

We are the aliens!

Florb, a young adult living on TRAPPIST-1 f wonders, one day, whether they could find life on a planet orbiting a nearby star.

(a) What are some techniques at Florb's disposal? What does each technique tell us about planets?

(b) For Florb's first target, they choose to observe our Sun. Using the radial velocity method, what planet will Florb probably see?

(c) Will it be easy for Florb to find the Earth with the radial velocity method? Why or why not?

(d) Supposed Florb wanted to take a picture of the Earth (using "direct imaging"). What is a potential hurdle that they will have to overcome?

(e) If the Earth transits, Florb would be able to look at its spectrum. What might they investigate if their goal is finding life?

What's "normal," at the end of the day?

(a) Is the Earth common or uncommon with respect to the other planets in the Milky Way?

(b) What are some planets that aren't represented in our Solar System? Are they very common?

(c) Would you say that we have a good understanding of what “normal” exoplanet composition is? Why or why not?

Challenge questions

(a) Might the frequency of Earth-like planets vary in other galaxies? What about in the Universe on average?

(a) What type of asteroid might be the hardest to detect?