



making physics matter



Age  
9-11  
years

# Phizzi practical

## Solar system in my pocket



Credit-NASA

### Introduction

The purpose of this activity is to challenge simple models we have of the universe. Although the planets are not to scale in this model and are positioned in a line rather than at different locations in their orbits, it helps us visualise the huge distances between the Sun and the planets. This is a great activity to use in the classroom when introducing a research enquiry to find out more about the solar system.

### Scientific explanation

Our solar system comprises our star, the Sun, and all the planets, dwarf planets, comets, and asteroids that are held in orbit by the Sun's gravitational field. The planets, comets and asteroids all travel around the Sun in elliptical (oval) orbits.

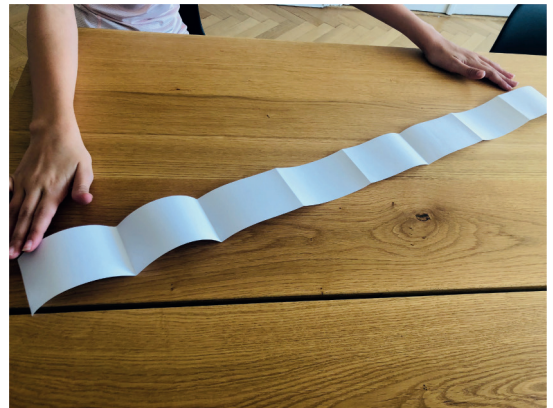
Whenever we see a picture or a model of our solar system the distances and sizes are never to scale. This is because space is so vast! Even if the distances of the planets are drawn more-or-less 'to scale', the sizes of the planets are not shown in proportion – if they were, they'd mostly be too tiny to see.

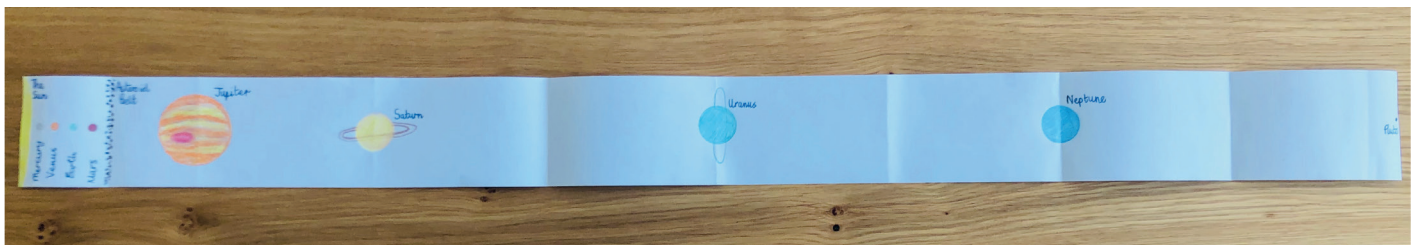
### Equipment needed

- Till roll
- Scissors
- 4 small coloured circular stickers
- 4 large coloured circular stickers
- A yellow pen and a black pen

## Method

1. Take a strip of till roll approximately one metre in length. Fold it in half once, then in half again and finally in half for a third time so that when you unfold the till roll it has been divided into eighths.
2. At the left-hand end of the till roll draw and label a curved yellow line, the width of the paper, to represent the Sun – our nearest star.
3. At the right end of the till roll draw a small black dot and label this Pluto – the largest dwarf planet.
4. Place a large pale green sticker on the fold exactly half way between the Sun and Pluto. Label this Uranus.
5. On the fold that is two eighths from the right-hand end, half way between Pluto and Uranus, place a large blue sticker. Label this Neptune.
6. On the fold that is two eighths from the left-hand end, half way between the Sun and Uranus, place a large pale-yellow sticker. Label this Saturn – use a pen to draw Saturn's rings on to the sticker.
7. On the fold that is one eighth from the left-hand end, half way between the Sun and Saturn, place a large orange sticker. Label this Jupiter.
8. The first eighth of the till roll, the section between the Sun and Jupiter, is where all of the inner planets lie. Fold this first eighth in half and then open it out – on this fold, half way between the Sun and Jupiter, use a black pen to draw a band of black dots. Label this the asteroid belt.
9. In the space between the Sun and the asteroid belt, place four small stickers in a line. Put a grey sticker nearest to the Sun and label it Mercury, then place an orange sticker and label it Venus. Next place a blue sticker and label it Earth, and finally a red sticker and label it Mars.



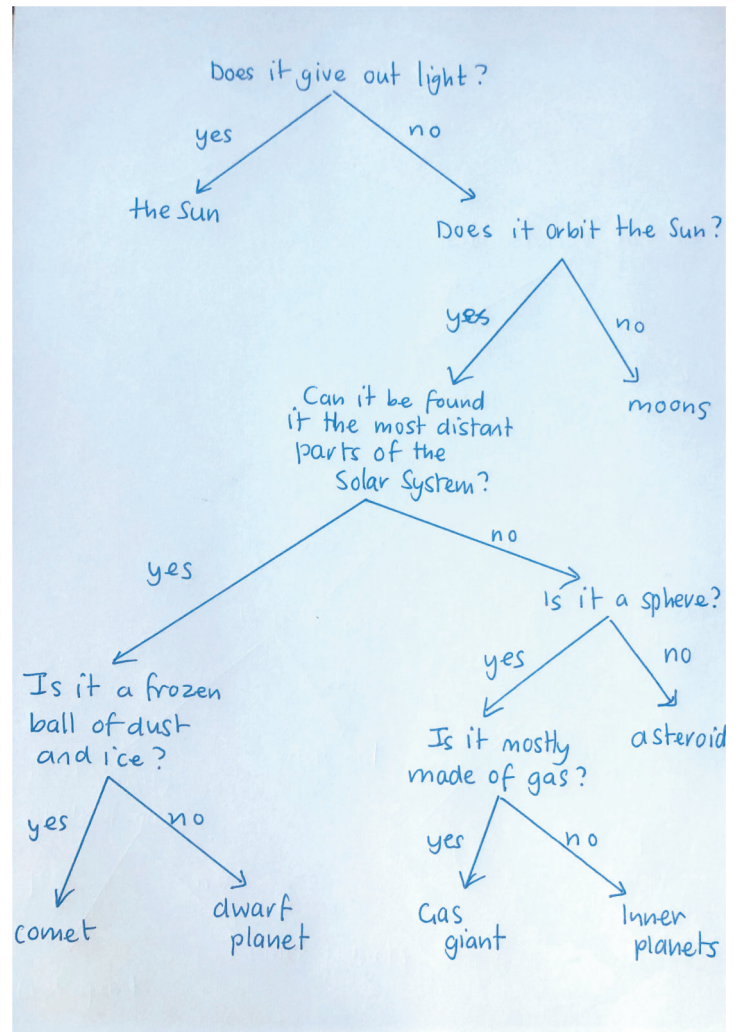


## Working scientifically

This activity could be used to support a research enquiry where children investigate facts about each of the planets and add these to their pocket solar system. Research could include finding out the actual distance between the Sun and each of the planets and adding this information to their models.

Alternatively, this activity could be used to support pattern seeking enquiries where children collect various types of data on the planets and add this to their model. This could include surface temperature, circumference or time to orbit the Sun. They could then look for patterns in this data by drawing various graphs and charts to explore questions such as 'how is the surface temperature of a planet related to its distance from the Sun?'.  
To develop observation skills, encourage children to go with a parent or carer just after dark to look up at the night sky to observe planets. They appear just before the stars, as they reflect the Sun's light brightly. If the conditions are right, this activity could be developed further with children keeping a diary of the position of a planet over a series of evenings.

Children could also develop identification and classification skills by finding ways to group objects in the solar system and comparing the features of different groups. This could lead to the creation of a branched identification key for all of the objects on the pocket solar system.



## Teaching tips

- Emphasise to the children that although the distances are approximately to scale in this model, the size of the Sun and planets are not to scale. If you want to address the relative sizes of the planets as well, take a look at our Phizzi practical – Playdough planets: [www.ogdentrust.com/resources](http://www.ogdentrust.com/resources)
- For a possible homework activity, ask children to take their pocket solar system home and share their learning with as many members of their family as they can.