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| **Columbus County Schools** *Science Curriculum Guide* |
| **SUBJECT:** Science | **GRADE LEVEL:** 7th | **GRADING PERIOD:** 3rd 9 weeks  |
| Module(s): F – Earth’s Water and Atmosphere  | Time Frame: 4 weeks | **Unit:** Earth Systems, Structures and Processes. |
| Essential Standard: **7.E.1 Understand how the cycling of matter (water and gases) in and out of the atmosphere relates to Earth’s atmosphere, weather, and climate and the effects of the atmosphere on humans.**  |

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| **Lesson:****Earth’s Atmosphere****(1 Week)** | **Technology and Literacy Standards and Tasks** | **Academic Vocabulary:** | **Assessment(s):** | **Additional Resources:** |
| **Clarifying Objective:****7.E.1.1: Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.****Essential Questions:**What is the atmosphere? How does energy move through Earth’s systems?What is wind? | ***Science Fusion* Online Components and Digital Lessons****Write to Learn *(*See Additional Resources)****Technology Standards:**7.SI.17.RP.1 7.SE.1**Literacy Standards:** [CCSS.ELA-Literacy.RST.6-8.1](http://www.corestandards.org/ELA-Literacy/RST/6-8/1/) .[CCSS.ELA-Literacy.RST.6-8.8](http://www.corestandards.org/ELA-Literacy/RST/6-8/8/)  | * atmosphere
* air pressure thermosphere
* mesosphere
* stratosphere troposphere
* ozone layer
* greenhouse effect
* temperature
* thermal energy
* radiation
* thermal expansion
* convection
* wind.
 | **Formative:**Write to Learn AssignmentsBell Ringers/Exit Tickets **Science Formative Assessment: 75 Practical Strategies (Keeley)*** **First Word, Last Word page 88**
* **Justified True/False page 126**
* **Juicy Questions page 121**
* **Commit and Toss page 65**

**Uncovering Student Ideas in Science Vol.3 (Keeley)** * **Where did the water come from? Page 163**
* **Rainfall page 171**

**Summative:*** **Unit Tests**
* **County Benchmarks**
* **Projects**
* ***Exam View* Test bank**
* ***Schoolnet Test bank***
 | McDougal Littell 7th Grade Science Book page 9A – 39AScience Fusion Work Book Earth’s Water and Atmosphere page 104 - 113Science Fusion Teacher Edition Earth’s Water and Atmosphere page 134 – 147**Write to Learn**[**Science 6 12.1 What is Earth's atmosphere?**](http://pearsonkt.com/cgi-bin/writeToLearn/teacher/displayText.cgi?textID=1331&classID=9733)[**Weather and Climate: 1.3 Layers of the Atmosphere**](http://pearsonkt.com/cgi-bin/writeToLearn/teacher/displayText.cgi?textID=157&classID=9733) |

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| **Lessons:****Weather Patterns****(3 Weeks)** | **Technology and Literacy Standards and Tasks** | **Academic Vocabulary:** | **Assessment(s):** | **Additional Resources:** |
| **Clarifying Objectives:****7.E.1.2: Explain how the cycling of water in and out of the atmosphere and atmospheric conditions relate to the weather patterns on Earth.** **7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.** **Essential Questions:**What is weather and how can we describe different types of weather conditions?How do the water cycle and other global patterns affect local weather? | ***Science Fusion* Online Components and Digital Lessons****Write to Learn *(*See Additional Resources)****Technology Standards:**7.SI.1: 7.TT.1: 7.RP.17.SE.1: **Literacy Standards:**[CCSS.ELA-Literacy.RST.6-8.5](http://www.corestandards.org/ELA-Literacy/RST/6-8/5/) [CCSS.ELA-Literacy.RST.6-8.2](http://www.corestandards.org/ELA-Literacy/RST/6-8/2/)   | * weather
* humidity
* relative humidity
* dew point
* precipitation
* air pressure
* wind
* visibility
* Coriolis Effect
* jet streams
* water cycle
 | **Formative:**Write to Learn AssignmentQuizReview Games Group Assignments Bell Ringers/Exit Tickets **Science Formative Assessment: 75 Practical Strategies (Keeley)*** **First Word, Last Word page 88**
* **Justified True/False page 126**
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**Summative:*** **Unit Tests**
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* ***Exam View* Test bank**
* ***SchoolNet* Test bank**
 | McDougal Littell 7th Grade Science Book page 9A – 39AScience Fusion Work Book Earth’s Water and Atmosphere page 14 – 25 and page 114 - 131Science Fusion Teacher Edition Earth’s Water and Atmosphere page 26 – 39 and page 152 - 167 **Write to Learn**[**Science 6 12.2 How do clouds and precipitation form?**](http://pearsonkt.com/cgi-bin/writeToLearn/teacher/displayText.cgi?textID=1332&classID=9733) |

**Technology Standards Used in this Unit:**

7.SI.1: Research topics, use graphic organizers, and evaluate the validity of resources both online and in text.

7.RP.1: Group work and individual research activities using online resources.

7.SE.1: Learn safe practices when using online resources and the proper way to summarize retrieved information.

7.TT.1: Use technology tools to organize information and explore new ways to communicate with peers and teachers.

**Literacy Standards Used in this Unit:**

[CCSS.ELA-Literacy.RST.6-8.1](http://www.corestandards.org/ELA-Literacy/RST/6-8/1/) Cite specific textual evidence to support analysis of science and technical texts.

[CCSS.ELA-Literacy.RST.6-8.2](http://www.corestandards.org/ELA-Literacy/RST/6-8/2/) Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

[CCSS.ELA-Literacy.RST.6-8.5](http://www.corestandards.org/ELA-Literacy/RST/6-8/5/) Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

[CCSS.ELA-Literacy.RST.6-8.8](http://www.corestandards.org/ELA-Literacy/RST/6-8/8/) Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

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| **Day 1****Lesson: Earth’s Atmosphere** | **Day 2****Lesson: Earth’s Atmosphere** | **Day 3****Lesson: Earth’s Atmosphere** | **Day 4****Lesson: Earth’s Atmosphere** | **Day 5****Lesson: Earth’s Atmosphere** |
| **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.** **Academic Vocabulary:**atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. | **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.** **Academic Vocabulary:**atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. | **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.** **Academic Vocabulary:**atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind.  | **Clarifying Objective: 7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.** **Academic Vocabulary:**atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind.  | **Clarifying Objective:****7.E.1.1 Compare the composition, properties and structure of Earth’s atmosphere to include: mixtures of gases and differences in temperature and pressure within layers.** **Academic Vocabulary:**atmosphere, air pressure, thermosphere, mesosphere, stratosphere, troposphere, ozone layer, greenhouse effect, temperature, thermal energy, radiation, thermal expansion, convection, wind. |
| **Bell Ringer:** **Engage Your Brain p. 104 #1 and #2****Instructional Tasks:** “The Atmosphere” Digital Lesson with fill in notes.**Summarizer:****What are three things you learned today?** | **Bell Ringer:** **#9 Student Workbook p. 109****Instructional Tasks: Lesson Review “Lesson 1: The Atmosphere” p. 113 in Student Workbook****Summarizer:** **How does the atmosphere protect life on Earth?** | **Bell Ringer:** **Interpreting Visuals TE p. 144** **Instructional Tasks:** Daily Demo “Transfer Energy” TE p. 151Quick Lab “Modelling Convection” TE p. 151Have students respond in writing to these labs. There are resources in the ***Science Fusion*** Teacher Resources that are tied to these activities.**Summarizer:****Pyramid FoldNote p. 154**  | **Bell Ringer: Analyzing TE 144****Instructional Tasks: “Energy Transfer” Digital Lesson** with fill in notes**Summarizer:****Energy Transfer Game TE p.154** | **Bell Ringer: Probing Question Synthesizing TE p. 145** **Instructional Tasks: Atmospheric Review TE p.140** **Summarizer: Discuss responses to questions on charts.** |
| **Assessment:** Participation, Discussion | **Assessment:** Observation, Participation | **Assessment:**  Observation, Participation | **Assessment:** Participation, Discussion | **Assessment:** Participation, Discussion, Observation |

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| **Day 6****Lesson: Weather** | **Day 7****Lesson: Weather** | **Day 8****Lesson: Weather** | **Day 9****Lesson: Weather** | **Day 10****Lesson: Weather** |
| **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.** **Academic Vocabulary:**wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.** **Academic Vocabulary:**wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.** **Academic Vocabulary:**wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.** **Academic Vocabulary:**wind, Coriolis effect, global wind, local wind, jet stream | **Clarifying Objective: 7.E.1.5: Explain the influence of convection, global winds and jet stream on weather and climate.** **Academic Vocabulary:**wind, Coriolis effect, global wind, local wind, jet stream |
| **Bell Ringer:** **Inferring TE p. 178** **Instructional Tasks:** “Wind in the Atmosphere” Digital Lesson with Fill in Notes**Summarizer:****What are three things you learned today?** | **Bell Ringer: How do you think the movement of air would be different if Earth did not rotate?****Instructional Tasks:** Vocabulary ActivityEx. Frayer Model, Magnet Words, Word Triangle**Summarizer: What type of weather might a sea breeze carry on to land? Why?** | **Bell Ringer: Formative Assessment TE p. 179****Instructional Tasks:** Illustrated Sea Breezes TE p. 173 (you may also have groups illustrate land breezes, mountain breezes and/or valley breezes)**Summarizer:**Visual Summary Student Workbook p. 142 | **Bell Ringer: Visualize It! p. 140-141 #17 and #18****Instructional Tasks:** Unit 3 Review Student Workbook**Summarizer:****Explain how the uneven warming of Earth causes air to move.** | **Bell Ringer:** **N/A****Instructional Tasks: Write to Learn: Science 6 12.1 What is Earth’s Atmosphere?****Or** **Weather and Climate: 1.3 Layers of the Atmosphere****Summarizer: Completed Write to Learn**  |
| **Assessment:** Participation, Discussion | **Assessment:** Observation, participation | **Assessment:**  Observation, Completed poster | **Assessment:** Graded Assignment | **Assessment:** Completed WTL Activity, Observation |

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| **Day 11****Lesson: Weather** | **Day 12****Lesson: Weather** | **Day 13****Lesson: Weather** | **Day 14****Lesson: Weather** | **Day 15****Lesson: Weather** |
| **Clarifying Objective: 7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to** **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:** **7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to** **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge  | **Clarifying Objective:** **7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to** **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge  | **Clarifying Objective:****7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to** **storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge  | **Clarifying Objective:****7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to** **storms (including thunderstorms, hurricanes, and tornadoes)and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge  |
| **Bell Ringer:** **Write a paragraph describing everything you know about the elements of weather.****Instructional Tasks:** “Elements of Weather” Digital Lesson with fill in notes**Summarizer:****What are three things you learned today?** | **Bell Ringer: What is the difference between humidity and relative humidity?****Instructional Tasks:** Cloud in a bottle demonstration “Clouds and Cloud Formation” Digital Lesson with Fill in notes**Summarizer:** **Complete the flow chart on p. 167 in Student Workbook** | **Bell Ringer: Visualize It! #10 Student Workbook p. 169 and #13 p. 171****Instructional Tasks:** Finish “Clouds and Cloud Formation” Digital Lesson **Summarizer:****Name the three factors that are required for cloud formation.** | **Bell Ringer: What do you think influences weather? Answer in 2 to 3 sentences.****Instructional Tasks:** “What influences weather?” Digital Lesson **Summarizer:****Explain the factors that influence weather.** | **Bell Ringer: Visual Summary Student Workbook p. 192** **Instructional Tasks:** “Severe Weather and Weather Safety” Digital Lesson **Summarizer:****Stormy Weather Game TE p. 256** |
| **Assessment:** Participation, Discussion | **Assessment:** Observation, participation | **Assessment:**  Observation, participation | **Assessment:** Participation, Discussion | **Assessment:** Participation, Observation |

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| **Day 16****Lesson: Weather** | **Day 17****Lesson: Weather** | **Day 18****Lesson: Weather** | **Day 19****Lesson: Weather** | **Day 20****Lesson: Weather** |
| **7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge | **Clarifying Objective:** **7.E.1.2 Explain how the cycling of water in and out of the atmosphere** **and atmospheric conditions relate to the weather patterns on** **Earth.** **7.E.1.3 Explain the relationship between the movement of air masses,** **high and low pressure systems, and frontal boundaries to storms (including thunderstorms, hurricanes, and tornadoes) and other weather conditions that may result.****Academic Vocabulary:**weather, humidity, relative humidity, dew point, precipitation, air pressure, wind, visibility, cloud, cirrus cloud, stratus cloud, cumulus cloud, fog, particulates, air mass, jet stream, front, thunderstorm, hurricane, tornado, storm surge  | **Clarifying Objective: 7.E.1.4: Predict weather conditions and patterns based on information obtained from:*** **Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure)**
* **Weather maps, satellites and radar**
* **Cloud shapes and types and associated elevation**

**Academic Vocabulary:*** **weather forecasting, meteorology, station model)**
 | **Clarifying Objective: 7.E.1.4: Predict weather conditions and patterns based on information obtained from:*** **Weather data collected from direct observations and measurement (wind speed and direction, air temperature, humidity and air pressure)**
* **Weather maps, satellites and radar**
* **Cloud shapes and types and associated elevation**

**Academic Vocabulary:****weather forecasting, meteorology, station model)** | **Clarifying Objective:****7.E.1.6: Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.** **Academic Vocabulary:****ice age, greenhouse effect, global warming** |
| **Bell Ringer: Explain three types of severe weather and what you should do if severe weather threatens your area.****Instructional Tasks:** “When Severe Weather Strikes” Virtual Lab**Summarizer:**What are the four major safety threats from hurricanes? | **Bell Ringer: How can the paths of past hurricanes be used to predict the paths of new hurricanes?****Instructional Tasks:** “When Severe Weather Strikes” Virtual Lab (Cont.)**Summarizer:** Explain how meteorologists predict hurricanes. What is the cone of uncertainty? | **Bell Ringer: How do you think meteorologists predict the weather?****Instructional Tasks:** “Weather Maps and Weather Prediction” Digital Lesson**Summarizer:** Responding to Weather Maps TE p. 272 | **Bell Ringer: Explain three types of information that meteorologists can get from a station model.****Instructional Tasks:** “Forecasting the Weather” Virtual Lab**Summarizer:**Explain each of the four types of fronts that meteorologists can forecast. | **Bell Ringer: Vocabulary Matching Activity****Instructional Tasks:** “Forecasting the Weather” Virtual Lab (Cont.)**Summarizer:** How did the weather maps help you predict the weather? |
| **Assessment:** Participation, Discussion, Summarizer | **Assessment:** Observation, Participation, Summarizer | **Assessment:**  Observation, Participation | **Assessment:** Participation, Discussion | **Assessment:** Participation, Observation |