

NAME: **KEY**

DATE: / /

CLASS PERIOD: NPA NPB EBA EBB

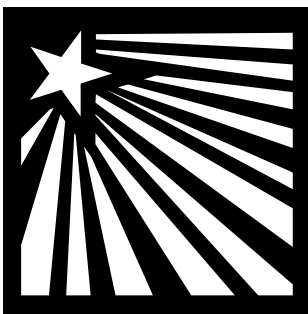
LAB ACTIVITY

LAB ACTIVITY TITLE:

# EXPLORE ASTRONOMY USING YOUR ESRT



**INTRO:** Hidden in the back recesses of your ESRT is a lot of great data on the electromagnetic spectrum, Solar System and the stars. It is in both text and chart form. It is up to you (working alone), to interpret the charts and find the requested information. This lab will help you become familiar with it and be able to use it as a tool to discover/uncover information on Astronomy.



## PROCEDURE:

**First gather what you need:**

Your ESRT and a pencil or pen.

**Then:**

1. Read the explorations carefully.
2. Use your ESRT to help determine the answers.
3. Hand in completed lab for grading.



1. Which type of electromagnetic energy has the shortest wavelengths? \_\_\_\_\_  
**Gamma waves**
2. Which type of electromagnetic energy has the most energetic wavelengths and are therefore the most dangerous? \_\_\_\_\_ **Gamma waves**
3. Which color has a longer wavelength red or blue? **Red** \_\_\_\_\_.
4. What is the most luminous star shown on your Characteristics of Stars chart. \_\_\_\_\_ **Deneb?**
5. Using just the ESRT, at what altitude (in km) does it look like space would start? **120-600 km** km
6. Name the titles of the horizontal axes of the Characteristics of Stars chart. \_\_\_\_\_ and \_\_\_\_\_  
**Color and Surface Temperature**
7. Name the title of vertical axis of the Characteristics of Stars chart. \_\_\_\_\_  
**Luminosity (Relative to the Sun)**
8. What does luminosity mean in relation to a quality of a star? \_\_\_\_\_  
**Rate a star emits energy relative to the Sun**
9. On the luminosity chart, temperature increases as you read it to the right. True or **False**
10. On the luminosity chart, hot stars are Red and cool stars are Blue. True or **False**
11. What is the approximate temperature of the star Rigel? **10,000-11,000 K** **KEY**
12. The star Pollux is approximately how many times more luminous than the Sun? **75 to 90**
13. Which named star has the highest temperature? **Spica** What color is it? **Blue**

# KEY

14. Name 2 stars that are considered Giants and have an orange-red color? **Aldebaran & Pollux**
15. What named star is closest in temperature, luminosity and color to the Sun? **Alpha Centauri**
16. The star Betelgeuse has a luminosity of **100,000-200,000** and has a **RD-OR** color.
17. Which star group has an average luminosity of 0.01-0.001 and includes Procyon B? **White Dwarfs**
18. The solar system body with:

- The shortest Period of Rotation - **Jupiter**
- The longest Period of Rotation - **Venus**
- The shortest Period of Revolution around the Sun - **Mercury**
- The longest Period of Revolution - **Neptune**
- The second largest equatorial diameter - **Jupiter**
- The smallest equatorial diameter - **Mercury**
- A planet with a diameter approximately 21 times the diameter of Mars - **Jupiter**
- An equatorial diameter that is nearly 10 times greater than Earth's - **Saturn**
- A relative mass which is  $3.33 \times 10^5$  greater than Earth's - **Sun**
- Besides Earth, the planet with a 24 hour day - **Mars**
- The second most circular orbit - **Neptune**
- Has the least circular orbit - **Mercury**
- Has a day longer than its year - **Venus**
- Has equal Periods of Rotation and Revolution - **Moon**
- Has the lowest density - **Saturn**
- Has the density closet to Earth's **Mercury**

19. If you are 14 years old on Earth on what planet would you be almost 23 years old? **Venus**

20. Describe what is meant by (short answers are good):

- Eccentricity of orbit **how oval an orbit is**
- Period of Revolution **revolve around the Sun, 1 year**
- Period of Rotation **rotate on it's axis, 1 day**

21. Other than the Earth describe something that you find interesting about another planet in our solar system (this must be based on facts). \_\_\_\_\_

20. (Thought Question) At noon On June 21 will the shadow length at  $42^\circ$  N latitude be shorter or longer than it is on March 21? And, what is your reason for saying it will be either shorter or longer?

**Shadow longer on March 21 because the Sun is lower in the sky.**

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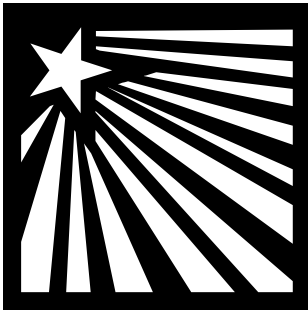
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**EXPLORATIONS:**

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  - The second largest equatorial diameter - \_\_\_\_\_
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  - A planet with a diameter approximately 21 times the diameter of Mars - \_\_\_\_\_
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  - Besides Earth, the planet with a 24 hour day - \_\_\_\_\_
  - The second most circular orbit - \_\_\_\_\_
  - Has the least circular orbit - \_\_\_\_\_
  - Has a day longer than its year - \_\_\_\_\_
  - Has equal Periods of Rotation and Revolution - \_\_\_\_\_
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  - Period of Revolution \_\_\_\_\_
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\_\_\_\_\_

