

# DP12: THE SUN AND STARS, 2005–2006

## Homework 2

Tuesday, February 28th  
(due Tuesday, March 14th)

### Question 1

(a) Explain, with the aid of a diagram, how parallax can be used to measure a star's distance. What is the distance (in parsecs) of a star with a parallax of 0.008 arcseconds? [5]

(b) The apparent magnitudes,  $m$ , of stars in a cluster are measured and plotted in a Hertzsprung-Russell (H-R) diagram. This plot is compared with an absolute magnitude,  $M$ , H-R diagram of nearby stars whose distances are known. The main sequence of stars in the cluster is found to be 7.5 magnitudes fainter than that of the main sequence of nearby stars. How far away is the cluster? What assumption has been made about the stars in the cluster? [5]

### Question 2

Briefly discuss the Harvard stellar spectral classification scheme. What is the MK luminosity classification system? [10]

**TOTAL MARKS = [20]**