Name _____ Date _____

Chapter 30.1

Star Types – Color, Surface Temperature, and Characteristics

O, B, A, F, G, K, and M. - "Oh be a fine girl (guy), kiss me."

Star Type	Color	Approximate Surface Temperature	Average Radius (Sun = 1)	Main Characteristics	Examples
O	Blue	over 25,000 K	15	Singly ionized helium lines (H I) either in emission or absorption. Strong UV continuum.	10 Lacertra
B	Blue	11,000 - 25,000 K	7	Neutral helium lines (H II) in absorption.	Rigel Spica
A	Blue	7,500 - 11,000 K	2.5	Hydrogen (H) lines strongest for A0 stars, decreasing for other A's.	Sirius, Vega
F	Blue to White	6,000 - 7,500 K	1.3	Ca II absorption. Metallic lines become noticeable.	Canopus, Procyon
G	White to Yellow	5,000 - 6,000 K	1.1	Absorption lines of neutral metallic atoms and ions (e.g. once-ionized calcium).	Sun, Capella
K	Orange to Red	3,500 - 5,000 K	0.9	Metallic lines, some blue continuum.	Arcturus, Aldebaran
M	Red	under 3,500 K	0.4	Some molecular bands of titanium oxide.	Betelgeuse, Antares

Table Source: http://www.enchantedlearning.com/subjects/astronomy/stars/startypes.shtml

Name _____ Date _____

Star Types – Color and Surface Temperature

Determine the color and letter of these stars:

Star Name	Luminosity	Surface Temperature Kelvin	Color	Letter
Our Sun	1	5,750	White-Yellow	G
Betelgeuse	16,000	3,100		
Polaris	5,500	5,400		
B. Centauri	1,700	25,000		
Antares	910	3,200		
Spica	760	24,000		
Aldebaran	160	3,600		
Regulus	160	13,600		
Arcturus	100	4,500		
Vega	50	11,300		
Sirius	20	10,600		
Fomalhaut	12	9,600		
Altair	10	8,400		
Procyon	6	6,600		
A. Centauri	2	6,000		
Lacaille 8760	0.03	3,500		
40 Eridani B.	0.01	9,000		

Name _____ Date _____

Star Magnitudes

Chapter 30.1

Rank	Star	Absolute Magnitude	Apparent Magnitude	Distance from Earth (light-years)
.	The Sun	+4.8	**-26.72**	.
1	Sirius (in Canis Major)	+1.4	**-1.46**	8.6
2	Canopus (in Carina)	-2.5	**-0.72**	74
3	Rigel Kentaurus (Alpha Centauri) (in Centaurus)	+4.4	**-0.27**	4.3
4	Arcturus (in Boötes)	+0.2	**-0.04**	34
5	Vega (in Lyra)	+0.6	**0.03**	25
6	Capella (in Auriga)	+0.4	**+0.08**	41
7	Rigel (in Orion)	-8.1	**+0.12**	900
8	Procyon (in Canis Minor)	2.8	**+0.38**	11
9	Archenar (in Eridanus)	-1.3	**+0.46**	75
10	Betelgeuse (in Orion)	-7.2	**+0.50**	1,500
11	Hadar (in Centaurus)	-4.3	**+0.61**	300
12	Altair (in Aquila)	+2.3	**+0.77**	17
13	Acrux (in Crux)	-3.8	**+0.79**	270
14	Aldebaran (in Taurus)	-0.2	**+0.85**	65
15	Antares (in Scorpius)	-4.5	**+0.96**	400
20	Deneb (in Cygnus)	-7.2	**+1.25**	1,500

Apparent magnitude is a measure of the brightness of a celestial object as seen from Earth. The lower the number, the brighter the object. **Negative numbers indicate extreme brightness.** We can see objects up to 6th magnitude without a telescope. This system of rating the brightness of celestial objects was developed by the Greek astronomer Hipparchus in 120 B.C.

Absolute magnitude is a measure of the inherent brightness of a celestial object. This scale is defined as the apparent magnitude a star would have if it were seen from a distance of 32.6 light-years. The lower the number, the brighter the object. **Negative numbers indicate extreme brightness.**

Questions: Use the chart to help you answer these:
(Besides the Sun/Apparent Magnitude)

1. What is the brightest star in the sky? _____ What is the apparent magnitude? _____ What constellation is it in? _____ How far away is it? _____ .

2. The closest star is _____ at _____ light years away.

3. The farthest star is _____ at _____ light years away.

4. Which constellation has 2 of the brightest stars in the sky? _____
Name of star _____ apparent magnitude _____ and
Name of Star _____ apparent magnitude _____.

5. What is the difference between absolute and apparent magnitude?

_____

_____

_____

6. Rank these stars in order from brightest to dimmest apparent magnitude
Vega, Archenar, Aldebaran, Arcturus, Hadar, Canopus, Procyon

_____

_____