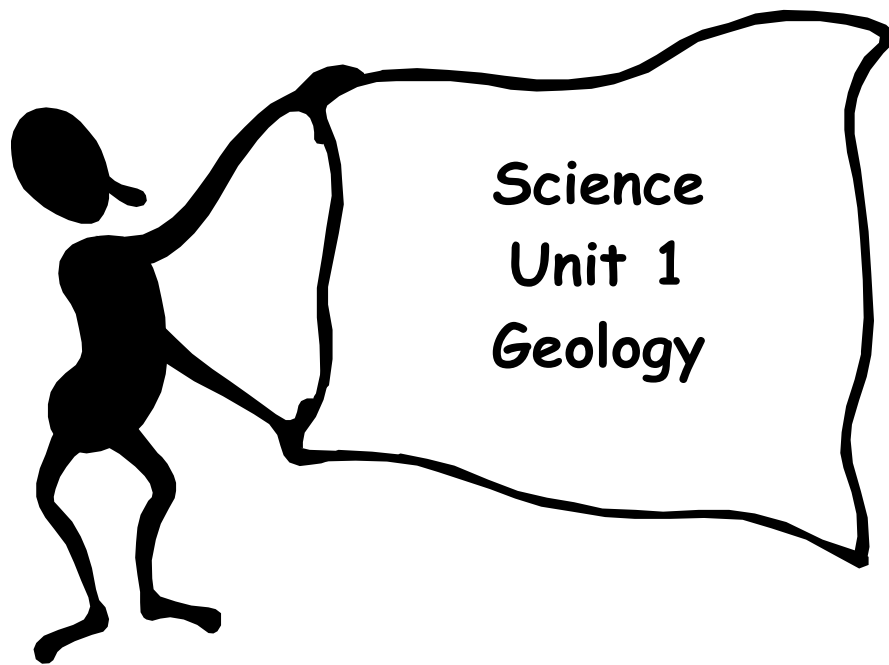


# New York City Department of Education Magnet Program District 25 & 28

JHS 185 The Aspires Magnet School



**Essential Question:** As caretakers of the Earth, how can we maintain optimum homeostasis?

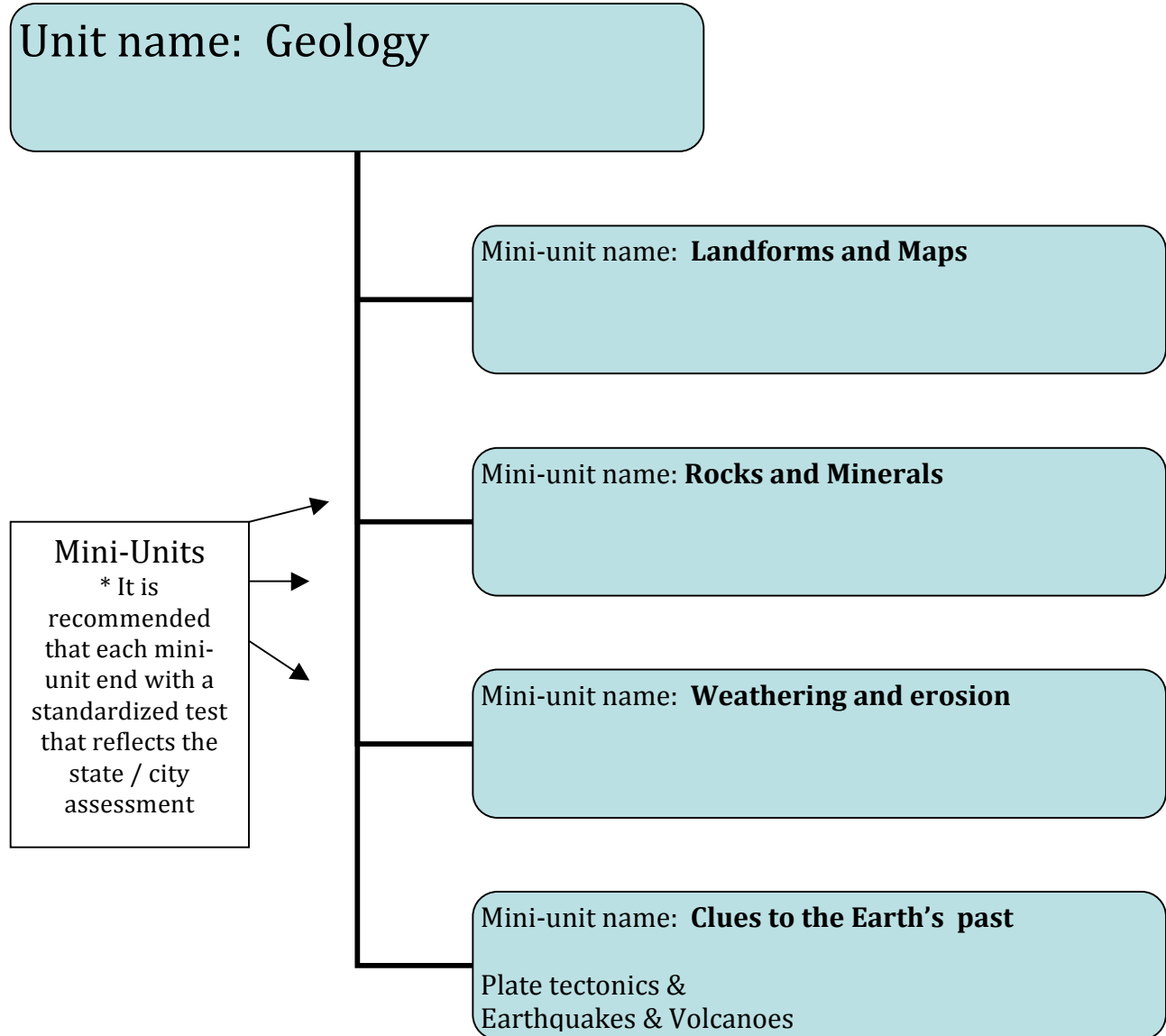
**Suggested Time Frame:** 9 Weeks

**Theme:** Health and Medicine

# Graphic Overview of Unit

Suggested Time Frame:

## Essential Question:



**Unit's Culminating Project: (briefly explain in 2-3 sentences):** Students will create a report on the viability of relocating humans, plants, and animals to another planet. They will take on the role of NASA scientists and report to NASA administrators.

Stage 1- Desired Results	
<p><b>Standards-Based Learning Goals:</b> PS 2.1 a,b,c,d,e,f,g,h,I, 2.2 a,b,c,d,e,f,h, 3.1 a,b,g,h,i,3.3 e,f, 4.2 b LE 3.2 b,c, GS 1,2,3,4,5,6,7, PSS 1,2,3,4,5,6,7,10,11,13</p>	
Concepts	
<p><b>Big Ideas for this Unit</b></p> <ul style="list-style-type: none"> <li>- The Earth is in constant conflict, resulting in change. All life is similar, to survive we must be able to adapt and maintain a balance.</li> </ul>	<p><b>Magnet School Theme:</b> Health and Medicine</p> <p><b>How does the Big Idea in your unit connect to your theme?</b></p> <ul style="list-style-type: none"> <li>-The medical and health fields, like the Earth and life are constantly evolving to maintain homeostasis in our life.</li> </ul>
<p><b>Enduring Understandings</b></p> <ul style="list-style-type: none"> <li>-Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.</li> <li>-The condition of the Earth geologically, directly affects the health conditions of all living things.</li> <li>-Fossils are evidence of a great variety of past species due to the ever changing Earth.</li> </ul>	<p><b>Overarching Essential Question: (this question should connect to your school theme)</b></p> <ul style="list-style-type: none"> <li>-As caretakers of the Earth, how can we maintain optimum homeostasis?</li> </ul>
Content and Skills	
<p><b>Content</b> <b>Students will know...</b></p> <p>Lithosphere, hydrosphere, atmosphere, biosphere, rock cycle, sedimentary, igneous, metamorphic, properties of minerals, erosion, weathering, soil, sediments, fossils, fossil record, dating of rocks, plate tectonics, convection currents,</p>	<p><b>Skills</b> <b>Students will be able to...</b></p> <ul style="list-style-type: none"> <li>-Recognize patterns and trends, Follow safety procedures, Utilize measurement tools, Use appropriate units, Classify objects in an orderly scheme, Determine volume and density, Identify physical and chemical properties, Identify rock types</li> </ul>

<b>Content</b> <b>Students will know...</b>	<b>Skills</b> <b>Students will be able to...</b>
<p>Lithosphere, hydrosphere, atmosphere, biosphere, rock cycle, sedimentary, igneous, metamorphic, properties of minerals, erosion, weathering, soil, sediments, fossils, fossil record, dating of rocks, plate tectonics, convection currents, buoyancy, sea floor spreading, earthquakes, volcanoes eruptions, magma, lava, seismic waves, ocean basins mountain building, topography, lab safety ,measurements, metric ruler, balance, graduated cylinder, appropriate units, patterns and trends, classification, scheme, sequence of events, indicators, interpretations, compound microscope, latitude, longitude, minerals, rock cycle, patterns of distribution, magnetic compass, angular elevation, magnetic field, field maps, density, volume, element</p>	<p>-Recognize patterns and trends, Follow safety procedures, Utilize measurement tools, Use appropriate units, Classify objects in an orderly scheme, Determine volume and density, Identify physical and chemical properties, Identify rock types and minerals, Use relative, and absolute dating using fossils and sedimentary layers, Sequence and Interpret events, Manipulate a compound microscope, Determine the size of a microscopic object, Understand how to use a flow chart, Use a flow chart to identify minerals, Explain the rock cycle diagram and describe how it can be used to explain how a rock was formed, Describe what causes earthquakes and volcanoes, Use a magnetic compass, Interpret and create a field map,</p>

**Stage 2- Summative Assessment Evidence**

**If students understand, know and are able to do the items in Stage 1, they should be able to show their understanding by completing an authentic task found in the world beyond the classroom.**

➤ Design the Culminating/Summative Task:

- Please note: The Essential Question and the Grasp are interconnected. The GRASP is a way for students to demonstrate their knowledge and understanding unit by answer of the Essential Question. Or you can say, they are answering the essential question through their GRASP.

G- (goal)

Demonstrate understanding of how geology impacts human life.

R- (role)

Geologic Survey team for NASA.

A- (audience)

NASA Scientists (class)

S- (situation)

Find a planet to relocate, humans, plants, and animals.

P- (purpose and product)

From your final analysis report choice of a planet that can sustain maximum health and life.

S- (standards for performance)

- Clearly identify how geological factors can enhance or destroy an environment, therefore our lives.
- Gain an understanding of how our actions can accelerate geological processes and affect our health.

## **Student Task**

In the space below, write the task exactly as students will see it. You should give this task to them on the first day of the unit. This way they know where they are going.

You are part of a geologic team working for NASA. The Earth is headed for a cataclysmic event that will end all life as we know it. Your mission is to investigate a potential planet to colonize. Your team must analyze the geologic properties of that planet to see if it is compatible for life as we know it. Your team will also include a botanist and a biologist. After you finalize your analysis and data, you must present your findings to NASA and inform them if this planet is habitable. To complete a successful mission you must complete the following:

Task 1. Research the 5 plants and animals assigned to your group, include the following:

- What temperature do they thrive in?
- How much water do they require?
- What kind of soil is best for them?
- How is the plant beneficial to man?

Task 2. Research the 5 animals assigned to your group.

Task 3. Your geological survey of the planet must include the following information:

Atmosphere:

- What is the elemental composition of the atmosphere?
- What is the percentage of each element?
- What is the average temperature of the planet?

Task 4. Hydrosphere:

- What kind of water is on the planet?
- Is the water neutral, acidic, or basic, (pH)?

Task 5. Biosphere:

- Is there any kind of Earth life there?
- Is there any indigenous life?

Task 6. Lithosphere:

- What kinds of rocks are on the planet?
- What kinds of minerals are on the planet?
- What tests will you run to identify an unknown mineral and is it found on Earth?
- What is the topography of the planet or area of interest?
- Map the topography, longitude, and latitude of the desired area.
- What is the extent of erosion and weathering on the planet?

#### Interior of the Planet

- Determine the composition and possible internal geologic activity of the planet. Include the following:
  - Is the interior solid, molten, or liquid?
  - What is the elemental composition?
  - Is there a magnetic field on the planet?
  - Is there evidence of volcanic activity, and/or magma movement?
  - Is there evidence of convection currents and/or tectonic movement?
  - Is there evidence of sea floor spreading, and mountain building?
  - Is there evidence of seismic activity?

#### Task 7. Chronology:

- Use absolute and relative aging to determine the age of the planet.
- Is there a fossil record and what does it tell you about the past history of the planet?
- If there are fossils are they similar to those on Earth?

#### Task 8. Presentation:

Is the planet your team was assigned capable of sustaining your sample organisms and do you think it is a candidate planet? Include in your findings potential ways to avert a disaster similar to the one that has happened on Earth. Present your findings and defend your decision to the NASA committee.



## Rubric For Culminating Project

Traits	Understanding	Performance or Performance Quality
<b>Scale</b>	<b>65 Percent</b>	<b>35 Percent</b>
<b>4</b>	<b>The student shows a mastery of geological processes and concepts. The students' methods show an advanced grasp of the subject for this age level.</b>	<b>The final product presentation is explicit and detailed. The performance is detailed and engaging.</b>
<b>3</b>	<b>The student shows a rock solid understanding of geologic concepts and processes. The methods used are appropriate for the grade level.</b>	<b>The final product presented is concise and thorough. The student successfully conveyed the purpose of the study.</b>
<b>2</b>	<b>Shows a limited grasp of geologic concepts and processes. Methods used were somewhat crude and inadequate.</b>	<b>The effectiveness of the presentation is somewhat effective. It lacks clarity in context and delivery, the awareness of the audience is questionable.</b>
<b>1</b>	<b>Shows minimal comprehension of concepts and processes. The methods are inadequate and show major misunderstandings of the topic.</b>	<b>The performance is unpolished and ineffective. The presentation is unclear and shows little preparation and purpose.</b>

