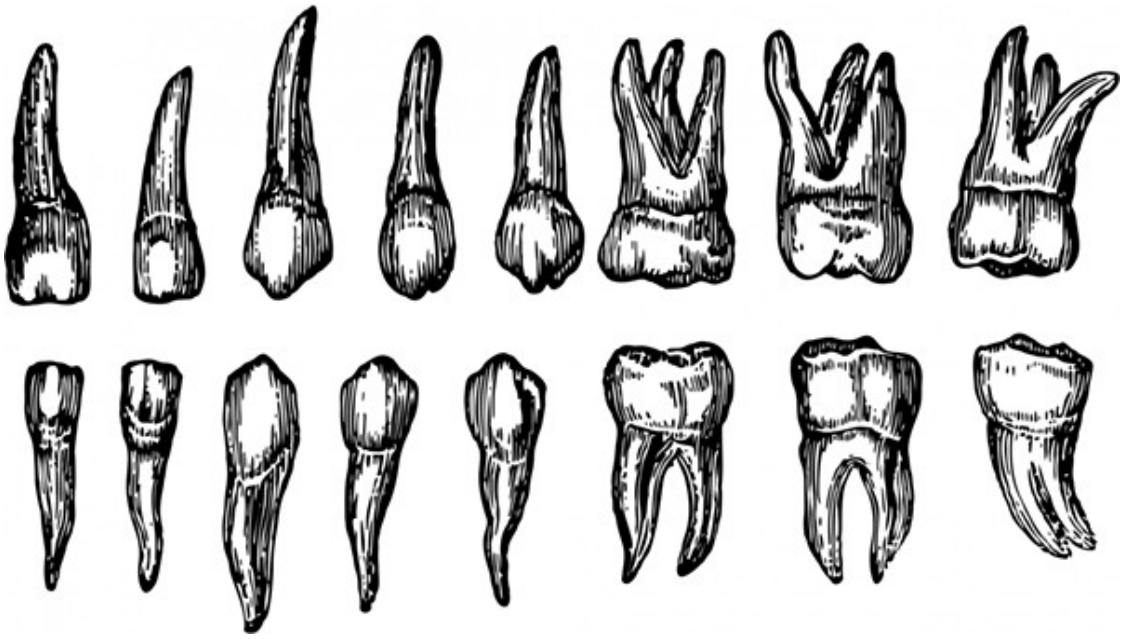
Name: _____ Per: _____ Date: _____

Unit 7: Impression Evidence: Bite Marks & Odontology



By the end of this section of the unit, you will be able to:

- Describe the structure of a typical tooth.
- Compare and contrast permanent and deciduous human dentition.
- Recognize the value of odontology in forensic investigations.
- Explain how teeth and craniofacial features are helpful in estimating age, ancestry, and sex.
- Differentiate between the dentition of humans and other animals.

Unit Vocabulary

- Odontology:

  _____

- Forensic Odontologist:

  _____

- Dentition:

  _____

- Crown/Neck/Root:

  _____

- Dentin/Pulp/ Enamel:

  _____

- Incisors/Canines/Molars:

  _____

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Introduction

- _____- the study of the anatomy and growth of teeth and diseases associated with the teeth and gums.
- Forensic Odontologist uses knowledge of the teeth to:
  - _____ victims of mass disasters
  - Help police in _____ _____.
  - Verify signs of abuse

Structure & Function of Teeth

- Digestion begins in the _____
- Enzymes in the saliva chemically break down complex carbohydrates into simpler molecules
- Teeth _____ grind and crush food
- Tooth is divided into three regions
  - _____ - above the gum line
  - _____ - where crown and root meet _____ - embedded in bony socket
- _____ - a connective tissue that has _____and gives teeth their basic shape.
- _____ - a softer connective tissue inside the tooth; contains nerves and blood vessels
- _____ - calcium carbonate and calcium phosphate covering the dentin
- _____ - a bonelike substance that covers the dentin in the root
- _____ _____ - anchors the tooth to the bone, keeps teeth in alignment, and acts as shock absorber

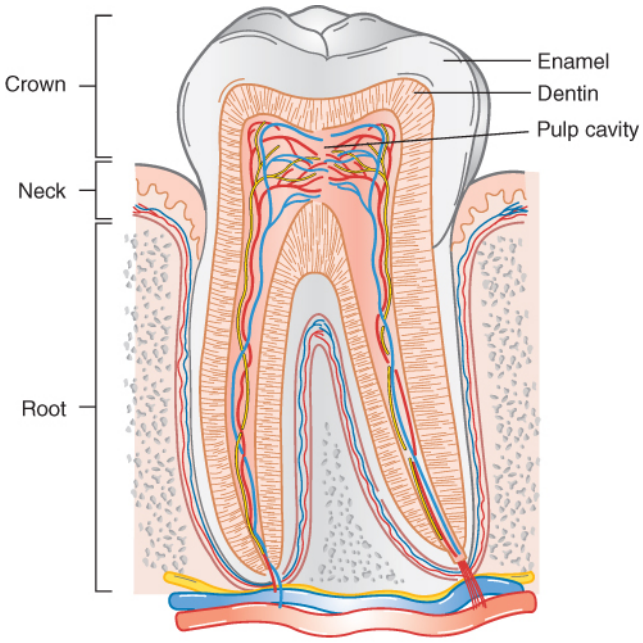

Figure 11-4. *Anatomy of a typical tooth.*

Types of Teeth

- 20 deciduous (baby) teeth
- 32 permanent (adult) teeth
- Incisors
- Canines
- Molars

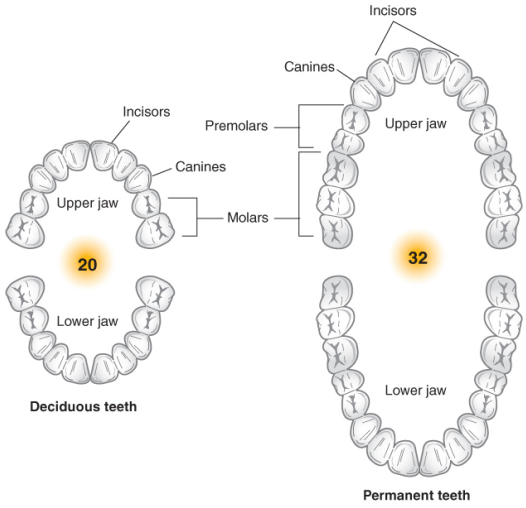

Figure 11-5. *Full sets of deciduous and permanent teeth.*

Estimating Physical Characteristics

- A forensic odontologist compares _____ _____ with the victim's remains
- Dental alterations - fillings, caps, bridgework, and dentures
- Teeth - size, shape, gaps, cracks, alignment, missing or extra one, wears, stains
- _____ - the pattern made by a particular set of teeth

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Age Estimation

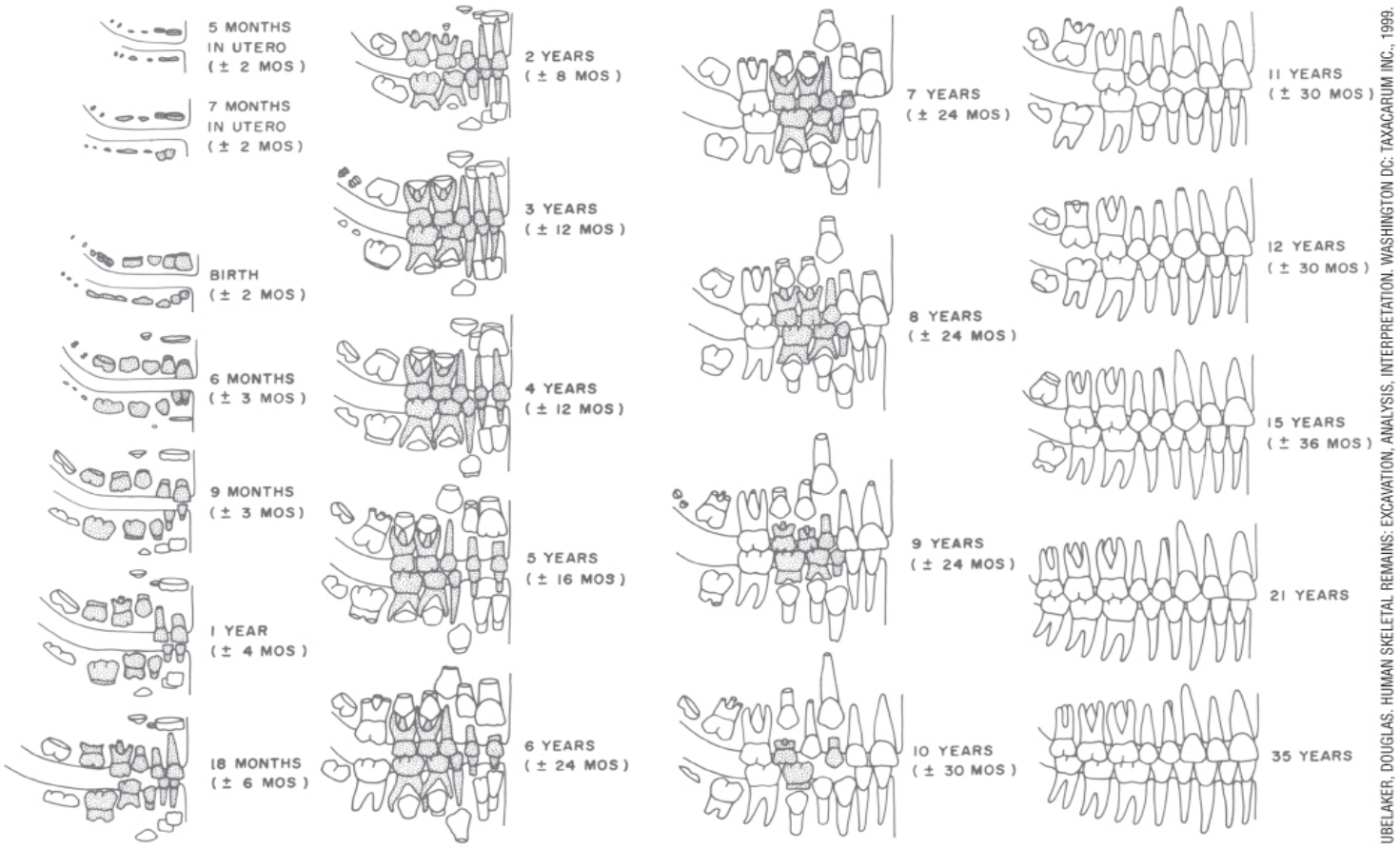

Figure 11-7. *Ubelaker's Chart of Dental Development shows the emergence pattern of human teeth.*

Ancestry Estimation

- Examining physical characteristics _____ absolutely determine an unidentified person's ancestry.
- Certain characteristics are more common within certain population groups
- The _____ of the decedent's _____ can be a _____ _____.

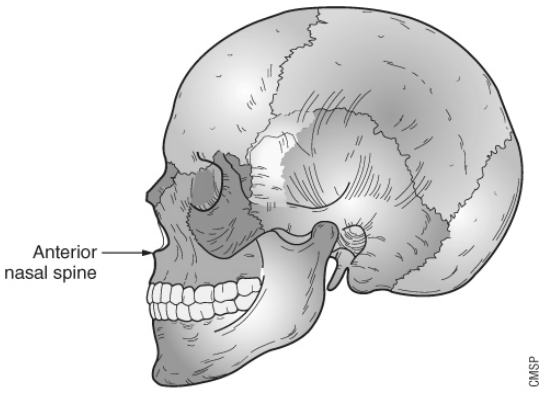

Figure 11-8. *The nasal spine is usually much more prominent in people of European descent than in people of African descent.*

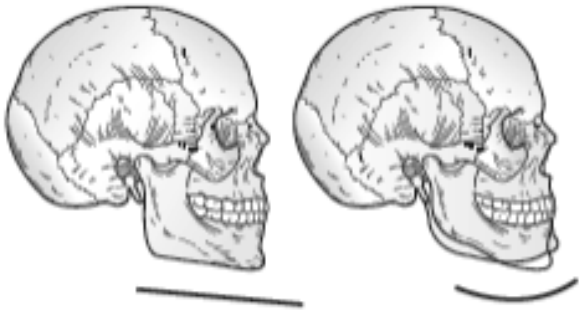

Figure 11-9. *Australian aborigines and some South Pacific islanders often exhibit rocker jaw.*

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Sex Estimation

- _____ to determine with teeth.
- _____ teeth - generally _____.
- _____ teeth - _____ tend to be more _____.
- _____ differences make sex determination more accurate.

Determining Positive Identification

- _____ identification.
  - Personal effects
  - Family ID
  - Location of the body
- _____ identification
  - Fingerprints
  - DNA
  - Medical and dental records

Dental Records

- Forensic Odontologist compares:
  - The _____ records (take during life)
  - The _____ records (recorded after death)
- Especially helpful if the decedent has/had:
  - Fillings
  - Bridgework
  - Dental implants

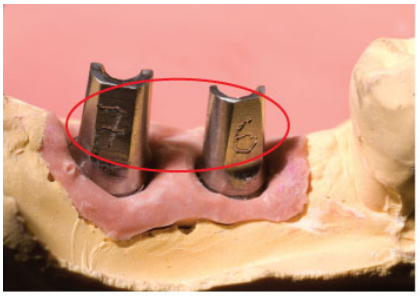

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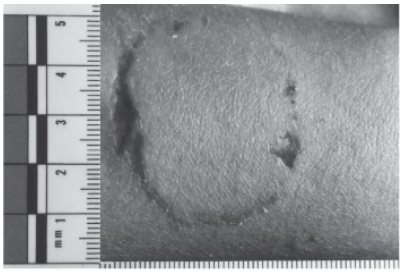
Figure 11-12. *The serial numbers of the dental implants are circled in red.*

Human Bite Marks

- Bite marks look different in soft and stretchy substances like skin versus hard substances like cheese or a pencil
- When the bite occurs _____:
  - The area bruises and swells
- When the bite occurs _____:
  - The area does not bruise or swell
- Typical bite has a double _____.



Human Bite Marks

- Swelling and inflammation can deform the bite mark
- _____ bite marks.
- If bites are _____, make a cast.
- Compare casts or traces with impressions from a suspect.

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Figure 11-14. *A casting of human teeth that can be compared to a bite mark.*

Animal Bite Marks

- Very different _____ patterns
- Compare DNA and bite patterns just like with humans