



Science Standards

Grade 7B

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navigation

It is essential that these standards be addressed in contexts that promote scientific inquiry, use of evidence, critical thinking, making connections and communication.

PHYSICS:

6.2P.1 - Describe types and properties of waves and explain how they interact with matter.

Qualitative descriptions

- Wavelength, crest, trough, amplitude, frequency, period

Waves

- Different types of waves (e.g. seismic waves, sound waves, water waves, electromagnetic radiation)
- Properties of waves
- How waves are similar

Interactions

- Waves can travel through matter.
- Waves can be reflected.
- Waves can be refracted.
- Waves can change speed as they encounter different materials.
- Waves can combine to produce bigger waves.
- Vocabulary: electromagnetic, seismic, wavelength, crest, amplitude, frequency, period, trough, diffraction, reflect, refract, resonance

Possible learning targets: Underline the literacy component of each learning target.

Describe the types of waves such as electromagnetic, mechanical, sound and seismic waves.

Describe and diagram the properties of waves such as wavelength, amplitude, and frequency.

Compare types and properties of waves.

Explain how types and properties of waves interact with matter

CHEMISTRY

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 elements.

Composition of Matter

- Atom is the basic unit of matter
- Compounds are combinations of elements that cannot be physically separated (vs. mixture)
- Elements are one type of atom.
- Vocabulary: element, atom, compound, molecule, mixture, solution, matter

Possible learning targets: Underline the literacy component of each learning target.

Explain that all matter is composed of atoms.

Explain that all elements are composed of a single kind of atom.

Explain that compounds are composed of two or more atom.

Compare and contrast atoms, elements, and compounds.
Differentiate between mixtures and compounds.

EARTH/SPACE

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

Composition, properties and location of-

- Crust
- Lithosphere
- Asthenosphere
- Mantle
- Outer Core
- Inner Core
- Atmosphere

Layers have different properties

- Composition
- Physical
- Chemical
- Vocabulary: crust, mantle, inner core, outer core, lithosphere, asthenosphere, convection, hydrosphere, magma, radiation

Possible learning targets: Underline the literacy component of each learning target.

Describe the properties of the crust, mantle and core.

Describe the composition of the crust, mantle and core.

Compare the properties and composition of the layers of the Earth

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

Constructive Forces

- Volcanoes
- Deposition
- Uplift
- Mountain building

Destructive Forces

- Weathering
- Erosion (wind, water, ice gravity, waves, people)

Landforms

- Landforms can be created by constructive forces (e.g. dunes, delta, moraines)
- Landforms can be created by destructive forces (e.g. arches, cirque, v-shaped valley, sea stack)
- Vocabulary: uplift, volcanoes, deposition, weathering, erosion, hurricane/typhoon, sedimentary, tsunami, uniformitarianism

Possible learning targets: Underline the literacy component of each learning target.

Explain how constructive forces such as crustal deformation, volcanic eruptions, and sediment deposition change landforms over time at various rates.

Explain how destructive forces such as weathering and erosion change landforms over time at various rates.

7.3 Scientific Inquiry: Scientific inquiry is the investigation of the natural world based on observation and science principles that includes proposing questions or hypotheses, designing procedures for questioning, collecting, analyzing, and interpreting multiple forms of accurate and relevant data to produce justifiable evidence-based explanations.

7.3S.1 -Based on observations and science principles propose questions or hypotheses that can be examined through scientific investigation. Design and conduct a scientific investigation that uses appropriate tools and techniques to collect relevant data.

Scientific Investigation

- Questions or hypotheses proposed based on observations and scientific principles
- Scientific investigations are designed and conducted
- Appropriate tools and techniques used
- Data collected must be relevant to the proposed question or hypothesis

Vocabulary

- accuracy
- conclusions
- control
- dependent variable
- independent variable
- modifications
- procedure
- variable

7.3S.2 - Organize, display, and analyze relevant data, construct an evidence-based explanation of the results of an investigation, and communicate the conclusions including possible sources of error.

Results of an investigation

- Relevant data should be organized and displayed (e.g. tables, graphs).
- Analysis of data should yield an explanation or conclusion based on evidence from the investigation.
- Conclusions should be communicated and include possible sources of error.

Vocabulary:

- calculation

7.3S.3 - Evaluate the validity of scientific explanations and conclusions based on the amount and quality of the evidence cited.

Validity of an investigation

- Valid scientific explanations and conclusions are based on evidence cited from the investigation
- Both the amount and quality of the evidence are important in determining validity

Vocabulary:

- analyze
- range
- trial

7.4 Engineering Design: Engineering design is a process of identifying needs, defining problems, identifying constraints, developing solutions, and evaluating proposed solutions.

7.4D.1 - Define a problem that addresses a need and identify constraints that may be related to possible solutions.

Problem, solutions and constraints

- Identify a need and define a problem that addresses that need
- Identify the constraints involved in each of any possible solutions

Vocabulary:

- constraints

7.4D.2 - Design, construct, and test a possible solution using appropriate tools and materials. Evaluate the proposed solutions to identify how design constraints are addressed.

Test a solution

- A possible solution should be designed, constructed, and then tested.
- Appropriate tools and materials are identified and utilized.
- A proposed solution is evaluated to see how well design constraints are addressed.

Vocabulary:

- benefit
- evaluate
- prototype

7.4D.3 - Explain how new scientific knowledge can be used to develop new technologies and how new technologies can be used to generate new scientific knowledge.

New scientific knowledge and technologies

- Scientific knowledge is often used to develop new technologies.
- These new technologies can, in turn, be used to generate new scientific knowledge.

Vocabulary:

- exploit
- technology

Deconstruction of State Content Standards
 Salem-Keizer School District
 Science – 7

<p>State Core Standard: 6.2 - Interaction and Change: The related parts within a system interact and change.</p> <p>State Content Standard: 6.2P.1 - Describe types and properties of waves and explain how they interact with matter.</p>
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What does this standard require students to ...

KNOW? (Concepts)	DO? (Skills&/or Reasoning)
<ul style="list-style-type: none"> • Types of waves • Properties of waves • Matter • Vocabulary: electromagnetic, seismic, wavelength, crest, amplitude, frequency, period, trough, diffraction, reflect, refract, resonance 	<ul style="list-style-type: none"> • Diagram • Describe

Explanation:

Qualitative descriptions

- Wavelength, crest, trough, amplitude, frequency, period

Waves

- Different types of waves (e.g. seismic waves, sound waves, water waves, electromagnetic radiation)
- Properties of waves
- How waves are similar

Interactions

- Waves can travel through matter.
- Waves can be reflected.
- Waves can be refracted.
- Waves can change speed as they encounter different materials.
- Waves can combine to produce bigger waves.

Possible learning targets: Underline the literacy component of each learning target.

Describe the types of waves such as electromagnetic, mechanical, sound and seismic waves.

Describe and diagram the properties of waves such as wavelength, amplitude, and frequency.

Compare types and properties of waves.

Explain how types and properties of waves interact with matter

Textbook resources:

Book 0: Sound and Light – Chapter 1

Deconstruction of State Content Standards
Salem-Keizer School District
Science – 7

State Core Standard:

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

State Content Standard:

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 elements.

What does this standard require students to ...

KNOW? (Concepts)	DO? (Skills&/or Reasoning)
<ul style="list-style-type: none">• Matter is made of atoms and elements• Mixtures and compounds • Vocabulary: element, atom, compound, molecule, mixture, solution, matter	<ul style="list-style-type: none">• Compare• Contrast• Differentiate

Explanation:

Composition of Matter

- Atom is the basic unit of matter
- Compounds are combinations of elements that cannot be physically separated (vs. mixture)
- Elements are one type of atom.

Possible learning targets: Underline the literacy component of each learning target.

Explain that all matter is composed of atoms.

Explain that all elements are composed of a single kind of atom.

Explain that compounds are composed of two or more atom.

Compare and contrast atoms, elements, and compounds.

Differentiate between mixtures and compounds.

Textbook resources:

Book K: Chemical Building Blocks – Chapter 1

Deconstruction of State Content Standards
Salem-Keizer School District
Science 6

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

State Content Standard:
 6.1E.1 – Describe and compare the properties and composition of the layers of Earth.

What does this standard require students to ...

KNOW? (Concepts)	DO? (Skills&/or Reasoning)
<ul style="list-style-type: none"> • Layers of the Earth • Properties of the layers • Composition of the layers • Vocabulary: crust, mantle, inner core, outer core, lithosphere, asthenosphere, convection, hydrosphere, magma, radiation 	<ul style="list-style-type: none"> • Describe • Compare

Explanation:

Composition, properties and location of-

- Crust
- Lithosphere
- Asthenosphere
- Mantle
- Outer Core
- Inner Core
- Atmosphere

Layers have different properties

- Composition
- Physical
- Chemical

Possible learning targets: Underline the literacy component of each learning target.

Describe the properties of the crust, mantle and core.

Describe the composition of the crust, mantle and core.

Compare the properties and composition of the layers of the Earth

Textbook Resource:

Book F: Inside Earth – Chapter 1

Deconstruction of State Content Standards
 Salem-Keizer School District
 Science – 7

State Core Standard:
 7.2 - Interaction and Change: The components and processes within a system interact.

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

What does this standard require students to ...

KNOW? (Concepts)	DO? (Skills&/or Reasoning)
<ul style="list-style-type: none"> • How landforms change over time at various rates • Constructive and destructive forces • Vocabulary: uplift, volcanoes, deposition, weathering, erosion, hurricane/typhoon, sedimentary, tsunami, uniformitarianism 	<ul style="list-style-type: none"> • Explain • Compare • Contrast

Explanation:

Constructive Forces

- Volcanoes
- Deposition
- Uplift
- Mountain building

Destructive Forces

- Weathering
- Erosion (wind, water, ice gravity, waves, people)

Landforms

- Landforms can be created by constructive forces (e.g. dunes, delta, moraines)
- Landforms can be created by destructive forces (e.g. arches, cirque, v-shaped valley, sea stack)

Possible learning targets: Underline the literacy component of each learning target.

Explain how constructive forces such as crustal deformation, volcanic eruptions, and sediment deposition change landforms over time at various rates.

Explain how destructive forces such as weathering and erosion change landforms over time at various rates.

Textbook resources:

Book G: Earth’s Changing Surface – Chapter – 2 and 3