

Show ALL work for full credit. Each problem 2 pts unless otherwise noted.

- 1) A parsec is about 3.3 light-years.
- 2) A parsec is slightly more than 200,000 AU.
- 3) Our nearest stellar neighbor is a little less than 1 parsec away.
- 4) Of all the stars in the sky, Barnard's star, the next closest beyond Alpha Centauri, appears to move the fastest.
- 5) Two stars have the same absolute magnitude, but one lies twice as far from Earth as the other. It will appear half as bright.
- 6) The full Moon's apparent magnitude is
A) -12.5. B) -1.4. C) -26.2. D) +4.83. E) +12.7.
- 7) A star's absolute magnitude is its apparent brightness as seen from
A) 10 light-years distance.
B) Alpha Centauri.
C) 10 parsecs distance.
D) Pluto.
E) 100 parsecs distance.
- 8) Which of these stars would be the hottest?
A) A0 B) K9 C) B0 D) M10 E) G2
- 9) In general, what can be said about type O and B stars compared to type K and M stars?
A) They are cooler and older.
B) They are cooler and younger.
C) They are hotter and younger.
D) They are hotter and older.
E) They are neither hotter nor cooler, younger nor older.
- 10) The H-R diagram can plot
A) radius versus mass.
B) temperature versus mass.
C) apparent magnitude versus spectral classes.
D) radius versus luminosity.
E) temperature versus luminosity.
- 11) In the H-R diagram, what are the two most important types of data plotted?
A) luminosities and masses
B) spectral classes and absolute magnitudes
C) absolute and apparent magnitudes
D) apparent magnitudes and temperatures
E) sizes and temperatures

- 12) Compared to the size of the Sun, stars of all types range from
A) 0.001 to 50,000 solar radii.
B) 0.5 to 50 solar radii.
C) 0.1 to 10 solar radii.
D) 0.01 to 1,000 solar radii.
E) 0.08 to 8,000 solar radii.
- 13) A star near the lower right of the H-R diagram is likely to be
A) yellow, with luminosity similar to our Sun's.
B) red, with high luminosity.
C) blue, with high luminosity.
D) hot, bright, and very large.
E) red, with low luminosity.
- 14) The Doppler shift is used to find
A) photometric binaries.
B) astrometric binaries.
C) spectroscopic binaries.
D) visual binaries.
E) eclipsing binaries.
- 15) In what range of masses are most stars found?
A) 0.1 to 2 solar masses
B) 0.01 to 100 solar masses
C) 0.1 to 100 solar masses
D) 1 to 3 solar masses
E) Stars can have any mass.
- 16) To find the distance of nearby stars, we use their parallaxes obtained over _____-month intervals.
A) one
B) three
C) six
D) twelve
E) twenty-four
- 17) The absolute magnitude of the Sun is
A) -26.7. B) -12.1. C) 0. D) +4.8. E) +26.7.
- 18) The ionized helium lines show up only in class _____ stars.
A) B B) O C) F D) K E) M
- 19) High mass stars are typically found on the _____ of the main sequence.
A) upper right B) upper left C) center D) lower left E) lower right
- 20) Only type O stars are hot enough to show ionized _____ in their spectra.

- 21) Where on the H-R diagram are the majority of stars that dominate the night sky?
- 22) White dwarfs like Sirius B are typically the size of _____.
- 23) A star's _____ parallax is found by using the spectral lines to estimate the spectral class and luminosity of distant stars.
- 24) Contrasting a M3Ib and M3V star, they differ primarily in _____ and _____.
- 25) Stellar masses are determined by observing _____ stars.
- 26) The star's _____ plays the major role in determining its main sequence position and luminosity.
- 27) If a binary is detected by periodic shifts in its spectral lines, it is a(n) _____ binary.
- 28) In general, the more massive the star, the _____ its lifetime.
- 29) In general, as you examine stars on the main sequence, going from bottom right to top left, their stellar radii _____.
- 30) How can a white dwarf be hotter than our Sun, yet much less luminous?
- 31) Explain the difference between radial and transverse velocities.
- 32) Contrast apparent and absolute magnitudes.