Georgia Performance Standards Framework for Earth Science – Grade 6

Unit: Universe and Solar System
Sternberg Task
Asteroids, Comets and Meteors

Subject Area: Earth Science
Grade: 6

Standards (Content and Characteristics):

S6E1. Students will explore current scientific views of the universe and how these views evolved.
   f. Describe the characteristics of comets, asteroids, and meteors.

S6CS1. Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
   a. Understand the importance of—and keep—honest, clear, and accurate records in science.

S6CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.
   a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.

S6CS6. Students will communicate scientific ideas and activities clearly.
   b. Understand and describe how writing for scientific purposes is different than writing for literary purposes.
   c. Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal.

S6CS10. Students will enhance reading in all curriculum areas by:
   a. Reading in All Curriculum Areas
   c. Building vocabulary knowledge
   d. Establishing context

Enduring Understanding:
Comets and asteroids are objects smaller than planets that orbit the sun and vary in size, composition, and characteristics.

Essential Question(s):
How are asteroids and comets different?
ADMINISTRATION PROCEDURES

Pre-Assessment: Administer quiz.

1. Which of the following happens to the majority of space debris that enters earth’s atmosphere?
   a. The majority of space debris impacts the earth’s surface.
   b. The majority of space debris melts on the earth’s surface.
   c. The majority of space debris explodes in the earth’s atmosphere.
   d. The majority of space debris burns up in the earth’s atmosphere.

2. Which of the following best describes a meteorite?
   a. A meteorite is a meteor that makes it through earth’s atmosphere.
   b. A meteorite is a universal object that has fallen to the earth.
   c. A meteorite is a piece of rock or metal that is traveling through space.
   d. A meteorite is a piece of ice with rock and dust that has its own orbit.

3. Where do many scientists believe most asteroids, meteors, and comets come from?
   a. debris from planets in other galaxies
   b. leftover material from the formation of the solar system
   c. pieces of older planets in the solar system that exploded
   d. material that has evaporated from the surface of the planets in the solar system

4. The asteroid belt in our solar system is located between which two planets?
   a. Uranus and Pluto
   b. Venus and Mars
   c. Mars and Jupiter
   d. Neptune and Jupiter

5. A comet’s tail always points toward the sun?
   a. true
   b. false

Answer Key  1. d,  2. a,  3. a,  4. c,  5. b
### Outcome / Performance Expectations:
Comets, chunks of ice and dust, revolve around the sun with very, very elliptical orbits. Asteroids are smaller than planets and are found orbiting the Sun between Jupiter and Mars. Meteoroids are mostly chunks of rock or dust found in space and usually come from a comet or asteroid.

Students will differentiate between comets, asteroids, and meteors by designing a tri-fold electronic brochure.

### General Teacher Instructions:
View segments of video Cosmic Collisions using united streaming to provide visuals and information about comets, asteroids, and meteors. Have students take notes in their logbooks. Focus on the similarities and differences between each.

### Materials Needed:
- Cosmic Collisions video from [www.gpb.org](http://www.gpb.org)
- logbooks
- computer access
- texts
- classroom library

### Safety Precautions:
Make sure each student has a signed permission form to use the internet. Remind students of the need to only visit sites related to the assignment.

### Task with Student Directions:
After viewing the video, design a tri-fold electronic brochure which shows the differences between asteroids, comets, and meteors. You should consult the notes in your logbook, textbooks, and other resources in the classroom library, as well as the computer. Include factual information and pictures. You should be creative in your format choice. Your brochure will be presented to the class and displayed on the bulletin board.

### Resources:
- Video from www.gpb.org:

- Websites:
  - [http://www.nasa.gov](http://www.nasa.gov)
  - [http://www.daviddarling.info/childrens_encyclopedia/comets_Chapter4.html](http://www.daviddarling.info/childrens_encyclopedia/comets_Chapter4.html)

### Homework / Extension:
Summarize the differences between asteroids, comets, and meteors by writing a paragraph in your logbook. Observe the night sky for a period of one hour; record your observations in your logbook. Be prepared to discuss how you can tell the differences between each and what you observed during your viewing time.
## Instructional Task Accommodations for ELL Students:
- adjust teacher talk when explaining activity to increase comprehensibility (face the students, pause frequently, speak at a moderate speed)
- decrease details needed to learn main concepts
- reduce length of assignment
- pair verbal directions with visual clues
- provide additional examples

## Instructional Task Accommodations for Students with Specific Disabilities:
- reduce the number of questions answered about each website students investigate
- provide quiet work space with minimal distractions
- provide sentence/story starters for answering questions about each website
- enlarge font size on student copies of website listings
- record websites orally on data collecting instrument

## Instructional Task Accommodations for Gifted Students:
- students can conduct a “writer’s workshop” detailing why they wouldn’t recommend a particular website to their peers
- students can make “editorial” changes to the website they wouldn’t recommend to their peers
- students will write a skit based on interactive graphics, activities discovered and the researched websites; students will then cast and perform the skit for their peers