

Age Estimation



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In forensic anthropology – the study of the human body for medical and legal purposes - we can use our knowledge of the development of bones to predict what age a person is.

1. The 'long' bones of the body, including the bones of the hand, grow until the ends of the bones join (fuse) with the shaft (middle) of the bone.
2. This doesn't happen at the same time in all of the bones of the body – instead it happens at different times in different bones.
3. This fusion of bones occurs in a pattern in children, so by seeing which bones are fused we can guess a child's age.
4. In younger children the bones will look quite far apart - as the child grows older the bones will get closer together.
5. The area where bone growth is occurring, and where fusion will eventually occur, looks like a dark space or line, between the ends of the bones and the middle of the bones on an x-ray (and can sometimes be confused with a fracture!). It gets smaller as we get older.....
6. As the ends of the bone finally fuse together with the shaft, this line will disappear, so it can no longer be seen in older individuals.

Examples of this growth and fusion (joining together) are shown in the hand x-rays pictures.

If there are no areas that look like this in the hand bones of the skeleton you have found, then that means the skeleton belongs to an adult

Activity 1 – Age Estimation Using Hands



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Female



1

1 year and 2 months



2

5 years and 9 months



3

10 years



4

14 years



5

17 years

Female or Male?



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In forensic anthropology – the study of the human body for medical and legal purposes - we can use our knowledge of the bones to predict whether a skeleton belong to a female or male.

1. Male and females bones are usually most different in the pelvis and the skull
2. Look at the images of the pelvis first and try to match it to your skeleton
3. A female pelvis usually has lots more space in it than a male pelvis
 - This is so there is lots of room for a baby
4. A male pelvis usually looks more heavy and has less space
 - It doesn't need any room for a baby
5. Now look at the images of the skull and try to match it to your skeleton
6. A female skull is usually lighter looking, with more round eye sockets (orbits) and the angle of the jaw is more gently sloped
7. A male skull is usually heavier looking, with squarer looking eye sockets (orbits) and the angle of the jaw is more square

Female Pelvis



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Male Pelvis



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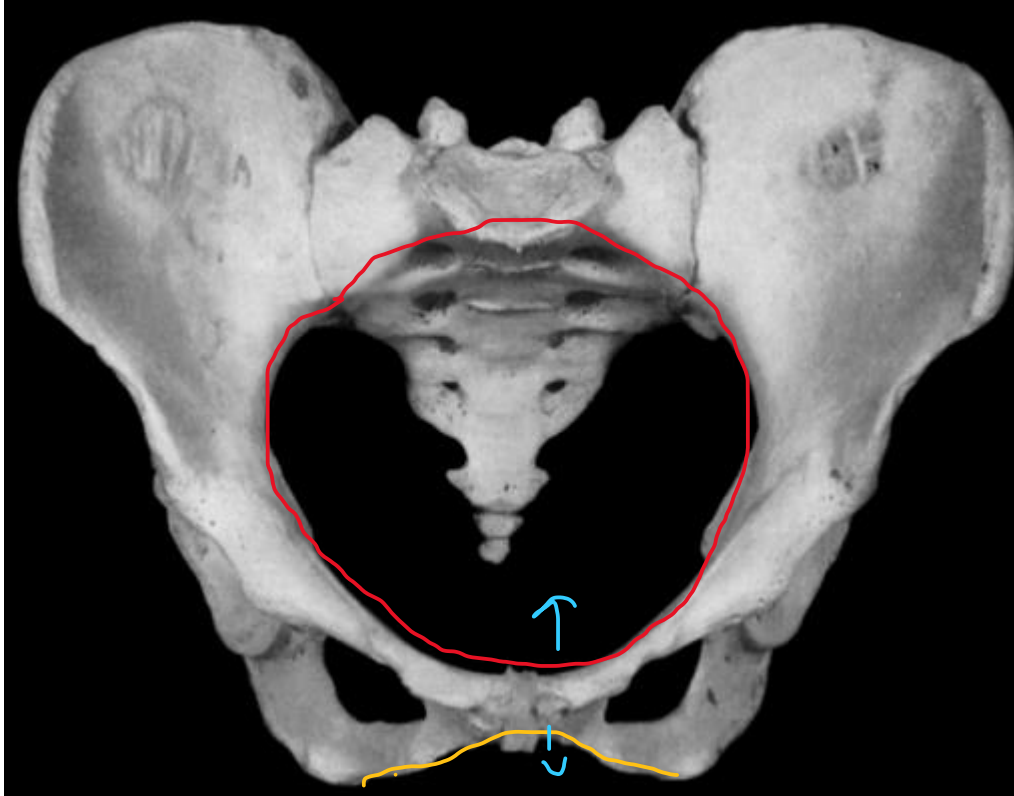


Clues to look for.....



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Female



Male



Yellow – sub-pubic arch is **wider** in females than in the male

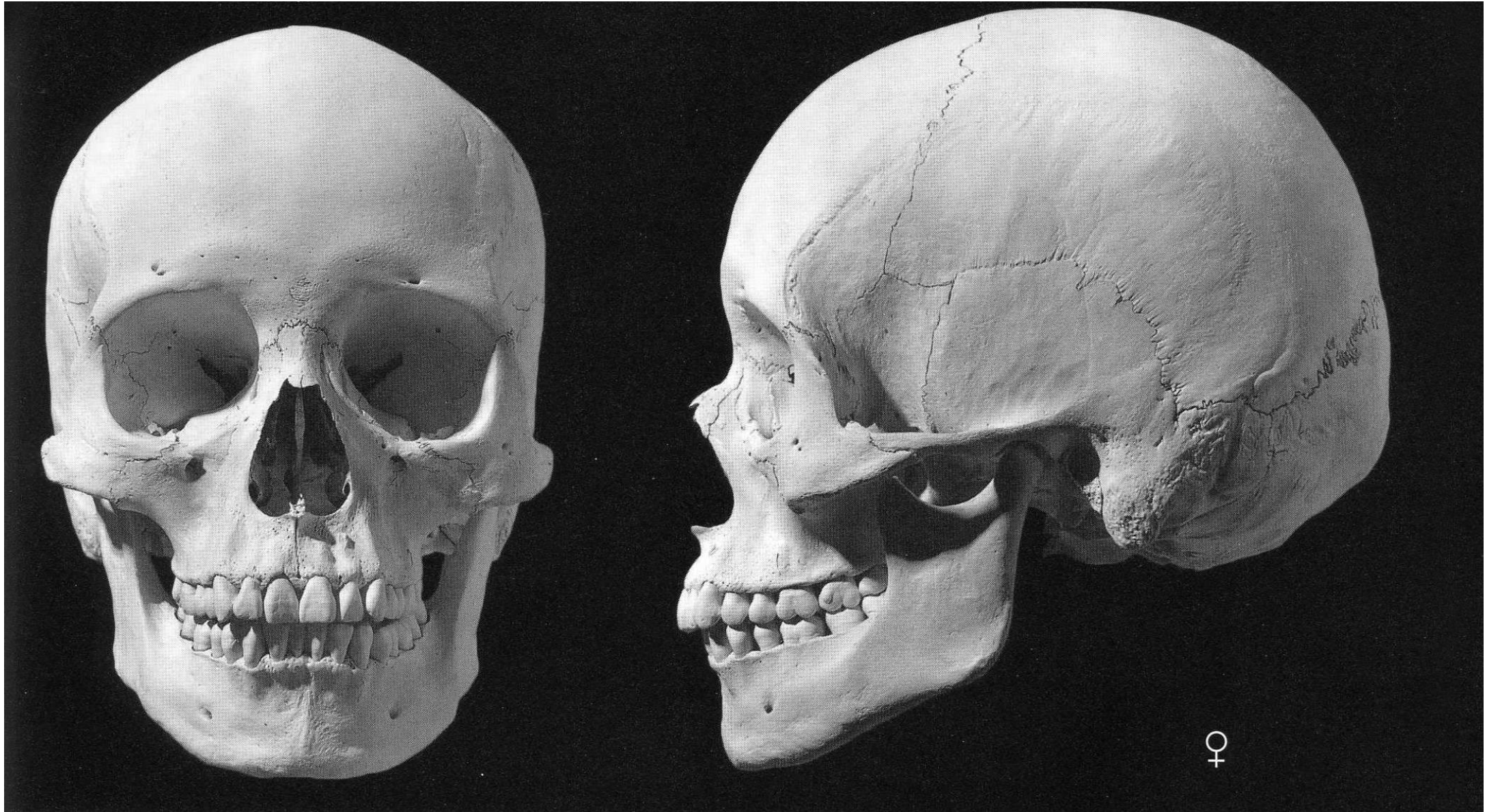
Red – pelvic inlet and outlet (openings at top and bottom of pelvis) are **larger** in females than males

Blue – Pelvic cavity (height/space between inlet and outlet) is more **shallow** in females than in males

Female Skull



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Male Skull



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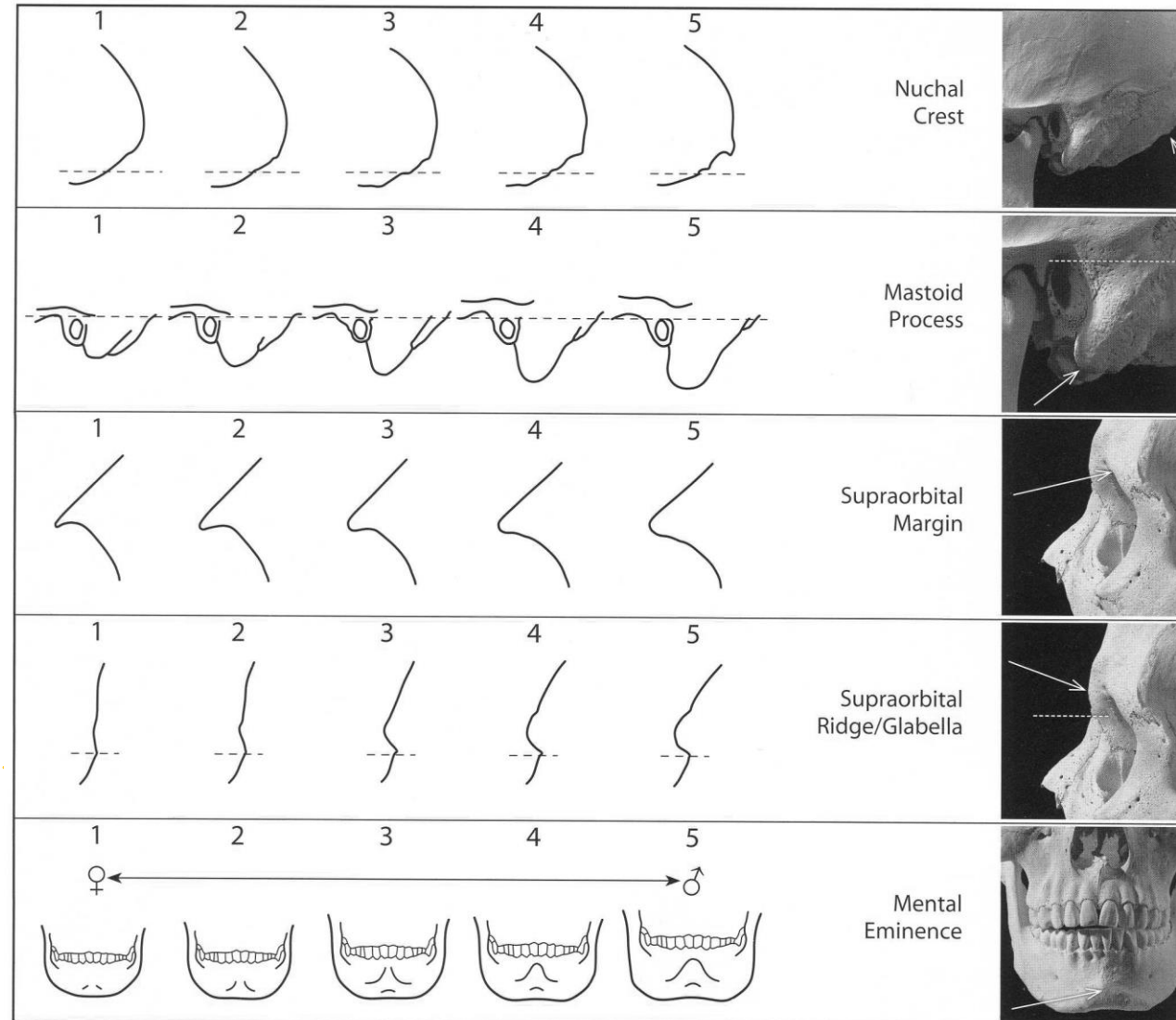


Clues to look for.....



Female

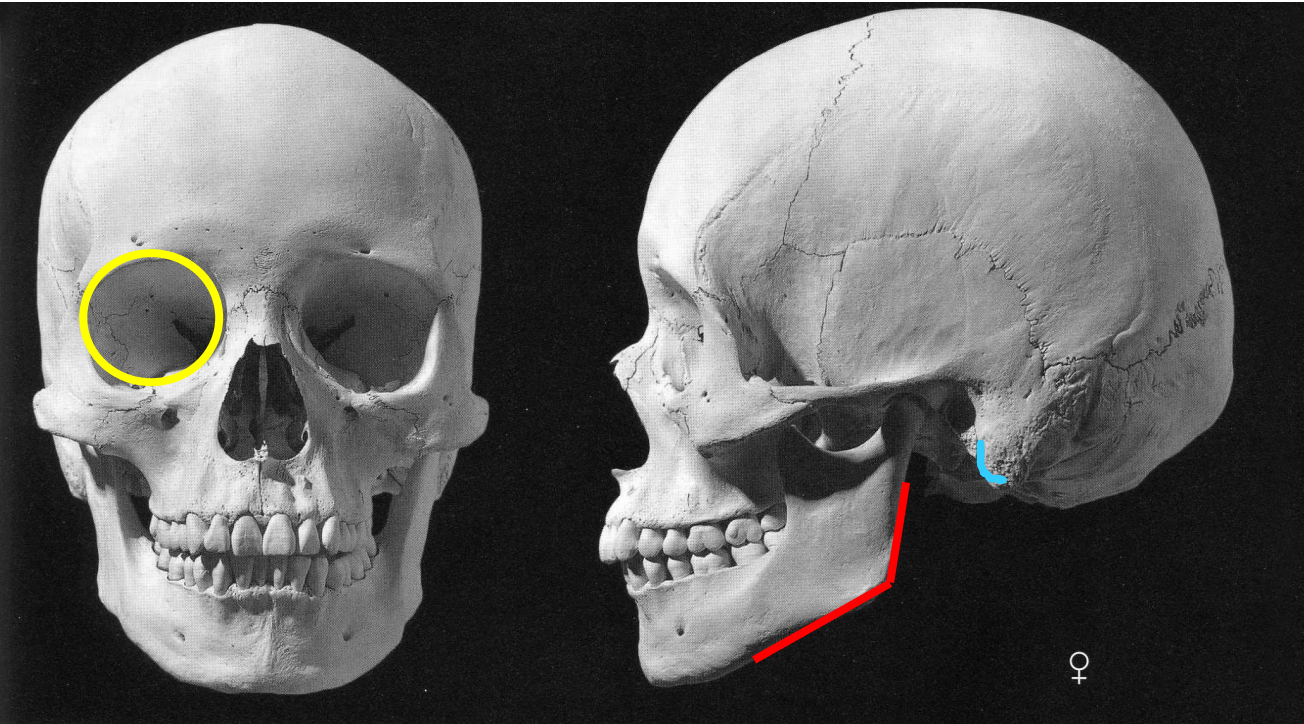
Male



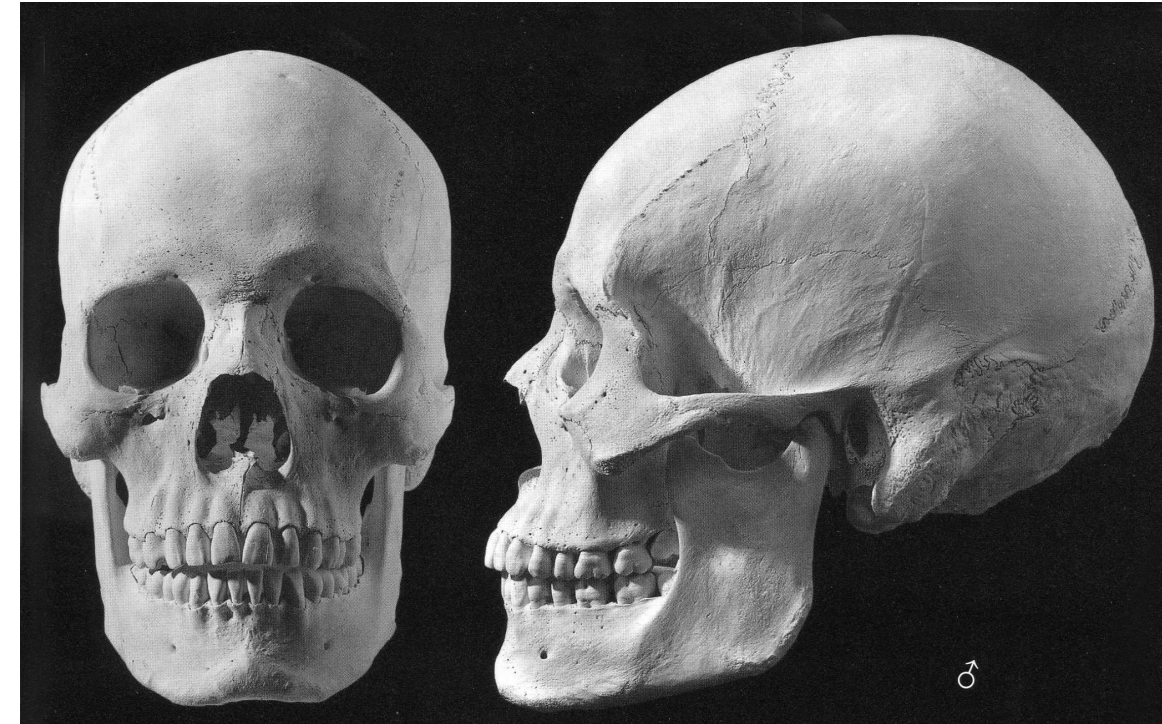
Clues to look for.....



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Female



Male

Yellow – orbital is **rounder** in females than in the male

Red – angle of jaw is more **gently sloped** in females than males

Blue – Mastoid process is less **prominent** in females than in males

Clues to look for.....



Trait	Male	Female
General Size	Large	Small
Architecture	Rugged	Smooth, rounded
Occipital Area	Marked nuchal crests; Large protuberance	Nuchal crest smoother; small or no protuberance
Supraorbital ridges	Medium to large	Small to medium
Glabella	Pronounced	Faint
Mastoid Processes	Medium to large; broad base	Small to medium, narrow base
Frontal eminence	Small	Pronounced
Parietal eminence	Small	Pronounced
Orbits	Squared, lower, with rounded margins	Rounded, higher, with sharp margins
Forehead	Sloping, less rounded	Vertical, full
Zygomastics	Heavier, more laterally arched	Lighter, more compressed
Palate	Larger, broader, U-shaped	Smaller, parabolic
Occipital condyles	Larger	Smaller
Mandible	Larger, increased symphysis height, broad ramus	Gracile, reduced symphysis height, more gracile ramus
Mental eminence	Pronounced	Slight
Gonial angle	~90°	>90°
Gonial flare	Pronounced	slight

Height



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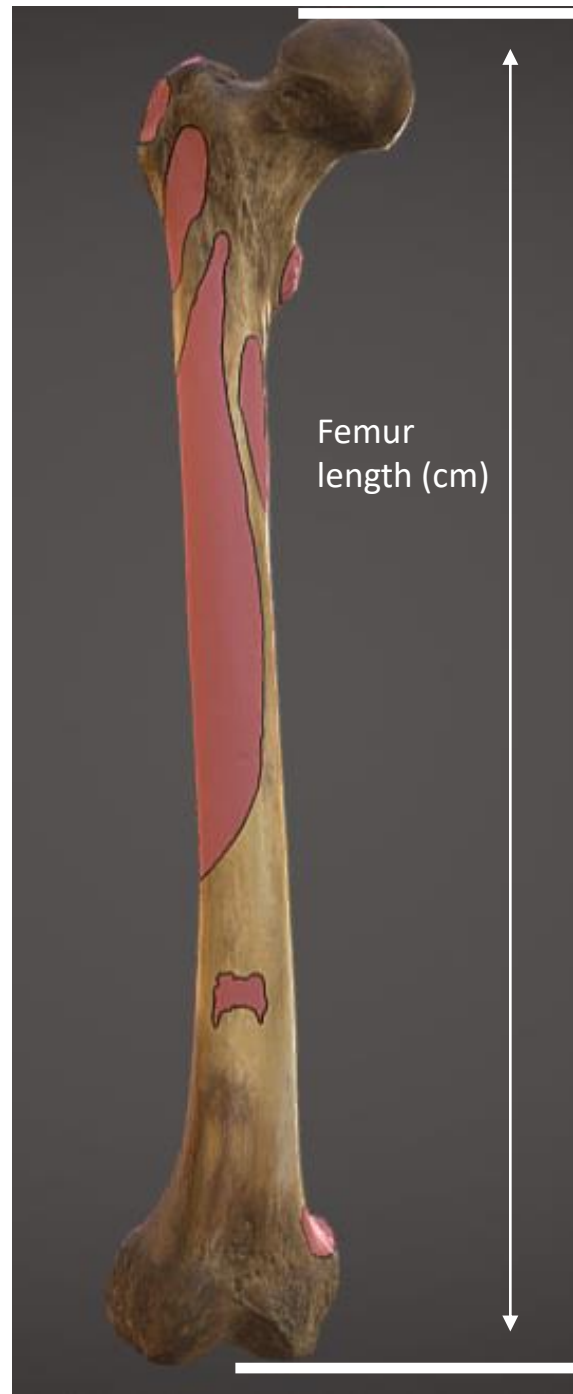
In forensic anthropology – the study of the human body for medical and legal purposes - we can use our knowledge of the bones to predict what height a person was from the length of the femur.

1. The femur is the thigh bone and is the longest bone in the body
2. To work out a person's height we can measure the length of the femur, as shown in the image.
3. We then put that measurement into a sum (maybe the grown-ups could help here with a calculator!)

$$\text{Height in centimetres} = (\text{Length of femur} \times 2.38) + 61.41$$

4. The answer to the sum gives us the height of the person

Height



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