

Star Classification

The first people to combine a camera with a spectroscope were the father and son team of John and Henry Draper in the 1870s. Their work was carried on by Edward C. Pickering who, by 1918, had listed the spectra of over 200000 stars. Using details about luminosity and composition, stars are classified into several common groups, or classes, depending on their colour (spectral types). Each difference in colour is directly related to the surface temperature of the star. The hottest stars are blue-white, with surface temperatures of greater than 50 000°C. The cooler the star, the more red it appears.

The Pickering empirical classification has become the accepted way to describe stars:

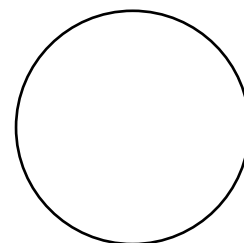
- **M** orange/red (coolest)
- **K** orange
- **F/G** yellowish
- **A** white/bluish-white
- **O/B** white (hottest)



The temperatures (and colours) of stars are a gradual progression and the divisions between groups are arbitrary. To remember the correct sequence, from hottest to coolest (O B A F G K M), think of the following catchphrase: 'Only Bold And Fearless Giants Kill Martians', Further subdivisions rank these classes from 0-9.

Other schemes include stars described as X, W, N, R and S, although these are very rare and represent only a fraction of a per cent of the total number of stars so far observed and classified.

1 Of the stars that have been classified by their spectra, B stars represent about 3%, A stars are 27%, F are 10%, G are 16%, K are 37% and M are 7%. Draw a sector graph (pie chart) to show these figures.



2 Why weren't Type O stars mentioned in Question 1?

3 Use your knowledge about spectral types to match the jumbled surface temperatures in the box on the right with the correct star.

Star	Spectral Type	Temperature (K)	Distance (Light Years)
Sirius	A0		9
The Sun	G2		1
Betelgeuse	M2		520
Spica	B1		220

3 000
25 000
6 000
11 000

4 What else can we predict about Sirius from the information above? _____

5 What else can we predict about Betelgeuse from the information above? _____

6 What else can we predict about Spica from the information above? _____

Research

7 In which constellation is Sirius located? _____

8 In which constellation is Betelgeuse located? _____

9 In which constellation Spica located? _____