ASTR1: Review part III: Stars

- What powers the Sun?
- Describe equilibrium?
- What layer of the Sun do we consider as the surface? What is the temperature at this layer?
- What layer of the Sun does nuclear fusion occur? What is the temperature at this layer?
- Fission vs fusion.
- Know proto-proton chain : 4H → 1He + energy
- What are sunspots?
- Describe what causes solar flares.
- What causes solar prominences?
- What is the 11 year cycle?
- Luminosity vs Apparent brightness.
- What is parallax?
- Know spectral type temperatures (OBAFGKM)
- Know how to read the HR diagram. (size, age, mass, luminosity, heat, main sequence, life path through diagram)
- Know size scale I,II,III,IV,V
- Be able to compare full star classifications (for example G2V vs M2I who is bigger? Hotter?)
- Star luminosity, temperature &mass upper and lower limits.
- What is the Sun's life expectancy?
- What are the 2 types of star clusters?
- How can you tell if a cluster is old/young?
- Describe how a star forms (this is exactly how the solar system formed)
- What is a protostar?
- What is a brown dwarf?
- Describe degeneracy pressure.
- What is a helium flash (hint: 3He → 1C
- Describe how double shell fusion affects the size of a star?
- What is a planetary nebula?
- Describe how a low mass star turns into a white dwarf.
- Summarize life stages of both low mass starts and high mass stars.
- What is multiple shell burning?
- What is the heaviest element in a star that can be created by fusion?
- What is a supernova?
- What can happen with binary star systems
- What is the size of a white dwarf?
- What is the mass limit for a whit dwarf?
- What is a nova?
- Describe how accretion can create a nova?
- What conditions are needed for a white dwarf supernova to occur?
- What are the two types of supernovas?
- What is a neutron star?
- What is the size of a neutron star?
- What is a pulsar?
- What can happen with neutron stars in a binary system?
- What is the neutron star mass limit?
- explain Gamma-Ray burst?
- **KNOW THE HR DIAGRAM WELL**