

Determining the Age of Open Clusters and Globular Clusters

Using the information on the Graphs, Star Charts, Stellar Information, and H-R Diagram pages, answer the following:

1. The main sequence lifetime of a star (T) is equal to its solar mass (M) $\times 10^{10}$ divided by its solar luminosity. At the end of the main sequence lifetime, stars reach their “turn off point” and leave the main sequence to the giant branch of the H-R Diagram. Determine the main sequence lifetimes for the following stars:
 - (a) Vega
 - (b) Capella
 - (c) Procyon
 - (d) Altair
 - (e) Spica
 - (f) What is the relationship between main sequence age and mass?
2.
 - (a) Use the information in the Absolute Magnitude-Spectral Type table to construct a zero-age main sequence on the H-R Diagram graph paper.
 - (b) Plot the data for the three star clusters (Pleiades, Hyades, M67) on the H-R Diagram.
 - (c) For each cluster determine the absolute magnitude of the star at the cluster “turn off point.”
 - (d) What are the ages of the three clusters?