

Name(s): _____

Date: _____ Course/Section: _____
Grade: _____

Photometry of a Globular Cluster

Learning Objectives:

Students will determine the age of a globular cluster using photometry.

Checklist:

- ☐ **Complete the pre-lab quiz with your team (if required).**
- ☐ **Compile a list of resources you expect to use in the lab.**
- ☐ **Work with your team to complete the lab exercises and activities.**
- ☐ **Record your results.**
- ☐ **Share and discuss your results with the rest of the class.**
- ☐ **Determine if your team's answers are reasonable.**
- ☐ **Submit an observation request for next week (if required).**

Pre-Lab Quiz

1.

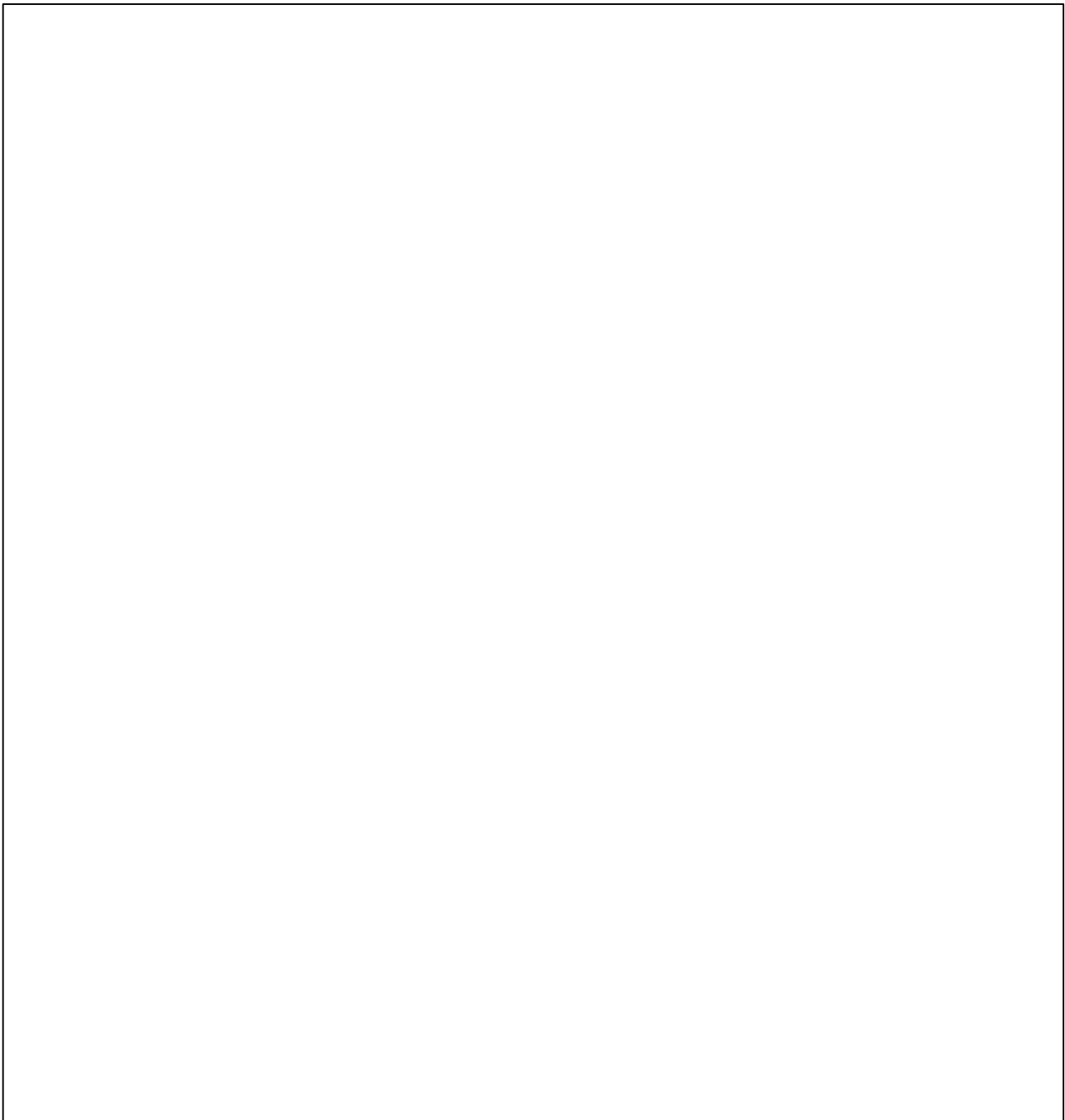
2.

3.

4.

5.

Part 1: The HR Diagram



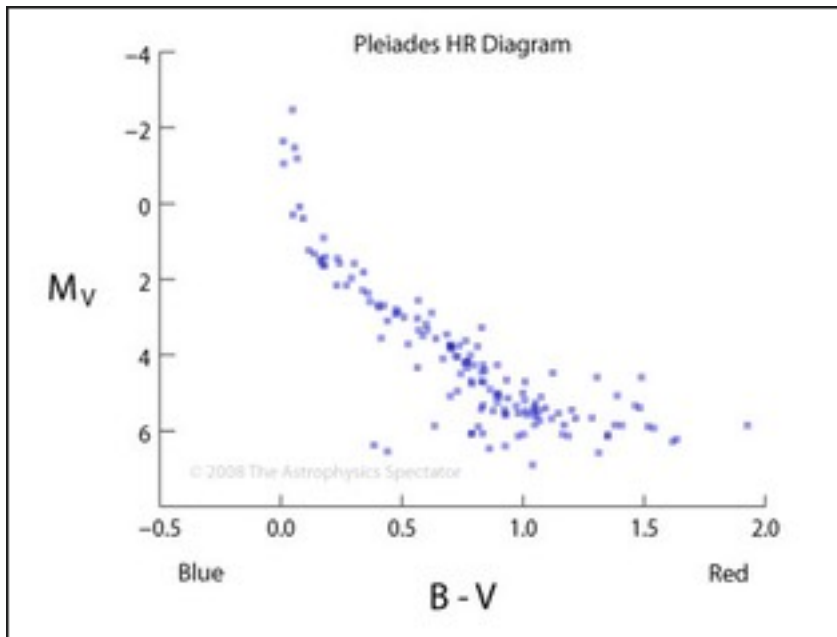
1. Draw an HR diagram with temperature on the x axis and luminosity on the y axis. Label the temperature axis in both units of Kelvin and spectral type.
2. Draw the Main Sequence.
3. Place a dot that represents the Sun on the diagram.
4. Mark where you would find Red Giants, Super Giants, and White dwarfs.
5. Using the star wheels, stellarium, the ipads, or the SC100 charts, find five bright stars that are up tonight and look up what spectral type and class they are (i.e., are they a main sequence star? What's their surface temperature?) Record their altitude, azimuth, and constellation.
6. Add these stars onto the HR diagram and label them.

[illegible]

Part 2: Comparing Ages of Globular Clusters

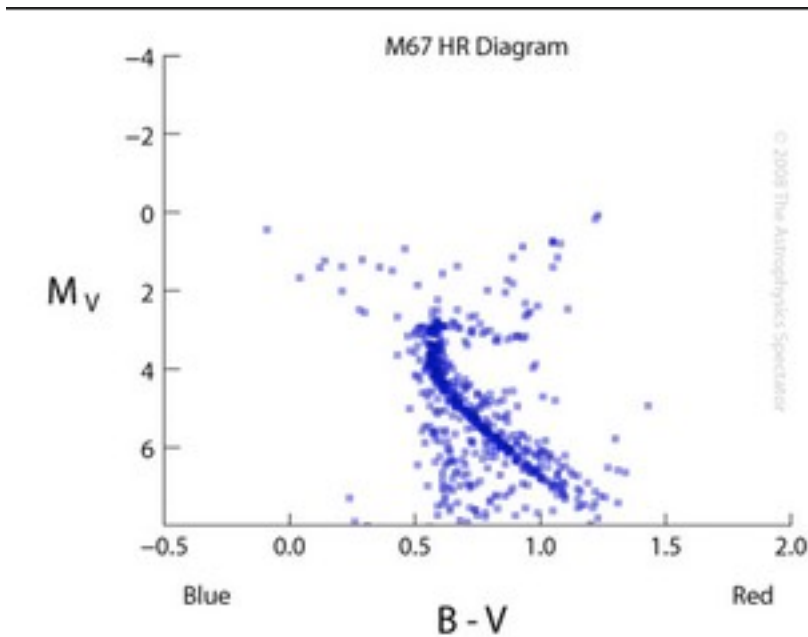
Below there are 4 HR Diagrams for four different clusters. Label the Main Sequence, the Red Giant Branch, and the Horizontal (yellow giant) branch, etc. Then, circle the last star on the Main Sequence.

Use the link on the lab website to ``convert'' B-V values to spectral type for the last star on the main sequence. Then, Determine the Age of the cluster.



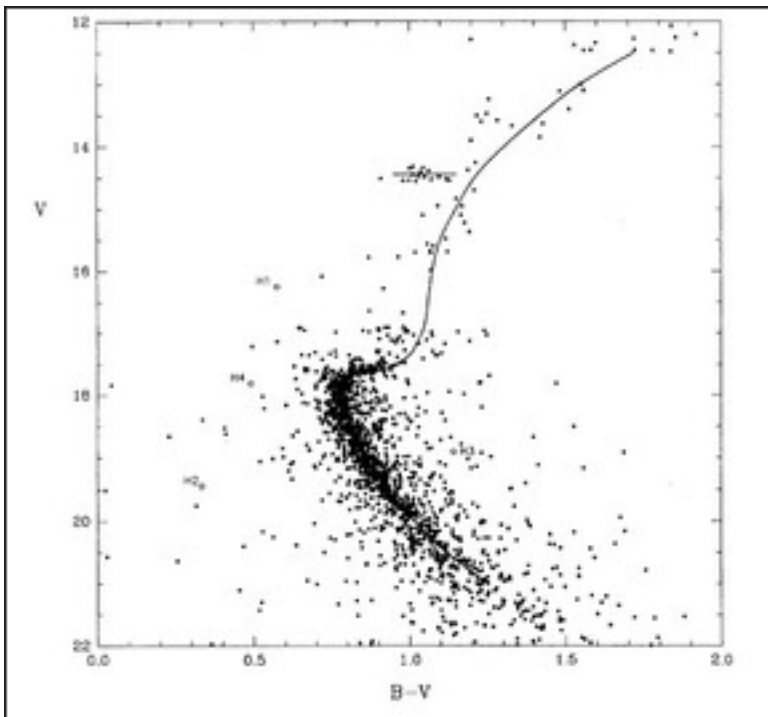
Spectral Type of Last star:

Age of Cluster:



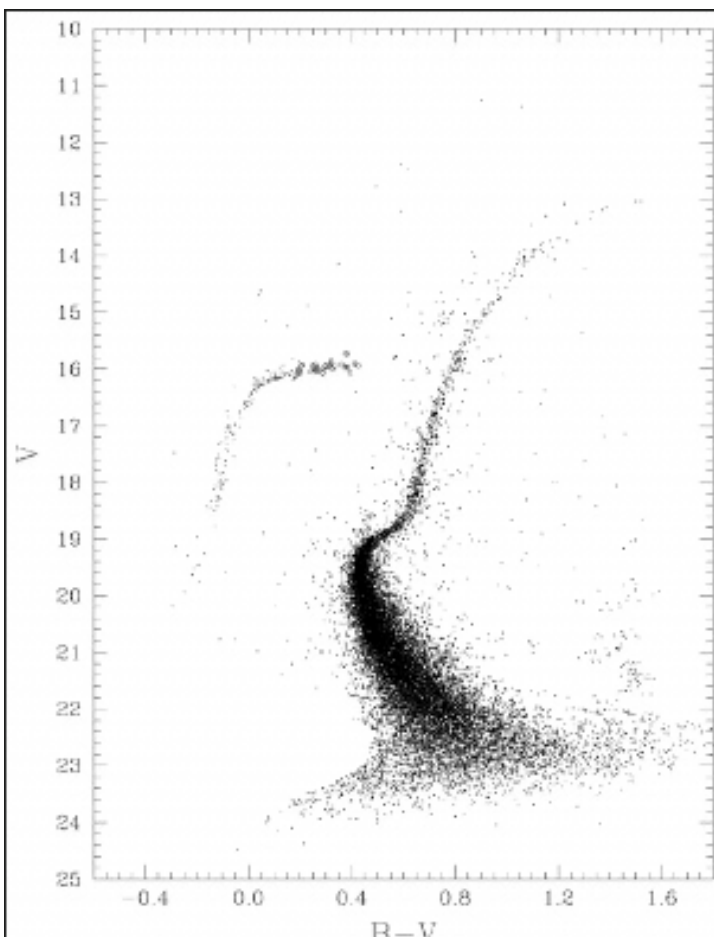
Spectral Type of Last star:

Age of Cluster:



Spectral Type of Last star:

Age of Cluster:



Spectral Type of Last star:

Age of Cluster:

Finally, Rank them in order of youngest to oldest.