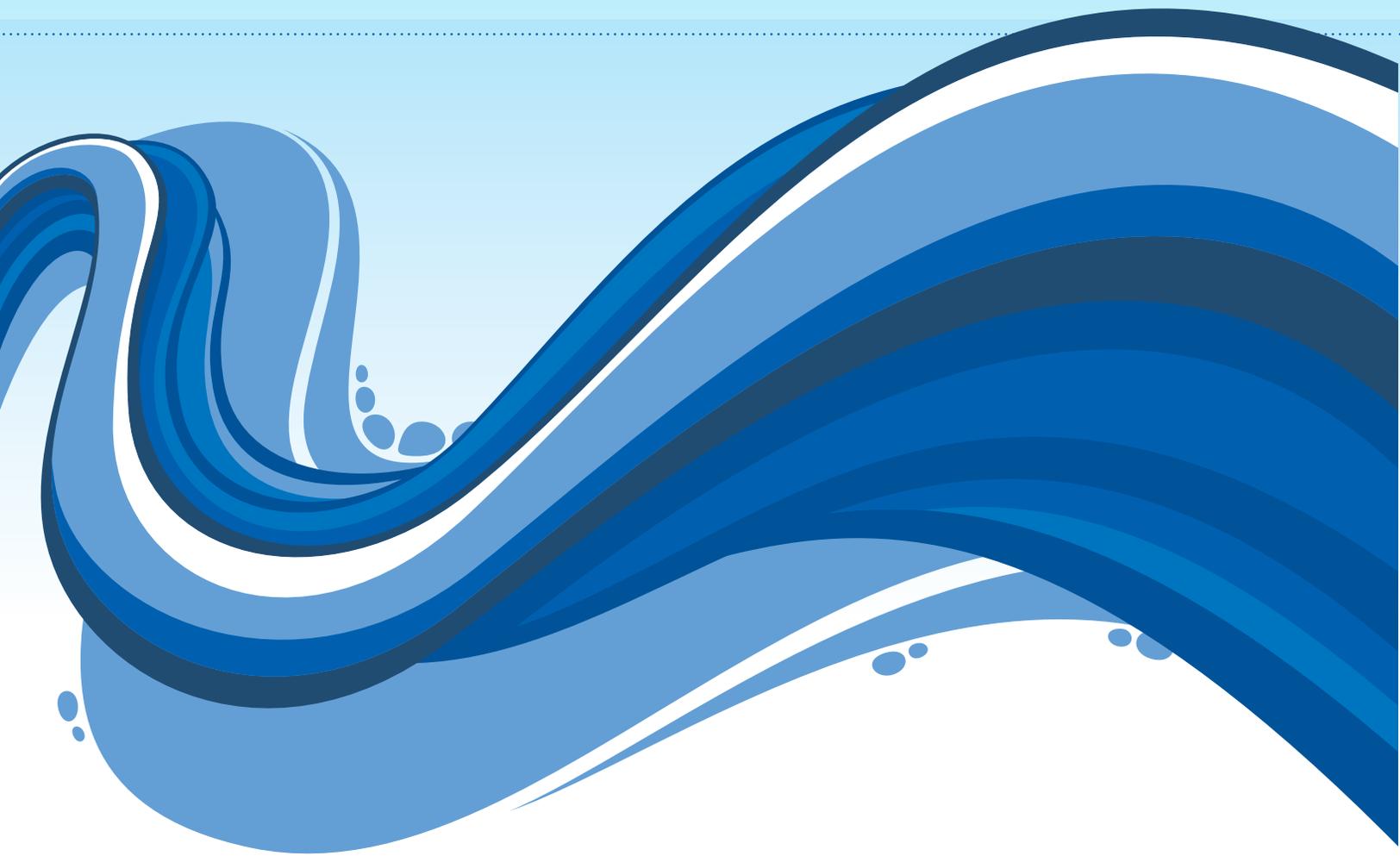


# GLOBAL WATER SUPPLY ELEMENTARY SCHOOL CURRICULUM



Made possible by



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# GLOBAL WATER SUPPLY ELEMENTARY CURRICULUM

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# NATIONAL CURRICULUM STANDARDS ALIGNMENT

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:: Elementary

:: <http://www.education-world.com/national/standards>

## English/Language Arts

### **NL-ENG.K-12.1**

Reading for Perspective: Students read a wide range of print and non-print documents to build an understanding of texts, of themselves, and of the cultures of the United States and the world.

### **NL-ENG.K-12.3**

Evaluation Strategies: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts.

### **NL-ENG.K-12.4**

Communication Skills: Students adjust their use of spoken, written, and visual language to communicate effectively with a variety of audiences and for different purposes.

### **NL-ENG.K-12.5**

Communication Strategies: Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

### **NL-ENG.K-12.6**

Applying Knowledge: Students apply knowledge of language structure, language conventions, media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.

### **NL-ENG.K-12.7**

Evaluating Data: Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources to communicate their discoveries in ways that suit their purpose and audience.

### **NL-ENG.K-12.8**

Developing Research Skills: Students use a variety of technological and information resources to gather and synthesize information and to create and communicate knowledge.

### **NL-ENG.K-12.11**

Participating in Society

### **NL-ENG.K-12.12**

Applying Language Skills: Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

# NATIONAL CURRICULUM STANDARDS ALIGNMENT

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## Social Sciences

### Geography

#### **NSS-G.K-12.1**

The World in Spatial Terms: Understand how to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

#### **NSS-G.K-12.2**

Places and Regions: Understand the physical and human characteristics of places/ Understand that people create regions to interpret Earth's complexity/ Understand how culture and experience influence people's perceptions of places and regions.

#### **NSS-G.K-12.3**

Physical Systems: Understand the physical processes that shape the patterns of Earth's surface/ Understand the characteristics and spatial distribution of ecosystems on Earth's surface.

#### **NSS-G.K-12.4**

Human Systems: Understand the characteristics, distribution, and migration of human populations on Earth's surface/ Understand the characteristics, distribution, and complexity of Earth's cultural mosaics/ Understand the patterns and networks of economic interdependence on Earth's surface/ Understand the processes, patterns, and functions of human settlement/ Understand how the forces of cooperation and conflict among people influence the division and control of Earth's surface.

#### **NSS-G.K-12.5**

Environment and Society: Understand how human actions modify the physical environment/ Understand how physical systems affect human systems/ Understand the changes that occur in the meaning, use, distribution, and importance of resources.

#### **NSS-G.K-12.6**

Uses of Geography: Understand how to apply geography to interpret the present and plan for the future.

### Technology

#### **NT.K-12.1**

Basic Technology Operations and Concepts: Students demonstrate a sound understanding of the nature and operation of technology systems/ Students are proficient in the use of technology.

#### **NT.K-12.2**

Social, Ethical, and Human Issues: Students understand the ethical, cultural, and societal issues related to technology/ Students practice responsible use of technology systems, information, and software/ Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

**NT.K-12.3**

Technology Productivity Tools: Students use technology tools to enhance learning, increase productivity, and promote creativity/ Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

**NT.K-12.4**

Technology Communications Tools: Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences/ Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

**NT.K-12.5**

Technology Research Tools: Students use technology to locate, evaluate and collect information from a variety of sources/ Students use technology tools to process data and report results/ Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

**Mathematics****NM-NUM.3-5.1**

Understand numbers, ways of representing numbers, relationships among numbers, and number systems: Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals; recognize equivalent representations for the same number and generate them by decomposing and composing numbers; develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers; use models, benchmarks, and equivalent forms to judge the size of fractions; recognize and

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## **2.0 “WATER IS LIFE” GLOBAL WATER AWARENESS MINI-UNIT (GRADES 3-5)**

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## National Curriculum Alignment:

### Geography Grades K-5

#### **NSS-G.K-12.3**

Physical Systems: Understand the physical processes that shape the patterns of Earth's surface/ Understand the characteristics and spatial distribution of ecosystems on Earth's surface.

#### **NSS-G.K-12.4**

Human Systems: Understand the characteristics, distribution, and migration of human populations on Earth's surface/ Understand the characteristics, distribution, and complexity of Earth's cultural mosaics/ Understand the patterns and networks of economic interdependence on Earth's surface/ Understand the processes, patterns, and functions of human settlement/ Understand how the forces of cooperation and conflict among people influence the division and control of Earth's surface.

#### **NSS-G.K-12.5**

Environment and Society: Understand how human actions modify the physical environment/ Understand how physical systems affect human systems/ Understand the changes that occur in the meaning, use, distribution, and importance of resources.

#### **NSS-G.K-12.6**

Uses of Geography: Understand how to apply geography to interpret the present and plan for the future.

### Science Grades K-5

#### **NS.K-4.3**

Life Science: Organisms and environment

#### **NS.K-4.4**

Earth and Space Science: Properties of earth materials

#### **NS.K-4.6**

Personal and Social Perspectives: Types of resources/ Changes in environments

### Math Grades K-5

#### **NM-MEA.3-5.1**

Understand Measurable Attributes of Objects and the Units, Systems, and Processes of Measurement

#### **NM-MEA.3-5.2**

Apply Appropriate Techniques, Tools, and Formulas to Determine Measurements

**NM-MEA.6-8.1**

Understand Measurable Attributes of Objects and the Units, Systems, and Processes of Measurement

**NM-MEA.6-8.2**

Apply Appropriate Techniques, Tools, and Formulas to Determine Measurements

**NM-NUM.3-5.1**

Understand numbers, ways of representing numbers, relationships among numbers, and number systems/Understand the place-value structure of the base-ten number system and be able to represent and compare whole numbers and decimals/ Recognize and generate equivalent forms of commonly used fractions, decimals, and percents.

**:: Elementary**

**:: A Drop in the Bucket**

**:: Level of difficulty and duration:** 

**Pre-activities:**

Students should understand/review percentages and should be familiar with the basic facts relating to the Earth's surface (water types and percentages). (Review the Water Awareness Basic Fact Sheet)

**Objective:**

Students will calculate the percentage of fresh water available for human use and explain why water is a limited resource. By estimating and calculating the percent of available fresh water on Earth, students understand that fresh water is limited and must be conserved and protected.

**Background Information:**

Students may know that Earth is covered mainly by water, but they may not realize that only a small amount is available for human consumption.

Ironically, on a planet approximately 71 percent water, this resource is one of the main limiting factors for life on Earth. The Water Availability Table summarizes the major factors affecting the amount of available water on Earth. If all the clean, fresh water were distributed equally among people, there would be about 1.82 million gallons (7 million liters) per person. This is only about .003 percent of the total water on Earth. On a global scale, only a small percentage of water is available, but this percentage represents a large amount per individual. The paradox is that, for some, water may appear plentiful, but for others it is a scarce commodity. Why are some people in need of more water? Geography, climate, and weather affect water distribution. Agriculture, industry, and domestic use also affect availability.

**Lesson:**

Students will estimate the proportion of potable water on Earth and compare it to the rest of the water on the planet. Students work in small groups. Instruct them to draw a large circle with a marker on white sheet of paper. Offer them two sheets of different-colored construction paper. One color represents available fresh water; the other represents the rest of the water on the planet. Next, inform students that they will be tearing the two sheets of paper into a total of 100 small pieces. Students will estimate how many pieces will represent potable water and how many pieces will indicate the rest of the water on the planet. Instruct each group to tear up their paper and arrange the 100 pieces within the circle so that these pieces reflect their estimates. Have groups record the number of pieces representing "potable" water and "remaining" water.

Note: For simplicity, measurements have been retained in metric.

1. Show the class a liter (1000 mL) of water and tell them it represents all the water on Earth.
2. Ask where most of the water is located. (Refer to a globe or map.) Pour 30 mL of the water into a 100-mL graduated cylinder. This represents Earth's fresh water, about 3 percent of the total.
3. Put salt in the remaining 970 mL to simulate water found in oceans, unsuitable for human consumption.

4. Ask students what is at the Earth's poles. Almost 80 percent of Earth's fresh water is frozen in ice caps and glaciers. Pour 6 mL of fresh water into a small dish or cylinder and place the rest in a nearby freezer or ice bucket. The water in the dish (around 0.6 percent of the total) represents non-frozen fresh water. Only about 1.5 mL of this water is surface water; the rest is underground.
5. Use an eyedropper or a glass stirring rod to remove a single drop of water (0.003 mL). Release this one drop into a small metal bucket. Make sure the students are very quiet so they can hear the sound of the drop hitting the bottom of the bucket. This represents clean, fresh water that is not polluted or otherwise unavailable for use, about .003 percent of the total! This precious drop must be managed properly.
6. Discuss the results of the demonstration. At this point many students will conclude that a very small amount of water is available to humans. However, this single drop is actually a large volume of water on a global scale. Have students use the Water Availability Table to calculate the actual amounts.

**Materials:**

2 colors of construction paper, sheets of white paper, markers, water, globe or world map, 1000-mL beaker, 100-mL graduated cylinders, small dish, salt, freezer or an ice bucket, eyedroppers or glass stirring rod, small metal bucket, and copies of Water Availability Table.

**Post-activities:**

Refer back to students' earlier guesses about how much water on Earth is available to humans and compare the actual percent of Earth's water available. Have students explain their reasoning for their initial estimates. How would they adjust their proportions? (One-half of one of the pieces of paper represents potentially available water [0.5 percent]. Only one small corner of this half [0.003 percent] is actually potable water.)

**Possible discussion question:**

*Why does more than one-third of the world's population not have access to clean water?*

Discuss the main factors affecting water distribution on Earth. Be sure to consider such influences as drought, contamination, flooding and economic conditions.

# WATER AVAILABILITY TABLE

Quantity to be divided among people on Earth	Amount Available Liters/person	% of total water
All the water on Earth	233.3 billion	100%
Only the fresh water (calculate 3% of the amount available)		3%
Only the non-frozen fresh water (calculate 20% of the remaining amount available)		0.6%
Available fresh water that is not polluted, trapped in soil, too far below ground, etc. (calculate 0.5% of the remaining amount available)		.003%

## ANSWER KEY

Total water on Earth divided among people	233.3 billion liters/ person
Minus the 97% of each share (226.3 billion) that contains salt	7 billion liters/person
Minus the 80% of this 7 billion that is frozen at the poles (5.6 billion)	1.4 billion liters/person
Minus the 99.5% of the 1.4 billion that is unavailable (1.393 billion)	7 million liters/person

# GLOBAL AWARENESS FACT SHEET

All living creatures, including humans, need water to survive

Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater

Poor people often pay more for water than wealthy people living in the same city

Water can travel from one part of the world to another through the water cycle

Human activities affect water quality all over the world

Many people living in other countries die because the water they drink makes them sick

2.6 billion people in the world lack basic sanitation resources

A person needs 4 to 5 gallons of clean water per day to survive

More than 700 gallons of water are needed to grow the cotton for just one T-shirt!

People living in water-rich regions can affect how people use water in water-deprived areas

Conserving water helps to preserve the planet's natural resources

Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries

Salt water accounts for more than 97 percent of the water on Earth.

Millions of women and children spend several hours a day collecting water

In many parts of the world, fresh water is being used faster than it can be replaced

Less than 1% of the world's fresh water is readily accessible for direct human use

The earth has a limited amount of water. The same water keeps going around and around the planet in a process called the water cycle

A person can live weeks without food, but only about three days without water

All people need access to safe drinking water and improved sanitation conditions

Many people in the world suffer from health problems caused by drinking dirty water

**Sources:** (<http://www.amnh.org>) (<http://water.org>) (<http://news.nationalgeographic.com>)

## Vocabulary Safari Search

Draw a line to connect terms to the correct definition

fit or suitable for drinking	<b>Sanitation</b>	<b>Rural</b>	the promotion and preservation of health
a hole drilled or bored into the earth to obtain water	<b>Resource</b>	<b>Glacier</b>	interference in the affairs of another
geological formation containing ground water	<b>Terrain</b>	<b>Well</b>	wind and heavy rains
extreme illness	<b>Potable</b>	<b>Contaminate</b>	"of the countryside"
Taking precautions for the sake of cleanliness	<b>Monsoon</b>	<b>Agriculture</b>	something that indicates limits
a source of supply, support, or aid	<b>Hygiene</b>	<b>Boundary</b>	a rate or proportion per hundred
one of the main landmasses of the globe	<b>Disease</b>	<b>Intervention</b>	farming and/or raising livestock
to make unsuitable by contact with something unclean	<b>Percentage</b>	<b>Accessible</b>	A huge mass of ice
easy to approach, reach, enter, or use	<b>Archipelago</b>	<b>Aquifer</b>	a large group or chain of islands
natural environment being contaminated with harmful substances	<b>Continent</b>	<b>Pollution</b>	the natural features of a tract of land

# Vocabulary Safari Search Key

**Potable** - fit or suitable for drinking

**Well** - a hole drilled or bored into the earth to obtain water

**Aquifer** - any geological formation containing or conducting ground water

**Disease** - extreme illness

**Sanitation** - the application of measures for the sake of cleanliness

**Resource** - a source of supply, support, or aid

**Continent** - one of the main landmasses of the globe

**Contaminate** - to make unsuitable by contact or mixture with something unclean

**Accessible** - easy to approach, reach, enter, or use

**Pollution** - natural environment being contaminated with harmful substances

**Hygiene** - the promotion and preservation of health

**Intervention** - interference in the affairs of another

**Monsoon** - wind storm and heavy rains

**Rural** - "of the countryside"

**Boundary** - something that indicates bounds or limits

**Percentage** - a rate or proportion per hundred

**Agriculture** - farming and/or raising livestock

**Glacier** - A huge mass of ice

**Archipelago** - a large group or chain of islands

**Terrain** - the natural features of land

# “HOT WATER” GAME INSTRUCTIONS

“Hot Water” is suggested as a review for activities that have familiarized students with the Global Water Awareness Vocabulary List. The Global Water Awareness Fact Sheet, Global Water Awareness “Vocabulary Safari Search”, Water Awareness World Tour, and the “Water is Life” Website Search Activity all help familiarize students with terms and definitions from the list.

The object of the game is to stay out of “Hot Water”. Hot water can either be a location in the classroom or a designation that the student is no longer participating in the game. Examples of designations (other than a special location in the classroom) are red droplets of water cut out of construction paper or a stack of red plastic cups placed in the front of the room. Students will come to the front of the room either individually or in pairs and draw a term out of a basket or pail. If students are working in pairs they will each have an opportunity to explain the meaning of a single term they draw. If successful, they simply return to their seats to continue to play. If students cannot relate the meaning of the term they may pick up a red droplet of water to tape to their desk or they may place an empty red plastic cut on their desk so that the teacher can see they are no longer participating and will wait until the next round to re-enter the game. (Separate the terms from the definitions before placing in a container.)

**Scarce** - rare

**Potable** - fit or suitable for drinking

**Typhoid** - an infectious disease

**Well** - a hole drilled or bored into the earth to obtain water

**Aquifer** - any geological formation containing or conducting ground water

**Disease** - extreme illness

**Sanitation** - the application of measures for the sake of cleanliness

**Resource** - a source of supply, support, or aid

**Continent** - one of the main landmasses of the globe

**Contaminate** - to make unsuitable by contact or mixture with something unclean

**Accessible** - easy to approach, reach, enter, or use

**Pollution** - natural environment being contaminated with harmful substances

**Hygiene** - the promotion and preservation of health

**Economy** - a system of production, distribution and consumption

**Intervention** - interference in the affairs of another

**Monsoon** - wind storm and heavy rains

**Rural** - “of the countryside”

**Boundary** - something that indicates bounds or limits

**Percentage** - a rate or proportion per hundred

**Agriculture** - farming and/or raising livestock

**Glacier** - A huge mass of ice

**Archipelago** - a large group or chain of islands

**Terrain** - the natural features of land

# “WATER IS LIFE” WEBSITE SEARCH ACTIVITY

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Each of the below websites have valuable information that relates to the current global water crisis. Search each of the websites to find answers to the global water crisis questions. Remember to record the website where you find the answer to the question. Each website may offer differing information. (One easy way to search for specific information is to locate the search feature of a website and enter a keyword or phrase relating to your question.)

## Websites to search:

American Museum of Natural History: (<http://www.amnh.org>)

Discovery Education: (<http://www.discoveryeducation.com>)

Environmental Protection Agency: (<http://www.epa.gov>)

National Geographic: (<http://www.nationalgeographic.com>)

United Nations: (<http://www.un.org/Pubs/CyberSchoolBus/>)

WaterPartners International: (<http://www.water.org>)

**1:: How much water does the average person need each day to survive? Does your number of gallons include water for bathing and washing clothes? Does your number include water needed to grow food to eat?**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**2:: What is the global percentage of saltwater vs. freshwater**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**3:: Find a name and a brief description of a disease associated with contaminated water sources.**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**4:: What percentage of the world's fresh water is ready for people to drink?**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**5:: Why is it difficult for many people to find clean drinking water?**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**6:: Search the WaterPartners International website and describe WaterCredit.**

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**7:: How many people on the planet do not have access to clean drinking water?**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**8:: Visit the EPA website with your parents and click on "Surf your Watershed" for information about the source of the water in your home.**

Information: \_\_\_\_\_

**9:: List a fact about the global water crisis:**

Answer: \_\_\_\_\_

Website: \_\_\_\_\_

**10:: List a few water conservation ideas:**

Answer: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Website: \_\_\_\_\_

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## **3.0 WATER IS LIFE, WATER IS POETRY SEMINAR**

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# WATER IS LIFE, WATER IS POETRY

## SEMINAR INSTRUCTIONS

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1. Either individually, or as a class, ask students to read one, two, or all of the water-inspired poem selections.
2. As a class discuss one, two, or all of the selected poems.
3. Prompt students to reflect on a memorable experience involving water such as a river-rafting trip, watering a beautiful flower, getting caught in a downpour, or a family trip to a water-park.
4. Next, students will create an illustration demonstrating a memorable experience, favorite use for, or general feelings about water on the top 1/2 of a standard sized unlined piece of paper.
5. Prior to beginning their illustrations, explain that students will also be writing their own poem about water on the lower 1/2 of the paper.
6. Finally, have students create a poem on a separate sheet of paper. Once the poem is finished, ask students to carefully transfer the poem in writing onto the page with their illustration. (Suggestion, if students have trouble creating a poem they may want to try writing a word that describes or relates to water and assigning an adjective for each letter of the word.)

# WATER IS LIFE, WATER IS POETRY

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## Going for Water

Robert Lee Frost

The well was dry beside the door,  
And so we went with pail and can  
Across the fields behind the house  
To seek the brook if still it ran;

Not loth to have excuse to go,  
Because the autumn eve was fair  
(Though chill), because the fields were ours,  
And by the brook our woods were there.

We ran as if to meet the moon  
That slowly dawned behind the trees,  
The barren boughs without the leaves,  
Without the birds, without the breeze.

But once within the wood, we paused  
Like gnomes that hid us from the  
moon, Ready to run to hiding new  
With laughter when she found us soon.

Each laid on other a staying hand  
To listen ere we dared to look,  
And in the hush we joined to make  
We heard, we knew we heard the brook.

A note as from a single place,  
A slender tinkling fall that made  
Now drops that floated on the pool  
Like pearls, and now a silver blade.

## Drinking Fountain

Ethel Jacobson

At first just a trickle,  
Two drops splash and tickle.  
And then there's a spurt,  
A sudden big squirt,  
Right smack in my eye:  
The fountain must think  
That I need a face-wash  
More than a drink!

## The Tide Rises, the Tide Falls

Henry Wadsworth Longfellow

The tide rises, the tide falls,  
The twilight darkens, the curlew calls;  
Along the sea-sands damp and brown  
The traveler hastens toward the town,  
And the tide rises, the tide falls.

Darkness settles on roofs and walls,  
But the sea, the sea in darkness calls;  
The little waves, with their soft, white  
hands

Efface the footprints in the sands,  
And the tide rises, the tide falls.  
The morning breaks; the steeds in their  
stalls

Stamp and neigh, as the hostler calls;  
The day returns, but nevermore  
Returns the traveler to the shore.  
And the tide rises, the tide falls.

## Waterfall at Lu-shan

Li T'ai-po

translation: Hamil

Sunlight streams on the river stones.  
From high above, the river steadily plunges—  
three thousand feet of sparkling water—  
the Milky Way pouring down from heaven.

# WATER IS LIFE, WATER IS POETRY

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## Clouds

Aileen Fisher

Wonder where they come from?  
Wonder where they go?  
Wonder why they're sometimes hanging  
high  
And sometimes hanging low?  
Wonder what they're made of,  
And if they weigh a lot?  
Wonder if the sky feels bare up there  
When clouds are not?

## Wind and Water and Stone

Octavio Paz

The water hollowed the stone,  
the wind dispersed the water,  
the stone stopped the wind.  
Water and wind and stone.  
The wind sculpted the stone,  
the stone is a cup of water,  
The water runs off and is wind.  
Stone and wind and water.  
The wind sings in its turnings,  
the water murmurs as it goes,  
the motionless stone is quiet.  
Wind and water and stone.  
One is the other and is neither:  
among their empty names  
they pass and disappear,  
water and stone and wind.

## Water is a Lovely Thing

Julia W. Wolfe

Water is a lovely thing—  
Dark and ripply in a spring,  
Dark and quiet in a pool,  
In a puddle brown and cool;  
In the river blue and gray,  
In a raindrop silver gray,  
In a fountain crystal bright;  
In a pitcher frosty cold,  
In a bubble pink and gold;  
In a happy summer sea  
Just as green as green can be;  
In a rainbow far unfurled,  
Every color in the world;  
All the year from spring to spring,  
Water is a lovely thing.

## Flow

Aldo Kraas

Water from the Sea  
I hope that  
You flow  
Back and forth  
Because I want to hear  
The sound of the water  
I find the sound of the water  
So soothing

# WATER IS LIFE, WATER IS POETRY

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## Ocean

by Ashley (age 12)

Blue, green, and gray.  
Silvery smooth on good days.  
Restless and unable to choose,  
Good or bad,  
What do I do?  
Starting choppy,  
Growing large and wide.  
Giant gray waves loom ahead,  
Forming a white foamy top  
Crash!  
Water engulfs me totally,  
Soaked down to the bone,  
Laughing,  
Screaming,  
Happiness in the air,  
Always there.  
Calm and smooth like green, blue glass.  
Gliding through the water easily,  
In my tiny skiff.  
I wish I could be  
As calm as the ocean around me

## The Water Cycle

Helen H. Moore

When I was young  
I used to think  
that water came  
from  
the kitchen sink.  
But now I'm older,  
and I know,  
that water comes  
from rain and snow.  
It stays there, waiting,  
in the sky,  
in clouds above  
our world so high.  
And when it falls,  
it flows along,  
and splashes out  
a watery song,  
as each raindrop  
is joined by more  
and rushes to  
the ocean shore,  
or to a lake, a brook, a stream,  
from which it rises,  
just like steam.  
But while it's down here  
what do you think?  
Some DOES go to  
the kitchen sink!

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## **4.0 “WATER HAS MANY USES” MINI-UNIT GRADES K-5**

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# “WATER HAS MANY USES” FAMILY QUESTIONNAIRE

Together with your family, list as many uses for water as you can. Does your family use water differently in summer and winter months? Next, decide on your family’s top 7 uses and list below.

**The ways our family uses water:**

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**“My Family’s Top 7 Uses of Water”** (In order of importance to us)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

Talk with your family about people who live in developing countries who may not have toilets, washing machines, dishwashers or any running water in their homes. Do you think people without running water use water differently than your family? How?

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Pretend with your family that beginning tomorrow you will no longer have running water in your home. Your family will only be able to get water from a well that is located two miles from your home. You have to walk to and from the well to collect your water. Plan how your family will work together to bring the needed amount of water to your home. Assign a role to each member of the family. (Things to consider: You will need 15 gallons of water. What container size will you use? How much will the containers weigh? Do you have younger siblings? Is everyone in the family capable of making the trip?)

Family Member: \_\_\_\_\_ Role/Duties: \_\_\_\_\_

# “WATER HAS MANY USES” COLLAGE INSTRUCTIONS

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A collage is made from images or objects that are glued or attached in some other way. The word “collage” comes from the French word, *coller*, which means to stick.

**Materials needed:**

paper, cardboard or poster-board, magazines, glue sticks or bottles of glue, and scissors.

**Pre-activity:**

Have students complete the “Water Has Many Uses” Family Questionnaire the night before the collage activity. Have students brainstorm uses for water in class as a warm-up activity.

**Prompt:**

Create a collage or collection of pictures and images that show the many ways people use water (or a collage of things that need water to live). Tell students that finding the right pictures for their collage is like going on a treasure hunt!

**Post-activity:**

Allow students the opportunity to explain the images they selected for their collages.

People all over the world use water in many different ways. What is your favorite use for water? **Draw a picture of yourself enjoying water.**



Now, trace the word water.

WATER

# A DROP OF WATER: WRITING ACTIVITY

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1. On the first line write one reason why water is important.
2. On the second line write down three adjectives to describe water.
3. On the third line use water in a sentence.

1.

2.

3.

# GLOBAL AWARENESS FACT SHEET

All living creatures, including humans, need water to survive

Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater

Poor people often pay more for water than wealthy people living in the same city

Water can travel from one part of the world to another through the water cycle

Human activities affect water quality all over the world

Many people living in other countries die because the water they drink makes them sick

2.6 billion people in the world lack basic sanitation resources

A person needs 4 to 5 gallons of clean water per day to survive

More than 700 gallons of water are needed to grow the cotton for just one T-shirt!

People living in water-rich regions can affect how people use water in water-deprived areas

Conserving water helps to preserve the planet's natural resources

Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries

Salt water accounts for more than 97 percent of the water on Earth.

Millions of women and children spend several hours a day collecting water

In many parts of the world, fresh water is being used faster than it can be replaced

Less than 1% of the world's fresh water is readily accessible for direct human use

The earth has a limited amount of water. The same water keeps going around and around the planet in a process called the water cycle

A person can live weeks without food, but only about three days without water

All people need access to safe drinking water and improved sanitation conditions

Many people in the world suffer from health problems caused by drinking dirty water

**Sources:** (<http://www.amnh.org>) (<http://water.org>) (<http://news.nationalgeographic.com>)

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## **5.0 “WORLD-WATER HERO” LESSON GRADES 3-5**

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# WORLD-WATER HERO

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## National Curriculum Alignment:

### **NL-ENG.K-12.1**

Reading for Perspective: Students read a wide range of print and non-print documents to build an understanding of texts, of themselves, and of the cultures of the United States and the world.

### **NL-ENG.K-12.3**

Evaluation Strategies: Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts.

### **NL-ENG.K-12.4**

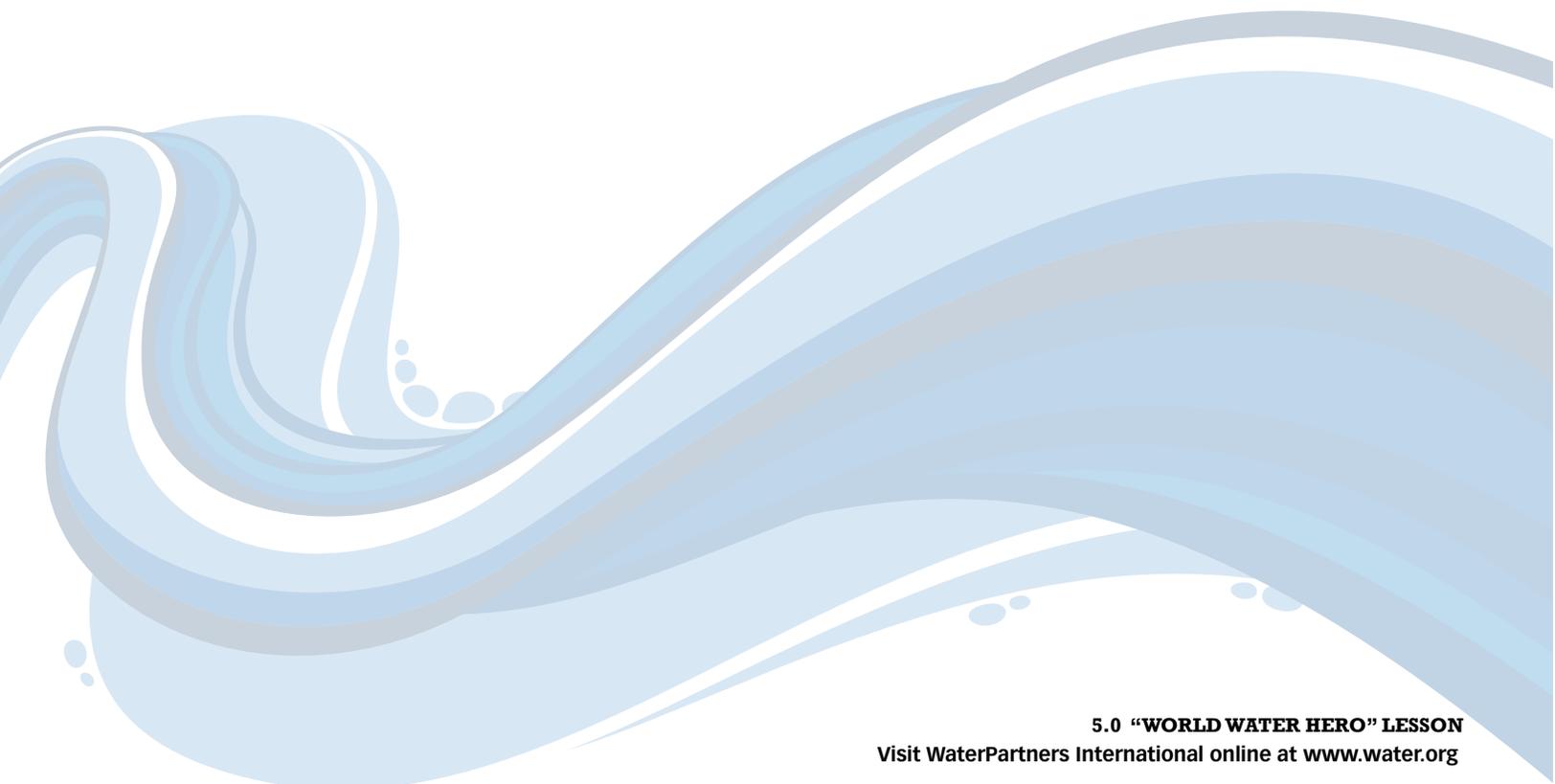
Communication Skills: Students adjust their use of spoken, written, and visual language to communicate effectively with a variety of audiences and for different purposes.

### **NL-ENG.K-12.5**

Communication Strategies: Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

### **NL-ENG.K-12.6**

Applying Knowledge: Students apply knowledge of language structure, language conventions, media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.



**:: Elementary**

**:: Level of difficulty and duration:** 💧💧

**Pre-activities:**

Have students identify, describe and discuss their favorite superheroes. The teacher may want to have a picture or a comic book of a popular superhero to use as an example. Review global water issues with the Global Water Awareness Fact Sheet or take the Global Water Awareness “World Tour” by reading the information sheet with the class.

**Objective:**

Students will discuss why clean water is important. Students will evaluate the “powers” needed to improve water quality around the world.

**Lesson:**

Students will create a superhero with super powers that can improve water quality and availability. As you draw and describe your new superhero answer the following questions:

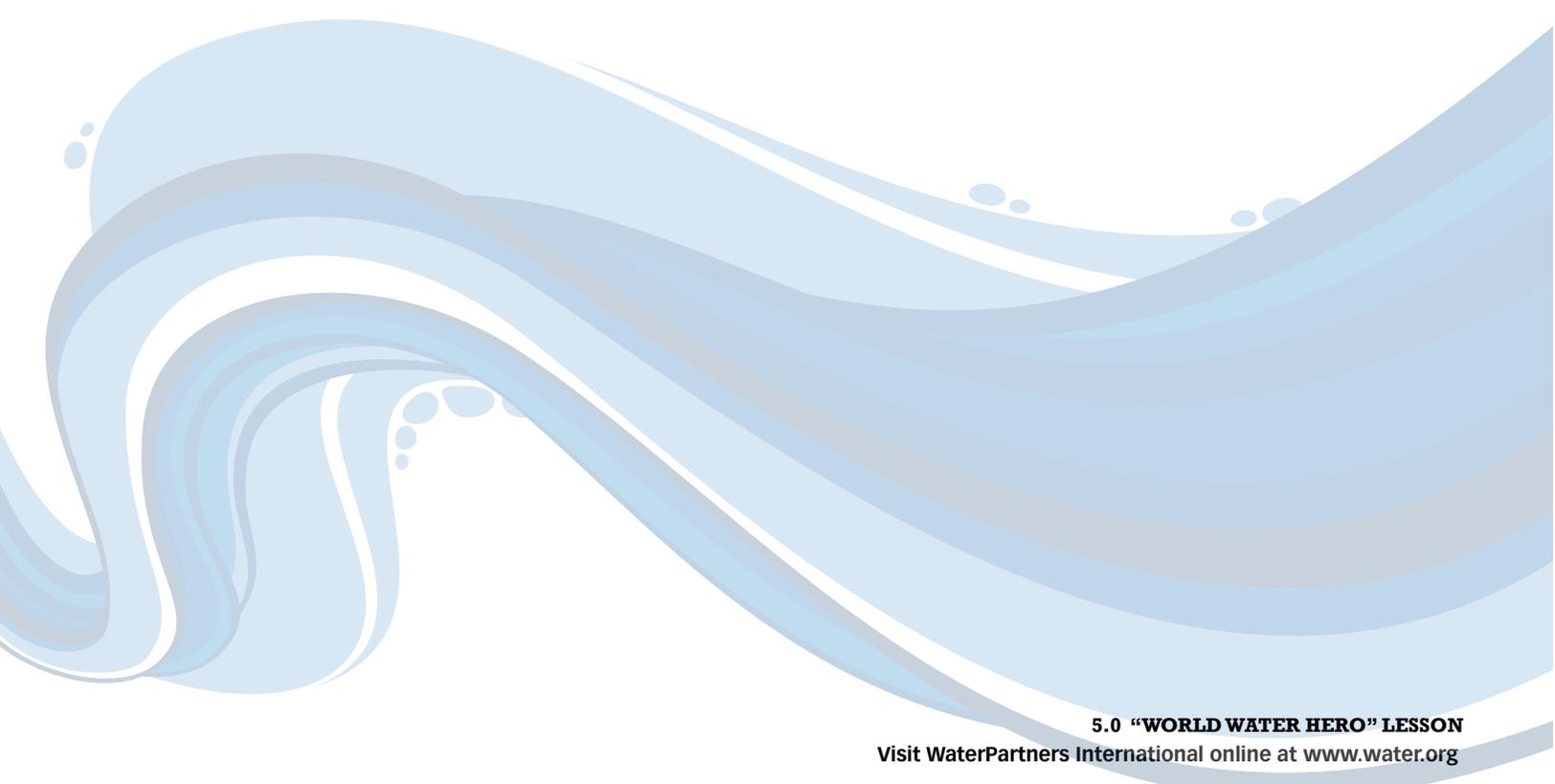
1. What powers does your superhero have?
2. What does his or her costume look like?
3. Who are your superhero’s archenemies?

**Materials:**

A picture, comic strip or a comic book of an existing popular superhero. Paper, pencils, crayons, markers.

**Post Activities:**

Students can share descriptions and images of world-water superheroes either one at a time at the front of the class or in a gallery style display.



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## **6.0 “TRAVELING FOR WATER” LESSON PLAN (GRADES 3-5)**

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# GLOBAL WATER AWARENESS WORLD TOUR

Read the information about the following countries and complete the Global Water Awareness Chart

## Bangladesh

- Bangladesh is located in South Asia. It is mostly a flat plain with hills in the southeast.
- Each year during the summer monsoon season about one third of Bangladesh floods. These floods often force people from their homes, and hinder the economic development of the country.
- Preventable diseases, largely the results of poverty and overcrowding, remain highly prevalent.
- Like many other developing nations, Bangladesh is experiencing a water crisis. Bangladesh has made progress in supply of safe water to its people. However, gross disparity in coverage exists across the country. Latrine usage is very poor across the country, averaging only 16% in the rural areas.
- The size of the urban population is increasing at alarming rates. The poor people from the rural areas continue to migrate to the urban areas in hope of being able to earn larger wages to support their families. Many of these people find shelter in the Dhaka's slum communities.
- The enormous quantity of people living in such close quarters causes people living in these slums to have some of the worst health in the country. Acute poverty, overcrowding, poor housing, and unhealthy disposal of waste all play major roles in the water and sanitation crisis in the urban areas of Bangladesh.

## Ethiopia

- Ethiopia is a landlocked country in the eastern Horn of Africa. It is slightly less than twice the size of Texas. The average temperature throughout much of the country is about 60° Fahrenheit. However, the northern part of the country along the Sudanese border can be much hotter.
- The need for water and sanitation in Ethiopia is severe. Only 22% of the population has access to an improved water supply. In rural areas, these numbers drop even further.
- In the last 20 years, Ethiopia has experienced droughts followed by food shortages and famines. In rural areas, women and children walk up to six hours to collect water. Most people collect water from shallow ponds which they share with animals! Other people collect water from shallow wells. Both types of these sources are subject to contamination as rain water washes waste from surrounding areas into the source.
- Ethiopian women carry large clay jugs of water from ponds back to their villages. These jugs can weigh up to 40 pounds! Often, young children are left home by themselves or with a slightly older sibling while their mother and older siblings collect water and their father works tends to animals or tries to earn money at a job outside the house.
- Water-related diseases are among the principle causes of death in young children.

## India

- India boasts the world's second largest population with more than 1 billion people. Its population is more than 3.5 times the size of that of the United States. However, India is only one-third of the physical size of the US.
- The population is incredibly diverse. Hindi is the national language, but there are 14 other official languages. India's schools teach 58 languages and its national newspapers are published in 87 languages. The predominant religion is Hindu (81.3%), but 12% of the population is Muslim.
- Poverty is a chief concern in India. Although overall poverty in India has decreased in the last 50 years, more than 25% of India's population still lives on less than two dollars a day. There is an ever-widening gap between poor people and those who are better off.
- India does not have enough freshwater for all of its people. India's huge and growing population is putting a severe strain on all of the country's natural resources.
- Most water sources are contaminated by sewage and agricultural runoff. India has made progress in the supply of safe water to its people, but gross disparity in coverage exists across the country. In order to decrease the amount of disease spread through drinking-water, toilet usage and hygiene must both be improved.

## The Philippines

- The Philippines is located in southeastern Asia. It is an archipelago between the Philippine Sea and the South China Sea, east of Vietnam. The Philippine archipelago is made up of 7,107 islands.
- The climate is tropical marine. Terrain is mostly mountains with narrow to extensive coastal lowlands. Natural hazards include cyclonic storms, landslides, active volcanoes, destructive earthquakes, and tsunamis.
- Current environmental issues include uncontrolled deforestation especially in watershed areas; soil erosion; air and water pollution in major urban centers; coral reef degradation; and increasing pollution of coastal mangrove swamps.
- Fifteen percent of the all families in the Philippines do not have access to safe drinking water, and 28 percent do not have sanitary toilets. Waterborne diseases are a major cause of infectious disease in the Philippines, and include bacterial diarrhea, hepatitis A, and typhoid fever.

## Honduras

- Honduras is the knee of Central America, bordered to the south by Nicaragua and El Salvador and to the west by Guatemala. In the rural regions, nearly 63% of the population is considered extremely poor, living on less than a dollar a day.
- Families often work as subsistence farmers—growing only what they can use to feed their own families, and leaving very little money for other purchases.
- The water crisis in Honduras was made much worse in 1998 by an enormous hurricane. The hurricane was followed by three days of rain that caused landslides and floods and killed thousands of people.
- Reconstruction efforts are continuing. However, until they are complete, in these areas families are forced to rely on contaminated water supplies, and the prevalence of waterborne diseases like cholera is increasing. Mosquitoes that carry malaria and dengue fever are also a problem.
- Many women and children in the rural areas of Honduras spend up to six hours each day simply fetching water and carrying it home on their heads.

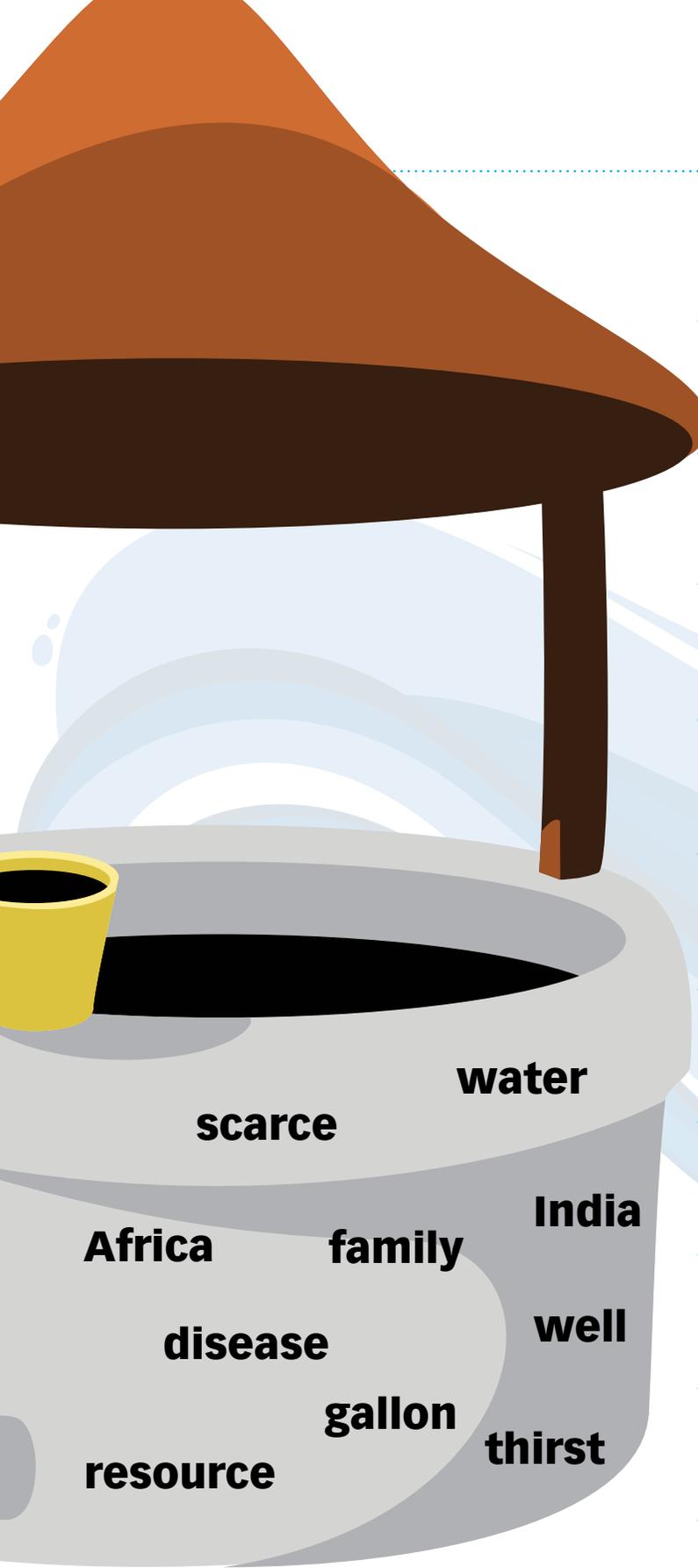
# GLOBAL WATER AWARENESS CHART

Use information from the "Global Water Awareness World Tour" information sheet to complete the chart.

Information	Ethopia	The Philippines	Bangladesh	Honduras	India
Description of physical location					
Other geographical facts					
Important statistics					
Description of the water crisis					

# TRAVELING FOR WATER WORD PUZZLE

Use terms from the "word well" to fill in the blanks. De-code the message below.



1. desire for a drink

\_\_\_\_\_ 9 \_\_\_\_\_ 11

2. extreme illness

\_\_\_\_\_ 14

3. where water is stored

\_\_\_\_\_ 4

4. a continent

\_\_\_\_\_ 3 \_\_\_\_\_ 6 \_\_\_\_\_

5. location of the Ganges River

\_\_\_\_\_ 7 12

6. a cool drink

\_\_\_\_\_ 15

7. rare

\_\_\_\_\_ 8 \_\_\_\_\_ 16 \_\_\_\_\_ 5

8. a group of related people

\_\_\_\_\_

9. a measurement for liquids

\_\_\_\_\_ 1

10. something of value

\_\_\_\_\_ 13 \_\_\_\_\_ 2 \_\_\_\_\_ 10

\_\_\_\_\_ 4 12 11 5 2

\_\_\_\_\_ 6 8 \_\_\_\_\_ 1 7 3 10 !

# “TRAVELING FOR WATER”

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## Quick Math Questions

Determine the correct answers for questions 1-5. When you have completed the questions create a formula or equation to help someone else answer the question.

A woman living in India needs six gallons of water from the Ganges River each day. Six gallons is the bare minimum she needs each day for drinking, cooking, and bathing for her and her family. Each day she walks  $\frac{1}{2}$  mile to the river and back home again.

1. If the woman can only carry two gallons of water at a time, how many trips will she have to make to the river to get a total of six gallons?
2. If the woman could carry three gallons of water at a time, how many trips will she have to make to the river to get a total of six gallons?
3. The river is  $\frac{1}{2}$  mile from her home. What is the total distance she will have to walk if she needs six gallons and can only carry two gallons at a time?
4. The river is  $\frac{1}{2}$  mile from her home. What is the total distance she will have to walk if she needs six gallons and can carry three gallons at a time?
5. When the woman is sick she sends her daughter to the river to collect the water for the family. The daughter can only carry  $\frac{1}{2}$  gallon per trip. How many trips to the river and back would the daughter have to make to bring the family the needed six gallons? How many total miles would the daughter have to travel to bring home six gallons of water?

# “TRAVELING FOR WATER”

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## Quick Math Answers

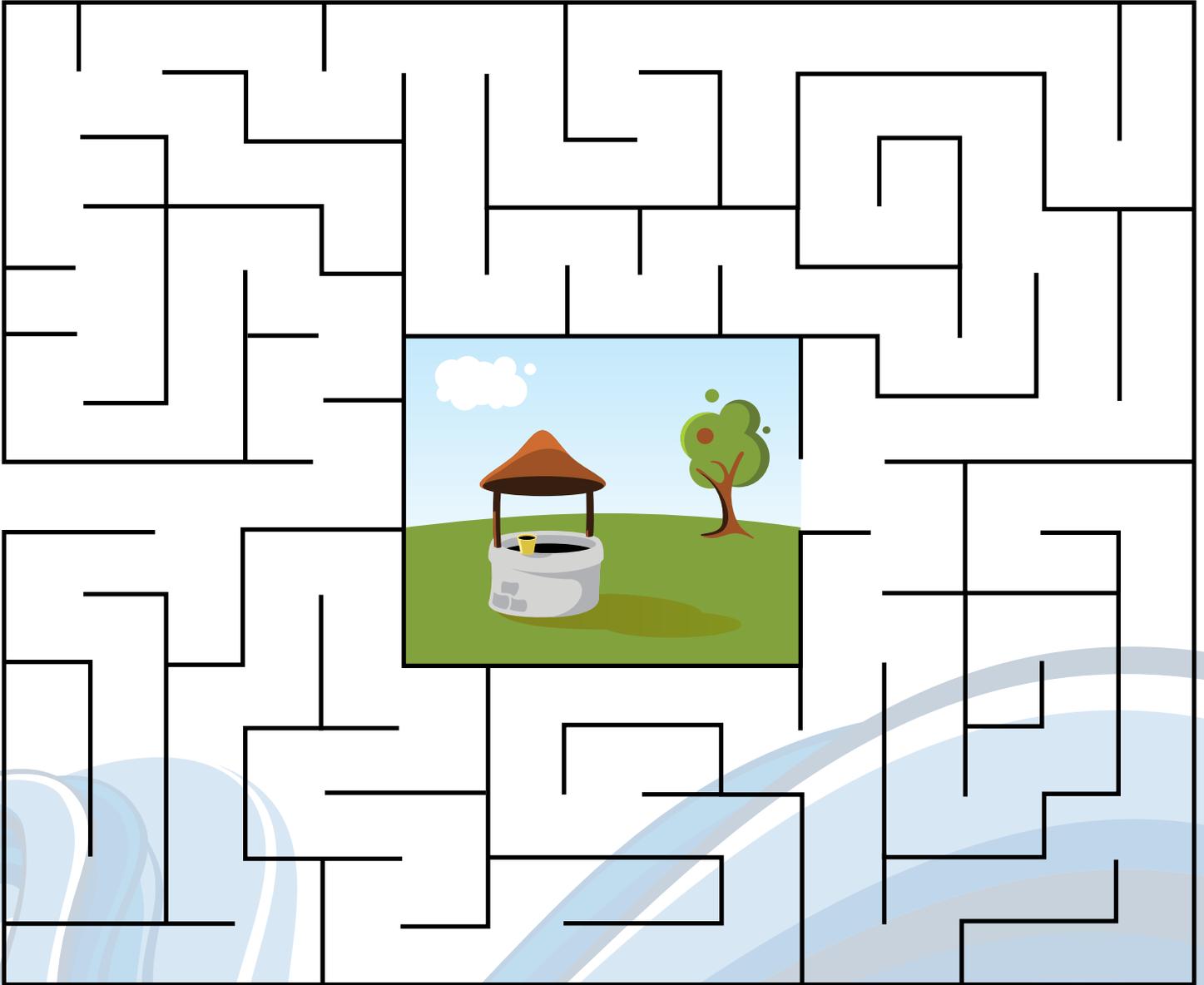
(formulas/equations will vary)

1. 3 trips
2. 2 trips
3. 3 miles
4. 2 miles
5. 12 trips/12 miles



# TRAVELING FOR WATER MAZE ACTIVITY

## FIND THE WATER WELL



## ABOUT WATERPARTNERS INTERNATIONAL

WaterPartners International is a U.S.-based non-profit organization that provides safe drinking water and sanitation to people in developing countries. Since its inception in 1990, WaterPartners has transformed more than 200 communities in Bangladesh, El Salvador, Ethiopia, Honduras, Guatemala, India, Kenya, and the Philippines with access to safe water and sanitation.



Visit WaterPartners International online at [www.water.org](http://www.water.org)