

Study & Master

Support Pack | Grade 12

CAPS

Life Sciences

Practice exercises: Diversity,
change and continuity

This support pack for the **Diversity, change and continuity** strand in the **Life Sciences Grade 12 CAPS curriculum** provides practice exercises. All exercises have the answers provided. Learners can work through these individually at home or these could form the basis of a catch-up class or online lesson. You have permission to print or photocopy this document or distribute it electronically via email or WhatsApp.

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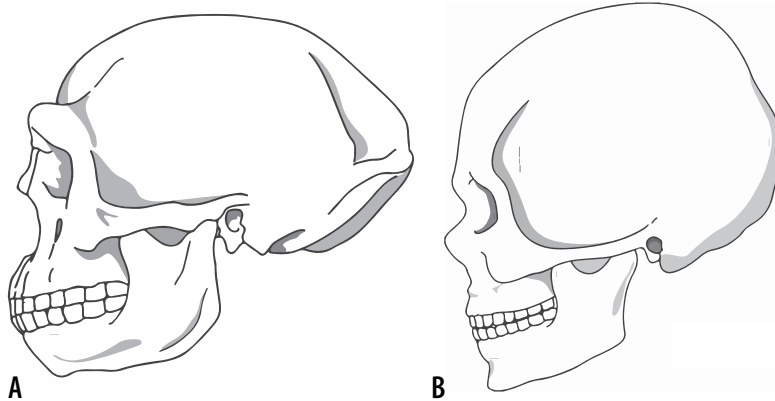
WORKSHEET 4: DIVERSITY, CHANGE AND CONTINUITY

EVOLUTION BY NATURAL SELECTION

1. Name and describe two principles that Lamarck used to explain how evolution took place.
2. Give one reason why Lamarck's theory is not accepted.

HUMAN EVOLUTION

3. Diagrams A and B illustrate the skulls of *Homo sapiens* and *Homo erectus*. The diagrams are drawn to scale.



- 3.1 Which of the diagrams (A or B) represents:
 - a) *Homo sapiens*
 - b) *Homo erectus*?
 - c) Tabulate two visible differences between the skulls in diagrams A and B that represent changes in structure that characterised human evolution.
- 3.2 Describe the significance of *Homo erectus* to the Out of Africa hypothesis.
- 3.3 List four similarities between *Homo sapiens* and other primates.

MEMORANDUM FOR WORKSHEET 4

1. * Principle of use and disuse/adaptation to the environment: compulsory mark.
 - Structures of individuals in a population that are used more frequently become better/ adapted.
 - Structures of individuals in a population that are used less frequently become smaller/ disappear.
- * Principle of inheritance of acquired characteristics: compulsory mark.
 - Acquired characteristics developed by the organism in its lifetime are passed on to its offspring.
2. Acquired characteristics are not inherited/do not cause any change to the DNA of an organism's gametes (sperm or ova). OR Organisms did not evolve because they wanted to evolve/ Lamarck's theory is deterministic.

3.

- 3.1 a) B
- b) A

3.2

Very clean	Clean
Brow ridges more pronounced	Brow ridges less pronounced
Smaller cranium/brain	Larger cranium/brain
Jaw protrudes (prognathus)	Not prognathus
No obvious chin	Pronounced chin
Elongated cranium	Shorter cranium
Zygomatic arch well developed	Zygomatic arch less developed

- 3.3 H. erectus was the first Homo species to move out of Africa; their large bodies and well-adapted pelvic girdles made them better bipedal runners and walkers over long distances than H. sapiens.
- 3.4 Large brains/skulls compared to their body mass; olfactory brain centres reduced/reduced sense of smell; parts of the brain that process information from the hands and eyes are enlarged; eyes in front/binocular vision/stereoscopic vision; eyes with cones/ colour vision; freely rotating arms; long upper arms; elbow joints allow rotation of forearm; rotate hands at least 180°; flat nails instead of claws/bare fingertips; opposable thumbs that work in the opposite direction to the fingers; upright posture; sexual dimorphism/distinct differences; two teats only.