



Discovering NEW PLANETS

Scientists are looking beyond our Solar System. They are discovering other things in the Universe. Some of these things might be new planets.



1. Xena – A new planet?
 In 2003 the astronomer Mike Brown discovered Xena.
Tenth planet found!
 In 2003 a team of astronomers discovered a distant, icy world very far away. They called it Xena.
 Xena takes 560 years to complete one trip around the sun. 'It has a surface just like Pluto's,' said Michael Brown. 'It's much, much farther away than Pluto right now, so it's going to be a much colder place to be. Not a very pleasant place to live, definitely.'

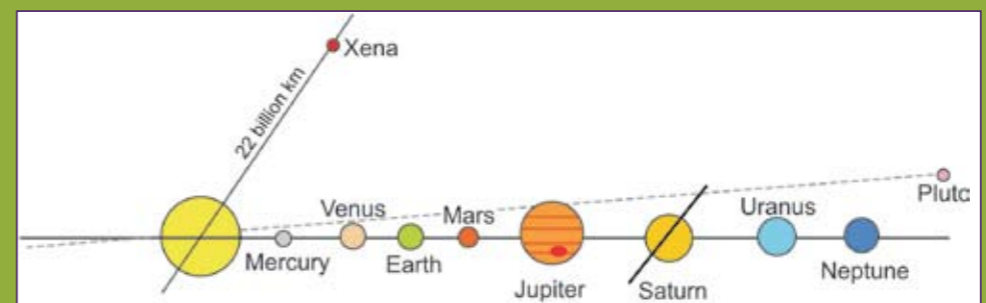
Gabrielle, Xena's moon

This is a drawing of what scientists think Xena looks like. This picture shows Xena, its moon and our Sun in the distance.

4. What are the Kuiper Belt and the Oort Cloud?
 Beyond Pluto's orbit there is an area of space dust, rocks and ice called the Kuiper Belt. It all orbits around our Sun.
 There is also a huge cloud around the Kuiper Belt, that is called the Oort Cloud. This Oort Cloud is billions and billions of km wide.

2. Pluto and beyond

Up to now scientists thought that Pluto was the furthest planet in our Solar System. Did you know that Pluto was only discovered in 1930? Astronomers have now discovered objects far beyond Pluto in an area beyond our Solar System, called the Kuiper Belt. The Kuiper Belt has many millions of icy objects. Some of these objects could be planets such as Xena, which was recently discovered.



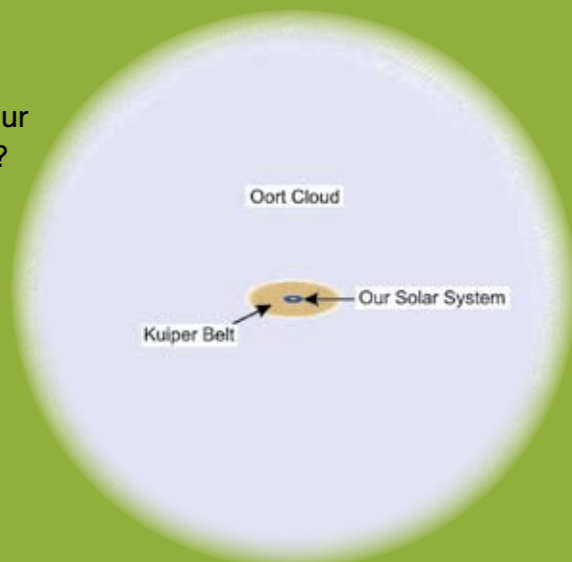
This diagram shows the planets of our Solar System. They orbit around the Sun in a flat disc. But, see how the 9th planet, Pluto, orbits at an angle and 'Xena', the 10th planet, orbits at a much bigger angle. (The drawing is not drawn to scale.)

SIZE COMPARISON (DIAMETER)			
Earth 12 756 km	Moon 3 476 km	Mars 6 788 km	Pluto 2 360 km
Sedna less than 1 600 km	Pluto's moon, Charon 1 250 km	Quaoar 1 250 km	Xena 2003 UB313 2 600 km

This diagram compares the sizes of some planets and moons with the newly discovered objects (Sedna, Quaoar and Xena).

5. Planets around distant stars.

Astronomers have found over 130 planets around other stars. Nearly all of these planets are bigger than Jupiter. They are giant gas balls. One day we may discover a planet with life on it. For life to exist on any planet, it has to be close to a sun. The planet should also be the right distance away from the sun so that it is not too hot or too cold. Scientists think it should also have water and be a rocky planet.



This diagram shows the Solar System and the Kuiper Belt inside the Oort Cloud

3. Other objects discovered in space—around our Sun

Large objects have been discovered in the Kuiper Belt. These objects cannot be called planets because they are smaller than Pluto. They became known as 'Kuiper Belt Objects' or KBOs. Two new and interesting objects were recently discovered in the Kuiper Belt.

Quaoar
 In 2002 astronomers discovered an object smaller than Pluto. It was called Quaoar, (pronounced kwa whar). Quaoar is a billion kilometres beyond Pluto.

Sedna
 Sedna was discovered in 2003. It is three times further away from the Sun than Pluto. It is about 2/3 of the diameter of Pluto. Sedna's orbit around the Sun takes about 10 500 Earth years.



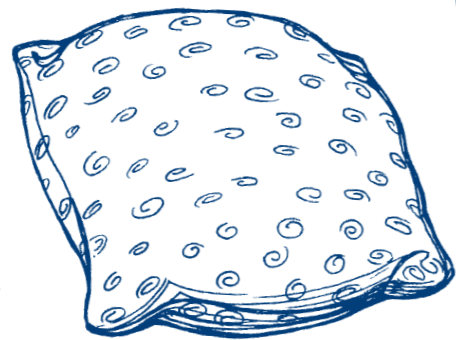
When we look into the night sky we cannot see where the Kuiper Belt or the Oort Cloud are because they do not give off light like stars.

But, scientists know they are there from using special instruments.

ACTIVITY 1. Modelling the Kuiper Belt and the Oort Cloud

Learning area: Natural Sciences

Thinking about size and position of the Solar System and Kuiper Belt in relation to the Oort Cloud



You will need:

- a) A small pillow (the size of a football or cushion)
- b) A ten cent coin
- c) A small bead

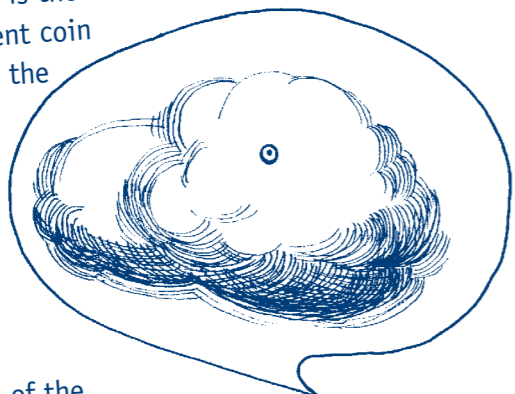
1. Imagine

- a) Imagine that the pillow is the Oort Cloud.
- b) Imagine that the ten cent coin is our Solar System and the Kuiper Belt together.
- c) Glue a small bead into the centre of the ten cent coin to represent our Sun.
- d) Now imagine that the ten cent coin is right inside – in the middle of the pillow. Our Solar System and Kuiper Belt are right inside the Oort Cloud in space.

2. **Make a drawing** to show our Solar System and Kuiper Belt inside the Oort Cloud.

3. **Label** the Oort Cloud, the Kuiper Belt and our Sun. Draw in where you think 'Xena' is.

4. **Write** to explain what the drawing is about and give any other interesting information about the Oort Cloud, the Kuiper Belt and the Solar System.

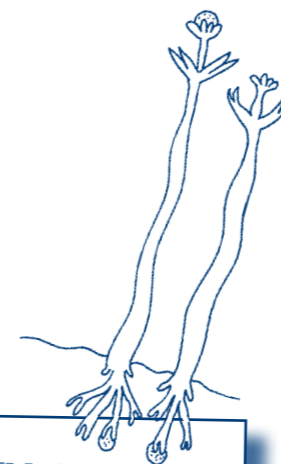
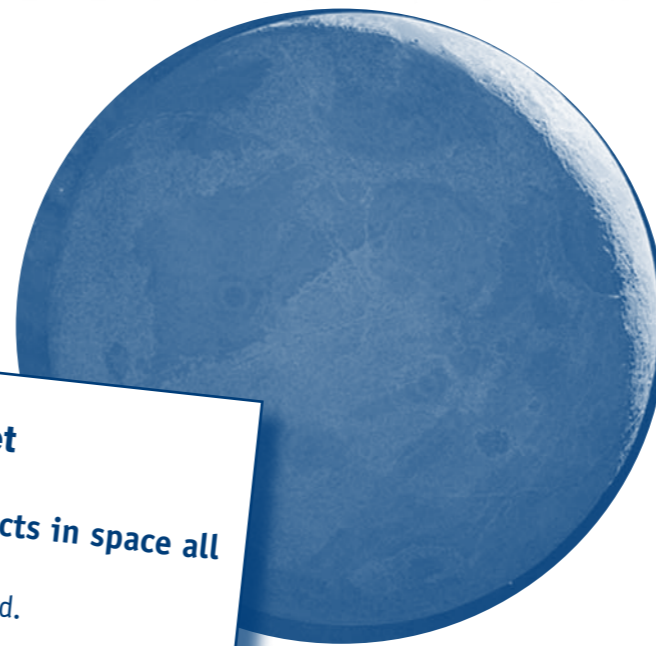


ACTIVITY 2. The tenth planet

Learning area: Natural Sciences

Scientists are discovering new objects in space all the time

1. Read about the tenth planet on the card.
2. Answer these questions:
 - a) Make your own 'Cool facts' box for the new planet using the information on the card. Is there enough information to make a complete list of cool facts? Why?
 - b) What name would you give the new planet? Why?
 - c) Why would the new planet be cold?
 - d) In what ways do you think this planet would be different if it was found between Mercury and Venus?

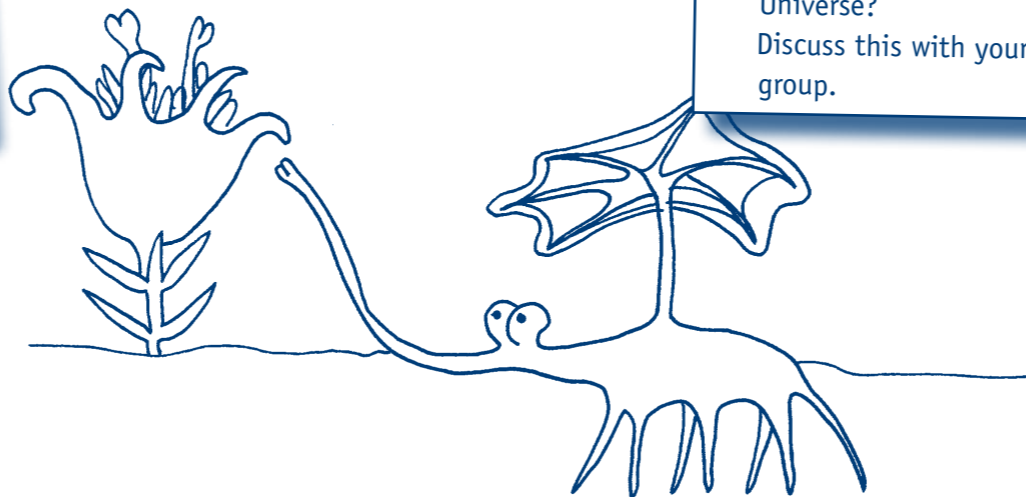


ACTIVITY 4. The possibility of life on other planets

Learning area: Life Orientation

1. How would you feel if scientists did actually discover life on another planet?
2. How would this discovery change the way we think about ourselves and the Universe?

Discuss this with your group.



ACTIVITY 3. Create your own new planet

Learning areas: Natural Sciences, Languages and Arts and Culture.

Imagining the conditions on a new planet

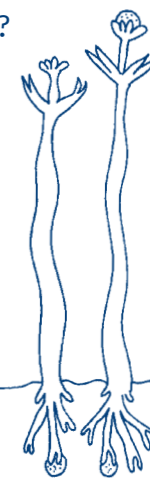
The conditions on a planet depend on its position in the Solar System.

We know that there are other planets that revolve around distant stars. In the future we may discover other small planets similar to Earth. These planets might be bigger or smaller than Earth. These planets may have more or less water than we have on Earth. These planets may have an atmosphere that is different to Earth's atmosphere.

You will need to look at information about other planets to help you.

1. Pretend that you are an astronomer who has discovered a new planet in our Solar System.
2. Write about your discovery for a scientific magazine. You will need to look at information about other planets to help you. You can also make drawings for your article. Include all the following information:

- The name of the planet
- Why it has this name
- Where it is situated (show this with a diagram)
- The distance from its sun
- The size
- What is the length of day and night?
- What is the length of the year?
- What is the planet made up of?
- What is the temperature?
- Is there water?
- Is there an atmosphere?
- Is it windy?
- Is there weather?
- Is there oxygen?
- Are there mountains and seas?
- Are there seasons?
- Are there any moons? What are they like?
- Are there any rings?



3. You have written about a planet that you have discovered.
 - a) Draw some plants and animals for your own planet. They must be your own ideas.
 - b) They must show that the plants and animals suit the conditions on your own planet.

On this page you will find a few ideas of plants and animals from an imaginary planet.