



An initiative of  
**Water Missions**  
International

# Lessons in a BUCKET





What is .....

### Water Missions International —

Water Missions International is a nonprofit Christian engineering ministry providing sustainable safe water solutions to people in developing countries and disaster areas. Founded in 2001, they work with a sense of urgency and commitment to implement the best technologies and community development programs for those in need of clean and safe drinking water.

### Educators' Think Tank (ETT) —

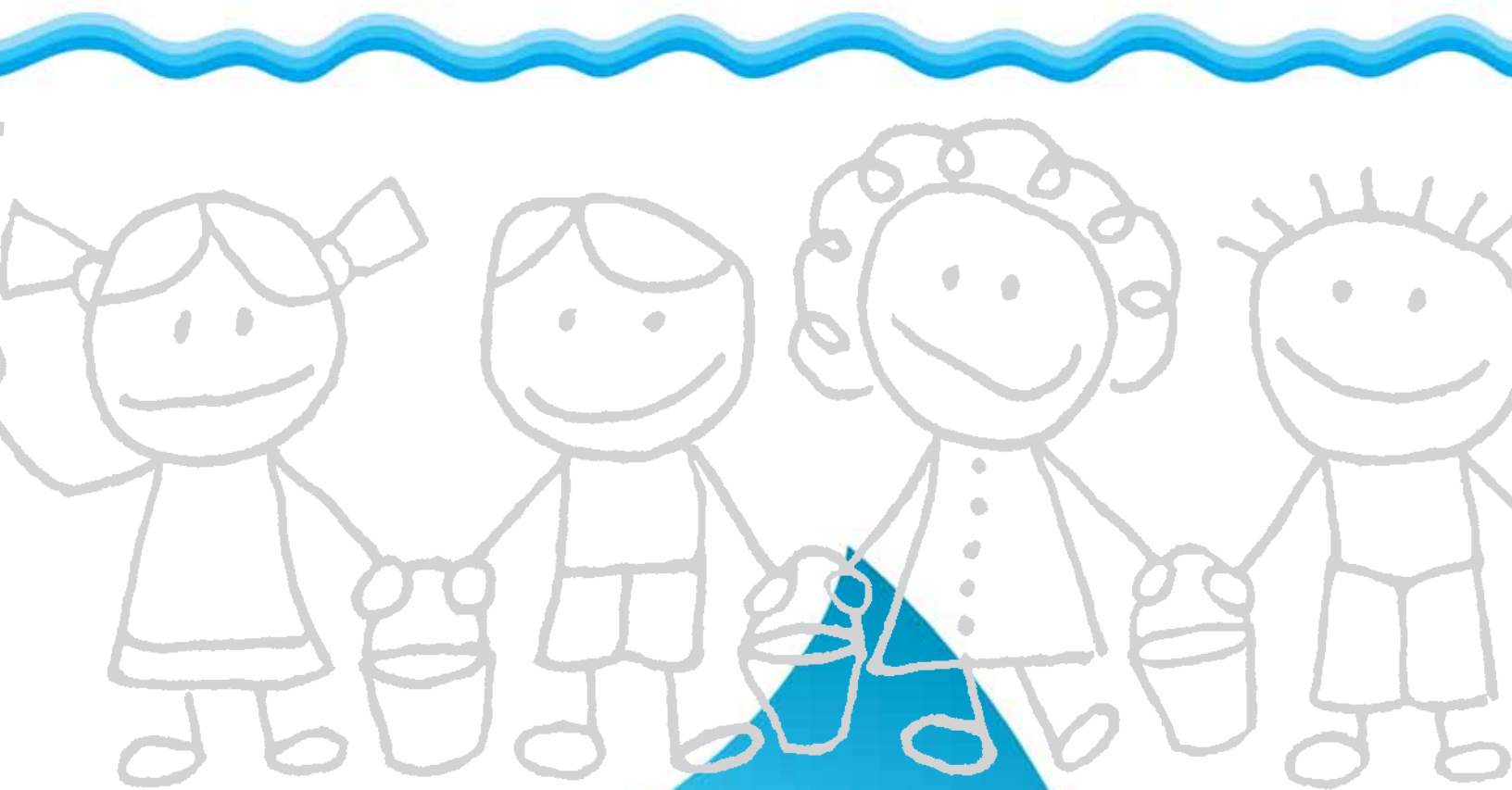
This group of volunteers formed in 2011 with the goal of creating educational programming for children and youth centered on water, the world water crisis, and the work of Water Missions International.

### Lessons in a Bucket—

This first program of the ETT provides resources and activities that will help teachers of K- 6th grade discuss the importance of water while introducing the world water crisis and the work of Water Missions International.

### Bucket Brigade —

Imagine children joining together like the firefighters of old, passing buckets of water to where they are needed to solve a problem! This is the ETT vision. By participating in Lessons in a Bucket and/or any of our future programming, your children can say, "I have joined the Water Missions International Bucket Brigade," and know they are making a difference.



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Dear Teacher,



Thank you for using Water Missions International's [Lessons in a Bucket](#). By introducing your class to this information, your children can become part of this initiative of Water Missions International to educate children and youth on the importance of safe water and to introduce them to the concept of a world water crisis. Our children often do not realize that people in many countries do not have access to safe water. It is our hope that, as your children become more familiar with the facts, they will do their part to appreciate water, use it wisely, and advocate for those who do not have safe and clean water.

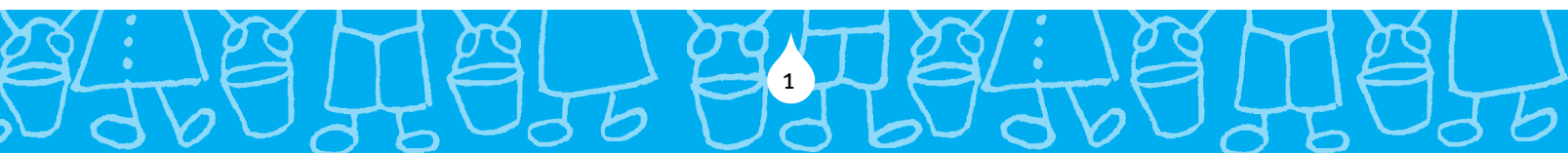
Our activities present a variety of avenues through which you and your class can explore water and learn about our world water crisis. Each teacher can determine which facts, activities, and goals are most appropriate for his/her class. The grade levels and timing for use are adaptable. We hope that many activities will help you reach your required local, state, and national curriculum standards. The [Lessons in a Bucket](#) also contains DVDs, a beach ball, photo cards, a flag sheet, many resources, and letters for parents.

The Water Missions International Educators' Think Tank supports you in this effort. We look forward to your input and suggestions after using the [Lessons in a Bucket](#). Please complete the survey and return it. If you have any questions, please contact Water Missions International at (843) 769-7395.

Sincerely,

The Educators' Think Tank

Water Missions International





Dear Parents,



Water is a very important resource! Water is necessary for life! Your child's class will be discussing water while using Water Missions International's **Lessons in a Bucket**. Water Missions International is a nonprofit Christian engineering ministry providing sustainable safe water solutions to people in developing countries and in the wake of disaster. Since 2001, Water Missions International has responded to the world's largest natural disasters and daily tackles the world's single biggest cause of illness - lack of safe water and adequate sanitation (U.N. Report, 2005) by providing safe water to more than two million people in 49 countries.

We believe that children can be wonderful advocates for our environment and our planet if they have the information to understand the world around them. In creating the **Lessons in a Bucket**, a program of activities for children and youth, Water Missions International seeks to introduce the concept of a world water crisis and explore what we can do together as individuals about this problem.

Your child's teacher will be using **Lessons in a Bucket**, literally a bucket of resources, to help the class learn and discuss how water is a limited resource, how everyone uses water, what the availability of water is around the world, how we can conserve water, and help those who have little or no safe, clean water for daily life. We encourage you to become involved in your child's learning.

For more information on Water Missions International please visit us at [www.watermissions.org](http://www.watermissions.org).

Sincerely,

The Educators' Think Tank

Water Missions International





# Countries Served by Water Missions International



Countries are in historial order.

# Vocabulary List

## **accessible -**

1. Easily approached or entered.
2. Easily obtained: accessible money.

## **availability -**

1. Present and ready for use; at hand; accessible: kept a fire extinguisher available at all times.
2. Capable of being gotten; obtainable: a bedspread available in three colors.
3. Qualified and willing to serve or assist: a list of available candidates; was not available for comment.

## **brigade -**

1. A military unit consisting of a variable number of combat battalions or regiments.
2. A group of persons organized for a specific purpose: formed a bucket brigade to carry water to the fire.

## **chlorination -**

1. To treat or combine with chlorine or a chlorine compound.

## **condensation -**

1. The act of condensing.
2. The state of being condensed.
3. Physics
  - a. The process by which a gas or vapor changes to a liquid.
  - b. The liquid so formed.

## **conservation -**

1. The act or process of conserving.
2. The protection, preservation, management, or restoration of wildlife and of natural resources such as forests, soil, and water.

## **consumption -**

1.
  - a. The act or process of consuming.
  - b. The state of being consumed.
  - c. An amount consumed.
2. *Economics* - The using up of goods and services by consumer purchasing or in the production of other goods.

## **contaminate -**

1. To make impure or unclean by contact or mixture.

## **continent -**

1. One of the principal land masses of the earth, usually regarded as including Africa, Antarctica, Asia, Australia, Europe, North America, and South America.

## **diarrhea -**

1. Abnormally fast passage of waste material through the large intestine, resulting in frequent loose stools and sometimes cramps

## **disaster -**

1.
  - a. An occurrence causing widespread destruction and distress; a catastrophe.
  - b. A grave misfortune.



### **disease -**

1. A pathological condition of a part, organ, or system of an organism resulting from various causes, such as infection, genetic defect, or environmental stress, and characterized by an identifiable group of signs or symptoms.

### **drought -**

1. A long period of abnormally low rainfall, especially one that adversely affects growing or living conditions.

### **evaporation -**

1. a. To change into vapor, to pass off in or as vapor.
2. To produce vapor.
3. To disappear; vanish: Our fears at last evaporated.

### **filtration -**

1. The act or process of filtering, especially the process of passing a liquid or gas, such as air, through a filter in order to remove solid particles.

### **flocculation -**

1. To cause (soil) to form lumps or masses.
2. To cause (clouds) to form fluffy masses.

### **freshwater -**

1. Of, relating to, living in, or consisting of water that is not salty: freshwater fish; freshwater lakes.
2. Situated away from the sea; inland.

### **glacier -**

1. A huge mass of ice slowly flowing over a land mass, formed from compacted snow in an area where snow accumulation exceeds melting and sublimation.

### **global -**

1. Having the shape of a globe; spherical.
2. Of, relating to, or involving the entire earth; worldwide: global war; global monetary policies.

### **groundwater -**

1. Water beneath the earth's surface, often between saturated soil and rock, that supplies wells and springs.

### **hurricane -**

1. A severe tropical cyclone having winds greater than 64 knots (74 miles per hour; 119 kilometers per hour), originating in the equatorial regions of the Atlantic Ocean or Caribbean Sea or eastern regions of the Pacific Ocean, traveling north, northwest, or northeast from its point of origin, and usually involving heavy rains.
2. A wind with a speed greater than 64 knots (74 miles per hour; 119 kilometers per hour per hour), according to the Beaufort scale.
3. Something resembling a hurricane in force or speed.

### **hygiene -**

1. The science that deals with the promotion and preservation of health.
2. Conditions and practices that serve to promote or preserve health: hygiene in the workplace; personal hygiene.

### **intervention -**

1. To come, appear, or lie between two things: You can't see the lake from there because the house intervenes.
2. To come or occur between two periods or points of time: A year intervened between the two dynasties.
3. To occur as an extraneous or unplanned circumstance: He would have his degree by now if his laziness hadn't intervened.
4. To involve oneself in a situation so as to alter or hinder an action or development: "Every gardener faces choices about how and how much to intervene in nature's processes" (Dora Galitzki).

### **life-saving -**

1. acting to save a person's life
2. *Informal* - giving help in time of need

### **monsoon -**

1. A wind system that influences large climatic regions and reverses direction seasonally.
2. a. A wind from the southwest or south that brings heavy rainfall to southern Asia in the summer.  
b. The rain that accompanies this wind.

### **pollution -**

1. The act or process of polluting or the state of being polluted, especially the contamination of soil, water, or the atmosphere by the discharge of harmful substances.
2. Something that pollutes; a pollutant or a group of pollutants: Pollution in the air reduced the visibility near the airport.

### **precipitation -**

1. A form of water, such as rain, snow, or sleet, that condenses from the atmosphere, becomes too heavy to remain suspended, and falls to the Earth's surface. Different atmospheric conditions are responsible for the different forms of precipitation.
2. The process by which a substance is separated out of a solution as a solid. Precipitation occurs either by the action of gravity or through a chemical reaction that forms an insoluble compound out of two or more soluble compounds.

### **resource -**

1. Something that can be used for support or help: The local library is a valuable resource.
2. An available supply that can be drawn on when needed. Often used in the plural.

### **rural -**

1. Of, relating to, or characteristic of the country.
2. Of or relating to people who live in the country: rural households.
3. Of or relating to farming; agricultural.

### **saltwater -**

1. Water containing salts

### **sanitation -**

1. Formulation and application of measures designed to protect public health.
2. Disposal of sewage.

### **terrain -**

1. a. An area of land; ground: climbed a tree to view the surrounding terrain.  
b. A particular geographic area; a region: a guide who knows this terrain well.
2. The surface features of an area of land; topography: boots designed for rugged terrain.

### **transformation -**

1. a. The act or an instance of transforming.  
b. The state of being transformed.
2. A marked change, as in appearance or character, usually for the better.

### **treatment system -**

1. A group of interacting mechanical or electrical components that remedy a situation such as improving the quality of water.

### **tsunami -**

1. A very large ocean wave caused by an underwater earthquake or volcanic eruption.

### **turbidity -**

1. Muddiness created by stirring up sediment or having foreign particles suspended

### **vapor -**

1. Barely visible or cloudy diffused matter, such as mist, fumes, or smoke, suspended in the air.
2. a. The state of a substance that exists below its critical temperature and that may be liquefied by application of sufficient pressure.  
b. The gaseous state of a substance that is liquid or solid under ordinary conditions.

### **well -**

1. A deep hole or shaft sunk into the earth to obtain water, oil, gas, or brine.
2. A container or reservoir for a liquid, such as ink.
3. A place where water issues from the earth; a spring or fountain.

\*\* Definitions taken from the Free Online Dictionary at [www.thefreedictionary.com](http://www.thefreedictionary.com) and the American Heritage Dictionary of the English Language

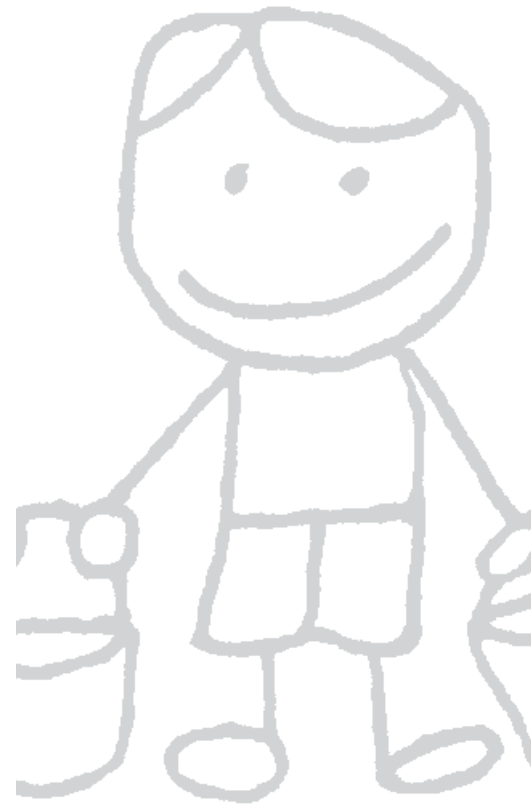


## Reference List- Websites and Books

### Water-related Web resources:

- [www.slideshare.net/magarces/morphies-great-water-ride-adventure-presentation](http://www.slideshare.net/magarces/morphies-great-water-ride-adventure-presentation)  
*Morphie's Great Water Ride Adventure*  
*Water Cycle*
- <http://kids.earth.nasa.gov/droplet.htm>  
*Droplet and the Water Cycle*
- <http://www.drippytheraindrop.com/DrippysWorldTrialStories/ToMountainsAndBack/Entry.htm>  
*To the Mountain and Back (The Many Adventures of Drippy the Raindrop)*
- [www.nationalgeographic.com](http://www.nationalgeographic.com)  
Disaster photos available, good link for water-related environmental information, news, and media.
- [www.weather.com](http://www.weather.com)  
The Weather Channel has a collection of images and videos on weather stories
- [www.epa.gov/safewater](http://www.epa.gov/safewater)  
Water Sourcebook, lesson plans by age, worksheets and games  
(click Kids, Students & teachers under RESOURCES)
- [www.ceeindia.org/drip/start.swf](http://www.ceeindia.org/drip/start.swf)  
good visuals, diagrams, stories, leading questions and excellent summary story told by a "drop" of water, suggest preview by teachers, use with children if technology is available
- [www.cwec.ca](http://www.cwec.ca)  
(Children's Water Education Council)  
lessons on salt water and conservation, ideas for celebrating water in a festival format
- [www.lwcky.com/funzone/people/curriculum.htm](http://www.lwcky.com/funzone/people/curriculum.htm)  
Adventures in Water curriculum, fun zone has quiz formats  
(click Education Opportunities in left margin)
- [www.e4s.org.uk](http://www.e4s.org.uk)  
16 photo story opportunities, water filtering experiments
- [www.oxfam.org.uk/education/resources/water\\_for\\_all](http://www.oxfam.org.uk/education/resources/water_for_all)  
excellent for teacher resource, discusses the why of our world water shortage using photos/quiz, case study format  
(click Lesson Plans, Arts & Crafts in left margin)
- [www.peacecorps.gov/www/water/africa](http://www.peacecorps.gov/www/water/africa)  
(click on Lesson Plans at top)
- [www.peacecorps.gov/www](http://www.peacecorps.gov/www)  
lesson plans created by PC volunteers, good photos and stories under resource section  
(click Classrooms Resources)

- [www.wateraid.org.uk/external/game](http://www.wateraid.org.uk/external/game)  
go to Learn Zone for lessons, slideshows, activities  
(click Learn Zone on top of page)
- [www.ecokids.ca](http://www.ecokids.ca)  
(click on Kids, Teachers sections)
- [www.canteach.ca/elementary/songspoems17.html](http://www.canteach.ca/elementary/songspoems17.html)  
water songs
- [www.getwise.org/](http://www.getwise.org/)  
(click Kc for Kids and Tl for Teachers at top of page)
- [www.proteacher.com/110056.shtml](http://www.proteacher.com/110056.shtml)  
archive of water activities
- [www.worldwaterday.org](http://www.worldwaterday.org)  
information on World Water Day
- [www.projectwet.org](http://www.projectwet.org)  
nonprofit water education program for educators/children K-12



### Water-related Children's Books:

*Water* – F. Asch  
*Water Adventures Around The World* – S. Koerner  
*Who Comes To The Water Hole?* - C. Bare  
*Water, The Drop Of Life* – P. Swanson  
*A Drop Around The World* – B. McKinney  
*The Drop In My Drink – Water On Our Planet* - MJ Hooper  
*A Drop Of Water* – G. Morrison  
*Water Crisis* – J. Keen  
*Why Should I Save Water?* - W. Jen Green  
*Where Is Water?* - R. Nelson  
*Water Words Rhymed and Defined* – B.S. McKinney  
*Hot Hippo* – M Hadithi (young children)  
*Rivers & Oceans* – B. Taylor  
*Caring For Our Water* – C. Greene  
*Do Fish Drink? First Questions and Answers About Water* – Time Life Books  
*Water Wonders* – Better Homes and Gardens (projects, cooking, puzzles)  
*First-hand Science WATER* – Lynn Huggins-Cooper  
*The Magic School Bus – WET ALL OVER* - J. Cole  
*The Magic School Bus – AT THE WATERWORKS* - J. Cole



## Water Word Search #1

D	E	W	X	P	O	D	N	A	R	E	V	E	B	M
S	P	U	O	E	U	C	X	I	F	G	E	T	H	M
I	W	O	E	H	C	Q	E	A	A	U	W	F	B	N
Z	J	F	B	F	F	C	S	A	B	R	B	H	C	O
G	C	F	A	W	A	L	V	T	N	B	G	Y	A	K
W	K	E	A	U	A	U	B	E	W	A	T	E	R	X
N	O	I	O	K	C	I	B	T	N	A	E	L	C	B
E	M	L	E	Q	M	E	R	E	S	T	R	E	A	M
E	Z	E	M	Z	D	S	T	K	D	X	H	X	X	X
O	T	R	N	W	Q	P	A	C	X	K	Y	B	W	J
Y	W	U	I	M	R	B	K	U	S	M	I	F	C	W
R	P	V	L	E	E	P	O	B	X	M	K	T	T	O
Y	V	S	V	L	O	P	H	M	C	U	R	M	O	X
J	X	I	E	T	O	F	Q	P	X	L	C	E	C	E
S	R	E	N	B	T	P	K	X	X	H	M	Q	G	Y



Find these  
words in the  
water word  
search.

BUCKET  
CLEAN  
FAUCET  
WATER  
GERMS

LAKE  
OCEAN  
POLLUTE  
RAIN

RELIEF  
RIVER  
SAFE  
STREAM



## Water Word Search #2

R Z P A S D T E M R A I X A C  
S E C R L A X H E Q M Z F G O  
P S T Q E Z L S G A L I P D N  
N A B A S C O T N U L R E I S  
O E E X W U I U W T O N P S E  
I S U R R D S P R A A R Z A R  
T I Z C E T N A I C T D D S V  
A D E Y F A T U I T B E C T A  
T G Y P W I D R O Z A S R E T  
I A D Q O Y R X X G I T D R I  
N W W N A U W A T E R K I D O  
A A C R H V P O L L U T I O N  
S M J S R E T A W H S E R F N  
E N E I G Y H L C Q X B L B N  
W N T B S X X S N H R Y P Z E



Find these  
words in the  
water word  
search.

CONSERVATION  
DISASTER  
DISEASE  
RESOURCE  
FILTRATION

FRESHWATER  
TSUNAMI  
WATER  
HYGIENE  
POLLUTION

DROUGHT  
PRECIPITATION  
SALTWATER  
SANITATION  
HURRICANE

## Hidden Message

Find each word. Cross out the letters. You may use some letters more than once.  
Write the first 26 remaining letters in order on the lines.

W B A R S A F E N R S I T R E  
E R U M I I S S O E A M I E O  
L T R C N V S B I T L A U L C  
K A A E K E E P T A T N T I B  
G R B N T E O R A W W U D E I  
H R G O I L T A V H A S R F D  
E Y O H L M I M R S T T O N S  
F U G U U G A F E E E S U R V  
X A T I N R D T S R R B G W L  
T E U W E D R D N F O B H V C  
F P F C J N W I O O G C T E Q  
D N O P E O E A C J C L E A N  
G E R M S T X K T A Y Q G A D  
A C C E S S I B L E N M W G N  
E L B D I S A S T E R E Q R H

ACCESSIBLE  
GROUNDWATER  
HURRICANE  
HYGIENE  
BUCKET  
OCEAN

POLLUTE  
POND  
CLEAN  
RIVER  
SAFE  
SALTWATER

CONSERVATION  
RELIEF  
GLOBAL  
GERMS  
CONTAMINATE  
TSUNAMI

FILTER  
FAUCET  
DISASTER  
DROUGHT  
FRESHWATER

## Water Missions International Countries

Here are some of the countries that Water Missions International has helped.  
Find each country in the word search.

C	Z	A	P	H	I	B	T	U	E	L	N	A	A	Q
C	A	E	I	W	S	H	O	C	K	A	I	I	U	P
A	R	M	A	P	A	E	U	L	I	T	S	D	G	A
U	D	L	E	I	O	A	D	R	I	E	M	O	A	K
Q	A	N	L	R	D	I	E	A	N	V	S	B	R	I
M	O	A	A	O	O	G	H	O	L	B	I	M	A	S
B	N	K	R	G	I	O	D	T	D	G	R	A	C	T
D	J	Z	Y	N	U	N	N	Z	E	Q	N	C	I	A
C	N	A	T	S	I	N	A	H	G	F	A	A	N	N
Z	I	M	B	A	B	W	E	O	G	O	T	H	B	C
S	A	R	U	D	N	O	H	R	O	M	A	N	I	A
D	G	Z	A	M	B	I	A	O	C	I	X	E	M	C
A	D	N	A	W	R	K	E	N	Y	A	G	P	Y	V
I	S	I	U	P	R	J	E	C	R	H	C	A	Q	E
K	A	F	L	V	F	M	O	F	H	S	R	L	S	K

AFGHANISTAN  
ROMANIA  
ZIMBABWE  
BANGLADESH  
BOLIVIA  
CAMBODIA  
THAILAND

NIGERIA  
CAMEROON  
ECUADOR  
ETHIOPIA  
ZAMBIA  
UGANDA

HAITI  
HONDURAS  
INDONESIA  
TOGO  
PAKISTAN  
KENYA

MALAWI  
MEXICO  
RWANDA  
PERU  
NEPAL  
NICARAGUA

## A decorative horizontal line with a wavy, undulating pattern in shades of blue, spanning the width of the page.

## Water Word Search #2

R	Z	P	A	S	D	T	E	M	R	A	I	X	A	C
S	E	C	R	L	A	X	H	E	O	M	Z	F	G	O
P	S	T	Q	E	Z	L	S	G	A	L	I	P	D	N
N	A	B	A	S	C	O	T	N	U	L	R	E	I	S
O	E	E	X	W	U	I	U	W	T	O	N	P	S	E
I	S	U	R	R	D	S	P	R	A	A	R	Z	A	R
T	I	Z	C	E	T	N	A	I	C	T	D	D	S	V
A	D	E	Y	F	A	T	U	I	T	B	E	C	T	A
T	G	Y	P	W	I	D	R	O	Z	A	S	R	E	T
I	A	D	Q	O	Y	R	X	X	G	I	T	D	R	I
N	W	W	N	A	U	W	A	T	E	R	K	I	D	O
A	A	C	R	H	V	P	O	L	L	U	T	I	O	N
S	M	J	S	R	E	T	A	W	H	S	E	R	F	N
E	N	E	I	G	Y	H	L	C	Q	X	B	L	B	N
W	N	T	B	S	X	X	S	N	H	R	Y	P	Z	E

## International Countries

C	Z	A	P	H	I	B	T	U	E	L	N	A	A	Q
C	A	E	I	W	S	H	O	X	K	A	I	I	U	P
A	R	M	A	P	A	E	U	L	I	T	S	D	G	A
U	D	L	E	I	O	A	D	R	I	E	M	O	A	K
Q	A	N	L	R	D	I	E	A	N	V	S	B	R	I
M	O	A	A	O	O	G	H	O	L	B	I	M	A	S
B	N	K	R	G	I	O	D	T	D	G	R	A	C	T
D	J	Z	Y	N	U	N	N	Z	E	Q	N	C	I	A
C	N	A	T	S	I	N	A	H	G	F	A	A	N	N
Z	I	M	B	A	B	W	E	O	G	O	T	H	B	C
S	A	R	U	D	N	O	H	R	O	M	A	N	I	A
D	G	Z	A	M	B	I	A	O	C	I	X	E	M	C
A	D	N	A	W	R	K	E	N	Y	A	G	P	Y	V
I	S	I	U	P	R	J	E	C	R	H	C	A	Q	E
K	A	F	L	V	F	M	O	F	H	S	R	L	S	K

## Concept: Water is Life

**Grades: K-6**

**Setting: Indoors or Outdoors**

**Materials:** Globe/World map, poster board, glue, stapler, tape, markers, graph paper, Variety of assembly items may include pennies, penne pasta, yarn, paper clips, paper strips, etc.

**Activity:** Using a globe or world map, locate areas of water on our planet. Explore issues of availability of water on our planet. Facts to include are: 97% of world's water is salt-water, 3% of the world's water is fresh water, of that 3% some 2% of the freshwater is frozen leaving 1% of the world's water available to meet the needs of humans, humans can live for 4 weeks without food but only 1 week without water.

**Assembly Task:**

Assembly Task is to use 100 of a selected object to represent the world's water, then show the portions that are saltwater, fresh but frozen water, and fresh usable water for humans. For example: pennies could be put in piles of 97, 2 & 1, paper strips could be linked and colored in groups of 97, 2 & 1, yarn might be measured in inch pieces and cut to show 97, 2 & 1. The goal is to help youth visualize that water available for human consumption is only a very small part of the water on our planet and water sources vary greatly from country to country. This assembly task may be done individually, in pairs or in small groups. Have children share their projects with the group and share what they have learned and how this knowledge might change their own water usage.

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## Concept: Got Water

**Grades: K-3**

**Setting: Indoors**

**Materials:** Cups, salty, snack, ice water

**Activity:** Ask children the following questions.....

1. How many of you have ever taken a hike or long bike ride? What supplies did you take with you? Did you take water? What was it like when you were hot and thirsty and then took a drink?
2. What are some of the everyday things you do that require water? How much water do you think your family uses everyday? What would it be like to have to go to a well or river away from home and carry all the water back home?

After this discussion, give the children a salty snack (pretzels or crackers.) When they finish eating, pour a cup of ice water for each from a clear pitcher. Discuss what it was like to have clear, cold water after the salty snack.



## Concept: Basic Water Facts

**Grades: K-4**

**Setting: Indoors**

**Materials:** Smartboard (or other visual medium to display story on screen), material for charting responses

**Activity:** Select a story about the water cycle (see Reference List.) Use the story to lay a basic foundation of facts concerning water. Children view the story as read by the teacher. Ask the children to listen carefully for information that will answer the following questions:

- **Where is the water?**
- **Why is water important?**

A follow-up discussion could include a charting of the information that they shared as they answered the questions.

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## Concept: The Water Cycle: Clouds

**Grades: K-3**

**Setting: Indoors or Outdoors**

**Materials:** A supply of packing peanuts (Styrofoam) so that you have about 1 cup per student, *The Water Cycle* by Robin Nelson (or a similar book)

**Activity:** The children will begin to understand that water moves in a cycle and has different states (vapor, liquid, solid), that water evaporates into the air, rises to form clouds, cools and becomes precipitation, and again evaporates into the air... Introduce that water moves in a cycle by reading a book about the water cycle (suggested: *The Water Cycle* by Robin Nelson, Lerner Publications Co., 2003.)

Act out the water cycle by pairing up the children, one to be the cloud and the other the sun. Pour a supply of packing peanuts (the “water”) on the floor in front of each pair. Ask the suns to “feel” very warm so that they can move the “water” up to the clouds. The suns will place packing peanuts into the hands of the “clouds.” Eventually, the cloud will begin dropping peanuts (water). Ask what is happening to the water, hopefully leading someone to answer that when the cloud releases the water, it is “raining”!

Extend, as age appropriate, the discussion to include what happens to water in puddles, ponds, etc. Ask whether or not they would want to drink this water. Why or why not? Why is this water not clean? Connect to the fact that many people in the world have to depend on getting their water from sources such as this.





# Concept: The Water Cycle: Evaporation      Grades: K-3

Setting:      Indoors or Outdoors

**Materials:**      Chalkboards, sponges, water

**Activity:**

Discuss how water evaporates and becomes a vapor. Give the children individual chalkboards, or use a large class chalkboard. Dampen sponges and wet the board(s). Step away from the boards and watch the water evaporate. Use the vocabulary word, “evaporation”. Talk about what is happening. Then teach the children the song, Water Cycle, by Lori-Ann Phelan. Use the tune for “She’ll Be Coming ‘Round the Mountain” complete with arm motions (see below).

For this 2 line refrain, the arm moves in a big circle, illustrating the water cycle)

Water travels in a cycle, yes it does  
Water travels in a cycle, yes it does  
(move hand up to the sky)  
It goes up as evaporation  
(2 hands form a big cloud overhead)  
Forms clouds as condensation  
(hands come down with fingers wiggling like raindrops)  
Then comes down as precipitation  
Yes it does!

Wet two small chalkboards outdoors and place one in a sunny and the other in a shady spot. Have a race between the two, checking on evaporation at intervals during the day. Discuss conclusions.



# Concept: The Water Cycle: Rain      Grades:      K-3

Setting:      Indoors or Outdoors

**Materials:** Shallow pans or saucers of cold water (one for each child), cotton balls (one for each child), *Adventures of Randy the Raindrop* which is included in the Reference List.

**Activity:** Read *Randy the Raindrop* (on the next page). Have the children speculate about what will happen to the raindrop next.

Use real water to act out the water cycle. Pretend each cotton ball is a cloud. Discuss how it feels (heavy or light, hard or soft). Have children place their clouds gently over the pan of cold water. (Pretend the pan is a river, ocean or puddle.) Encourage children to get close enough so that the water can be absorbed by the cotton (cloud) and ask them if they can see their “clouds” filling with water. Ask them to raise their clouds above the water. Ask them again how their clouds feel (heavy or light? warm or cold?) Ask what is happening? (The water is dripping from the cloud.) The cloud cannot hold so much water. It is too heavy. What do we call water that falls from clouds? We call it rain. And what is happening to the rain? It is falling back into the river/ocean/puddle? Children may illustrate a copy of this story. Ask them to each share their illustrated stories with their families.

Extend this lesson to talk about how we don’t drink directly from puddles or rivers because the water is not clean. We filter water to take out impurities so that we will not get sick. Explain that many people in the world do not have access to water other than water from rivers or streams. This water needs to be filtered to be clean and healthy.



# The Story of Randy the Raindrop

**R**andy, the raindrop, lived in a cloud.

The heat from the sun made him grow bigger and bigger.

He got so big that one day, he fell from the sky!

Randy noticed more raindrops falling.

“Isn’t this fun?” they were calling.

Then onto a leaf with a splash Randy fell.

What happened to him next is strange to tell.

Randy was made of water, and part of him went to make a tree grow.

The rest of him went into a puddle, and then the sun came out and shone on the ground. The sun warmed Randy, and he started to change.

He became water vapor, which means little tiny drops of water too small to see. These tiny vapor drops floated up into the sky and found a home back in a cloud.

Randy was a raindrop once more as the sun was warming him and making him bigger and bigger.

Soon, Randy fell through the floor of the cloud as a raindrop again.



## Concept: The Water Cycle: Condensation (without electricity)

**Grades: K-2**

**Setting: Outdoors**

**Materials:** A rotisserie chicken container, small cup of water (Note: some grocery stores will donate these containers to teachers)

**Activity:** Use the chicken container with a small cup of water placed inside to represent a lake or pond. Place the closed container outside in a sunny location.

Check periodically.

Over time, condensation will form inside the clear lid.  
Discuss observations.

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## Concept: The Water Cycle: Condensation (with electricity)

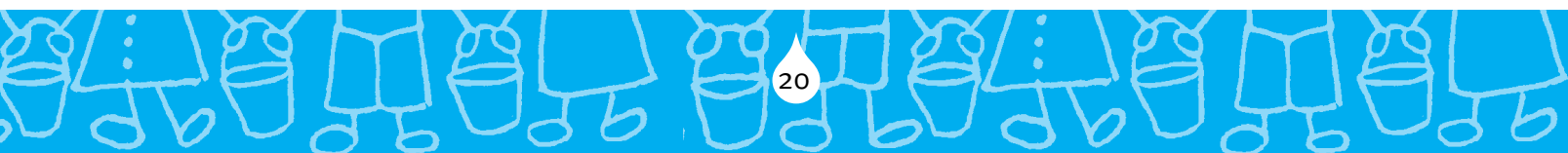
**Grades: K-4**

**Setting: Outdoors**

**Materials:** Hot plate, pot with water, pan with ice cubes

**Activity:** Water moves in a cycle and has different states (vapor, liquid, solid). Water evaporates into the air, rises to form clouds, cools and becomes precipitation, and again evaporates into the air...)

- Review water cycle understanding with the Water Cycle song (see Activity #5).
- Emphasize this cycle is never-ending (talk about why that is a good thing).
- Boil water on a hot plate in the classroom. Hold a pan filled with ice cubes over the boiling water to demonstrate condensation. Soon water (rain) will begin to drip from the bottom of the pan. Explain that this is what happens when the warm, moist air from the earth goes up into the cold sky. Encourage discussion of children's observations.
- Extend the lesson by talking about water ending up in rivers and streams, and that this is where some people get their drinking water. Explain that this is unclear and not healthy. Explain that the water we get from our faucets has been filtered to make it clean. This can be extended further to explain that if water from a river is filtered properly, then it is clean enough to drink.



## Concept: How Wet is Our Planet?

**Grades: 3-6**

**Setting: Indoors or Outdoors**

**Materials:** Bucket, five gallons of water, tablespoon, three clear jars, eye dropper, world map or globe

**Activity:** The earth is known as the “water planet” because approximately 70% of its surface is water. The earth has the same amount of water now as it did when it was first created. Have children identify on a map/globe the areas covered by water. Fill an empty bucket with five gallons of water.

Imagine that this is all the water on Earth including the water that is contained in the atmosphere, glaciers, ice caps, lakes, rivers, oceans and streams. Take out 25 tablespoons of water from the five gallon bucket and place it in a clear jar labeled “freshwater.” This represents all the fresh water on earth. Now, all the water in the bucket represents all of the salt water on Earth. Ask the children to discuss the difference between salt and freshwater (salt-water is not drinkable, freshwater is). Take out 8 tablespoons from the fresh water supply and place it in another clear jar labeled “groundwater.” This represents all the groundwater on Earth. Discuss with the children that groundwater is water that is located underground in the cracks and spaces between sand and gravel. Take out 25 drops with an eye dropper and put it in a jar labeled “rivers and lakes.” This water represents all the water in rivers and lakes on Earth. Now we have removed the water contained in groundwater, rivers and lakes from the world’s “freshwater” container. The “freshwater container” now represents all the water contained in the atmosphere (clouds, rain, and snow) and all the water in the planet that is frozen (polar ice caps and glaciers). Ask the children if it is easy to make a trip to Antarctica to chip away a chunk of ice, then melt it to get a drink. Ask if it is easy to collect a cloud or wait for it to rain in order to get a drink. Ask the children to compare the amount of drinkable water to the amount of undrinkable water.

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## Concept: What are natural disasters?

**Grades: K-6**

**Setting: Indoors or Outdoors**

**Materials:** Vocabulary list, photos or video of disasters to visualize hurricane, drought, earthquake, tsunami

**Activity:** Question the children to determine what they know about the following: hurricane, drought, earthquake, tsunami. Use photos or videos to help the group determine a definition for each (see both photo/video links in reference list and vocabulary list.) Gather the children in a circle, recall the game Duck, Duck, Goose – explain what to do if they are not familiar with this game. Use the words (water, hurricane, drought, earthquake, tsunami) as a child circles on the outside of the circle. The child taps each child in the circle saying “water, water, water, hurricane.....” When tapped with “water”, a child remains sitting, but if tapped with (the disaster word), the child stands and chases the tapper around the circle, trying to tag them before s/he reaches the vacant seat. (If the chaser tags the tapper first, then the tapper remains in that role again.)

## Concept: Using Water

**Grades: K-6**

**Setting: Indoors or Outdoors**

**Materials:** Paper, pencils, Family Use Survey

**Activity:** Ask the children how they use water every day. Using the Family Use Water Survey in the Reference List, ask the children to keep track of how their family uses water for one week.

When the children bring their water use surveys back to school, discuss the results. Where do you use most of the water in your house? Is there any way to use less water in your house?

Extensions:

- To transfer the discussion to water in other countries, ask questions to get the children thinking about whether or not all people have clean water to drink, water for washing, water in their homes, water to play in, etc.
- Have the children share ideas and/or create a plan for dealing with no running water in their homes.
- Create a Water Graffiti Wall or mural using important water words and illustrations
- Survey results can connect well with Math lessons on graphing and percentages

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## Concept: Be Responsible – Conserve! Grades: K-6

**Setting: Indoors or Outdoors**

**Materials:** Conservation tip sheets (from Reference List), paper, poster board, art supplies

**Activity:** Because water for human consumption is limited, conservation is a positive way in which to support others. Discuss water conservation using the Tip Sheets (see Reference List). Create posters, fliers, other items to share your conservation knowledge with others. Share conservation information by creating a school awareness campaign using items developed by the class. Campaigns could also include speeches, powerpoints, radio or internet promos.




















# Family Use Water Survey

How do you and your family use water?

	# of times each day	Weekly total	Estimated water use
<b>Washing hands</b> (1 gal.)			
<b>Taking a shower</b> (25 gal.)			
<b>Taking a bath</b> (40 gal.)			
<b>Brushing teeth</b> (1 gal.)			
<b>Getting a drink</b> (0.25 gal.)			
<b>Washing dishes-by hand</b> (10 gal.)			
<b>Running the dishwasher</b> (15 gal.)			
<b>Flushing the toilet</b> (1.6 gal.)			
<b>Washing a load of clothes</b> (40 gal.)			
<b>Watering the lawn</b> (300 gal.)			
<b>Washing the car</b> (50 gal.)			
<b>Other</b> (specify)			



# Water Conservation Tips

-  Turn off the water while brushing your teeth.
-  When you are washing your hands, don't let the water run while you lather up.
-  Take short showers (5 minutes) instead of baths.
-  Wash your laundry with only full loads.
-  Repair leaky faucets and turn off your faucets tightly so they don't drip.
-  Repair leaky toilets.
-  Be conscious of how often you flush the toilet.
-  Don't run water continuously while hand washing dishes, washing fruits & vegetables; use a partly filled sink and a quick rinse afterward.
-  Run your dishwasher only when it is full.
-  Keep a pitcher of water in the refrigerator, instead of running the tap for a cold glass of water.
-  Check outside hoses, faucets, sprinklers for leaks.
-  Set your sprinklers so they water only the lawn, not sidewalks, streets or your house.
-  Water your lawn in the cool morning to avoid evaporation.
-  Share water conservation tips with your family, friends and classmates.
-  Collect rainwater in a large pail or rain barrel to use for watering your plants.

## Concept: Water Has Many Uses

**Grades: K-6**

**Setting: Indoors**

**Materials:** Paper, cardboard or posterboard, magazines, glue, and scissors,  
Book titled *Water* by Frank Asch

**Activity:**

Read the book *Water* by Frank Asch as a lead-in for making water creations.  
Children may create

- Water is... pictures using watercolors
- Collages with different shades of blue
- Collages or collections of pictures, images, drawings that show the many ways people use water
- Collage of things that need water to live
- A water-themed picture frame

Allow students the opportunity to explain their creations.

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## Concept: Our Faucet Water is Clean!

**Grades: K-6**

**Setting: Outdoors**

**Materials:** Buckets, scoops, obstacles, water, jugs/water bottles, open space for games

**Activity:**

Play games to highlight the difficulty some people have getting clean water.

-Obstacle Course: teams of two follow a path through cones that support signs with the shape/name of countries that WMI works in, each spot has a receptacle for water, one member of the team carries a bucket of water and the other carries a scoop. The team deposits a scoop of water at each location before moving on to the next country. The course could have obstacles to move around (barrel) or things to step over (board) or walk on (balance beam). Rather than having winners, we suggest timing each team and posting all the times. All participants are winners!

-Relay Races: carrying gallon jugs or buckets of water (no tops), winner is first team to finish the race with the most amount of water still in the container, could use 2 liter or 1 liter bottles for younger children or cup measures- emphasis on not “spilling a precious drop.”



## Concept: Water Haul

**Grades: 3-6**

**Setting: Outdoors**

**Materials:** 4 – one gallon buckets or jugs, 2 – five gallon buckets, water, tape measure or yardstick

**Activity:** In many developing countries, water is not easily available. People often walk long distances (approximately 4 miles) to get water from rivers, streams, or ponds. Sometimes the water carriers, usually women and girls, make several trips every day and carry as much as 40-50 pounds of water on each trip. Often the water they are carrying is not safe to drink. At the water source, people may be washing clothes, bathing, watering animals, and more. All of these activities make the water unsafe to drink.  
<http://www.safewaterscience.org>

Have the children measure out a 250 foot length outdoors. Have the children form two teams. Give each team a gallon bucket or jug that is filled with water. Have each child on each team carry the water the length of 250 feet and back to the starting point. Note: this is not a “running race” but rather a “thinking race” – a time to think about how they feel carrying the water and what it would be like to have this as a daily job for their family. Discuss. Repeat the race with each child carrying 2 gallons. Discuss again. Take volunteers to carry a 5 gallon bucket. Discuss the difference. Remind the children that this water haul would have to be repeated 40 or more times just to equal the average 4 mile walk done in many countries. (5,280 feet = 1 mile)

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## Concept: Can Dirty Water be Made Clean? Grades: K-6

**Setting: Indoors or Outdoors**

**Materials:** Chart paper, markers, clear two-liter bottles, scissors, cotton balls, sand, coffee filters, marbles, gravel, dirty water, other filtering materials suggested by the students

**Activity:** Brainstorm ideas on how to get clean drinking water. If you don't have access to clean drinking water, what can you do? Filtration is a process where polluted water is poured through filters. As the water trickles through different layers of soil, the pollutants become attached to the soil particles. The water keeps draining and is clean after it moves through all the layers.

Give each group a clear two liter bottle already cut in half. Turn the top portion upside down and set it into the bottom portion of the bottle, lay a coffee filter down first then follow that with layers of cotton, sand, gravel, etc. Pour dirty water through the filtering material. Have students examine the filter and determine how effective each is in cleaning the dirty water. Have students discuss what choices they made and why. What were their results?

NOTE: Even if water looks clean, it may still be unsafe due to unseen bacteria. WMI uses garnet and anthracite in filtration but also uses chlorine to deal with bacteria.



# Concept: Washing Our Hands Can Help Keep Us Healthy

**Grades: K-3**

**Setting: Indoors**

**Materials:** Salt shaker filled with clean water, soap, a sink that has warm water, paper towels, trash can

**Activity:** Germs are everywhere, even though we cannot see them because they are so tiny. Germs can make us sick. Ask children how we can kill the germs on our hands (looking for answers “washing hands” or “using hand sanitizer”). Explain that hand sanitizer is great when there is nowhere close by to wash our hands, but the best way to kill germs is with soap and warm water. Sprinkle water on children’s hands using the salt shaker. Explain that we’re pretending the water on their hands is actually germs that come out of our noses and mouths when we cough or sneeze. Ask them to touch something, what happened (the water from the salt shaker, or the “germs”, are on the object that was touched). This is how germs get on door knobs, light switches and tables, etc. Ask what would happen when another person touched the place where the “germs” are. The germs may get on that person! Talk about what germs do – make us sick! Ask how we can kill these germs before they make us sick (wash with soap and warm water).

- Make a list of when we should wash hands (after coughing, sneezing, or blowing our noses; after using the restroom; before eating, etc.). This list can be posted in the classroom.
- Talk about the correct way to wash hands using warm running water; rub hands together for at least 10 seconds with soap (sing the “ABC” song to know how long to rub your hands together); clean underneath the fingernails; rinse in running water, and dry, use your paper towel to turn off the faucet then place the towel in the trash can.
- Ask each child to find times during the day to practice proper hand washing techniques.
- Talk about what would happen if we lived in a place where there was no clean water available for proper hand washing (and bathing). Children may be able to reach the understanding that people who live in places without access to clean water are more likely to get sick from germs.



## Concept: Down the Drain Charades

**Grades: K-6**

**Setting: Indoors**

**Materials:** Index cards, a sharpie or other marker

**Activity:** In small groups, have the children identify ways in which they use water at home. Have the children write down their ideas. When the groups have completed their task, determine which uses most groups had on their lists. Write the following facts below on index cards. Have each group draw an index card and act it out. Others guess the water use and how many gallons of water are used.

1. Washing face or hands: 1 gallon
2. Taking a shower (standard shower head): 50 gallons
3. Taking a shower (low-flow shower head): 25 gallons
4. Taking a bath: 40 gallons
5. Brushing teeth (water running): 2 gallons
6. Brushing teeth (water turned off): 1 gallon
7. Flushing the toilet (standard flow toilet): 5 gallons
8. Flushing the toilet (low flow toilet): 1-1/2 gallons
9. Getting a drink: 1 gallon
10. Washing dishes by hand: 10 gallons
11. Running a dishwasher: 15 gallons
12. Doing a load of laundry: 30 gallons
13. Watering a lawn: 300 gallons
14. Washing a car: 50 gallons

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## Concept: Global Awareness Bingo

**Grades: 3-6**

**Setting: Indoors**

**Materials:** Bingo Cards, Bingo call list, Bingo markers

**Activity:** Make copies of Bingo cards. Pass out Bingo markers, pebbles, or markers of your choice. Read out each fact and have children cover with markers. Play until a child has "BINGO." The win may be vertical, horizontal, diagonal or full coverage – teacher's choice.  
NOTE: This BINGO presents facts related to water and the world water crisis. All cards have the same facts but in different locations. The object here is not to know the answers to questions but rather to be presented with important facts and to learn them.



## Bingo Call Sheet

- All living creatures, including humans, need water to survive
- A person can live weeks without food, but only about three days without water
- Less than 1% of the world's fresh water is readily accessible for direct human use
- Many people living in other countries die because the water they drink makes them sick
- Many people in the world suffer from health problems caused by drinking dirty water
- In many parts of the world, fresh water is being used faster than it can be replaced
- 2.6 billion people in the world lack basic sanitation resources
- Water can travel from one part of the world to another through the water cycle
- A person needs 15 to 19 liters of clean water per day to survive
- Almost two in every three people who need safe drinking water survive on less than \$2 a day
- Poor people often pay more for water than wealthy people living in the same city
- Millions of women and children spend several hours a day collecting water
- Every 20 seconds, a child dies from a water-related disease
- The human body is more than 60 percent water
- All people need access to safe drinking water and improved sanitation conditions
- 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
- 884 million people lack access to safe water supplies
- Salt water accounts for more than 97 percent of the water on Earth
- Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater
- 3.9 trillion gallons of water are consumed in the United States per month
- Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries

## Lessons in a Bucket Bingo Card

All living creatures, including humans, need water to survive	A person can live weeks without food, but only about three days without water	Less than 1% of the world's fresh water is readily accessible for direct human use	Many people living in other countries die because the water they drink makes them sick	Many people in the world suffer from health problems caused by drinking dirty water
In many parts of the world, fresh water is being used faster than it can be replaced	2.6 billion people in the world lack basic sanitation resources	Water can travel from one part of the world to another through the water cycle	A person needs 15 to 19 liters of clean water per day to survive	FREE SPACE
Almost two in every three people who need safe drinking water survive on less than \$2 a day	Poor people often pay more for water than wealthy people living in the same city	FREE SPACE	Millions of women and children spend several hours a day collecting water	Every 20 seconds, a child dies from a water-related disease.
The human body is more than 60 percent water	All people need access to safe drinking water and improved sanitation conditions	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	884 million people lack access to safe water supplies
Salt water accounts for more than 97 percent of the water on Earth.	Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater	3.9 trillion gallons of water are consumed in the United States per month	FREE SPACE	Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries

## Lessons in a Bucket Bingo Card

3.9 trillion gallons of water are consumed in the United States per month	2.6 billion people in the world lack basic sanitation resources	All living creatures, including humans, need water to survive	In many parts of the world, fresh water is being used faster than it can be replaced	A person can live weeks without food, but only about three days without water
FREE SPACE	Millions of women and children spend several hours a day collecting water	Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries	Poor people often pay more for water than wealthy people living in the same city	Every 20 seconds, a child dies from a water-related disease.
The human body is more than 60 percent water	Salt water accounts for more than 97 percent of the water on Earth.	FREE SPACE	Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater	Almost two in every three people who need safe drinking water survive on less than \$2 a day
884 million people lack access to safe water supplies	Many people living in other countries die because the water they drink makes them sick	Less than 1% of the world's fresh water is readily accessible for direct human use	All people need access to safe drinking water and improved sanitation conditions	FREE SPACE
A person needs 15 to 19 liters of clean water per day to survive	Water can travel from one part of the world to another through the water cycle	Many people in the world suffer from health problems caused by drinking dirty water	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

## Lessons in a Bucket Bingo Card

3.9 trillion gallons of water are consumed in the United States per month	2.6 billion people in the world lack basic sanitation resources	All living creatures, including humans, need water to survive	In many parts of the world, fresh water is being used faster than it can be replaced	FREE SPACE
Millions of women and children spend several hours a day collecting water	FREE SPACE	The human body is more than 60 percent water	Poor people often pay more for water than wealthy people living in the same city	Every 20 seconds, a child dies from a water-related disease.
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.	Many people in the world suffer from health problems caused by drinking dirty water	Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater	Almost two in every three people who need safe drinking water survive on less than \$2 a day
884 million people lack access to safe water supplies	Many people living in other countries die because the water they drink makes them sick	Less than 1% of the world's fresh water is readily accessible for direct human use	All people need access to safe drinking water and improved sanitation conditions	A person can live weeks without food, but only about three days without water
A person needs 15 to 19 liters of clean water per day to survive	Water can travel from one part of the world to another through the	FREE SPACE	People living in water rich regions can affect how people use water	Conserving water helps to preserve the planet's natural resources

## Lessons in a Bucket Bingo Card

FREE SPACE	2.6 billion people in the world lack basic sanitation resources	Every 20 seconds, a child dies from a water-related disease.	In many parts of the world, fresh water is being used faster than it can be replaced	A person can live weeks without food, but only about three days without water
Water can travel from one part of the world to another through the water cycle	Millions of women and children spend several hours a day collecting water	Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries	FREE SPACE	All living creatures, including humans, need water to survive
The human body is more than 60 percent water	Salt water accounts for more than 97 percent of the water on Earth.	Poor people often pay more for water than wealthy people living in the same city	Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater	Almost two in every three people who need safe drinking water survive on less than \$2 a day
884 million people lack access to safe water supplies	Many people living in other countries die because the water they drink makes them sick	Less than 1% of the world's fresh water is readily accessible for direct human use	All people need access to safe drinking water and improved sanitation conditions	3.9 trillion gallons of water are consumed in the United States per month
A person needs 15 to 19 liters of clean water per day to survive	FREE SPACE	Many people in the world suffer from health problems caused	People living in water rich regions can affect how people use water	Conserving water helps to preserve the planet's natural resources

## Lessons in a Bucket Bingo Card

Less than 1% of the world's fresh water is readily accessible for direct human use	Water can travel from one part of the world to another through the water cycle	Many people in the world suffer from health problems caused by drinking dirty water	Salt water accounts for more than 97 percent of the water on Earth.	All people need access to safe drinking water and improved sanitation conditions
A person needs 15 to 19 liters of clean water per day to survive	A person can live weeks without food, but only about three days without water	Millions of women and children spend several hours a day collecting water	All living creatures, including humans, need water to survive	FREE SPACE
Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater	People living in water rich regions can affect how people use water in water-deprived areas	FREE SPACE	2.6 billion people in the world lack basic sanitation resources	In many parts of the world, fresh water is being used faster than it can be replaced
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884 million people lack access to safe water supplies	FREE SPACE	Every 20 seconds, a child dies from a water-related disease.	The human body is more than 60 percent water	3.9 trillion gallons of water are consumed in the United States per month

## Lessons in a Bucket Bingo Card

3.9 trillion gallons of water are consumed in the United States per month	2.6 billion people in the world lack basic sanitation resources	All living creatures, including humans, need water to survive	In many parts of the world, fresh water is being used faster than it can be replaced	Despite all the water in the world, only a small amount is available to humans and other creatures that depend on freshwater
The human body is more than 60 percent water	Millions of women and children spend several hours a day collecting water	FREE SPACE	Poor people often pay more for water than wealthy people living in the same city	Every 20 seconds, a child dies from a water-related disease.
FREE SPACE	Salt water accounts for more than 97 percent of the water on Earth.	Protecting freshwater resources is difficult because many rivers, lakes, and underground aquifers cross national boundaries	A person can live weeks without food, but only about three days without water	Almost two in every three people who need safe drinking water survive on less than \$2 a day
884 million people lack access to safe water supplies	Many people living in other countries die because the water they drink makes them sick	Less than 1% of the world's fresh water is readily accessible for direct human use	All people need access to safe drinking water and improved sanitation conditions	FREE SPACE
A person needs 15 to 19 liters of clean water per day to survive	Water can travel from one part of the world to another through the water cycle	Many people in the world suffer from health problems caused by drinking dirty water	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

## Concept: Create Your Own Character

**Grades: 3-6**

**Setting: Indoors**

**Materials:** Paper, pencil, WMI materials about the water crisis, possibly a computer if research is needed, materials for the presentation method (book, drawing, script, etc)

**Activity:** Access to clean, safe water is a major problem in many countries. The lack of safe water may result from many causes including natural disasters (hurricane, tsunami, earthquake, monsoon), weather/drought, poverty, lack of water sources, wars and political unrest, etc.

Select one: create a problem solving team OR a rescue hero OR a superhero to address the water crisis. Consider the following information, ask yourself questions, think BIG!

Problem solving team - Who would you include, what skills would they need, what jobs could they do, how would your team approach the water crisis?

Rescue hero - Firefighters, police officers, EMT are examples of real life rescue heroes. What would your rescue hero be like, what is he/she good at, what would your hero look like, would special tools or talents be required to attack the water crisis?

Superhero - Comic books and media are full of superheroes with extraordinary powers to solve problems. What would a water superhero look like, what powers would the hero have, how could it solve the water crisis?

CREATE A CHARACTER can be shared in an oral presentation or video, through a book, drawings, Powerpoint - let your talents and imagination be your guide. This can also be done with a partner or in a small group format.

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## Concept: Poetry with Water

**Grades: 3-6**

**Setting: Indoors**

**Materials:** Paper, pencils

**Activity:** Haiku is a form of Japanese poetry written in 17 syllables divided into 3 lines of 5, 7, 5 and is usually on the subject of nature.

Example 1:	Line 1 (5 syllables)	No more walking miles
	Line 2 (7 syllables)	Clean, pure Water Missions system
	Line 3 (5 syllables)	Life-saving water
Example 2:	Line 1 (5 syllables)	River flowing fast
	Line 2 (7 syllables)	Mud, rocks, branches swept along
	Line 3 (5 syllables)	Nothing safe to drink

Write your own water Haiku.

May display on bulletin board or share in book form with your school.



## Concept: Perspective in Poetry

**Grades: 3-6**

**Setting: Indoors**

**Materials:** Paper, pencils, WMI photo cards

**Activity:** Perspective is your point of view. Using one of the Water Missions pictures, write a poem from the perspective of the child in the picture. You can also write about your perspective of the water situation or the contribution of Water Missions.

Cinquain is a short poem consisting of five usually unrhymed lines containing two, four, six, eight and two syllables.

Example:

Earthquake  
Shaking, trembling  
Buildings fall and crumble  
Destruction everywhere I look  
Haiti

Think of sharing by illustrating, creating a book or a bulletin board display.

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## Concept: Rain Painting

**Grades: K-3**

**Setting: Indoors or Outdoors**

**Materials:** White construction paper, water, blue paint or food coloring, eyedroppers (one for each child)

**Activity:** Make a “rain painting”. Put blue food coloring or some blue paint in water. Use white construction paper. Take an eyedropper and get some blue water in it. Drip it onto the paper to see what effects you can get. Don’t get too carried away, or the entire thing becomes a sodden mess. It is best to put some newspapers underneath the construction paper if doing this activity indoors to prevent things becoming overly wet. Once paintings are dry, each child can select a water fact to print onto his/her painting for display.



## Concept: We can help – WMI

**Grades: K-6**

**Setting: Indoors or Outdoors**

**Materials:** Water bottles/jugs/buckets, stickers, greeting cards, markers, other decorating items

**Activity:** Have children decorate water bottles/jugs/buckets to be used in fundraising for Water Missions International.

Share information about the work of WMI (see website: [www.watermissions.org](http://www.watermissions.org)) with the group

Hold contests for best designs and creativity

- Show a WMI video or invite a speaker from Water Missions to join your group.
- Plan to collect donations – possibilities include “penny wars” between classes, donations collected & brought in by the children, taking up collections at a culminating event, etc.

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## Concept: Name that Food Charades

**Grades: 3-6**

**Setting: Indoors or Outdoors**

**Materials:** Index Cards with tasks listed in Activity section already written on them

**Activity:** Explain how Charades is played. Divide the children into small groups. Have each group draw an index card task and act it out. The other groups are to guess what food is being grown/produced and how many gallons of water are used during this growth/production.

- Growing/production of a chicken = 400 gallons of water
- Growing/production of french fries = 6 gallons of water
- Growing/production of a single orange = 14 gallons of water
- Growing/production of watermelon = 100 gallons of water
- Growing/production of a loaf of bread = 150 gallons of water
- Growing/production of a tomato = 3 gallons
- Growing/production of almonds = 12 gallons
- Growing/production of an egg = 120 gallons

Statistics provided by the EPA (Environmental Protection Agency) of the US Government  
2007





# Concept: Your Water Supply Game

**Grades: 3-6**

**Setting: Indoors**

**Materials:** Your Water Supply Directions, YWS Group Sheet & Country Cards (included in Reference List), counters (lima beans, pennies, markers of some sort for counting)

**Activity:** Use the Simulation Game sheets (included) to prepare for and conduct this activity. Pairs or small groups of students experience using water that is available to them in the US/other countries and discuss their own water priorities and the problems they may face in their chosen country. With the YWS Group Sheet as a guide, the students design how each bean/marker (representing a single gallon of water) will be used. If problems arise with a lack of or very limited water, then students brainstorm solutions to these problems. In large group, each team presents its findings and shares how they might feel living daily with these limitations.

## Game Directions

**Purpose:** To investigate the amount of water available in different countries around the world. To look at daily family functions that involve water and determine how to deal with challenges that may arise.

**Materials:** Sheet containing water distribution facts and daily water use facts  
Markers that will each represent one gallon of water, number differs for each country  
Globe or world map

**Procedure:** Form student groups of 4. Each group will represent a family of 4 from a designated country. Groups may be smaller if needed, but will still represent a family of 4

The teacher/leader is the “Global Water Supply.” Each group selects a country designation card which also includes the amount of water allocated per family per day in that country.

Groups decide who/how to handle the roles of recorder and reporter for their group. When all groups have received their cards, then each group announces its country name, location, and designated amount of water. Then the group collects the corresponding number of markers.

Using the fact sheet and the restrictions noted there, the group first will determine the order of importance for each water use from the most important to survival to the least important. With this in mind then they proceed to assign markers for each use and record their choices.

In addition, the group should record any challenges or problems they meet during this process and prepare to join in on the discussion questions.

# Your Water Supply Group Sheet

## Global Water Distribution Facts

### Gallons of Water per Family per day

USA - 176  
Canada - 209  
Honduras - 9  
Costa Rica - 23  
Kenya - 13  
Mozambique - 3  
Egypt - 40  
Sweden - 31

### Daily Water Uses in the Home (add others as you wish)

Flushing toilets  
Brushing teeth  
Bathing/showering  
Cooking  
Drinking  
Washing dishes  
Cleaning  
Watering lawn  
Watering vegetable garden  
Washing car  
Washing pet animals  
Washing clothes  
Gardening

## RULES TO FOLLOW:

- Place 1 marker aside to represent polluted water. This should not be used unless absolutely necessary.
- Minimal Life Requirements per family include:  
DRINKING = 3 gallons,  
COOKING = 2  
BATHING = 3  
Consider this.
- Use your water supply as efficiently as possible.

## DISCUSSION QUESTIONS:

- Was your group able to perform all the activities listed on the Use chart?  
Why or why not?
- How did you rank the daily uses of water?
- Based on what you have learned in this activity, which countries use the most water? Why do you think the available water amounts are so different from country to country?

## Your Water Supply Country Cards

Cut into eight cards prior to use.

USA  
176 gallons

Canada  
209 gallons

Honduras  
9 gallons

Costa Rica  
23 gallons

Kenya  
13 gallons

Mozambique  
3 gallons

Egypt  
40 gallons

Sweden  
31 gallons

# Concept: Water Facts Game

**Grades: 2-4**

**Setting: Indoors**

**Materials:** Question & Answer Game, Directions & Game Cards (next page)

**Activity:** Use this game to review key understandings about water and the world water crisis. The multiple choice game cards present three alternatives for each fact presented. This game can be played with individual contestants but in the classroom setting is more appropriate and more fun when done with small teams (2-4 children).

## Real Water Q & A Game — Multiple Choice

### Directions

Prior to Game: Use blank index cards to make three answer cards for each team.

Label them A,B,C.

Designate a caller, a timer, and a scorekeeper.

Directions:

Players form teams (2-4 on each team)

OPTION 1:

For each question called, each team quietly discusses and decides on their answer. When time is called, each team holds up their answer card. All teams with the correct answer score 3 points.

OPTION 2:

One team has the opportunity to answer each question. If correct, they receive the 3 points. If their choice is not correct than the same question moves to the next team with a correct answer receiving 1 point.

Time limits are set by the teacher/leader.

Game ends when all questions have been used.

First place team will be the one having the most points.

All players will be “winners” because they have gained knowledge about water and the world water crisis that they can use to inform others and make a difference in this world.

## Real Water Q & A Game — Multiple Choice

- 1 What percentage of the earth is covered with water? .....answer C  
A. 55 percent B. 36 percent C. 70 percent
- 2 What percentage of the earth's water is fresh water? .....answer A  
A. 3 percent B. 10 percent C. 30 percent
- 3 What percentage of the earth's water is saltwater? .....answer C  
A. 20 percent B. 53 percent C. 97 percent
- 4 What percentage of the human body is composed of water?.....answer B  
A. 35 percent B. 66 percent C. 74 percent
- 5 What number of people lack access to safe water worldwide? .....answer C  
A. 3 million B. 82 million C. 780 million
- 6 What is the weight of one gallon of water .....answer A  
A. 8 lbs. B. 2 lbs. C. 5 lbs.
- 7 What is the average distance that women in developing countries walk to collect water? .....answer C  
A. One city block B. a half a mile C. four miles
- 8 What is the amount of water that meets the daily needs of one person in a developing country?.....answer B  
A. 2 gallons B. 5 gallons C. 20 gallons
- 9 How many gallons of water does the average North American use daily? .....answer C  
A. 5 gallons B. 20 gallons C. 100 gallons
- 10 On average almost 26 percent of the water used in a home is used to do what? .....answer B  
A. Take showers B. flush toilets C. wash dishes
- 11 What is the number of children who die each year from waterborne diseases? .....answer C  
A. 200,000 B. 800,000 C. 1.5 million
- 12 How many children die every minute from water-related illnesses? .....answer A  
A. 3-4 B. 20-25 C. 100-110
- 13 What is the one simple act that can reduce diarrheal disease by 40 percent? .....answer B  
A. Brush your teeth B. Wash your Hands C. Clean your room
- 14 What is the amount of time a person can survive without water? .....answer B  
A. Less than a day B. 3 days to a week C. a month to 6 weeks
- 15 Where is the headquarters for Water Missions International located? .....answer A  
A. Charleston, SC B. Washington, DC C. New York, NY

- 16 What is the amount of water purified per minute by a Water Missions Living Water Treatment System?  
A. 1 gallon      B. 4 gallons      C. 10 gallons .....answer C
- 17 Water Missions International has served in how many countries worldwide? .....answer C  
A. 3      B. 25      C. 49
- 18 What is the source of energy for the hydrologic or water cycle? .....answer A  
A. Sun      B. sky      C. stars
- 19 What is the lack of precipitation for a long period of time called? .....answer C  
A. Tsunami      B. rain forest      C. drought
- 20 What is the formulation and application of measures designed to protect public health called?  
A. Irrigation      B. sanitation      C. pollution.....answer B
- 21 What chemical is added to water to destroy unseen bacteria? .....answer C  
A. Bromine      B. Fluoride      C. Chlorine
- 22 What material is used in the LWTS to filter dirty water? .....answer A  
A. Garnet      B. Cotton      C. Charcoal
- 23 Who began Water Missions International? .....answer C  
A. Bob & Betty Smith      B. Joe & Jody Walker      C. George & Molly Greene
- 24 What is another name for all the “gunk” that floats in our water?  
A. Chlorine      B. Turbidity      C. Rainwater .....answer B
- 25 What country received the first water treatment system designed by George Greene? .....answer B  
A. Uganda      B. Honduras      C. Haiti
- 26 What is the weight of one LWTS (water treatment system)? .....answer A  
A. 750 LBS      B. 1000 LBS      C. 10,000 LBS
- 27 What do we call “protecting & preserving” our natural resources? .....answer B  
A. condensation      B. conservation      C. consumption
- 28 Which of the following is NOT a natural disaster? .....answer A  
A. war      B. earthquake      C. tsunami
- 29 What is a deep hole or shaft sunk into the earth to obtain water? .....answer C  
A. pit      B. fountain      C. well
- 30 A “water-conserving” shower would last how long? .....answer B  
A. 10 minutes      B. 5 minutes      C. 20 minutes

# Concept: Reality Water Facts Game

**Grades: 4-6**

**Setting: Indoors**

**Materials:** Jeopardy-style Game – Directions & Open-ended Game Cards (next page)

**Activity:** Use this Jeopardy-style Game to review key understandings about water, the world water crisis and Water Missions International with the students. The leader announces the fact and the student/team comes up with a question that is an appropriate match.

## Water Jeopardy-style Q & A Game

### Directions

Prior to Game:

Copy question sheets #1 & 2 on blue paper

Copy question sheets #3 & 4 on yellow paper

Cut sheets into question cards keeping blue and yellow separated.

2 categories – by color, blue = 3pts (easier), yellow = 5 pts (more difficult)

Directions:

Players form teams (2-4 on each team)

In each round, each Team selects color choice, moderator reads the “answer,” team discusses and announces one agreed upon “question” to match the answer. Must be in question form to score points.

Each team follows this process in turn, accumulating points for correct “questions.”

Time limit may be set by moderator for each discussion time.

Game ends when all “answers” have been used.

First place team will be the one having the most points.

All players will be winners because they have gained knowledge about water and the world water crisis that they can use to inform others and make a difference in this world.



## Reality Water Jeopardy – Game Cards – Sheet 1

A. A place where water is treated to make it safe to drink.

Q. What is a water treatment plant?

A. Lack of precipitation for a long period of time.

Q. What is a drought?

A. On average almost 26% of the water used in a home is used to do this.

Q. What is to flush toilets?

A. The percentage of the human body composed of water. (35, 66, 74)

Q. What is 66%?

A. The percentage of the earth covered with water. (55, 36, 70)

Q. What is 70%?

A. The average number of gallons of water treated in the US for each person each day. (60, 180, 300)

Q. What is 180 gallons?

A. The percentage of the earth's water that is fresh water.

Q. What is 3%?

A. The source of energy for the hydrologic or water cycle.

Q. What is the sun?

A. The chemical symbol for water.

Q. What is H<sub>2</sub>O?

A. The three largest oceans.

Q. What are the Atlantic, Pacific, and the Indian?

## Reality Water Jeopardy – Game Cards – Sheet 2

A. The process by which a vapor becomes a liquid or solid.

Q. What is condensation?

A. The constant circulation of the water from the atmosphere to the land and the oceans and back again.

Q. What is the water or hydrologic cycle?

A. The act of adding water to crops.

Q. What is irrigation?

A. The movement of water down through the earth's surface.

Q. What is infiltration? or percolation?

A. A change in the quality of water that makes it unsuitable for certain uses.

Q. What is pollution?

A. A pit, hole, or shaft sunk into the earth to tap an underground source of water.

Q. What is a well?

A. 97% of the water on earth.

Q. What is saltwater?



## Reality Water Jeopardy – Game Cards – Sheet 3

A. The number of people who lack to safe water worldwide.

(3 million, 82 million, 884 million)

Q. What is 884 million people?

A. The amount of water that meets the daily access needs of one person in a developing country.

(2 gallons, 5 gallons, 20 gallons, 30 gallons)

Q. What is 5 gallons?

A. The weight of one gallon of water.

Q. What is 8 lbs? (8.33 lbs.)

A. The average distance that women in developing countries walk to collect water?

Q. What is 4 miles?

A. The percentage of time daily that household in rural Africa spends fetching water.

Q. What is 26% of their time?

A. The amount of water purified per minute a by a Water Missions Living Water Treatment System.

Q. What is 10 gallons per minute?

A. The number of children who die each year from waterborne diseases.  
(200,000 800,000 1.5 million, 4 million)

Q. What is 1.5 million children per year?

A. The simple act that can reduce diarrheal disease by 40%.

Q. What is washing your hands?

A. The number of children who die every minute from water-related diseases.

Q. What is 3-4 children?

A. The amount of time a person can survive without water.

Q. What is 3 days to a week?

## Reality Water Jeopardy – Game Cards – Sheet 4

A. 1,000 water systems to 49 countries.

Q. What has Water Missions done?

A. The number of people that Water Missions has helped get clean water over the past 10 yrs.

Q. What is more than 2 million?

A. To cause soil to form lumps or masses.

Q. What is flocculation?

A. The science that deals with the promotion and preservation of health.

Q. What is hygiene?

A. The formulation and application of measures designed to protect public health.

Q. What is sanitation?

A. Muddiness created by stirring up meadiment or having foreign particles suspended

Q. What is turbidity?

A. The founders of Water Missions International.

Q. Who are George & Molly Greene?



## Concept: Picture Scavenger Hunt

**Grades: K-6**

**Setting: Indoors**

**Materials:** Photo cards, Individual copies of clue sheet, crayons, pencils

**Activity:** Acquaint students with Water Mission International's work in a variety of countries by using the photo cards to conduct a scavenger hunt. Children can work as individuals or teams. Each child or team should receive a copy of the clue sheet. The object of the hunt is to match each clue to a photo card, either using the color code on the upper left-hand corner with crayons, or using the alphabet code on the upper right-hand corner with pencils.

Once everyone has finished with the hunt, check the children's matches and use this opportunity to discuss water-related elements of the photo (ex. Children walking barefoot on dirt road, type of water source, etc.).

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## Concept: Using What You've Learned

**Grades: K-6**

**Setting: Indoors or Outdoors**

**Materials:** Computer, musical instruments, water CDs, children's poems/songs/art related to water

**Activity:** Prepare and share a culminating activity designed by your group using materials such as a CD of Handel's Water Music, rain sticks, basic rhythm instruments, and water songs, poems, dances, art created by children. These children's creations may reflect their thoughts about -

- the importance of water,
- appreciation for water,
- a personal experience with water,
- water difficulties around the world,
- what it would be like to be a person who lacks clean, safe water,
- how we can make a difference in the world water crisis

Share your presentation with other classes, with your parents or at a PTA meeting.




A



Honduras

Sanitation is non-existent for more than 2.5 billion people around the world. More people have mobile phones than toilets around the world.



A group of approximately ten young children, mostly of African descent, are gathered together, smiling broadly and holding up clear plastic cups filled with water. They are standing in front of a brick building. The children are wearing various colorful clothing, including an orange shirt, a pink shirt, and a green and white striped shirt. The overall mood is joyful and celebratory.

**B**

**Uganda**

**One Living Water™ Treatment System  
cleans 10 gallons of water per minute,  
or over 10,000 gallons of water per day.**





Peru

Having clean water and good sanitation are the first steps out of the cycle of poverty and disease.

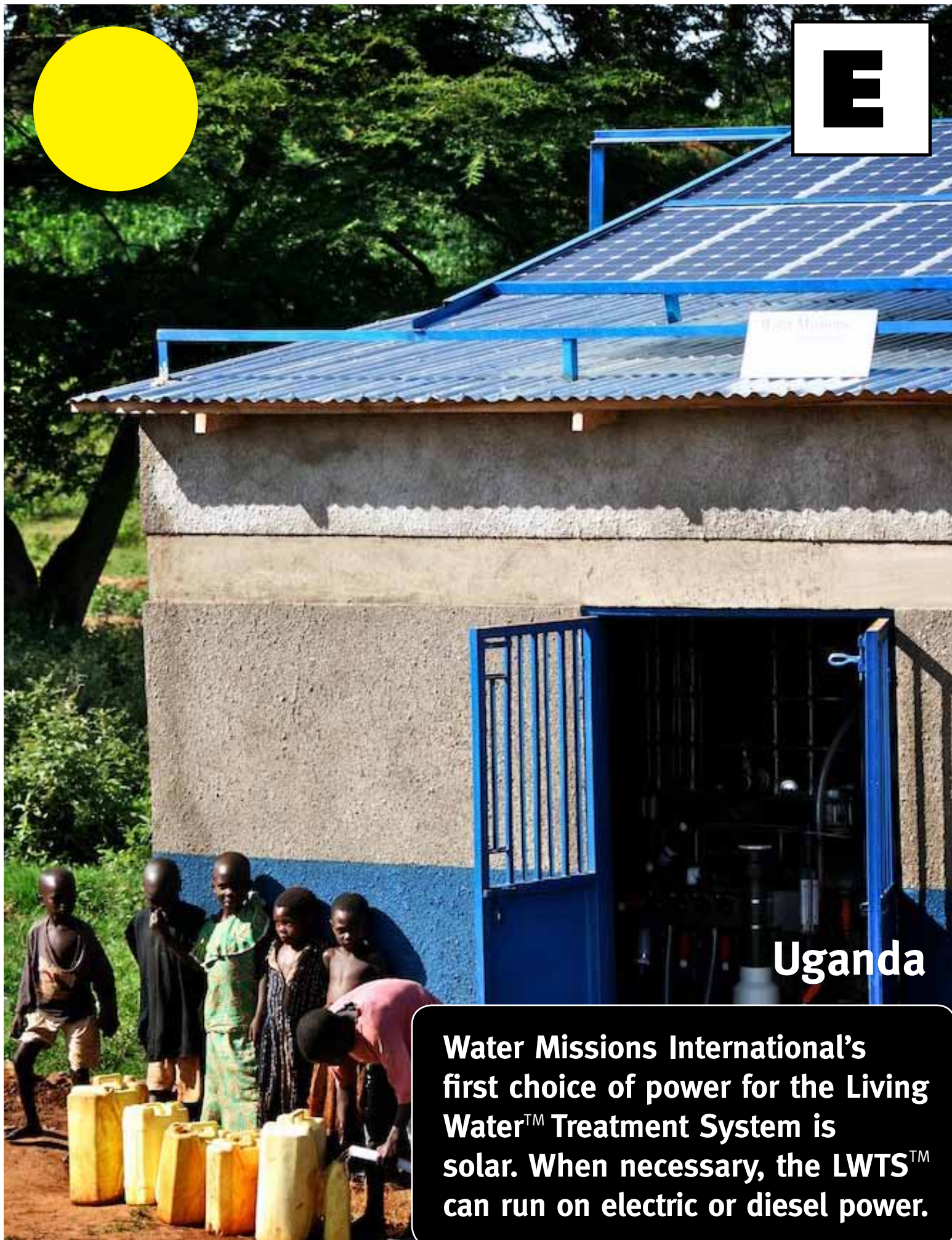


**D**

## Uganda

**5,000 children die every day  
from diarrheal disease.  
That's one every 20 seconds.**





**Uganda**

**Water Missions International's first choice of power for the Living Water™ Treatment System is solar. When necessary, the LWTS™ can run on electric or diesel power.**



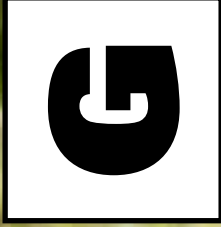
F

Indonesia

Diarrheal disease comes from dirty water. The simple act of washing hands can reduce the number of diarrheal diseases by 40%.



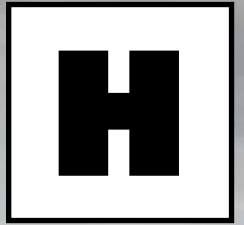




## Honduras

One out of every eight people in the world lack access to safe drinking water.



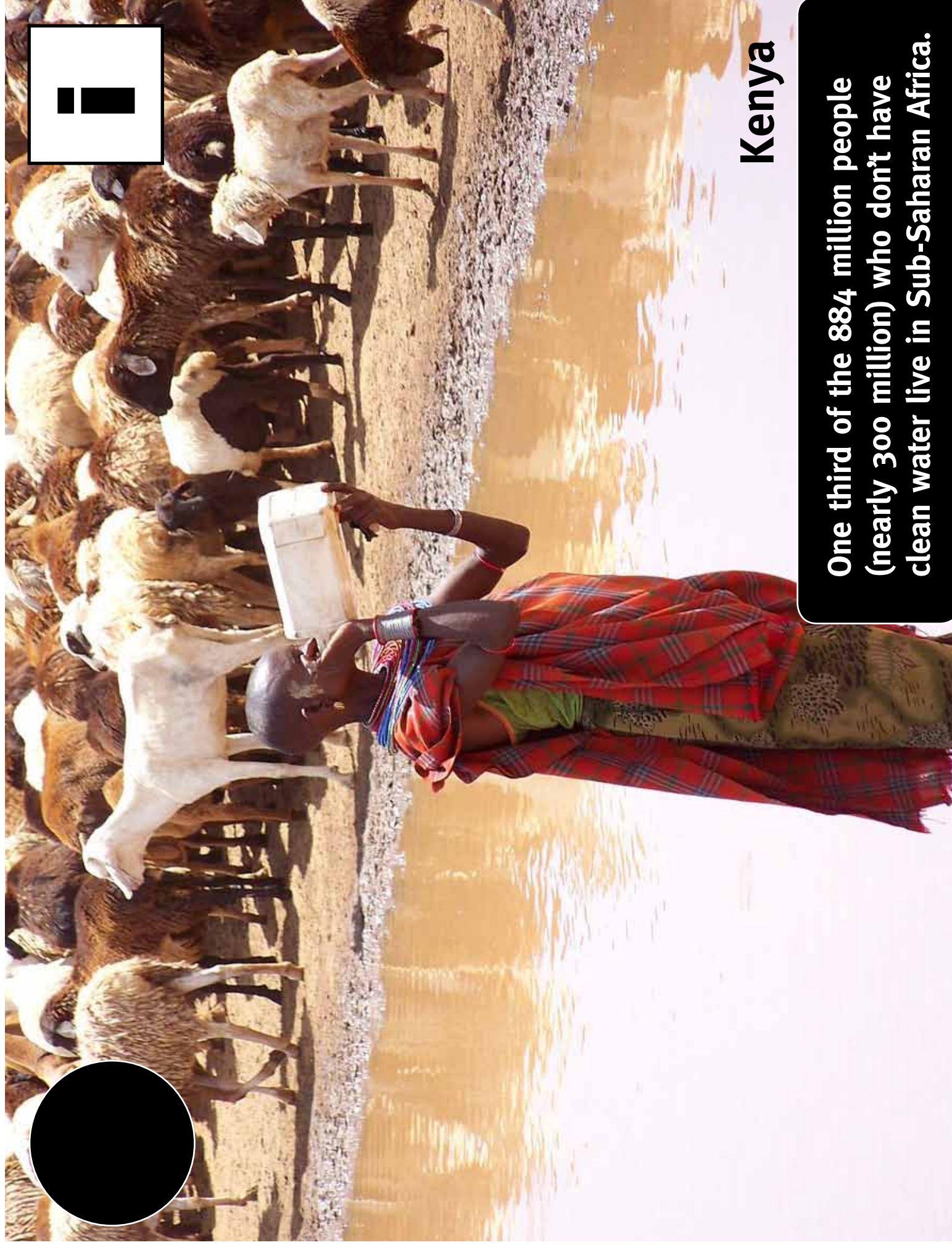


## Kenya

**The average distance women and children walk to collect water is 4 miles per day. The average weight women carry on their heads is 44 pounds.**



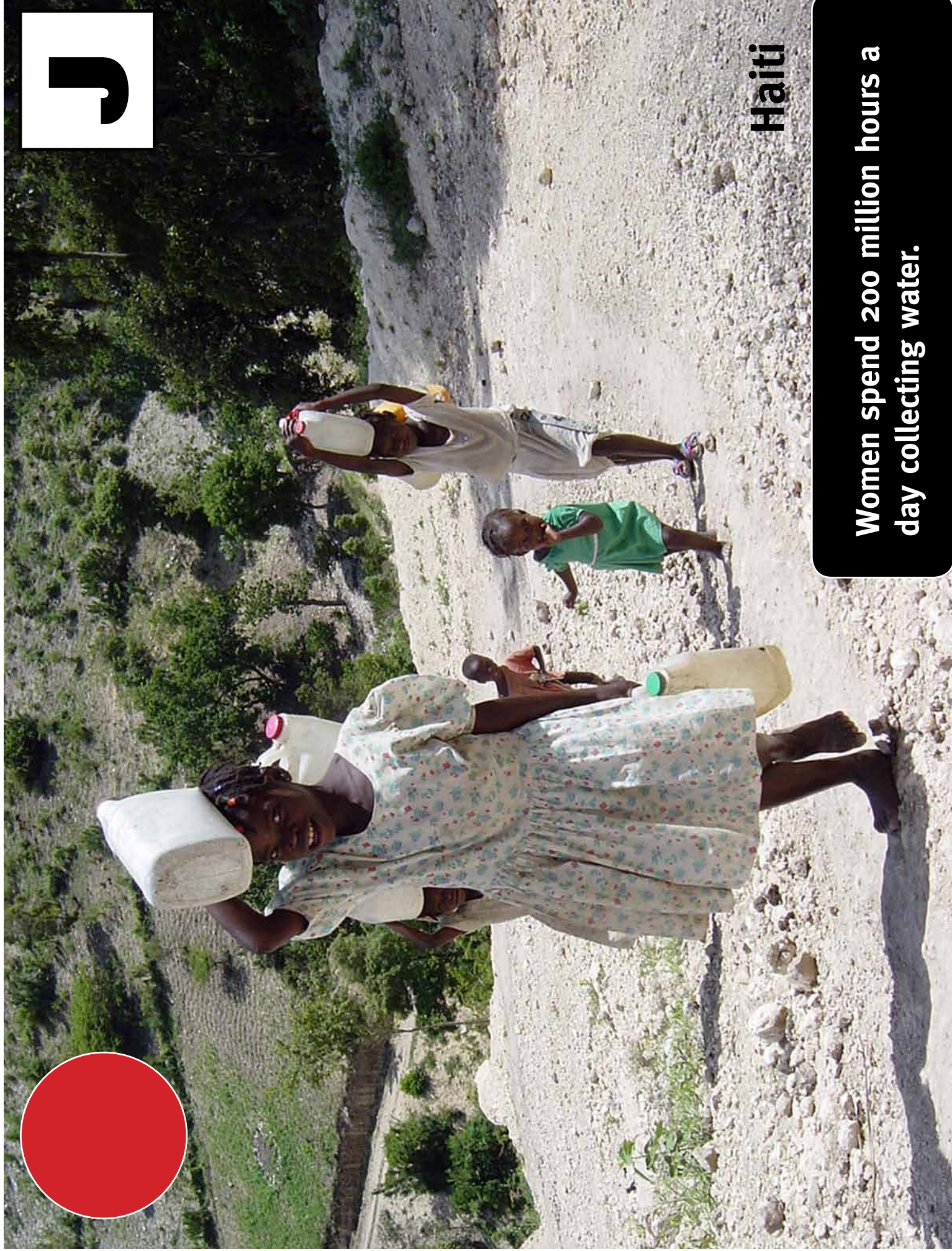
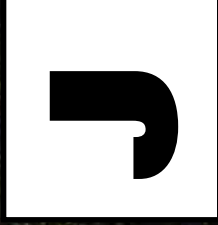




## Kenya

One third of the 884 million people (nearly 300 million) who don't have clean water live in Sub-Saharan Africa.





Haiti

Women spend 200 million hours a day collecting water.



# Picture Scavenger Hunt

## Clue Sheet





Water Missions  
International †

