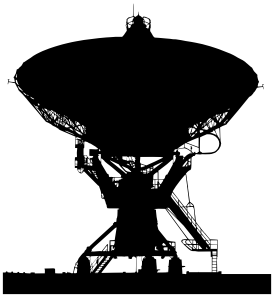
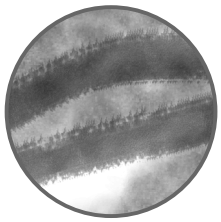
Build your own Planet System Teachers worksheet

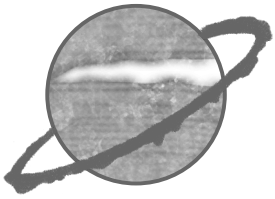


Planets outside our Solar System are called **exoplanets**. Far-off **planetary systems** can be found orbiting distant stars using the **transit method** (https://exoplanets.nasa.gov/faq/31/whats-a-transit/), where planets orbiting a star pass between us and the star, causing the brightness of the star to dip. This can be demonstrated with a torch or a lamp (the "star") and an apple or tennis ball (the newly discovered "planet"). Multiple dips in brightness can indicate multiple planets. Your students are astronomers who have just made this discovery and now must fill in a factfile on the new planetary system they have observed!

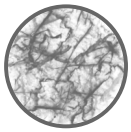


Students can draw or paint one of their planets and describe what it would look like. Use some sattelite imagery of Earth and other planets and moons to inspire: https://earth.esa.int/web/guest/images-of-the-earth, https://solarsystem.nasa.gov/.

Is their planet a **rocky planet** or a **gas giant**? How close is it to the star? Students can talk about whether their planet would be **close to the star and hot**, or **far away and icy** - if you were sending a crewed mission to build a planetary base on the planet, what might you need?



With older students, this can be tied into learning about Earth's atmosphere (https://www.esa.int/Enabling_Support/Preparing_for_the_Future/Discovery_and_Preparation/Earth_s_climate_and_atmosphere) and a comparison to the different atmospheres on other planets. **Would they need a space suit to visit their planet, or would they be able to breathe the air?**



In our Solar System, the small, rocky, terrestrial planets (https://www.bbc.co.uk/bitesize/topics/zdrrd2p/articles/ztsdj6f) all orbit close to our star, while the gas giants are further away. This is believed to be due to the temperature gradient across the planetary disk during planet formation. You can read a little bit about terrestrial exoplanets in the **Trappist** system here: https://exoplanets.nasa.gov/what-is-an-exoplanet/planet-types/terrestrial/. In some exoplanet systems, gas giants have been found much closer to their stars than we expected: these are called **Hot Jupiters**. How did these gas planets, which we thought only formed in the cold, outer edges of planetary systems, end up so close to their stars? We're still not sure, but one theory is that they did form further out and moved in closer to the star over time (https://exoplanets.nasa.gov/what-is-an-exoplanet/planet-types/gas-giant/).

Younger students might enjoy drawing out their planets on the spiral template and cutting along the grey dashed line to make a 3D planetary system mobile that can be pinned/bluetacked/sellotaped to the ceiling or attached to a string from the central star (lots of examples of similar spiral mobiles can be found by searching "spiral snake mobile" online).