Key points for starting off

First off, the **five questions** to ask yourself about a loose tooth before identifying it are:

1. Category (incisor, canine, premolar or molar)?
2. Permanent or deciduous?
3. Upper or lower?
4. Location in arch;
5. Left or right?

When identifying if a tooth is **permanent or deciduous**, remember that deciduous teeth:

- Have crowns with thinner enamel relative to crown size;
- Have crowns that are more bulbous in shape (their enamel often bulges out above the CEJ more prominently than in permanent teeth);
- Have roots that are thinner and shorter; in particular, deciduous molar roots are more divergent.


Adapted by Bone Broke (http://bonebrokeblog.wordpress.com)
Incisors

1. Category
Incisor crowns are flat and blade-like (shaped like a flattened shovels), and their outline is rectangular or square.

2. Upper or Lower
(i) **Crowns** - If height is 2x length (e.g. tall and narrow crowns), the tooth is probably a lower. Upper incisor crowns are broader relative to their height, and also have much more lingual relief (more bumps on lingual surface). Lower incisor crowns have comparatively little lingual topography.

(ii) **Roots** – Upper incisor roots are more circular in cross-section, while lower incisor roots are usually more mesiodistally compressed.

4. Location in Arch
(i) **Upper** - I¹ crowns are larger than I² crowns. I¹ crowns are more symmetrical in labial view than I² crowns. I¹ roots are shorter and stouter than I² roots.

(ii) **Lower** – I₁ crowns are slightly smaller than I₂ crowns. I₁ crowns are slightly more symmetrical in labial view than I₂ crowns, and distal I₂ crown edges flare distally in this view. I₁ roots are shorter, both relative to crown height and absolutely, than I₂ roots.

5. Left or Right
(i) **Upper** – The distal occlusal corner is more rounded than the mesial. The long axis of the root angles distally relative to the vertical axis of the crown, and the distal root surface is more deeply grooved than the mesial root surface.

(ii) **Lower** – The distal occlusal corner is more rounded than the mesial. Occlusal wear angles distally and inferiorly relative to the crown (the vertical axis of it). The long axis of the root angles distally relative to the vertical axis of the crown, with the root tip usually leaning distally.

Maxillary central and lateral incisors, scale bar 1 cm.

Canines

1. **Category**
Canine crowns are conical and tusk-like, and the outline of the occlusal dentin patch is diamond shaped. Canine roots are longer and larger relative to crown height than incisor roots.

2. **Upper or Lower**
(i) *Upper* - Upper canines are broad relative to their height, while lower canines are narrow. Additionally, upper canines have occlusal wear that is mostly lingual.

(ii) *Lower* - If the height of the crown is 2x its length (e.g. tall and narrow), it is probable a lower. Lower canines have occlusal wear that is mostly labial.

5. **Left or Right**
These tricks work for both upper and lower canines.
The mesial occlusal ridge (joining the crown shoulder to the tip of the crown) is usually shorter than the distal occlusal ridge. The long axis of the root angles distally, and the distal root surface is more deeply grooved than the mesial root surface.

*Mandibular canines circled in red, scale bar 5 cm.*

1. Category
Premolars normally each have two cusps, and crowns that are rounder and shorter than canines, and smaller than molars. They are round or oval in occlusal view, and have a fairly regular cusp pattern relative to molars.

2. Upper or Lower
(i) Upper – Have two cusps of nearly equal size, and strong grooves oriented mesiodistally between the major cusps. The occlusal outline is more oval.
(ii) Lower - The buccal cusp is much larger than the lingual cusp in both height and area, and there is a relatively weak groove between the cusps. The occlusal outline is more circular.

3. Location in Arch
(i) Upper – P³ major lingual cusps < major buccal cusps, while P⁴ cusps are about the same size. P³’s have more triangular outlines, while P⁴s are rounder. P³’s have more concave mesial surfaces and more deeply indented mesial occlusal outlines. P⁴ crowns have greater mesiobuccal projection of the cervical enamel line than P⁴s. P³ roots are double, bilobate, or bifurcated, while P⁴ roots tend to be single.
(ii) Lower – P₃ major lingual cusps < < major buccal cusps. P₄ has cusps of more equivalent size. P₃s have less symmetrical occlusal outlines than P₄s.

4. Left or Right
(i) Upper – The major lingual cusp is centered mesially relative to the major buccal cusp. (For worn teeth, the centre of the dentin exposure usually corresponds to the placement of the original cusp apex). The major lingual cusp is smaller, less occlusally prominent, and usually more heavily worn than the major buccal cusp. The long axes of the roots angle distally relative to the vertical axis of the crown.
(ii) Lower – The major buccal cusp is larger (in both area and height), more occlusally prominent, and usually more heavily worn than the major lingual cusp. The major lingual cusp is displaced mesially relative to the main buccolingual axis of the crown, and as with the upper premolars, the long axis of the root angles distally.

Molars

1. **Category**
Molars are larger, more square-shaped, and have more cusps than the other teeth. They also usually have multiple roots.

2. **Upper or Lower**
   
   (i) **Upper** – have 3-4 major cusps and a rhombus-shaped outline. Upper crowns have cusps placed asymmetrically relative to the mesiodistal crown axis. They also usually have three variably fused roots.

   (ii) **Lower** – Have 4-5 major cusps and a more square or rectangular outline. Cusps are placed symmetrically about the midline, and lower molars usually only have two major roots.

4. **Location in Arch**
   
   (i) **Upper** – M¹ have 4 well developed cusps arranged in a rhomboid shape and three long, distinct + divergent roots. M³ are smaller, more crenulate (furrowed on occlusal surface), tend to lack a hypocone, and have more irregular cusp positioning, and fused roots. M² are intermediate between M¹ and M³.

   (ii) **Lower** – M₁ crowns have 5 well-developed cusps, usually arranged in a Y-5 pattern, and two long, separate and divergent roots. M₃ have ≤4 cusps that are variably arranged. M₃s crowns are smaller, more crenulate and have irregularly positioned cusps. M₃s have fused roots and lack distal IPCFs. M₂s are intermediate between M₁ and M₃.

5. **Left or Right**
   
   (i) **Upper** – Protocone = largest, most heavily worn cusp, occupying mesiolingual crown corner. Hypocone is the smallest cusp, occupying distolingual crown corner. Lingual cusps occlusally < prominent than buccal cusps and have > wear. In occlusal view, lingual crown surface more visible than the buccal crown surface. Largest root often buccolingually compressed, set beneath proto- + hypocone. 2 smaller roots are rounder + set buccally. All roots angle distally w/ respect to major crown axes

   (ii) **Lower** – IPCFs on mesial + distal crown faces. Largest crown dimension usually mesiodistal. Protoconid = largest, most worn cusp in the mesiobuccal crown corner. Hypoconulid = smallest cusp, placed distally. Buccal cusps occlusally < prominent than lingual cusps, and have heavier wear. 2 major roots are compressed mesiodistally and set under mesial and distal crown halves. All roots angle distally with respect to major crown axes.

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