

Pack 1

Maths/Science project – The Solar System

This might seem a little project, but you'll need some space to get it set-up properly – I'd recommend the garden (especially if it is nice weather).

The aim of the project is to create a scale version of our solar system! It is tricky – the solar system is monstrously big (unbelievably so).

To complete the project you will need 9 roundish objects (varying sizes will be fine – we can deal with planet size as our next project); a tape measure (raid someone's toolkit) or a ruler and lots of patience. You will also (amazingly) need around 15-20 metres of space (if you don't have this then get as far as you can in the space you have!).

As you should already know, our solar system revolves around the sun. All planets are in an orbit around this. So, step one is to place the sun at the start of your space (one end of the garden). Use your largest object and then measure all distances from here!

Step 2 requires some maths! To make it a little easier, scientists and astronomers use a unit called an 'astronomical unit' (AU) to measure distance in space. It is based on the fact that the earth is, on average, 1 AU from the sun during its orbit. Amazingly, 1 AU is something like 150,000,000km (that is equivalent to going around the earth around 3700 times!). There are planets closer to the sun than the earth (Mercury and Venus) which will be less than 1 AU, and most that are further away (more than 1 AU). I am going to suggest that you use a scale of $1 \text{ AU} = 0.5\text{m}$ (which is 50cm). The first thing you will need to do is complete the conversions below. This means you need to times every AU value by 0.5 in order to get the distance away from the sun in terms of your scale.

Planet	Distance from Sun in AU	Converted distance in m
Mercury	0.38	
Venus	0.72	
Earth	1	0.5
Mars	1.5	
Jupiter	5.2	
Saturn	9.5	
Uranus	19.2	
Neptune	30.1	

If you find this too easy then go with a smaller scale like $1\text{AU} = 0.25\text{m}$ (this is also handy if you've got a small garden!).

Once you have your measurements, find your space and lay out each circular object at the appropriate intervals. Now go back to the Sun and look at your solar

system – Neptune should seem a fair way off! Try to label each planet and then take a photo from the Sun looking outwards ready to send to me! Even better, get one from an upstairs window and edit it in order to label it.

Extra Project – Creating a mnemonic

It is helpful to be able to remember the order in which the planets come in terms of their distance from the Sun. In order to this, I would like you to come up with your own mnemonic (a memory device with letters). This works a little like an acrostic poem – you take the first letter of each planet as the start of each line. You can go with one word lines or create an actual poem (but you must learn it by memory). Test out your parents – do they know the order?? Teach them your mnemonic if not. Record it or write it down – you can share it with me. I'll share mine with you at some point – it is pretty bizarre but I've remembered it since Year 7 so it has clearly worked! The template below might help:

M		(Mercury)
V		(Venus)
E		(Earth)
M		(Mars)
J		(Jupiter)
S		(Saturn)
U		(Uranus)
N		(Neptune)

Wellbeing/Something different project – Have some fun with the stars!

Depending on bedtimes, this is a great time of year to go stargazing (the sun is still setting early). Plus, if we have good weather then we have a number of clear nights ahead of us.

I am not an expert on stars (I just like them) but with the help of a parent you might be able to find the north-star. My tip is to find the plough (or frying pan if you prefer). Join the stars at the non-handle end together and carry on upwards in the night sky on the same line. The next star on this line should be North – check with a compass.

Enjoy these projects and involve your family with them – spending time together has to be the biggest bonus of this unusual situation.