STARRY, STARRY NIGHT

Description:
This event will test students' knowledge of astronomical facts and concepts relating to the earth, moon, solar system, celestial sphere, stars, constellations, **galaxies, nebulae, and telescopes**.

Number of participants: 2 **Approximate Time: 30 minutes**

The Competition:

The students will take a written test consisting of a variety of question formats, including: true/false, multiple choice, matching, fill in the blank, and sketch a diagram.

Part I: Demonstrate knowledge of our solar system:

1. Distinguish between the motions of rotation and revolution.
2. Explain the astronomical basis for units of time--day, month, year.
3. **Know the terms** and explain the causes for seasons on the earth.
4. Identify the phases of the moon and understand why they occur.
5. Compare solar and lunar eclipses and the conditions that produce them.
6. Demonstrate knowledge about the planetary members of the solar system.
   a. Characteristics of the planets, such as length of day, length of year, number of moons, and atmosphere, temperature, relative distance from the sun, relative size.
   b. Visual identification of planets and planetary features.

Part II: Demonstrate knowledge about the celestial sphere and the following concepts: zenith, horizon, celestial meridian, celestial poles, celestial equator and ecliptic. For this list of constellations, be able to identify on a star chart the location, seaon visible, and the alpha and beta stars.

Constellation	Star or Star Cluster	Constellation	Star or Star Cluster
Bootes	Arcturus	Leo	
Canis Major	Sirius	Orion	Betelgeuse, Rigel
Cassiopeia		Scorpius	
Cepheus		Taurus	Aldebaran, Pleides
Cygnus		Ursa Major	
Draco		Ursa Minor	Polars
Gemini	Castor, Pollux	Virgo	Spica
Andromeda	Andromeda galaxy (M31)	Hercules	

Part III: A series of written questions and visual identification of **galaxies and nebulae, as well as questions about the life cycle of stars. Know glossary terms specific to galaxies, nebulae and life cycle of stars.**

A. **Galaxies**
   a. **What are they?**
   b. **Recognize shapes – spiral, elliptical and irregular**
   c. **Know the characteristics of each type of galaxy**

B. **Nebulae**
   a. **What are they?**
   b. **Understand the differences among reflection, emission and dark nebulae**
   c. **Two other types of nebulae (planetary nebulae and supernova remnant) will be considered below**

C. **Stellar Evolution**
   a. **Understand the main stages – birth, main sequence, red giant, death, remnant**
   b. **Understand the size-dependent differences in the type of various remnant stars produce – white dwarf, neutron star, black hole, supernova remnant**

D. **Visually identify specific galaxies and nebulae.**

Part IV: Telescopes: A series of written questions on various earth and space-based telescopes.

A. **Be able to recognize a basic description of each telescope**

B. **Know the important findings or proposed research goals for each telescope**

C. **Visually identify specific telescopes**

Scoring: One (1), two (2) or three (3) points will be awarded for each correct answer, depending on the level of difficulty. There will be about 65 questions that add up to about 130 points. Tie-breaker questions will be included on the test.