

# *Wallenpaupack Area School District*

**COURSE:** Science - Earth and Space Science

**GRADE LEVEL:** Grades 10 - 12

**LENGTH OF COURSE:** 90 Days/84 Minutes Per Day

**TEXT:** Modern Earth Science

**PUBLISHER:** Holt, Rhinehart and Winston

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**COURSE DESCRIPTION:**

This course investigates topics that are specific to the study of the earth, space, the solar system and moons and ring systems. The course focuses on both small scale and in-depth investigations as well as long-range investigations. The course uses maps involving rivers, comets, sea floors, weather and stars. The course also focuses on the environment, science and technology, the impact on society as well as career focus topics.

**CURRICULUM WRITING TEAM:**

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**DATE OF REVISION:**

2002

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Studying the Earth  
Chapter 1: Introduction to Earth Science

**PA Standards:** 3.1.10.A  
3.1.10.B  
3.1.10.C  
3.1.10.D  
3.1.10.E  
3.2.10.A  
3.2.10.B  
3.2.10.C  
3.2.10.D  
3.4.10.A  
3.4.10.D  
3.5.10.A  
3.4.10.A  
3.8.10.C

| <b>Topics:</b>   | <b>Skills:</b>  |
|--|---|
| <p>Earth Science, What is it?<br/>Scientific Methods<br/>Big Bang theory</p> | <p>Identify the function of subsystems within a larger system<br/>Explain the concept of system redesign and apply it to improve technological systems<br/>Distinguish between different types of models and modeling techniques and apply their appropriate use in specific applications<br/>Examine the advantages of using models to demonstrate processes and outcomes<br/>Apply mathematical models to science and technology<br/>Examine and describe stationary physical patterns<br/>Examine and describe physical patterns in motion<br/>Apply dimensional analysis and scale as a ratio<br/>Convert one scale to another<br/>Describe how fundamental science and technology concepts are used to solve practical problems (e.g., momentum, Newton's laws of universal gravitation, tectonics, conservations of mass and energy, cell theory, Theory of Evolution, atomic theory, theory of relativity, Pasteur's germ theory, relativity, heliocentric theory, gas laws, feedback systems)</p> |

## *Wallenpaupack Area School District*

|   |  |
|---|--|
|   | <p><b>SKILLS: (continued)</b></p> <p>Compare and contrast scientific theories and beliefs</p> <p>Describe materials using precise quantitative and qualitative skills based on observations</p> <p>Generate questions about objects, organisms and/or events that can be answered through scientific investigations</p> <p>Examine the problem rank all necessary information and all questions that must be answered</p> <p>Know that atoms are composed of even smaller sub-atomic structures whose properties are measurable</p> <p>Describe phases of matter according to the Kinetic Molecular Theory</p> <p>Illustrate and explain plate tectonics as the mechanism of continental movement and sea floor changes</p> <p>Select and safely apply appropriate tools, materials and processes necessary to solve complex problems</p> <p>Relate scientific and technological advancements in terms of cause and effect</p> |
| <p><b>Activities:</b></p>   | <p><b>Performance Assessments:</b></p>   |
| <p>Observing and Measuring the Earth's Circumference</p> <p>% Error</p> <p>Density of Rocks lab</p> | <p>Test and quizzes, written and oral</p> <p>Student notebook/lab book</p> <p>Homework</p> <p>Projects, individual and group</p> <p>Presentations, individual and group</p>  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Studying the Earth  
Chapter 2: The earth in space

**PA Standards:** 3.1.10.A  
3.2.10.A  
3.2.10.B  
3.2.10.C  
3.2.10.D  
3.6.10.B

|   |  |
|---|--|
| <p><b>Topics:</b></p> <p>Earth Structure<br/>Movements of the earth<br/>Artificial satellites</p>     | <p><b>Skills:</b></p> <p>Identify the function of subsystems within a larger system<br/>Compare and contrast scientific theories and beliefs<br/>Describe materials using precise quantitative and qualitative skills based on observations<br/>Evaluate the appropriateness of questions<br/>Examine the problem rank all necessary information and all questions that must be answered<br/>Describe the proper use of graphic and electronic communication systems</p> |
| <p><b>Activities:</b></p> <p>Models of measuring the earth<br/>Shape of the earth<br/>Inner earth</p> | <p><b>Performance Assessments:</b></p> <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Studying the Earth  
Chapter 3: Models of the Earth

**PA Standards:** 3.1.10.A  
3.1.10.B  
3.1.10.C  
3.1.10.D  
3.1.10.E  
3.2.10.C

|   |  |
|---|--|
| <p><b>Topics:</b></p> <ul style="list-style-type: none"> <li>Locations on the earth</li> <li>Mapping the earth's surface</li> <li>Topographic maps</li> </ul>   | <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Identify the function of subsystems within a larger system</li> <li>Examine the advantages of using models to demonstrate processes and outcomes</li> <li>Examine and describe recurring patterns that form the basis of biological classification, chemical periodicity, geological order and astronomical order</li> <li>Convert one scale to another</li> <li>Describe how fundamental science and technology concepts are used to solve practical problems (e.g., momentum, Newton's law of universal gravitation, tectonics, conservation of mass and energy, cell theory, Theory of Evolution, atomic theory, theory of relativity, Pasteur's germ theory, relativity, heliocentric theory, gas laws, feedback systems)</li> <li>Generate questions about object, organisms and/or events that can be answered through scientific investigations</li> </ul> |
| <p><b>Activities:</b></p> <ul style="list-style-type: none"> <li>Contour maps</li> <li>Longitude and time</li> <li>Mapping a temperature field</li> <li>Topographic map symbols</li> <li>Topographic maps readings</li> <li>Folded mountains</li> </ul> | <p><b>Performance Assessments:</b></p> <ul style="list-style-type: none"> <li>Test and quizzes, written and oral</li> <li>Student notebook/lab book</li> <li>Homework</li> <li>Projects, individual and group</li> <li>Presentations, individual and group</li> </ul>  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** The Dynamic Earth  
Chapter 4: Plate Tectonics

**PA Standards:** 3.1.10.A  
3.1.10.C  
3.1.10.D  
3.4.10.B  
3.4.10.C  
3.5.10.A  
3.6.10.A

|  |  |
|--|--|
| <b>Topics:</b>   | <b>Skills:</b>   |
| <p>Continental Drift<br/>Place Tectonics</p>             | <p>Identify the function of subsystems within a layer system<br/>Examine and describe recurring patterns that form the basis of biological classification, chemical periodicity, geological order and astronomical order<br/>Convert one scale to another<br/>Determine the efficiency of chemical systems by applying mathematical formulas<br/>Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force<br/>Illustrate and explain plate tectonics as the mechanism of continental movements and sea floor changes<br/>Interpret topographic maps to identify and describe significant geologic history/structures in Pennsylvania<br/>Apply knowledge of plant and animal production process in designing an improvement to existing processes</p> |
| <b>Activities:</b>                                       | <b>Performance Assessments:</b>  |
| <p>Sea floor spreading<br/>Theory of Plate tectonics</p> | <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** The Dynamic Earth  
Chapter 5: Deformation of the crust

**PA Standards:** 3.1.10.A  
3.4.10.A  
3.4.10.B  
3.4.10.C  
3.5.10.A  
3.7.10.A  
3.7.10.B

| <b>Topics:</b>  | <b>Skills:</b>   |
|---|--|
| <ul style="list-style-type: none"> <li>Crust formation</li> <li>Results of stress</li> <li>Mountain formation</li> </ul>                                    | <ul style="list-style-type: none"> <li>Identify the function of subsystems within a larger system</li> <li>Know that atoms are composed of even smaller sub-atomic structures whose properties are measurable</li> <li>Determine the efficiency of chemical systems by applying mathematical formulas</li> <li>Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force</li> <li>Illustrate and explain plate tectonics as the mechanism of continental movement and sea floor changes</li> <li>Compare examples of change to the earth's surface over time as they related to continental movement and ocean basin formation (e.g., Delaware, Susquehanna, Ohio Rivers system formations dynamics)</li> <li>Select and safely apply appropriate tools, materials and processes necessary to solve complex problems</li> <li>Describe and use appropriate instruments to gather and analyze data</li> </ul> |
| <b>Activities:</b>  | <b>Performance Assessments:</b>  |
| <ul style="list-style-type: none"> <li>Types of mountains</li> <li>Deformation and stress</li> <li>Results of stress</li> <li>Folding and faults</li> </ul> | <ul style="list-style-type: none"> <li>Test and quizzes, written and oral</li> <li>Student notebook/lab book</li> <li>Homework</li> <li>Projects, individual and group</li> <li>Presentations, individual and group</li> </ul>   |

# *Wallenpaupack Area School District*

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** The Dynamic Earth  
Chapter 6: Earthquakes

**PA Standards:** 3.1.10.A  
3.1.10.E  
3.4.10.C  
3.5.10.A

|  |  |
|--|--|
| <b>Topics:</b>   | <b>Skills:</b>   |
| <p>Earthquakes and plate tectonics<br/>Recording earthquakes<br/>Earthquake damage</p>         | <p>Identify the function of subsystems within a larger system<br/>Analyze and describe the effectiveness of systems to solve specific problems<br/>Identify elements of simple machines in compound machines<br/>Interpret topographic maps to identify and describe significant geologic history/structures in Pennsylvania</p> |
| <b>Activities:</b>   | <b>Performance Assessments:</b>  |
| <p>Earthquakes<br/>Epicenter of earthquakes<br/>Seismographic records<br/>Earthquake waves</p> | <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** The Dynamic Earth  
Chapter 7: Volcanoes

**PA Standards:** 3.1.10.C  
3.1.10.D  
3.2.10.D  
3.4.10.C  
3.5.10.A  
3.7.10.A  
3.7.10.B  
3.8.10.C

| <b>Topics:</b>  | <b>Skills:</b>  |
|---|---|
| <p>Volcanoes and plate tectonics<br/>Volcanic eruptions<br/>Extraterrestrial volcanism</p>                  | <p>Examine and describe stationary physical patterns<br/>Apply dimensional analysis and scale as a ratio<br/>Examine the problem, rank all necessary information and all questions that must be answered<br/>Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force<br/>Compare examples of change to the earth's surface over time as they related to continental movement and ocean basin formation (e.g., Delaware, Susquehanna, Ohio Rivers system formations dynamics)<br/>Select and safely apply appropriate tools, materials and processes necessary to solve complex problems<br/>Describe and use appropriate instruments to gather and analyze data<br/>Relate scientific and technological advancements in terms of cause and effect</p> |
| <b>Activities:</b>  | <b>Performance Assessments:</b>   |
| <p>Volcanic types<br/>Classification and identification of volcanoes<br/>Volcanism<br/>Plate boundaries</p> | <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Composition of the earth  
Chapter 8: Earth Chemistry

**PA Standards:** 3.1.10.A  
3.1.10.D  
3.4.10.A  
3.4.10.B  
3.5.10.D

|   |  |
|---|--|
| <p><b>Topics:</b></p> <p>Matter<br/>Combinations of atoms<br/>Chemical analysis</p>                   | <p><b>Skills:</b></p> <p>Identify the function of subsystems within a larger system<br/>Convert one scale to another<br/>Know that atoms are composed of even smaller sub-atomic structures whose properties are measurable<br/>Determine the efficiency of chemical systems by applying mathematical formulas<br/>Compare specific sources of potable water (e.g., wells, public systems rivers) used by people in Pennsylvania<br/>Identify the components of municipal/agricultural water supply system and a wastewater treatment system</p> |
| <p><b>Activities:</b></p> <p>Earth Chemistry<br/>Periodic table of elements<br/>Chemical analysis</p> | <p><b>Performance Assessments:</b></p> <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Composition of the earth  
Chapter 9: Minerals of the earths  
crust

**PA Standards:** 3.4.10.A  
3.4.10.B  
3.5.10.B

| <b>Topics:</b>   | <b>Skills:</b>   |
|--|--|
| Minerals<br>Identifying minerals   | Know that atoms are composed of even smaller sub-atomic structures whose properties are measurable<br>Determine the efficiency of chemical systems by applying mathematical formulas<br>Compare the locations of strategic minerals and earth resources in the world with their geologic history using maps and global information systems |
| <b>Activities:</b>   | <b>Performance Assessments:</b>  |
| Minerals: Chemical and Physical properties<br>Mineral Vocabulary<br>Minerals study guide<br>Uses of minerals<br>Nonmetal minerals<br>Rock forming minerals<br>Metallic minerals<br>Hardness scales | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Composition of the earth  
Chapter 10: Rocks

**PA Standards:** 3.4.10.A  
3.5.10.B

| <b>Topics:</b>   | <b>Skills:</b>   |
|--|--|
| Rocks and rock cycle<br>Igneous rock<br>Sedimentary rocks<br>Metamorphic rocks   | Know that atoms are composed of even smaller sub-atomic structures whose properties are measurable<br>Compare the locations of strategic minerals and earth resources in the world with their geologic history using maps and global information systems |
| <b>Activities:</b>   | <b>Performance Assessments:</b>  |
| The rock cycle<br>Rock cycle study sheet<br>Definition of rocks<br>Activity A: igneous rocks<br>Activity b: sedimentary rocks<br>Activity c: metamorphic rocks | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Composition of the earth  
Chapter 11: Resources and energy

**PA Standards:** 3.4.10.B  
3.5.10.B  
3.7.10.B  
3.8.10.A  
3.8.10.B  
3.8.10.C

| <b>Topics:</b>  | <b>Skills:</b>  |
|---|---|
| <ul style="list-style-type: none"> <li>Mineral resources</li> <li>Fossil fuels</li> <li>Nuclear energy</li> <li>Alternative energy sources</li> </ul>   | <ul style="list-style-type: none"> <li>Determine the efficiency of chemical systems by applying mathematical formulas</li> <li>Use knowledge of chemical reactions to generate an electrical current</li> <li>Compare the locations of strategic minerals and earth resources in the world with their geologic history using maps and global information systems</li> <li>Describe and use appropriate instruments to gather and analyze data</li> <li>Identify past and current tradeoffs between increased production, environmental harm and social values (e.g., increased energy, needs, power plants, automobiles)</li> <li>Identify several problems and opportunities that exist in your community, apply various problem-solving methods to design and evaluate possible solutions</li> <li>Relate scientific and technological advancements in terms of cause and effect</li> </ul> |
| <b>Activities:</b>  | <b>Performance Assessments:</b>   |
| <ul style="list-style-type: none"> <li>Formation of ores</li> <li>Uses of mineral resources</li> <li>Coal, oil and gas</li> <li>Nuclear fission and fusion</li> <li>Solar and geothermal energy</li> <li>Wind and water energy</li> </ul> | <ul style="list-style-type: none"> <li>Test and quizzes, written and oral</li> <li>Student notebook/lab book</li> <li>Homework</li> <li>Projects, individual and group</li> <li>Presentations, individual and group</li> </ul>  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Reshaping the Crust  
Chapter 12: Weathering and erosion

**PA Standards:** 3.4.10.C  
3.5.10.A  
3.7.10.B

| <b>Topics:</b>  | <b>Skills:</b>  |
|---|---|
| Weathering process<br>Rates of weathering<br>Weathering and soil<br>Erosion                       | Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force<br>Compare examples of change to the earth's surface over time as they related to continental movement and ocean basin formation (e.g., Delaware, Susquehanna, Ohio Rivers system formations dynamics)<br>Describe and use appropriate instruments to gather and analyze data |
| <b>Activities:</b>  | <b>Performance Assessments:</b>   |
| Weathering and erosion laser disk investigation<br>Weathering and erosion<br>Weathering worksheet | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Reshaping the Crust  
Chapter 13: Water and erosion

**PA Standards:** 3.4.10.C  
3.5.10.A  
3.7.10.B

| <b>Topics:</b>   | <b>Skills:</b>  |
|--|---|
| Water cycle<br>River systems<br>Stream deposition  | Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force<br>Compare examples of change to the earth's surface over time as they related to continental movement and ocean basin formation (e.g., Delaware, Susquehanna, Ohio Rivers system formations dynamics)<br>Describe and use appropriate instruments to gather and analyze data |
| <b>Activities:</b>   | <b>Performance Assessments:</b>   |
| Flooding VCR tape<br>Running water study guide<br>Rivers and river development<br>Streams<br>Drainage basins<br>Major US rivers<br>River flood plains, levees and swamps | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Reshaping the Crust  
Chapter 14: Groundwater and erosion

**PA Standards:** 3.4.10.C  
3.5.10.A  
3.7.10.B

| <b>Topics:</b>  | <b>Skills:</b>   |
|---|--|
| <p>Water beneath the surface<br/>Wells and springs<br/>Groundwater and chemical weathering</p>  | <p>Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force<br/>Compare examples of change to the earth's surface over time as they related to continental movement and ocean basin formation (e.g., Delaware, Susquehanna, Ohio Rivers System formations dynamics)<br/>Describe and use appropriate instruments to gather and analyze data</p> |
| <b>Activities:</b>  | <b>Performance Assessments:</b>  |
| <p>Groundwater VCR tape<br/>Power of water, National Geographic<br/>Geysers and springs video<br/>Groundwater vocabulary and activity sheet</p> | <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Reshaping the Crust  
Chapter 15: Glaciers and Erosion

**PA Standards:** 3.5.10.A  
3.5.10.B  
3.8.10.C

| <b>Topics:</b>                                       | <b>Skills:</b>  |
|--|---|
| Glaciers<br>Landforms<br>Ice ages                    | Illustrate and explain plate tectonics as the mechanism of continental movements and sea floor changes<br>Compare the locations of strategic minerals and earth resources in the world with their geologic history using maps and global information systems<br>Relate scientific and technological advancements in terms of cause and effect |
| <b>Activities:</b>                                   | <b>Performance Assessments:</b>   |
| Glaciers worksheet<br>Glaciers movements and effects | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Reshaping the Crust  
Chapter 16: Erosion by wind and waves

**PA Standards:** 3.4.10.C  
3.5.10.A  
3.7.10.B

| <b>Topics:</b>  | <b>Skills:</b>  |
|---|---|
| <p>Wind erosion<br/>Wave erosion<br/>Coastal erosion and deposition</p>                             | <p>Identify the relationship of electricity and magnetism as two aspects of a single electromagnetic force<br/>Compare examples of change t the earth's surface over time as they related to continental movement and ocean basin formation (e.g., Delaware, Susquehanna, Ohio Rivers system formations dynamics)<br/>Describe and use appropriate instruments to gather and analyze data</p> |
| <b>Activities:</b>  | <b>Performance Assessments:</b>   |
| <p>VCR tape moving air<br/>Moving air study guide sheet<br/>Waves and shore currents work sheet</p> | <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>   |

# *Wallenpaupack Area School District*

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** The history of the earth  
Chapter 17: The rock record

**PA Standards:** 3.3.10.B  
3.6.10.A  
3.6.10.B

|   |   |
|---|---|
| <b>Topics:</b>  | <b>Skills:</b>  |
| Determining relative age<br>Determining absolute age<br>Fossil record     | Describe the relationship between the structure of organic molecules and the function they serve in living organisms<br>Apply knowledge of plant and animal production process in designing an improvement to existing processes<br>Describe the proper use of graphic and electronic communication systems |
| <b>Activities:</b>  | <b>Performance Assessments:</b>   |
| Interpreting geological events<br>Fossil correlation<br>Radioactive decay | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** The history of the earth  
Chapter 18: A view of the earth's  
past

**PA Standards:** 3.2.10.A  
3.6.10.A  
3.7.10.D

| <b>Topics:</b>                              | <b>Skills:</b>  |
|---|---|
| Geological time scale<br>Geological history | Compare and contrast scientific theories and beliefs<br>Apply knowledge of biomedical technology applications in designing a solution to a simple medical problem<br>Identify legal restriction in the use of software and the output of data |
| <b>Activities:</b>                          | <b>Performance Assessments:</b>   |
| Constructing a geologic column              | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |

# *Wallenpaupack Area School District*

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Oceans  
Chapter 20: The ocean basins

**PA Standards:** 3.5.10.D

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| <p><b>Topics:</b></p> <p>The water planet<br/>Features of the ocean floor<br/>Ocean floor sediments</p>  | <p><b>Skills:</b></p> <p>Compare specific sources of potable water (e.g., wells, public systems, rivers) used by people in Pennsylvania<br/>Relate aquatic life to water conditions (e.g., turbidity, temperature, salinity, dissolved oxygen, nitrogen levels pressure)<br/>Identify economic resources found in marine areas<br/>Assess the natural and man-made factors that affect the availability of clean water (e.g., rock and mineral deposits, man-made pollution)</p> |
| <p><b>Activities:</b></p> <p>VCR tape "The sea floor".<br/>Oceans and seas<br/>Mariana trench<br/>Ocean basins<br/>Features of the ocean floor</p> | <p><b>Performance Assessments:</b></p> <p>Test and quizzes, written and oral<br/>Student notebook/lab book<br/>Homework<br/>Projects, individual and group<br/>Presentations, individual and group</p>   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Oceans  
Chapter 21: Ocean water

**PA Standards:** 3.6.10.D

|   |   |
|---|---|
| <b>Topics:</b><br>Properties of ocean water<br>Life in the oceans<br>Ocean resources  | <b>Skills:</b><br>Compare specific sources of potable water (e.g., wells, public systems, rivers) used by people in Pennsylvania  |
| <b>Activities:</b><br>Ocean water chemistry<br>Ocean floor sediments<br>Properties of ocean water worksheet<br>Seawater worksheet | <b>Performance Assessments:</b><br>Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Oceans  
Chapter 22: Movements of the  
ocean

**PA Standards:** 3.5.10.D

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| <b>Topics:</b>   | <b>Skills:</b>   |
| Ocean currents<br>Ocean waves<br>Tides   | Relate aquatic life to water conditions (e.g., turbidity, temperature, salinity, dissolved oxygen, nitrogen levels, pressure)                        |
| <b>Activities:</b>   | <b>Performance Assessments:</b>  |
| Motion of the oceans<br>Ocean waves worksheet<br>Tides investigation, worksheet and vocabulary | Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Atmospheric Forces  
Chapter 23: The atmosphere

**PA Standards:** 3.5.10.C

|  |   |
|--|---|
| <b>Topics:</b><br>Characteristics of the atmosphere<br>Solar energy and the atmosphere<br>Winds  | <b>Skills:</b><br>Analyze information from meteorological instruments and online sources to predict weather patterns<br>Describe weather and climate patterns on global levels<br>Evaluate specific adaptations plants and animals have made that enable them to survive in difference climates |
| <b>Activities:</b><br>Characteristics of the atmosphere worksheet<br>The earth's atmosphere<br>Jet stream<br>Atmospheric pressure<br>Dew point | <b>Performance Assessments:</b><br>Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group   |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Atmospheric Forces  
Chapter 24: Water in the atmosphere

**PA Standards:** 3.5.10.D

|  |   |
|--|---|
| <b>Topics:</b><br>Atmospheric moisture<br>Clouds and fog<br>Precipitation  | <b>Skills:</b><br>Compare specific sources of potable water (e.g., wells, public systems, rivers) used by people in Pennsylvania  |
| <b>Activities:</b><br>Condensation and precipitation<br>Vapor pressure<br>Dew point, wet and dry bulb methods<br>Humidity, absolute and relative | <b>Performance Assessments:</b><br>Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Atmospheric Forces  
Chapter 25: Weather

**PA Standards:** 3.5.10.C

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| <b>Topics:</b><br>Air masses<br>Fronts<br>Weather instruments<br>Forecasting the weather   | <b>Skills:</b><br>Analyze information from meteorological instruments and online sources to predict weather patterns<br>Describe weather and climate patterns on global levels<br>Evaluate specific adaptations plants and animals have made that enable them to survive in different climates |
| <b>Activities:</b><br>Weather worksheet<br>Weather and climate<br>Instruments activity<br>Predicting the weather from weather maps<br>GPS and weather location identification. | <b>Performance Assessments:</b><br>Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Atmospheric Forces  
Chapter 26: Climate

**PA Standards:** 3.5.10.C

|  |   |
|--|---|
| <b>Topics:</b><br>Factors that affect the climate<br>Climate zones   | <b>Skills:</b><br>Analyze information from meteorological instruments and online sources to predict weather patterns  |
| <b>Activities:</b><br>Latitude<br>Heat absorption<br>Topography<br>Tropical climates<br>Polar climates<br>Local climates | <b>Performance Assessments:</b><br>Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group |

# Wallenpaupack Area School District

**Course:** Earth and Space Science

**Grade Level:** Grade 10-12

**Unit:** Studying Space  
Chapter 27: Stars and Galaxies

**PA Standards:** 3.4.10.D

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|--|--|
| <b>Topics:</b><br>Characteristics of stars<br>Stellar evolution<br>Star groups   | <b>Skills:</b><br>Compare the basic structures of the universe (e.g., galaxy types, nova, black holes, neutron stars)<br>Explain the "red-shift" and Hubble's use of it to determine stellar distance and movement<br>Compare absolute versus apparent star magnitude and their relation to stellar distance |
| <b>Activities:</b><br>Changes in the celestial sphere<br>Calculating the angular diameter of the sun<br>Constellations and the night sky<br>Navigating using the stars | <b>Performance Assessments:</b><br>Test and quizzes, written and oral<br>Student notebook/lab book<br>Homework<br>Projects, individual and group<br>Presentations, individual and group  |