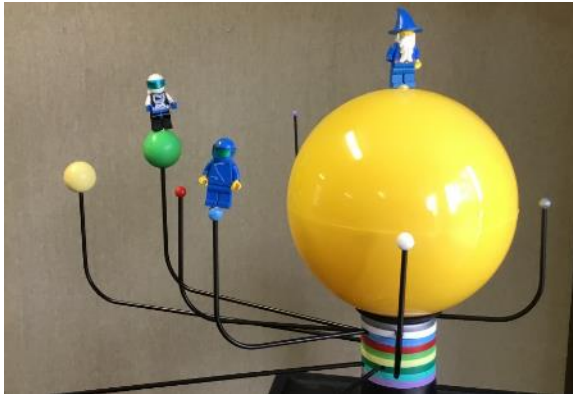


How big is space?

This virtual solar system activity builds a 1/ 10 billion scale model of our solar system.



Many models give the impression that we are quite close to our neighbours. The model pictured shows the orbits of the planets, however it gives a very misleading idea of comparative sizes and distances.

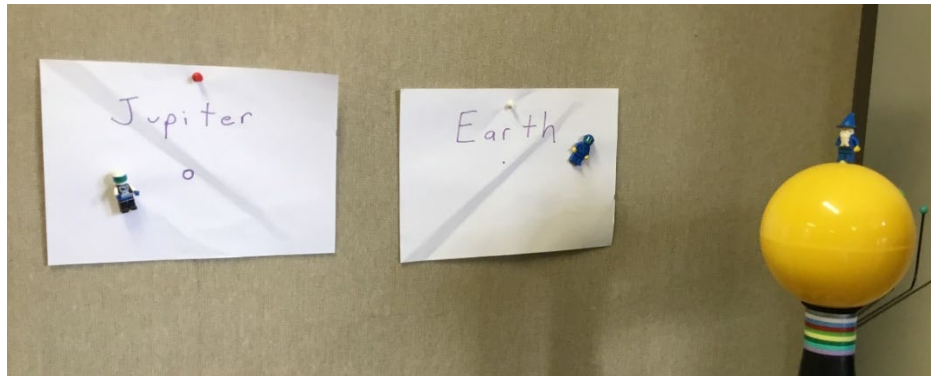
The solar system in this activity will use a sun roughly this size, about 14 cm across. Once we scale up the distance our Lego astronauts will have further to travel

Step 1: Collect the information in the table below, it lists the average distances and diameters of the solar system bodies and does the maths to divide them by 10 Billion.

The information can be found on the internet or in many books. One good interactive solar system model that has the detail is the one at <https://www.solarsystemscope.com/>

Object	Diameter	Scale size	Average distance	Scale distance	Distance moving out
Sun	1.39 M km	140 mm			0
Mercury	4879 km	0.5 mm	57.9 M km	5.8m	5.8m
Venus	12104 km	1.2 mm	108 M km	10.8m	5m
Earth	12756 km	1.3mm	150 M km	15 m	4m
Mars	6792 km	0.7mm	229 M km	22.9m	7.9m
Jupiter	142984 km	14.3mm	780 M km	78m	55m
Saturn	120 536 km	12mm	1434 M km	143m	65m
Uranus	51118 km	5mm	2880 M km	288m	145m
Neptune	49528 km	5mm	4500 M km	450m	162m
Pluto	2374 km	0.2 mm	6225 M km	622 m	172m
Our moon	3476 km	0.35 mm	385169	4 cm	

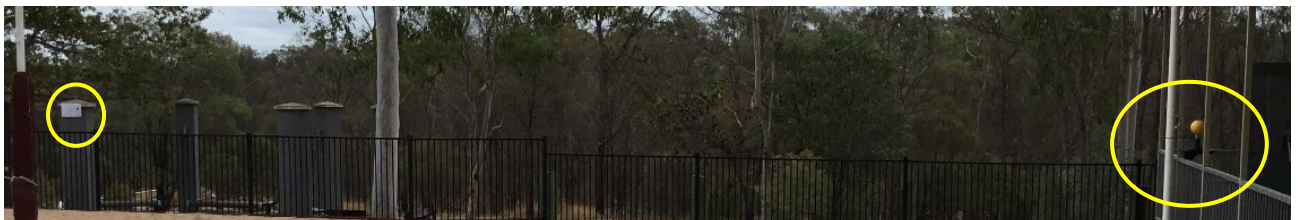
Step 2: Create a poster for each planet. The planet should be the scale size from the data chart, our Earth is not much bigger than a grain of rice. Students can add information they have found about their planet and make their posters colourful.



Step 3: Using a long tape measure or your paces set out the planets, either with a person to hold them or stuck to something. Yes that is the earth way over there, about 15 metres away. Jupiter is no longer visible at 78 metres.



Step 4: Ask some questions. What would the sun look like from planets? Why are Venus and Mercury only visible at sunrise or sunset? What is special about the planets in close or further out? What is an orbit? Do some orbits for different planets or just be amazed at how small we are in comparison to our own solar system. Just in case someone suggests space travel at this scale a space ship moves at about 1 mm an hour and the closest star would be over 1000 km away.



This activity is particularly relevant to Year 5 science students who will be studying the solar system.