LESSON ASSIGNMENT

LESSON 4
Dental Anatomy.

LESSON ASSIGNMENT
Paragraphs 4-1 through 4-25.

LESSON OBJECTIVES
After completing this lesson, you should be able to:

4-1. Identify the differences between groups of teeth.

4-2. Identify the number and characteristics of deciduous teeth.

4-3. Identify the permanent teeth according to the military numbering system.

4-4. Identify the terminology related to the surfaces of teeth.

4-5. Identify the division of teeth into thirds.

4-6. Identify basic anatomic terminology that describes the location, configuration, or shape of teeth.

4-7. Identify the correct description of the anatomy of each permanent maxillary tooth.

4-8. Identify the correct description of the anatomy of each permanent mandibular tooth.

SUGGESTION
After studying the assignment, complete the exercises at the end of this lesson. These exercises will help you to achieve the lesson objectives.
LESSON 4
DENTAL ANATOMY

Section I. ASPECTS OF THE ANATOMIC DESCRIPTION OF TEETH

4-1. GENERAL

Teeth are of different shapes and sizes. The primary function of teeth is to chew (masticate) food. They function in specialized ways in the preparation of food for digestion. There are two kinds of teeth—anterior and posterior. The anterior teeth are designed for the purpose of cutting and tearing food. The posterior teeth are designed for the purpose of grinding or crushing food. Teeth also have a role in speaking, by aiding in the production of sounds. Another function of teeth concerns appearance (esthetics). The presence or absence of teeth, their regularity or irregularity of position, and their color and condition greatly affect the appearance of the individual. The shape, size, number, and arrangement of teeth in a normal arch are such that they efficiently perform these major functions. The character and general arrangement of teeth, taken as a whole, are referred to as the dentition. The individual has two sets of teeth during his lifetime. The first set is the primary (deciduous or temporary) set of 20 teeth. A later set is the secondary (permanent) set of 32 teeth.

4-2. ANATOMIC DIFFERENCES BETWEEN GROUPS OF TEETH

The 32 teeth that are commonly found in the adult dentition have differences and similarities in form and function. For comparison, the teeth are often grouped as maxillary and mandibular teeth or as anterior and posterior teeth.

a. Maxillary and Mandibular Teeth. The maxilla and the mandible contain the same number and types of teeth. There are certain distinct differences between the teeth of the two jaws. One of the differences is in the mesiodistal width between the maxillary and mandibular anterior teeth. The normal relationship between the maxillary and mandibular teeth results in a horizontal and vertical overlap. The horizontal overlap is called overjet. The vertical overlap is called overbite. This results in a wider arch for the maxillary teeth to fill. It affects the anterior teeth because of the greater curvature of the anterior part of the dental arch. (There is little or no lateral curvature in the posterior part.) Other differences include the number of roots of molars (maxillary molars have three and mandibular molars have two), the configuration and the outline form of occlusal surfaces, and the nature of the curvature of vertical crown surfaces.
b. **Anterior and Posterior Teeth.** As indicated in paragraph 4-1, teeth may be divided into anterior and posterior groups. Anterior teeth, commonly called "anteriors" when referred to as a group, include the central and lateral incisors and the cuspids. Posterior teeth, commonly called "posteriors" when referred to as a group, include the bicuspids and molars. Anterior teeth differ from posterior teeth in their relative position within the dental arch. They also differ in their form, their function, and their conformity to that part of the arch in which they are located.

(1) **Anterior teeth.** Anterior teeth are characterized by having single roots and incisal edges or single-cusped crowns ending in narrow edges. These narrow edges are designed to incise (bite off) relatively large amounts of food in eating. Anterior teeth are located in the anterior part of the jaw. They are so aligned as to form a smooth curving arch from the distal of the cusp of one side of the arch to the distal of the cusp on the opposite side.

(2) **Posterior teeth.** Posterior teeth differ from anterior teeth in that they may have more than one root. They also differ in their form and function. They may also have multiple cusps forming occlusal surfaces designed to crush and grind food into small parts.

(a) **Bicuspids.** Most bicuspids have single roots but may have roots which are partly or completely bifurcated (over one-half of all maxillary first bicuspids have such bifurcations). As their name implies, most bicuspids have two cusps. The mandibular second bicuspid may have either two or three cusps. The three-cusped bicuspid has two lingual cusps and one buccal cusp.

(b) **Molars.** Molars are all multirooted (three roots in the maxillary arch and two roots in the mandibular arch). See figure 4-1. Molars have four or more cusps. First permanent mandibular molars have five functional cusps. The maxillary first molars have four functional cusps and the cusp of Carabelli, a nonfunctional cusp located on the mesioloingual surface. Third molars are commonly called "wisdom teeth." They resemble second molars but are largely unpredictable as to form, size, and number of roots.

![Figure 4-1. Trifurcated and bifurcated roots.](image-url)
4-3. DECIDUOUS TEETH

The "deciduous dentition" is the common term used to designate the first set of teeth.

a. Temporary Teeth or Primary Teeth. The terms "temporary teeth" or "primary teeth" are often used because these teeth are replaced by a permanent or second set early in life. The deciduous teeth are also called "baby" or "milk" teeth. The first of the deciduous teeth push through the gums (erupt) at an average age of 6 months. All deciduous teeth are usually erupted by the end of the second year.

b. Description of the 20 Deciduous Teeth. There are 20 deciduous teeth, 10 in each jaw. In each half of each jaw, beginning at the midline and extending backward, these teeth are called: central incisor, lateral incisor, cuspid, first molar, and second molar. See figure 4-2. The name for each tooth is made more specific by the addition of terms indicating its location within the mouth, such as maxillary (upper) left central incisor or mandibular (lower) right cuspid. Thus, there are four of each type of tooth. Each is individually designated as maxillary or mandibular and as right or left.

c. Permanent Tooth Formation and Temporary Tooth Resorption. During the period of deciduous dentition, the permanent teeth are in the process of formation within the jaw. In the course of development, the roots of the temporary teeth undergo resorption (gradually dissolve) until there is insufficient remaining root structure to support them. During the period from about 6 to 12 years of age, the temporary teeth thus loosen and are lost. Temporary teeth are replaced by permanent teeth in a physiologically controlled sequence.

Figure 4-2. Deciduous teeth.
4-4. REPLACEMENT OF DECIDUOUS TEETH

a. Replacement Teeth. The 10 deciduous teeth of each jaw are replaced by the 10 most anterior teeth of the permanent dentition (see figure 4-3) as follows:

(1) The permanent central incisors replace the deciduous central incisors.
(2) The permanent lateral incisors replace the deciduous lateral incisors.
(3) The permanent cuspids replace the deciduous cuspids.
(4) The permanent first bicuspids replace the deciduous first molars.
(5) The permanent second bicuspids replace the deciduous second molars.

Figure 4-3. A comparison between the deciduous and permanent dental arches.
b. **Molars.** The three permanent molars on each side of the upper and lower jaw pierce the gum (erupt) distally to (behind) the deciduous second molars. Normally, at 6 or 7 years of age, the first permanent teeth to erupt are the first molars or the central incisors. Since the deciduous teeth are still in place when the first permanent molars erupt, the latter are often overlooked or mistaken for temporary teeth. Because the molars contain many pits and fissures, they are prone to decay. If they are neglected, they are often lost too early in life.

4-5. **PERMANENT TEETH**

There are 32 permanent teeth, 16 in the maxilla and 16 in the mandible (see figure 4-4). The permanent teeth on the right side of the mouth, for example, are named as follows:

a. Maxillary right central incisor and mandibular right central incisor.

b. Maxillary right lateral incisor and mandibular right lateral incisor.

c. Maxillary right cuspid and mandibular right cuspid.

d. Maxillary right first bicuspid and mandibular right first bicuspid.

e. Maxillary right second bicuspid and mandibular right second bicuspid.

f. Maxillary right first molar and mandibular right first molar.

g. Maxillary right second molar and mandibular right second molar.

h. Maxillary right third molar and mandibular right third molar.

4-6. **NUMBERING OF TEETH**

Several systems of numbering the teeth have been devised to simplify the designation of a tooth by an authorized number rather than by name. The system used by the armed services (see figure 4-4) begins with the maxillary right third molar and numbers around the maxillary arch from 1 to 16. It continues with the mandibular left third molar as No. 17 and goes around the lower arch from 17 to 32. By this method, the number alone designates the tooth without the use of letters "R" and "L". For example, tooth No. 3 is the maxillary right first molar and No. 24 is the mandibular left central incisor. In dental records and general correspondence, the dental specialist refers to a tooth by authorized number rather than by name.
Figure 4-4. Permanent teeth; numbers of the teeth.

4-7. SURFACES OF TEETH

For convenience of description and as an aid in denoting the location of areas of decay and restorations, the crown part of a tooth is divided into a number of surfaces. Some of these surfaces are characterized by certain anatomic features such as pits, grooves, and ridges. Every dental specialist should be familiar with these terms. These surfaces are named to indicate the direction each surface faces. See figure 4-5.

a. **Lingual.** The lingual surface is that surface of the tooth that faces toward the tongue.

b. **Facial.** The facial surface of a posterior (back) tooth faces toward the cheek. In some textbooks, it is referred to as the buccal surface because it lies next to the buccinator (cheek muscle). The facial surface of an anterior (front) tooth faces toward the lips. In some textbooks, it is referred to as the labial surface because it lies next to the labia (lips). In this subcourse, the term facial surface will be used.

c. **Occlusal.** The occlusal surface is the broad chewing surface found on posterior teeth (bicuspid and molars). The occlusal surface faces toward and contacts the teeth of the opposite jaw.
d. **Incisal.** The incisal surface is the narrow cutting edge found on anterior teeth (incisors and cuspids). Incisors have one incisal edge. Cuspids have two incisal edges, the distal slope and the mesial slope, that meet at the tip of the cusp. The incisal surface (incisal edge) of an anterior tooth faces toward the teeth of the opposite jaw.

e. **Proximal.** The proximal surface lies next to another tooth. The tooth surfaces that face each other are called proximal surfaces. The proximal surface includes the entire length of the tooth from the crown to the root tip. Most mesial and distal surfaces are proximal surfaces.

f. **Mesial.** The mesial surface (toward the midline) contacts the tooth immediately anterior to it (mesial to it) in the dental arch. Following the curvature of the dental arch, it is the surface of a tooth that is closest to or facing the midline (or median line) of the arch. With central incisors, it is that surface which normally contacts the central incisor of the opposite side of the arch.

g. **Distal.** The distal surface (away from the midline) contacts the tooth immediately posterior to it (distal to it) in the arch. Following the curvature of the dental arch, it is the tooth surface that faces away from the midline (median line). With deciduous second molars and permanent third molars, it is that surface which faces posteriorly in the arch.

h. **Axial.** The axial surface is any surface of a tooth that is parallel to the long axis of the tooth (see figure 4-6). The long axis is an imaginary straight line passing through the crown and root of the tooth. The facial, lingual, mesial, and distal are all axial surfaces.
4-8. **DIVISION OF TEETH**

To simplify the description of the surface anatomy of teeth, the crown and roots are divided into imaginary thirds. Each axial surface of the crown is divided into both vertical and horizontal thirds. The root is divided into horizontal thirds only. See figure 4-7.

a. Each crown is divided into horizontal thirds--occlusal (or incisal), middle, and cervical (or gingival).

b. Each mesial and distal surface of the crown is divided into vertical thirds--facial, middle, and lingual.

c. Each facial and lingual surface of the crown is divided into vertical thirds--mesial, middle, and distal.

b. Each root is divided into horizontal thirds--cervical, middle, and apical.
4-9. ANATOMIC TERMINOLOGY

In this paragraph, there are a series of anatomic terms that describe the location, configuration, or shape of teeth. These are terms that the dental specialist should be able to understand and use.

a. General Terms. See figure 4-8.

(1) Contact area (point). The contact area (point) is an area on the convex part of the mesial or distal surface of a tooth which normally contacts an adjacent tooth. The term "contact area" rather than "contact point" is preferred because the amount of contact is greater than that of a point. By means of the contact area, the teeth help to support each other when force is exerted.
(2) **Interproximal space.** The interproximal space is a triangular space between the proximal surfaces of adjacent teeth, from the crown to the root tip. In a normal situation, part of the interproximal space is filled by the interdental (gingival) papilla.

(3) **Interproximal embrasure.** The part of the interproximal space not occupied by the interdental papilla is called the interproximal embrasure. It is an open space between two adjacent teeth which widens outward facially, lingually, occlusally, and gingivally from the contact area.

(4) **Bifurcation.** When a tooth has two roots, the root portion is said to be bifurcated. As a general rule, mandibular molars have two roots. See figure 4-1.

(5) **Trifurcation.** When a tooth has three roots, the root portion is said to be trifurcated. Maxillary molars have three roots.

(6) **Midline.** The midline (or median line) is an imaginary perpendicular line that passes between the central incisors in each arch. See figure 4-5. Mesial surfaces turn toward the midline while distal surfaces turn away from the midline.

(7) **Long axis.** The long axis of a tooth is an imaginary straight line passing through the crown and root of the tooth where the bulk of the tooth is most symmetrically arranged. See figure 4-6.
b. Angles (Junctions).

(1) **Line angle.** The line angle is a line formed by the junction of two surfaces. A specific line angle is often named to indicate the surfaces it joins. For example, the junction between the distal and lingual surfaces of an anterior tooth is called the *distolingual* line angle. The junction between the mesial and the occlusal surfaces of a posterior tooth is called the *mesio-occlusal* line angle. There are eight line angles per tooth.

(2) **Point angle.** The point angle represents the junction of three surfaces. For example, *mesiolabioincisal* for an anterior tooth point angle (mesial, labial, incisal surfaces) or *distolinguo-occlusal* for a posterior tooth point angle (distal, lingual, occlusal surfaces). There are four point angles per tooth.

c. Rounded Elevations.

(1) **Lobe.** Lobes are one of the primary anatomical divisions of a crown. All teeth develop from either four or five lobes. Each lobe was the center of calcification in the developing tooth. Lobes are usually separated by readily identifiable developmental grooves.

(2) **Mamelon (scallop).** A mamelon (see figure 4-9) is one of three small, rounded projections of enamel (thought to resemble a scallop shell) sometimes present on the cutting edge of a newly-erupted incisor tooth. The projections wear away soon after eruption.

![Mamelons](image-url)
(3) **Cingulum.** The cingulum (see figure 4-10) is a prominence (bulge) of enamel found on the cervical third of the lingual surface of all anterior teeth.

![Figure 4-10. Cingulum.](image)

(4) **Cusp.** A cusp is a conical (cone-shaped) or rounded elevation of enamel on the occlusal surface of bicuspsids and molars and on the incisal edge of cuspsids. A cuspid has a single cusp, a bicuspid has two cusps, and a molar has four cusps.

![Figure 4-11. Cusp.](image)

(5) **Cusp of Carabelli.** Sometimes there is a fifth cusp on the maxillary first molar. It is called the cusp of Carabelli. It is an underdeveloped, rudimentary cusp on the lingual surface of the mesiolingual cusp.

**d. Linear Elevations.**

(1) **Ridge.** A ridge is an elongated elevation of enamel on the crown surface of a tooth. Several different ridges can be found on a tooth. They are named for their location.
(2) **Marginal ridge.** Marginal ridges (see figure 4-12) are elevations of enamel which form the mesial and distal margins of the occlusal surfaces of posterior teeth (on a bicuspid or a molar). They also form the mesial and distal margins of the lingual surface of anterior teeth (on an incisor or a cuspid).

![Figure 4-12. Marginal ridges.](image)

(3) **Triangular ridge.** This feature is a triangular-shaped ridge of enamel. The triangular ridge (see figure 4-13) passes from the tip of a cusp to the central part of the occlusal surface of a bicuspid or molar.

![Figure 4-13. Triangular ridge.](image)

(4) **Transverse ridge.** The transverse ridge is formed by the union of a facial and a lingual triangular ridge on the occlusal surface of a posterior tooth.
(5) **Oblique ridge.** The oblique ridge (see figure 4-14) is a transverse ridge of enamel found only on maxillary molars. It connects the mesiobuccal cusp with the distofacial cusp. This ridge is important for charting and for operative dentistry, since the dentist tries to preserve this strong ridge whenever possible.

![Figure 4-14. Oblique ridge.](image)

**e. Depressions.**

(1) **Fossa.** A fossa (see figure 4-15) is a rounded or wedge-shaped depression on the surface of a tooth.

![Figure 4-15. Fossa.](image)
(2) **Sulcus.** A sulcus (see figure 4-16) is an elongated depression (or valley) on the surface of a tooth. It is formed by the inclines of adjacent cusps or ridges. The sulcus has a developmental groove at the junction of its inclines (at the bottom).

![Figure 4-16. Sulcus.](image1)

(3) **Groove.** A groove is a linear depression on the surface of a tooth. Grooves are formed by the union of two lobes during the development of the crown. A marginal groove is a depression running perpendicular to a marginal ridge. Facial and lingual grooves are, simply, grooves on the facial and lingual surfaces of the teeth. Grooves are indicated on the standard dental chart by means of dark lines. See figure 4-4.

(4) **Developmental groove.** A developmental groove (see figure 4-17) is a depression in the crown of a tooth that marks the boundary between separate lobes. They are the junction lines between the inclined walls of a sulcus. These grooves appear on facial, lingual, and occlusal surfaces.

![Figure 4-17. Developmental grooves.](image2)
(5) **Fissure.** A fissure (see figure 4-18) is a fault occurring along a developmental groove caused by incomplete or imperfect joining of the lobes.

![Figure 4-18. Fissure.](image)

(6) **Pit.** A pit is a small, pointed depression in the enamel of a tooth. It is usually found at the bottom of a fossa, or at the end of a developmental groove, where two or more enamel lobes are joined, or at a place where two fissures intersect. (Note that teeth with pits and fissures are hard to clean and are least likely to be protected against decay by fluoride.)

(7) **Example.** Figure 4-19 shows features of the occlusal surface of a maxillary first molar.

![Figure 4-19. Features of the occlusal surface of a maxillary first molar.](image)
Section II. MAXILLARY TEETH

4-10. MAXILLARY CENTRAL INCISOR

The maxillary central incisor (figure 4-20) is located adjacent to the midline (median line) on the anterior portion of the maxillary dental arch. Its mesial surface contacts the mesial surface of the maxillary central incisor of the opposite side. This tooth has the greatest mesiodistal width of all anterior teeth. Like all anterior teeth, it develops from four fused lobes. Three of these lobes making up the facial surface and the fourth forming the cingulum on the lingual surface. Newly erupted incisor teeth have three mamelons (scallops) on their incisal edges conforming to the three labial lobes; these mamelons are usually worn away within a short period of time.

a. **Facial Surface.** The facial surface is broad, resembling a thumbnail in outline. Its incisal two-thirds is relatively flat and broad while the gingival one-third is more convex. The gingival margin is convex toward the root. The surface has two shallow, longitudinal (axial) depressions, which are developmental grooves representing fusion of the three facial lobes. The distoincisal angle is more rounded than the mesioincisal angle.

![Figure 4-20. Maxillary right central incisor.](image-url)
b. **Lingual Surface.** The lingual surface is scoop-like or shovel-like in appearance and is bounded by prominent mesial and distal marginal ridges. It is narrower than the facial surface because both proximal surfaces converge toward the lingual. The cingulum is located in the cervical third and is slightly distal to the midline of the crown. The incisal two-thirds is concave and the cervical one-third is convex in outline.

c. **Mesial Surface.** The mesial surface is somewhat triangular in shape with the apex of the triangle toward the incisal edge. It has a slight faciolingual convexity. The contact area is located in the incisal third.

d. **Distal Surface.** The distal surface is smaller in area but similar in outline to the mesial surface. Its contours are more convex than those of the mesial surface. The contact is located near the junction of the middle and incisal thirds.

e. **Incisal Edge.** The incisal edge is fairly straight and ends in curved mesioincisal and distoincisal angles. The distoincisal curvature is more pronounced than is the mesioincisal curvature. The incisal edge is usually worn so that it presents a distinct, narrow surface which usually slopes toward the lingual surface.

f. **Root.** The single root averages about 1 1/4 times the length of the crown. This single root tapers gradually from about its midsection to end in a rounded apex. In cross section, the root is egg-shaped with the narrow curvature toward the lingual surface.

4-11. **MAXILLARY LATERAL INCISOR**

The maxillary lateral incisor (figure 4-21) is smaller in size than the central incisor but has the same general appearance. It presents a generally greater convexity in its crown portion than does the central incisor. The maxillary lateral incisor can be compared with the central incisor in many ways.

a. **Facial Surface.** The facial surface is similar in appearance to the central incisor but more convex (rounded) in form. Developmental grooves are not as pronounced as in the central incisor.

b. **Lingual Surface.** The lingual surface is similar in appearance to the central incisor. The marginal ridges are relatively broader. The lingual pit is often small, deep, and irregular in shape.

c. **Mesial Surface.** The mesial surface is similar to the mesial surface of the central incisor.
Figure 4-21. Maxillary right lateral incisor.

d. **Distal Surface.** The distal surface is convex in all directions. The distal contact area is relatively nearer the cervical or gingival margin than in the central incisor.

e. **Incisal Edge.** The incisal edge is similar to that of the central incisor. The outline of the incisal edge reflects generally the greater convexity of the lateral incisor.

f. **Root.** The root averages about 1 1/2 times the length of the crown. This single root is smaller than that of the central incisor, but has a greater relative length in comparison to the length of the crown. It is oval-shaped in cross section. Its apical one-third inclines toward the distal.

4-12. **MAXILLARY CUSPID**

The maxillary cuspid (figure 4-22) is the third tooth from the median line. It is the longest and the only single-cusp tooth in the arch. Located at the angle between the anterior and the posterior portions of the dental arch, it plays an important role in determining facial features of the individual and in controlling mandibular movement. It is sometimes called the "canine tooth" or "eye tooth."
a. **Facial Surface.** The facial surface is markedly convex in all directions. The facial surface has two longitudinal (axial) grooves delineating the development lobes. The middle lobes are developed into a prominent ridge running lengthwise from the cusp area to the cervical third of this surface. The mesial cusp arm is shorter than the distal cusp arm.

b. **Lingual Surface.** The lingual surface is scoop-like or shovel-like in appearance and is bounded by prominent mesial and distal marginal ridges. It is narrower than the facial surface because both proximal surfaces converge toward the lingual. The cingulum is located in the cervical third and is slightly distal to the midline of the crown. The incisal two-thirds is concave and the cervical one-third is convex in outline.

c. **Mesial Surface.** The mesial surface is somewhat triangular in shape with the apex of the triangle toward the incisal edge. It has a slight faciolingual convexity. The contact area is located in the incisal third.

d. **Distal Surface.** The distal surface is smaller in area but similar in outline to the mesial surface. Its contours are more convex than those of the mesial surface. The contact is located near the junction of the middle and incisal thirds.
e. **Incisal Edge.** The incisal edge is fairly straight and ends in curved mesioincisal and distoincisal angles. The distoincisal curvature is more pronounced than is the mesioincisal curvature. The incisal edge is usually worn so that it presents a distinct, narrow surface which usually slopes toward the lingual surface.

f. **Root.** The single root averages about 1 1/4 times the length of the crown. This single root tapers gradually from about its midsection to end in a rounded apex. In cross section, the root is egg-shaped with the narrow curvature toward the lingual surface.

### 4-13. MAXILLARY FIRST BICUSPID

The maxillary first bicuspid (figure 4-23) has the largest crown of the four maxillary bicuspid teeth. It is formed from four developmental lobes--three lobes form the facial cusp and one lobe forms the lingual cusp.

a. **Facial Surface.** The facial surface resembles the facial surface of the maxillary cuspid but is not as long or as broad.

b. **Lingual Surface.** The lingual surface is oval in shape and convex in all directions. It is shorter and narrower than the facial surface.

![Maxillary right first bicuspid](image)

Figure 4-23. Maxillary right first bicuspid.
c. **Mesial Surface.** The mesial surface is rectangular in outline, convex in the occlusal two-thirds, and concave in its gingival (cervical) third. The contact area is located at the junction of the middle and occlusal thirds.

d. **Distal Surface.** The distal surface resembles the mesial surface but is slightly more convex.

e. **Occlusal Surface.** The occlusal surface has two cusps. The facial cusp is larger and more prominent than the lingual cusp. A central depression is bounded by the slopes of the facial and lingual cusps and by mesial and distal marginal ridges. The mesial marginal ridge is divided by a prominent groove, the mesiolingual groove. This groove extends from the occlusal surface over the marginal ridge to the mesial surface. A groove at the line of junction between the cusps ends in mesial and distal pits.

f. **Roots.** The roots are bifurcated to form two roots about halfway to two-thirds of the way from the crown to the apex.

4-14. **MAXILLARY SECOND BICUSPID**

The maxillary second bicuspid (figure 4-24) is very similar to the first bicuspid. There are some differences. It has smaller crown dimensions than the first bicuspid. The cusps are about the same height. The marginal ridge is not divided by a prominent mesiolingual groove. The single root of this tooth is slightly bulkier than the root of the first bicuspid. The contact areas are located slightly closer to the occlusal and facial surfaces.

![Figure 4-24. Maxillary right second bicuspid.](image-url)
The maxillary first molar (see figure 4-25) is the largest tooth in the mouth. It develops from four lobes and is often called the "six year molar" because of the age at which it erupts.

a. **Facial Surface.** The facial surface is convex in all directions. A groove (the facial groove) passes vertically from the middle of this surface, between the two facial cusps, and onto the occlusal surface. The mesiofacial cusp is higher and wider than is the distofacial cusp.

b. **Lingual Surface.** The lingual surface is more convex and smaller in area than the facial surface. The mesiolingual cusp is larger than the distolingual cusp. An oblique groove, the lingual portion of the distolingual groove, passes from the lingual surface between the two lingual cusps and onto the occlusal surface. A fifth (supplemental) cusp, which develops from the fifth lobe, is present on the mesiolingual surface. This cusp, when present, is called the cusp of Carabelli.

c. **Mesial Surface.** The mesial surface is nearly flat in all directions. The contact area is located at the junction of the middle and occlusal thirds on the facial third of this surface.

![Figure 4-25. Maxillary right first molar.](image)
d. **Distal Surface.** The distal surface resembles the mesial but it is more convex. It is shorter occlusocervically.

e. **Occlusal Surface.** The occlusal surface has four cusps. Each cusp is named according to its position on the tooth (for example, mesiofacial, mesiolingual, and mesioocclusal). Each cusp is developed from a single developmental lobe. An oblique ridge is formed by a continuation of enamel ridges from the mesiolingual and the distofacial cusps. Three pits are formed on this surface—the mesial, the central, and the distal pits. These pits are found in corresponding fossae. A distolingual groove runs from the distal pit onto the lingual surface. A facial groove runs from the central pit, between the two facial cusps, to the facial surface.

f. **Roots.** The roots divide into three separate roots in its cervical (gingival) third. Each root is named according to its position on the tooth—mesiofacial, distofacial, and lingual. The lingual root is larger and longer than the facial roots. The mesiofacial root is larger than the distofacial root.

**4-16. MAXILLARY SECOND MOLAR**

The maxillary second molar (figure 4-26) is very similar to the maxillary first molar. There are some differences. It is smaller in all dimensions than the first molar. The fifth cusp is seldom present. The distolingual cusp is proportionally smaller. The mesiofacial and distofacial roots are occasionally fused.

![Figure 4-26. Maxillary right second molar.](image)
4-17. MAXILLARY THIRD MOLAR

The maxillary third molar (figure 4-27) may occur in a great variety of forms. In its most common form, it resembles the maxillary second molar but is smaller in all dimensions. It is often called the wisdom tooth.

![Figure 4-27. Maxillary right third molar.](image)

Section III. MANDIBULAR TEETH

4-18. MANDIBULAR CENTRAL INCISOR

The mandibular central incisor (figure 4-28) is located adjacent to the median line in the anterior portion of the mandibular dental arch. Its mesial surface contacts the mesial surface of the central incisor of the opposite side. It is the smallest and most symmetrical of all teeth. Developmental grooves are indistinct.

a. **Facial Surface.** The facial surface is flat in the incisal two-thirds and convex in the cervical third. It is widest near the incisal edge. The incisal edge forms a straight line at nearly right angles to the long axis and forms slightly acute angles with the mesial and distal surfaces.

b. **Lingual Surface.** The lingual surface is narrower than the facial surface. The incisal two-thirds is concave and bounded by mesial and distal marginal ridges. In the cervical third, or cingulum area, it is convex.
c. **Mesial Surface.** The mesial surface is triangular in shape. It is almost flat in its entire length. The contact area is located in the incisal third.

d. **Distal Surface.** The distal surface resembles the mesial surface except for being slightly more convex.

e. **Incisal Edge.** The incisal edge appears slightly curved from mesial to distal. Its thickness increases with wear.

f. **Root.** The root is narrow mesiodistally, but broad faciolingually. The apical portion may have a slight distal inclination.

**4-19. MANDIBULAR LATERAL INCISOR**

The mandibular lateral incisor (figure 4-29) resembles the mandibular central incisor and the maxillary lateral incisor in many respects. The mandibular lateral incisor is slightly larger in all dimensions and is less symmetrical in outline.
Figure 4-29. Mandibular right lateral incisor.

a. **Facial Surface.** From the facial view, the facial surface of the incisal edge slopes distally while the central incisor is straight. The mesioincisal angle is more acute. The distoincisal angle is more obtuse and rounded than those of the central incisor.

b. **Lingual Surface.** The lingual surface has marginal ridges and cingulum slightly more pronounced than those of the central incisor.

c. **Mesial and Distal Surfaces.** The mesial and distal surfaces closely resemble those of the central incisor. The contact area on the distal surface is at the junction of the incisal and middle thirds rather than in the incisal third as in the central incisor.

d. **Incisal Edge.** The incisal edge has more distal curvature than does that of the central incisor.

e. **Root.** The root is longer than that of the central incisor.
4-20. MANDIBULAR CUSPID

The mandibular cuspid (figure 4-30) resembles the maxillary cuspid in many respects. The mandibular cuspid is long and firmly anchored in the alveolar bone. It occupies a key position in the dental arch.

a. **Facial Surface.** The facial surface is narrower than the facial surface of the maxillary cuspid. The distal slope of the incisal margin is almost twice the length of the mesial slope. The mesial margin is almost parallel to the long axis of the tooth. Otherwise, the facial surface is much the same as that of the maxillary cuspid.

b. **Lingual Surface.** The lingual surface is narrower but similar in outline to the facial surface. The marginal ridges, the cingulum, and the lingual axial ridge are not nearly so pronounced as they are on the maxillary cuspid.

c. **Mesial Surface.** The mesial surface of the crown is triangular in outline. It is flat, forming an almost continuous flat surface with the root. The contact area is located at the junction of the incisal and middle thirds.

Figure 4-30. Mandibular right cuspid.
d. **Distal Surface.** The distal surface is smaller in area and much more convex than is the mesial surface. The contact area is located at the junction of the incisal and middle thirds.

e. **Incisal Edge.** The incisal edge consists of two sloping narrow surfaces forming a curved angle at the tip of the cusp. The distal slope is about twice the length of the mesial slope. The tip of the cusp is located at the junction of the mesial third and the middle third of the crown.

f. **Root.** The root is flattened mesiodistally and the apical portion is usually inclined distally. It is shorter than the root of the maxillary cuspid.

**4-21. MANDIBULAR FIRST BICUSPID**

The mandibular first bicuspid (figure 4-31) is the smallest tooth in the bicuspid group. It possesses characteristics of all bicuspids but it differs greatly in form, particularly when compared to upper bicuspids.

a. **Facial Surface.** The facial surface is symmetrical in outline and more convex in all directions than are the upper bicuspids, giving the crown a form resembling an inverted bell. The two developmental grooves and the facial axial ridge are usually prominent. The facial cusp is long and sharp.

---

Figure 4-31. Mandibular right first bicuspid.
b. **Lingual Surface.** The lingual surface is about half the size of the facial cusp. This is because the lingual cusp is very short and because the mesial and distal surfaces have a marked lingual convergence.

c. **Mesial Surface.** The mesial surface is convex in all directions. In outline, it resembles the mesial surface of a lower cuspid with an enlarged cingulum. The contact area is located at the junction of the middle and occlusal thirds.

d. **Distal Surface.** The distal surface is more convex faciolingually than is the mesial surface. The contact area is located at the junction of the middle and occlusal thirds near the center of the surface.

e. **Occlusal Surface.** The occlusal surface is round to oval in outline. A well-developed transverse ridge runs from the tip of the facial cusp to the lingual cusp. The facial cusp occupies about four-fifths of the occlusal surface.

f. **Roots.** The single root tapers gradually toward the apex. Near the crown, the root is narrower lingually than it is facially.

4-22. **MANDIBULAR SECOND BICUSPID**

The mandibular second bicuspid (figure 4-32) is slightly larger, stockier, and less rounded than the mandibular first bicuspid. It is, however, more rounded or ovoid (egg-shaped) than the maxillary bicusps and may have two or three cusps. The three-cusp form has two lingual cusps and one facial cusp.

a. **Facial Surface.** The facial surface resembles the facial surface of the first bicuspid.

b. **Lingual Surface.** The lingual surface is similar in outline to the facial surface. The lingual surface varies somewhat with the number and arrangement of lingual cusps. It is markedly larger than the lingual surface of the mandibular first bicuspid. The cusp (or cusps) is also much larger. Where two lingual cusps are present, they are divided by a lingual groove passing from the occlusal onto the lingual surface.

c. **Mesial Surface.** The mesial surface has the form of a lingually inclined parallelogram. The surface is convex with a shallow concavity sometimes present in the cervical area. The contact area is located at the junction of the middle and occlusal thirds and lingual to the midline of the tooth.

d. **Distal Surface.** The distal surface resembles the mesial surface, but is slightly more convex.
Figure 4-32. Mandibular right second bicuspid.

e. **Occlusal Surface.** The outline form of the occlusal surface varies with the number of lingual cusps. In the case of a single lingual cusp, the outline form is similar to that of the first bicuspid. In the case of two lingual cusps, the outline form is broader and more rectangular toward the lingual. In the case of a two-cusp tooth, the occlusal surface resembles that of a maxillary bicuspid. In the case of a three-cusp tooth, a prominent lingual groove passes from the occlusal surface, between the lingual cusps, onto the lingual surface.

f. **Root.** The root is longer and larger than the root of the first bicuspid. A cross section at the cervix is ovoid in form. Most of the taper is confined to the apical third.

**4-23. MANDIBULAR FIRST MOLAR**

The mandibular first molar is the largest tooth in the mandible (see figure 4-33). It has five functional cusps, each of which develops from a separate lobe. The maxillary and mandibular first molars are often called "six-year" molars because of the age at which they erupt. Eruption of the mandibular teeth usually precedes that of the maxillary teeth by several months. This tooth plays a vital role in the establishment and maintenance of occlusion. It is called "the key to occlusion."
a. **Facial Surface.** The facial surface is convex in all directions. A facial groove and a distofacial groove are continuations of grooves from the occlusal surface which end on the facial surface. Its occlusal margin is made up of six slopes (two slopes for each of three facial cusps).

b. **Lingual Surface.** The lingual surface is smaller than the facial surface. Its occlusal margin is formed by the four slopes of the two lingual cusps. A distinct lingual groove is continuous from the occlusal surface ending in the middle third of this surface.

c. **Mesial Surface.** The mesial surface has the form of a lingually inclined parallelogram. It is flat in appearance with its greatest convexity in the occlusal third. The contact area is located at the junction of the middle and occlusal thirds.

d. **Distal Surface.** The distal surface is convex in all directions. It is smaller in area than the mesial surface. The contact area is located at the junction of the middle and occlusal thirds, slightly more to the lingual than is the contact area of the mesial surface.
e. **Occlusal Surface.** The occlusal surface is characterized by the presence of a fifth cusp called the distal cusp. This cusp is smaller than the other cusps. It forms part of the masticating surface of the tooth. The presence of this cusp is accompanied by the presence of additional developmental grooves. Three grooves--facial, distofacial, and lingual--have been mentioned in descriptions of the facial and lingual surfaces. Other grooves are a central groove and mesial and distal developmental grooves. The mesial developmental groove runs from the central fossa over the mesial marginal ridge. The distal developmental groove runs from the central fossa over the distal marginal ridge.

f. **Roots.** The roots are divided into a mesial and a distal root. The bifurcation is located closer to the crown than the bifurcation of any of the other teeth. Both roots are wide faciolingually and narrow mesiodistally. The mesial root is larger than the distal root. The mesial root commonly has a distal inclination in its apical portion. The distal root may have a similar curvature but usually is straight.

4-24. MANDIBULAR SECOND MOLAR

The mandibular second molar (figure 4-34) is smaller than the mandibular first molar but is similar in general appearance. Cusps are usually four in number, but occasionally there are five. They are arranged similarly to those of the mandibular first molar. Because of the age at which they erupt, they are sometimes called the "twelve-year molar."

![Mandibular second molar diagram](image)

**Figure 4-34.** Mandibular right second molar.
a. **Facial Surface.** The facial surface is rectangular in shape and convex in form. Its occlusal margin consists of the slopes of two similarly shaped cusps separated by a facial groove. The facial groove is a continuation of a groove from the occlusal surface which ends at the middle of the facial surface. The mesial cusp is slightly larger than the distal cusp.

b. **Lingual Surface.** The lingual surface resembles the lingual surface of the mandibular first molar. The lingual groove, which is a continuation of the lingual groove of the occlusal surface, ends at the middle of this surface.

c. **Mesial Surface.** The mesial surface is similar in outline to the mesial surface of the mandibular first molar but is more convex in all directions. The contact area is located in the middle of the occlusal third.

d. **Distal Surface.** The distal surface is similar to the mesial surface but is smaller in area and more convex. The contact area is located in the middle of the occlusal third.

e. **Roots.** The two roots of the mandibular second molar resemble those of the mandibular first molar but are less divergent. The two roots present a distal inclination.

4-25. **MANDIBULAR THIRD MOLAR**

The mandibular third molar (figure 4-35) is commonly known as the "wisdom tooth." It may appear in any of a wide range of forms, sizes, and shapes. Typically, it resembles either the first or second mandibular molar (more often the latter). It is smaller in its overall size. Abnormalities of eruption and occlusion of third molars commonly occur.
Figure 4-35. Mandibular right third molar.

Continue with Exercises

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EXERCISES, LESSON 4

INSTRUCTIONS: Answer the following exercises by marking the lettered response that best answers the question, or by completing the incomplete statement, or by writing the answer in the space provided at the end of the question.

After you have completed all the exercises, turn to "Solutions to Exercises" at the end of the lesson, and check your answers. For each exercise answered incorrectly, reread the material referenced after the answer.

1. How many teeth are present in the normal permanent dentition?
   a. 20.
   b. 24.
   c. 32.
   d. 36.

2. The ____________ teeth are designed for the purpose of cutting or tearing food.
   a. Anterior teeth.
   b. Posterior teeth.

3. The vertical overlap of the teeth is called the:
   a. Overjet.
   b. Overbite.
   c. Overset.

4. Which molars have three roots instead of two?
   a. Maxillary.
   b. Mandibular.
5. Which teeth have more cusps?
   a. Incisors.
   b. Cuspids.
   c. Bicuspids.
   d. Molars.

6. Complete the following statements related to deciduous teeth.
   a. Deciduous teeth are also called ______________ or ______________ teeth.
   b. There are ____ deciduous teeth. There are ___ deciduous teeth in each jaw.
   c. During the process of permanent tooth formation, the roots of the temporary teeth undergo ________________.

7. During what period do children usually lose their deciduous teeth?
   a. 5-10 years.
   b. 6-12 years.
   c. 7-14 years.
   d. 8-16 years.

8. Normally, where are the permanent teeth during the period of deciduous dentition?
   a. They have not formed.
   b. They are completely formed under the deciduous teeth.
   c. They are in the process of formation within the jaw.
9. Which permanent teeth replace the deciduous second molars?
   a. Second molars.
   b. First bicuspid.
   c. First molars.
   d. Cuspids.
   e. Second bicuspid.

10. Why are permanent first molars lost early in life more often than other permanent teeth?
    a. They are more readily affected by dietary deficiencies than other teeth.
    b. Their structure is more fragile and thus more susceptible to decay.
    c. They are especially vulnerable because of their position in the jaw.
    d. They are often overlooked or mistaken for temporary teeth and neglected.

11. The maxillary right first bicuspid is tooth number:
    a. 21.
    b. 12.
    c. 20.
    d. 28.
    e. 5.
12. The mandibular left lateral incisor is tooth number:
   a. 10.
   b. 23.
   c. 7.
   d. 26.
   e. 9.

13. The maxillary left first molar is tooth number:
   a. 3.
   b. 28.
   c. 14.
   d. 19.
   e. 30.

14. The mandibular right cuspid is tooth number:
   a. 27.
   b. 11.
   c. 6.
   d. 22.
   e. 28.
15. Match the authorized number of the tooth in Column I and the name of the maxillary tooth in Column II. Write your answer in the space provided.

<table>
<thead>
<tr>
<th>COLUMN I</th>
<th>COLUMN II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) number 12.</td>
<td>a. Maxillary right first molar.</td>
</tr>
<tr>
<td>(2) number 15.</td>
<td>b. Maxillary right second bicuspid.</td>
</tr>
<tr>
<td>(3) number 6.</td>
<td>c. Maxillary right cuspid.</td>
</tr>
<tr>
<td>(4) number</td>
<td>d. Maxillary right central incisor.</td>
</tr>
<tr>
<td>(5) number</td>
<td>e. Maxillary left lateral incisor.</td>
</tr>
<tr>
<td>(6) number</td>
<td>f. Maxillary left cuspid.</td>
</tr>
<tr>
<td>(7) number</td>
<td>g. Maxillary left first bicuspid.</td>
</tr>
<tr>
<td>(8) number 1</td>
<td>h. Maxillary left second molar.</td>
</tr>
</tbody>
</table>

16. Match the authorized number of the tooth in Column I and the name of the mandibular tooth in Column II. Write your answer in the space provided.

<table>
<thead>
<tr>
<th>COLUMN I</th>
<th>COLUMN II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) number 22.</td>
<td>a. Mandibular left second molar.</td>
</tr>
<tr>
<td>(2) number 24.</td>
<td>b. Mandibular left second bicuspid.</td>
</tr>
<tr>
<td>(3) number 30.</td>
<td>c. Mandibular left cuspid.</td>
</tr>
<tr>
<td>(4) number 32.</td>
<td>d. Mandibular left central incisor.</td>
</tr>
<tr>
<td>(5) number 18.</td>
<td>e. Mandibular right lateral incisor.</td>
</tr>
<tr>
<td>(6) number 20.</td>
<td>f. Mandibular right first bicuspid.</td>
</tr>
<tr>
<td>(7) number 26.</td>
<td>g. Mandibular right first molar.</td>
</tr>
<tr>
<td>(8) number 28.</td>
<td>h. Mandibular right third molar.</td>
</tr>
</tbody>
</table>
17. Match the term in Column II to the appropriate description of the surfaces of the teeth in Column I. Write your answer in the space provided.

<table>
<thead>
<tr>
<th>COLUMN I</th>
<th>COLUMN II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) The broad chewing surface on posterior teeth.</td>
<td>a. Lingual.</td>
</tr>
<tr>
<td>(2) The narrow cutting edge on anterior teeth.</td>
<td>b. Facial.</td>
</tr>
<tr>
<td>(3) The tooth surfaces that face each other from the crown to the root tip.</td>
<td>c. Occlusal</td>
</tr>
<tr>
<td>(4) Faces toward the tongue.</td>
<td>d. Incisal.</td>
</tr>
<tr>
<td>(5) Faces toward the cheek or lips.</td>
<td>e. Proximal.</td>
</tr>
<tr>
<td>(6) The anterior surface of the tooth.</td>
<td>f. Mesial.</td>
</tr>
<tr>
<td>(7) The posterior surface of the tooth.</td>
<td>g. Distal.</td>
</tr>
</tbody>
</table>

18. The surface that contacts the central incisor of the opposite side of the dental arch is the ________________________ surface.

19. What is the facial surface of posterior teeth sometimes called?
   a. Labial.
   b. Lingual.
   c. Distal.
   d. Buccal.
20. All of the following tooth surfaces are axial surfaces EXCEPT the ____________ surface.
   a. Facial.
   b. Lingual.
   c. Mesial.
   d. Distal.
   e. Occlusal.

21. Each crown is divided into horizontal thirds. Select the appropriate terminology for posterior teeth.
   a. Facial, middle, and lingual.
   b. Occlusal, middle, and cervical.
   c. Mesial, middle, and distal.
   d. Cervical, middle, and apical.
   e. Incisal, middle, and gingival.

22. In the imaginary division of teeth for descriptive purposes, the apical third of a mandibular tooth lies in the:
   a. Upper third of the crown.
   b. Upper third of the root.
   c. Middle third of the crown.
   d. Lower third of the root.
23. The triangular space between the proximal surfaces of adjacent teeth, from the crown to the root tip, is termed the:

a. Interproximal space.

b. Contact area.

c. Interproximal embrasure.

d. Point angle.

24. The term distolinguo-occlusal refers to a:

a. Line angle.

b. Point angle.

25. Match the description of rounded elevations on the crown in Column I to the term in Column II. Write your answer in the space provided.

<table>
<thead>
<tr>
<th>COLUMN I</th>
<th>COLUMN II</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ (1) A prominence of enamel on the cervical third of the lingual surface of all anterior teeth.</td>
<td>a. Lobe.</td>
</tr>
<tr>
<td>____ (2) A conical elevation of enamel on the occlusal surface of molars and bicuspid.</td>
<td>b. Mamelon.</td>
</tr>
<tr>
<td>____ (3) An underdeveloped fifth cusp on the maxillary first molar.</td>
<td>c. Cingulum.</td>
</tr>
<tr>
<td>____ (4) One of the primary anatomical divisions of a crown.</td>
<td>d. Cusp.</td>
</tr>
<tr>
<td>____ (5) One of three small, rounded projections of enamel on the cutting edge of a newly-erupted incisor tooth.</td>
<td>e. Cusp of Carabelli.</td>
</tr>
</tbody>
</table>
26. Which ridge is found only on maxillary molars?
   a. Marginal ridge.
   b. Triangular ridge.
   c. Transverse ridge.
   d. Oblique ridge.

27. Match the tooth ridge in Column I to the type of tooth in which this feature occurs in Column II. Items in Column II can be used more than once. Items in Column I may have more than one answer. Write your answer in the space provided.

   COLUMN I           COLUMN II
   ___ (1) Marginal ridge.   a. Incisor or cuspid.
   ___ (2) Triangular ridge.   b. Bicuspid or molar.
   ___ (3) Transverse ridge.   c. Molar.
   ___ (4) Oblique ridge.

28. Complete the following statements related to grooves.
   a. A groove is a linear __________________ on the surface of a tooth formed by the union of two ______________ during the development of the crown.
   b. A ______________ ______________ is a depression running perpendicular to a marginal ridge.
   c. A __________________ ______________ is the depression in the crown of a tooth that marks the boundary between separate lobes.
29. Match the description in Column I to the term in Column II.

<table>
<thead>
<tr>
<th>COLUMN I</th>
<th>COLUMN II</th>
</tr>
</thead>
<tbody>
<tr>
<td>____ (1) A fault occurring along a developmental groove.</td>
<td>a. Fossa.</td>
</tr>
<tr>
<td>____ (2) A small, pointed depression in a fossa or in a developmental groove.</td>
<td>b. Sulcus.</td>
</tr>
<tr>
<td>____ (3) A rounded or wedge-shaped depression on the surface of a tooth.</td>
<td>c. Fissure.</td>
</tr>
<tr>
<td>____ (4) An elongated depression on the surface of a tooth.</td>
<td>d. Pit.</td>
</tr>
</tbody>
</table>

30. Which of the following has a developmental groove at the junction of its inclines?
   a. Pit.
   b. Fossa.
   c. Sulcus.
   d. Fissure.
   e. Marginal groove.

31. Complete the following statements related to the occlusal surface of the maxillary first molar.
   a. How many cusps are identified in figure 4-19? ______________
   b. How many grooves are in figure 4-19? ____________
32. Select the incisor that has a mesial surface that is somewhat triangular in shape and that has a root (in cross section) that is ovoid (egg-shaped)?
   a. Maxillary central incisor.
   b. Mandibular central incisor.
   c. Maxillary lateral incisor.
   d. Mandibular lateral incisor.

33. Which of the following teeth is the longest and the only single-cusp tooth in the arch?
   a. Mandibular lateral incisor.
   b. Maxillary central incisor.
   c. Mandibular cuspid.
   d. Mandibular second bicuspid.
   e. Maxillary cuspid.

34. Select the incisor that has a distal surface that is convex in all directions and that has a root (in cross section) that is oval-shaped?
   a. Mandibular lateral incisor.
   b. Maxillary central incisor.
   c. Maxillary lateral incisor.
   d. Mandibular central incisor.
35. Which of the following teeth, on the incisal edge, has a distal slope that is twice the length of the mesial slope?
   a. Mandibular lateral incisor.
   b. Maxillary cuspid.
   c. Maxillary lateral incisor.
   d. Mandibular cuspid.
   e. Mandibular central incisor.

36. Select the incisor that resembles the mandibular central incisor but has slightly more pronounced marginal ridges.
   a. Maxillary central incisor.
   b. Mandibular lateral incisor.
   c. Maxillary lateral incisor.

37. Select the smallest and most symmetrical of all teeth. The root is narrow mesiodistally but broad faciolingually.
   a. Maxillary lateral incisor.
   b. Mandibular lateral incisor.
   c. Maxillary central incisor.
   d. Mandibular cuspid.
   e. Mandibular central incisor.
38. Which is the smallest tooth in the bicuspid group?
   a. Mandibular first bicuspid.
   b. Maxillary first bicuspid.
   c. Mandibular second bicuspid.
   d. Maxillary second bicuspid.

39. Which of the bicuspids has the largest crown?
   a. Mandibular second bicuspid.
   b. Maxillary second bicuspid.
   c. Mandibular first bicuspid.
   d. Maxillary first bicuspid.

40. Select the bicuspid that is more ovoid than others, stockier than others, and may have either two or three cusps.
   a. Maxillary second bicuspid.
   b. Mandibular second bicuspid.
   c. Maxillary first bicuspid.
   d. Mandibular first bicuspid.

41. Select the tooth that appears in a wide range of forms, sizes, and shapes.
   a. Maxillary cuspid.
   b. Mandibular cuspid.
   c. Mandibular third molar.
   d. Maxillary second bicuspid.
   e. Mandibular second bicuspid.
42. Which tooth has a well-developed transverse ridge on the occlusal surface?
   
   a. Mandibular first bicuspid.
   b. Mandibular second bicuspid.
   c. Mandibular first molar.
   d. Maxillary first bicuspid.
   e. Maxillary first molar.

43. Select the tooth with cusps that are about the same height. The marginal ridge is not divided by a prominent mesiolingual groove.
   
   a. Maxillary first bicuspid.
   b. Mandibular first bicuspid.
   c. Mandibular second bicuspid.
   d. Mandibular first molar.
   e. Maxillary second bicuspid.

44. Select the tooth with a facial surface convex in all directions, a mesial surface nearly flat in all directions, and with mesiodistal and distofacial roots occasionally fused.
   
   a. Maxillary first molar.
   b. Maxillary second molar.
   c. Mandibular first molar.
   d. Mandibular second molar.
   e. Mandibular second bicuspid.
45. Select the molar with facial and lingual grooves. Its facial surface is rectangular in shape and convex in form, and its two roots present a distal inclination.

   a. Maxillary third molar.
   b. Maxillary second molar.
   c. Maxillary first molar.
   d. Mandibular second molar.
   e. Mandibular first molar.

46. Select the tooth with an oblique ridge and an oblique groove. It also has three pits in three distinct fossae -- mesial, central, and distal.

   a. Mandibular first molar.
   b. Maxillary first bicuspid.
   c. Maxillary first molar.
   d. Mandibular first bicuspid.
   e. Mandibular second molar.

47. Select the molar with a distal cusp (a fifth cusp) on the occlusal surface. It has developmental grooves not found on other molars.

   a. Maxillary third molar.
   b. Maxillary second molar.
   c. Maxillary first molar.
   d. Mandibular second molar.
   e. Mandibular first molar.

Check Your Answers on Next Page
SOLUTIONS TO EXERCISES, LESSON 4

1. c (para 4-1)
2. a (para 4-1)
3. b (para 4-2a)
4. a (para 4-2a)
5. d (para 4-2b)(2)(b)
6. a. baby or milk (para 4-3a)
   b. 20; 10 (para 4-3b)
   c. resorption (para 4-3c)
7. b (para 4-3c)
8. c (para 4-3c)
9. e (para 4-4a(5); figure 4-3)
10. d (para 4-4b)
11. e (para 4-6; figure 4-4)
12. b (para 4-6; figure 4-4)
13. c (para 4-6; figure 4-4)
14. a (para 4-6; figure 4-4)
15. (1) g
   (2) h
   (3) c
   (4) d
   (5) a
   (6) b
   (7) e
   (8) f (para 4-6; figure 4-4)
16. (1) c
   (2) d
   (3) g
   (4) h
   (5) a
   (6) b
   (7) e
   (8) f  (para 4-6; figure 4-4)

17. (1) c  (para 4-7c)
   (2) d  (para 4-7d)
   (3) e  (para 4-7e)
   (4) a  (para 4-7a)
   (5) b  (para 4-7b)
   (6) f  (para 4-7f)
   (7) g  (para 4-7g)

18. mesial  (para 4-7f)

19. d  (para 4-7b)

20. e  (para 4-7h)

21. b  (para 4-8a)

22. d  (para 4-8d; figure 4-7)

23. a  (para 4-9a(2))

24. b  (para 4-9b(2))

25. (1) c
   (2) d
   (3) e
   (4) a
   (5) b  (para 4-9c)

26. d  (para 4-9d(5))

27. (1) a, b
   (2) b
   (3) b
   (4) c  (para 4-9d)
28. a. depression; lobes
   b. marginal groove
   c. developmental groove  (para 4-9e(3),(4))

29. (1) c
    (2) d
    (3) a
    (4) b  (para 4-9e)

30. c  (para 4-9e(2))

31. a. 5
    b. 9  (figure 4-19)

32. a  (para 4-10)

33. e  (para 4-12)

34. c  (para 4-11)

35. d  (para 4-20)

36. b  (para 4-19)

37. e  (para 4-18)

38. a  (para 4-21)

39. d  (para 4-13)

40. b  (para 4-22)

41. c  (para 4-25)

42. a  (para 4-21)

43. e  (para 4-14)

44. b  (para 4-16)

45. d  (para 4-24)

46. c  (para 4-15)

47. e  (para 4-23)

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