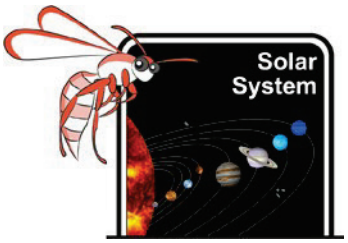
Planet Mnemonic – Teacher Notes



Our solar system consists of the Sun, Sol, four inner stony or terrestrial planets, a zone of rocky planetessimals called the Asteroid Belt, the four outer giant gas planets, and beyond that the zone of icy comets and dwarf planets known as the Kuiper Belt. Beyond all of this lies the Oort Cloud, containing more comets and dwarf planets.

Distances
The Kuiper Belt stretches out to 12 billion kilometres from the Sun. To simplify the problem of using multiple digits a unit based on the average distance of the Earth from the Sun is used when estimating distances within the Solar System. It is called the Astronomical Unit or AU

1AU = 149,597,870.70 kilometres

When it comes to describing greater distances, such as how far away another star is from our Sun, the time it would take for light to travel from that source to our planet is used. This is known as the Universal physical constant or c.

C = 299,792,458m/s or 1,080km/h

Stars
Stars are giant thermonuclear reactors that produce their own energy. Everything else in space is only visible because their surfaces reflect starlight. Our Sun is a star and we see the planets, asteroids, meteors and comets in our night sky because light from our Sun is reflected from their surfaces. Activities for teacher demonstrations or student activities are given in “Twinkle, Twinkle?”

Our ancestors viewed the night skies and recognised patterns and progressions of movement that allowed them to:

- Navigate on land and on sea.
- Recognise the seasons (when to plant and when to reap).
- Recognise when an eclipse might occur.

They also noticed some star groups formed patterns or constellations (con=together stella = star). These seemed to move as a group and could be used to indicate the passing of seasons or points of the compass. Some groups, like South American Indians and Australian Aboriginals, also noted shapes of voids where no stars appeared visible to human eyes such as the Emu, which lies near the Coal Sack, a dark shape in the Milky Way. Although the Coal Sack appears as empty sky it is actually caused by dust stopping light penetration.

Planets
In amongst these well-ordered celestial bodies were large bright bodies, which didn’t twinkle or follow the same pattern of seasonal movement as the others and “wandered around”. In Greek, planet means wanderer. Stars elsewhere in the Milky Way Galaxy have surrounding planets.
Early astronomers called any large body a planet, but as telescopes improved many more bodies were discovered. Your grandparents would have included Pluto in the planets, but in 2006 the International Astronomical Union declared that Pluto no longer qualified.
To be a planet, a body must:

1. Orbit a sun
2. Be large enough to take on a shape that is nearly round (most planets are slightly flattened towards their poles).
3. Clear the orbit of other planets.

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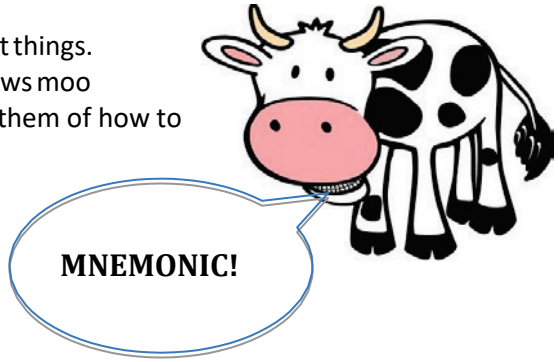
Alas, Pluto's orbit overlaps that of Neptune. It was declared a planetissimal and joins other dwarf planets found in the trans-Neptunian zone of the Kuiper Belt.

The four inner rocky planets of the solar system are Mercury, Venus, Earth and Mars. The four outer gas giants are Jupiter, Saturn, Uranus and Neptune.
Between these two groups lies a belt of smaller objects known as the Asteroid Belt. When the solar system was forming it may have started to assemble as another planet but the fragments would not bind together because of the influence of Jupiter's gravitational force. Most of the mass in the belt is made of the four largest asteroids and the rest is mostly space with a little dust.

Curtin University's "Fireballs in the sky" teacher's resource materials are available through the landing page at: http://fireballsinthesky.com.au/about/activities/. There are many fun, hands on and slightly messy activities and loads of background information about meteorites, meteors, asteroids and comets. They also have information about how students can participate in the Desert Fireball Network using its free App and their mobiles.

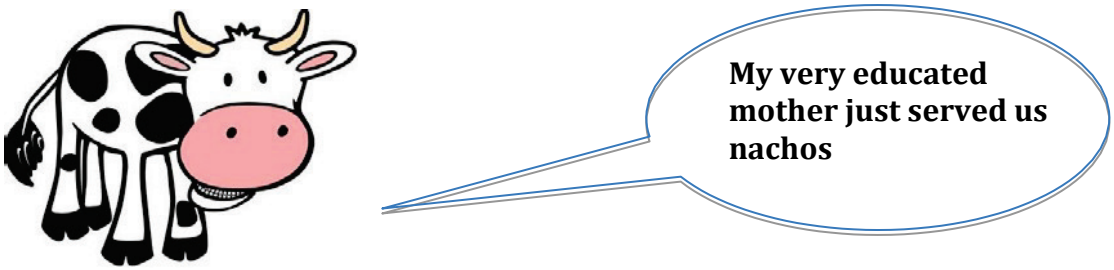
Activity - Planetary mnemonics

Mnemonics (Greek mnemon = mindful)
Mnemonics are phrases used to remember important things. Many primary schools use the science mnemonic "cows moo softly" because the first letter of each word reminds them of how to make sure their experiments are fair tests.



C = **C**hange one thing
M = **M**easure one thing
S = **S**ame. Keep everything else the same.

The International Astronomical Union suggested the following to remember the sequence of the planets from the Sun.



Students can be challenged to create memorable (but polite) mnemonics and they can be boarded and voted upon to find the most acceptable.

Write down the names of the planets moving outwards from the Sun.
Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune