

Topic: Earth's Atmosphere  
 Subject(s):

Days: 31  
 Grade(s):

Key Learning: How do changes in the atmosphere affect weather



Unit Essential Question(s):

What is the Earth's atmosphere?

How do global patterns of atmospheric movement influence regional weather?

How do water systems on earth affect local weather?

How is weather forecasted?



Concept:

**weather forecasting**

S8.D.2.1.3



Lesson Essential Question(s):  
 How is weather forecasted? (A)



Vocabulary:  
 cloud, barometer, anemometer, isotherm, isobar

Concept:

**global patterns**

S8.D.2.1.2



Lesson Essential Question(s):  
 How do global patterns affect local weather? (A)



Vocabulary:  
 El nino, jet stream, climate

Concept:

**Impact of Earth's water**

S8.D.2.1.1



Lesson Essential Question(s):  
 How does water on Earth affect local weather patterns? (A)



Vocabulary:  
 land breeze, ocean breeze, lake effect snow

Concept:

**Atmosphere**

S8.D.2.1.2



Lesson Essential Question(s):  
 What is the Earth's atmosphere? (A)



Vocabulary:  
 atmosphere

Topic: Earth's Atmosphere

Days: 31

Subject(s):

Grade(s):

Additional Information:
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Attached Document(s):
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Vocab Report for Topic: Earth's Atmosphere

Days: 31

Subject(s):

Grade(s):

**Concept: weather forecasting**

cloud -  
barometer -  
anemometer -  
isotherm -  
isobar -

**Concept: global patterns**

El nino -  
jet stream -  
climate -

**Concept: Impact of Earth's water**

land breeze -  
ocean breeze -  
lake effect snow -

**Concept: Atmosphere**

atmosphere -

Topic: Earth's Features and Processes

Days: 31

Subject(s):

Grade(s):

**Key Learning:** Describe the constructive and destructive natural processes that form different geological structures and resources



Unit Essential Question(s):

**How are the interactions among earth's system's measured?**

**How is the internal structure of Earth organized?**

**How do types of soil differ?**

**What evidence can be determined from fossils?**



Concept:  
**rock cycle**  
S8.D.1.1.1

Concept:  
**Natural Processes**  
S8.D.1.1.2

Concept:  
**soil types**  
S8.D.1.1.3



**Lesson Essential Question(s):**  
How does the rock cycle change earth? (A)  
What are the three types of rocks? (A)

**Lesson Essential Question(s):**  
How do Earth's natural processes change the shape of the land? (A)  
How do weathering and erosion change the shape of the land? (A)

**Lesson Essential Question(s):**  
What are the main types of soil? (A)  
What are the characteristics of the different types of soil? (A)  
What types of soil are found in Pennsylvania? (A)



**Vocabulary:**  
igneous, metamorphic, sedimentary, rock cycle, intrusive, extrusive

**Vocabulary:**  
earthquake, landslide, earthquake, mountain, weathering, erosion

**Vocabulary:**  
humus, topsoil, loess, porosity, permeability

Topic: Earth's Features and Processes

Days: 31

Subject(s):

Grade(s):

Concept:

**fossils**

S8.D.1.1.4



Lesson Essential Question(s):

What evidence do fossils provide about the plants and animals that once lived in Pennsylvania? (A)



Vocabulary:

fossil, index fossil

Additional Information:

Attached Document(s):

Vocab Report for Topic: Earth's Features and Processes

Days: 31

Subject(s):

Grade(s):

**Concept: rock cycle**

igneous -  
metamorphic -  
sedimentary -  
rock cycle -  
intrusive -  
extrusive -

**Concept: Natural Processes**

earthquake -  
landslide -  
earthquake -  
mountain -  
weathering -  
erosion -

**Concept: soil types**

humus -  
topsoil -  
loess -  
porosity -  
permeability -

**Concept: fossils**

fossil -  
index fossil -

Topic: Earth's water

Days: 31

Subject(s):

Grade(s):

**Key Learning:** water cycle components; freshwater and saltwater characteristics; types of water systems; stream development












Unit Essential Question(s):

**Why is the water cycle important to Earth's processes?**

**How do saltwater and freshwater systems compare?**

**What are the characteristics of Earth's water systems and how do they compare?**

**How do the characteristics of a stream determine the types of organisms that are found there?**

 Concept: <b>Water Cycle</b> S8.D.1.3.1	 Concept: <b>Freshwater vs Saltwater</b> S8.D.1.3.2	 Concept: <b>Water systems</b> S8.D.1.3.3
 Lesson Essential Question(s): What are the processes of the water cycle? (A)	 Lesson Essential Question(s): How do saltwater and freshwater systems compare? (A)	 Lesson Essential Question(s): What are the characteristics of Earth's water systems? (A)
 Vocabulary: evaporation, condensation, precipitation, transpiration, runoff, infiltration	 Vocabulary: freshwater, saltwater, salinity, density	 Vocabulary: wetland, ocean, river, watershed

Topic: Earth's water

Days: 31

Subject(s):

Grade(s):

Concept:

**Stream characteristics**

S8.D.1.3.4



**Lesson Essential Question(s):**

What are the physical characteristics of a stream? (A)

How do a stream's characteristics determine the types of organisms found there? (A)



**Vocabulary:**

biological diversity, water quality, flow rate, turbidity, tributaries, watershed

**Additional Information:**

**Attached Document(s):**



Vocab Report for Topic: Earth's water

Days: 31

Subject(s):

Grade(s):

**Concept: Water Cycle**

evaporation -  
condensation -  
precipitation -  
transpiration -  
runoff -  
infiltration -

**Concept: Freshwater vs Saltwater**

freshwater -  
saltwater -  
salinity -  
density -

**Concept: Water systems**

wetland -  
ocean -  
river -  
watershed -

**Concept: Stream characteristics**

biological diversity -  
water quality -  
flow rate -  
turbidity -  
tributaries -  
watershed -

Topic: Nature of Science

Days: 15

Subject(s): Science

Grade(s): 8th, 9th

**Key Learning:** Explain how we gather information in science; understand the building blocks of matter



Unit Essential Question(s):

**How do we gather information in science?**

**How are tools and technology used in Earth Science?**

**How can the scientific method be used to solve problems?**

**What is matter and how does it change?**



<p><b>Concept:</b> <b>reasoning and analysis</b> S8.A.1.1.1, S8.A.1.1.2, S8.A.1.1.3, S8.A.1.1.4, S8.A.1.2.1, S8.A.1.2.2, S8.A.1.3.1, S8.A.1.3.2, S8.A.1.3.3</p>	<p><b>Concept:</b> <b>scientific investigation</b> S8.A.2.1.1, S8.A.2.1.2, S8.A.2.1.3, S8.A.2.1.4, S8.A.2.1.5, S8.A.2.2.1, S8.A.2.2.2, S8.A.2.2.3</p>	<p><b>Concept:</b> <b>systems, models and patterns</b> S8.A.3.1.1, S8.A.3.1.3, S8.A.3.1.4, S8.A.3.2.1, S8.A.3.2.3, S8.A.3.3.2</p>
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<p><b>Lesson Essential Question(s):</b> How do scientists interpret and apply knowledge in a variety of formats? (A)</p>	<p><b>Lesson Essential Question(s):</b> How do we use the computer to find reliable resources or information in Earth Science? (ET)  How do scientists solve problems using the scientific method? (A)  What are the appropriate instruments used in Earth Science? (A)</p>	<p><b>Lesson Essential Question(s):</b> How do the parts of a system relate to the system as a whole? (A)  How are models used in science to explain concepts? (A)</p>
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<p><b>Vocabulary:</b> theory, inquiry, opinion</p>	<p><b>Vocabulary:</b> control, variable, scientific method, scale</p>	<p><b>Vocabulary:</b> system, model, pattern</p>
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Topic: Nature of Science

Days: 15

Subject(s): Science

Grade(s): 8th, 9th

Concept:

**Matter**

[S8.C.1.1.1](#), [S8.C.1.1.2](#)



Lesson Essential Question(s):

What is matter and how does it change? (A)



Vocabulary:

atom, compound, density, molecule, mass

Additional Information:

Attached Document(s):

Vocab Report for Topic: Nature of Science

Days: 15

Subject(s): Science

Grade(s): 8th, 9th

**Concept: reasoning and analysis**

theory -  
inquiry -  
opinion -

**Concept: scientific investigation**

control -  
variable -  
scientific method -  
scale -

**Concept: systems, models and patterns**

system -  
model -  
pattern -

**Concept: Matter**

atom -  
compound -  
density -  
molecule -  
mass -

Topic: The Environment  
 Subject(s):

Days: 31  
 Grade(s):

Key Learning: Explain how humans impact the environment



Unit Essential Question(s):

Why is the sustainable use of natural resources necessary?

What are the effects of Environmental Laws on humans and the environment?

How do humans influence the environment?

How do renewable and nonrenewable resources differ?



Concept:  
**Human Impact**

Concept:  
**Renewable and Nonrenewable resources**

Concept:  
**Energy**



Lesson Essential Question(s):  
 How do human activities affect the environment? (A)  
 How does waste management affect the the environment? (A)  
 What long term effects have occurred due to the use of integrated pest management? (A)

Lesson Essential Question(s):  
 How do renewable and nonrenewable resources provide for human needs? (A)  
 How are renewable and non renewable resources different? (A)  
 What types of waste are produced from the use of renewable and non- renewable resources? (A)

Lesson Essential Question(s):  
 How is energy transferred from place to place? (A)  
 How does the sun impact the environment? (A)  
 How do the time span of renewability for fossil fuels and alternative fuels? (A)



Vocabulary:  
 waste management, integrated pest management

Vocabulary:  
 renewable, non-renewable

Vocabulary:  
 energy, fossil fuels

Additional Information:

Attached Document(s):

Vocab Report for Topic: The Environment

Days: 31

Subject(s):

Grade(s):

**Concept: Human Impact**

waste management -  
integrated pest management -

**Concept: Renewable and Nonrenewable resources**

renewable -  
non-renewable -

**Concept: Energy**

energy -  
fossil fuels -

Topic: The Universe  
Subject(s):

Days: 31  
Grade(s):

Key Learning: How Earth compares to other celestial bodies



Unit Essential Question(s):

**How are the Earth, Sun and Moon movements related to each other?**

**How are celestial bodies similar and different?**



Concept:

**Earth, Sun and Moon**

S8.D.3.1.1, S8.D.3.1.2



Lesson Essential Question(s):

How does the Earth move in space? (A)

What causes the phases of the moon? (A)

How do different types of stars compare? (A)



Vocabulary:

axis, eclipse, orbit, revolution, rotation, satellite, HR diagram

Concept:

**Objects in Space**



Lesson Essential Question(s):

How are the planets similar and different? (A)

What are the characteristics of asteroids, comets, and meteors? (A)



Vocabulary:

asteroid, comet, meteor, meteorite, meteoroid, planet, moon, dwarf planet, oort cloud, Kuiper belt

Additional Information:

Attached Document(s):

Vocab Report for Topic: The Universe

Days: 31

Subject(s):

Grade(s):

**Concept: Earth, Sun and Moon**

axis -  
eclipse -  
orbit -  
revolution -  
rotation -  
satellite -  
HR diagram -

**Concept: Objects in Space**

asteroid -  
comet -  
meteor -  
meteorite -  
meteoroid -  
planet -  
moon -  
dwarf planet -  
oort cloud -  
Kuiper belt -