

Name(s): \_\_\_\_\_

Team: \_\_\_\_\_

Date: \_\_\_\_\_

# Reach 4 the Stars Test

MC (35 points): \_\_\_\_\_

TF (10 points): \_\_\_\_\_

SA (20 points): \_\_\_\_\_

Matching (15 points): \_\_\_\_\_

PI (15 points): \_\_\_\_\_

Math (25 points): \_\_\_\_\_

Total Score: \_\_\_\_\_

I - Multiple Choice: 1 points each

1. What is the approximate diameter of Andromeda?
  - a. 200,00 light-years
  - b. 220,000 light-years
  - c. 300,500 light-years
  - d. 326,981 light-years
2. What is Andromeda's brightest star?
  - a. Alpha Andromedae
  - b. M31
  - c. Sirius
  - d. Algol
3. What is the magnitude of Altair?
  - a. 0.76
  - b. 0.81
  - c. 0.77
  - d. 0.78
4. Which 3 Messier objects does the Constellation Auriga contain? (Pick 3)
  - a. M36
  - b. M37
  - c. M38
  - d. M39
  - e. M40
  - f. M42
5. Where is the constellation Bootes located?
  - a. Southern Sky, -74 and 30
  - b. Southern Sky, +67 and 23
  - c. Northern Sky, 0 and +60
  - d. Northern Sky, +97 and 1
6. What is a nickname for Canis Major?
  - a. The Smaller Dog
  - b. The Dog
  - c. The Horse
  - d. The Greater Dog
7. The Star Procyon is currently in what stage?
  - a. Giant
  - b. Supergiant
  - c. Protostar
  - d. Main sequence

8. What is Centaurus representing?
  - a. A horse
  - b. A centaur
  - c. A man
  - d. An Ox
9. What type of galaxy is Centaurus located in and what type of galaxy?
  - a. NGC 5128, elliptical
  - b. NGC 1333, spiral
  - c. NGC 4038, irregular
  - d. NGC 4039, barred spiral
10. How many messier objects are in Coma Berenices?
  - a. 8
  - b. 9
  - c. 10
  - d. 5
11. What kind of galaxy is NGC 4028 and NGC 4039?
  - a. 2 spiral galaxies that are close to each other
  - b. 1 barred spiral and the other elliptical
  - c. 2 spiral galaxies that collided
  - d. 1 irregular galaxy and 1 elliptical galaxy that collided
12. What is the Dragonfish Nebula made up of?
  - a. Dust and clouds
  - b. Dust and gas
  - c. Gas and clouds
  - d. Cosmic radiation and debris
13. What does the life of a star depend on?
  - a. Luminosity
  - b. Mass
  - c. Temperature
  - d. All the above
14. On the Hertzsprung-Russell Diagram, where are the main sequence stars located at?
  - a. Top right
  - b. Top left
  - c. Middle
  - d. Bottom left
15. Based on the Yerkes Spectral Classification, what does Ib represent?
  - a. Normal supergiants
  - b. Bright supergiants
  - c. Main-sequence
  - d. White dwarf

16. What is the hottest color of a star?
- Red
  - Orange
  - White
  - Blue
17. What type of color are G-type stars?
- Blue
  - Orange
  - Yellow
  - Red
18. What is a helium flash?
- When the star's core reaches 300 mil degrees and takes in a lot of helium
  - When the star runs out of helium
  - When the star switches from hydrogen to helium
  - All the above
19. How are protostars created?
- Collapse and fragmentation of molecular clouds
  - Temperatures of surroundings increase
  - Gravitational contraction
  - All the above
20. When large galaxies similar in mass collide with each other, they become
- Spiral galaxy
  - Elliptical galaxy
  - Irregular galaxy
  - Barred Spiral galaxy
21. A blue light photon \_\_\_\_\_ a red light photon.
- is less energetic than
  - is more energetic than
  - has the same amount of energy as
  - There is no such thing as a "red light photon"
22. What sort of light has the shortest wavelength?
- Radio waves
  - Infrared light
  - X-Rays
  - Microwaves
23. What is the Rv of Sgr A?
- 50 km/s
  - 25 km/s
  - 78 km/s
  - 46 km/s

24. How far away is the Baby Boom Galaxy?
- a. 12.2 bil
  - b. 12 bil
  - c. 12.2 mil
  - d. 10 mil
25. What is LMC?
- a. A planet
  - b. A cloud
  - c. A satellite galaxy
  - d. A nebula
26. What is Aldebaran known as?
- a. Eye of Taurus
  - b. A bright star
  - c. The follower
  - d. All the above
27. What type of radiation do hot stars emit the most?
- a. Ultraviolet
  - b. Gamma rays
  - c. X-ray
  - d. All the above
28. What type of galaxy has the most stars?
- a. Spiral
  - b. Large elliptical
  - c. Barred
  - d. Irregular
29. About how many stars according to the above question?
- a. 1 million
  - b. 1 billion
  - c. 1 trillion
  - d. 10 million
30. What is the spectral classification of the Sun?
- a. G
  - b. O
  - c. K
  - d. A
31. What type of radiation is the biggest?
- a. Radio
  - b. Microwave
  - c. Infrared
  - d. Gamma ray

32. What type of radiation is the smallest?

- a. Radio
- b. Microwave
- c. Infrared
- d. Gamma ray

33. What does the picture on the right show?

- a. Continuous
- b. Absorption
- c. Emission
- d. Blueshifted



34. What does the picture on the right show?

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35. What does the picture on the right show?

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II - True or False: 1 point each

1. The Pegasus star is located in the sixth Quadrant of the northern hemisphere.
  - a. True
  - b. False
2. Constellations travel from west to east.
  - a. True
  - b. False
3. Mizar and Alcor are binary systems
  - a. True
  - b. False

4. When the core of a low-mass star is depleted of Hydrogen, nuclear fusion subsides because Helium fusion occurs at a lower higher temperature.
  - a. True
  - b. False
5. Wien's displacement law states that the wavelength where a black-body emits most of its radiation is inversely not proportional to the temperature.
  - a. True
  - b. False
6. The Baby Boom galaxy is located in the Sextans constellation.
  - a. True
  - b. False
7. 30 Doradus is located in the H II region in the LMC.
  - a. True
  - b. False
8. Zeta Ophiuchi is the brightest nebula.
  - a. True
  - b. False
9. Ursa Major is in the Northern sky.
  - a. True
  - b. False
10. Castor is a single bright star.
  - a. True
  - b. False

III - Short Answers: 2 points each

1. Define apparent magnitude?
-

2. Define absolute magnitude?

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3. What is the life cycle of a massive star?

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4. What is the life cycle of a main-sequence star?

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5. What are black dwarfs?

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6. What stars are in the Winter Triangle?

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7. What stars are in the Summer Triangle?

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8. What are neutron stars?

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9. What is a pulsar?

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10. Name 5 space telescopes

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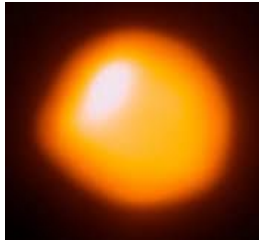
IV - Matching: 1 point each

Match the star to each its spectral type

- |                |                  |
|----------------|------------------|
| 1. Altair      | A. A1V           |
| 2. Capella     | B. M2Iab         |
| 3. Arcturus    | C. K1.5IIIFe-0.5 |
| 4. Sirius      | D. A5V SB        |
| 5. Procyon     | E. B1V           |
| 6. Deneb       | F. G3III         |
| 7. Spicas      | G. A0V           |
| 8. Pollux      | H. A2 Ia         |
| 9. Vega        | I. A7V           |
| 10. Betelgeuse | J. M1Ib          |
| 11. Rigel      | K. B8Iab         |
| 12. Algol      | L. DQZ           |
| 13. Antares    | M. K5III         |
| 14. Aldebaran  | N. K0IIIb        |
| 15. Alcor      | O. B8V           |

V - Picture Identification: 1 point each

1.



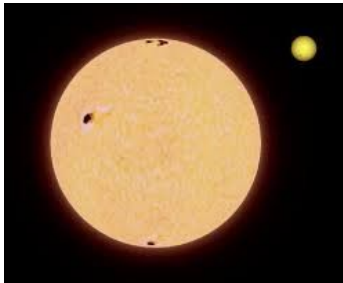
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2.



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3.



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4.



5.



6.



7.



8.



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9.



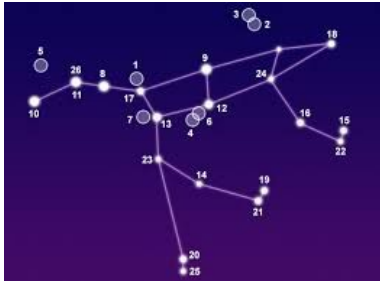
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10.

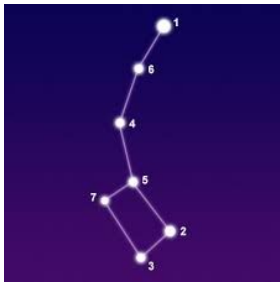


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11.



12.



13.

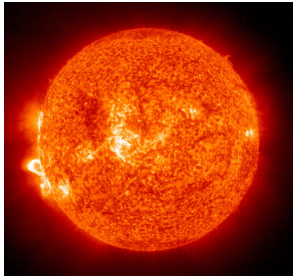


14.



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15.



VI - Math Problems: 5 points each

1. What is the luminosity of a star if its apparent and absolute magnitude is 5 and a distance of 10 parsecs. (kW)

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2. If a star has the same surface temperature as the Sun and a radius is twice as big. What is the star's luminosity? ( $L_{\odot}$ )

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3. How many times more luminous is a  $m=1$  star than a  $m=11$  star?

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4. A star has an apparent magnitude of -15, what is the absolute magnitude?  
(distance = 25 parsecs)

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5. Aldebaran is about 20 parsecs away and has an absolute magnitude of -0.3. Calculate the apparent magnitude.
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