

Space Badge

What you need to do to achieve your **Space Badge**:

- ☐ Point out some of the things you can see in the night sky. It could be stars, the moon or planets.
- ☐ Point out and name at least one constellation you can see.
- ☐ Name the eight planets in our solar system and draw or make a model of one of the planets. You could use papier-mâché to make your model.
- ☐ Find out about a space mission, an astronaut or a planet in our solar system.





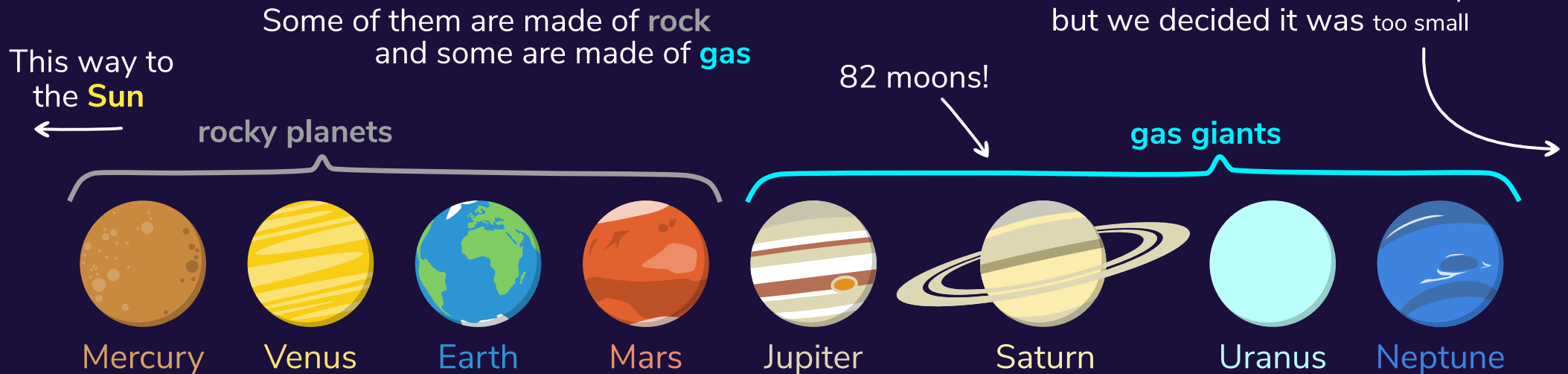
There are **eight** planets in our solar system

(and five dwarf planets, but they're less interesting)

Even though Mercury is closest to the Sun,
Venus is the **hottest** because of its greenhouse-like atmosphere

Some of them have lots of **moons**
and some don't have any at all!

Pluto used to be the ninth planet,
but we decided it was too small



People often come up with mnemonics to help them remember the order of the planets. These are sentences in which the first letter of each word is the same as the first letter of each planet:

My Very Educated Mother Just Served Us Noodles

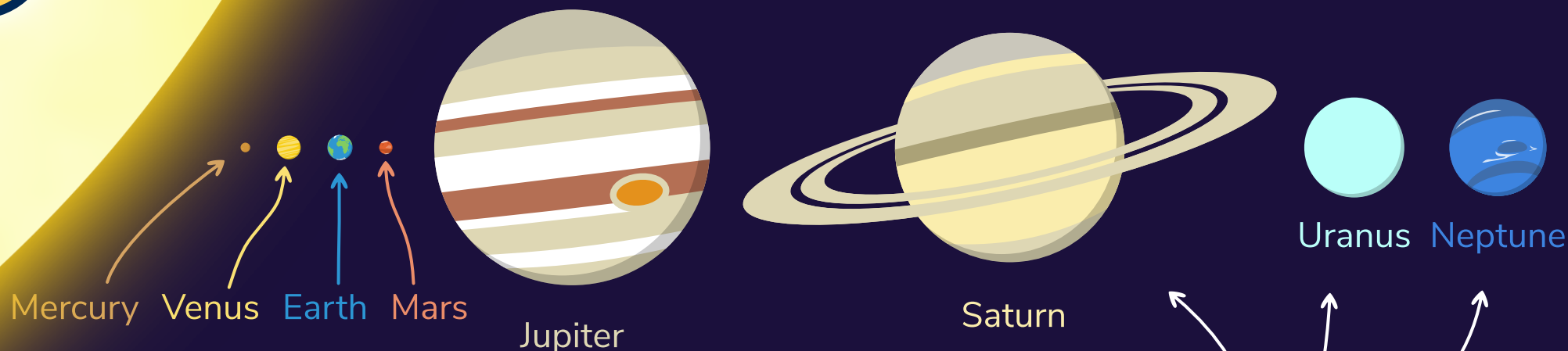
That one's quite well-known, but I think it's a lot more fun to make up your own one...

My Very Excitable Mouse Jumped Straight Up Nelson's column

It doesn't matter if your mnemonic doesn't make perfect sense, so long as you can remember it!



But the planets aren't all the same size ...



... and they're not this close together either!

Planet	Distance from the Sun
Mercury	1.9
Venus	3.6
Earth	5
Mars	7.6
Jupiter	26
Saturn	48
Uranus	96
Neptune	150

You will need:

A roll of toilet paper

A pencil or pen

If you were to spread the planets out at this scale, you'd have to walk 1.5km to get from the Sun to Neptune!

The table to the left shows the relative distance from the Sun to each of the eight planets in toilet paper sheets.

As you unroll your toilet paper, count the sheets and use your pencil to mark whenever you reach one of the planets. It turns out they're a lot further apart than you might think...



There's plenty to look out for in the **night sky**:

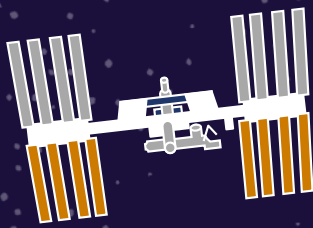
Polaris - The Pole Star

Follow the line from two of the stars in Ursa Major

The pole star is directly above the North Pole, so you can use it to find out which way is North!

The International Space Station

Visit spotthestation.nasa.gov to see when it will be visible



The Moon

The moon is tidally locked, which means that the same side is always facing the Earth.

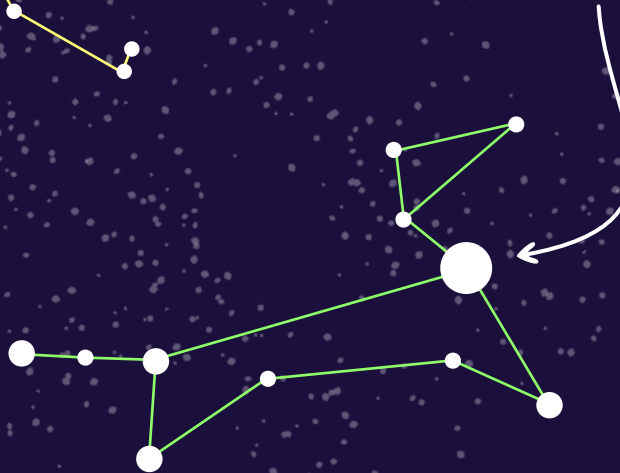


Ursa Major (the Great Bear)

Look out for the saucer-shape that makes up the bear's head

Canis Major (the Great Dog)

Look out for Sirius, the brightest star in the sky!



Orion the Hunter

Look out for the three bright stars that make up his belt





Mars is the closest planet to Earth

Mars is known as the **red planet** because of the iron minerals in its soil which go rusty and turn red. We think that there used to be lots of **water** on Mars, but now it's all frozen in ice caps.



Mars

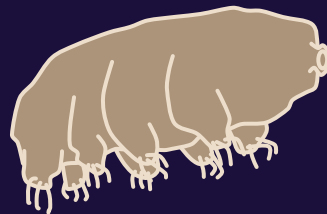
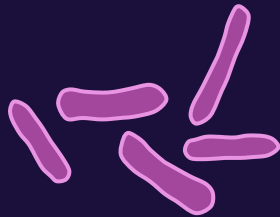
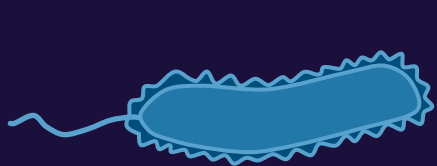


Earth



Because Mars is sixty million kilometres away, it will take astronauts **nine months** to get there! There won't be enough space for showers on the spaceship, so the astronauts will have to wash themselves with cloths and cleaning solution.

When they get to Mars, the astronauts will need to generate **oxygen** from **carbon dioxide** through a process called electrolysis. They will also need to put up a kind-of high-tech tent to live in, which will have been brought to Mars by unmanned landers.

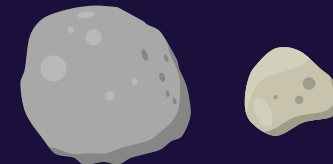


The astronauts will be looking for signs of tiny **microscopic organisms** which could still live on Mars today!

Mars has two moons, **Phobos** and **Deimos**, which were named after characters from Greek mythology. They're a lot smaller than our moon, so they look all wobbly rather than being spherical.



← This is how big **Phobos** and **Deimos** are compared to our moon...



...and at this scale, our moon would be 3.5m wide!