

## Grade 8 Science Scope & Sequence

<u>First Unit</u>	<b>Textbook &amp; Materials</b>	<b>Supplements</b>	<b>Assessment Options</b>
Ecology & Evolution	Holt Life Science: Chapter 5 (Heredity) Chapter 6 (Genes) Chapter 7 (Evolution) Chapter 8 (History of Life on Earth) Chapter 9 (Classification)	Websites: <ul style="list-style-type: none"> <li>• Food Chain Game: <a href="http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm">http://www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm</a></li> <li>• Energy Roles (Producers/Consumers/Decomposers) Game: <a href="http://www.sheppardsoftware.com/content/animals/kidscorner/games/producersconsumersgame.htm">http://www.sheppardsoftware.com/content/animals/kidscorner/games/producersconsumersgame.htm</a></li> <li>• Charles Darwin &amp; Natural Selection - interactive with survival game <a href="http://science.discovery.com/interactives/literacy/darwin/darwin.html">http://science.discovery.com/interactives/literacy/darwin/darwin.html</a></li> <li>• Natural Selection <a href="http://evolution.berkeley.edu/evolibrary/article/evo_25">http://evolution.berkeley.edu/evolibrary/article/evo_25</a></li> <li>• Genetics Review: Probability of Inheritance ~ <a href="http://anthro.palomar.edu/mendel/mendel_2.htm">http://anthro.palomar.edu/mendel/mendel_2.htm</a></li> </ul>	<b><u>Formative:</u></b> <ul style="list-style-type: none"> <li>• Lab: Out-of-Sight Marshmallows p. 710</li> <li>• Lab: Survival of the Chocolates p. 711</li> <li>• Population Lynx &amp; Hare</li> <li>• Food Web Diagram</li> </ul> <b><u>Summative:</u></b> <ul style="list-style-type: none"> <li>• Lab: How DO You Stack Up? P. 652</li> <li>• See disk</li> </ul>
<b>Days/Weeks</b>			
Minimum: 20 days Maximum: 30 days	Holt Earth Science: Chapter 6 (Fossils) Chapter 7 (Plate Tectonics)		

### **Oregon Science Standards:**

#### **6.2 Interaction and Change: The related parts within a system interact and change.**

**6.2L.2 (Review Ecology)** – Explain how individual organisms and populations in an ecosystem interact and how changes in populations are related to resources.

#### **7.1 Structure and Function: Living and non-living systems are composed of components which affect the characteristics and properties of the system.**

**7.1L.2 (Review Genetics)** – Distinguish between inherited and learned traits, explain how inherited traits are passed from generation to generation, and describe the relationships among phenotype, genotype, chromosomes, and genes.

#### **8.1 Structure and Function: Systems and their components function at various levels of complexity.**

**8.1L.1** – Explain how genetics and anatomical characteristics are used to classify organisms and infer evolutionary relationships.

**8.2 Interaction and Change: Systems interact with other systems.**

**8.2L.1** – Explain how species change through the process of natural selection. Describe evidence for evolution.

**8.2E.4** – Analyze evidence for geologic, climatic, environmental, and life form changes over time.

**Common Core Standards for Literacy in Science – Reading:**

**RST.6-8.3** – Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

**RST.6-8.7** – Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually

**Common Core Standards for Literacy in Science – Writing:**

**WHST.6-8.2** – Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

**Critical Content Vocabulary**

absolute age  
adaptation  
alleles  
anatomical characteristics/features  
ancestry  
classification  
climate change  
core sample  
Darwin  
deposits  
DNA (genetic material)  
Ecosystem  
El Nino/La Nina  
embryo  
evidence  
evolution  
extinction  
fossil  
genetics  
habitat  
heredity  
homologous structures  
ice core analysis  
isotopes

**Critical Content Learning Targets:**

- I can explain how fossils provide evidence that organisms have evolved over time.
- I can identify three ways that organisms can be compared to support the theory of evolution.
- I can describe the four steps of Darwin’s theory of evolution by natural selection.
- I can explain how mutations are important to evolution.
- I can give two examples of natural selection in action.
- I can outline the process of speciation.
- I can explain how fossils are dated.
- I can describe the geologic time scale and the information it provides scientists.
- I can describe the possible causes of mass extinctions.
- I can explain the theory of plate tectonics.

limiting factors  
mutation  
natural selection  
niche  
offspring  
organism  
origin (ancestry)  
plate tectonics  
radioactive dating  
random  
relative age  
rock cycle  
species  
superposition  
survival  
taxonomy  
variation

**Common Core Reading Vocabulary:**

multistep procedure, experiment, format

**Common Core Writing Vocabulary:**

organizational structures, formatting structures, transitions, cohesion

**Common Core Reading Learning Targets:**

- I can precisely follow a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- I can identify visual displays of quantitative or technical information (e.g., in flowchart, diagram, model, graph or table) in a text.

**Common Core Writing Learning Targets:**

- I can present my information objectively in a formal style that includes an introduction that previews what is to follow, supporting details, varied transitions (to clarify and create cohesion when I move from one idea to another), and a concluding statement/section that supports the information presented.

## Grade 8 Science Scope & Sequence

<u>Second Unit</u>	Textbook & Materials	Supplements	Assessment Options
Landforms	Holt Earth Science: Chapter 4, Section 1 Chapter 6, Sections 1-2 and 4 Chapter 7, Sections 1-5 Chapter 10, Section 1 Chapter 12, Sections 1-3	Video:  Bill Nye Earth's Crust Bill Nye Rocks and Soil  Websites: <a href="http://www.mysciencebox.org">www.mysciencebox.org</a> <a href="http://www.usgs.gov/">http://www.usgs.gov/</a> <a href="http://www.dlese.org/library/index.jsp">http://www.dlese.org/library/index.jsp</a> <a href="http://www.sciencespot.net/Pages/classearth.html">http://www.sciencespot.net/Pages/classearth.html</a> <a href="http://www.learner.org/interactives/dynamicearth/">http://www.learner.org/interactives/dynamicearth/</a> <a href="http://science-class.net/Geology/Geology.htm">http://science-class.net/Geology/Geology.htm</a>	<b><u>Formative:</u></b> See websites for: Apple Earth Layer Analogy LabBook: Some Go Pop, Some Do Not, p. 664  <b><u>Summative:</u></b> Holt Chapter Tests Rock Cycle Assessment (Pending) Plate Tectonics (Pending)
<b>Days/Weeks</b>			
Minimum: 20 days			
Maximum: 30 days			

### **Oregon Science Standards:**

**6.1 Structure and Function: Living and non-living systems are organized groups of related parts that function together and have characteristics and properties.**

**6.1E.1-** Describe and compare the properties and composition of the layers of Earth.

**7.2 Interaction and Change: The components and processes within a system interact.**

**7.2E.4-** Explain how landforms change over time at various rates in terms of constructive and destructive forces.

**8.2 Interaction and Change: Systems interact with other systems.**

**8.2E.4-** Analyze evidence for geologic, climatic, environmental and life form changes over time.

### **Common Core Standards for Literacy in Science-Reading:**

**RST.6-8.1-** Cite specific textual evidence to support analysis of science and technical texts.

**RST.6-8.7-** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g. in a flowchart, diagram, model, graph, or table).

### **Common Core Standards for Literacy in Science- Writing:**

**WHST.6-8.2-** Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

**Critical Content Vocabulary:**

convection  
magma  
Crust  
Lithosphere  
Asthenosphere  
Mantle  
Tectonic plate  
Outer Core  
Inner Core  
sedimentary  
tsunami  
uniformitarianism  
Volcanoes  
Deposition  
Uplift  
Mountain building  
Weathering  
Erosion (wind, water, ice gravity, waves,  
people)  
absolute age  
deposits  
extinction  
Fossils  
Relative age dating  
Superposition  
Radioactive dating  
Rock cycle

**Critical Content Learning Targets:**

- I can identify and describe the layers of the Earth by what they are made of (composition) and physical properties.
- I can define tectonic plate.
- I can explain how scientists know about the structure of Earth's interior.
- I can describe Wegener's theory of continental drift, and explain why it was not accepted at first.
- I can explain how sea-floor spreading provides a way for continents to move.
- I can describe how new oceanic crust forms at mid-ocean ridges.
- I can describe the three forces thought to move tectonic plates.
- I can describe the three types of tectonic plate boundaries.
- I can explain how the three major types of faults differ.
- I can describe the various types of mountains and how they form.
- I can identify the role of uniformitarianism and contrast it with catastrophism.
- I can explain how relative dating is used in geology.
- I can explain the principle of superposition.
- I can explain how physical features are used to determine relative ages.
- I can describe how different types of fossils are formed.
- I can demonstrate how fossils can be used to determine changes in environments and in the organisms the fossils come from.
- I can describe how ice, rivers, tree roots, and animals cause mechanical weathering.
- I can describe how water, acids, and air cause chemical weathering of rocks.
- I can explain the connection between storms and wave erosion.
- I can describe the effects of wind erosion.
- I can describe how wind moves sand and finer materials.
- I can summarize why glaciers are important agents of erosion

**Common Core Reading Vocabulary:** textual evidence, explicit, analysis

**Common Core Writing Vocabulary:** organizational structures, formatting structures, transitions, cohesion, credibility, paraphrase, citation, plagiarism, search terms

and deposition.

- I can explain how ice in a glacier flows.
- I can describe how some of the landforms eroded by glaciers.
- I can describe some of the landforms deposited by glaciers.
- I can describe how each type of rock changes into another as it moves through the rock cycle.

**Common Core Reading Learning Targets:**

- I can read closely and find explicit information in science and technical texts.
- I can recognize that authors use various formats when presenting information in print or digital texts.

**Common Core Writing Learning Targets:**

- I can select a scientific procedure/experiment or technical process and identify and gather relevant information to share with my audience.

## Grade 8 Science Scope & Sequence

<b>Third Unit</b>	<b>Textbook &amp; Materials</b>	<b>Supplements</b>	<b>Assessment Options</b>
Chemistry	Holt Physical Science: Chapter 2 (Properties of Matter) Chapter 3 (States of Matter) Chapter 4 (Elements, Compounds, and Mixtures) Chapter 11 (Introduction to Atoms) Chapter 12 (The Periodic Table)	Websites: Chem 4 kids: <a href="http://chem4kids.com/">http://chem4kids.com/</a>  Middle School Science Chemistry Page: <a href="http://www.middleschoolscience.com/chemistry.htm">http://www.middleschoolscience.com/chemistry.htm</a>  Videos: Bill Nye – Atoms and Molecules Bill Nye – Chemical Reactions Bill Nye – Phases of Matter	<b>Formative:</b> Atoms Family Balloon Graph Baggie Lab (for chemical reactions) Elements, Compounds, Mixtures Word Sort Changing Sugar Lab  <b>Summative:</b> Change of State Comic Strip Teacher-created summative exams
<b>Days/Weeks</b>			
Minimum: 20 days Maximum: 27 days			

### **Oregon Science Standards:**

#### **7.1 Structure and Function: Living and non-living systems are composed of components which affect the characteristics and properties of the system**

7.1P.1 – Explain that all matter is made of atoms, elements are composed of a single kind of atom, and compounds are composed of two or more different elements.

#### **8.1 Structure and Function: Systems and their components function at various levels of complexity**

8.1P.1 – Describe the atomic model and explain how the types and arrangement of atoms determine the physical and chemical properties of elements and compounds.

8.1P.2 – Explain how the Periodic Table is an organization of elements based on their physical and chemical properties.

8.1P.3 – Explain how the motion and spacing of particles determines the states of matter.

#### **8.2 Interaction and Change: Systems interact with other systems.**

8.2P.1 – Compare and contrast physical and chemical changes and describe how the law of conservation of mass applies to these changes.

### **Common Core Standards for Literacy in Science – Reading**

RST.6-8.4 – Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

### **Common Core Standards for Literacy in Science – Writing**

WHST.6-8.1b – Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate and understanding of the topic or text, using credible sources.

## Vocabulary:

Matter

Physical property

Chemical property

Physical change

Chemical change

Law of conservation of mass

States of Matter

Change of State/Phase Changes

Atom

Element

Characteristic Properties (Intrinsic Properties)

Metals, Non-metals, metalloids

Compound

Mixture

Solution

Physical Change

Chemical Change

Molecule

Solution

Atom

Electrons

Nucleus

Electron Clouds

Proton

Neutrons

Atomic Number

Mass Number

Atomic Mass

Periodic

Period

Group

## Learning Targets:

- I can compare physical and chemical properties
- I can explain what happens to matter during physical and chemical changes.
- I can identify clues that a chemical reaction might be taking place.
- I can explain the law of conservation of mass and how it applies to chemical and physical changes.
- I can describe the differences between states of matter.
- I can describe how substances change from state to state.
- I can explain the difference between an exothermic and endothermic change.  
I can compare the changes of state.
- I can describe pure substances.
- I can classify elements according to their properties.
- I can identify the differences between an element and a compound.
- I can give examples of common compounds.
- I can describe the properties of mixtures.
- I can describe the methods of separating a mixture.
- I can analyze a solution in terms of its solute, solvent, and concentration.
- I can compare different models of an atom.
- I can explain how the atomic theory has changed as scientists have discovered new information about the atom.
- I can draw a model of an atom
- I can compare the charge, location, and relative mass of protons, neutrons, and electrons.
- I can use the periodic table to find the numbers of each subatomic particle in an atom.
- I can describe how elements are arranged on the periodic table.
- I can compare metals, nonmetals, and metalloids based on their properties and on their location in the periodic table.
- I can explain why elements in a group often have similar properties.



**Common Core Reading Vocabulary:**

(Chemical) Symbol

**Common Core Writing Vocabulary:**

Introduction

Conclusion

Supporting Details

Argument

Evidence

**Common Core Reading Learning Targets:**

- I can identify chemical symbols.
- I can locate and use the periodic table to assist me in determining the meaning of chemical symbols.

**Common Core Writing Learning Targets:**

- I can support my conclusion with evidence.
- I can present my conclusion in a formal style that includes an introduction, supporting details, and a concluding statement that supports my argument.