

Stars I

About 5000 stars can be seen with the naked eye and the longer we stay out watching the night sky, the more stars we will see. We see stars because their light results from massive nuclear reactions occurring within them. These reactions involve the fusion (fusing together) of hydrogen atoms into helium atoms. When the reaction occurs, and helium is formed, heat and light are also created.

- 1 As well as heat and light, what forms of electromagnetic radiation are emitted during nuclear fusion?

The brightest star in our galaxy is Sirius. Sirius is 26 times brighter than our Sun and is 8.7 light years away (which is just as well or we would all be toast!). Groups of stars forming recognisable patterns are called constellations. In the past, constellations were named by ancient Greek and Babylonian stargazers using a 'joining the dots' technique. Many of the shapes were imagined to resemble creatures from ancient mythology and were named accordingly.

- 2 The best-known constellations are those in the Zodiac. Name the 12 signs of the Zodiac.

Among astronomers, one of the most well known constellations is the spectacular Pleiades cluster located just over 400 million light years from our Solar System. The Pleiades is 50-60 million years old (a relative youngster!) and much of the gas from which it was formed still surrounds it. Although Pleiades' hundreds of stars have been seen through the telescope, only seven can be seen with the naked eye. These are affectionately called The Seven Sisters. Stars are still being formed in the Orion (the Hunter) constellation. Orion contains a massive red star called Betelgeuse. Betelgeuse (alpha Orionis) is about 500 times bigger than our Sun. Though it is 310 light years away, it is the tenth brightest star in our skies!

- 3 Give your own definition of a constellation.

Brighter stars are usually closer to us, but this is not always the case. Clouds of 'space dust' can often block out a star's light making it appear dimmer. It is easier to see stars at night, and the less light there is around you, the better you will see them. Stars continue to shine during the day, but the brightness of the Sun makes them too difficult to see.

Shooting Stars

It is not unusual to see what looks like a star shooting across the sky. As suddenly as the star appears, it vanishes. Shooting stars are meteors. A meteor is a piece of space rock moving at such a rapid speed that it heats to a burning hot temperature. Usually the meteor is incinerated in the sky and the tiny remaining dust particles disperse and are lost. Sometimes a meteor is either very large or does not completely burn up. In this case, a meteorite falls, occasionally landing on Earth. If the meteorite is particularly large, it can hit the ground at such a speed it creates an enormous crater. Asteroids are large fragments of rock scattered between Mars and Jupiter. Some can be up to 1000 km in diameter.

- 4 Where would you see the most stars, in the city or in the country? Explain why. _____
- 5 Draw the constellation found on the Australian and New Zealand flags.
Name it and join the dots to show how it came to be named.
- 6 What is another name for the 'Seven Sisters'? _____
- 7 Which is the brightest star in our galaxy? _____
- 8 Explain the difference between a meteor and a meteorite. _____

Research

- 9 The colour of a star can be some indication of its age. Would a cluster of bright blue/white stars be young or old? Explain your answer.
- 10 One hypothesis exists that dinosaurs (and other life) died out about 60 million years ago due to either a large asteroid or huge meteor showers hitting Earth. Write a short report on this theory.