

SCORE  
(5 pts max)

ASTRONOMY 5  
THIRD HOUR SESSION "H"

ACTIVITY: More on the HR Diagram

NAME

KEY-H

DATE

ID#

1. Where on the HR diagram do you plot stars that are burning hydrogen in their cores?

Main sequence

2. What are the names (and if relevant, luminosity classes) for stars in regions \_\_\_\_ Region 2, Region 3 \_\_\_\_?

Giants; II, III, IV

Supergiants; I

3. What is the approximate temperature and luminosity of a star at \_Region 9\_?

T: 3,000 K

L:  $10^{-3}$  Lsun

4. Which star is \_\_\_\_ less luminous \_\_\_\_? A star with spectral class F3 V\_ or a star with spectral class \_\_F8 V\_\_?

F8 V

5. At which point or area on the HR diagram (i.e., Region 1, Region 2, etc.) would you plot the Sun?

Region 8

6. Use Starry Nights to determine the point or area on the HR diagram (i.e., Region 1, Region 2 etc) you would plot \_\_\_\_ Spica \_\_\_\_ and \_Betelgeuse\_\_?

Region 6: (20396 K  
4870 Lsun)

Region 3: (3488 K,  
305089 Lsun)

7. Use the data table (next page) to correctly place the spectral types OBAFGKM at the bottom of the HR diagram.

8. Similarly, use the data table to label the main sequence with the masses of the stars at each spectral type. (Note: masses are approximate.)

9. Approximately what luminosity is a \_\_3000 K\_\_ main sequence star? What about a supergiant star at the same temperature?

$10^{-3}$  Lsun

$10^5$  Lsun

(Questions continue on back)

10. How many times more luminous is a    B5 V    star than the Sun? How many times more massive is it?

1000	10
------	----

11. Which would you expect to live on the main sequence longer? The Sun or the star in question #10?

The Sun
---------

O	B	A	F	G	K	M
35000K	20000K	9000K	7000K	5800K	4500K	3200K
60M <sub>☉</sub>	10M <sub>☉</sub>	2M <sub>☉</sub>	1.4M <sub>☉</sub>	1M <sub>☉</sub>	0.7M <sub>☉</sub>	0.3M <sub>☉</sub>

