Spectra Matching Activity
Lesson developed by Brenda Paul

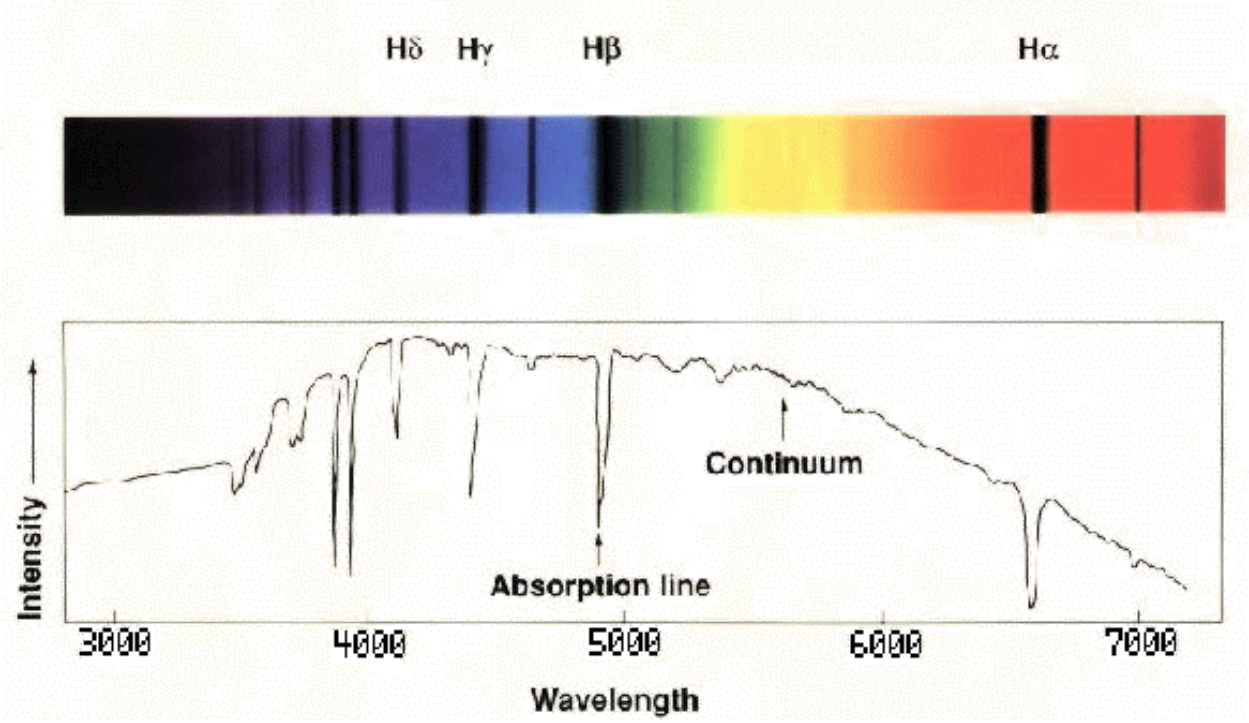
NGSS
HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.
HS-ESS1-2. Construct an explanation of the Big Bang theory based on astronomical evidence light spectra, motion of distant galaxies, and composition of matter in the universe

Materials
- Set of matching cards (recommend printing in color on cardstock, each page contains two sets)
- Introductory image to display on a projector

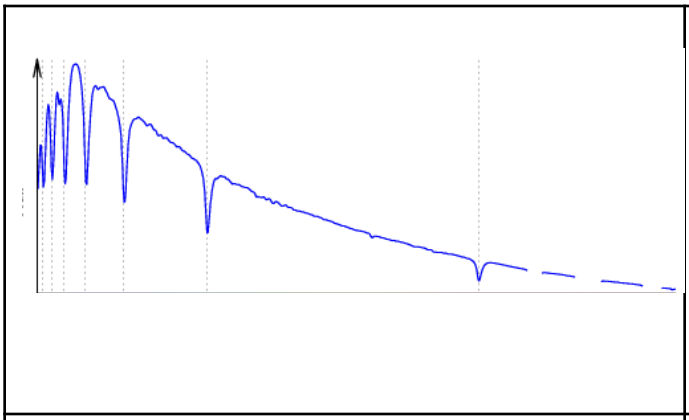
Lesson Plan
In this activity, students will be given a set of cards containing the spectrum of several stars, presented as both an absorption spectrum and a graph. The goal is for students to match the correct graph and absorption spectrum.

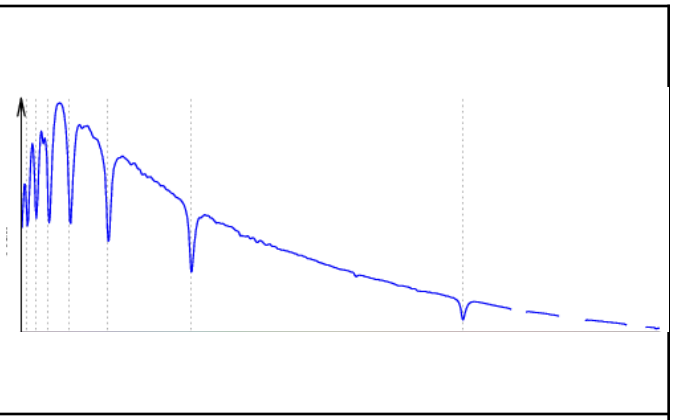
First, display the image on a projector and discuss with students. Use the following guide in a discussion of the image into the matching activity.

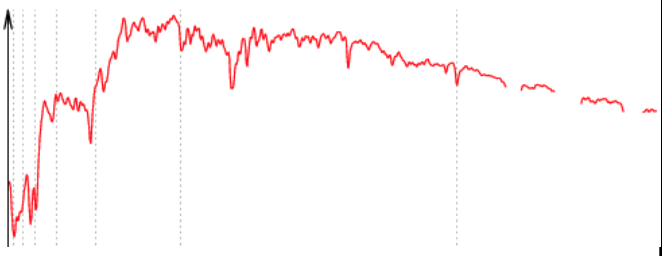
- The spectrum of a star can be presented two ways: on an absorption spectrum or as a graph. The two provide the same information, but presented differently.
- The wavelengths on the graph correlate with the dark lines on the absorption spectrum. This is how the elemental composition of the star is determined.
- In this activity, you will attempt to match the absorption spectra with the appropriate graph.

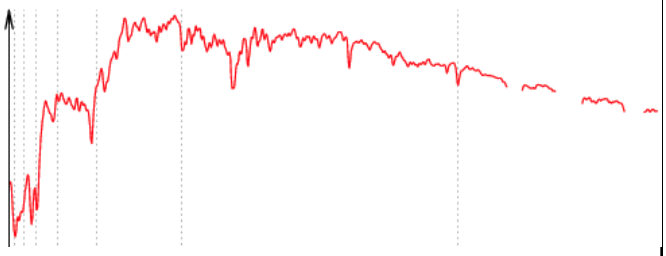


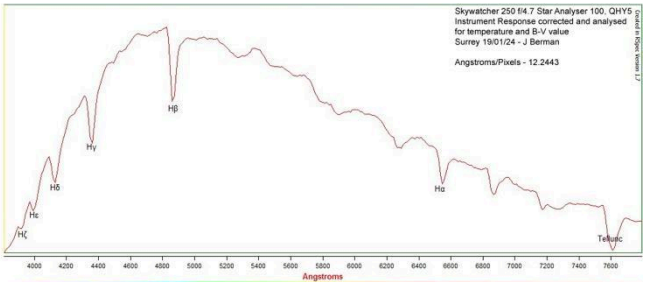
Matching Cards

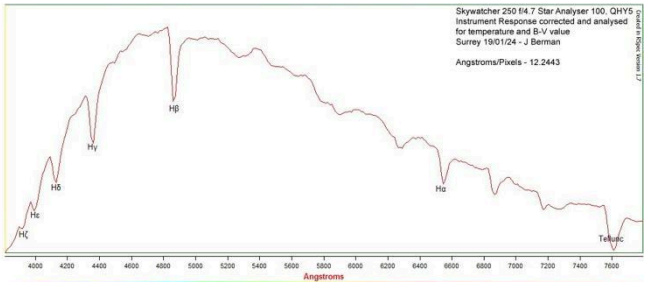


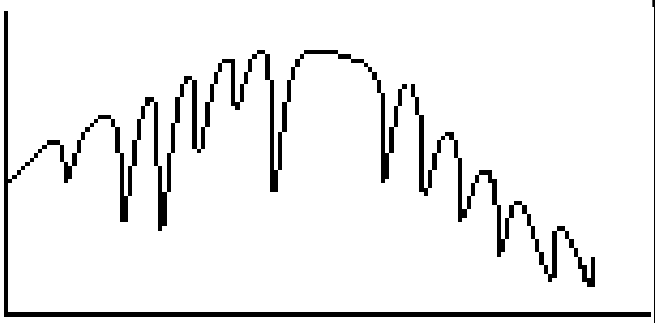


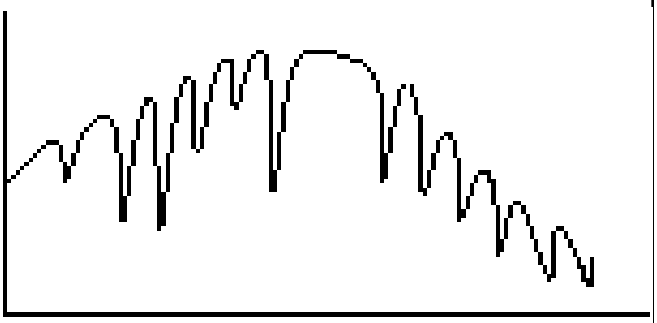


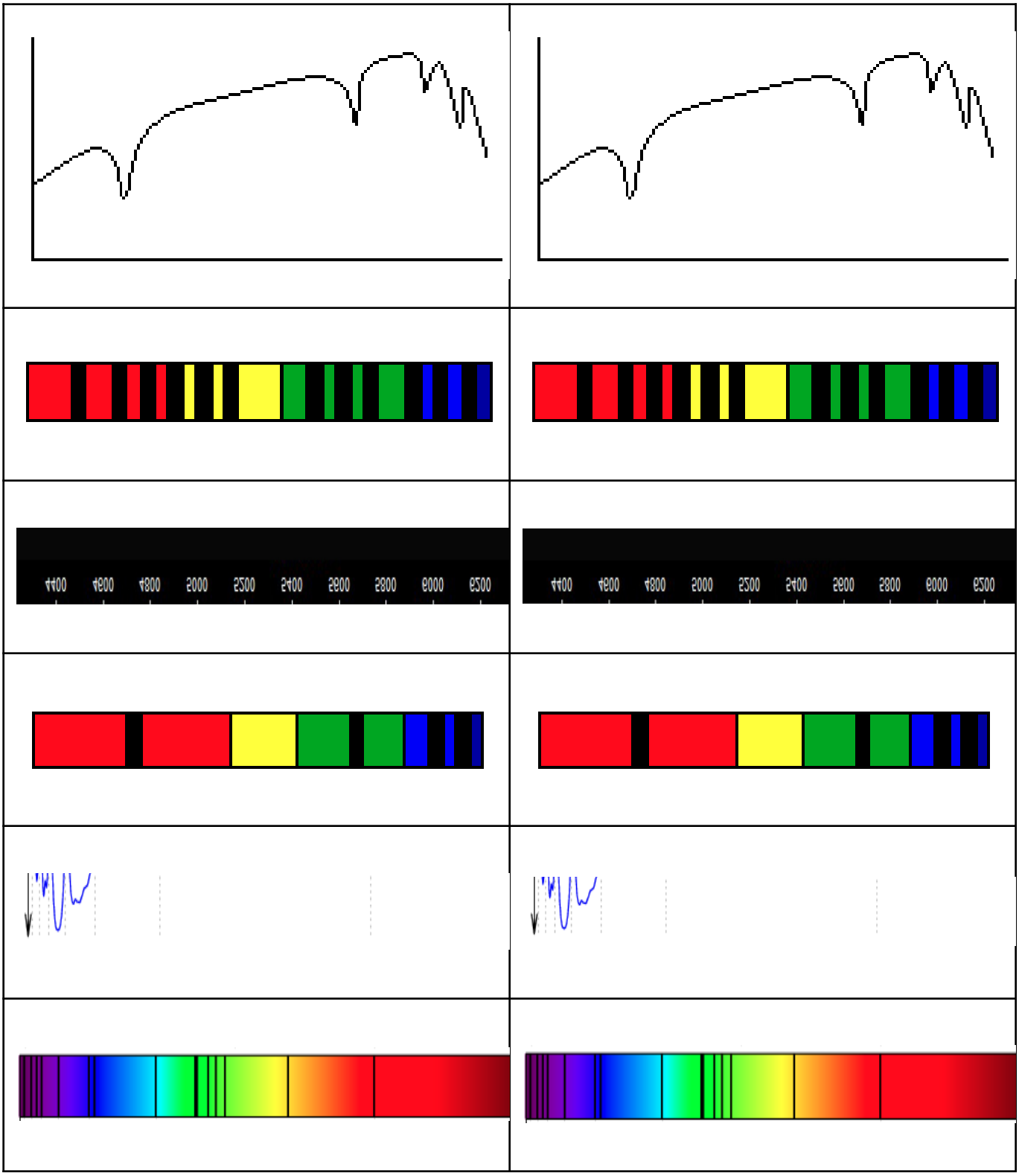




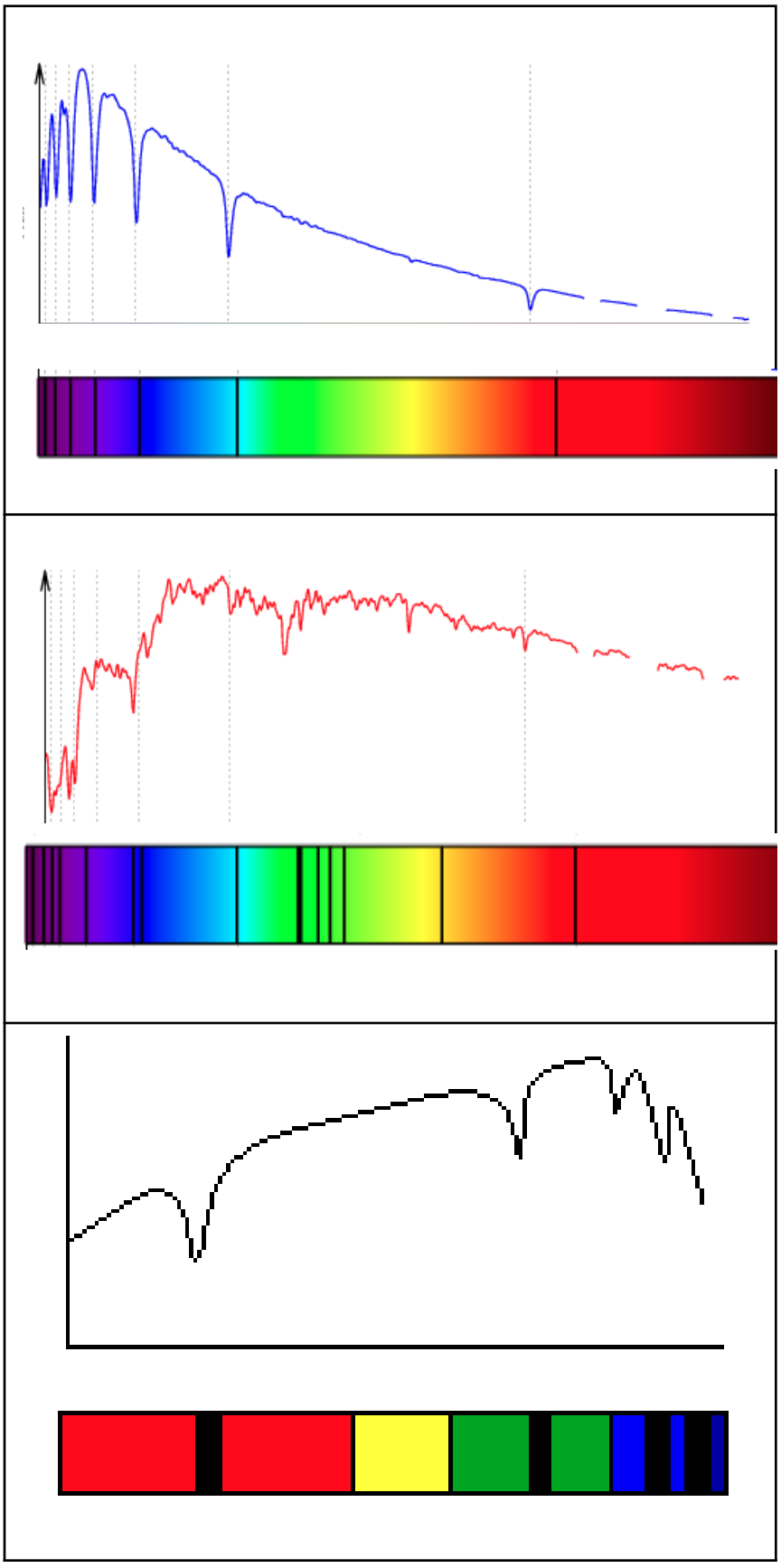


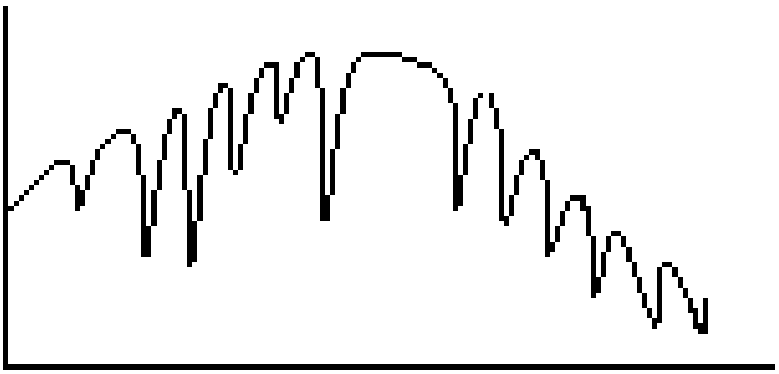


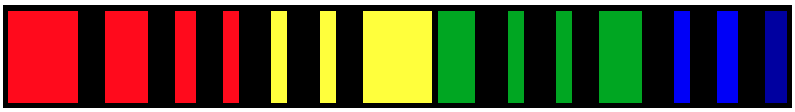


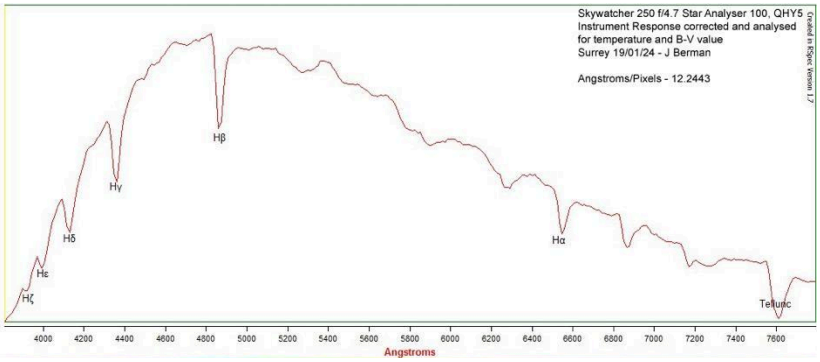


Matching Cards Key








Skywatcher 250 f/4.7 Star Analyser 100, QHY5
Instrument Response corrected and analysed
for temperature and B-V value
Surrey 19/01/24 - J Berman
Angstroms/Pixels - 12.2443
Created in ISIS Version 1.7
Hζ
Hε
Hδ
Hγ
Hβ
Hα
Telluric
4000 4200 4400 4600 4800 5000 5200 5400 5600 5800 6000 6200 6400 6600 6800 7000 7200 7400 7600
Angstroms