

The Messier Objects

WHAT'S IN THE NIGHT SKY?

Bonus Material

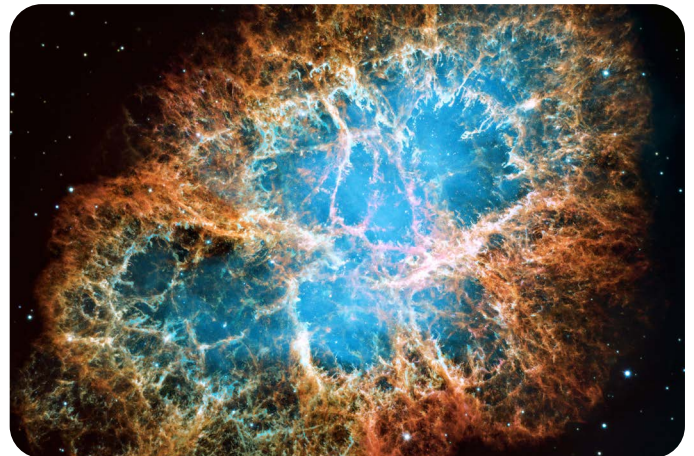
The Messier objects are a list of 110 deep-sky objects that were catalogued by a French astronomer called Charles Messier. He created this list in the 1700's when he was looking for comets. He wanted to keep track of the things he could see in the night sky, so he wouldn't confuse them for comets.

The Messier objects all have names that start with the letter M (for Messier), followed by a number. For example, M13 is a Messier object which can be found in the Hercules constellation.

Types of Messier objects

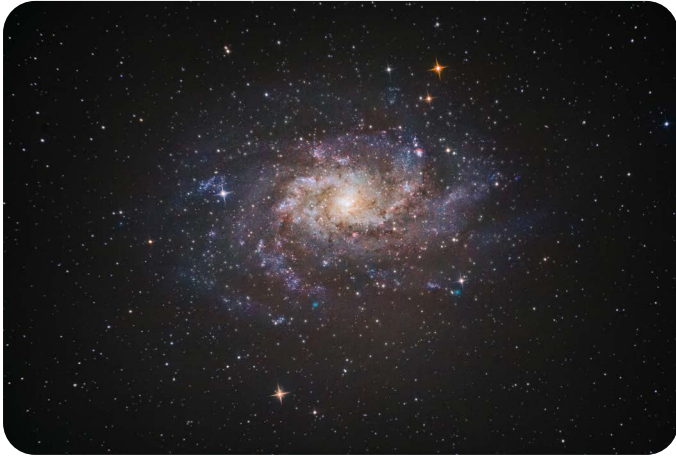


Globular Clusters – These are spherical (round) systems of ancient stars held together by gravity. They are dense systems, which contain thousands or millions of stars. From Earth, they look like small, blurry blobs in the night sky. The globular cluster in the picture is M13, which is found in the Hercules constellation.



Supernova Remnants – When a very large star (more than 5 times the size of our Sun) uses up all its fuel, it collapses. The collapse happens so quickly that the outer layers of the star explode! A supernova remnant is the hot, expanding cloud of gas that is given off in this explosion. The supernova remnant in the picture is M1, which is more commonly named the Crab Nebula.

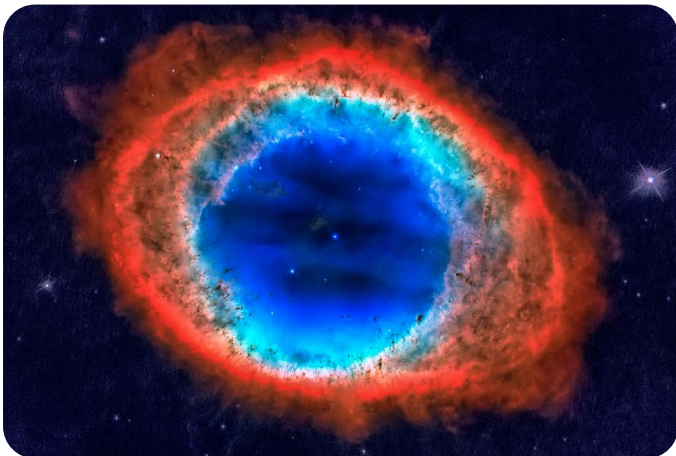
Types of Messier objects continued...



Galaxies – A huge collection of dust, gas, billions of stars and their solar systems (including planets). All of the other types of Messier objects are found inside galaxies. They can be a few different shapes (round, oval, spiral, barred), but the galaxy we live in (the Milky Way) is a spiral galaxy. The galaxy in the picture is also a spiral galaxy. It is M33, which is also called the Triangulum galaxy.



Open Cluster – An open cluster is a loose group of hundreds or thousands of stars. The stars in an open cluster were all formed in the same nebula and so are roughly the same age. The open cluster in the picture is M45, which is more commonly called the Pleiades, or Seven Sisters. It can be found in the Taurus constellation.



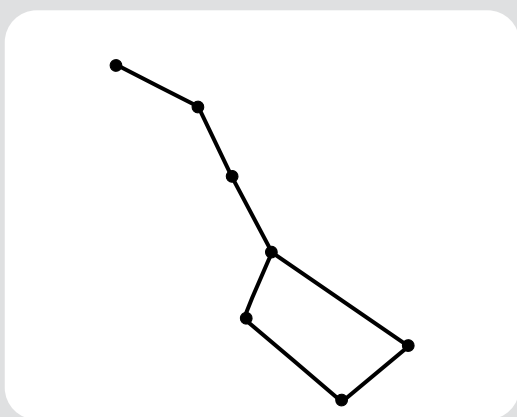
Planetary Nebula -- When a small star (like our Sun) uses up all its fuel, it expands (grows) and turns red as it cools down. We call it a red giant. The red giant will shed its outer layers, which become a glowing shell of hot gas and plasma called a planetary nebula. The planetary nebula in the picture is M57, also called the Ring Nebula, which can be found in the Lyra constellation.



Stellar Nurseries – A stellar nursery is a type of nebula (cloud of dust and gas) where new stars are forming. The stellar nursery in the picture is M42, which is also known as the Orion Nebula because it can be found in the Orion constellation.

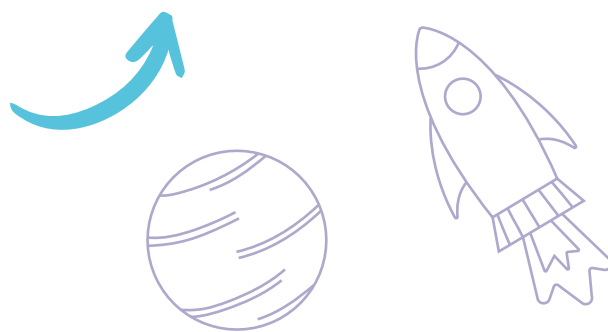
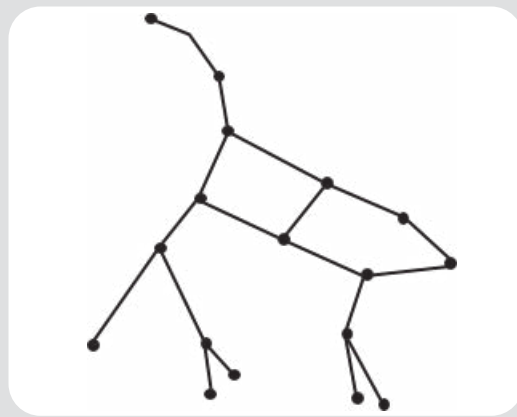
Using the Big Dipper and Boötes to find the Hercules constellation

Big Dipper (plough/sosban)



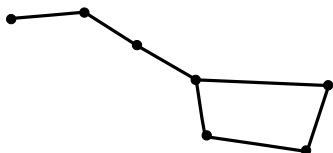
It is not an official constellation – it is an asterism, but is actually part of a larger constellation called Ursa Major, or the Big Bear.

Ursa Major (Big Bear)



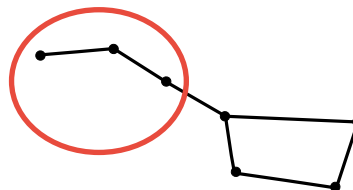
To find Hercules:

1



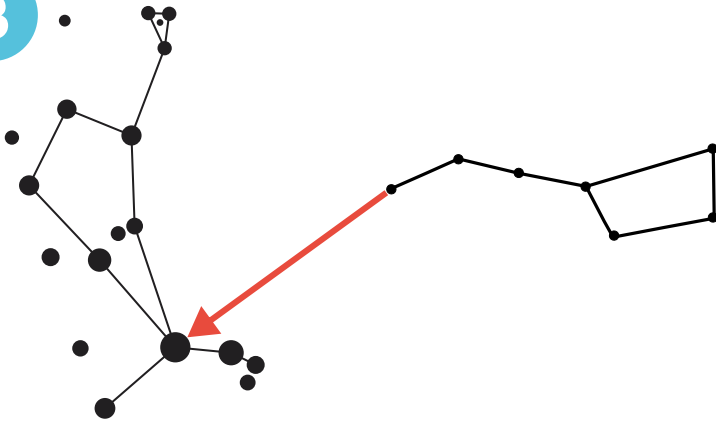
Find the Big Dipper. This asterism is made of 7 stars in a saucepan shape.

2



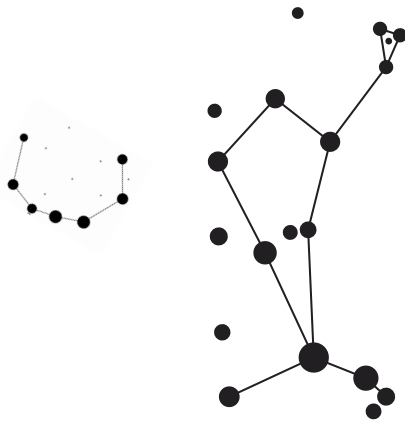
Locate the arc of the handle, which extends from the main 'pan'.

3



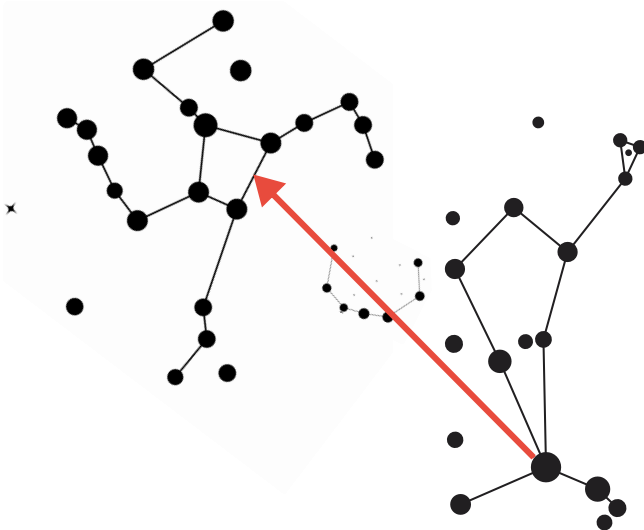
Extend this in a straight line to the next bright star. This is Arcturus! It is at the base of the 'diamond' or 'kite' shape which makes up the main part of the Boötes constellation.

4



If you look over the right shoulder of Boötes, you will find a semicircle of stars. This is the Corona Borealis, or 'Northern Crown'.

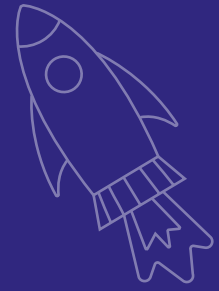
5



If you imagine a line from Arcturus to the Corona Borealis and extend this line, you will find the keystone of Hercules. This is four stars in a trapezium (a four-sided shape) which is wider at the top than the bottom. This is Hercules' body. His arms and legs stick out from the four corners of the trapezium.

Activity

Naming the stars and constellations

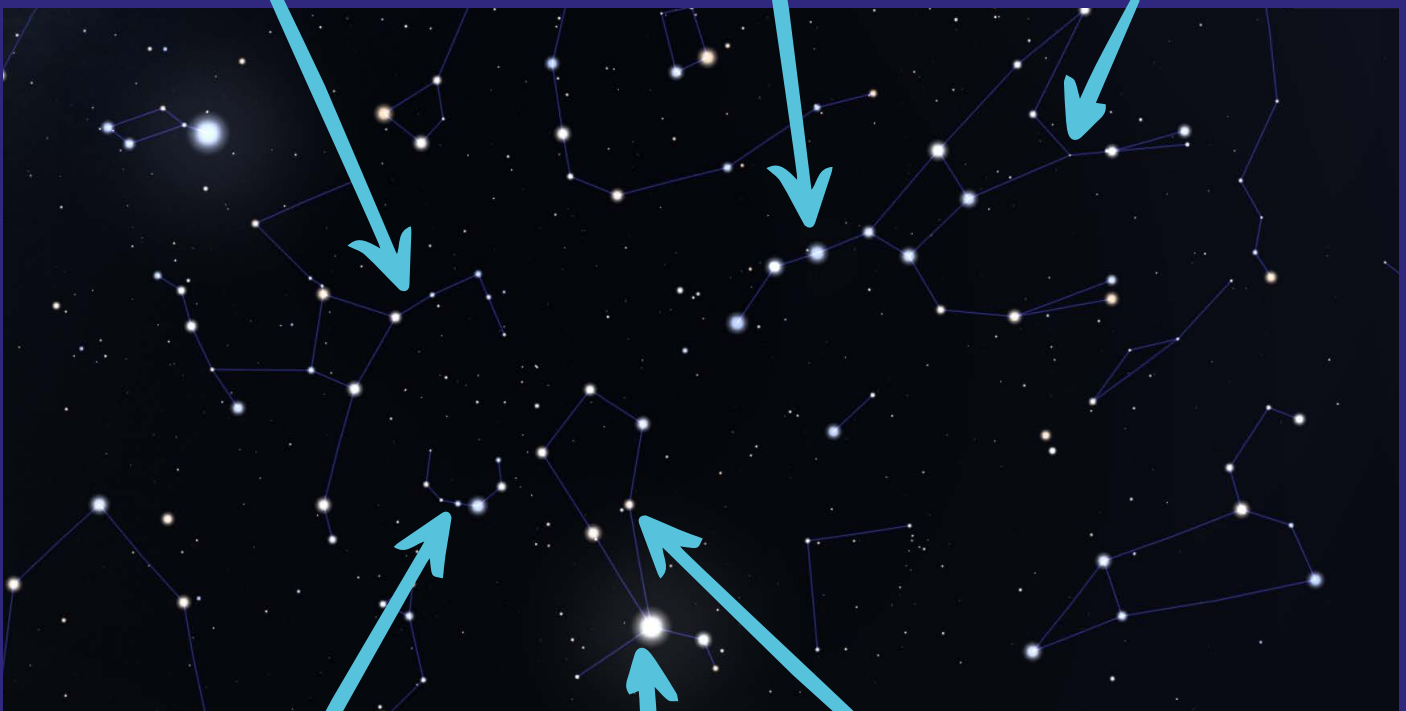


Add these labels to the picture below.

Arcturus
Corona Borealis

Big Dipper
Hercules

Boötes,
Ursa Major



Swansea University
Science for
Schools Scheme



Swansea
University
Prifysgol
Abertawe



(S4) Funded by the European Social Fund and the Welsh Government.