

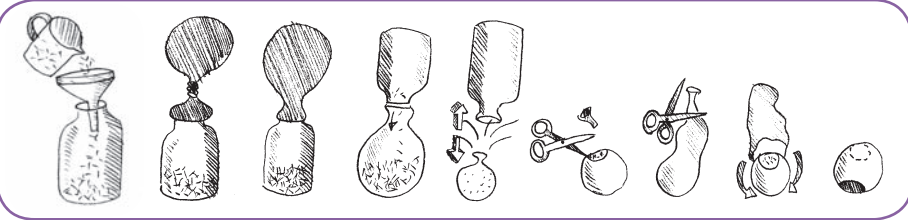
# PLANETS

## Gas planets (low density)

- 1 Cut off the neck of the balloon and then stretch the hole really wide, big enough to fit your fingers inside.
- 2 Ask your friend to get a big handful of stuffing and put it inside the balloon. Let the neck go and check the size. If it is not big enough, put more stuffing in.
- 3 Now get another balloon and cut off the neck. Stretch the second balloon over your stuffed balloon, making sure that the hole is covered by the second balloon.



## Rocky planets (high density)



- 1 Use the funnel and jug to fill the bottle with rice to the marked line.
- 2 Blow up a balloon, twist the neck to stop the air escaping, and put it over the top of the bottle. You will probably need a friend to help you!
- 3 Turn the bottle upside-down and shake the rice down into the balloon (hold on to the bottom of the balloon so that it doesn't come off).
- 4 Carefully take the balloon off the bottle and let the rest of the air out.
- 5 Cut the neck off the bottle (above the rice level). Now cut the neck off a second balloon and stretch it over the first, making sure that the hole is covered.



If you could design a planet...

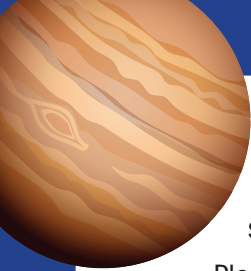
what would it be made of?

what would it look like?

what would be on the surface?



Make a planet today – a solar system tomorrow!



## What are planets made of?

Planets are all around us – there are eight of them in our solar system and many more around stars in the rest of the universe.

Planets are many different colours and sizes, weigh different amounts and can be made up of different things too. We think that all the material that makes up the planets was formed inside stars billions of years ago. Smaller planets are often made of rock and larger planets are often big balls of gas.

Planets are lots of different weights. Even the ones that are the same size can vary in weight – this is called density. High-density planets are very heavy for their size, and low-density planets are very light.

For example, in our solar system Earth and Mars are small, high-density rocky planets; Jupiter and Saturn are large, low-density gas giants.



## Decorate your planet

### What is your planet like?



Use the pens to decorate it.

Cover rocky planets in sand.

Cover icy planets in glitter.

### What is the atmosphere like?

Invisible! Don't do anything.

Thick and cloudy – use wisps of cotton wool.

Thin – use cling film. Strips or folds in the cling film will look like swirls of gas.

## Make a planet

### What colour will it be?

Get two balloons that colour.

### How dense is your planet?

High density – filled with rice  
Low density – filled with stuffing

### Follow the instructions on the back to make your planet

## What is your planet called?

Make a solar system at home. Experiment with what you fill your planet with for different densities. For gas planets you could blow a balloon up or fill it with water, but be careful not to burst it!

### Want to find out more?

Visit [www.physics.org](http://www.physics.org) and search for “planets” for lots of great sites. Go to [www.nineplanets.org/tour](http://www.nineplanets.org/tour) for a tour of our solar system and [www.planethunters.org](http://www.planethunters.org) to search for a planet yourself!

## What is on a planet's surface?

Most solid planets have atmospheres. This is a layer of gas that wraps around the planet. On Earth, the atmosphere protects us from the harmful effects of the sun. However, the thickness of the atmosphere is tiny compared with how big the Earth is – the atmosphere is about 70 miles thick, and the distance from the centre of the Earth to the surface is nearly 4000 miles!

Underneath their atmospheres, planets have lots of different surfaces. Earth is mostly covered with water, rock, soil and ice (and a lot of concrete, since humans came along). Mars has a red rocky surface. We haven't found it yet, but somewhere in the universe there might just be a planet covered in chocolate...yum!

