El Paso Water Education Series

Water Cycle In A Bag - Lesson Plan

Grade K-1

Subject
Properties of Matter, Energy

Duration
45 mins

Skills
Recording observations, Interpreting (identifying cause and effect)

Vocabulary
energy, frozen, liquid, melt, steam

Science TEKS
Grade K: K.1(A-B), K.2(A-E), K.4(A-B), K.5(A-B), K.6(A), K.7(A-C)

Grade 1: 1.2(A-E), 1.5(A-B), 1.6(A)

Math TEKS
Grade K: K.2(C)

ELA/Reading TEKS
Grade K: K.3(B-C)

For more lessons, activities, and to schedule a visit to EPWater's TecH_2O Water Resources Learning Center visit:

tech2o.org

Lesson Overview: The water on Earth is in constant motion all around us. Water that we see in a river or from rain clouds is only a small part of the picture. This lesson will help students recognize different sources of water in the environment. It will also help make the connection between energy and physical properties of water.

Objectives:
1. Review properties of objects and practice making observations about the natural world.
2. Introduce properties and uses of water.
3. Relate energy to changes in physical properties of water.

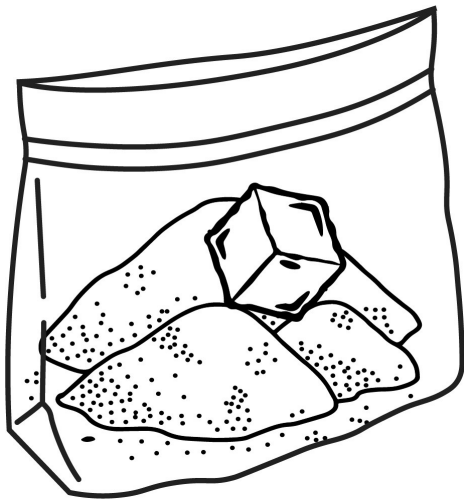
Engagement Questions:
1. Does water need energy to move like people need energy to move?
2. What happens to ice when it is warmed by the sun?

Making Connections: Seventy one percent of Earth's surface is covered by water; nearly all water is found in deep oceans. Only one percent of all water on Earth is fresh and can be found in lakes, rivers, ponds, snow, ice, rain, and underground. The Rio Grande river is an important source of water for the people of El Paso, but many El Pasoans do not realize that the river actually starts as snowmelt in the San Juan Mountains of southern Colorado and the Sangre de Cristo Mountains in northern New Mexico. Eventually it makes its way through Texas, all the way to the Gulf of Mexico. Because El Paso has grown to be a major city, the Rio Grande river can only satisfy part of the city's needs. Much of the water El Pasoans use comes from underground. This activity will model snowmelt and how water can be stored underground. Students will also consider everyday activities to decide ways to use water wisely.

Materials: *(per student or small group)*
(1) sealable quart-size plastic baggie
(1) plastic spoon
(1) timer
(5) clear plastic cups
0.5 cup gravel (large)
0.5 cup gravel (small)
0.5 cup sand
0.5 cup water
0.5 cup ice
} Provide in separate cups.

Procedure: *(making observations)*
1. Portion out the gravel, sand, water, and ice into 5 clear plastic cups, and arrange the cups in a line for students to make observations.
2. Make observations about the materials provided: relative weight, relative size, relative temperature, color, etc. and record them on the first page of the Water Cycle in a Bag - Worksheet.

Procedure Continued: *(preparing experiment)*



4. Add large gravel to baggie and spread it evenly with spoon.
5. Add small gravel and spread evenly over large gravel with spoon.
6. Add sand and leave mounded or spread evenly.
7. Place 1-2 ice cubes on sand.
8. Seal baggie trapping plenty of air. (Do not deflate)
9. Place sealed baggie in sunny location for 5-10 minutes. Complete steps 10-12 while you wait.
10. Use Water Cycle in a Bag - Worksheet to record observations of activity setup.
10. Discuss predictions about what will happen to ice cube because of the energy from the sun.
11. Use the Water Cycle in a Bag - Worksheet to introduce properties and uses of water.
12. Return to baggies and use the Water Cycle in a Bag - Worksheet to record observed changes.

Optional Extension: Demonstrate that invisible water vapor is also present in the baggie by placing an ice cube at the top near the seal to encourage condensation

Check for Understanding:
Did students meet the lesson objectives? Can they answer the engagement questions? Below are some key takeaways and questions that students should be able to answer following the lesson.

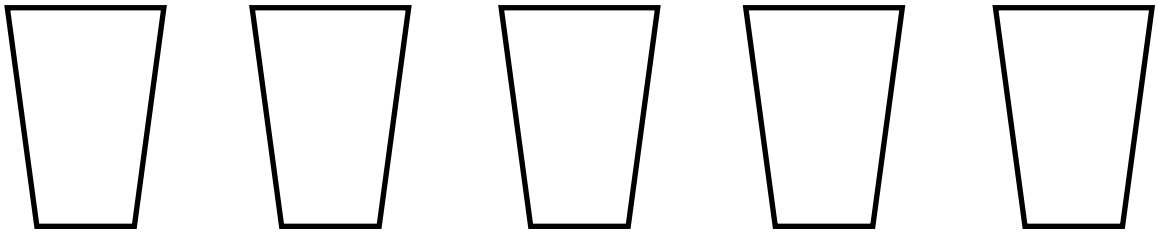
Key Takeaways:
- Water can be frozen solid or melt to a liquid.
- Energy from the sun can cause water to change form and move.
- Water can move through sand and rocks.
- People use water in many different ways, and there are many ways to conserve water.

Questions:
1. How does ice or frozen water change when heated?
2. Where did the energy come from to melt the ice cubes in each baggie?
3. Can water move through some materials?
4. What are some ways that people use water?
5. What can people do to prevent wasting water?

Water Cycle In A Bag - Worksheet

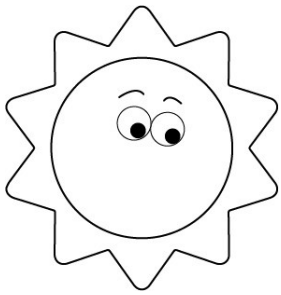
Name: _____ Date: _____

Instructions: Use this worksheet to record your observations of the Water Cycle in a Bag activity.



1. Draw what you see in the cups on your desk.
2. Color the cup holding the heaviest things red.
3. Color the cup holding the smallest things green.
4. Color the cup holding the coldest thing blue.

Follow your teacher's instructions to set up a water cycle model.



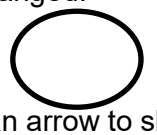
AFTER SETUP

1. Draw what you see in your bag after you have added the materials and closed the top.
2. Place your bag in a sunny spot for 5-10 minutes.

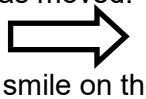
3. Talk to a classmate about what you think will happen to the ice in your bag.

AFTER 5-10 MINUTES

1. Draw a circle around the thing that changed.



2. Draw an arrow to show where water has moved.



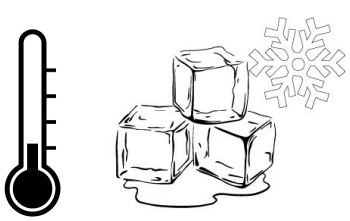
3. Draw a smile on the thing that gave energy to the ice, making it change.

Water Cycle In A Bag - Worksheet

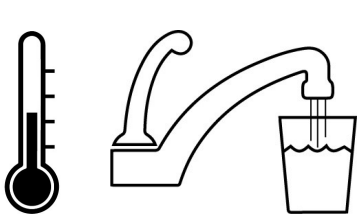
Name: _____ Date: _____

How much energy is in the water?

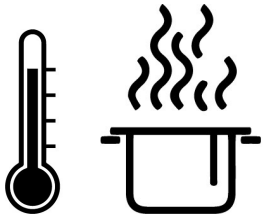
Water can look, feel, and behave differently depending on how much energy it has.



Frozen water, like ice and snow, has very little energy. This is why frozen water is cold and does not easily change shape.



Liquid water, like the water that comes from a faucet, can feel cool or warm. It has enough energy to flow but not enough to fly.



Steam is really hot. It is created when water has a lot of energy. Steam has enough energy to fly right out of a pot.

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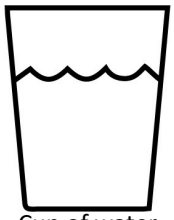
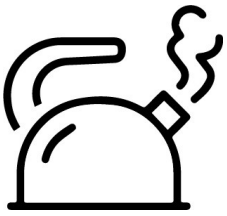
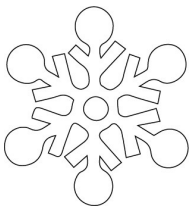
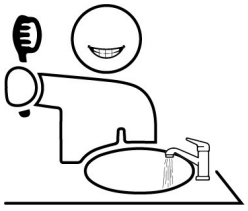
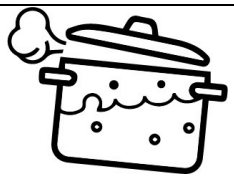
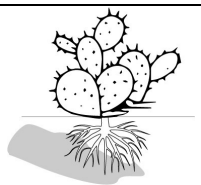
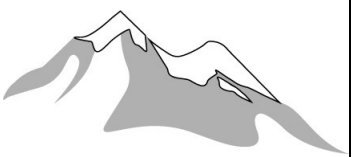
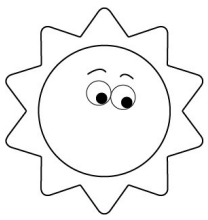
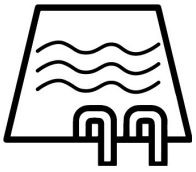
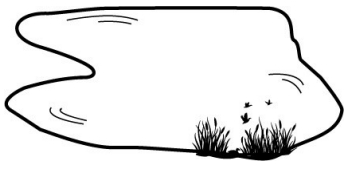
1. Draw a square around each picture of water frozen solid.
2. Draw a circle around each picture of liquid water.
3. Draw a smile on the picture of something that provides energy.

 Rain	 Cup of water	 Ice cubes	 Steam
 Cloud	 Snowflake	 Rio Grande river	 Brushing teeth
 Cooking	 Cactus	 Mountain	 Washing dishes
 Sun	 Swimming pool	 Shower	 Lake

Water Cycle In A Bag - Worksheet

Name: _____ Date: _____

Water All Around Us

1. Draw a square around water frozen solid.
2. Draw a smile on the thing that gives energy and melts the snow.
3. Color liquid water blue.
4. Draw a circle around things that use water.
5. Count the number of circles you drew and write the number in the box.

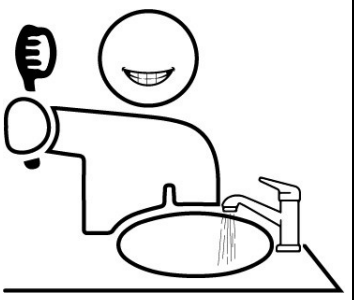
_____
Circles

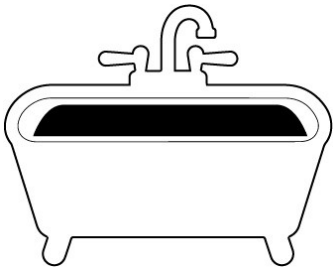
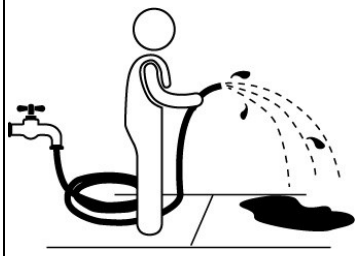
Water Cycle In A Bag - Worksheet

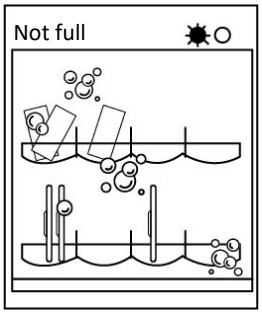
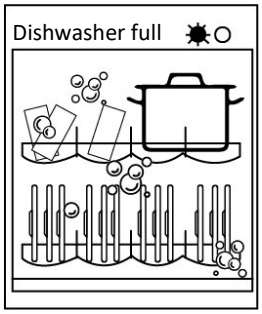
Name: _____ Date: _____

Using Water Wisely

Instructions: Draw an **X** over each example of wasting water.

Brushing Teeth		Washing Car	
			

Bathing		Cleaning Sidewalks	
			

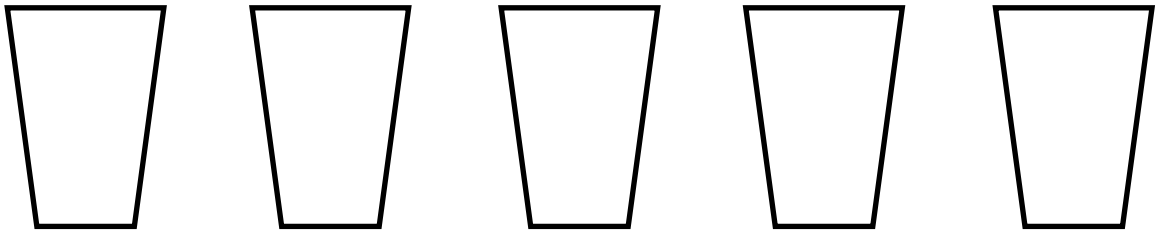
Washing Dishes			
			

It is important that we all do our part to save water.

Ciclo Del Agua En Una Bolsa - Hoja De Trabajo

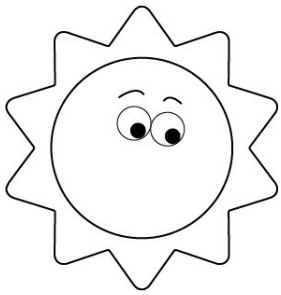
Nombre: _____ Fecha: _____

Instrucciones: Utiliza esta hoja de trabajo para registrar tus observaciones de la actividad ciclo del agua en bolsa.



1. Dibuja lo que ves en los vasos sobre tu escritorio.
2. Colorea de rojo el vaso que contiene las cosas más pesadas.
3. Colorea de verde el vaso que contiene las cosas más pequeñas.
4. Colorea de azul el vaso que contiene la cosa más fría.

Sigue las instrucciones de tu maestro/a para armar un modelo del ciclo del agua.



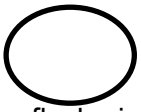
DESPUÉS DE ARMARLO

1. Dibuja lo que ves en tu bolsa después de haber agregado los materiales y cerrado la parte superior.
2. Coloca tu bolsa en un lugar soleado durante 5-10 minutos.

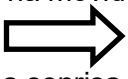
3. Habla con un compañero sobre lo que crees que pasará con el hielo en tu bolsa.

DESPUÉS DE 5-10 MINUTOS

1. Dibuja un círculo alrededor de la cosa que cambio.



2. Dibuja una flecha indicando a donde se ha movido el agua.



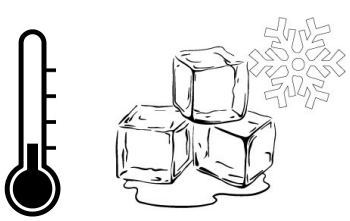
3. Dibuja una sonrisa en la cosa que le dio la energía al hielo, haciéndolo cambiar.

Ciclo Del Agua En Una Bolsa - Hoja De Trabajo

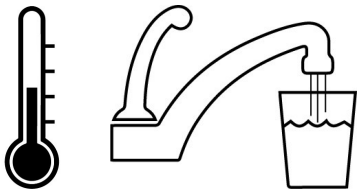
Nombre: _____ Fecha: _____

¿Cuánta energía hay en el agua?

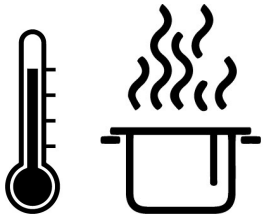
El agua se ve, se siente, y se comporta diferente dependiendo de cuánta energía tenga.



El agua congelada, como el hielo y la nieve, tiene muy poca energía. Es por esto que el agua congelada es fría y no cambia de forma con facilidad.



El agua líquida, como el agua que sale del grifo, puede sentirse fresca o tibia. Tiene suficiente energía para fluir pero no suficiente para volar.



El vapor es muy caliente. Es creado cuando el agua tiene mucha energía. El vapor tiene suficiente energía para saltar directamente de una olla.

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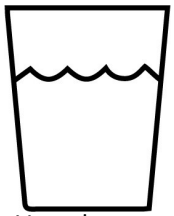
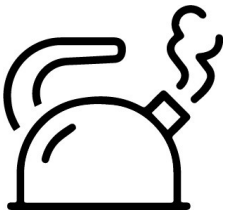
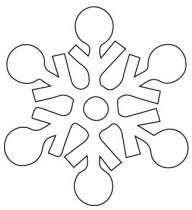
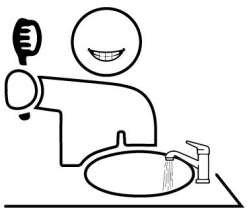
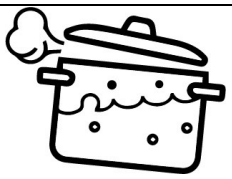
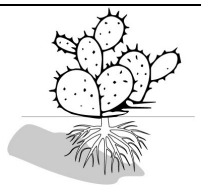
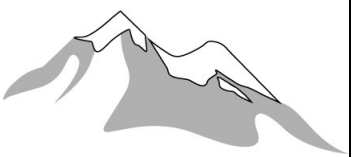
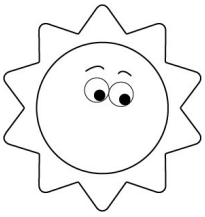
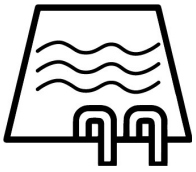
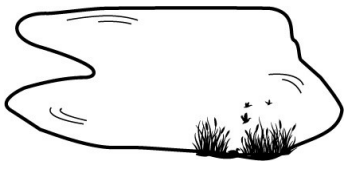
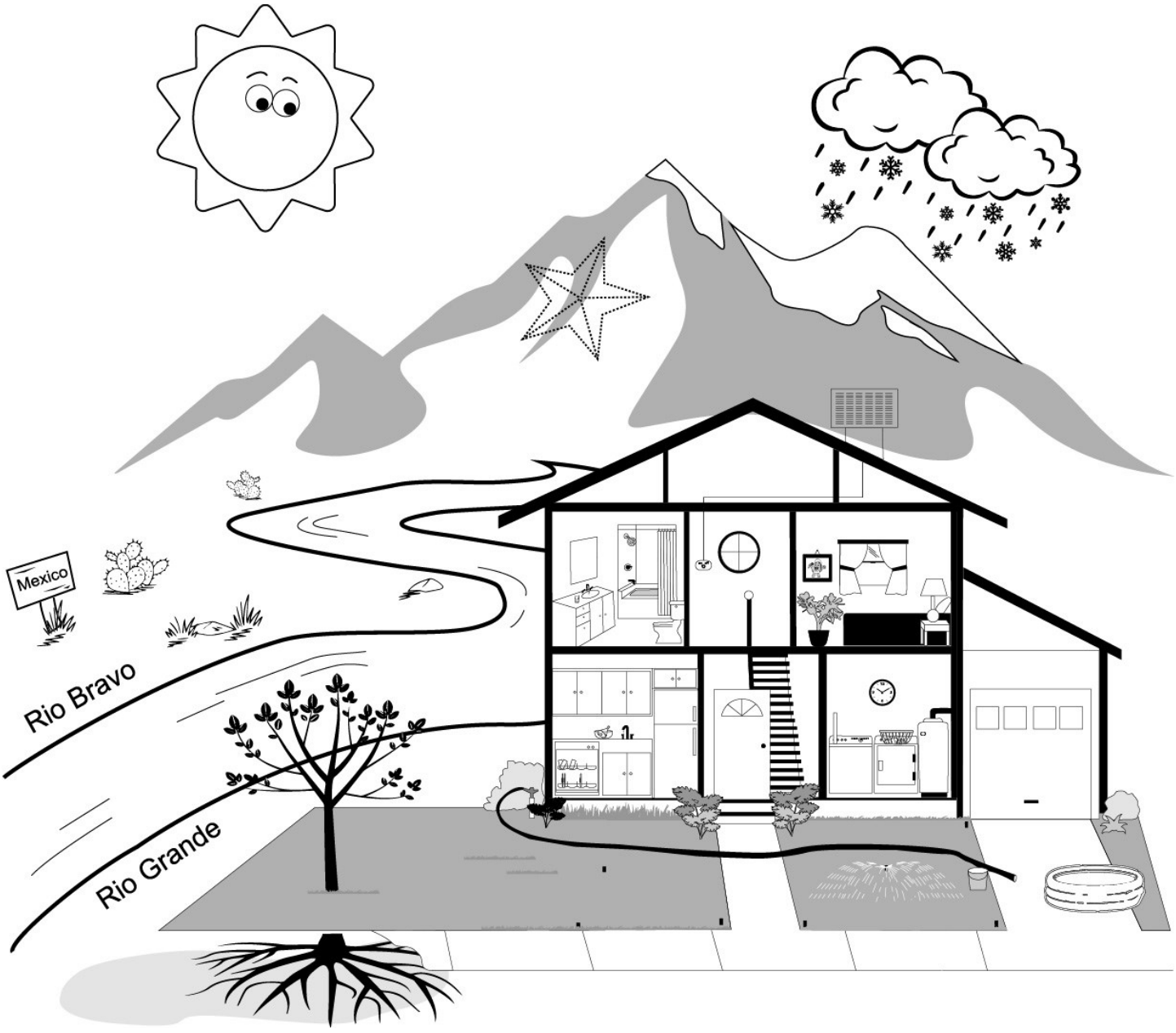
1. Dibuja un cuadrado alrededor de cada imagen de agua congelada.
2. Dibuja un círculo alrededor de cada imagen de agua líquida.
3. Dibuja una sonrisa en la imagen de algo que proporciona energía.

 Lluvia	 Vaso de agua	 Cubos de hielo	 Vapor
 Nube	 Copo de nieve	 Rio Grande	 Cepillarse los dientes
 Cocinar	 Cactus	 Montaña	 Lavar los trastes
 Sol	 Piscina	 Ducha	 Lago

Ciclo Del Agua En Una Bolsa - Hoja de Trabajo

Nombre: _____ Fecha: _____

Agua A Nuestro Alrededor



1. Dibuja un cuadrado alrededor del agua congelada.
2. Dibuja una sonrisa en la cosa que da energía y derrite la nieve.
3. Colorea el agua líquida azul.
4. Dibuja un círculo alrededor de las cosas que usan agua.
5. Cuenta el número de círculos que dibujaste y escribe el número en la caja.

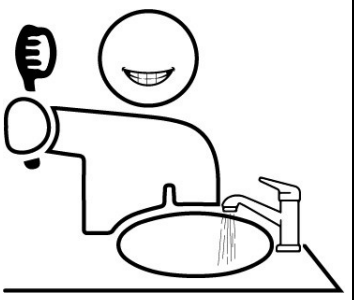
_____ Círculos

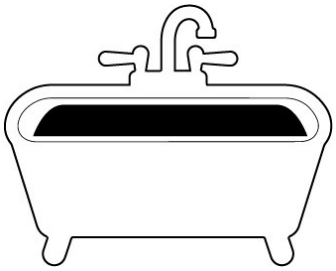
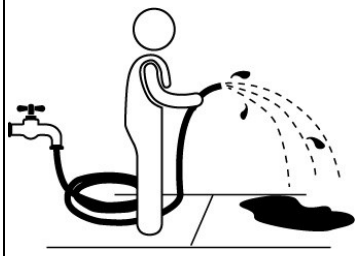
Ciclo Del Agua En Una Bolsa - Hoja De Trabajo

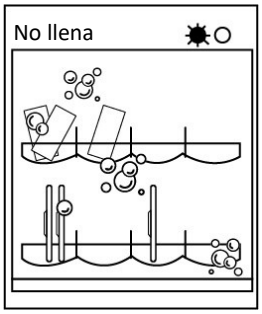
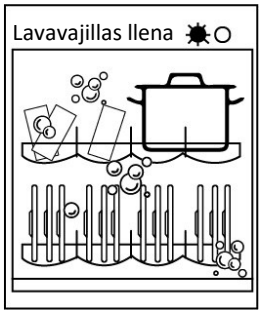
Nombre: _____ Fecha: _____

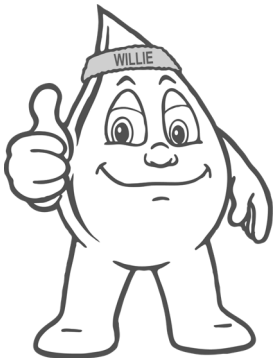
Usando El Agua Sabiamente

Instrucciones: Dibuja una **X** sobre cada ejemplo de desperdicio de agua.

Cepillando Los Dientes		Lavando Coches	
			

Bañandose		Limpiando Aceras	
			

Lavando Trastes			
			



Es importante que todos pongamos de nuestra parte para ahorrar agua.