SCIENTIFIC CASE:

What are the colour of the stars?[1]

Team members

Writer: _____

Equipment manager: _____

Reader: _____

Spokesperson: _____

Ambassador: _____

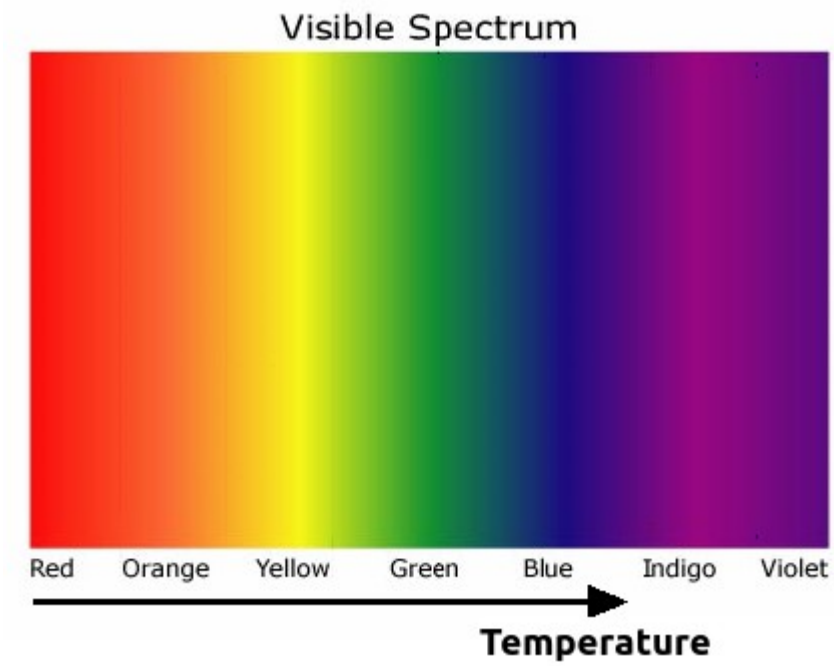
1Designed by Planeta Ciencias, in collaboration with the CESAR team.

Context

The Sun is a star just like any other. We see stars as shiny dots because they are very far away from us. From Earth, what can we find out about stars? At first glance, we can see that stars' colour is one of their properties.

The hotter a star's surface is, the bluer it will be.

Because we can't touch stars, we must look for something that is as similar to one as possible, here on Earth. Something that can be really hot, like a light bulb.



Credit: *http://soho.esac.esa.int/classroom/spectroscope.html*

We can observe filament light bulbs that get so hot that they emit light in a variety of colours. Depending on its temperature, we'll see a different colour.

Similarly, we can relate the light bulbs' temperatures with the stars' temperatures.

Temperature (° C)
550
630
680
740
770
800
850
900
950
1000
1100
1200
1300

Relationship between colour and temperature of a light bulb.
Credit: https://en.wikipedia.org/wiki/Incandescence . https://pixabay.com/

More educational resources:

http://www.cosmos.esa.int/web/cesar/solar-observation
http://soho.esac.esa.int/classroom/classroom.html

Scientific case 1: Temperature and colour of the stars.

We are going to study some Corvus constellation stars' temperature[2].

Hypothesis

How hot are the hottest stars? And the coldest? Remember our body is at about 36ºC

Research equipment

You have access to the following:

- Colour pencils, paper, rubber.
- Picture of Corvus constellation.
- Image of the relationship between temperature and colour of a light bulb.
- *Hertzsprung-Russell stellar diagram.*

Procedure

We are going to fill in the table below.

1. Before filling the table in, we have to have a close look at the stars we're going to study in the picture.

2. We fill in the circle with the star's colour.

3. To write down the temperature of the star, look at the drawing of the light bulbs.

4. If you have any doubts, ask the educators or other groups. Never hesitate to ask questions or share your work with others!

2 The temperature always refers to the "surface" of the star, not to its core.

Results

Star number *(assigned on the image)*	**Star colour**	**Star temperature**
1	○	
2	○	
3	○	
4	○	
5	○	
6	○	

Conclusions and new questions

How cold are the coldest stars? And the hottest ones?

What would you say is the temperature on the surface of the Sun?

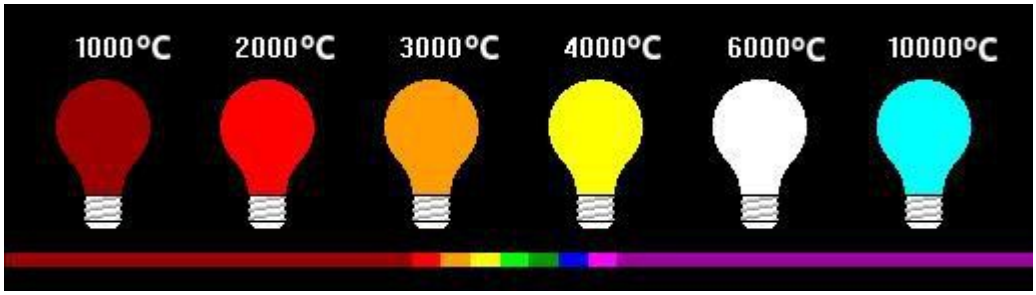
Do you think there's a relationship between the temperature and the brightness we see in a star?

Have a close look at the Corvus constellation picture and the *Hertzsprung-Russell* stellar diagram. What type of star do you think is more common?

Aside of the color of a star, what other characteristics can we observe and study?

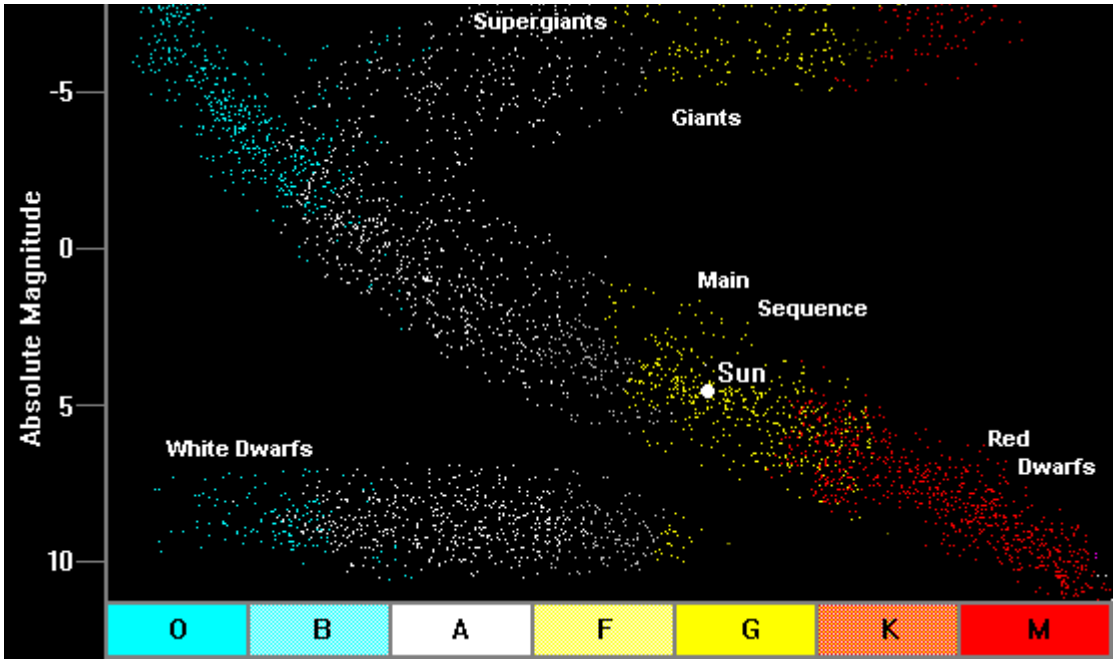
Research equipment

Relationship between temperature and color of a light bulb



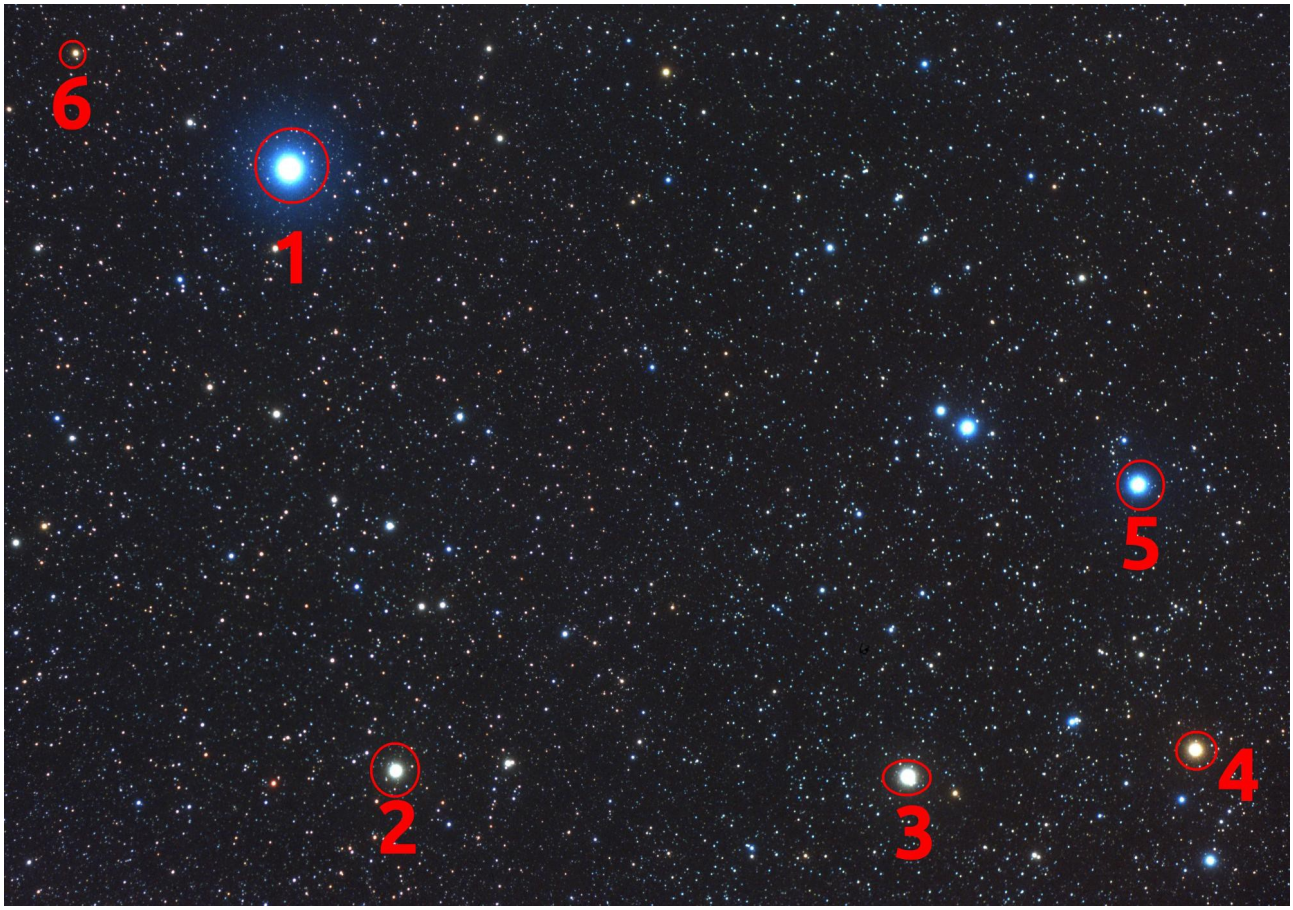
Credit: https://www.uwgb.edu/dutchs/CosmosNotes/spectra.htm

Hertzsprung-Russell stellar diagram



Credit: https://en.wikipedia.org/wiki/Hertzsprung%E2%80%93Russell_diagram#/media/File:HRDiagram.png (modified).

Corvus constellation pictures



Corvus constellation. Credit: http://sci.esa.int/jump.cfm?oid=40145

More information on the Applet http://www.kcvs.ca/site/projects/astronomy_files/starColor.swf