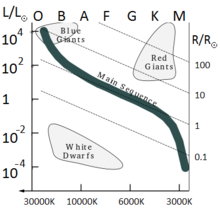
**KEY ASTRONOMY FINAL EXAM REVIEW**

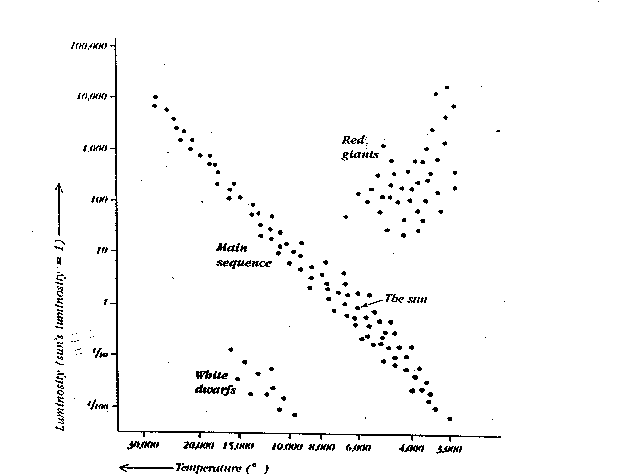
1. Zenith- straight up and above; horizon- where sky meets the land
2. East to west- rise to the right and set to the left
3. 34 degrees to the north celestial pole, directly above at the North Pole, not seen from equator
4. Right ascension- like longitude (hours); declination- like latitude (degrees above and below the equator
5. Imaginary sphere upon which all the stars are projected; imaginary line around the sky directly above the Earth’s equator
6. Sidereal day-time it takes for stars to rise 24 hours 56 min 4sec; 4 minutes shorter than solar day
7. Stars rise 4 minutes early every night 2 hours early in one month’s time
8. Ecliptic- they orbit around the sun
9. Retrograde motion- apparent backward(westward) motion of planets as seen against the background of stars. Earth’s rotation catches Mars and then passes it, Mars appears to fall back
10. Rotation of the Earth in a tilted axis
11. Depends on the season-location of the Earth to the Sun
12. Polaris
13. Trails of stars movement forming a path that is caused by Earth’s spinning
14. Agriculture, astrology, religion, historical records
15. Whether the solar system was geocentric or heliocentric
16. Galileo-sun centered universe
17. Near the sun
18. Found the Milky Way; sunspots on the sun; Jupiter has 4 orbiting satellites; Venus had phases
19. Kepler-planets move ellipses not circles; planets move faster when closer to the sun; slower and further away
20. Mass attracts mass; more mass-closer, more gravity; Less mass-further away, less gravity
21. Gamma Rays, X-Rays, Ultraviolet, Visible Light, Infrared, Microwaves, Radio Waves-High to Low
22. Reflecting and Refracting
23. Telescope



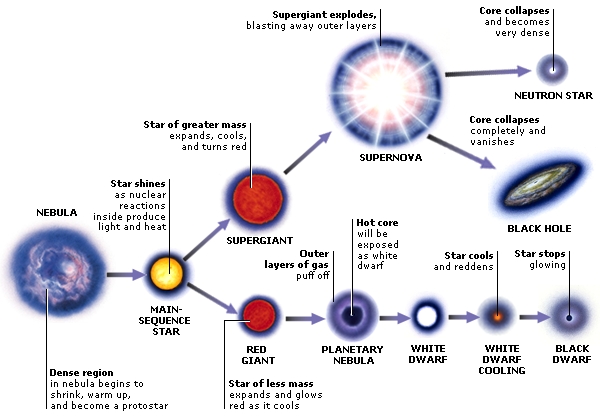
1. Light gathering power 300-f/10; aperture -300mm, focal length -3,000mm
2. Magnification 120 x; 300-f/10 = 3000/25 = 120x
3. Decrease size of eyepiece
4. Refracting- primary lens to eyepiece; reflecting- aperture to primary mirror
5. CCD- Charge Coupled Device- detects light and faint objects in single exposure-read directly into a computer for analysis
6. 1 / 16
7. Terrestrial Planets- inner 4 planets; heavy metal cores, liquid mantle, solid rocky surface, temperature differences, liquid water, rocky
8. Jovian Planets- 4 outer planets, small cores of heavy metals, large, ring systems
9. Pluto’s orbit is elliptical not circular
10. Small pieces of debris are burning up in the atmosphere
11. Meteorite- debris large enough- does not burn- strikes the ground
12. Comet- small, icy bodies that orbit the sun
13. We only see portions of the lit side from different angles
14. Lunar eclipse – Moon-Earth-Sun

Solar eclipse- Earth-Moon-Sun

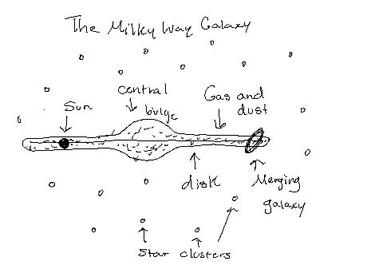
1. Nuclear fusion- hydrogen🡪 Helium 🡪 energy, the core- high pressure and temperature
2. Sunspots- hot gas that hits cool surface created by magnetic fields, sunspot cycle peaks approximately 10-11 years
3. By temperature- O,B,A,F,G,K,M
4. At higher temperatures atoms move faster, hydrogen becomes ionized
5. Dark absorption lines – cooler gas absorbs light
6. Composition
7. Gravity; nuclear fusion; balance between pressure of gases and gravity
8. Apparent magnitude- brightness-lower the number, the brighter the star
9. Absolute magnitude- luminosity- lower the number, the more luminous the star
10. Apparent angular size of the ellipse that a nearby star appears to trace against the background stars. 1/.742 = 1.35 pc ; 44 light year
11. Helium and hydrogen
12. Temperature and luminosity
13. HR Diagram
14. Luminosity
15. Sun 🡪 red giant 🡪 planetary nebula 🡪 white dwarf
16. Hot stars have a shorter life span
17. HR Diagram



1. Helium fuses into heavier elements
2. Serve as distance markers (when two far away to see parallax)
3. Mass
4. Blue giants
5. High mass stars- light and radiation, neutrinos, elements heavier than iron
6. Stars run out of fuel, core collapses, core converts to mostly neutrons, explodes- after red giant phases
7. Pulsar- neutron star that spins rapidly- emits radio waves (synchrotron radiation)
8. Black hole- a very dense star that continues to collapse, detected by: accretion disk, galactic jets, x-rays, companion star orbiting
9. Hypernova- explosion produced when a high mass star collapses into a black hole
10. Interstellar Cloud 🡪 Protostar 🡪 Massive Star 🡪 Red Giant 🡪 Super Nova 🡪 Blackhole neutron star



1. Red giant – Betelgeuse; blue giant – Rigel; pulsar- crab pulsar; Blackhole- center of the universe; main sequence star – Sun
2. Milky Way Galaxy



1. Milky Way – spiral
2. Interstellar dust; 21cm infrared waves
3. Elliptical, spiral, barred spiral, irregular
4. Initial conditions under which the galaxy was formed
5. Cosmology- the study of how the universe began, is not and how it will be in the future
6. Theory of how the universe began
   1. Galaxies are receding away
   2. Cosmic background radiation
   3. Majority of universe is hydrogen and helium
   4. Left over neutrinos
7. The further away the faster the galaxy is receding
8. Dependent on density; low density- the universe keeps expanding; high density- the universe expanding and collapse; Dark energy is the current cause of that force.
9. Exoplanet- planets outside our solar system that could hold Habitable planet. Look for water as a signature.
10. Atmosphere “water” food supply regulated heat