

# AROUND WE GO WITH THE WATER CYCLE

## 2<sup>nd</sup> Grade Science

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Length of Unit: 8 lessons (about 40 minutes each)

### I. ABSTRACT

- A. In this eight day second grade unit, students will explore the components of the water cycle. They will use hands on experiments and the scientific method to study evaporation, condensation and precipitation. The students will also take a closer look at the continuous cycle of water on the earth.

### II. OVERVIEW

- A. Concept Objectives
1. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations. (CDE Standard 1)
  2. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
  3. Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. (CDE Standard 4.3)
  4. Students know and understand interrelationships among science, technology, and human activity and how they can affect the world. (CDE Standard 5)
- B. Content from the *Core Knowledge Sequence*
1. Second Grade Science (p. 59)
    - a. Cycles in Nature
      - i. The Water Cycle
        - i. Most of the Earth's surface is covered by water
        - ii. The water cycle
          1. Evaporation and condensation
          2. Water vapor in the air, humidity
          3. Clouds: cirrus, cumulus, stratus
          4. Precipitation, groundwater
- C. Skill Objectives (List specific skills to be taught in each lesson – and use the same ones from your lessons.)
1. Students will brainstorm uses for water
  2. Students will observe by looking at the globe that there is more water than land on the Earth
  3. Students will make a hypothesis about how much of the Earth is covered with water
  4. Students will correctly draw and divide a representation of the Earth into fourths
  5. Students will label what fraction of the Earth is land and what fraction is water
  6. Students will make predictions for an evaporation experiment
  7. Students will observe and record observations from evaporation experiment
  8. Students will draw conclusions based on an experiment
  9. Students will use the scientific method to explore evaporation
  10. Students will define vocabulary words by drawing a representative picture
  11. Students will hear and comprehend that humidity is the amount of moisture in the air
  12. Students will compare and contrast the feeling of humidity v. a dry climate
  13. Students will feel humid air through the use of humidifier
  14. Students will draw one humid place and one dry place

15. Students will define humidity
16. Students will define vocabulary words by drawing a representative picture
17. Students will observe the change in a cup of warm water when ice is added to cool the water vapor
18. Students will comprehend condensation as the reverse or opposite of evaporation
19. Students will record the steps in a condensation experiment
20. Students will correctly define condensation
21. Students will connect condensation with clouds
22. Students will create different kinds of clouds using cotton
23. Students will draw and label each kind of cloud
24. Students will associate different clouds with different kinds of weather
25. Students will record the different kinds of clouds according to altitude
26. Students will observe clouds
27. Students will write a story about “pictures” seen in the clouds
28. Students will discuss the four major kinds of precipitation
29. Students will create a representation of each of the kinds of precipitation
30. Students will comprehend the water cycle going around and around
31. Students will learn the term groundwater
32. Students will practice saying the stages of the water cycle in order
33. Students will review information about the water cycle
34. Students will use various materials to create a representation of the water cycle
35. Students will watch a video about the water cycle
36. Students will take a written test to show what they have learned about the water cycle

### III. BACKGROUND KNOWLEDGE

- A. For Teachers
  1. *Core Knowledge Teacher Handbook* edited by E.D. Hirsch, Jr. and Souzanne A. Wright
  2. *Down Came the Rain* by Franklin M. Branley
  3. *The Magic School Bus: Wet All Over* by Joanna Cole
  4. *The Water Cycle* by Bobbie Kalman
  5. *What your Second Grader Needs to Know* edited by E.D. Hirsch, Jr.
- B. For Students
  1. Science – Seasons and Weather (K) *Core Knowledge Sequence*, p. 20
  2. Science – Oceans and Undersea Life (1<sup>st</sup> Grade) *Core Knowledge Sequence*, p. 37

### IV. RESOURCES

- A. *The Cloud Book* by Tomie dePaola
- B. *Down Comes the Rain* by Franklyn M. Branley
- C. *The Magic School Bus: Wet All Over* by Joanna Cole
- D. *The Magic School Bus Catches a Wave* (DVD includes *Wet All Over* episode)
- E. *The Water Cycle* by Bobbie Kalman
- F. *Where Does Water Come From?* By C. Vance Cast

### V. LESSONS

#### Lesson One: Water, Water, Water, Land

- A. *Daily Objectives*

1. Concept Objective(s)
    - a. Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. (CDE Standard 4.3)
  2. Lesson Content
    - a. Most of the Earth's surface is covered by water
  3. Skill Objective(s)
    - a. Students will brainstorm uses for water
    - b. Students will observe by looking at the globe that there is more water than land on the Earth
    - c. Students will make a hypothesis about how much of the Earth is covered with water
    - d. Students will correctly draw and divide a representation of the Earth into fourths
    - e. Students will label what fraction of the Earth is land and what fraction is water
- B. *Materials*
1. *Where Does Water Come From?* by C. Vance Cast
  2. Globe
  3. Blue and Green candies (enough for each student to have 3 blue and 1 green).
  4. Appendix A (*Water, Water Everywhere*)
  5. chart paper and marker
  6. two jars and one lid
- C. *Key Vocabulary*
1. water cycle – the way in which the water moves on and around the Earth
- D. *Procedures/Activities*
1. Before the start of the lesson, place three blue candies and one green candy on each student's desk. If possible, teach steps 2, 3 and 4 somewhere else in the class so the students don't see the candies.
  2. Introduce students to the water cycle.
    - a. *We will spend the next couple of weeks talking about the water cycle. We will be learning about why water is so important to us and the special cycle that water goes through on the Earth.*
  3. Read *Where Does Water Come From?* By C. Vance Cast
  4. Brainstorm uses for water.
    - a. *We use water every day. Think about the different ways you use water. Let's think of a list of all the things we use water for each day. (Make sure to include on the list cooking, drinking, manufacturing, helping plants and animals grow.)*
  5. Observe a globe.
    - a. *Who can tell me what this is? (a globe)*
    - b. *How can we tell what is land and what is water on a globe? (land is one color, water is a different color)*
    - c. *Do you think there is more land or more water covering the Earth's surface? (Ask many children to predict to see what they think)*
    - d. *There is more water than land on the Earth. Let's find out how much.*
  6. Teach students that most (almost  $\frac{3}{4}$ ) of the Earth's surface is covered in water.
    - a. *At your seats, there are four candies. The candies represent what fraction of the Earth is covered in water and what fraction is covered in*

*land. Look at those candies and make a prediction about how much of the Earth is covered in water.*

Give the students some time to look at the candies and make predictions about how much water and land covers the Earth's surface.

- b. *How many candies do you have all together? (4)*
  - c. *How many are blue? (3) How many are green? (1)*
  - d. *Green stands for land and blue stands for water. What fraction of your candies are blue? (3/4) This is about the same fraction of the Earth that is covered in water.*
7. Tell students that most of the water on Earth is found in oceans and glaciers. Only a very small percent is found in rivers, streams and lakes.
  8. Draw a representation of the Earth, showing the fractions of land and water.
    - a. *Let's draw a picture to show us what fraction of the world is covered in land and what fraction is covered in water.*
    - b. *How could I draw a quick picture to represent the Earth (draw a circle)*
    - c. *Now, how could I divide this circle into four equal pieces? (divide the circle in half, then divide it again)*
    - d. *How many of the fourths are land? (1) How many are water? (3) I will write an L in one section to stand for land and a W in three sections to stand for water. Then, I will color the land green and the water blue.*
    - e. *You will have a chance in a few minutes to draw this representation on your own paper.*
  9. Review
    - a. *Let's review what we've learned. There are many important uses for water. What are some of them? (have the students name 5 or 6) Is more of the Earth's surface covered with land or water? (Water) How much is land? (1/4) How much is water? (3/4)*
  10. To prepare for tomorrow's lesson on evaporation, show the students two jars. Fill each jar with water about 2/3 full. Draw a line on each jar right at the top of the water. Leave the lid off one jar and put the jar on the other lid. Place both jars near a window to check tomorrow.

E. *Assessment/Evaluation*

1. Provide the students with a copy of **Water, Water Everywhere** (Appendix A). Have them answer the questions to show what they've learned about water.

**Lesson Two: Evaporation**

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations. (CDE Standard 1)
  - b. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
2. Lesson Content
  - a. Evaporation and water vapor
3. Skill Objective(s)
  - a. Students will make predictions for an evaporation experiment
  - b. Students will observe and record observations from evaporation experiment

- c. Students will draw conclusions based on an experiment
  - d. Students will use the scientific method to explore evaporation
  - e. Students will define vocabulary words by drawing a representative picture
- B. *Materials*
- 1. Two jars and one lid from yesterday
  - 2. Appendix B – *Evaporation*
  - 3. Appendix C – *The Water Cycle*
  - 4. Appendix D – *Water Cycle Vocabulary*
- C. *Key Vocabulary*
- 1. Evaporation – the process of water changing in to water vapor
  - 2. Water vapor – what water becomes as it heats and turns into gas
  - 3. Droplets – tiny drops of water
- D. *Procedures/Activities*
- 1. Review from yesterday
    - a. *Who can remind we what we learned about water yesterday?*
    - b. *What did we set up at the end of the day? Our experiment that we set up with the jars is to help us understand a little bit more about evaporation.*
  - 2. Read *Down Comes the Rain* pp. 6-13
    - a. *Who can tell me something they learned about evaporation? When water evaporates, what does it become? (water vapor – the gaseous state of water that we can't usually see)*
  - 3. Make a prediction about the jars with water
    - a. *Now that we know a little bit about evaporation, does anyone have a prediction about what happened with our two jars?*
    - b. After some students answer, hand out Appendix B (*Evaporation*). Have each student record his/her prediction under the hypothesis section. Remind them there is no right answer for this question since they are just writing what they think will happen.
  - 4. Observe the jars
    - a. Have the students closely observe the jars. Talk about what happened in each jar. Is the water still up to the line in each jar? If not, what happened to the water that is now gone out of the jar? How did the water heat up?
    - b. *Explain to the students that the jar with no lid has less water in it because some of the water has evaporated. When the water in the jar heated up (because of the heat from the sun), some of the water droplets turned into water vapor (gas) and rose into the air. The jar with the lid on had water heat up, too but more water stayed because it hit the lid and fell back into the jar.*
  - 5. Draw the results of the experiment
    - a. Have the students draw what each jar looked like the first day (water up to the line in each jar). Then have the students draw what happened to the water in the jars (what they looked like on day 2). Remind the students to draw one with a lid and one without a lid
  - 6. Make conclusions
    - a. Discuss possible conclusions with the students. Have a few children share what happened in this experiment. Help the students write a conclusion along the lines of *the jar that had a lid kept all or most of its*

*water. The jar that did not have a lid lost water because the water evaporated into the air.*

7. Review
    - a. Have the students fill out the final sentence on Appendix B using the words from the word box.
  8. Discuss how evaporation fits into the water cycle
    - a. Use Appendix C (*The Water Cycle*) to show the whole water cycle. Discuss that evaporation is the beginning of the cycle. Talk to students about how to draw and label evaporation, water vapor and the sun on a water cycle.
- E. *Assessment/Evaluation*
1. Draw a picture in the Evaporation box on the vocabulary page (Appendix D)

### **Lesson Three: Humidity**

#### A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
2. Lesson Content
  - a. Humidity
3. Skill Objective(s)
  - a. Students will hear and comprehend that humidity is the amount of moisture in the air
  - b. Students will compare and contrast the feeling of humidity v. a dry climate
  - c. Students will feel humid air through the use of humidifier
  - d. Students will draw one humid place and one dry place
  - e. Students will define humidity
  - f. Students will define vocabulary words by drawing a representative picture

#### B. *Materials*

1. humidifier
2. Appendix D – *Water Cycle Vocabulary*
3. Appendix E – *Humidity*

#### C. *Key Vocabulary*

1. humidity – the amount of moisture in the air

#### D. *Procedures/Activities*

1. Review water vapor and evaporation
  - a. *What does water do when it heats up? (turns into a gas called water vapor).*
  - b. *Water vapor rises in the air. If there are a lot of water droplets or water vapor in the air, we call that moisture. **Humidity is the amount of moisture in the air.***
2. Teach about humidity
  - a. *If there is moisture in the air, how could we tell? (it would feel more wet) Remind students that we can not see humidity.*
  - b. *In our state (Colorado) it is not very humid. That is because we are land-locked. This means that there are no big bodies of water around where we live. If we look at a map of the United States, who can tell me*

*a state they think would be more humid? (any close to water would be fine). In those states, when people go outside it feels humid. In Colorado we feel crisp and dry when we are outside – in states like Texas, many times people feel damp when they go outside because of the humidity.*

- c. *Another place that feels very humid is the butterfly room at the Butterfly Pavilion. That room has a lot of water droplets and water vapor in the air. We say that the air is full of moisture. This means that there is high humidity.*
- d. *One final example is the bathroom when you get out of a warm shower. There is a lot of moisture in the air, so that means it is a humid place.*

3. Relating to personal experience

- a. *Does anyone know of a place they have been where it is humid?*

4. Experiencing humidity

- a. Have a humidifier in the classroom. Turn it on, and allow students to go back in small groups to feel how the air coming out of the humidifier is damper than the other air in the room.
- b. While the students are going back to the humidifier in their groups, have the other students draw a picture to represent humidity on their vocabulary page (appendix D). They can draw a place they know that is humid, or any other picture that will help them remember that humidity is the amount of moisture in the air.

E. *Assessment/Evaluation*

- 1. Humidity Worksheet (Appendix E) – The students will need to write the definition for humidity (humidity is the amount of moisture in the air) and draw a picture of a place they know that is not humid and a picture of a place they know is humid. If the students can correctly identify locations with moist air and dry air, we will know they grasp the concept of humidity.

**Lesson Four: Condensation**

A. *Daily Objectives* (Lesson content, concept objectives, and skill objectives should all be listed in the Overview section as well.)

- 1. Concept Objective(s)
  - a. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations. (CDE Standard 1)
  - b. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
  - c. Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. (CDE Standard 4.3)
- 2. Lesson Content
  - a. Condensation
- 3. Skill Objective(s)
  - a. Students will observe the change in a cup of warm water when ice is added to cool the water vapor
  - b. Students will comprehend condensation as the reverse or opposite of evaporation
  - c. Students will record the steps in a condensation experiment

- d. Students will define vocabulary words by drawing a representative picture
  - e. Students will correctly define condensation
- B. *Materials*
- 1. Small plastic cup for each group
  - 2. Warm water
  - 3. Ice cubes
  - 4. Towels
  - 5. Appendix D – *Vocabulary*
  - 6. Appendix C – *The Water Cycle*
  - 7. Appendix F – *Condensation*
  - 8. *The Water Cycle* by Bobbie Kalman
- C. *Key Vocabulary*
- 1. Condensation – when water vapor cools and turns back into water droplets
  - 2. Clouds – clusters of water droplets all together
- D. *Procedures/Activities*
- 1. Review information from previous days. Remind students about evaporation and how the water changes to a gas form we can't see when it heats up.
  - 2. Introduce Condensation
    - a. *Condensation is the reverse procedure of evaporation. Once water heats, turns into vapor and rises in the air, it starts to cool off the higher it gets. When the water vapor cools enough, it changes back into water droplets. This is called condensation. Condensation is the second step in the water cycle. We see condensation in the form of clouds. Clouds are lots of water droplets all together. Let's do an experiment to observe condensation up close.*
  - 3. Condensation Experiment. Hand out a small plastic cup to each group. Fill each cup with warm water. Ask the students to describe what the water feels like. Also have the students feel and carefully observe the outside of the cup. It should be dry to the touch. Remind the students that because the water is warm and out in the open, some of the droplets are evaporating (turning into water vapor). Then, give each group a couple of ice cubes to put into their cups. As the ice cools the water down, condensation should occur. Have the students observe what happens to the outside of their cups. Then discuss as a class what happened.
    - a. *Who can describe what happened to your cup as the ice cooled the water down? The ice turned some of the water vapor back into water droplets. The water droplets formed on the inside and the outside of the cup. This happens often with glasses we use at home (that's why we have coasters!) and with water bottles at school.*
  - 4. Read pages 12-15 of *The Water Cycle* by Bobbie Kalman. Explain to students that the experiment they just did was a small representation of what happens in the water cycle on Earth.
  - 5. Review the Facts
    - a. *When water vapor cools, it turns back into water droplets – this is called condensation.*
    - b. *When condensation happens on the Earth, we see it in the form of clouds.*
    - c. *Condensation is the second step of the water cycle. It happens after water evaporates into the air.*

6. Have the students draw a picture to represent condensation on the Vocabulary worksheet (Appendix D)
  7. Show the Water Cycle Worksheet (Appendix C). Talk to students about how condensation fits into the water cycle
- E. *Assessment/Evaluation*
1. Have students record the steps and observations from the condensation on Appendix F, *Condensation*

### **Lesson Five: Clouds (Cirrus, Cumulus, Stratus)**

- A. *Daily Objectives*
1. Concept Objective(s)
    - a. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
  2. Lesson Content
    - a. Clouds
      - i. Cirrus
      - ii. Cumulus
      - iii. Stratus
      - iv. Fog
  3. Skill Objective(s)
    - a. Students will connect condensation with clouds
    - b. Students will create different kinds of clouds using cotton
    - c. Students will draw and label each kind of cloud
    - d. Students will associate different clouds with different kinds of weather
    - e. Students will record the different kinds of clouds according to altitude
    - f. Students will observe clouds
    - g. Students will write a story about “pictures” seen in the clouds
    - h. Students will define vocabulary words by drawing a representative picture
- B. *Materials*
1. *The Cloud Book* by Tomie dePaola
  2. Blue construction paper
  3. Cotton balls
  4. Cotton batting
  5. Gray markers
  6. Glue
  7. Writing paper with space for illustration
  8. Appendix D – *Vocabulary*
  9. Appendix G – *Cloud Project checklist and Cloud Writing Rubric*
  10. Appendix H – *Cloud Information*
- C. *Key Vocabulary*
1. Cirrus – clouds high in the sky, indicate good weather, mare’s tails
  2. Cumulus – big, white puffy clouds
  3. Stratus – storm clouds, gray in color, lower than other clouds
  4. Fog – a cloud that touches the earth
- D. *Procedures/Activities*

1. Review condensation information. Remind students that in the water cycle, we see condensation when the water vapor cools and turns back into water droplets. These droplets form together and make clouds.
  2. Read *The Cloud Book* by Tomie dePaola
  3. Using blue construction paper, different cotton and gray markers, create a representation of the clouds in the sky. At the very top of the paper, write the word CLOUDS. Start by gluing cotton batting to the top of the paper, labeling with the word *cirrus*. Under the cirrus clouds, glue some cotton balls in a big puffy shape and label with the words *cumulus*. Under the cumulus clouds, use batting and color it gray to represent *stratus* clouds. Finally, add *fog* onto the very bottom. Check with Cloud Project Checklist (Appendix G)
  4. Have the students draw representations for each kind of cloud on the Vocabulary page (Appendix D).
  5. Take the students outside to do some cloud watching. Ask them to look for clouds that seem to make some sort of shape or picture. Allow the students to watch the clouds change and move around. Remind them to get a good picture in their heads, because they will be writing about what they saw when they get inside.
  6. When the students get in, hand them each a page of writing paper. Have the students start by drawing what they saw in the clouds. Then, have each student write a couple of sentences about what he/she saw in the clouds. Ask them to imagine that what they saw came to life, and have them tell what they would do if that happened. Rubric for writing on Appendix G.
- E. *Assessment/Evaluation*
1. Students complete cloud information worksheet (Appendix H). This can be done as *The Cloud Book* is being read out loud.

### **Lesson Six: Precipitation and Groundwater**

#### A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
  - b. Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. (CDE Standard 4.3)
2. Lesson Content
  - a. Precipitation
  - b. Groundwater
3. Skill Objective(s)
  - a. Students will discuss the four major kinds of precipitation
  - b. Students will create a representation of each of the kinds of precipitation
  - c. Students will comprehend the water cycle going around and around
  - d. Students will learn the term groundwater
  - e. Students will practice saying the stages of the water cycle in order

#### B. *Materials*

1. A different kind of bead/confetti to represent the 4 major kinds of precipitation
2. Construction paper
3. glue
4. *The Water Cycle* by Bobbie Kalman
5. Appendix C – *The Water Cycle*

6. Appendix D – Vocabulary
- C. Key Vocabulary
1. Precipitation – water that falls from the sky
  2. Groundwater – water that is under the ground
  3. Rain – precipitation in water droplet form
  4. Hail – precipitation in ice form
  5. Sleet – precipitation that is a mix of water and ice
  6. Snow – frozen precipitation, comes down in white flakes
- D. Procedures/Activities
1. Review information about Condensation. Talk about how clouds are a bunch of little water droplets all together. Introduce Precipitation.
    - a. *Who knows what happens when a cloud gets too heavy to hold all of those water droplets? Water begins to fall back to the Earth. We call this precipitation.*
  2. Read pp. 17-17 in *The Water Cycle* by Bobbie Kalman. As you read, pause to ask students if they have ever experienced each of the four types of precipitation. Finish reading and review all kinds of precipitation.
  3. Discuss Groundwater
    - a. *When precipitation occurs, water falls to the ground in some form. This is called collection because the water is collecting again on the Earth. The ground soaks this water up and stores it underground. We call this groundwater. Who can tell me why? The groundwater moves throughout the earth and makes its way back to a river, lake or ocean. It then starts the water process all over when it gets evaporated. Because water travels in this complete circle, we have had the same water on earth since the beginning of time!*
  4. Show the students Appendix C (*The Water Cycle*). They have now learned every part of the water cycle, so review a couple of times with the students the journey water makes on and around our Earth.
    - a. *When we started talking about the water cycle, we began by discussing evaporation. Water that is already on the Earth gets heated up and turns into water vapor. Can we see water vapor? (no) We can feel water vapor because it makes the air feel moist. What do we call the amount of moisture in the air? (humidity) When the vapor rises high enough in the air, it begins to cool. When the vapor cools, it changes back into liquid droplets of water. What do we call this process? (condensation) We can see condensation by looking at the clouds. What are the four kinds of clouds we talked about? (cirrus, cumulus, stratus, fog) When the clouds get too heavy to hold all that water, the water begins to fall back to Earth. This is what we learned about today – precipitation. What are the four major kinds of precipitation? (rain, hail, sleet, snow) Finally, when all the water falls to the Earth it is collected on the ground. Some water then travels underground. We call this groundwater. Then the process starts all over again.*
  5. After a sufficient review has been done, allow the students time to draw illustrations for any boxes that are not yet filled in on Appendix C (*Vocabulary*)
- E. Assessment/Evaluation
1. Have the students use the different materials to create a worksheet that shows all four kinds of precipitation. Demonstrate how to divide a paper in fourths (fold

one in half, then in half again). Label each section one of the four kinds of precipitation (one section for rain, one for snow, one for sleet and one for hail). At the top of the paper, have each child write *Precipitation is when water falls back to the earth*. Then, the students can glue the appropriate material into the correct section on the paper.

### **Lesson Seven: Review**

#### **A. Daily Objectives**

1. Concept Objective(s)
  - a. Students know that energy appears in different forms, and can move (be transferred) and change (be transformed). (CDE Standard 2.2)
  - b. Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. (CDE Standard 4.3)
  - c. Students know and understand interrelationships among science, technology, and human activity and how they can affect the world. (CDE Standard 5)
2. Lesson Content
  - a. Review
  - b. Conserving water
3. Skill Objective(s)
  - a. Students will review information about the water cycle
  - b. Students will use various materials to create a representation of the water cycle
  - c. Students will watch a video about the water cycle

#### **B. Materials**

1. Markers, crayons or colored pencils
2. Glue
3. Large white construction paper for each student
4. Craft supplies
  - a. pipe cleaners
  - b. foam
  - c. pom poms
  - d. glitter
  - e. confetti
  - f. Anything else you might want!
5. *The Magic School Bus: The Big Wave* DVD
6. Appendix C – *The Water Cycle*
7. Appendix I – *Water Cycle Self-Check Sheet*
8. Appendix J – *Water Cycle Teacher Check Sheet*
9. Appendix K – *Water Cycle Study Guide*

#### **C. Key Vocabulary**

1. Conserve – use carefully, not wastefully

#### **D. Procedures/Activities**

1. Review the water cycle using an overhead of Appendix C
  - a. *Evaporation – when water heats up (from the sun) and changes into water vapor*
  - b. *Water vapor – the gas form of water – we can't see it*

- c. *Condensation – when water vapor cools down and changes back into water droplets*
  - d. *Clouds – how water condenses in nature (cirrus, cumulus, stratus, fog)*
  - e. *Precipitation – when the clouds get too heavy to hold all the water, it falls back to the Earth (rain, hail, sleet, snow)*
  - f. *Collection – the water collects on the Earth*
  - g. *Groundwater – some of the water goes underground*
  - h. *Then we start all over!*
2. Review information from the first day
    - a. *How much of the Earth is covered in water? (about 3/4)*
    - b. *Where is most of the water on the Earth found? (Oceans and glaciers)*
  3. Talk about how there is a lot of water on the Earth, but we need to conserve water because we can not drink most of the water on Earth
    - a. *We know that most of the Earth is made up of water. However, it is very important for us to use water wisely. Out of all the water on Earth, we can only use a small portion for drinking. What are some ways we can use our water wisely so we don't waste what we have?*
    - b. Have the students list as many ways as possible to help conserve or save the good water that we have.
  4. Tell the students they are going to create their own water cycle representation. All week, we have been looking at the water cycle paper, and now they will have a chance to build their own using different craft supplies. They may use any supplies they like, as long as it makes sense with the water cycle. They need to use the Water Cycle Self-Check sheet (Appendix I) to make sure they include every part of the water cycle.
  5. Put supplies for each group in a central location. Give each student a large piece of white construction paper and a copy of Appendix I. Allow them to create their own representation of the Water Cycle!
  6. Send home Appendix K – *Water Cycle Study Guide*
- E. *Assessment/Evaluation*
1. Use Appendix J – *Water Cycle Teacher Check Sheet* to assess the water cycle creations done by the students.

### **Lesson Eight: Final Assessment**

- A. *Daily Objectives*
1. Concept Objective(s)
    - a. Students know major sources of water, its uses, importance, and cyclic patterns of movement through the environment. (CDE Standard 4.3)
  2. Lesson Content
    - a. Assessment
  3. Skill Objective(s)
    - a. Students will take a written test to show what they have learned about the water cycle
- B. *Materials*
1. Appendix L – *Final Assessment*
- C. *Key Vocabulary*
1. Precipitation – water that falls from the sky
  2. Groundwater – water that is under the ground
  3. Fog – a cloud that touches the earth

4. Condensation – when water vapor cools and turns back into water droplets
  5. Humidity – the amount of moisture in the air
  6. Evaporation – the process of water changing in to water vapor
  7. Water vapor – what water becomes as it heats and turns into gas
- D. *Procedures/Activities*
1. Show Appendix C and review the Water Cycle
- E. *Assessment/Evaluation*
1. Give students Appendix L (*Final Assessment*)

## VI. CULMINATING ACTIVITY (Optional)

- A. Meteorologist visit – contact a local meteorologist. He/she can come to the school to talk about the job that he/she does and how it relates to the water cycle.

## VII. HANDOUTS/WORKSHEETS

### Directions for Appendices

1. Appendix A – Water, Water Everywhere
2. Appendix B – Evaporation
3. Appendix C – The Water Cycle
4. Appendix D – Water Cycle Vocabulary
5. Appendix E – Humidity
6. Appendix F - Condensation
7. Appendix G – Cloud Information
8. Appendix H – Cloud Project Checklist and Writing Rubric
9. Appendix I – Water Cycle Self-Check Sheet
10. Appendix J – Water Cycle Teacher Check Sheet
11. Appendix K – Water Cycle Study Guide
12. Appendix L – Water Cycle Final Assessment

## VIII. BIBLIOGRAPHY

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Appendix A

**Water, Water Everywhere**

1. What fraction of the Earth's surface is made up of land?
2. What fraction of the Earth's surface is made up of water?
3. Where is most of the water on the Earth?
4. **Draw** and **label** a picture to show how much of the Earth is land and how much is water. Color the land green and the water blue.

5. Name 3 different ways we use water in our everyday lives.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Appendix B  
**Evaporation**

**Observation**

*Sometimes wet things dry out if they are left out*

**Question**

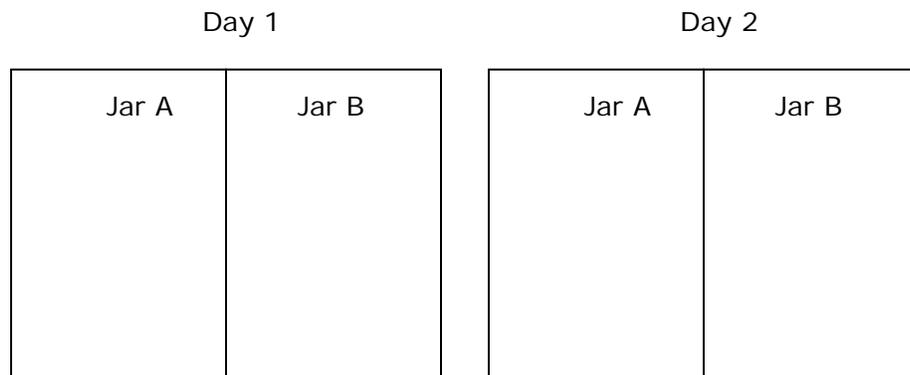
*Why do things dry out when they are left out of water?*

**Hypothesis**

---

---

**Experiment**



**Conclusion**

---

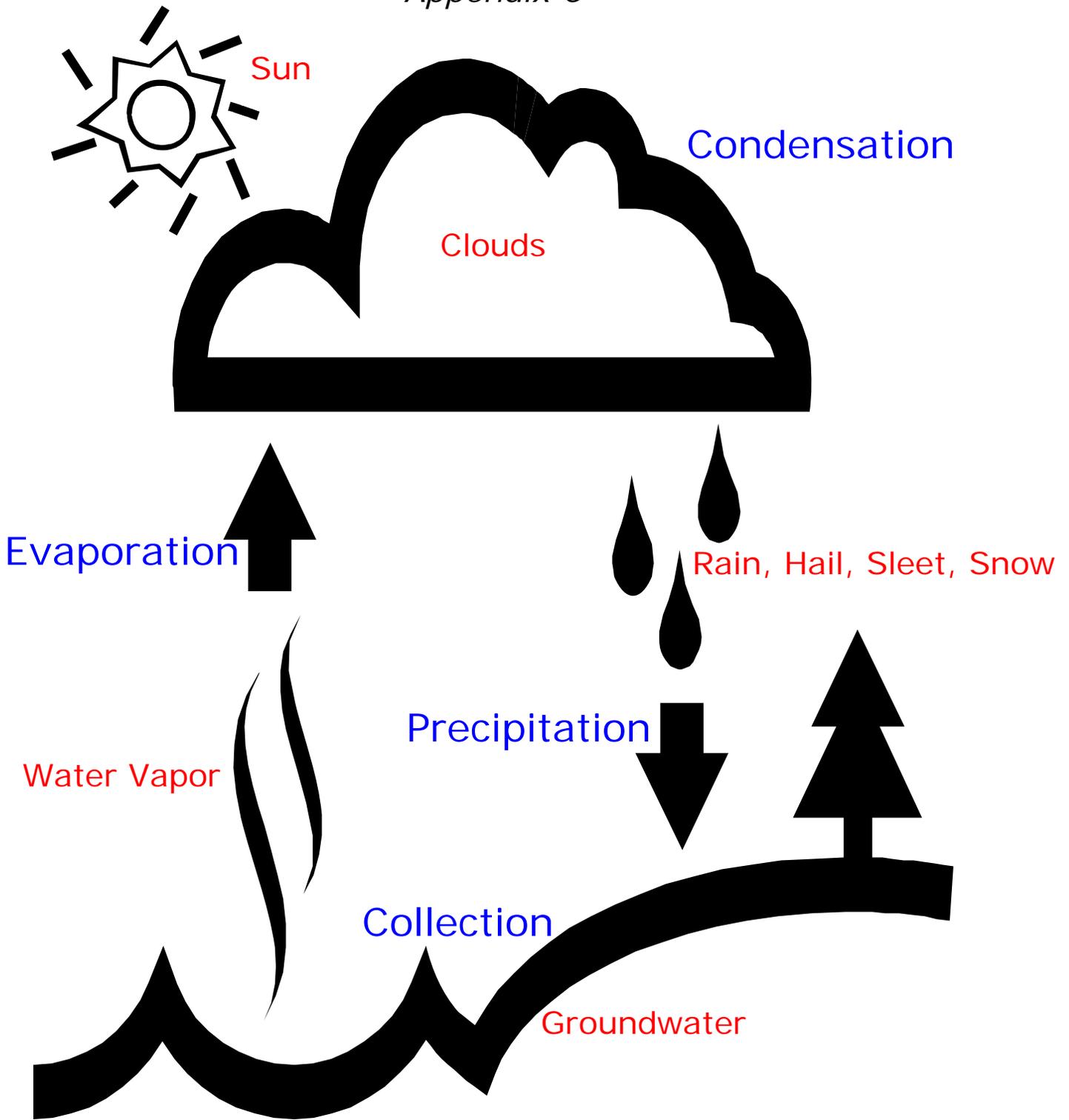
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**Review**

vapor	heats up	evaporation
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\_\_\_\_\_ is when water \_\_\_\_\_  
and the water drops turn into \_\_\_\_\_ .

Appendix C



*Appendix D*

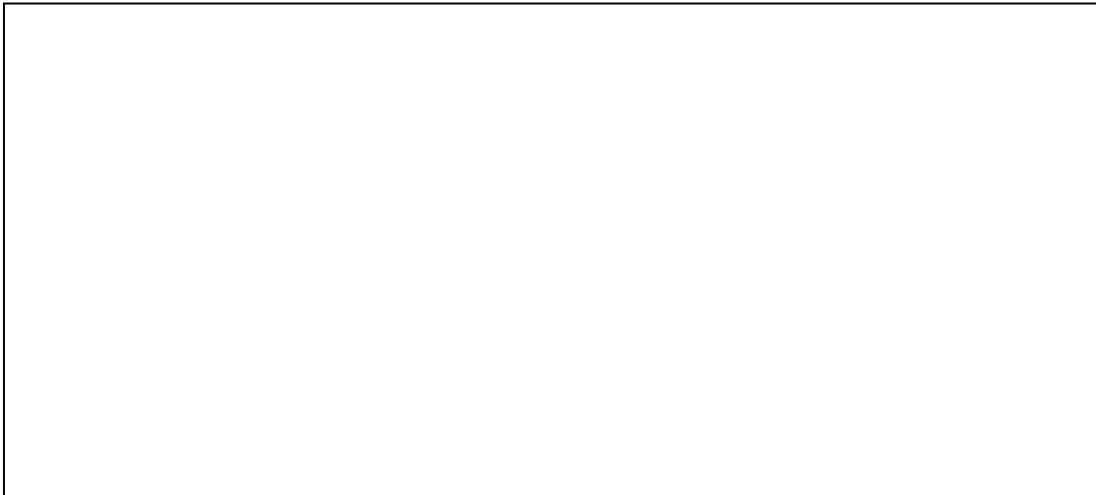
***Water Cycle Vocabulary***

Water Cycle	Evaporation	Water Vapor	Humidity	Condensation
Cirrus clouds	Cumulus clouds	Stratus clouds	Fog	Precipitation
Rain	Snow	Hail	Sleet	Groundwater

*Appendix E*  
***Humidity***

Humidity is \_\_\_\_\_  
\_\_\_\_\_

Here is a picture of one place I know that is not humid (it is very dry).



Here is a picture of one place I know that is humid (it feels wet and sticky).



*Appendix F*  
**Condensation**

Today, we did an experiment about condensation.

First, we

---

---

Next, we

---

---

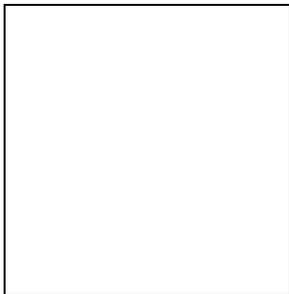
When we put the ice cubes in the water,

---

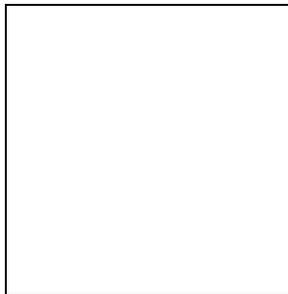
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Here are some pictures to show what happened.

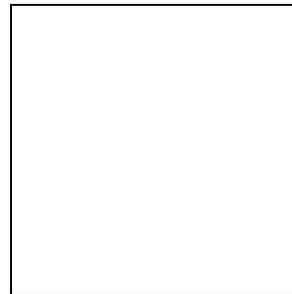
*First*



*Next*



*Finally*



**Review**

cools down

condensation

water droplets

\_\_\_\_\_ is when water \_\_\_\_\_

and the water drops turn into \_\_\_\_\_

*Appendix G*  
**Cloud Checklist**

Title	/2
Cirrus labeled	/2
Cirrus formed correctly	/2
Cumulus labeled	/2
Cumulus formed correctly	/2
Stratus labeled	/2
Stratus formed correctly (including colored)	/2
Fog labeled	/2
Fog formed correctly	/2
Neatness	/7

*Total*            /25

**Cloud Writing Rubric**

	4	3	2	1
<b>Content</b>	Ideas are original and creative. Shows great effort.	Ideas are creative. Shows some effort.	Ideas lack creativity. Little effort is shown.	No effort is shown.
<b>Mechanics</b>	Shows command of capitals. Shows command of punctuation.	General use of capitals. General use of punctuation	Inconsistent use of capitals. Inconsistent use of punctuation.	No capitals. No punctuation.
<b>Spelling</b>	Most words spelled correctly. Risk-taking shown in difficult words.	Beginning, middle and ending sounds are shown, including vowels	Beginning and ending sounds are shown.	Many sounds, including beginning and ending sounds missing.
<b>Illustration</b>	Full, color illustration. Very neat.	Some color. Fairly neat.	No color. Neatness needs improvement.	Very messy/no color illustration

*Appendix H*  
**Clouds**

The clouds highest in the sky are called \_\_\_\_\_

These kind of clouds mean \_\_\_\_\_ weather.

They look like this:

The next highest clouds are called \_\_\_\_\_

They look like this:

The lowest clouds in the sky are called \_\_\_\_\_

These kind of clouds mean \_\_\_\_\_ weather.

They look like this:

A cloud that is touching the ground is called \_\_\_\_\_

It looks like this:

Appendix I

**Water Cycle Self Check Sheet**

	Y	N
▪ Did I draw/represent the sun?		
▪ Did I label the sun?		
▪ Did I draw/represent evaporation?		
▪ Did I label evaporation?		
▪ Did I draw/represent water vapor?		
▪ Did I label water vapor?		
▪ Did I draw/represent condensation?		
▪ Did I label condensation?		
▪ Did I draw/represent clouds?		
▪ Did I label the clouds?		
▪ Did I draw/represent precipitation?		
▪ Did I label precipitation?		
▪ Did I draw/represent all 4 kinds of precipitation?		
▪ Did I label all 4 kinds of precipitation?		
▪ Did I draw/represent groundwater?		
▪ Did I label groundwater?		
▪ Is my name on the paper?		
▪ Is my work done neatly?		

*Appendix J*

***Water Cycle Teacher Check Sheet***

▪ Did the student draw/represent the sun?	/2
▪ Did the student label the sun?	/2
▪ Did the student draw/represent evaporation?	/2
▪ Did the student label evaporation?	/2
▪ Did the student draw/represent water vapor?	/2
▪ Did the student label water vapor?	/2
▪ Did the student draw/represent condensation?	/2
▪ Did the student label condensation?	/2
▪ Did the student draw/represent clouds?	/2
▪ Did the student label the clouds?	/2
▪ Did the student draw/represent precipitation?	/2
▪ Did the student label precipitation?	/2
▪ Did the student draw/represent all 4 kinds of precipitation?	/2
▪ Did the student label all 4 kinds of precipitation?	/2
▪ Did the student draw/represent groundwater?	/2
▪ Did the student label groundwater?	/2
▪ Is the student's name on the paper?	/2
▪ Is the student's work done neatly?	/6

*Total* /40

*Appendix K*

***Water Cycle Study Guide***

- Divide, color and label a circle to show how much of the Earth is water and how much is land.
- Where do we find most of the Earth's water?
- How can we conserve water?
- What are the three main types of clouds?
  - What do they look like?
- Be able to draw and label the water cycle including
  - Evaporation, water vapor and sun
  - Condensation and clouds
  - Precipitation and the 4 major kinds of precipitation
  - Groundwater

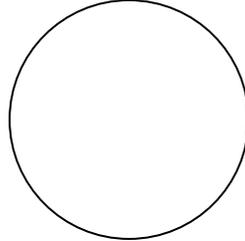
Vocabulary

- Evaporation
- Condensation
- Precipitation
- Humidity
- Water vapor
- Fog
- Groundwater

*Appendix L*

***Water Cycle Final Assessment***

1. Divide, color and label this circle to show how much of the Earth is water and how much is land.



2. What fraction of the Earth's surface is covered with water?
3. Where do we find most of the Earth's water?
4. Name the kind of cloud using these words:  

<i>stratus cumulus cirrus</i>
-------------------------------

  - a. Wispy, high in the sky, sometimes called mare's tails
  - b. Big, white puffy clouds with a flat bottom
  - c. Low, gray clouds
5. What are two ways can we conserve water?
6. Why is the water cycle called a cycle?

7. **Draw** and **label** the water cycle. Be sure to include evaporation, water vapor, sun, condensation, clouds, precipitation, the 4 major kinds of precipitation and groundwater.

### Vocabulary

*Put the letter of the definition next to the word it describes.*

- |                  |   |
|------------------|---|
| ___Evaporation   | A. when vapor cools and changes to water  |
| ___Condensation  | B. the amount of moisture in the air      |
| ___Precipitation | C. the gas form of water                  |
| ___Humidity      | D. a cloud that touches the ground        |
| ___Water vapor   | E. water that is in the ground            |
| ___Fog           | F. water that falls from the sky          |
| ___Groundwater   | G. when water heats up and turns to vapor |

Bonus: Why is it important to conserve water?