

See back cover for an English translation of this cover

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91192M



911925



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

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## Te Pūtaiao ā-Papa, ā-Rangi, Kaupae 2, 2012

### 91192M Te whakaatu māramatanga ki ngā whetū me ngā pūnaha ao ātea

2.00 i te ahiahi Rātū 27 Whiringa-ā-rangi 2012  
Whiwhinga: Whā

Paetae	Paetae Kaiaka	Paetae Kairangi
Te whakaatu māramatanga ki ngā whetū me ngā pūnaha ao ātea.	Te whakaatu māramatanga hōhonu ki ngā whetū me ngā pūnaha ao ātea.	Te whakaatu māramatanga matawhānui ki ngā whetū me ngā pūnaha ao ātea.

Tirohia mehemea e ōrite ana te Tau Ākonga ā-Motu (NSN) kei tō pepa whakauru ki te tau kei runga ake nei.

#### Me whakautu e koe ngā pātai KATOA kei roto i te pukapuka nei.

Ki te hiahia koe ki ētahi atu wāhi hei tuhituhi whakautu, whakamahia te (ngā) whārangi kei muri i te pukapuka nei, ka āta tohu ai i te tau pātai.

Tirohia mehemea kei roto nei ngā whārangi 2–15 e raupapa tika ana, ā, kāore hoki he whārangi wātea.

**HOATU TE PUKAPUKA NEI KI TE KAIWHAKAHAERE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.**

TAPEKE



MĀ TE KAIMĀKA ANAKE

Kia 60 meneti hei whakautu i ngā pātai o tēnei pukapuka.

**PĀTAI TUATAHI: ĀREPA MENEHAE (ALPHA MENSAE)**

Ko Ārepa Menehae te whetū tino mārāma i te kāhui whetū o Meneha (Mensa). He whetū kōwhaikaraka raupapa matua ia pēnei i a Tamanuiterā.

Whakamārama taipitopitotia **tēnā me tēnā** o ngā wāhanga (te whānautanga, te orange me te matenga) i te hurihanga ora o Ārepa Menehae.

I tō whakautu me kōrero mō:

- te momo kora me te whakamahinga
- te papatipu
- te tō-ā-papa
- ngā panoni pūngao.

Ka pīrangī pea koe ki te whakauru anō ki tō whakautu he hoahoa whai tapanga.

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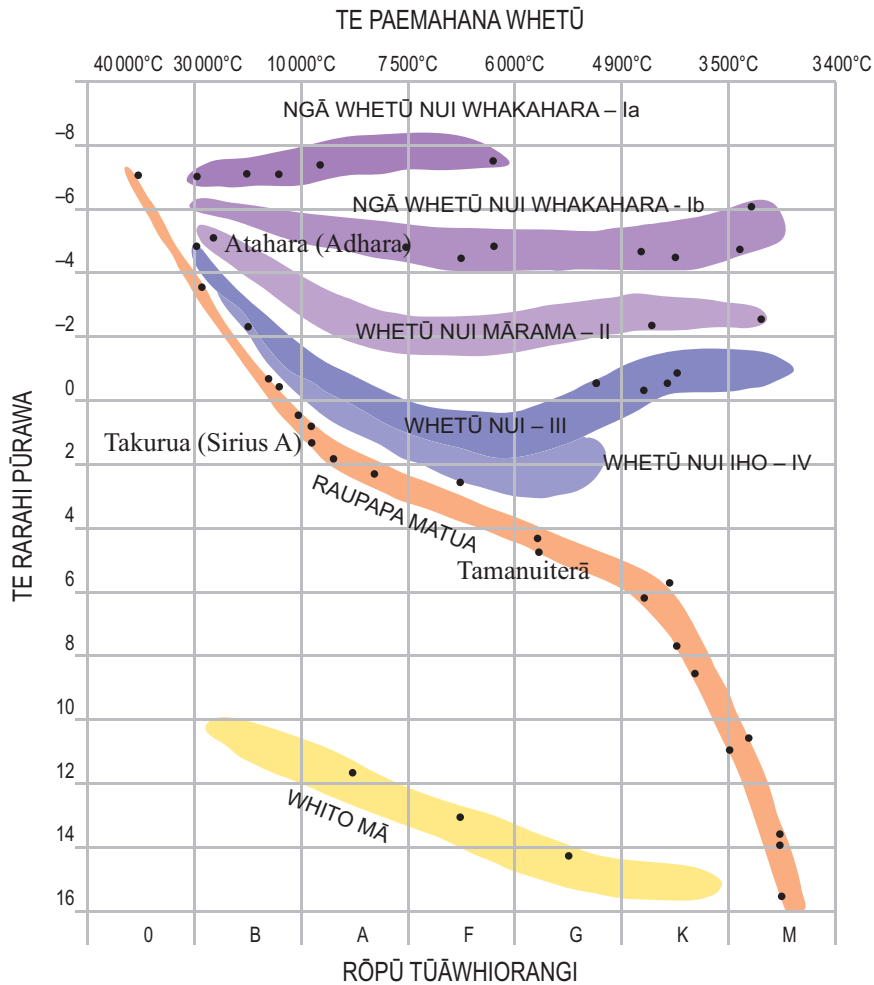
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## PĀTAI TUARUA: TE KĀHUI TAKURUA

Kei te kāhui Takurua te whetū Takurua (Sirius A), arā, te whetū tino mārama i te rangi pō, me Atahara (Adhara), he whetū tino mārama anō i tō tātou rangi pō.



Whakatauritehia ngā āhuatanga o ngā whetū Takurua me Atahara, mā te whakamahi i ngā tūranga whai pānga i te hoahoa Hertzsprung-Russell i runga nei hei tīmatanga mō tō whakautu.

I tō whakautu me kōrero koe mō:

- te momo whetū
- te hanganga whetū
- te rahi
- te papatipu
- te whakaputa mārama
- te whakapaunga kora.

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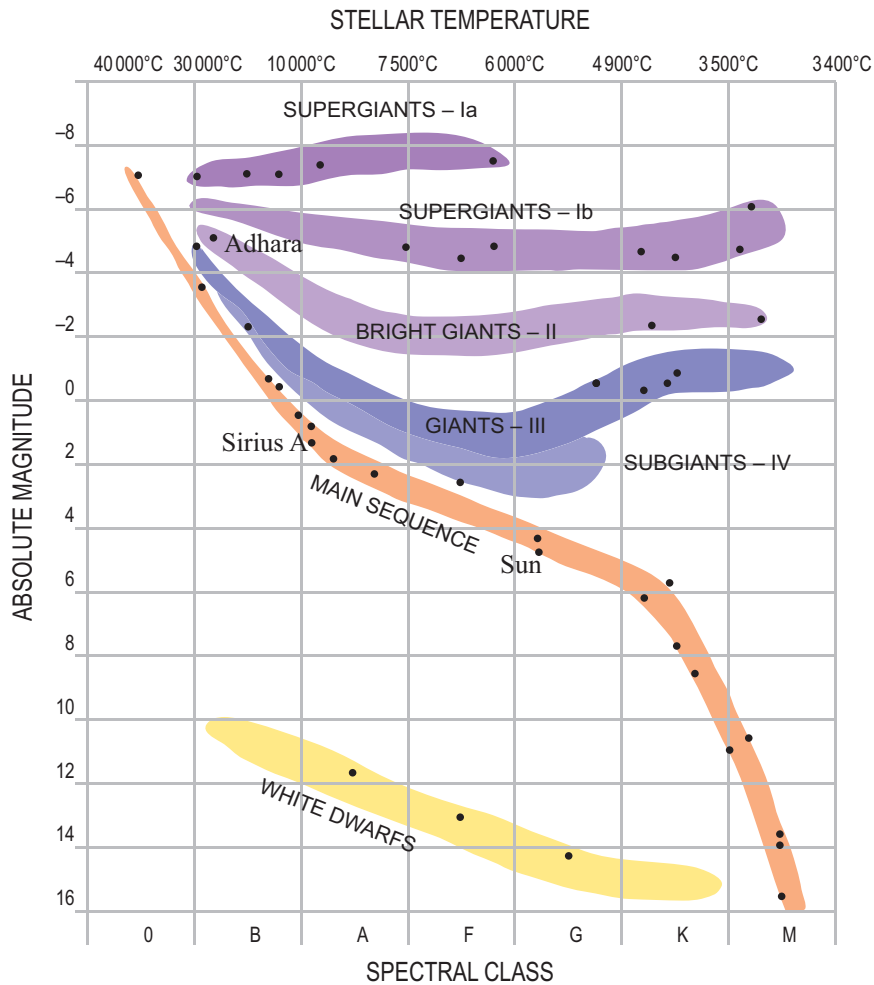
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## QUESTION TWO: CANIS MAJOR

The constellation Canis Major, contains Sirius A, the brightest star in the night sky, and Adhara which is also a very bright star in our night sky.



Compare and contrast the characteristics of Sirius A and Adhara, using their relative positions on the Hertzsprung-Russell diagram above as a starting point in your answer.

In your answer you should refer to:

- star type
- star formation
- size
- mass
- luminosity
- fuel usage.

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## PĀTAI TUATORU: NGĀ MARAMA O MATAWHERO ME TE MARAMA O PAPTŪĀNUKU

Kotahi tō Papatūānuku marama nui e āmio ana, heoi e rua nei ngā marama iti a Matawhero, ko Phobos me Deimos. He āhua rite ngā rahi o Papatūānuku me Matawhero, me ā rāua takotoranga i Te Whānau a Tamanuiterā, engari i tino rerekē te waihangatanga o ēnei marama.

*He tapu tēnei  
rauemi. E kore taea  
te tuku atu.  
Aata tirohia ki ngā  
kupu kei raro iho i te  
pouaka nei.*

<http://grin.hq.nasa.gov/IMAGES/SMALL/GPN-2000-001437.jpg>

*He tapu tēnei  
rauemi. E kore taea  
te tuku atu.  
Aata tirohia ki ngā  
kupu kei raro iho i te  
pouaka nei.*

[www.123rf.com/photo\\_6472305\\_a-digital-painting-of-the-red-planet-mars-and-2-of-it-s-moons-phobos-and-deimos.html](http://www.123rf.com/photo_6472305_a-digital-painting-of-the-red-planet-mars-and-2-of-it-s-moons-phobos-and-deimos.html)

Matapakitia, me te homai pūtaka, ngā wāhanga i te hanganga o ngā marama o Papatūānuku me Matawhero.

I tō whakautu me kōrero mō:

- te takenga mai o tēnei mea te marama
- ngā rerekētanga i ngā āmionga aorangi o Papatūānuku me Matawhero
- ngā rerekētanga o te tō ā-papa.

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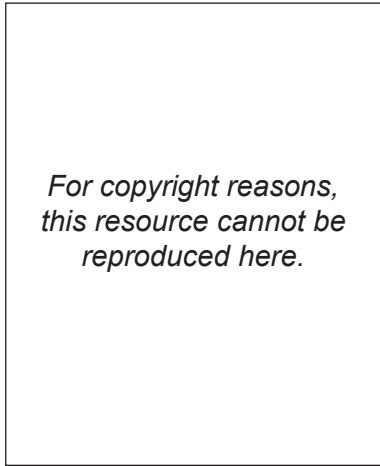
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### QUESTION THREE: MOONS OF MARS AND THE MOON OF EARTH

Earth has one large moon orbiting it, whereas Mars has two very small moons, Phobos and Deimos, orbiting it. Earth and Mars are similar in size, and in their positions in the solar system, but their moons were formed in very different ways.



<http://grin.hq.nasa.gov/IMAGES/SMALL/GPN-2000-001437.jpg>



[www.123rf.com/photo\\_6472305\\_a-digital-painting-of-the-red-planet-mars-and-2-of-it-s-moons-phobos-and-deimos.html](http://www.123rf.com/photo_6472305_a-digital-painting-of-the-red-planet-mars-and-2-of-it-s-moons-phobos-and-deimos.html)

Discuss, with reasons, the stages in the formation of the moons of Earth and Mars.

In your answer you should refer to

- origin of moons
- differences in the planetary orbits of Earth and Mars
- differences in gravitational pull.

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*English translation of the wording on the front cover*

## Level 2 Earth and Space Science, 2012

### 91192 Demonstrate understanding of stars and planetary systems

2.00 pm Tuesday 27 November 2012

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of stars and planetary systems.	Demonstrate in-depth understanding of stars and planetary systems.	Demonstrate comprehensive understanding of stars and planetary systems.

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 2–15 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.**

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