LEARNING AS ONE NATION

Expanded Project

SHS LEARNING ACTIVITY

Name: _____ **Score/Mark:** _____

Grade and Section: _____ **Date:** _____

Strand: ☐ STEM ☐ ABM ☐ HUMSS ☐ ICT (*TVL Track*)

Subject: _____

Type of Activity: ☑ Concept Notes ☑ Skills: Exercise/Drill ☐ Illustration ☐ Performance Task ☐ Essay/Report ☐ Others: _____

Activity Title: **LA02: Ancient Astronomical Observations**

Learning Target: To cite examples of astronomical phenomena known to astronomers before the advent of telescopes.

References: *(Author, Title, Pages)*

1) Stanford Solar Center. *Ancient Observatories – Timeless Knowledge* | https://solar-center.stanford.edu/AO/;

2) Library of Congress. *Finding Our Place in the Cosmos: From Galileo to Sagan and Beyond* | https://loc.gov/

The following are some ancient astronomical observatories, sites, and civilizations where early beginnings of astronomy were practiced and recorded and where early astronomical phenomena were observed:

1. **Jantar Mantar (India)** – Along with five other Indian astronomical observatories, this observatory in Jaipur has helped in the mapping out of position of stars in the sky. Although concepts in astronomy and astrology were intertwined during this period, several important astronomical findings were discovered:
   a. Calculation of occurrences of eclipses
   b. Determination of the circumference of the Earth
   c. Realization that the sun is a star
2. **Egyptian Temples and Pyramids** – Their construction has been considered a result of following precise astronomical observations. Astronomical discoveries by early Egyptian astronomers include:
   a. Invention of the 365-day calendar
   b. Development of instruments for quantitative astronomical measurement
   c. Discovery of precession (the movement of the axis of a rotating object about another axis)
   d. Circumference of the Earth calculated by Eratosthenes (Greek mathematician, chief of the Library of Alexandria in Egypt)
3. **Gaocheng Observatory (China)** – Originally designed to predict solstice (two points when the sun is farthest south or north of the Earth's equator) and is the oldest of the 27 observatories in China.
   – it was here where the calculation of the length of a year to 365.2425 days was done (prior to the development of the Gregorian calendar 300 years later!).
4. **Machu Picchu of Incas (Peru) and Tenochtitlan of Aztecs (Mexico)** – These Central and South American civilizations were renowned in their development of calendar systems.
5. **Ancient Greeks** – Findings of Egyptian and Babylonian astronomers paved the way for ancient Greeks to make great contributions in astronomy. Anaxagoras discovered that the Earth is spherical after his observation of eclipses.

Exercise:

Pick one astronomical phenomenon cited above and draw an illustration.