

91606



916060



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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## Level 3 Biology, 2013

### 91606 Demonstrate understanding of trends in human evolution

2.00 pm Tuesday 12 November 2013

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of trends in human evolution.	Demonstrate in-depth understanding of trends in human evolution.	Demonstrate comprehensive understanding of trends in human evolution.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

**You should attempt ALL the questions in this booklet.**

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

**YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.**

**TOTAL**

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You are advised to spend 60 minutes answering the questions in this booklet.

## QUESTION ONE

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Ardi (*Ardipithicus ramidus*) – an early bipedal hominin.

<http://thedailyomnivore.net/2011/04/21/ardi/>

[www.sciencemag.org](http://www.sciencemag.org)

Long before any hominin fossils were ever found, it had been predicted that walking upright must have happened **before** other biological changes, such as brain increase and manipulative ability of the hand.

There is not general agreement on what caused bipedalism to develop in early hominins, but one theory is that environmental change played a critical role.

Discuss how bipedalism may have developed and resulted in further biological evolution in early hominins.

In your answer:

- describe the changes in the skeleton, hand, and brain due to bipedalism
- explain why bipedalism was selected for in the environment of early hominins
- justify, with reasons, why brain developments and manipulative ability of the hand would have occurred **after** bipedalism.

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## QUESTION TWO

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## Stone tool production

Adapted from <http://ars.els-cdn.com/content/image/1-s2.0-S002839320600385X-gr1.jpg>

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## Hominin tool cultures

Adapted from [http://anthro.palomar.edu/homo2/images/Paleolithic\\_table.gif](http://anthro.palomar.edu/homo2/images/Paleolithic_table.gif)

Four of the main hominin tool cultures are Oldowan, Acheulean, Mousterian, and Upper Palaeolithic.

Discuss how each tool culture has allowed the species using it to improve their survival chances.

In your answer:

- describe at least TWO of the **trends** (in design, manufacture, and materials) in the tool cultures over time
- explain how **each tool culture** provided an adaptive advantage to the hominin species that used them
- relate these adaptive advantages to the methods of food gathering and way of life of the species.

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Analysis of genetic and fossil evidence (made over a number of years by a number of researchers) has indicated the following information about human dispersal:

- Use **some or all** of the above evidence to discuss the likely origin of modern humans.

- describe the main competing theories: **Multiregional** and **Out of Africa** (also known as Eve/Replacement/Recent African Origin)
- explain how the above evidence supports each theory
- justify the most likely model of human dispersal.



**Extra paper if required.**  
**Write the question number(s) if applicable.**

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