

SCB 208 Bone Practical Laboratory Exam (Terms Bank)

Bones for identification

The skeleton is broken down into 2 parts, the **AXIAL** skeleton and the **APPENDICULAR** skeleton

The axial skeleton is composed of bones that you will find in the midline of the body. This includes the skull, the vertebral column, the ribs and the sternum. The appendicular skeleton is everything else, including the limbs and the pectoral and pelvic girdles.

Bones of the cranium that you must learn are:

Bone	Number
Frontal	2
Parietal	2
Temporal (also called the squamous)	2
Occipital	1
Interparietal	2
Ethmoid *hidden (look in nasal cavity)	1
Sphenoid	1

Bones of the facial region you must learn include:

Bones	Number
Nasal	2
Incisive (also called premaxilla)	2
Zygomatic (also called zygomatic arch)	2
Maxilla	2
Palatine	2
Mandible	1 (or 2 depending on species. May be split sagittally)
Vomer	1
Lacrimal	2
Inferior nasal conchae	2

You also have to know some bones' Landmarks:

Bone	Landmark
Maxilla	Infraorbital foramen
	Palatine process of Maxilla
Incisive	Incisive foramen (Anterior palatine foramen)
Lacrimal	Lacrimal canal (also called nasolacrimal canal)
Ethmoid	Perpendicular plate of Ethmoid bone
Temporal	Tympanic bulla (also called auditory bulla)
	Auditory meatus (External auditory canal)
	Jugular foramen
	Mandibular fossa

Occipital	Foramen magnum
	Occipital condyles
Mandible	Ramus
	Coronoid process
	Condylod process
	Angular process
	Masseteric fossa
	Mental foramen
	Mandibular foramen
	Mandibular symphysis
Sphenoid	Optic Foramen
	Orbital Fissure
	Foramen Rotundum
	Foramen Ovale

In addition you need to learn the teeth (maxillary and mandibular). Cats are obligate carnivores. None of the teeth have grinding surfaces for consuming plant material. Note this in your inspection of the teeth. Consider the complementarity principle!

The dental formula for cats is $3\ 1\ 3\ \frac{1}{3}\ 1\ 2\ 1$

Notice that this is a fraction. The numerator refers to the maxillary teeth and the denominator refers to the mandibular teeth. There are 4 basic types of teeth. These are listed below.

1. **Incisors** – flattened in shape. Good for doing what?
2. **Canines** – sharp points. Good for doing what?
3. **Premolars** – sharp and pointed! Good for doing what?
4. **Molars** – very small on top and large on the bottom and also pointed. Good for doing what?

A generic, primitive mammal has 3 incisors, 1 canine, 4 premolars and 3 molars in each quadrant of the mouth (upper left, upper right, lower left, and lower right).

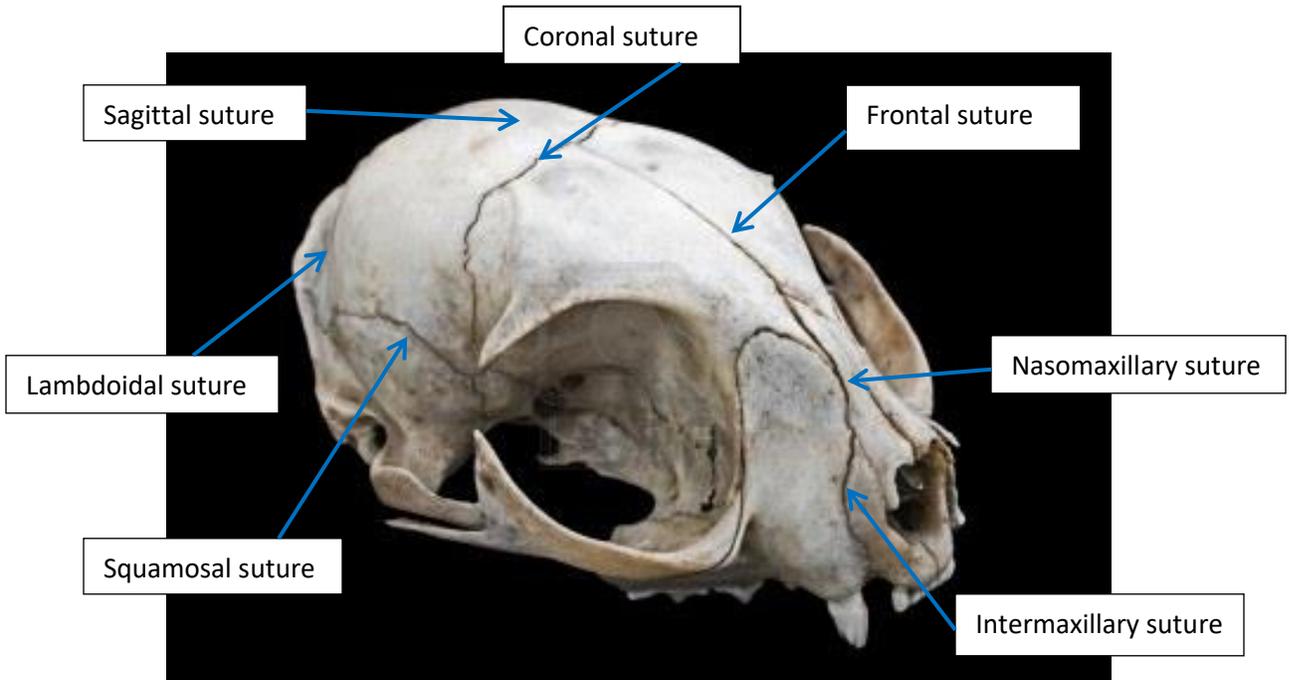
The cat's dental formula is, again, $3\ 1\ 3\ \frac{1}{3}\ 1\ 2\ 1$ which means the upper right should have 3 incisors, 1 canine, 3 premolars and 1 molar. The upper left should also have these same teeth. The lower teeth are different! The lower right and lower left quadrant has 3 incisors, 1 canine, 2 premolars and 1 molar respectively. Find all of these teeth!

What is the dental formula for an adult human? And no, having an extraction doesn't count. What is our generic dental formula?

Cranial sutures must also be identified. These include;

Sutures	Primary bones they separate
Frontal suture	Frontal bones
Sagittal suture	Parietal bones

Squamosal suture	Temporal from parietal
Lambdoidal suture	Parietal from occipital
Coronal suture	Frontal from parietal
*intermaxillary (facial not cranial)	Anterior median suture between the maxilla/premaxilla
*nasomaxillary (facial not cranial)	Lateral border of nasal bone and maxilla



The **hyoid bone** is a 'floating' bone in the neck (cervical) region. It is ventrally located and just caudal to the root of the tongue and deep to the muscles of the neck. It is derived from primitive gill arches and serves as an attachment point for the muscles of the larynx and it is also the origin point for the tongue. In humans it serves as an attachment point for the muscles used in producing speech.

Vertebra	Landmark
Atlas	Transverse process
	Transverse foramen
Axis	Dens (Odontoid process)
	Spinous process
Spinous vertebra	Vertebral canal
	Pedicle
	Lamina
	Spinous process
	Transverse process
	Centrum
Thoracic vertebra	Transverse foramen
	Transverse process
	Spinous process

	Vertebral canal
	Centrum
	Demifacet for rib head articulation
	Articular facet for rib tuberculum articulation
Lumbar vertebra	Spinous process
	Pleurapophysis
Sacrum	Meddle sacral crest
	Sacral canal
	Dorsal and ventral foramens
Caudal vertebra	

Ventrally and laterally, thoracic cage supported by sternum and by ribs. You have to know:

Bone	Landmark
Sternum	Sternebra
	Manubrium
	Xiphisternum
	Xiphoid process (cartilage)
Rib	Head (also called Capitulum)
	Neck
	Tuberculum
	Angle
	Body or shaft
	Costal cartilage

Pectoral girdle:

Bone	Landmark
Clavicle	
Scapula	Spine
	Metacromion process
	Acromion process
	Coracoid process
	Glenoid fossa
	Supraspinous fossa
	Infraspinous fossa
	Subscapular fossa

Bones of Forelimbs

Bones	Landmarks
Humerus	Head
	Greater tuberosity
	Lesser tuberosity

	Bicipital groove
	Deltoid ridge (Deltoid tubercle)
	Supracondyloid foramen
	Medial and Lateral Epicondyles
	Medial and Lateral condyles
	Trochlea
	Capitulum
	Olecranon fossa
	Coronoid fossa
	Radial fossa
Radius	Head
	Neck
	Bicipital tuberosity (Radial tuberosity)
	Interosseous crest
	Styloid process of Radius
Ulna	Olecranon
	Coronoid process
	Trochlear notch (or Semilunar notch)
	Radial notch
	Styloid process of Ulna
Carpals	
Metacarpals	
Phalanges	

Bones of Thoracic limbs of horse

Canon	
Splint	
Proximal Phalanx	
Medial Phalanx	
Distal Phalanx	

Bones of Pelvis (Os Coxa) – Pelvic Girdle

Bones	Landmarks
Ileum	Iliac crest
	Iliac wing (Ala)
	Spine of Ilium
	Acetabulum
Ischium	Obturator foramen
	Ischial tuberosity
Pubis	Pelvic symphysis

Bones of Hindlimbs

Bones	Landmarks
Femur	Head
	Greater and lesser Trochanter
	Trochanteric fossa
	Neck
	Medial and lateral condyles
	Medial and lateral epicondyles
	Trochlea
Patella	
Tibia	Lateral and medial condyles
	Tibial tuberosity
	Tibial crest
	Medial malleolus
Fibula	Head
	Lateral malleolus
Tarsals	Calcaneum (calcaneus) – bone not landmark
	Talus – bone not landmark
Metatarsals	
Phalanges	
Cannon bone of horse	
Splint bone of horse	
Long Pastern bone of horse	
Short pastern bone of horse	
Coffin bone of horse	

Joint

These are areas where bones meet other bones. There are numerous joints throughout the body. For this lab however, the following major joints should be identified;

Joint	The two bones involved in forming the joint
Atlanto-occipital	Atlas and occipital
Scapulohumoral	Scapula and humerus
Coxofemoral	Os coxa (the hip bone) and femur
Humororadial	Humerus and radius
Femorotibial	Femur and tibia
Carpus	The 7 carpal bones of the 'wrist'
Tarsus	The 7 tarsal bones of the 'ankle'
Metacarpal	Short bones of the 'hand' form a proximal articulation with the carpels and distal articulation with the phalanges
Metatarsal	Short bones of the 'foot' form proximal articulation with the tarsals and distal articulation with the phalanges
Phalanges	The 'fingers' and 'toes'

Temporomandibular	Temporal and mandible (where the jaw meets the skull)
Ilio-sacral	Ilium of coxa and sacrum

When finding ALL of the bones categorize them as either, long bones, short bones, flat bones or irregular bones.