The chemical composition of stars

ELYSE Ooh, I've got this game! What level are you on at the moment?

DYLAN I'm now on *The Fish Tank Fiasco*.

ELYSE Ooh, I haven't done that one. What clues do you have so far?

DYLAN Not much. I've got a fingerprint, and I found a scrap of paper that says follow the rainbow.

I just… what do rainbows have to do with fingerprints?

ADA Searching rainbow fingerprint…

Each star leaves a unique fingerprint in the light spectrum, that tells us what it is made of.

ELYSE How?

ADA Well, Elyse, when light travels through an element in a star's atmosphere, the element leaves a unique pattern in the light spectrum. This pattern is the fingerprint of the element.

ELYSE How does it know my name?

ADA As light travels from a star, certain wavelengths of light get absorbed by the specific gases in the star's atmosphere.

When that star's light arrives on Earth and we split that light using a prism, we should see a full spectrum of all the colours of the rainbow. But we don't. Instead, we see that parts of the spectrum are missing, in a specific pattern – a fingerprint in the rainbow. This is called the absorption spectrum.

Scientists have tested in laboratories which elements leave which fingerprints in the spectrum. We can then line these up with a star's absorption spectrum, and this will reveal what elements are present in that star.

Guys? Hello?

Oh, I see…

The outside is overrated.