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SUPERVISOR'S USE ONLY

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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 2–8 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.

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QUESTION ONE: ALPHA MENSAE

Alpha Mensae is the brightest star in the constellation Mensa. It is a yellow-orange main sequence star like our Sun.

Explain in detail **each** of the stages (birth, life and death) in the life cycle of Alpha Mensae.

In your answer you should refer to:

- fuel type and use
- mass
- gravity
- energy changes.

You may wish to include a labelled diagram in your answer.

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QUESTION TWO: CANIS MAJOR

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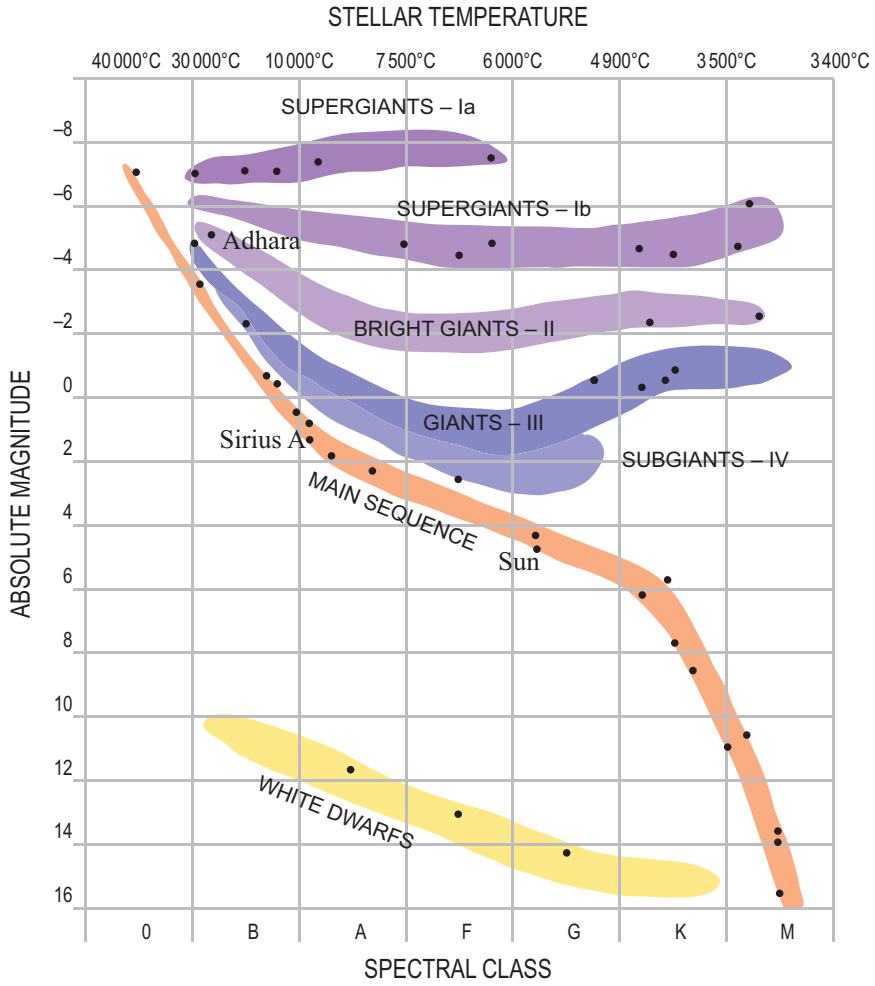
The constellation Canis Major, contains Sirius A, the brightest star in the night sky, and Adhara which is also a very bright star in our night sky.



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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QUESTION THREE: MOONS OF MARS AND THE MOON OF EARTH

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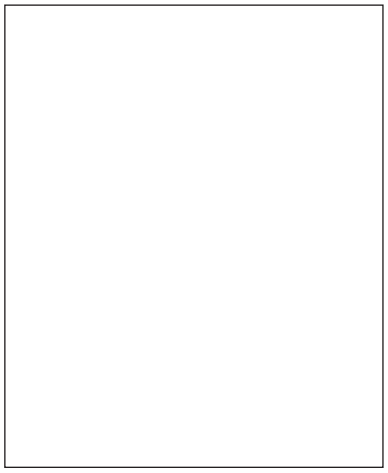
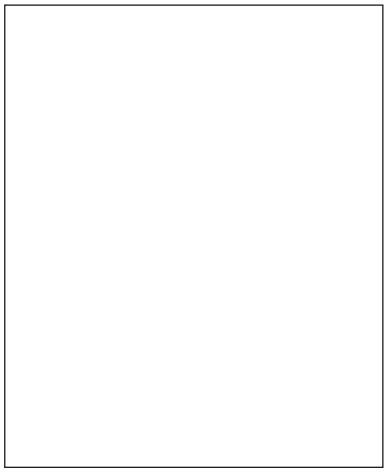
Earth has one large moon orbiting it, whereas Mars has two very small moons, Phobos and Deimos, orbiting it. Earth and Mars are similar in size, and in their positions in the solar system, but their moons were formed in very different ways.



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

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

QUESTION NUMBER

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