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NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Science, 2009

90192 Describe aspects of astronomy

Credits: Two
9.30 am Monday 23 November 2009

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 2–7 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.

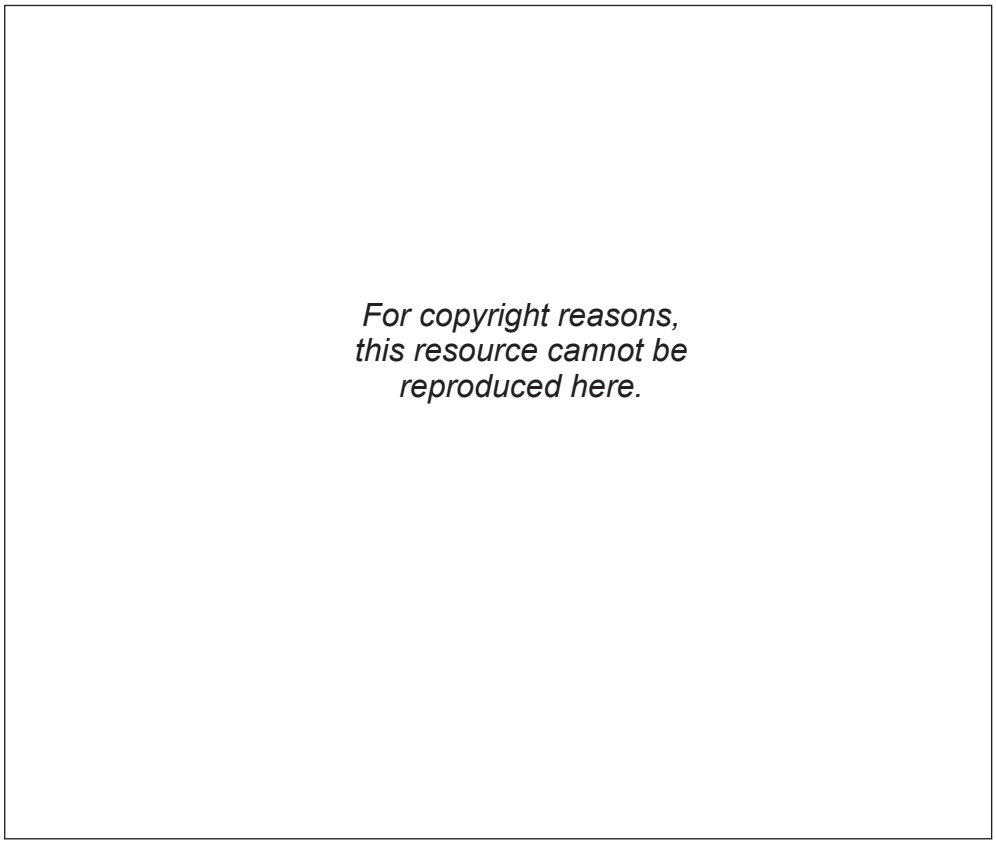
For Assessor's use only	**Achievement Criteria**		
Achievement	**Achievement with Merit**	**Achievement with Excellence**	
Describe aspects of astronomy.	Explain aspects of astronomy.	Discuss aspects of astronomy.	
Overall Level of Performance			

You are advised to spend 30 minutes answering the questions in this booklet.

Assessor's use only

QUESTION ONE: SPACE TRAVEL

The diagram below shows the relative positions of Mars to the stars at the same time of night between 1 December 2007 and 16 January 2008. The path of Mars is shown by the arrow.



weblogs.marylandweather.com

Mars and Earth revolve around the Sun.

(a) Explain why the position of Mars, as seen from Earth, changes over a period of time relative to the stars.

(b) Discuss the difficulties associated with **navigating** from the Earth to Mars.

In your answer you should consider:

- distances of the planets from the Sun
- the planets' revolution times
- factors that must be taken into account to achieve the shortest travel distance.

Assessor's use only

Planet	Distance to the Sun (million km)	Revolution time (Earth years)
Earth	150	1
Mars	229	2

QUESTION TWO: ECLIPSES

Assessor's use only

(a) Draw labelled diagrams to show how **both** solar and lunar eclipses are formed.

Solar eclipse

Lunar eclipse

(b) Discuss the differences between a solar eclipse and a lunar eclipse.

In your answer you should:

- describe the two different types of shadow produced
- include ideas about differences in relative positions of the Sun, Moon and Earth **in relation** to the **shadows** being cast
- include the cause of shadows being cast
- explain why we can have total solar eclipses.

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Question Three is on the following page.

QUESTION THREE: ORBITS

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The Sun's position in the sky is easily observed. The angle and position of the Sun relative to Earth is different in summer and winter in New Zealand.

Discuss the reasons for the summer and winter seasonal differences in the radiation received from the Sun.

Include a labelled diagram in the box provided.

Extra paper for continuation of answers if required.
Clearly number the question.

Assessor's use only

Question number