

Weather and Water

Answer Key: Grades 7–8 Lesson Extensions

Notes:

- This answer key should be used as a guide for basic responses to the questions and instructions found in the grades 7–8 lesson extensions. The children should be encouraged to make their student journals tidy, beautiful, and exceptionally well done.
- Encourage the children to write their answers in their own words, with definitions being a possible exception.
- There are two types of answers provided in this answer key:

Sample answers: Most questions are open ended, so the children’s answers will not match the provided text exactly or include everything provided in the sample answer. However, some answers should match more closely (for example, vocabulary word definitions, copied charts, etc.).

Answers will vary: This is used when there will be great variation in the children’s answers, which may be due in part to a lesson having more information provided than another lesson. Refer to the text in the lesson to check these answers.

Lesson 1

2. On the next page, write down three key facts about each of the scientists that you read about.

Sample answers:

Daniel Gabriel Fahrenheit: (only 3 bullet points needed)

- Born in Poland in 1686
- Dutch physicist who made many contributions to the study of meteorology
- Invented the alcohol thermometer in 1709 and the mercury thermometer in 1714
- Invented the Fahrenheit scale to measure temperature
- Discovered that water can remain in a liquid state below freezing and that the boiling point of water varies depending upon atmospheric pressure

Anders Celsius: (only 3 bullet points needed)

- Born in Sweden in 1701
- Born into a family of scientists and mathematicians
- Studied and became an astronomer and eventually a professor of astronomy at Uppsala University
- Invented the Celsius temperature scale
- Built Uppsala Observatory

- Studied the aurora borealis, or northern lights
- His temperature scale is used in almost every country in the world, except for the few that continue to use the Fahrenheit scale.

William Thomson: (only 3 bullet points needed)

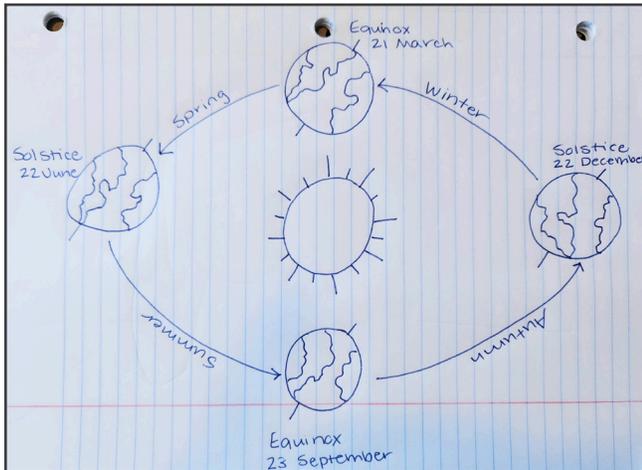
- Born in Belfast, Ireland, in 1824
- Scottish engineer, mathematician, and physicist
- Professor of natural philosophy at Glasgow University
- Implemented the first physics laboratory in Britain
- Invented the Kelvin temperature scale
- Knighted in 1892 and given the title Baron Kelvin of Largs
- Invented the mariner’s compass, a tide machine, and depth-measuring equipment

Lesson 2

2. After studying the “Equinoxes and Solstices for the Northern Hemisphere” diagram at the top of the page, draw your own diagram showing the same information. Do your best to remember the names of each equinox or solstice and their appropriate dates and details. You may refer back to this page as needed.



Sample answer:



Lesson 3

2. Make an informational type of pamphlet/brochure that informs citizens about droughts. Include the types of droughts, information about what is causing each type, and ways the citizens can conserve water during droughts.

Sample answer:

Lesson 4

2. List 3–4 things you can do to help protect and restore our ozone layer. Your contributions may seem small, but when many people work together doing small things, great things happen.

Answers will vary. Notes should reflect three or four pieces of information found in the lesson extension.

Lesson 5

2. Make a chart listing at least four substances in the air and their effects on people.

Sample answer:

Substance	Effect on People
① Water Vapor	- Feel hotter or colder - Effects how the temperature 'feels'
② Pollen	- Can cause allergic reactions of differing severity with sneezing, runny nose, watery eyes
③ Smoke, Ash, and Dust	- Can cause pneumonia - Stay indoors or evacuate temporarily if live near disasters that can cause smoke, ash, and dust in the air
④ Air Pollution	- Harmful to people's health, especially those with asthma or respiratory conditions - Can cause damage to buildings

Lesson 6

2. Copy the wind diagram, labeling the winds and zones.

Sample answer:



Lesson 7

2. Look at the pictures on the page. Write numbers 1–5 on the next page (one digit for each photo below). Determine



which phase of the water cycle (evaporation, condensation, precipitation, sublimation, or deposition) is occurring in each photo and write it next to the photo's corresponding number.

Sample answers:

1. Condensation
2. Sublimation
3. Evaporation
4. Precipitation
5. Deposition

3. Write the definition of sublimation and deposition.

Sample answers:

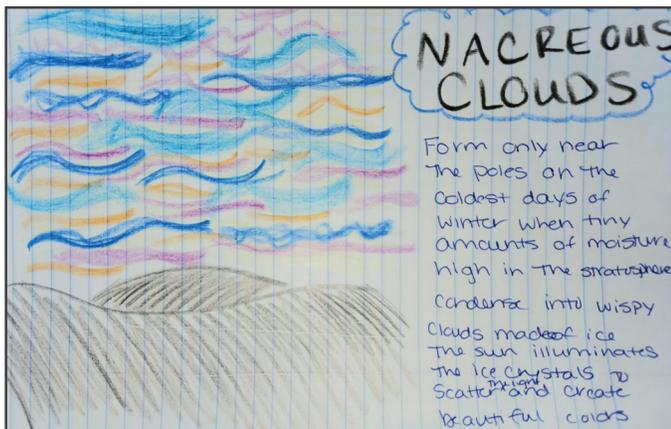
Sublimation: when water skips from its solid state (ice) to its gas state (water vapor) without ever becoming a liquid

Deposition: when water skips from its gas state (water vapor) to its solid state (ice) without ever becoming a liquid

Lesson 8

2. Choose one of the cloud formations and sketch it in your journal. Write a few sentences explaining how the formation you chose is created.

Sample answer:



Lesson 9

2. Look up the annual average rainfall in the area where you live and record it in your science journal. Write a brief description about whether your home area is more like the Namib Desert or San Antonio de Ureca.

Answers will vary as this answer requires outside research and correlating facts.

Lesson 10

2. Write down three of Bentley's character traits. Record how those traits enabled him to be a good scientist.

Answers will vary. Notes should reflect three traits found in the lesson extension. Answers for the second part of the question will vary as they involve opinions.

Lesson 11

2. Write 1–2 sentences about each of the following prompts.

Questions and sample answers:

- Describe the history of the lightning rod.

Benjamin Franklin discovered from his famous kite and key experiment that lightning is electricity and is attracted to metal objects. From this experiment he invented the lightning rod—a metal pole with a pointed top—that could protect buildings from lightning strikes. After many years of differing opinions in regard to lightning rods and different designs, lightning rods are still in use today to protect buildings and help prevent surges to electrical systems.

- How did Benjamin Franklin's discovery and invention change our world?

Buildings and homes are better protected from dangerous and powerful lightning strikes. His discoveries also help prevent damage to computers, televisions, and home security systems from power surges caused by lightning strikes.

Lesson 12

2. Imagine you are living in the 1950s and write a persuasive paragraph to explain why severe weather warnings are important.

Answers will vary. The paragraph should reflect information found in the lesson extension and be persuasive in nature, supporting why severe weather warnings are important.

Lesson 13

2. Write one benefit and one challenge associated with each of the following: hydroelectric dams, tidal power technology, and wave power technology.

**Sample answers:**Hydroelectric dams:

Benefits - renewable source of energy; water is held back by a barrier and stored in a reservoir so water can be directed where and when it's needed

Challenges - dams can prevent salmon or other fish from being able to swim upstream to spawn; dams can alter water temperature, chemistry, and flow, which could have an impact on plant life, animals, and even humans

Tidal power technology:

Benefit - renewable source of power; more powerful and more reliable than a wind turbine

Challenge - inconsistent source of energy production

Wave power technology:

Benefit - renewable source of power

Challenge - inconsistent source of energy production

Lesson 14

2. *Select one of the two weather proverbs in the green boxes below. Write a paragraph answering this question: Why do you think previous generations of people relied on weather proverbs?*

Answers will vary, as they will involve opinions, but they should reflect supporting information found in the lesson extension.