Stars & Galaxies Webquest: H-R Diagram & the Life of Stars/Galaxies

Part 1: Analyzing Stars with the H-R Diagram:
Go to http://sunshine.chpc.utah.edu/Labs/StarLife/support/HR_applications.swf and answer these questions.

1. If stars were the same size, then __________ would determine ______________. Stars would be brighter if they were ____________ and ____________ if they were cooler than the Sun.
   Write the hypothesis that best matches the statement above:________________________________
   ___________________________________________________________________________
   ___________________________. Now click on right arrow.

2. The Sun has a radius r. How much bigger is the radius of a star that is 20r? __________________________
   Compared to the sun, a star with a radius of .1r is how big? __________________________

3. The Sun is a ___________ ______________ star. Which line would you expect most of the main sequence stars to be found? ___________________________________________________________________________
   __________________________. Click on right arrow.

4. Use the main sequence line to help fill in the next statement. The ________________ stars on the main sequence line are ____________ than the Sun. ___________________________________________________________________________

5. For stars of the same size, ________________ stars will have a ___________________ surface temperature.

6. Question: If a main sequence star is much larger than the sun, it would have a ____________ surface temperature.
   ___________________________________________________________________________

7. If you look at the H-R diagram, where would the most massive stars be found? ___________________________________________________________________________
   The smallest mass stars would be found in the _________________. Click on right arrow.

8. What is the relationship between a star’s mass and its brightness (luminosity)? ___________________________________________________________________________
   True or False: Different stars have different masses. ___________________________________________________________________________

9. Stars with a mass of 10 suns (10 M_{sun}) would have similar ________________ as other stars of similar mass.
   ___________________________________________________________________________

10. The most ________________ stars shine ___________ brightly compared to smaller stars. ___________________________________________________________________________

Part 2: Life of Stars and Galaxies:
Go to http://www.zoomschool.com/subjects/astronomy/.
In the Table of contents on the top-left hand corner, click on STARS and answer these questions.

1. What is size is our Sun compared to other stars? ___________________________________________________________________________

2. If the Sun was much more massive, what would change about its life span? ___________________________________________________________________________

3. We know the composition of stars through a process called ___________ by analyzing stars’ ___________ light.

4. What is a binary star system? ___________________________________________________________________________

5. Huge collections of stars (over billions of stars) are called ___________________________________________________________________________

6. The name of our galaxy is the ________________ ________________ and it has a ________________ shape.
   Draw and label the 3 main types of galaxies:
   Spiral Galaxy  Elliptical Galaxy  Irregular Galaxy

7. Stars are so bright and hot because in the ____________ of each star, ________________ is combined to form ________________ through the process called ___________________________________________________________________________.
Scroll to the top of the page. Near the top inside the table, click on the link titled “Birth” and fill in the chart below:

7 Stages of the Birth of a STAR

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<th>Name of stage:</th>
<th>1.</th>
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Scroll to the top of the page. Near the top inside the table, click on the link titled “DEATH” and describe the stages of:

- A star like our sun:
- A star with a mass 1.5 – 3 times bigger than the Sun:
- A star with a mass 3 times greater than our Sun:

Question: Will our sun ever go Supernova? Explain:

Part 3: Astronomical Units and Light Years

Go to [http://starchild.gsfc.nasa.gov/docs/StarChild/questions/question19.html](http://starchild.gsfc.nasa.gov/docs/StarChild/questions/question19.html) and answer these questions:

1. True or False: Light year is a measurement time. It is a year of light.
   Evidence to support your answer:

2. Light travels __________________ km each second. 1 light year = __________________ km

3. Why do astronomers use light years rather than kilometers to measure the distance of stars?

4. In our Solar system, we describe distances in terms of ___________________.

5. 1 Astronomical Unit (AU) is equal to the _______________ between the _____________ and the ____________.

6. 1 AU = ___________________________ km (write out number, not words)

Practice problems:
(Do the problem then check your answers at [http://www.easysurf.cc/conver15.htm#ly2k1](http://www.easysurf.cc/conver15.htm#ly2k1)  NOTE: Round the answer from the website to the nearest whole number!)

1. Neptune is 30 AU from the Sun. What is its distance in km away from the Sun?
   30 AU × 1 AU = ___________________________ km

2. The asteroid belt is 2.2 AU from the Sun. How far away is it in kilometers?
   30 AU × 1 AU = ___________________________ km

3. Proxima Centauri is 4.4 light years away from the Sun. How far is that in kilometers?
   4.4 light years × 1 light year = ___________________________ km