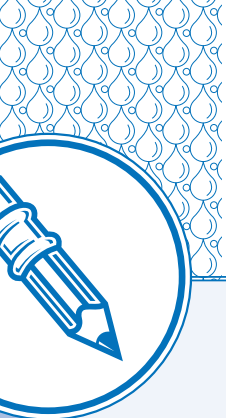


10 Things Kids Can Do To Protect Water

ACTION	REASON
<p>1 Turn off the faucet when brushing your teeth.</p>	<p>Save over 1-1/2 gallons of water every time you brush your teeth by turning off the tap.</p>
<p>2 Take quick showers instead of baths. Encourage your family to install low-flow showerheads.</p>	<p>Baths use 36 gallons of water. A quick shower under a low-flow showerhead uses only 12 gallons. That's 24 gallons you can save everyday!</p>
<p>3 Learn how to fix leaky faucets.</p>	<p>A tiny leak in your bathroom faucet can waste as much as 70 gallons of water a day.</p>
<p>4 Give grass and plants only as much water as they need.</p>	<p>Giving plants too much water may wash soil and fertilizers down the storm drains and into the Bay.</p>
<p>5 Clean up after pets.</p>	<p>Pet droppings that are washed into the storm drain system contaminate the water flowing to creeks, rivers, and the Bay.</p>
<p>6 Wash paint brushes in the sink, not in the gutter.</p>	<p>Paint going down storm drains pollutes the Bay.</p>
<p>7 Encourage your family to wash cars at a car wash.</p>	<p>Most car washes recycle water and send wastewater to the treatment plant, where it's cleaned before being released into the Bay. When cars are washed at home, soapy water is not reused. Instead, it runs directly to storm drains and out to the Bay, without being treated.</p>
<p>8 Sweep up yard clippings and put them out for recycling on collection day, or compost them.</p>	<p>Yard clippings that get dumped down the storm drains are decomposed by bacteria that use the oxygen in the water. That means less oxygen is available for the fish and plants that need it to live.</p>
<p>9 Read labels of household cleaners and encourage your family to less choose harmful products.</p>	<p>Choosing "environmentally friendly" cleaners makes the wastewater going down the drain easier to treat before going to the Bay.</p>
<p>10 Join with friends and family to help in a community creek cleanup.</p>	<p>You can help keep our creeks and Bay healthy.</p>



LESSON TITLE: **Water Collage**

Discipline: Art

Estimated Class Time: 45 minutes

Lesson Objectives:

At the end of this activity, students will construct a collage to illustrate one of these concepts:

- Water is one of earth’s limited resources.
- All life is dependent on the water cycle.
- Changes in one part of the ecosystem affect other parts of the ecosystem.

Materials:

- *Water Collage* Activity Sheet
- Magazines
- Scissors
- Glue
- Construction paper

CALIFORNIA CONTENT STANDARDS:

*Science – Grade 5
Earth Sciences*

3 Water on Earth moves between the oceans and land through the processes of evaporation and condensation.

As a basis for understanding this concept, students know:

3d the amount of fresh water, located in rivers, lakes, underground sources, and glaciers, is limited, and its availability can be extended through recycling and decreased use.

*Science – Grade 6
Ecology (Life Science)*

5 Organisms in ecosystems exchange energy and nutrients among themselves and with the environment.

As a basis for understanding this concept, students know:

5e the number and types of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil composition.

*Science – Grade 6
Resources*

6 Sources of energy and materials differ in amounts, distribution, usefulness, and the time required for their formation.

As a basis for understanding this concept, students know:

6b different natural energy and material resources, including air, soil, rocks, minerals, petroleum, fresh water, wildlife, and forests, and classify them as renewable or nonrenewable.



Preparation:

1. Collect old magazines. You may wish to have the class organize an old magazine collection drive at school to gather resources. (Recycle leftover magazines as mixed paper.)
2. Before beginning this lesson, have students go home and chart three ways their family uses water inside and three ways they use water outside the home. Chart the findings in class as a follow-up activity.
3. Use the outline of the drop of water on p. 9 as a photocopy master.

Activity:

1. Pass out construction paper with a copy of the water drop outline on p. 9. Students should use the stencil to draw a water drop on construction paper. Have students cut out the drop with scissors.
2. Have each student write his or her name on the back of the paper.
3. Pass out glue and magazines.
4. Have students cut out and glue pictures and words on water drop to support water use concepts.
5. Have students describe to the class or in groups why they selected each image and what it shows about the importance of water to us and other living creatures.
6. Mount water drops on a bulletin board, punch a hole in the top of each and hang from the ceiling, or hang with yarn around each student's desk.

Variations:

1. Older students may choose to focus their project on a specific water issue such as conservation or nonpoint source pollution.
2. Instead of clipping images, students may create their own images using paints, pencils, markers, or crayons.
3. Arrange with local merchants to display projects as a public awareness program for customers. Have students create a banner to title the display and to provide an explanation of the project's goal. Students should take responsibility for following up to collect the artwork and offer thanks to the merchant.

They Want More!

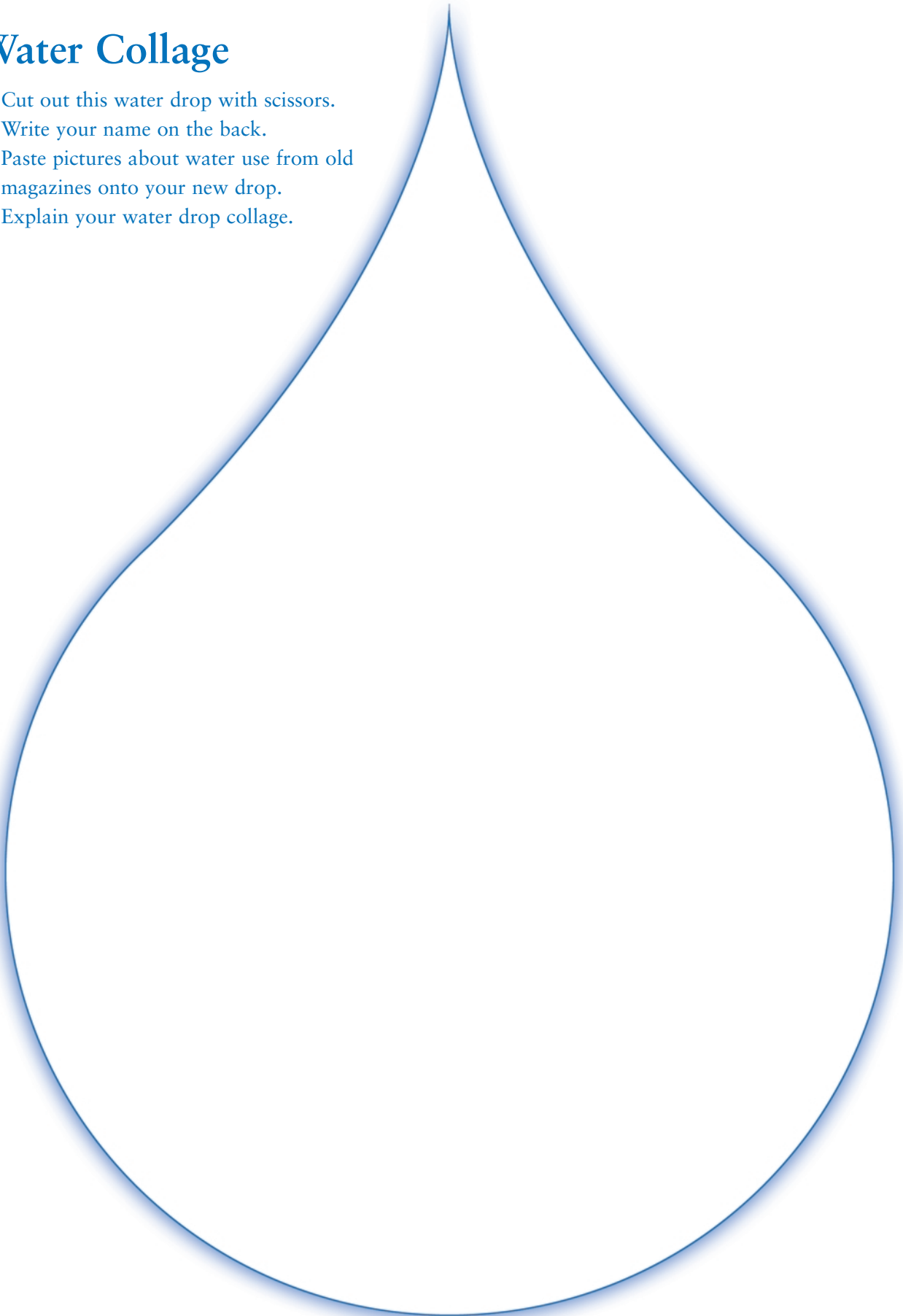
“Creekside Art Lesson,” *Creek Watchers: Exploring the Worlds of Creeks and Streams*, California Aquatic Science Education Consortium, p. 55.

“Lesson 1: Student Assessment,” *A Child's Place in the Environment: Caring for Aquatic Systems*, California Department of Education, p. 43.

“Lesson 12: How Do We Get Our Water?,” *A Child's Place in the Environment: Caring for Aquatic Systems*, California Department of Education, p. 223.

Water Collage

1. Cut out this water drop with scissors.
2. Write your name on the back.
3. Paste pictures about water use from old magazines onto your new drop.
4. Explain your water drop collage.



LESSON TITLE: Saving Water Starts at Home



Discipline: Science, Math, and Language Arts

Estimated Class Time: 50 minutes

Lesson Objectives:

At the end of this activity, students will be able to identify two or more water conserving practices they (and their family) are willing to implement over the next month.

Materials:

- *Saving Water Starts at Home* Activity Sheet
- Dish pan, hand soap, measuring cup, bucket of water
- *How You Can Save Water* chart on p. 3

CALIFORNIA CONTENT STANDARDS:

English-Language Arts – Grade 3
Writing (if pledge is written in paragraph form)

1.0 Writing Strategies

Students write clear and coherent sentences and paragraphs that develop a central idea. Their writing shows they consider the audience and purpose. Students progress through the stages of the writing process (e.g., prewriting, drafting, revising, editing successive versions).

Organization and Focus

1.1 Create a single paragraph:

- a develop a topic sentence.
- b include simple supporting facts and details.

Science – Grade 3
Life Sciences

3 Adaptations in physical structure or behavior may improve an organism’s chance for survival. As a basis for understanding this concept, students know:

- a living things cause changes in the environment where they live; some of these changes are detrimental to the organism or other organisms, whereas others are beneficial.

Science – Grade 3

Investigation and Experimentation

5 Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept, and to address the content of the other three strands, students should develop their own questions and perform investigations. Students will:

- a use numerical data in describing and comparing objects, events and measurements.

Mathematics – Grade 3
Number Sense

By the end of grade three, students deepen their understanding place value and their understanding of and skill with addition, subtraction, multiplication, and division of whole numbers. Students estimate, measure, and describe objects in space. They use patterns to help solve problems. They represent number relationships and conduct simple probability experiments.

2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division:

2.1 Find the sum or difference of two whole numbers between 0 and 10,000.

2.4 Solve simple problems involving multiplication of multi-digit numbers by one-digit numbers ($3,671 \times 3 = \underline{\quad}$).

*Mathematics – Grade 3
Algebra and Functions*

2.0 Students represent simple functional relationships:

2.1 Solve simple problems involving a functional relationship between two quantities (e.g., find the total cost of multiple items given the cost per unit).

*Mathematics – Grade 3
Mathematical Reasoning*

2.0 Students use strategies, skills, and concepts in finding solutions:

2.2 Apply strategies and results from simpler problems to more complex problems.

2.6 Make precise calculations and check the validity of the results from the context of the problem.

*Mathematics – Grade 4
Number Sense*

By the end of grade four, students understand large numbers and addition, subtraction, multiplication, and division of whole numbers. They describe and compare simple fractions and decimals. They understand the properties of, and the relationships between, plane geometric figures. They collect, represent, and analyze data to answer questions.

3.0 Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among the operations:

3.1 Demonstrate an understanding of, and the ability to use, standard algorithms for the addition and subtraction of multi-digit numbers.

3.3 Solve problems involving multiplication of multi-digit numbers by two-digit numbers.

*Mathematics – Grade 5
Mathematical Reasoning*

By the end of grade five, students increase their facility with the four basic arithmetic operations applied to fractions, decimals, and positive and negative numbers. They know and use common measuring units to determine length and area and know and use formulas to determine the volume of simple geometric figures. Students know the concept of angle measurement and use a protractor and compass to solve problems. They use grids, tables, graphs, and charts to record and analyze data.

2.0 Students use strategies, skills, and concepts in finding solutions:

2.2 Apply strategies and results from simpler problems to more complex problems.

2.6 Make precise calculations and check the validity of the results from the context of the problem.

Mathematics – Grade 6

Mathematical Reasoning

By the end of grade six, students have mastered the four arithmetic operations with whole numbers, positive fractions, positive decimals, and positive and negative integers; they accurately compute and solve problems. They apply their knowledge to statistics and probability. Students understand the concepts of mean, median, and mode of data sets and how to calculate the range. They analyze data and sampling processes for possible bias and misleading conclusions; they use addition and multiplication of fractions routinely to calculate the probabilities for compound events. Students conceptually understand and work with ratios and proportions; they compute percentages (e.g., tax, tips, interest). Students know about π and the formulas for the circumference and area of a circle. They use letters for numbers in formulas involving geometric shapes and in ratios to represent an unknown part of an expression. They solve one-step linear equations.

2.0 Students use strategies, skills, and concepts in finding solutions:

2.2 Apply strategies and results from simpler problems to more complex problems.

2.7 Make precise calculations and check the validity of the results from the context of the problem.



Activity:

1. Invite two students to come to the front of the room. Using the dish pan, hand soap, measuring cup, and water, have one student wash his or her hands while the second student acts as the faucet and constantly pours water over the first student's hands. Have the class as a whole keep track of the number of cups of water they use. Write that number on the board.
2. Empty out the wash tub in a bucket or sink. Invite two more students to the front of the class. Do the experiment again but this time have the first student wet his or her hands with a little water. The second student observes. After the first student washes well with soap, have the second student pour water over the first's hands to rinse. Have the class as a whole keep track of the number of cups of water they use. Write that number on the board. Have the students calculate the amount of water that can be conserved each day by washing their hands with the tap off.
3. Have students subtract the second number from the first to get the amount of cups saved by turning off the tap when washing hands. Have students estimate how many times a day they wash their hands and multiply that number by the savings.
4. Pass out the activity sheet on p. 14. In groups, have students estimate the amount of water used for each activity.
5. As a class, go through each water use and have students offer their guesses. Then share the correct amount. (Refer to chart on p. 3.)
6. As a class, go through each use and explain the water conservation practice. Ask students to guess how much water the conserving water practice uses.

7. Have students subtract the water conservation practice from the average water practice. Let them compare their answers with chart on p. 3. Next, have students add all the savings from each activity together for a total household amount.
8. You can also have students multiply the water savings by the number of students in your school, by the number of people in the San Jose area (1.5 million), and by the number of people in California (70 million).
9. Have students design and sign a pledge, stating which water conservation practice they will begin to implement over the next month. Have them share the pledge with their families. Ask class for feedback on progress after a month.

Reinforcement:

Have students conduct a study of toilet flushing at school. Announce the project to the student body. Place a chart in each restroom for a week. Have students and faculty mark on chart each time they flush the toilet. Tabulate results at end of the week. Calculate how much water was used and how much could have been saved by switching to an ultra-low flow toilet (ULFT). Call the water company serving your school and ask how much it costs the school per gallon of water. Using the data collected, have the class write letters to lobby the school administrators, PTA, and school district about the benefits of retrofitting toilets with ULFTs.

They Want More!

“Lesson 11: How Do People Currently Use Water?,” *A Child's Place in the Environment: Caring for Aquatic Systems*, California Department of Education, p. 205.

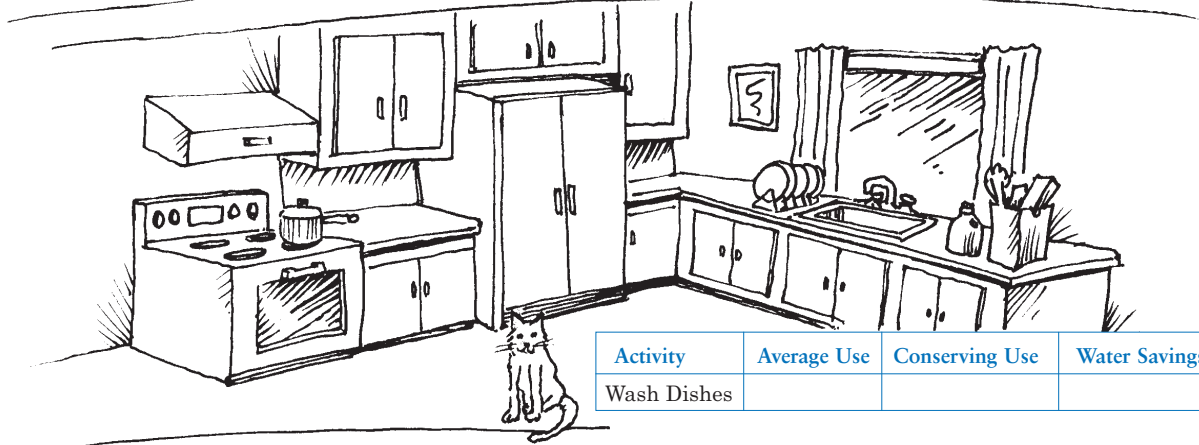
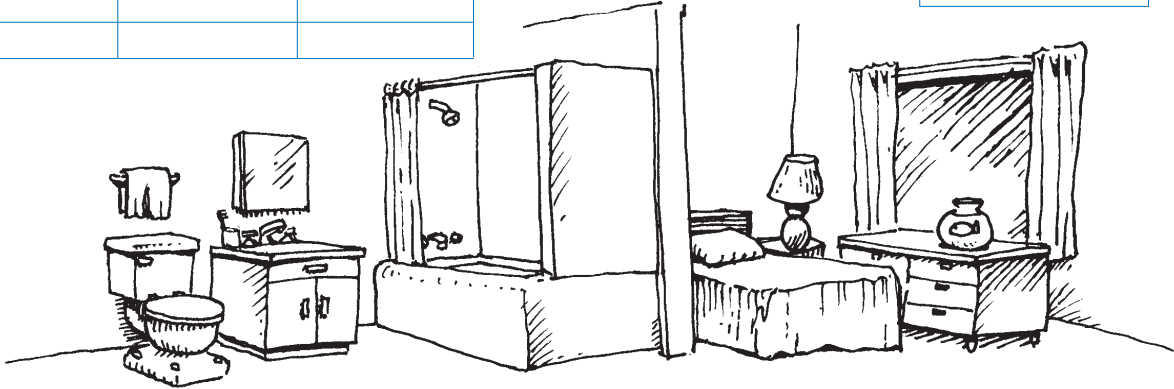
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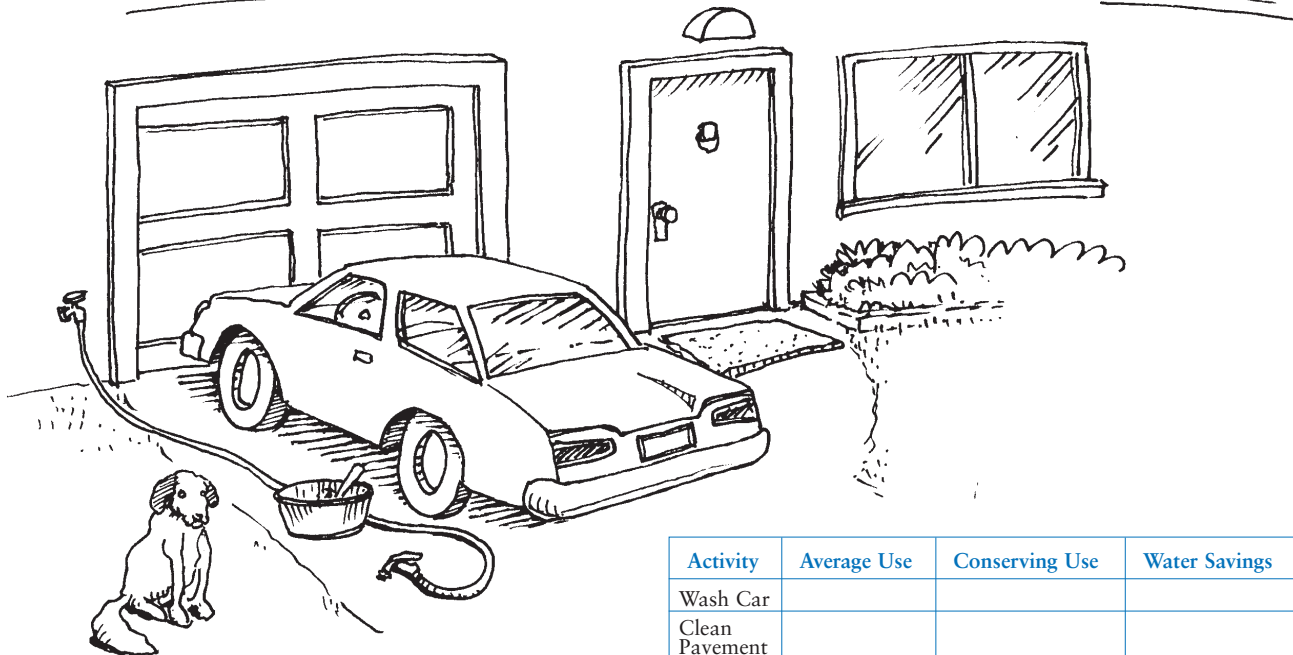
Saving Water Starts at Home

Activity	Average Use	Conserving Use	Water Savings
Brush Teeth			
Flush Toilet			
Shower			

Total Household
Water Savings



Activity	Average Use	Conserving Use	Water Savings
Wash Dishes			



Activity	Average Use	Conserving Use	Water Savings
Wash Car			
Clean Pavement			