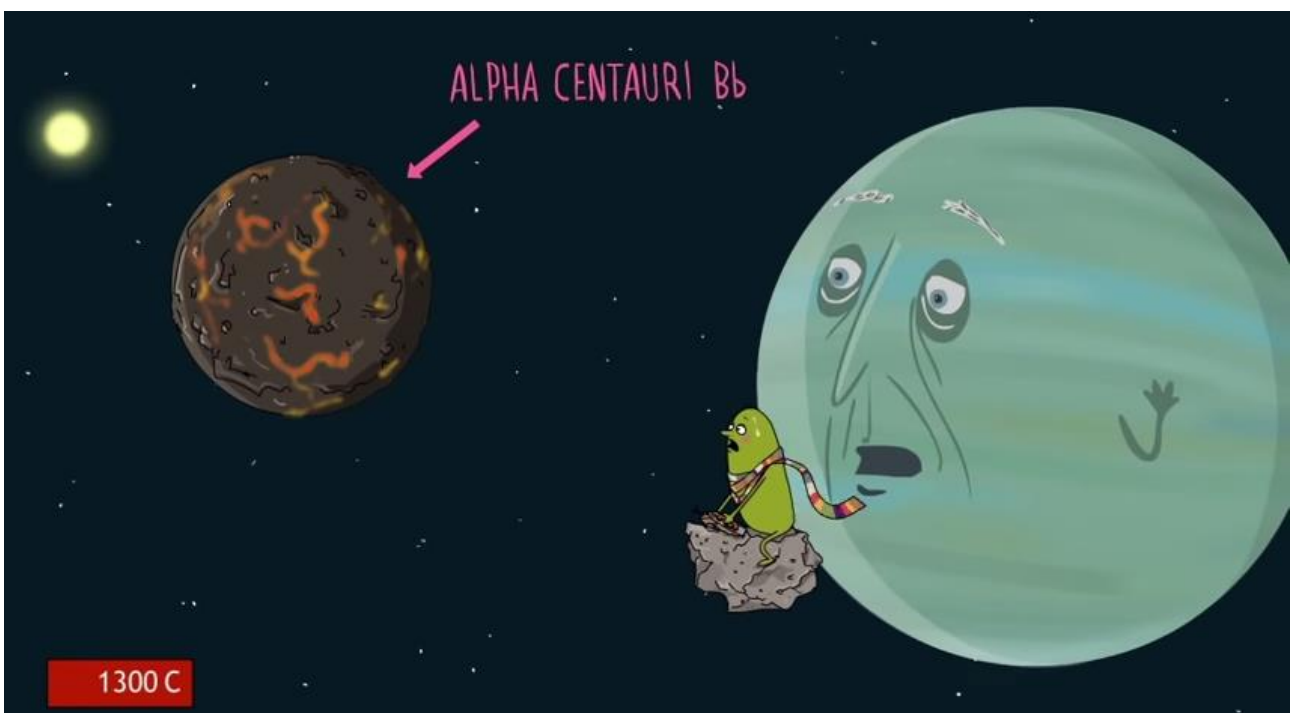


Notes for teachers

At a glance

This activity for gifted and talented students introduces some of the fascinating worlds outside our own solar system. Students begin by learning about the conditions which might make a planet habitable. They then study data about exoplanets, and evaluate evidence to predict which might harbour life.



Learning Outcomes

- Students outline the conditions that make an exoplanet habitable.
- Students evaluate evidence to predict which exoplanets might harbour life.

Each group of two or three students will need

- 1 copy of the pupil worksheet
- 1 copy of the *Planet profile* to complete
- 1 copy of the sheet *Habitable or not?* to complete
- One *Exoplanet information* sheet. There are twelve of these, each about a different exoplanet. Each group needs a different one. They are best printed in colour and laminated.

Possible Lesson Activities

1. Starter activity

- Show the animation 'Rogue planet' to the class.
- Repeat the viewing, focusing on the section on exoplanets from 1:32 to 2:16.

2. Main activity

- Divide the class into twelve groups, and outline the activity as described on the pupil worksheet.
- Allow students time to read *Conditions for life and Habitable zone* on the pupil worksheet, then check their understanding. Make the link between the term *Goldilocks zone* and the children's story of the same name.
- Give each group one copy of the *Planet profile* proforma to complete as well as one *Exoplanet information* sheet. There are twelve *Exoplanet information* sheets; each group needs a different one.
- Allow time for each group to complete its *Planet profile*, then display these around the room. Please note that, for some planets some of the information required to complete the *Planet profile* is not available. This means that some groups will not be able to complete all the boxes on their *Planet profile*.
- Give each student or small group a copy of *Habitable or not?* Ask them to move around the room to read the *Planet profile* sheets, completing the *Habitable or not?* sheet as they circulate.

3. Plenary

- Lead a discussion to reach a consensus about which planets could be habitable. The planets that are definitely not habitable are Alpha Centauri-Bb, Kepler-64b, Gliese-832b, PSR B1620-26b and MOA-192B. Any of the others might have conditions that would support Earth-like life, but of course we cannot be sure.
- Suggest that students explore PlanetHunters.org at home. Maybe they will discover their own exoplanet.

Web links

Web link 1: www.planethunters.org

Citizen science project in which volunteers analyse data to search for exoplanets.

Further web links are given at the bottom of each *Exoplanet information* sheet. If there is time, students can use these to find out further information about their exoplanet.