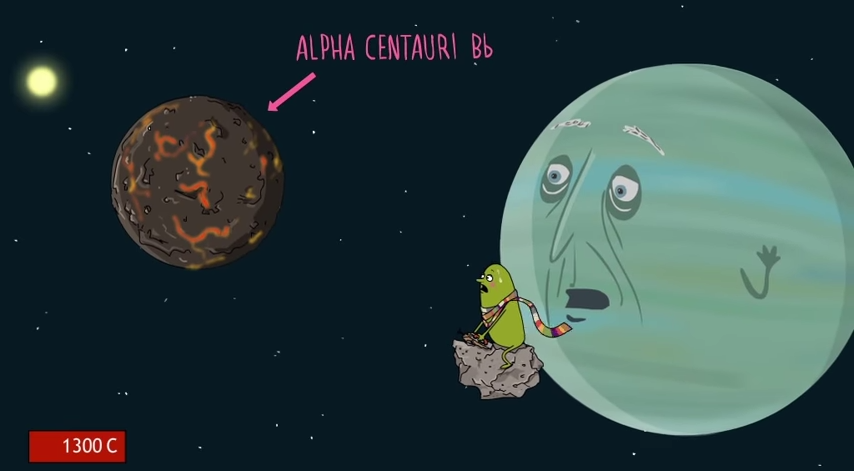
**Key Stage 3 – Perfect planet?**

**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](http://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.