Name: _____ Date: _____

Stimulus

Conserving Water

A student has been learning how the Goshute are working to protect their water. In her own neighborhood she sees lawn signs that say “slow the flow–save H_20” and wonders what difference one person’s efforts will make in water conservation efforts.

Table 1: Student’s family average indoor water usage

Water Use Task	Times used in one day	Gallons used per time	Gallons used per day
Flush toilet 	12	6	72
Run faucet for 1 minute (waiting for water to get hot or cold) 	5	4	20
Fill a bathtub (about 5 inches of water) 	1	40	40
Shower (5 minutes) 	8 (One time recorded for every 5 minutes)	35	280
Run dishwasher 	1	15	15
Wash a load of dishes by hand (in a basin or plugged sink without water running) 	0	4	0
Wash a load of dishes by hand (with water running) 	1	30	30

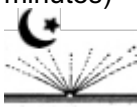
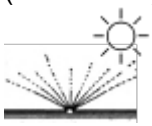
Water Use Task	Times used in one day	Gallons used per time	Gallons used per day
Wash a load of dishes by hand (with water running) 	1	30	30
Wash 1 small load of clothing 	0	30	0
Brush teeth with water running 	4	2	8
Brush teeth with water off 	4	1	4
Wash hands 	16	1	16
Drink water (It is recommended each person drinks eight 8-ounce glasses of water a day, which equals half a gallon.) 	8	0.25	2
TOTAL			532

(Table adapted from 4-H Water Conservation with the Water Lion)

Circle the two tasks which use the most water.

Color the two tasks yellow which use the least water (not including 0).

Table 2: Student's family average outdoor water usage

Water Use Task	Times used in one week	Gallons used per time	Gallons used per week
Wash a car, animal, or other object (water off while soaping) 	1	40	40
Wash a car, animal, or other object (water on while soaping) 	0	180	0
Water landscaping before 10 am or after 6 pm (20 minutes) 	12 (four hours)	140	1680
Water landscaping between 10 am to 6 pm (20 minutes) 	3 (one hour)	185	555
TOTAL			2,275

(Table adapted from 4-H Water Conservation with the Water Lion)

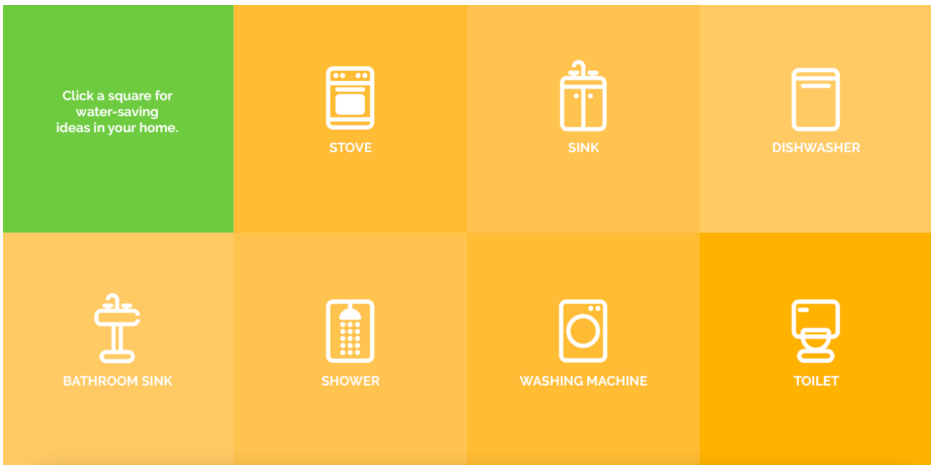
If desired, students can take home blank copies of indoor and outdoor water usage charts and use their own data in this activity.

https://slowtheflow.org/

Your Task
In the questions that follow, you will identify criteria and constraints, analyze available data on proposed solutions, and determine if one family's efforts are worth the energy it takes to conserve water.

Question 1

Have students go to https://slowtheflow.org/indoor-tips/ or print the reading materials from below for students to write on. There are a few additional details in the reading materials below that have been added to the information from the website.



Find (underline or write down) a detail that explains how indoor water can be conserved. Find (put a box around or write down) a second detail that explains how water conservation efforts might be an obstacle.

Website Reading 1: Tips for Indoor Water Usage

Reuse Cooking Water
Consider watering your plants with the water left over from cooked pasta and vegetables. Seriously. The extra nutrients can help plants grow better.

Fill It First
You'll use far less water by filling your sink to rinse vegetables, pans, and dishes than by just letting the water run.

Load It Full
The more dishes you get into the dishwasher per load, the more efficient your water use. Newer dishwashers use about half the water of older models, too. A new energy efficient dishwasher costs approximately $800-$1500.

Fix All Drips
On average, leaks make up about 14% of all indoor water use. If you live in a home built before 1975, your pipes are probably made of cast iron. Although cast iron pipes can last 50-100 years, deterioration of cast iron pipes is normal after just 25 years. If your faucet is not dripping, you'll save about three gallons of water by turning it off while brushing your teeth.

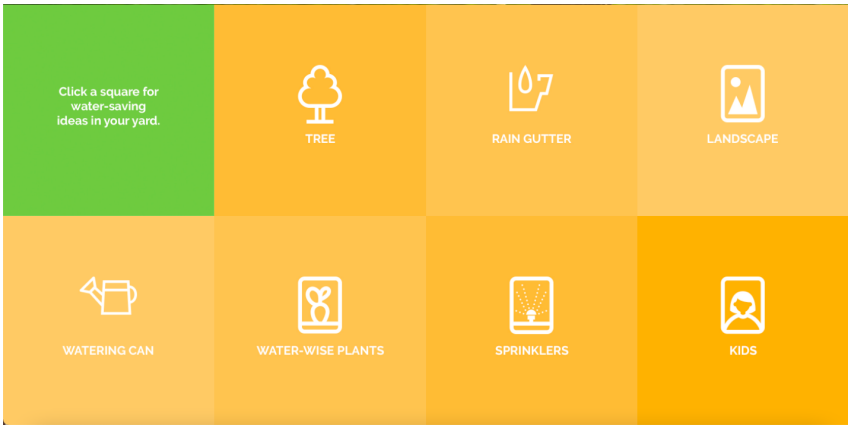
Shorten Your Shower
Showering just one minute less every day will save up to 1,875 gallons of water each year. In addition, replacing old showerheads can cut your water use in half.

Wash Full Loads
Laundry uses over 20% of all the water in your home. Use discretion when washing. Newer front loading machines also use about half the water and detergent of conventional models. A new energy efficient washing machine costs $750-$2000. When getting ready to do laundry, always ask, “Does this really need washing?” If clothes aren’t dirty, don’t wash them.

Upgrade Your Toilets
Newer models use just 1.28 gallons per flush. Models made prior to 1992 use between 3.5 and 7 gallons per flush.

Question 2

Have students go to https://slowtheflow.org/outdoor-tips/ or print the reading materials from below for students to write on. There are a few additional details in the reading materials below that have been added to the information from the website.



Find (underline) a detail that explains how outdoor water can be conserved. Find (put a box around) a second detail that explains how water conservation efforts might be an obstacle to a family.

Website Reading 2: Tips for Outdoor Water Usage

Tree: Water Wider
Root tips need water; the base of the tree doesn’t. Water around the drip line, located directly under the circumference of the tree. You’ll need to pay extra attention to set up sprinklers this way.

Rain Gutter: Aim to Conserve
Direct downspouts and other runoff towards shrubs and trees. This only has to be done once and will use water better.

Landscape: Conserving Water is Beautiful
Less grass and more shrubs, wildflowers, and rocks adds curb appeal and saves water (and money paying for water.) Try xeriscaping to save even more water. The average cost to add native plants to a xeriscaping

project is between $2,000 and $5,000. Hiring a landscaper for various projects, you can expect to pay around $50 to $100 per hour.

Watering Can: Perfect for Pots
Use a watering can to water potted plants or small areas. Watering these small spaces with a hose wastes water.

Water-Wise Plants
Learn more about water-wise plants for Utah landscapes. Free classes and design plans can be accessed online. These classes can be an hour or longer depending on your needs.

Sprinklers: No Wet Cement
Adjust sprinklers so they don't spray sidewalks and driveways.

Kids: Conservation Fun
Let them run through the sprinklers in an area where your lawn needs it the most.

Website Reading 3: Conserve Water in Utah

Have students go to Website Reading 3 at https://conservewater.utah.gov/ or print the reading materials from below for students to write on.

Water is the essence of life. It provides us with joy, health, food, economic opportunities, adventures, breathtaking landscapes, power generation, laughter and memories, and because it makes up two-thirds of our bodies, it makes it so you can be here, visiting our website (and on the earth)!
Our population is projected to double by 2065, so stretching our water supply is critical. Traditionally, two-thirds of Utah's growth has been from "natural increase" from the population having children. This percentage is declining with more people moving in. People have discovered Utah is a great play to live, work and play. Unfortunately, they don't bring water with them. Conservation is key to ensuring we have water now and for future generations.
Water is the most limited natural resource with 97% of it saltwater and only 3% freshwater. Of this 3%, 2.5% of it is unavailable because it is frozen as snow and ice, locked up in the atmosphere and soil, polluted, or lies too far under the earth's surface to be extracted at a reasonable cost. That means only 0.5% of all the earth's fresh water is easily accessible as surface water in rivers, streams and lakes. We encourage you to be a steward of Utah's water by using it wisely and sharing information with others.

Question 3

Using Table 1, Website Reading 1, and Website Reading 3 sort the following items into their correct category in Table 3 as to whether they are an advantage or disadvantage to indoor water conservation.

High cost of installing new equipment
Requires breaking habits
Population is projected to double
One minute can make a difference
Limited natural resource
Longer wait for clean clothes or dishes

Table 3 - Indoor Water Usage Conservation

Reasons to conserve water	Reasons it is hard to conserve water

Question 4

Using Table 2, Website Reading 2, and Website Reading 3, sort the following items into their correct category in Table 4 as to whether they are an advantage or disadvantage to outdoor water conservation.

Limited natural resource
Yard is already landscaped with grass
High initial cost to add native plants and xeriscaping
Stretching water supply is critical
Water evaporates when used during the day
Conservation opportunities are fun
Adds beauty
Requires extra effort

Table 4 - Outdoor Water Usage

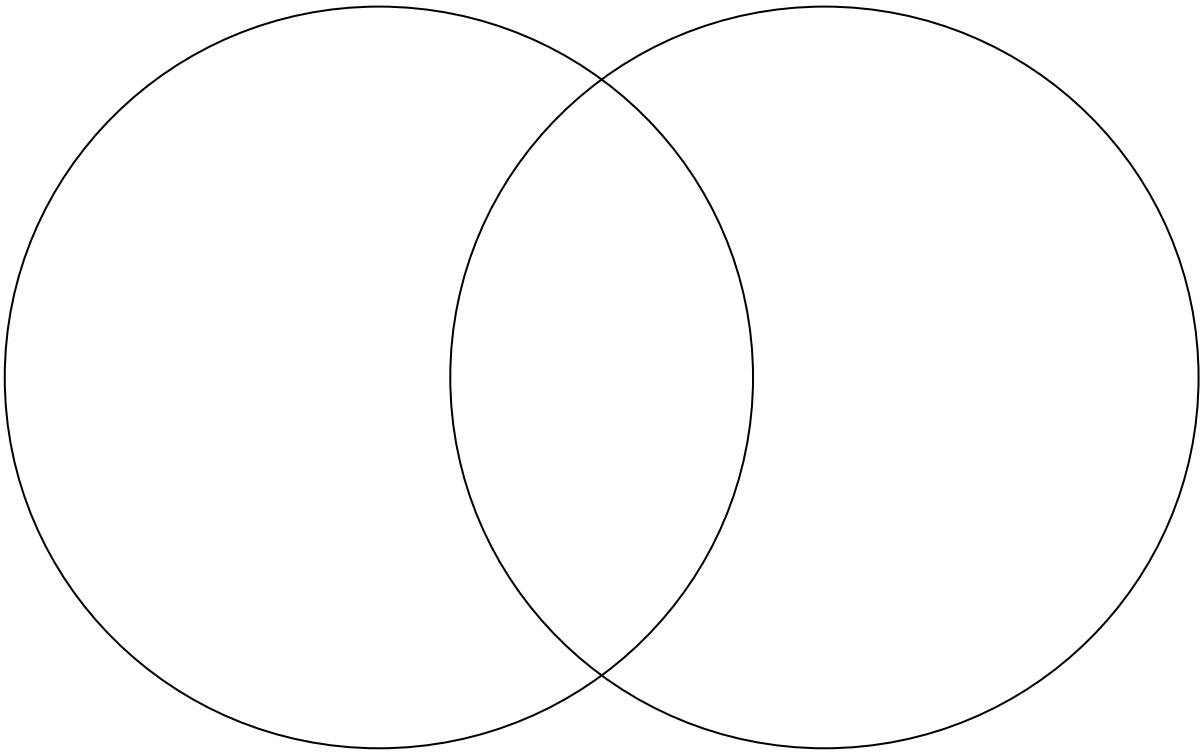
Reasons to conserve water	Reasons it is hard to conserve water

Question 5

Complete the Venn Diagram in Figure 1 to show the similarities and differences of conserving water indoors and conserving water outdoors. Be sure that you include at least 1 pro and 1 con in each section.

Figure 1 - Comparing and contrasting water conservation

Indoor Water Conservation	Both	Outdoor Water Conservation



Question 6

Based on what you have learned and the information provided, what do you feel are the most effective ways to start conserving water? Is it worth the effort required to conserve water? Does one person's efforts make a difference? Write a paragraph supporting your claim with evidence from the resources provided.

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