First Molar



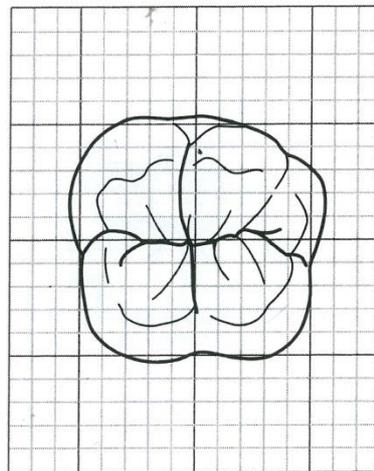
MANDIBULAR 1ST MOLAR



Buccal



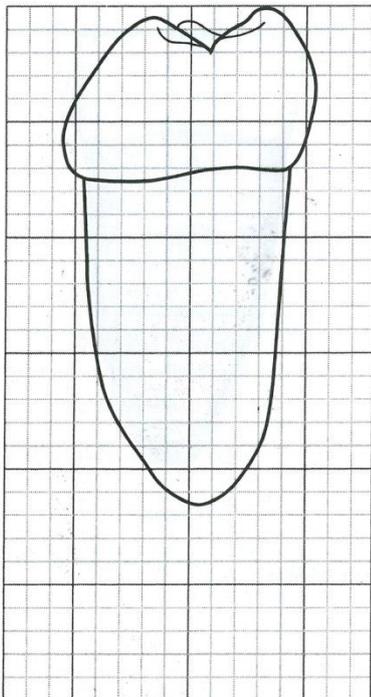
Lingual



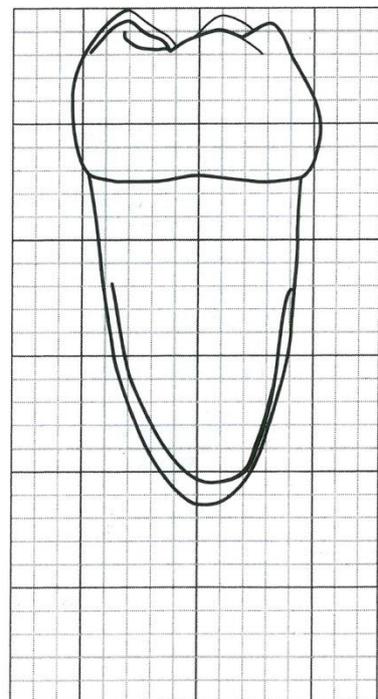
Occlusal

M

D

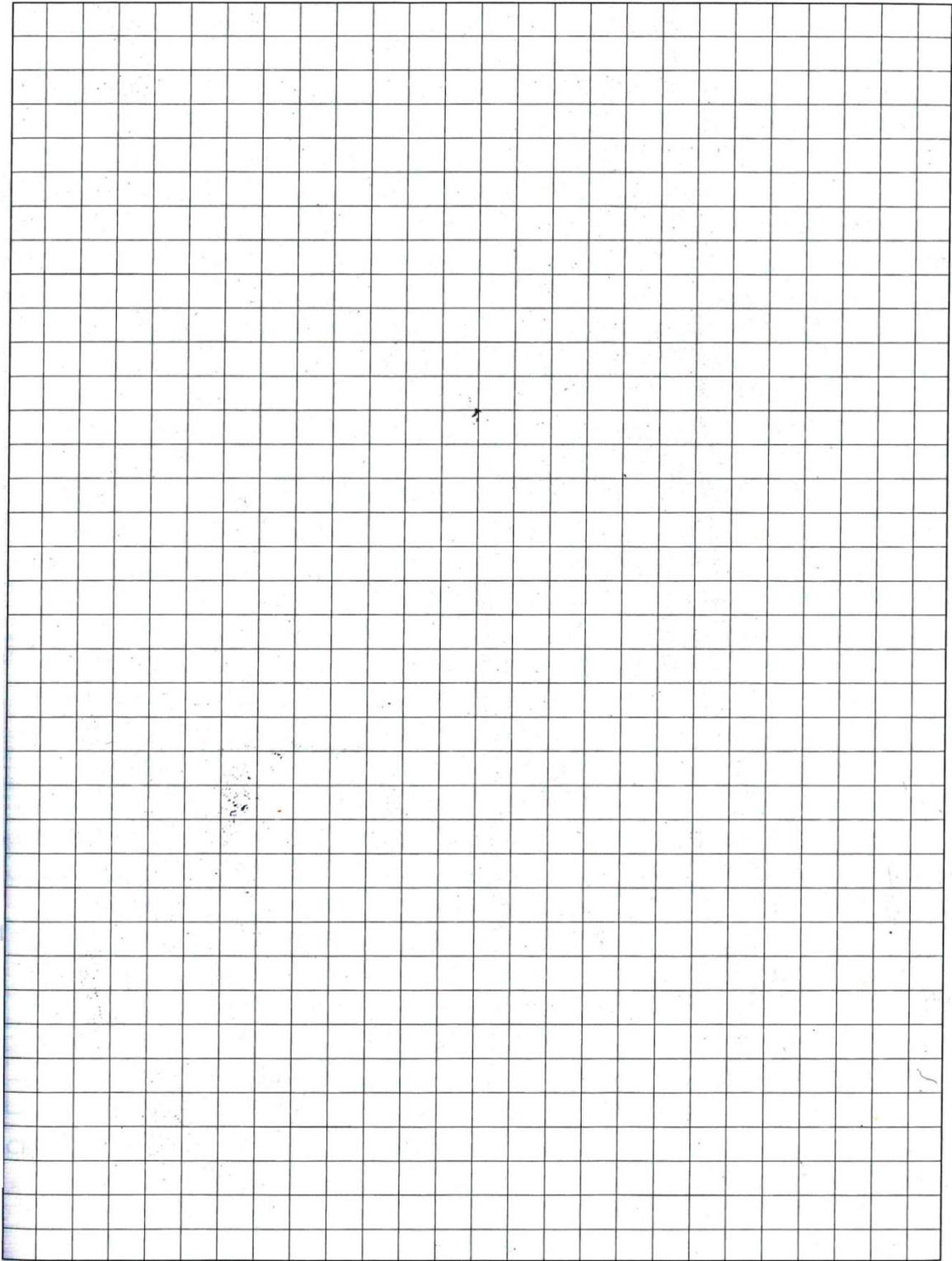


Mesial



Distal

Various Outline Views of a Permanent Mandibular Right First Molar



DIMENSIONS OF PERMANENT MAXILLARY SECOND MOLAR*		
Cervico-incisal Length of Crown	Buccal: 6.5	Lingual: 5.5
Length of Root	Buccal: 11	Lingual: 12
Mesiodistal Diameter of Crown	9.0	
Mesiodistal Diameter of CEJ	7.0	
Buccolingual Diameter	11.0	
Buccolingual Diameter of CEJ	10.0	
Curvature of CEJ—Mesial	1.0	
Curvature of CEJ—Distal	0.0	

*In millimeters; adapted from Nelson SF: Wheeler's Dental Anatomy, Physiology, and Occlusion, ed 9, WB Saunders, Philadelphia, 2009.

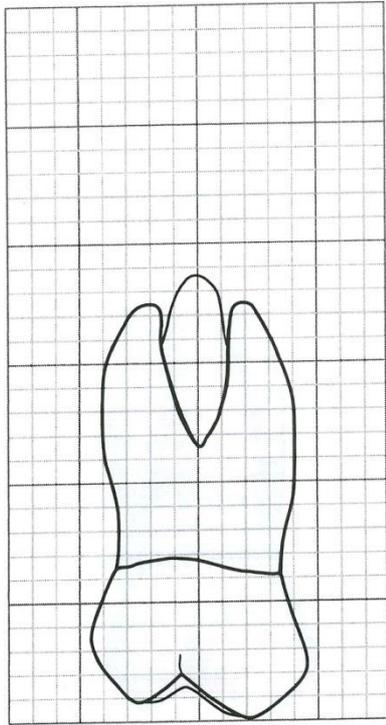
CHECKLIST FOR PERMANENT MAXILLARY FIRST MOLAR	
Features Noted	Features Present
Crown Features	
Four cusps usually	
Buccal cervical ridge	
Mesiobuccal cusp longer than distobuccal cusp; distolingual cusp usually smaller	
Occlusal table with less prominent oblique ridge, marginal ridges and cusps, with tips, ridges, inclined planes, and grooves, fossae, pits	
Mesial contact at middle third	
Distal contact at middle third	
Root Features	
Trifurcated roots with furcations, root trunks, and root concavities	
Less divergent roots	

DIMENSIONS OF PERMANENT MANDIBULAR SECOND MOLAR*	
Cervico-incisal Length of Crown	7.0
Length of Root	13.0
Mesiodistal Diameter of Crown	10.5
Mesiodistal Diameter of CEJ	8.0
Buccolingual Diameter	10.0
Buccolingual Diameter of CEJ	9.0
Curvature of CEJ—Mesial	1.0
Curvature of CEJ—Distal	0.0

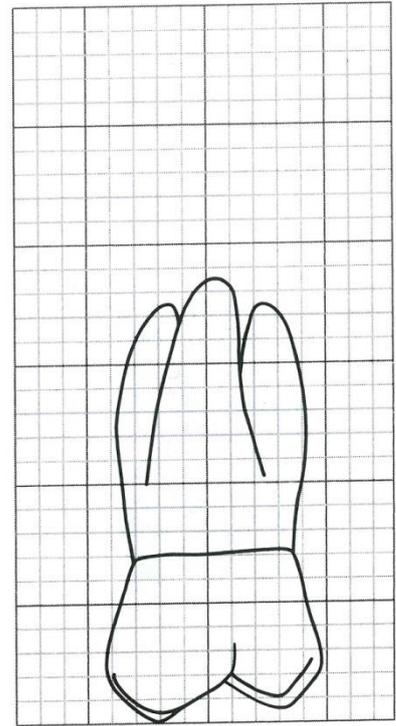
*In millimeters; adapted from Nelson SJ: *Wheeler's Dental Anatomy, Physiology, and Occlusions*, ed 9, WB Saunders, Philadelphia, 2009.

CHECKLIST FOR PERMANENT MANDIBULAR SECOND MOLAR	
Features Noted	Features Present
Crown Features	
Four cusps with cross-shaped groove pattern	
Buccal cervical ridge	
Wider mesial proximal surface than distal	
Occlusal table with marginal ridges and cusps, with tips, ridges, inclined planes, and grooves, fossae, pits	
Mesial and distal contact is at middle third	
Root Features	
Bifurcated roots with furcations, root trunks, and root concavities	
Less divergent roots with furcations closer to CEJ	

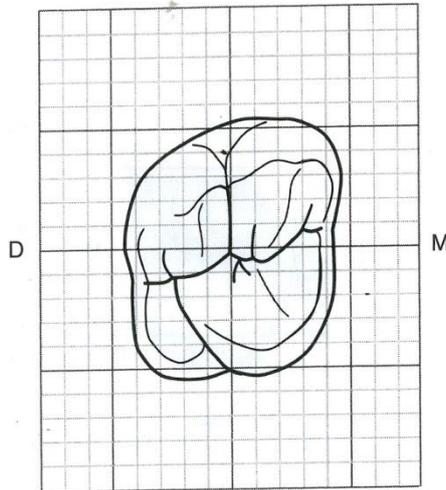
MAXILLARY 2ND MOLAR



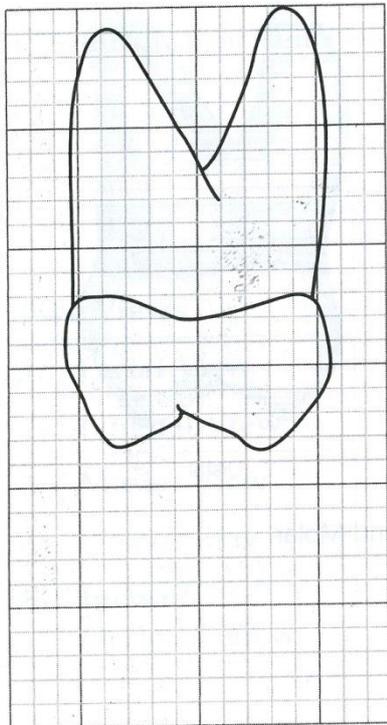
Buccal



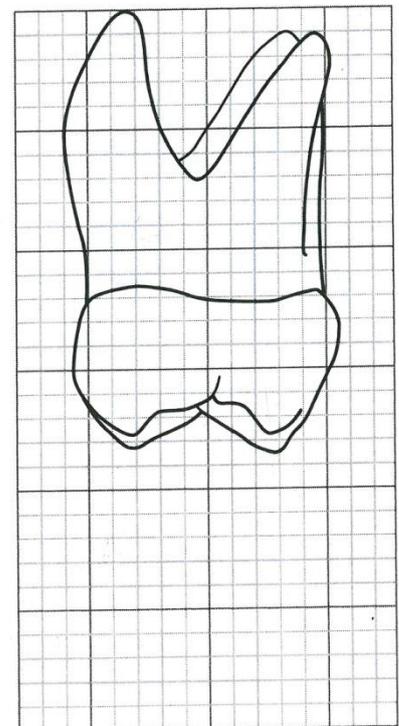
Lingual



Occlusal

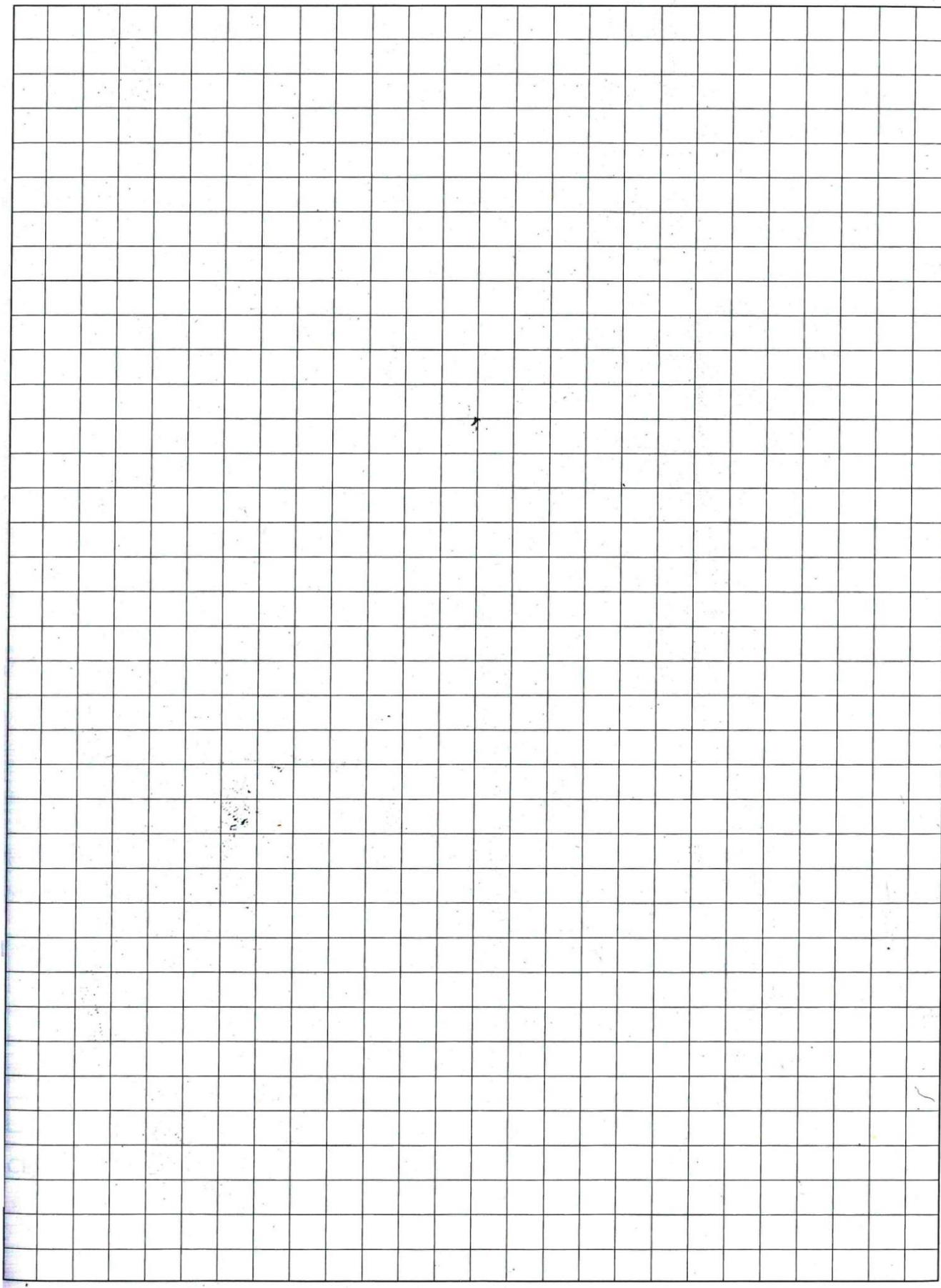


Mesial

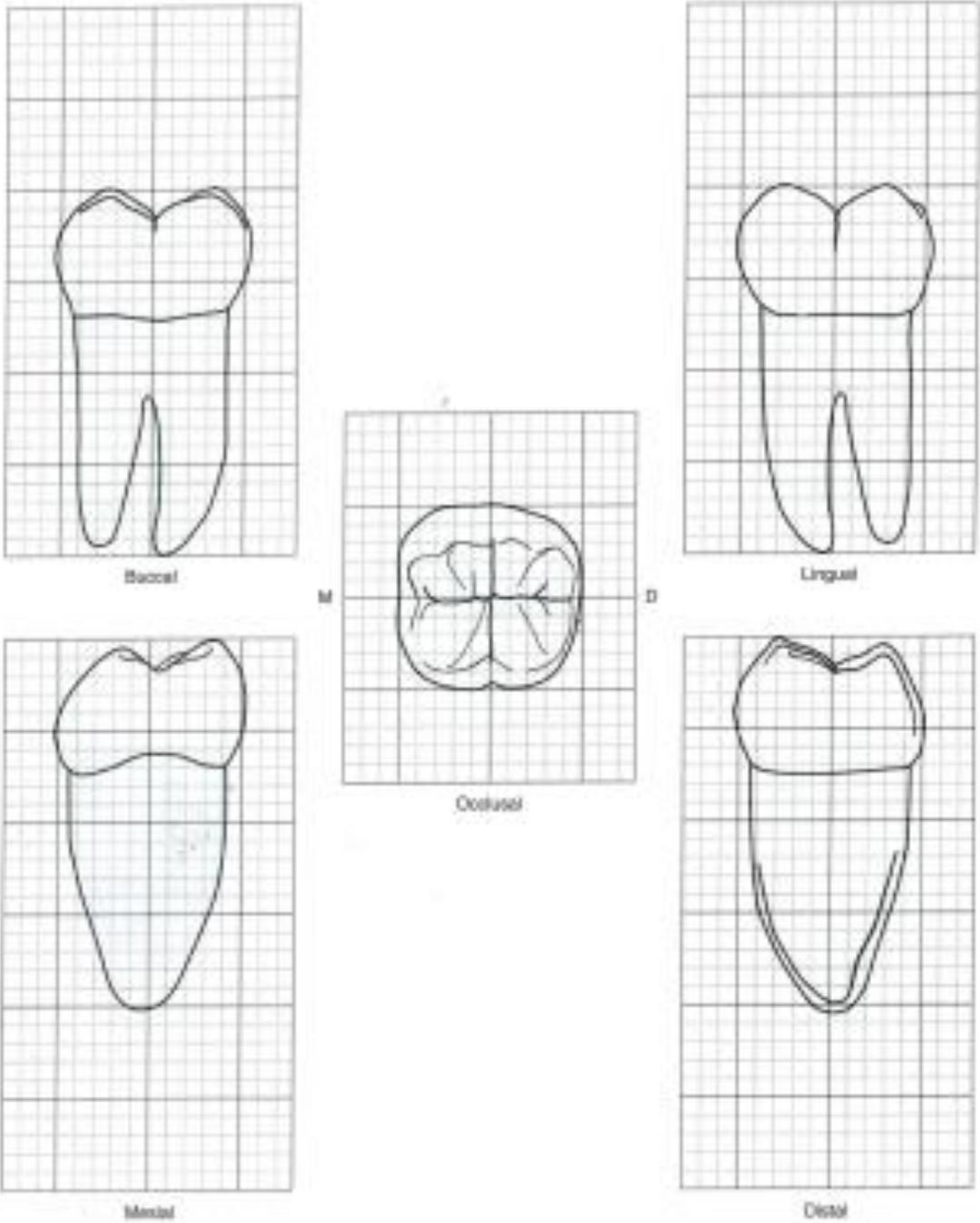


Distal

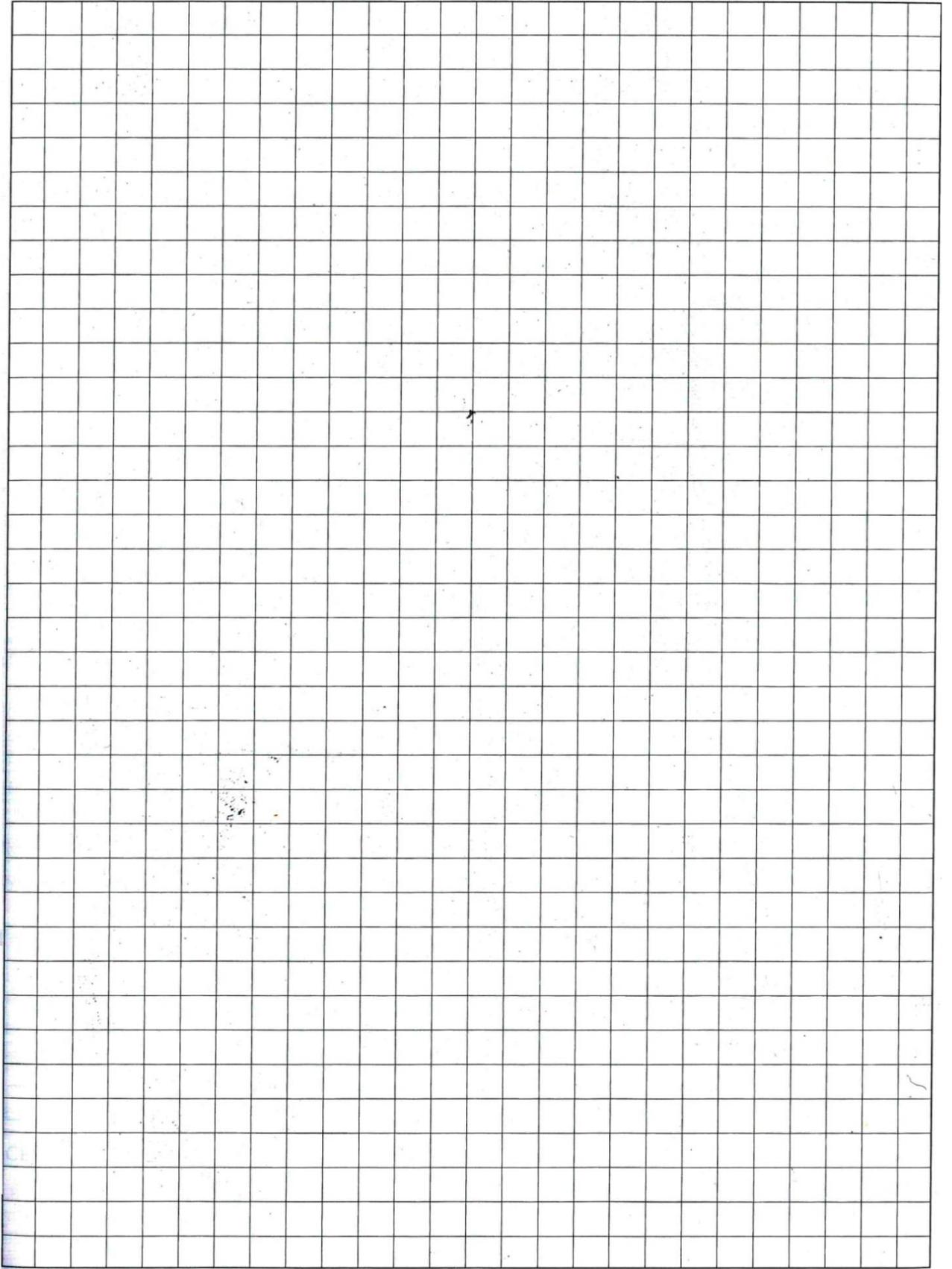
Various Outline Views of a Permanent Maxillary Right Second Molar



MANDIBULAR 2ND MOLAR



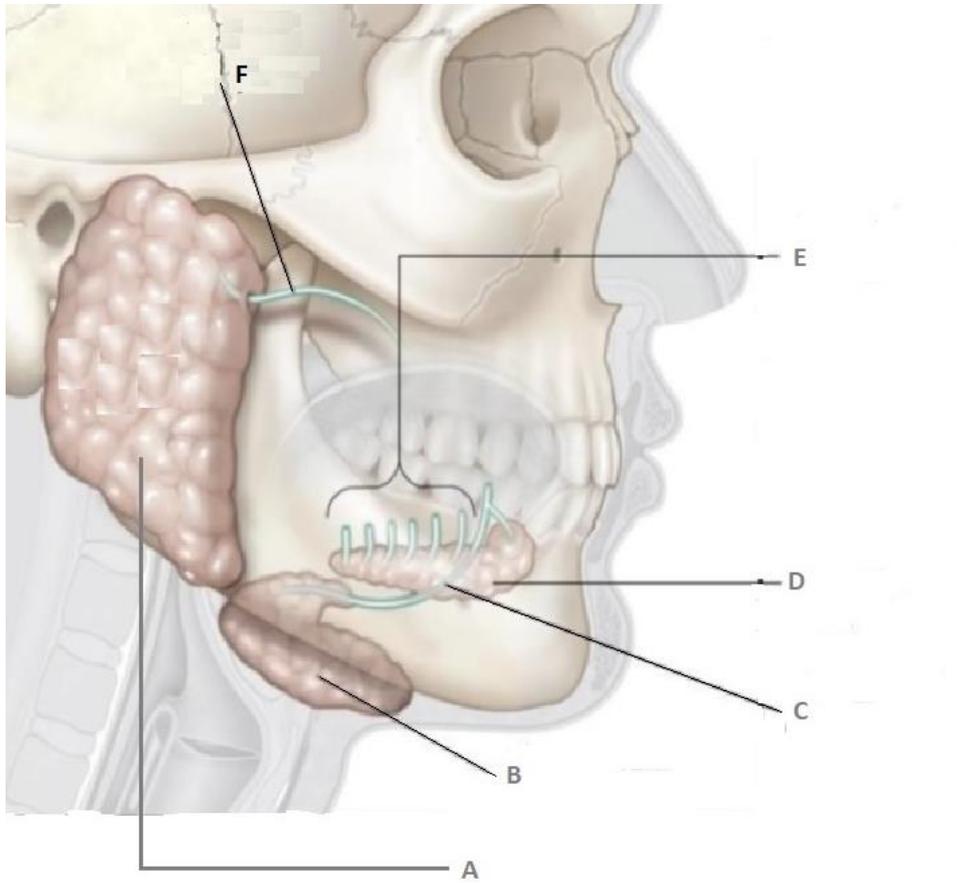
Various Outline Views of a Permanent Mandibular Right Second Molar



Block C
MODULE 5, 6 AND 7
GIT, UGS AND CARDIOPULMONARY

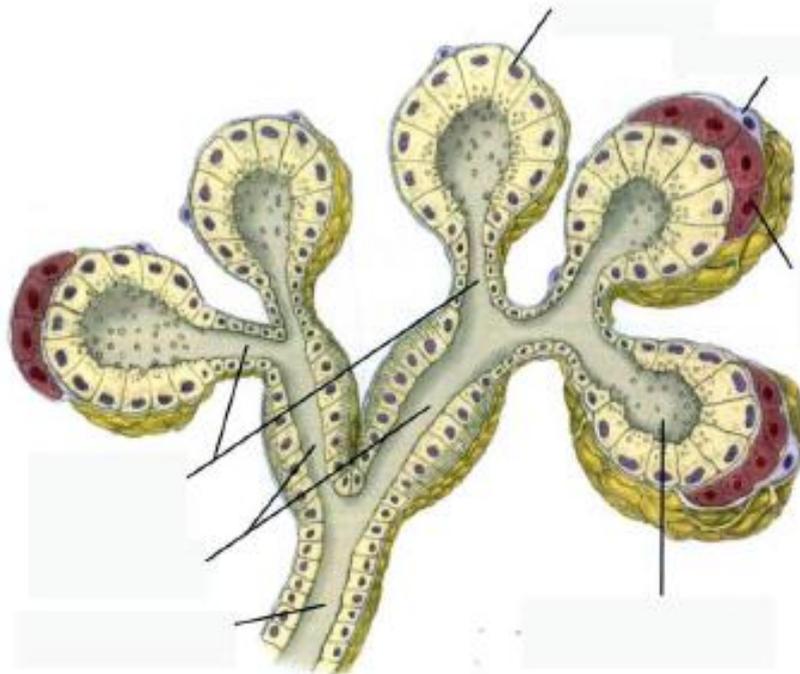
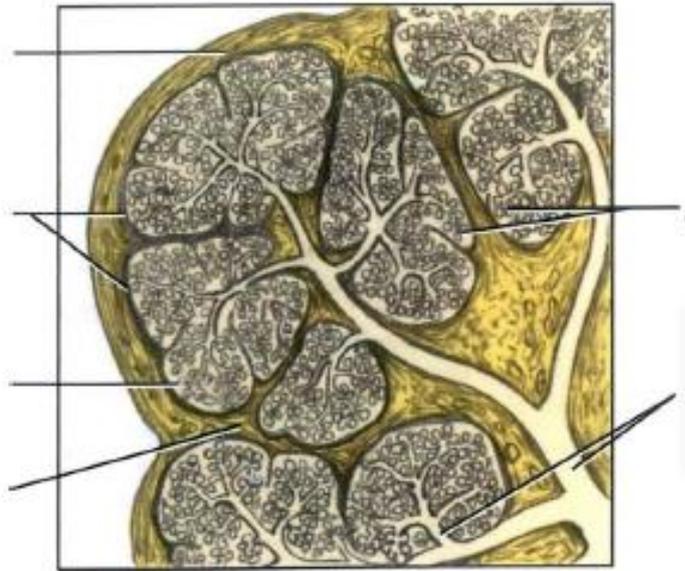
MAJOR SALIVARY GLANDS AND ITS DUCTS

LABEL THE FIGURE MARKED A, B, C, D, E AND F



SALIVARY GLAND APPARATUS

LABEL THE DIAGRAMS



SALIVARY GLAND SECRETION

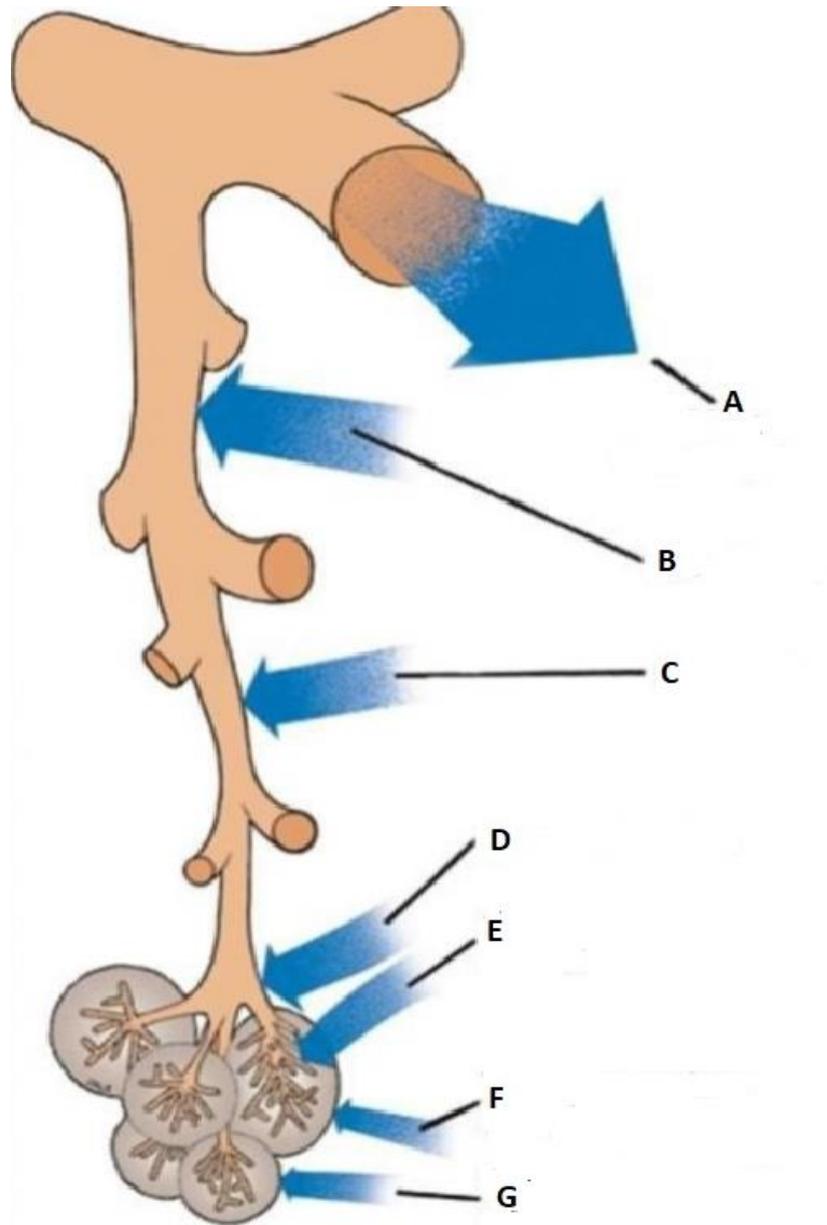
Secretion of Saliva (800-1500 mL/day; pH: 6.0-7.0, suitable for ptyalin; has K and bicarbonate

Salivary Glands	Secretion
Parotid	Serous
Submandibular	Serous and mucus
Sublingual	Serous and mucus
Buccal	Mucus

Serous-has ptyalin for starch digestion (thin watery secretions)

Mucus-has mucin for lubrication and surface protection (viscous secretions)

SALIVARY GLAND DUCT



**DRAW AND LABEL THE DIAGRAM MARKED A, B,
C, D, E, F AND G**

REFERENCE BOOKS

- 1) Orban's Oral Histology and Embryology.
- 2) Ten Cate's Oral Histology.
- 3) James L. Fuller Concise Dental Anatomy and Morphology.
- 4) Nelson SJ: Wheeler's Dental Anatomy, Physiology and occlusion.