

Stellar Fingerprints

1. Compare the atomic emission spectra of the elements (Hydrogen, Helium etc.) to the spectra emitted by the stars (Sirius, Betelgeuse etc.). Remember, an atomic emission spectra can be used like a fingerprint to match and thus identify the elements found in the star.
2. Create a data table to record the name of the stars and what elements they were found to contain. Include also the total number of elements found in each star.

Follow Up Questions:

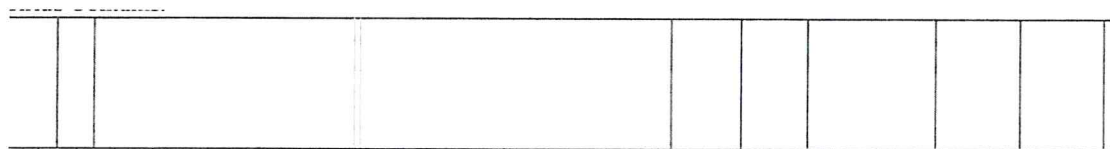
1. What elements were found in all of the stars? Infer why.
2. Which star (if any) had all of the elements? Infer why.
3. Which stars listed are more likely main sequence and which more likely to be red giants? What is your reasoning?
4. Place the stars in order of age. What is the reasoning behind your ranking?

Add the two unknown stars to your data table and determine what elements they contained.

What did you have to do to match the elements?

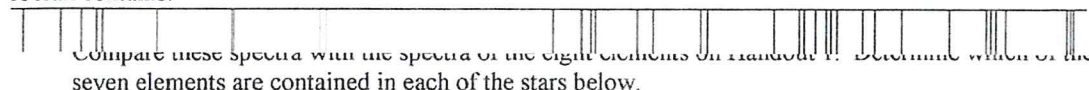
5. What direction did you have to shift Star A in order to match up the elements? Is that toward the long or short side of the spectrum? Is that toward the red or the blue side?
6. What direction did you have to shift Star B in order to match up the elements? Is that toward the long or short side of the spectrum? Is that toward the red or the blue side?

Unknown Star A contains:



Unknown Star B contains:

Star C contains:



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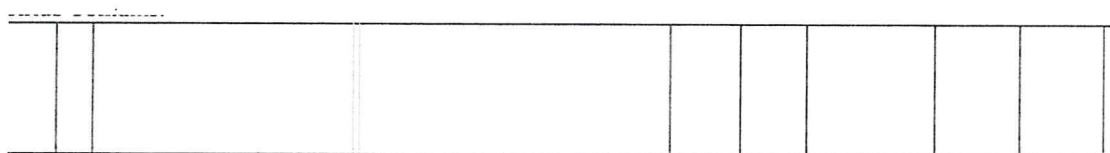
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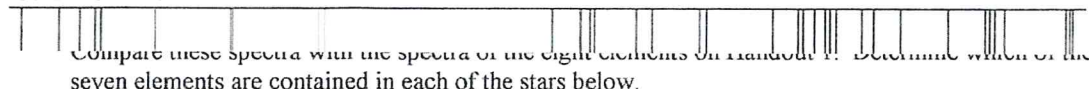
5. What direction did you have to shift Star A in order to match up the elements? Is that toward the long or short side of the spectrum? Is that toward the red or the blue side?
6. What direction did you have to shift Star B in order to match up the elements? Is that toward the long or short side of the spectrum? Is that toward the red or the blue side?

Unknown Star A contains:



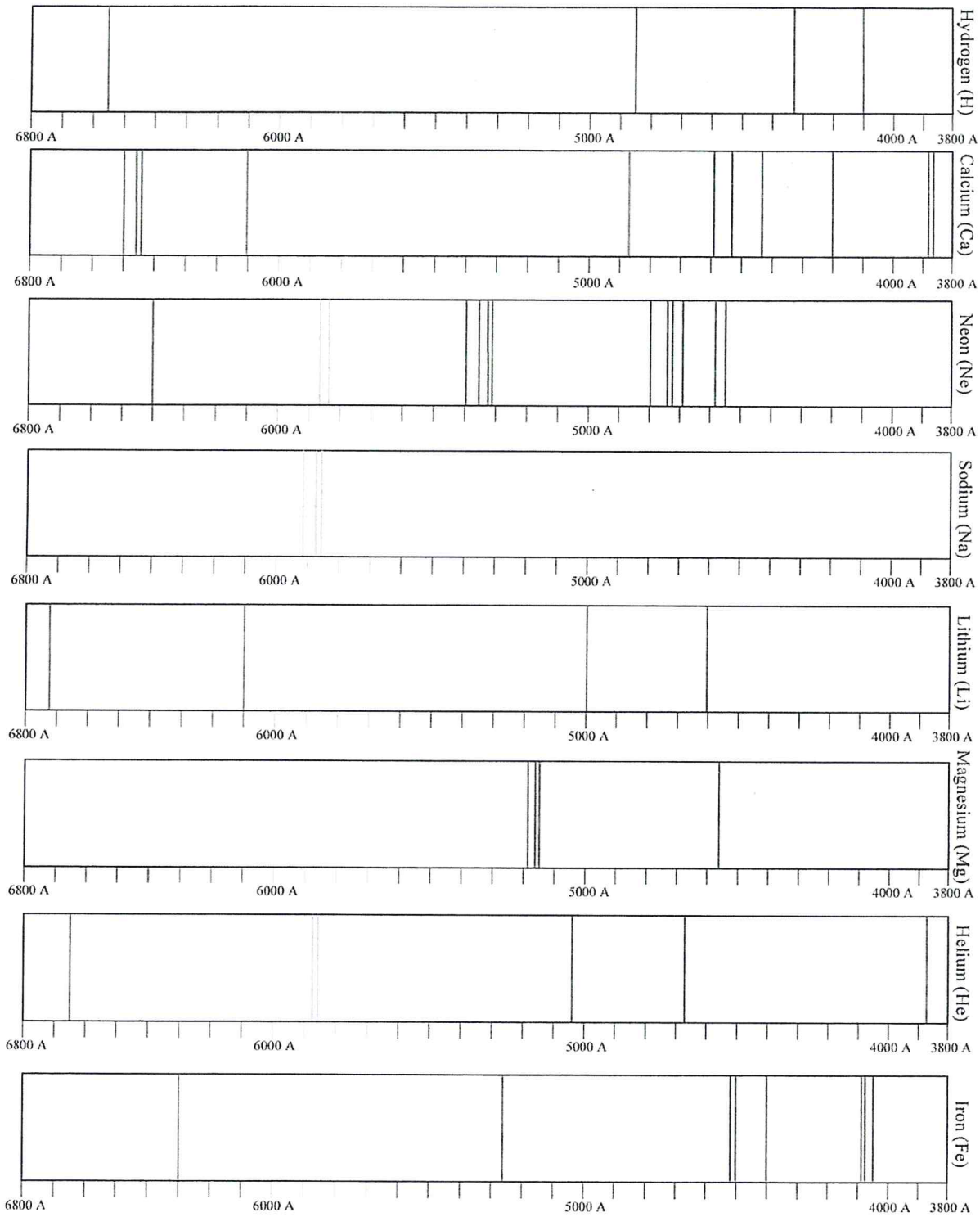
Unknown Star B contains:

Star C contains:



Handout 1: Emission spectra for eight elements.

Name: _____

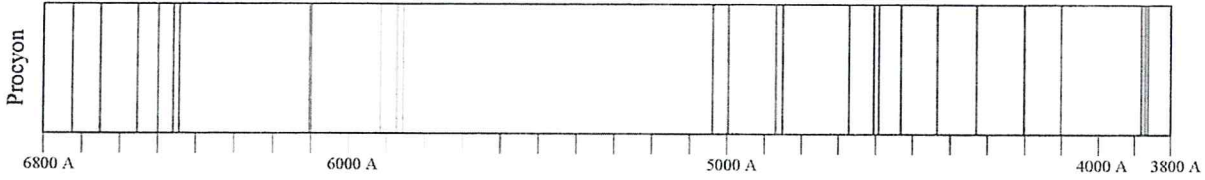


Name: _____ Date: _____

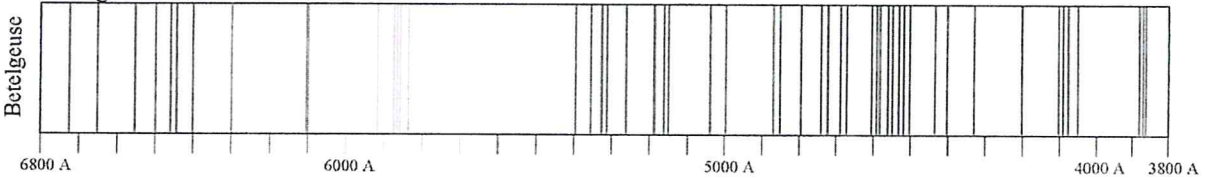
Handout 2: The Spectra of Five Stars

Compare these spectra with the spectra of the eight elements on Handout 1. Determine which of the seven elements are contained in each of the stars below.

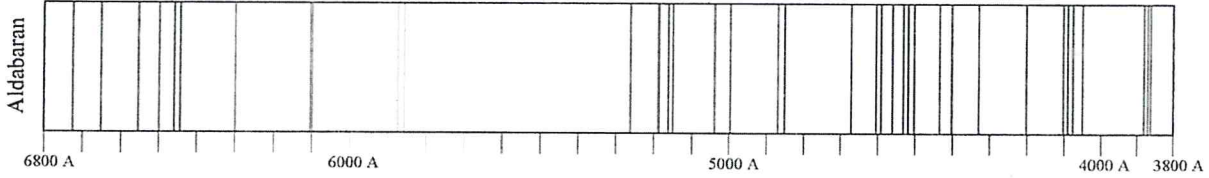
Procyon contains:



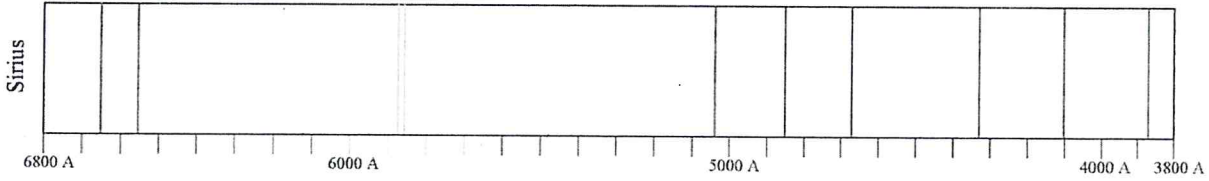
Betelgeuse contains:



Aldebaran contains:



Sirius Contains:



Sol contains:

