

Building Bodies Clues Page

Teacher note: Cut out each half-page set of clues below and place in the respective envelope with the acetate images of primate anatomy. Students will be reading the clues to appropriately place each anatomical set *in proper order* on the Reconstructions page.

Part 1/Envelope 1 Clues: Clues for ordered assembly of human and chimpanzee anatomy pieces

Each of the following clues does not specify whether it relates to a chimpanzee or human. Use your knowledge of anatomy, and the pieces of skeleton enclosed, to properly select and lay out *in order*, each of the 12 pieces in envelope #1 onto the "Reconstructions" page.

1. A skull with large cranium and high forehead is balanced on top of an S-shaped spine. The spinal cord enters from directly underneath, allowing the neck to be extended vertically.
 2. The ribcage is funnel shaped, tapered towards the neck, because the arms are used for locomotion like knuckle-walking or swinging in trees.
 3. The upper limbs are very large, long and powerful for the size of the creature, since much of the upper body is supported by these limbs during knuckle-walking or swinging in trees. The hand has a small opposable thumb capable only of a modest precision grip.
 4. The hips provide a lower and broader platform necessary for support of the upper body and internal organs when the body is aligned vertically during walking.
 - 5.. The femur is not angled inward down to the knee and results in an awkward, widely spaced walking stance which is difficult to balance when walking upright. The legs are noticeably shorter than the arms.
 6. The big toe is long and aligned with the other toes and has lost its ability to grasp. During walking the big toe and prominent arch help to propel the leg forward as each step is taken.
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Part 3/Envelope 2 Clues: Clues for ordered assembly of *Australopithecus afarensis* anatomy

1. Australopithecines have proportionally longer hindlimbs than chimps. The femur is angled in from hip to knee to balance the body, and broader knee joint surfaces support the weight of the body when walking upright.
2. Although having roughly a chimpanzee-sized brain, fossil evidence indicates that the australopithecine skull was relatively well-centered on top of a more deeply curved spine adapted for upright walking.
3. Fossil bones and fossil trackways indicate a large, in-line great toe, good arch and a strong heel strike indicative of a capable walker.
4. The upper limbs are relatively shorter than chimps, but longer than in humans. The hand has a more pronounced thumb more capable of a precision grip, but not quite as refined as a modern human hand.
5. The pelvis has broad and bowl shaped hips or ilia, effectively supporting the weight of the internal organs and providing efficient orientation for leg muscle attachment while the body is walking fully upright.
6. The ribcage is somewhat funnel shaped, having a small taper toward the shoulders, but not as dramatic as today's tree swinging apes. This suggests that australopithecines were still adapted for life in the trees, just like their ancestors.

