TEACHER RESOURCE

SCIENCE CONTENT/ CURRICULUM LINK
PLANET EARTH AND BEYOND – ASTRONOMICAL SYSTEMS. PHYSICAL WORLDS – PHYSICAL SYSTEMS.

STARDOME OBSERVATORY & PLANETARIUM
FACTS, RESOURCES AND ACTIVITIES ON...

ANCIENT ASTEROIDS
(PART ONE - INTRODUCTION)

Images sourced from Wikipedia Commons

The Greek word asteroid means 'star-like' but it turns out that asteroids are nothing like stars at all!

Stars (the Sun is 'our' star) are huge spheres of super-hot gas that generate heat and light.

Stars like our Sun have many objects moving around them in orbits including many millions of space rocks. The largest of these space rocks are called asteroids. Sometimes scientists call asteroids minor planets. Like the planets closest to the Sun, asteroids are made of rock and iron, but they are much smaller and are airless. They are different from comets which are mostly ice and rock.

Most asteroids orbit the Sun between Mars and Jupiter in a region known as the Asteroid Belt. There are more than half a million known asteroids in this region and probably many more. The 'belt' is a huge donut-shaped ring that extends all the way around the Sun. It's so large that there is a lot of empty space. Contrary to the scenes in movies depicting heroes dodging asteroids, one could land on an asteroid and not see another from that vantage point. In fact, many space probes have transited the belt without incident.

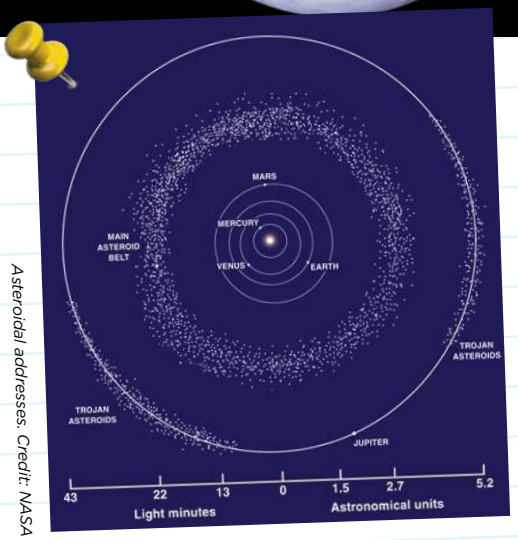
The first object discovered in this region was Ceres in 1801. Ceres is about 960 km across. Much smaller than our Moon, it was considered an asteroid, but it is still big enough for its gravity to have pulled it into a spherical shape. As such it fits into the International Astronomical Union's definition of a dwarf planet, and so it was promoted in 2006.

Not all asteroids are in the belt. Some, called Trojans, share the orbits of larger planets, the majority of them with Jupiter. Still others, known as Near-Earth asteroids have orbits that pass close by that of Earth.

Asteroids come in all shapes and many sizes. A few are nearly spherical (like Ceres) but most are irregular, pitted, and cratered. They range in size from Vesta, 530 km across, down to less than 10 metres.

More than 150 asteroids have been found to have tiny moons. There are also binary (double) asteroids in which two similarly sized rocks orbit each other. There are triple systems also!

Like comets, asteroids are ANCIENT and are thought to be leftovers from the formation of the Solar System 4.6 billion years ago. Scientists are eager to study them to try to gain a better understanding of the early formation of the Solar System.



Asteroidal addresses. Credit: NASA

Asteroids are ancient leftovers from the formation of the Solar System 4.6 billion years ago. If all the asteroids were gathered up and deposited in one place the resulting body would be smaller than the Moon.

Check out these other resources...

- Asteroids: Ancient Space Rubble: http://solarsystem.nasa.gov/planets/asteroids/
- Space.com fun facts about asteroids: http://bit.ly/1oToYPt

How tightly clustered are the asteroids?

How big are asteroids?

DISCUSSION POINTS

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ACTIVITY

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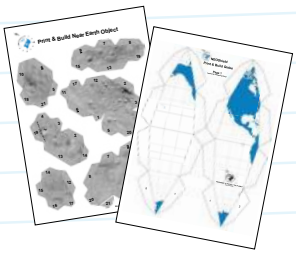
ASTEROID MODEL

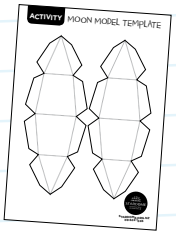
Get your class to create an asteroid, Earth and Moon with this craft activity.

You'll need:

- Scissors
- Glue or tape
- The Earth and asteroid template from http://www.neoshield.net/play-learn/overview/print-asteroid-and-globe/



- The Stardome Moon template.



Instructions...

Step 1 Download and print enough for each student.

Step 2 Using the blank template create a Moon. Our Moon has craters, valleys and the side we don't see, looks different to the side we do see. Let your students have fun creating their own Moon.

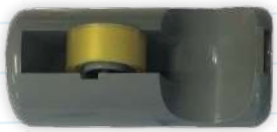
Step 3 Cut out the shapes for each object.

Step 4 Glue or tape the matching numbers together.

NOTE: These models are not to scale.

Cut...

Fold...



Stick!

Take a photo of your activity and send it to us. We'd love to see it! education@stardome.org.nz

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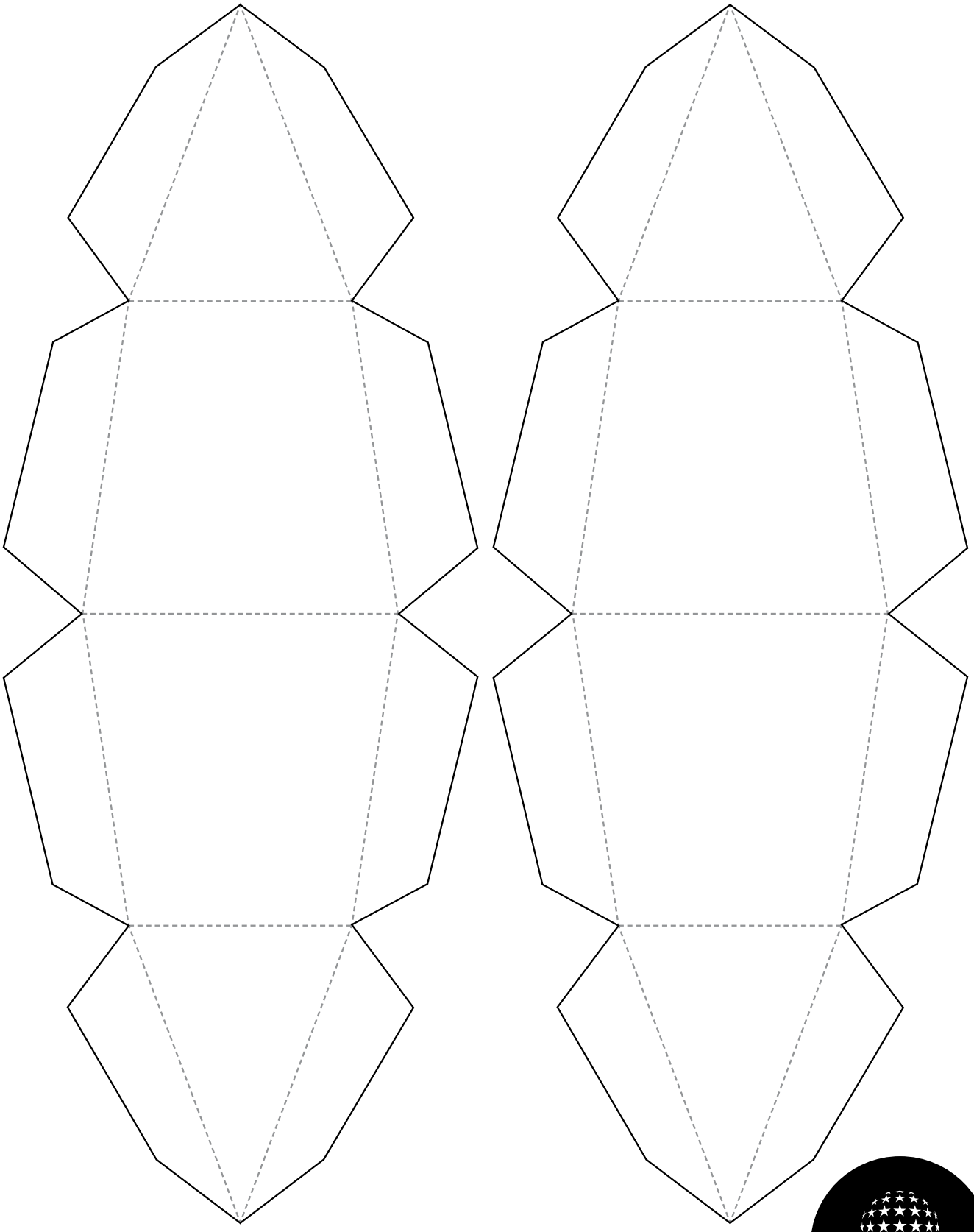
ACTIVITY

MOON MODEL TEMPLATE



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