



For Supervisor's use only

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90719



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement  
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

## Level 3 Biology, 2005

### 90719 Describe trends in human biological and cultural evolution

Credits: Three

9.30 am Tuesday 15 November 2005

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 answer 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.**

For Assessor's use only		Achievement Criteria			
Achievement		Achievement with Merit		Achievement with Excellence	
Describe trends in human biological and cultural evolution.	<input type="checkbox"/>	Explain trends in human biological and cultural evolution.	<input type="checkbox"/>	Discuss trends in human biological and cultural evolution.	<input type="checkbox"/>
Overall Level of Performance <input type="checkbox"/>					

You are advised to spend 35 minutes answering the questions in this booklet.

## QUESTION ONE

Last year scientists excavating a cave site on the island of Flores in Indonesia found the remains of an extinct group of very small people who were possibly alive until 13 000 years ago. Views of the skull they found are shown below. The second view shows a modern human skull for comparison.

<p style="text-align: center;"><b>[FOR COPYRIGHT REASONS, THIS RESOURCE CANNOT BE REPRODUCED HERE. SEE BELOW.]</b></p> <p style="text-align: center;"><i>Homo floresiensis</i>  <a href="http://www.talkorigins.org/faqs/homs/lb1.jpg">http://www.talkorigins.org/faqs/homs/lb1.jpg</a>  <a href="http://nature.com/news/specials/flores">http://nature.com/news/specials/flores</a></p>	<p style="text-align: center;"><b>[FOR COPYRIGHT REASONS, THIS RESOURCE CANNOT BE REPRODUCED HERE. SEE BELOW.]</b></p> <p style="text-align: center;"><i>Homo sapiens</i> (modern human)  <a href="http://nature.com/news/specials/flores">http://nature.com/news/specials/flores</a></p>
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Based on features of the skull and the rest of the bones found with the skull, the remains have been placed in a separate species, *Homo floresiensis*. This species seems to be more closely related to *Homo erectus* than to *Homo sapiens*.

- (a) Describe one feature of the **skull** found in the cave that would show that the species it belonged to walked upright.

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- Apart from overall skull size, compare and contrast features **shown in the photographs** of the two skulls, and the evolutionary trends of *Homo erectus* and *Homo sapiens*, that support the scientist's conclusions.

[illegible]

- (c) The tools found associated with the remains were Upper Paleolithic. Explain why scientists would not expect to find Upper Paleolithic tools with *Homo floresiensis*.

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- (d) Studies of the inside of the skull show that Wernicke's area of the brain was well developed.

- (i) Describe the function of Wernicke's area of the brain.

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- (ii) Explain how Wernicke's area of the brain would be an advantage to the species for the hunting of animals that were very large in comparison to *Homo floresiensis*.

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- (e) Explain why charred animal remains found with the *Homo floresiensis* remains could have been expected by the scientists studying them.

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- (f) Describe how the vertebral column of the genus *Homo* differs from that of a living ape.

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(a) The youngest of the bones of the now extinct *Homo floresiensis* is 13 000 years old. The way the findings fit in with the genus *Homo* family tree is shown in the diagram below.

[http://nationalgeographic.com/news/2004/10/1027\\_041027\\_homo\\_floresiensis.ht](http://nationalgeographic.com/news/2004/10/1027_041027_homo_floresiensis.ht)

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

- (b) During the timeline shown in the *Homo* family tree there was a trend from hunter gatherer to agriculture and the domestication of plants and animals.

- (i) Describe another cultural change that the development of agriculture and the domestication of plants and animals brought about.

- (ii) The development of agricultural skills brought many advantages to *Homo sapiens*, but there were associated disadvantages too. Explain the consequence of ONE of these disadvantages.

