



Pre/Post Visit Activities

Wonderful Water Cycle Lesson

Recommended for Preschool - 3rd grade

Lesson Description: Students discover how water moves around the world through a fun skit, complete with costumes and props. Moving like water drops, they'll play a game traveling to glaciers, rivers, lakes, soil and more. For the final act, students show their enthusiasm for water by singing and dancing to the "Water Cycle Boogie."

Objective: Students will know the basic components of the water cycle and will be able to name places that water travels in, through, or to/from.

Idaho State Science Standards Met for Grades Pre-K-3

K: K.S.1.2.1, K.S.1.6.1, K.S.1.7.1, K.S.1.8.1

1: 1.S.1.2.1, 1.S.1.6.1, 1.S.1.7.1, 1.S.1.8.1, 1.S.2.1.1, 1.S.2.2.1

2: 2.S.1.2.1, 2.S.1.7.1, 2.S.1.8.1, 2.S.2.1.1, 2.S.2.2.1, 2.S.3.2.1, 2.S.4.1.1

3: 3.S.1.2.1, 3.S.1.2.2, 3.S.2.1.2, 3.S.2.1.3, 3.S.5.3.1

Contents:	1. Background	pages 2-7
	2. Student Activities	pages 8-17
	3. Library Resources	page 18
	4. Internet Resources	page 19

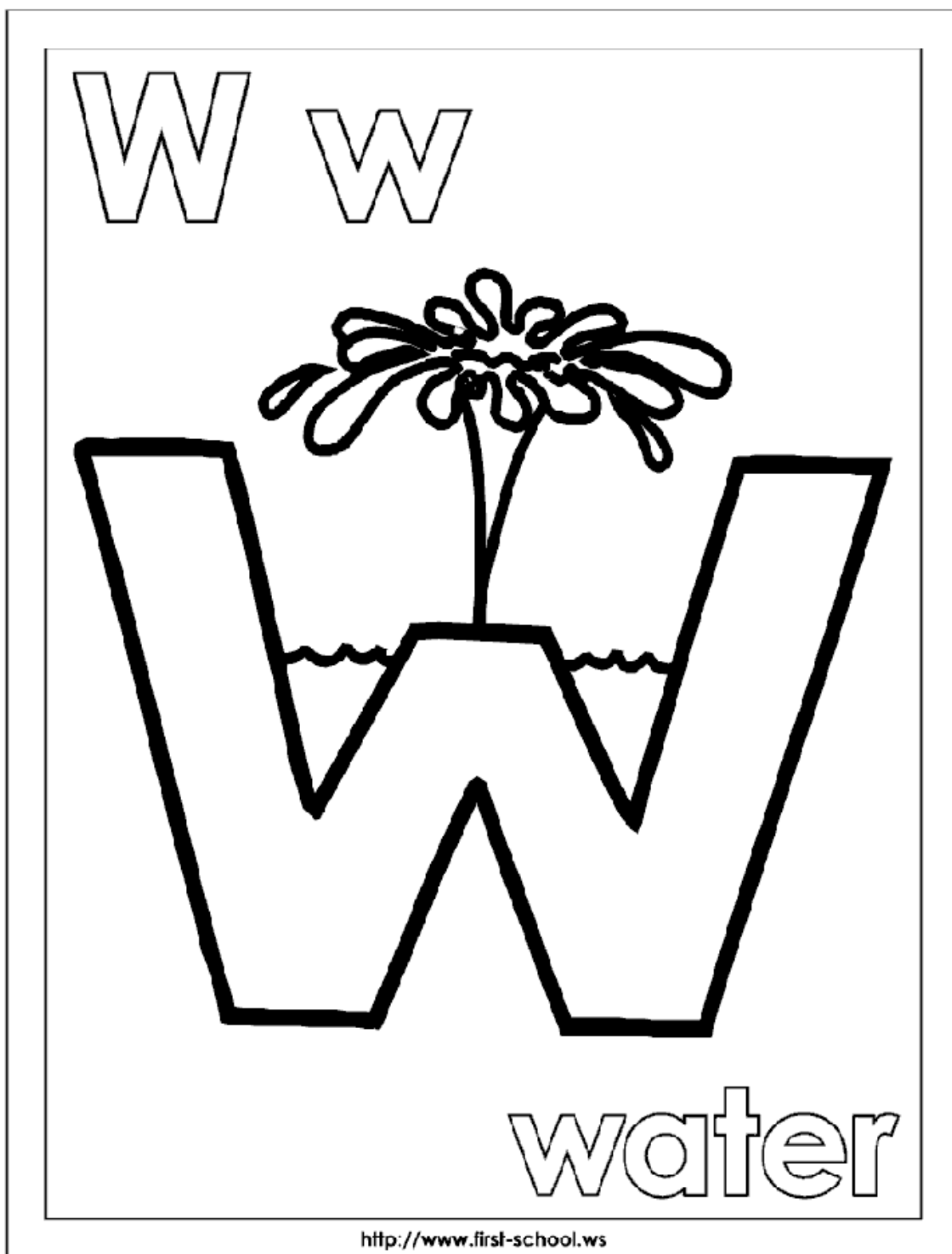
Copyright Disclaimer:

The information contained in this document is strictly for educational purposes. The Boise WaterShed Environmental Education Center does not take full credit for creating all of images and text found in this document. Images have been acquired from various Internet sources. In some cases, text has been acquired and modified from various Internet and print sources. If any copyrighted material is found here that is not properly sourced, please contact us immediately so that the images or text can be removed, or appropriate credit given (whichever is preferred).

For more information, please contact:

Boise WaterShed Environmental Education Center ▪ (208) 489-1284 ▪ www.BoiseEnvironmentalEducation.org

Today we are learning about...



Background Information

The Water Cycle

(The following excerpts, pictures and coloring pages are taken and have been adapted from the book "Water...the Amazing Journey" by Caren Trafford and Megan Eriksson; <http://www.kidzone.ws/water/>; and <http://www.nyu.edu/pages/mathmol/textbook/slg.html>)

Water - it covers more than 70% of Earth and is constantly on the move. Water may not look like much, but it is the reason that our planet is so often called the "Blue Planet." Without water, this planet would probably look like the moon or even Mars!

Have you ever stopped to wonder where it all comes from, where it goes and what it does along the way?

All life on Earth depends upon water for survival. Humans can go a few weeks without food, but only a few days without water. Our bodies are made mostly of water. Plants, animals, humans and all other living creatures need water. Water is also important for everyday activities like brushing your teeth, cleaning the dishes and taking a shower.



Image courtesy of www.prelavac.com



Image courtesy of notesonwellness.blogspot.com



Did you know that water has been around for almost as long as this amazing planet? The water in your cup may have fallen from the sky as rain just last week, but the water itself has been around pretty much as long as the earth has! In fact, the water you drank this morning could have been in the stomach of a giant dinosaur many, many years ago! The water you ran in the sink may have been used by George Washington to take a bath or by Pilgrims to sail to America and begin a new life.

Image courtesy of www.epa.gov

Did you know that water is kind of like the Transformers? Water has the ability to change form from a solid to a liquid to a gas.



Image courtesy of www.thegreatwaterodyssey.com



Liquid water is found in many places. You see liquid water in a refreshing cup or glass, coming out of the faucet in your sink, when it rains outside, and running in the Boise River.

Image courtesy of www.fitnessmantra.info



Ice, snow, and frost are examples of solid water. What happens is that liquid water gets so cold that it freezes and turns into solid water. Winter is a season that you see a lot of solid water. Other examples of solid water are ice cubes, icicles and ice on a skating rink.

Image courtesy of www.culliganlaredo.com



When it comes to gas, you don't see anything because gas is invisible. Liquid water gets hot and turns into a gas (also called steam or water vapor). If you have ever seen your mom boil a pot of water over the stove, chances are that you have seen water turn from a liquid into a gas. Maybe you have taken a hot bath or shower and seen the steam rising from the water.

Image courtesy of www.swe.org

So now we've learned that water is found on much of Earth, it is important for our survival, and it can change form like the Transformers. The one thing that water cannot do is continue to multiply and make more water. You might think there is an endless supply of water on Earth, or that Earth gets new water. Actually, Earth has only a limited amount of water. The water we have today is the same water we've always had. There is no new water. How can this be? Water keeps going around and around and around and around and around and around and (well, you get the idea) in what we call the water cycle. Just as a bicycle's tire keeps moving around in a circle, so does the water on the Blue Planet.

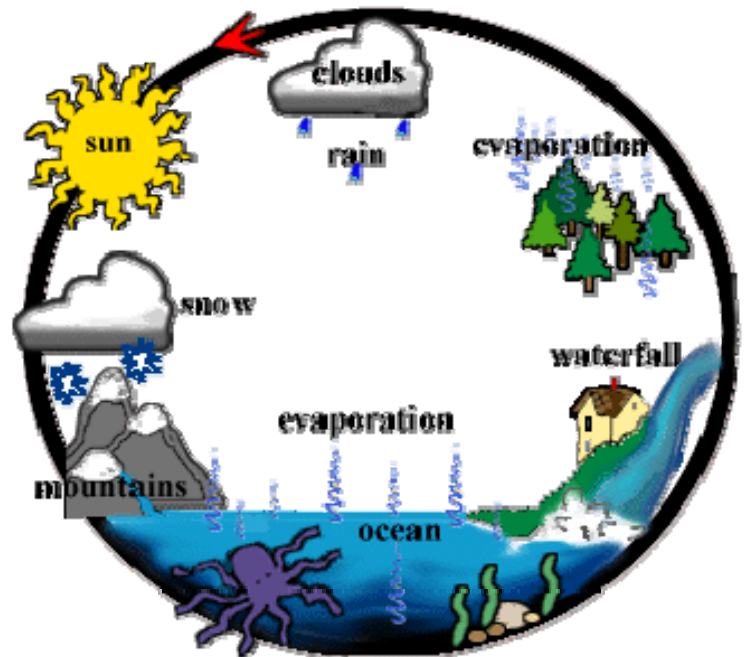


Image courtesy of members.optushome.com.au



Image courtesy of www.thesecondwave.us

Just like people put gas in their cars to make them go, the water cycle needs heat and energy from the sun to keep going around and around Earth. Water cannot change from solid to liquid to gas without the help of the sun, and without water's ability to change forms, there would be no water cycle.

The water cycle is made up of a few main processes:

- evaporation
- transpiration
- condensation
- precipitation

Each of these words describes how water is able to change from one form into another for example, from a solid to a liquid to a gas.

Evaporation: Evaporation happens when water turns from a liquid into a gas. Evaporation happens when the sun heats up water in rivers or lakes or the ocean and turns it into vapor or steam. The water vapor or steam leaves the river, lake or ocean and goes into the air.



Image courtesy of blogs.trb.com



Transpiration: When humans sweat, we call it perspiration. When plants sweat, we call it transpiration. Transpiration happens as plants lose water out of their leaves. Water moves through a plant's roots all the way up to its leaves. When it finally gets to the leaves, the sun warms it up and turns it from a liquid into a gas. Transpiration gives evaporation a bit of a hand in getting the water vapor back up into the air.

Image courtesy of www.depweb.state.pa.us

Condensation: Water vapor in the air gets cold and changes back into liquid, forming clouds. This is called condensation. You can see the same sort of thing at home... pour a glass of cold water on a hot day and watch what happens. Water forms on the outside of the glass. That water didn't somehow leak through the glass! It actually came from the air. Water vapor in the warm air turns back into liquid when it touches the cold glass.



Image courtesy of <http://flickr.com/photos/phillthomas/640990482/>



Precipitation: Precipitation happens when so much water has condensed that the air cannot hold it anymore. The clouds get heavy and water falls back to the earth in the form of rain, hail, sleet or snow.

Image courtesy of www.eontarionow.com

So where on Earth can we find water in all of these different forms as it evaporates, transpires, condenses or precipitates? In clouds, oceans, glaciers, groundwater, lakes, rivers, animals, plants and soil - just to name a few places. Water sure does take an incredible journey around the Earth through the water cycle! Next time you stare at a cloud, think about how it was made. When you see snow on a mountain, think about where it will go when it melts. As you swim in a pool, imagine how many drops of water are all around you. The Blue Planet has water almost everywhere!

Clouds



Oceans



Glaciers



Rivers



Groundwater



Lakes



Soil



Animals

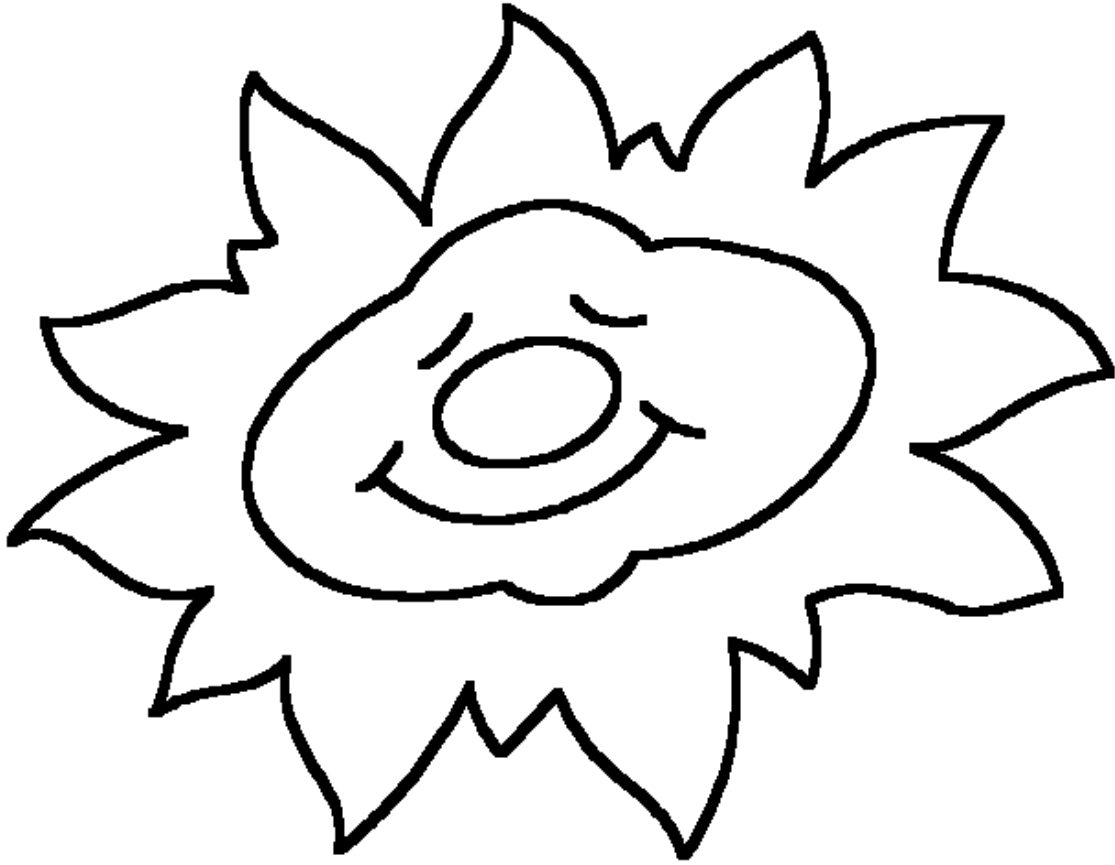


Plants



Images courtesy of www.edupic.net, www.ead.ae, www.rutasur.com, www.enviroblog.org, www.fullcoll.edu, www.cc.gatech.edu, www.hickerphoto.com, www.landscaping.about.com, www.uwsp.edu

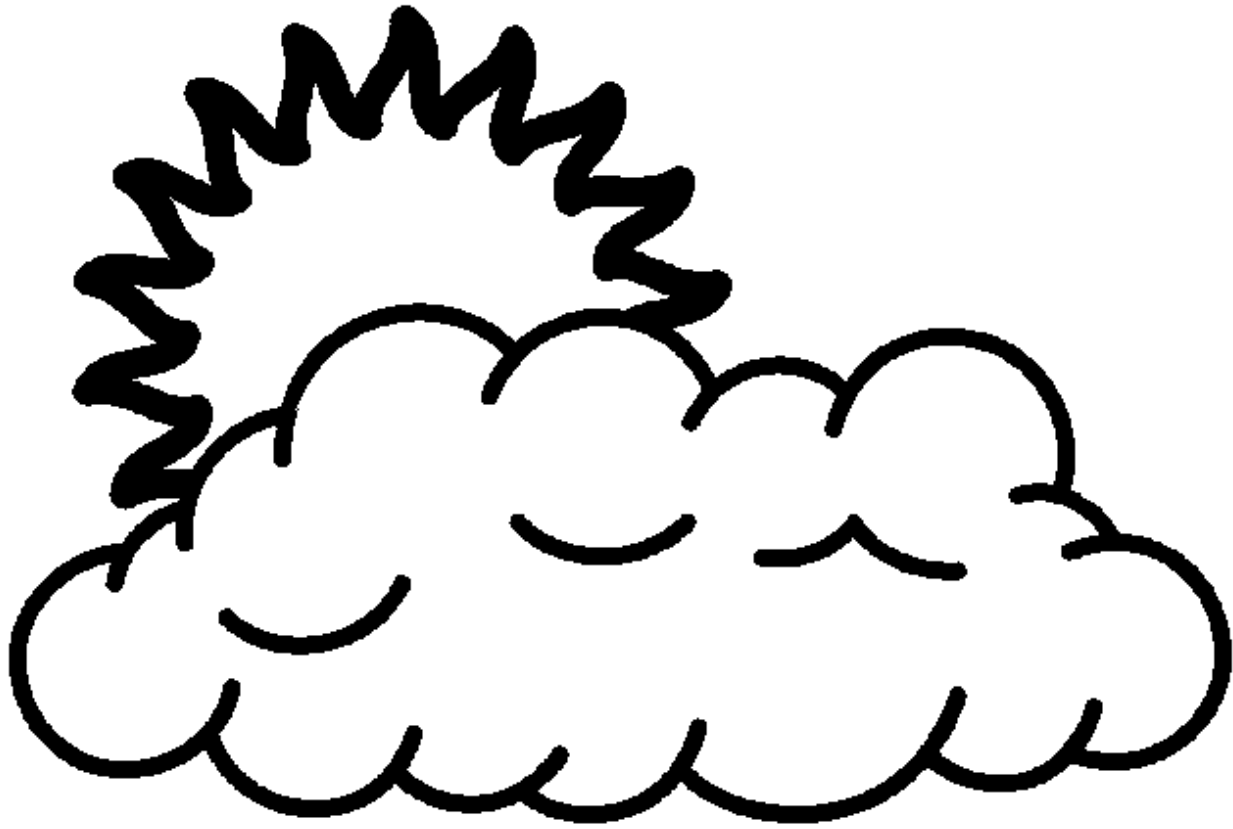
Evaporation



Evaporation is when the sun heats up water in rivers or lakes or the ocean and turns it into vapor or steam. The water vapor or steam leaves the river, lake or ocean and goes into the air. Make your own evaporation. With an adult's help, heat some water in a kettle. Watch closely! Do you see the steam rising? That's evaporation!

Image courtesy of www.kidzone.ws/water/index.html

Condensation



Water vapor in the air gets cold and changes back into liquid, forming clouds. This is called condensation.

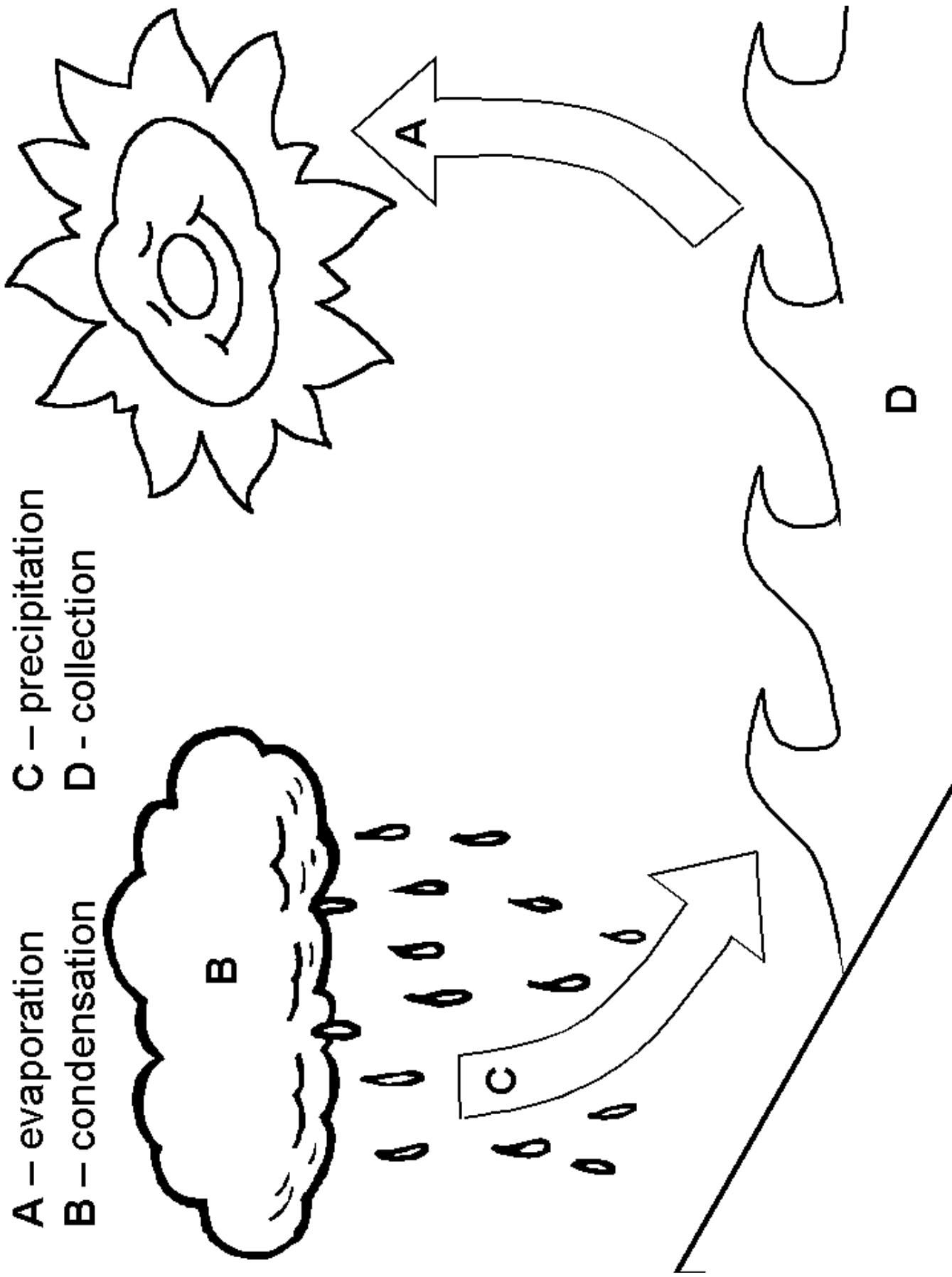
Image courtesy of www.kidzone.ws/water/index.html

Precipitation



Precipitation occurs when so much water has condensed that the air cannot hold it anymore. The clouds get heavy and water falls back to the earth in the form of rain, hail or snow.

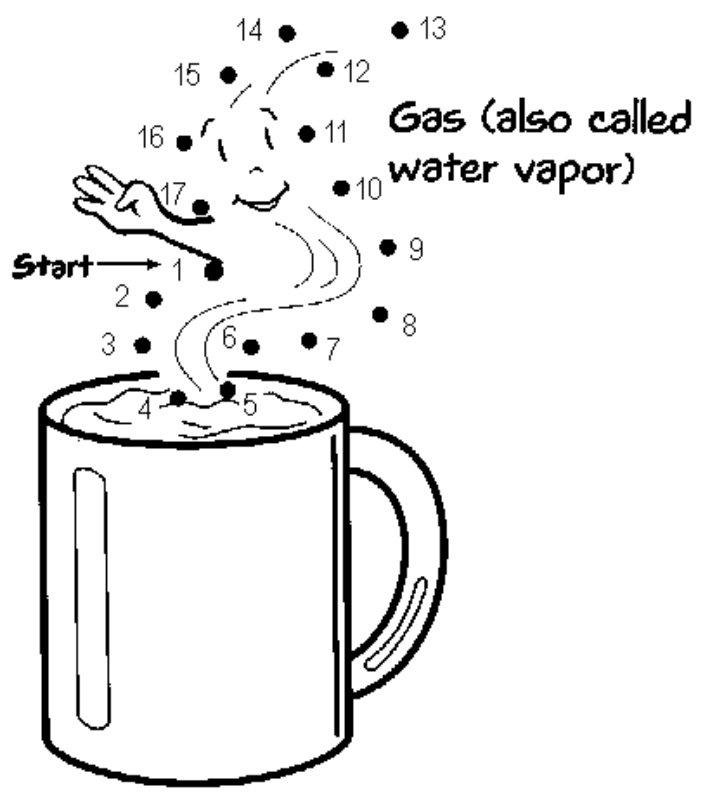
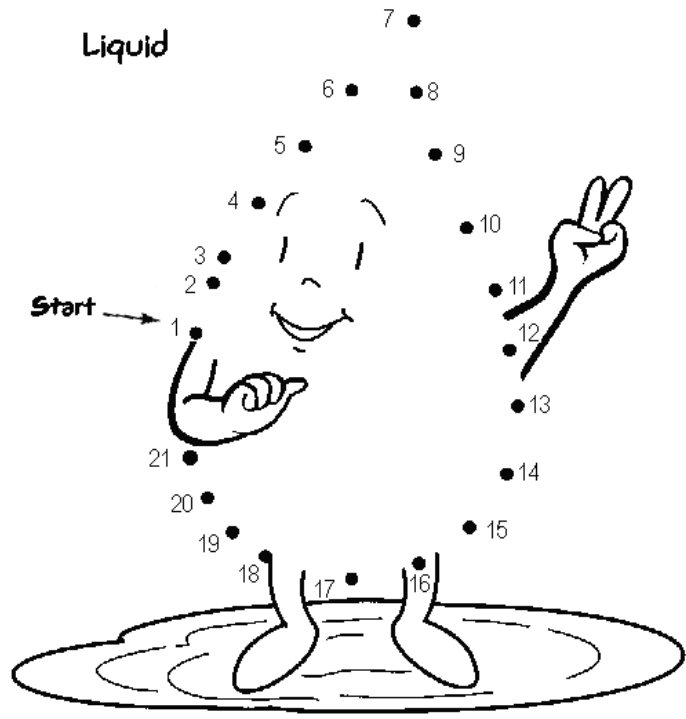
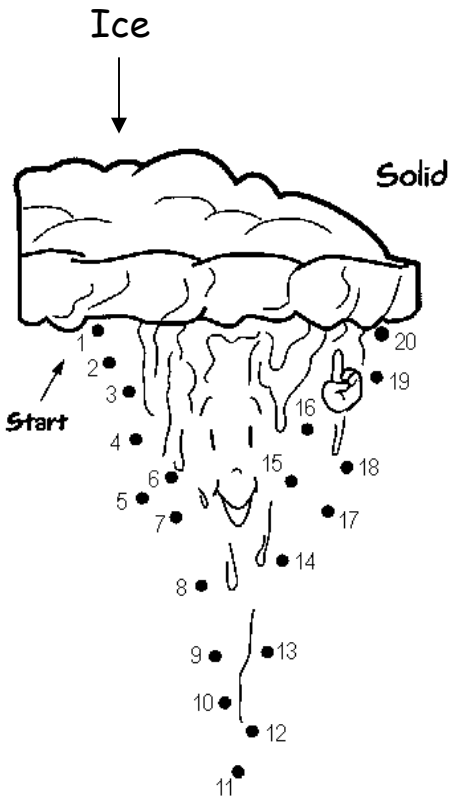
Image courtesy of www.kidzone.ws/water/index.html



A – evaporation
B – condensation
C – precipitation
D – collection

Water's Three Forms

Name: _____



Images courtesy of www.clarkburgwater.com

Gasses, liquids and solids

Name.....

Look at the pictures. Write in each box whether the part is a solid, a liquid or a gas.

Sky		Raindrop
Hot air		Basket

Air		Lemonade
Bubble		Bottle

Steam		Water
Kettle		

The Water Cycle Song

*(Sing to the tune of "She'll Be Coming
Around the Mountain")*

Water travels in a cycle, yes it does *(use pointer
finger to make a big circle)*

Water travels in a cycle, yes it does *(repeat
finger circle)*

It goes up as evaporation *(moves hands up to the
sky)*

Forms clouds as condensation *(make a cloud
overhead with arms)*

Then comes down as precipitation, yes it does!
*(sprinkle with fingers while bringing arms down in
front of you)*

Wonderful Water Cycle Showcase (K-1st)

<u>Characters</u>	<u>Props Needed</u>
Human	Fake Microphone
Cloud	Inflatable or Paper Cloud
Raindrop	Inflatable of Paper Rain Drop
Snowflake	Inflatable of Paper Snowflake
Sunshine	Inflatable or Paper Sun

Human: How does water move? Let's talk to Cloud.

Cloud: I collect water in the sky and send it back to earth.

Human: Let's talk to Raindrop now.

Raindrop: I fall from Cloud and land in a river or lake. Sometimes I even sink into the ground.

Human: Let's talk to Snowflake now.

Snowflake: I'm a frozen raindrop. I'm cold! I fall from Cloud. I like the mountains when it is cold. When it is hot, I melt and sink into the ground or go to a river or lake.

Human: Let's talk to Sunshine now.

Sunshine: Wow, I'm hot! Stand back Snowflake, or you'll melt! I make water turn to steam and go up into the sky.

Human: Wow, you all move in many ways!

THE END!

Wonderful Water Cycle Showcase (2nd-3rd)

<u>Characters</u>	<u>Props Needed</u>
Human	Fake Microphone
Cloud	Inflatable or Paper Cloud
Raindrop	Inflatable or Paper Rain Drop
Snowflake	Inflatable or Paper Snowflake
Sunshine	Inflatable or Paper Sun

Human: Hello, Everyone! Today we're learning how water cycles through the Boise River Watershed! Here to tell us about their journeys is Cloud, Raindrop, Snowflake and Sunshine. Let's talk to Cloud first.

Cloud: Well, I live high in the sky. I am formed through condensation. It's really cold up in the sky, where tiny water drops group together with more water drops. When I get too heavy, raindrops or snowflakes fall to the ground. I have the best view of the whole watershed! The wind carries me from place to place, so I've seen the mountaintops and valleys down below. I also see a lot of birds and airplanes.

Human: So you're made up of water and you send water back down to the ground. Let's talk to Raindrop now.

Raindrop: Well, I see a lot too when I hang out with Cloud in the sky. I don't always stay in the sky. When Cloud gets heavy, I visit the earth below as precipitation. I may hang out with rivers, lakes and streams in the watershed. Sometimes I even sink into the ground and travel through hidden underground tunnels. Then I visit more lakes, rivers and streams somewhere else.

Human: Wow, you've been to the sky, the earth and even underground! Let's talk to Snowflake now.

Snowflake: I'm the frozen version of my cousin, Raindrop. I hang out with Cloud and Raindrop in the sky. I also visit the earth too as precipitation. I really like the mountains where it is cold. Sometimes it gets warm, and then I melt. I sink into the ground and travel through underground tunnels or go up to the land into rivers, lakes and streams.

Human: I bet you spend a lot of time in the Sawtooth Mountains before you melt and go downstream to Lucky Peak Lake and the City of Boise! Let's talk to Sunshine now.

Sunshine: Wow, I'm hot! Stand back Snowflake, or you'll melt! Believe it or not, I have something to do with water too. You all know I live in the sky. You all know I make the earth warm. But did you know that when the earth is hot, water turns to vapor and rises back into the sky? Through evaporation, water in lakes and rivers, and on roads and sidewalks rises to the air.

Human: Wow, so you're like an elevator sending water back into the sky! This ends our special presentation. Remember, water travels through our watershed, falling to the earth and rising in the sky all over the place. Keep your eye out for these crazy characters!

THE END!

Boise WaterShed Library Resources

Take advantage of these FREE resources available for checkout from the Boise WaterShed Library Resource Center. Call (208) 489-1284 to reserve for a two-week period.

Videos, DVDs & Software

Our Water Cycle DVD by American Water Works Association, 15 minutes

Professor Water & The Amazing Water Cycle VHS by American Water Works Association 2001, 28 minutes

Sea to Summit: A Journey Through the Watershed VHS by Surfrider Foundation 2001, 19 minutes

The Water Cycle & Water: Who Needs It? VHS by California Department of Water Resources 2001, 27 minutes

Whadd'ya Know About H₂O? DVD by American Water Works Association, 20 one-minute segments

We All Live Downstream CD by the Banana Slugs String Band, includes the song "Water Cycle Boogie"

Educator Resources

All About Water: K-3 Water Activities, California Department of Water Resources

Compendium for Water Resources, California Department of Education/California Department of Water Resources, 1996

Professor Water & The Amazing Water Cycle Teacher's Guide, American Water Works Association, 2001

Project Wet Curriculum & Activity Guide, Project WET International/CEE, 2008

Peter's Magical Water Journey: A Flannel Board Story for Grade level 2-4, California Department of Water Resources, 2002

Water: K-3 Teacher's Guide, Sea World, 1995

Water Is Peter's Best friend: A Flannel Board Story for Grade Level K-2, California Department of Water Resources, 1993

Kids Books

Cloud Dance by Thomas Locker, 2000

Follow the Water from Brook to Ocean by Arthur Dorros, 1991

Outside, Inside by Carolyn Crimi, 1995

The Magic School Bus: Wet All Over by Joanna Cole and Bruce Degen, 1996

Water by Frank Asch, 1995

Water by Susan Canizares and Pamela Chanko, 1998

Water...the Amazing Journey by Caren Trafford and Megan Eriksson, 2007

Water Dance by Thomas Locker, 1997

Internet Resources

<http://www.dnr.state.wi.us/org/caer/ce/ee/earth/groundwater/watercycle.htm>

The Wisconsin Department of Water Resources invites you to click on the water cycle image on their home page to learn about different parts of the watershed. Links lead you to additional pages where you can complete an online water quiz and/or word search and read an online water poem.

<http://www.sweetwater.org/education/watercycle.html>

The Sweetwater Authority teaches about the water cycle through an interactive diagram complete with movement and sound, to demonstrate precipitation, condensation, runoff, percolation and evaporation. Click on the link to take a brief interactive quiz online.

http://www-k12.atmos.washington.edu/k12/pilot/water_cycle/index.html

The University of Washington Live From Earth and Mars Project offers an easy-to-understand overview of water and the water cycle for kids from an elementary standpoint. Click on the Teacher's Page for an in-depth lesson module complete with several in-classroom activities.

http://www.first-school.ws/theme/mini_theme/water-cycle-quality.htm

Enjoy water-themed educational activities for preschool and kindergarten by First School. You will find free printable crafts, activities and coloring pages with easy-to-follow lesson plan instructions, and related resources. These activities are adaptable for various themes and holidays listed within the lesson plan.

http://www.k12.hi.us/~shasincl/poems_prop_cycle_weather.html

Mrs. Sinclair's Multiage Primary Classroom 2000-2001 presents an excellent comprehensive list of water, water cycle and weather poems sure to reinforce the basic concepts of the water cycle with your class.

<http://www.youtube.com/watch?v=Yw275056JtA>

An excellent video of a very catchy Water Cycle Song made available on YouTube that is appropriate for kindergarten and first grade. This song deals with the water cycle—evaporation, condensation and precipitation. It is performed by Science Explosion—David Bydlowski, Charles Kline and Fred Ribits.

<http://www.youtube.com/watch?v=W8rowKnxmAI>

The Water Cycle song presented by Mr. Davies, a geography teacher, is made available on YouTube. This resource is a true treasure. The visuals, definitions and descriptions of evaporation, condensation, precipitation and various clouds formations, as well as the song playing in the background, are sure to please your class and have them singing the words all day long!