

Unit 1: Foundations

Driving Question: What can science reveal about our planet's future?

Anchor Phenomenon: Science in America








Duration: 15-18 days



Unit Overview: This unit introduces key skills used in Earth and Space Science, including observation vs. inference, qualitative and quantitative data, and basic mapping and graphing techniques. Students will practice making scientific observations, interpreting data, using latitude and longitude to find locations, and creating graphs to analyze information. These foundational skills will help students think like scientists and prepare them for future topics in Earth and space science.

Performance Expectations [PE]:

- Patterns: Empirical evidence is needed to identify patterns. [HS-ESS1-5]
- Scale, Proportion, and Quantity: The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs. [HS-ESS1-1] Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another [e.g., linear growth vs. exponential growth]. [HS-ESS1-4]
- Energy and Matter: Energy cannot be created or destroyed—only moved between one place and another place, between objects and/or fields, or between systems. [HS-ESS1-2]

	Identifying the Driving Question	Unit 1: Foundations				
		Gathering Evidence	Matter Matters	Data and Deduction	Visualizing Earth	
Anchor Phenomenon Activity	What can science reveal about our planet's future?	How do scientists gather and classify data?	Why does density keep coming up in science?	How can we make reading data easier?	How can you be so sure that Earth is not flat?	Anchor Phenomenon Activity
Science in America Video Clip  Short-form Video	Driving Question Board  Driving Question Board Activity	Making Observations  Station Rotation Activity	The California Gold Rush  Close Reading Activity	iPhone Sales and Trends  Analyze Charts and Graphs	Flat Earthers Proven Wrong  Short-form Video	Revisit the Driving Question  Driving Question Board Activity

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Anchor Phenomenon Activity

What can science reveal about our planet's future?

Scope and Sequence of Activities

Neil deGrasse Tyson Science in America  Short-form Video	Scientific Consensus  Analyze Charts and Graphs	Student Lead Question Creation  Driving Question Board Activity	Identifying the Driving Question  Driving Question Board Activity
Resources and Links			
Video - link	Article - link		

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Gathering Evidence

How do scientists gather and classify data?

Key Concepts

1. Using the five senses
2. Observation vs. Inference
3. Qualitative vs. Quantitative Data

Performance Expectations

There are no Performance Indicators associated with the Foundations unit. These lessons are to assess students' background knowledge and skills, ensuring they are prepared for more complex concepts later in the course.

Scope and Sequence of Activities

Phenomenon / Exploration

Station rotation with various pictures to explore some of Earth's natural events.

Keynotes & Investigations

Investigation: Gathering Evidence
Keynote: Gathering Evidence

Practice

Question Clusters
and Supplementals

Evaluate

6 Question
Assessment

Resources and Links

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Matter Matters

Why does density keep coming up in science?

Key Concepts

1. Measuring mass using an electric balance
2. Measuring volume using a rules and graduated cylinder
3. Calculating density

Performance Expectations

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Scope and Sequence of Activities

Phenomenon / Exploration

Close reading on "Gold Fever and the Science of Density" with questions.

Keynotes & Investigations

Investigation: Calculating Density
Keynote: Matter Matters
Investigation: Missing Volume

Practice

Question Clusters
and Supplementals

Evaluate

10 Question
Assessment

Resources and Links

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Data and Deduction

How can we make reading data easier?

Key Concepts

1. Plotting data
2. Interpreting data with terms
3. Extrapolating and Predicting data

Performance Expectations

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Scope and Sequence of Activities

Phenomenon / Exploration

Analyze iPhone sales data to recognize trends and extrapolate to predict trends.

Keynotes & Investigations

Investigation: Graphing Analysis
Keynote: Data and Deduction
Investigation: Mercalli Scale

Practice

Question clusters
for homework

Evaluate

10 Question
Assessment

Resources and Links

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Visualizing Earth

How can you be so sure that Earth is not flat?

Key Concepts

1. Plotting data
2. Interpreting data with terms
3. Extrapolating and Predicting data

Performance Expectations

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Scope and Sequence of Activities

Phenomenon / Exploration

National Geographic Explorer Flat Earth vs. Round Earth video.

Keynotes & Investigations

Exploration: Visualizing Earth
Keynote: Visualizing Earth

Practice

Question clusters for homework

Evaluate

10 Question Assessment

Resources and Links

Video - [Link](#)

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Synthesizing the Driving Question

What can science reveal about our planet's future?

Scope and Sequence of Activities

Revisit the
Driving Question



Driving Question
Board Activity

Answering the
Question



Socratic Seminar
Discussion

Write and defend your argument
based gained knowledge



Synthesizing the
Driving Question Argument

Unlocking New
Questions



Question
Discovery

Resources and Links