

Unit 3: How Water Is Used

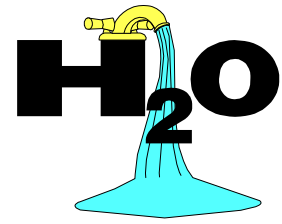
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Unit 3: How Water Is Used

Objectives: Each student will be able to:

- Explain the importance of water to life processes
- Discuss the amount of daily home water use
- Discuss major water uses in Alabama



Words to Remember:

- | | | |
|------------------------------------|------------------------|------------------------------|
| • Agriculture | • industry | • stream |
| • electric power generation | • irrigation | • well |
| • electricity | • manufacturing | • turbine |
| • generator | • mining | • Tennessee-Tombigbee |
| • hydroelectric power | • nuclear power | • Waterway |

Background Information

Water is a very important resource. There are many uses for water. Its most important use is to support life processes. Water is necessary for human life. We could go weeks without any food. We can only live a few days without water.

Use of Water in the Human Body. Water makes up about 70% of the fluids found in our bodies. However, our bodies lose a lot of water every day. We lose water in the form of sweat, tears, urine, and water vapor in our breath.

We must replace the water our bodies lose with freshwater. Drinking at least eight glasses of water per day will replace the water lost. You can also replace water by eating foods with a high water content. Fruits and



vegetables usually have a high water content. Milk and juice also contain mostly water. Drinking milk and juice can help us replace the water lost.

Use of Water in the Home. The average American uses about 80 gallons of water daily in the home. Some daily activities that use a lot of water include: brushing your teeth, taking a bath, and flushing toilets.

Other things that use a lot of water are washing clothes, dishes and cars, preparing food, watering lawns, and filling swimming



pools. The following chart shows average amounts of water used in the home:

Activity	Amount of Water Used
Flushing toilets	5-7 gallons per flush
Tub bath	35 gallons
Shower	25 gallons (about 5 gallons per minute)
Dishwasher use	25 gallons
Washing machine	20-45 gallons per load of clothes
Brushing teeth (water running) (water not running)	5 gallons 1/2 gallon

Use of Water by Businesses and Farms. **Industry** uses water in **manufacturing** (or making) products. Electric power companies use water to supply **electricity** to our homes and businesses. Restaurants use water in food preparation. **Agriculture**, or farming, uses large amounts of water. Some of the ways water is used on farms include growing crops and animal production. In the United States, agriculture is the largest user of water. However, the amount and use of water is different in various parts of our country. The size of the community and the types of industry present will influence water use.

Use of Water in Alabama. Approximately 8 billion gallons of water are used in Alabama every day. The major uses of water are shown in Figure 3.1. They are:

1. **Power generation:** **Electric power generation** uses a lot of water. There are different types of power plants which produce **electricity**. These include **nuclear power** plants, coal-burning plants and **hydroelectric power** plants. Both nuclear and coal burning power plants generate heat

which changes water to **steam**, a form of hot water vapor under high pressure. This steam is used to spin **turbines** which are connected to **generators**. The generators produce the electricity.

Fire boils water to produce steam in coal burning plants while the heat from atomic processes boils water in nuclear power plants. These two processes give off a lot of heat when making electricity. Large amounts of water are used to cool off the hot equipment in these plants.

Nuclear and coal power plants use about 78% of water used in Alabama. This is the largest use of water in the state. However, much of this water is not consumed and goes back to the stream from which it came. About 6.3 billion gallons of water are used in these plants each day. The largest user is the Brown's Ferry nuclear power plant in Limestone County on the Tennessee River. It uses 2.3 billion gallons of water per day.

Hydroelectric power uses flowing water to make electricity. This process uses the water in reservoirs on rivers. The water

passes over water turbines that spin generators to generate electricity. Hydroelectric power does not actually withdraw or "use up" water. This water remains at its source and is still available for other uses.

2. Business and Industry: Businesses and industries use about 10% of the water used in Alabama. Factories use water for many types of **manufacturing** processes. Water is used to produce steam which runs engines in some factories. Much water is used for both heating and cooling processes. Many items, such as food, steel, tires, newspapers, and cars need water in the manufacturing



process. For example, it takes about 75,000 gallons of water to make one ton of good quality paper. Just one copy of a Sunday newspaper takes approximately 150 gallons of water! (And think of all the paper we waste and simply throw away). Very clean water is needed in the production of food, drugs and chemicals.

3. Public Supply: About 9% of Alabama's water use comes from public supply systems. This water is used by cities and towns. Water used for public supplies can either come from surface areas (on top of the ground--such as lakes and rivers) or under the ground (called groundwater). Water treatment plants clean this water before it is used. These plants supply clean water for homes, businesses and schools. About 4 million people in the state use water from public supply systems.

4. Agriculture: Alabama uses only about 3% of its water for agricultural purposes. Some states use a major portion of their water for watering crops and farm



animals. **Irrigation** uses a system of pipes or ditches to water crops. It is used when there is not enough water from natural rain to supply crop needs. The main crops irrigated in Alabama are peanuts, corn, fruit, vegetables, turfgrasses and cotton. Fortunately, Alabama usually receives abundant rainfall and does not rely on irrigation as much as some states.



Another agricultural industry important in Alabama is catfish production. This industry must use large amounts of water.

5. Private Supply: Less than 1% of water used in Alabama comes from private **wells**. Homes using water from private **wells** do not rely on public supply systems. About 10% of homes in Alabama use water from private supplies.

6. Mining: The **mining** industry uses water in its manufacturing processes. In Alabama, the mining industry is mainly in the Appalachian mountains in the northern part of the state. Coal and iron ore are minerals found in these mountains. Water is used to make steel from iron ore. Earlier in this century, the steel industry was an important industry in the Birmingham area.



7. Transportation: Water is a valuable resource for the shipping industry. Many manufacturers rely on Alabama's river systems to transport their goods to the Gulf coast. The **Tennessee-Tombigbee Waterway** is one of Alabama's most important water resources. This waterway was built by joining the Tennessee and Tombigbee rivers. It made a faster route for ships to travel from North Alabama to the Gulf.

8. Recreation: There are many recreational uses of water in Alabama. Recreational users enjoy the many lakes, rivers, and coastal waters for boating, fishing, swimming, etc. Water used in transportation and recreation, just as the water used in hydroelectric power, is not withdrawn from its natural source when used. Instead of being "used up," it is still available for other uses.



Water is used in many different ways and is one of our most important natural resources.

Questions for Review

1. Why is water vital to human survival?
2. How can humans replace water lost during their daily activities?
3. How is water used in our every day lives?
4. How much water does the average American use each day?
5. What types of industries use water in the production of their products?

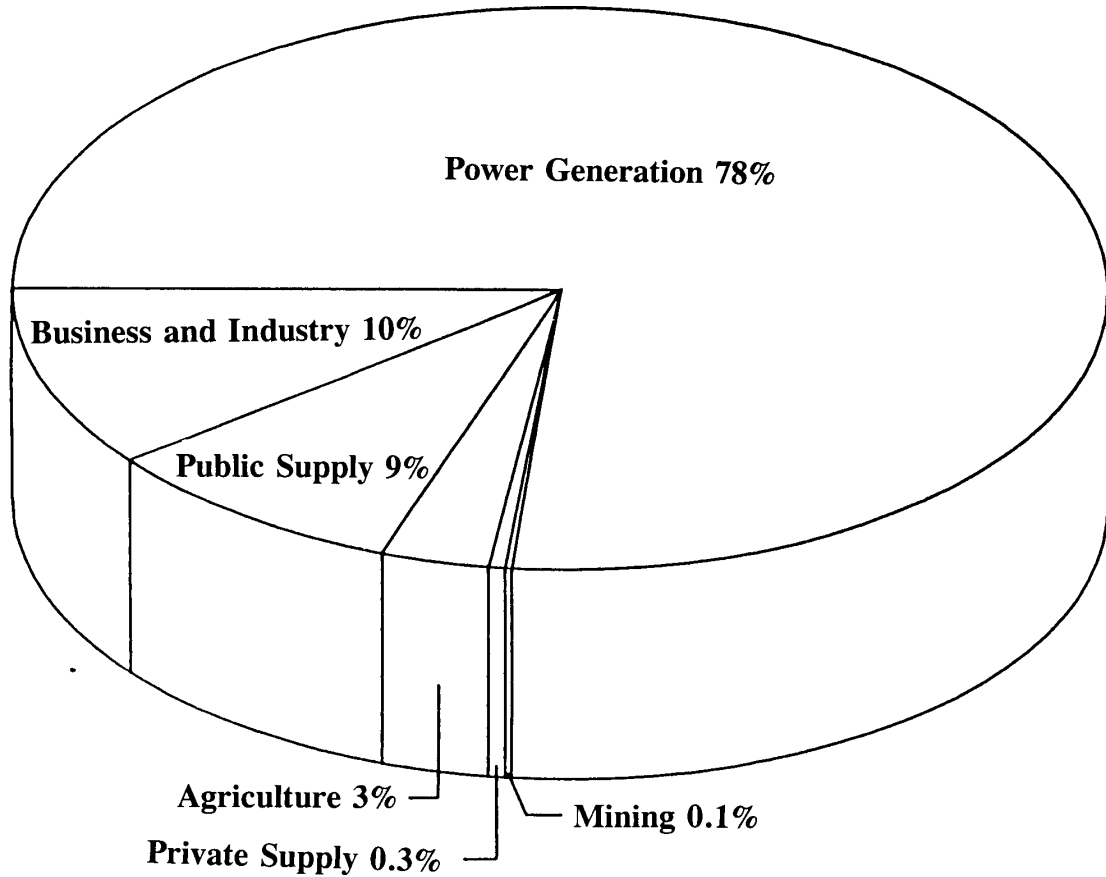
6. Name some products that we use in our homes every day that require water in their manufacturing processes.
7. How much water is used in Alabama every day?
8. What are the primary uses of water in Alabama?

Questions for Thought

1. What can happen to our water supply if a growing population continues to use water at the current rate?
2. Do you think nature can renew water fast enough to keep up the present rate of water use? Why or why not?
3. What could possibly happen to our water supply if manufacturers are not careful with the use of water in the production of their goods?
4. Can you think of any harmful effects that hydroelectric plants or nuclear power plants may have on rivers?
5. Why does Alabama rely less on water for irrigation than some other states?
6. What effect did the **Tennessee-Tombigbee Waterway** have on the use of rivers for transportation in Alabama? How do you think it affected Mobile as a port city?¹

Teacher Note:
¹ You may want to discuss the function of a port city.

FIGURE 3.1: Major Uses of Water in Alabama



Adapted from: Alabama's Water Resources: Student Activity Guide and Poster,
Legacy, Inc.

FACT SHEET: How Water Is Used

Interesting facts to remember about how water is used:

1. The most important use of water is to support life processes.
2. The human body is made up of about 70% water.
3. Humans can replace water lost in daily activities by drinking 8 glasses of water and eating foods with high water content, such as fruits and vegetables, each day.
4. The average American uses approximately 80 gallons of water each day for personal use.
5. Water is used by **industry** for **manufacturing** products, by facilities such as power companies to supply **electricity**, and by businesses such as restaurants to prepare food.
6. The largest user of water in the United States is the **agriculture** industry.
7. Approximately 8 billion gallons of water are used every day in Alabama.
8. **Electric power generation** is the largest use of water in Alabama.
9. Alabama relies less on water for agriculture than some other states because the abundant rainfall here helps in watering crops.
10. Ninety percent of Alabamians use public water supplies, the remaining 10% have private **wells**.
11. The **Tennessee-Tombigbee Waterway** is an important river in Alabama because it linked Mobile to the Tennessee River; this increased the importance of the shipping industry in the state.

GLOSSARY: How Water Is Used

agriculture	The science of preparing the soil, growing crops and raising farm animals; farming.
electric power generation	The production of electric energy, or electricity, using natural resources.
electricity	A natural form of energy that can be produced by manmade means, using natural resources, to generate heat or light.
generator	A machine that changes mechanical energy into electric energy.
hydroelectric power	Power produced by using water as a natural resource.
industry	A business or factory which makes large amounts of particular types of goods.
irrigation	A system of ditches and pipes which is used to help distribute water to the land for growing crops.
manufacturing	Making things, especially by using machinery in factories.
mining	The process of getting minerals from the earth.
nuclear power	Electric power produced using the nuclei (the central parts) of atoms (the tiniest bits of matter) as a natural resource.
steam	Hot water vapor which can produce power when under high pressure.
Tennessee-Tombigbee Waterway	The waterway that was built when the Tennessee and Tombigbee rivers were joined.
turbine	An engine made up of blades which spin or rotate; flowing water, air or steam causes these blades to spin. It may be connected to a generator which produces electricity.
well	A deep hole dug into an aquifer under the ground; it may be used for getting water.

WORKSHEET 3.1: Definitions

Directions: In the left column are definitions to the *Words to Remember* and in the right column are the words. Match the words with the correct definitions. Place the letter of the correct definition in the blank to the left of the word.

-
- | | |
|--|---------------------------------|
| _____ 1. Power produced by using water as a natural resource. | A. agriculture |
| _____ 2. Electric power produced using the nuclei (the central parts) of atoms (the tiniest bits of matter) as a natural resource. | B. electricity |
| _____ 3. The science of preparing the soil, growing crops and raising farm animals; farming. | C. electric power generation |
| _____ 4. The process of getting minerals from the earth. | D. generator |
| _____ 5. A system of ditches and pipes which is used to help distribute water to the land for growing crops. | E. hydroelectric power |
| _____ 6. A natural form of energy that can be produced by manmade means, using natural resources, to generate heat or light. | F. industry |
| _____ 7. A deep hole dug into an aquifer under the ground; it may be used for getting water. | G. irrigation |
| _____ 8. A business or factory which makes large amounts of particular types of goods. | H. manufacturing |
| _____ 9. A machine that changes mechanical energy into electric energy. | I. mining |
| _____ 10. The waterway that was built by joining together the Tennessee and Tombigbee rivers. | J. nuclear power |
| _____ 11. Making things, especially by using machinery in factories. | K. steam |
| _____ 12. The production of electric energy, or electricity, using natural resources. | L. Tennessee-Tombigbee Waterway |
| _____ 13. Hot water vapor which can produce power when under high pressure. | M. turbine |
| _____ 14. An engine made up of blades which spin or rotate; flowing water, air or steam causes these blades to spin. | N. well |

WORKSHEET 3.2: Vocabulary

Find the following words in the puzzle below:

AGRICULTURE
ALABAMA
BOATING
DRINKING
ENERGY
HYDROELECTRIC

IRRIGATION
MINING
RAINFALL
RESERVOIR
RIVER
STEAM

SWIMMING
TENNESSEE
TOMBIGBEE
WASHING
WATER
WELL

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

WORKSHEET 3.3: Facts About How Water Is Used

Directions: Below are sentences with words left out. Write the letter of the best word in the blank. You may use the *Background Information* to help you.

1. The most important use of water is _____.
 - A. to produce cars
 - B. for recreation
 - C. to support life processes

2. Water makes up about _____% of the fluids in our bodies.
 - A. 10
 - B. 30
 - C. 70

3. Water lost from the body through daily activities may be replaced by eating foods high in water content and drinking _____ glasses of water every day.
 - A. 2
 - B. 8
 - C. 20

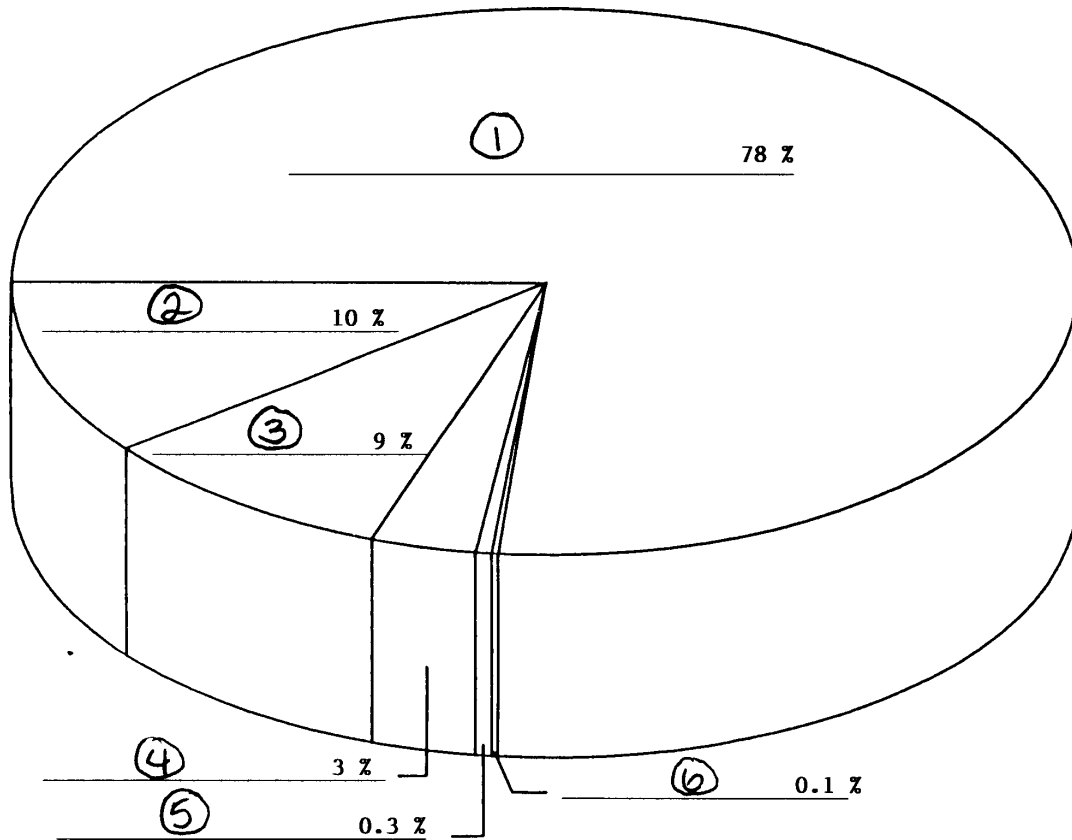
4. The average American uses approximately _____ gallons of water each day for personal use.
 - A. 10
 - B. 80
 - C. 300

5. Although some states use a major portion of their water for _____ purposes, this accounts for only 3% of water use in Alabama.
 - A. agricultural
 - B. energy production
 - C. transportation

6. Each day in Alabama, there are approximately _____ billion gallons of water used.
- A. 1
 - B. 8
 - C. 50
7. Two main types of electric power generation in Alabama use nuclear power and _____.
- A. hydroelectric power
 - B. oil
 - C. solar energy
8. One of the uses of water in the agriculture industry in Alabama is for _____.
- A. irrigation
 - B. watering farm animals
 - C. both A and B
9. One of the most important water systems that improved shipping in Alabama is the _____.
- A. inter-coastal canal
 - B. Tennessee-Tombigbee Waterway
 - C. Mobile Bay
10. Most of the water used in Alabama is for _____.
- A. irrigation of crops
 - B. drinking water
 - C. energy production

WORKSHEET 3.4: Major Uses Of Water In Alabama

Directions: Below is a figure of water uses in Alabama. The percentage of water use is given. Please write the category of water use in blanks below.



1. _____

4. _____

2. _____

5. _____

3. _____

6. _____

ACTIVITY 3.1: How Water is Used

Goal:

To increase the awareness of how water is used in our communities and homes.

Objective:

- To identify ways water is used in our daily lives.

Materials:

- old magazines
- poster board
- glue
- scissors
- markers
- soap and water



Procedure:¹

1. First, have a discussion with the students about ways water is used in our communities and homes. Have each student identify one way water is used.
2. Design a collage on ways water is used. Organize supplies around several washable tables.
3. Find pictures in magazines of examples of ways water is used in their community.
4. Group the pictures into different categories of water use, e.g., industrial, home, recreational, etc., and glue them to the posterboards.
5. Discuss the collages.

Discussion:

Water is used in many different ways. When students list the various uses in their communities and homes, they will have an appreciation of how much we rely on water resources. Students who live in rural areas will see different uses of water than do those who live in cities and towns. By listening to everyone's identification of different water uses, we become more aware of how our own communities use water.

Students will visualize ways that water is used in their community by viewing the pictures on the collage. By focusing on water use in looking for pictures, there should be a stronger awareness of how reliant we are on water.

Teacher Note:
¹ Since sometimes pictures may be hard to find, this activity may be performed as a group.

Discussion Questions:

1. What is the difference between wise (or efficient) use of water and unwise (or inefficient) use of water?
2. Which of the water uses listed is a waste of water? Why?
3. Which of the water uses listed is a wise use of water? Why?
4. What can happen to our water supply if water continues to be wasted, even in small amounts?
5. What can the individual person in a community do to help to conserve water?
6. How can we make the inefficient uses of water less wasteful?

Desired Outcome:

A collage that shows various ways that water is used in the community (or home). Students will be able to identify various water uses in their community, list wise and unwise uses of water, and be more aware of conservative practices when using water.

Evaluation:

1. Did the student make a collage?
2. Does the collage accurately show how water is used in the community (or home)?

Service Learning:

1. Find opportunities to display the collages at a school art show, during parent days, or display them as part of Earth Week.
2. Ask to speak to a younger class about ways to use water in the community (or in the home). Use the collages as a visual aid.
3. Identify the most wasteful use of water in the community. Brainstorm ways that the water waste could be eliminated. Then identify (a) who is responsible for this water waste (i.e., a company, an individual or a group of individuals) and (b) who is in a position to stop the water waste. Be sure to get the addresses.

Select a committee of students to approach the person or persons responsible about the problem of wasting water. Offer suggestions for how this may be eliminated. If no results, write letters to the appropriate individuals who may be able to help to get the problem resolved. Plot out a strategy to fall back on if the first two approaches do not get results.

ACTIVITY 3.2: Home Water Use

Goal:

To increase awareness of water use within our homes.

Objective:

○ To track by tally method¹ each time water is used at home.

Materials:

- 2 handouts:
 - "Home Water Use Inventory for the Bathroom"*
 - "Home Water Use Inventory for the Kitchen"*

Procedure:²

1. Give each student two copies of each inventory.
2. Ask students to post a copy of the bathroom inventory in the bathroom and a copy of the kitchen inventory in the kitchen.
3. Every time a family member uses water for any of the uses on the inventory, that family member should place a tally mark in the appropriate box.
4. At the end of a week, add up the amount of water in gallons that was used last week.
 - a. First, multiply the number of tally marks in each square by the number of gallons of water given for that activity in the bathroom.
 - b. When all tally marks have been multiplied by the number of gallons for every square, add the numbers down each column and then add the totals at the bottom of the columns across the page.
 - c. You may also want to add the numbers across the page for each category. This information would tell you what types of activities are using the most water.
 - d. Repeat this process for the water used in the kitchen.
 - e. Total the two grand totals together.³

Teacher Notes:

¹ The tally method may need to be demonstrated.

² Suggest that the students may want to:

- a. Ask their family members to help them with this activity.
- b. Secure the inventories in a location where they will not get wet.
- c. Put a pencil nearby.

³ Fill in sample amounts of water used on an inventory. Then demonstrate mathematically how the total for each column and the grand total can be reached. Students may feel more comfortable using a calculator.

Discussion:

When students keep an inventory of their water use at home, they will be more aware of actually how much water is used each day in the home. A reinforcement of the learning activity will occur by involving other family members in this exercise. Some of the ways we use water are wasteful; perhaps this exercise will make us more aware that we all can contribute to water conservation and wise water use.

Discussion Questions:

1. Which area in the home uses the most water?
2. Average the number of gallons used each day by each student's family. How does this number compare with the amount given in the Background Information?
3. Divide the class into public water system users and well water users. Average the amounts of water used daily by each group. Are there any differences? If so, what explanation do you have for this?
4. Which area in the home wastes the most water?
5. What are some of the ways we can conserve water at home?

Desired Outcome:

The two inventories should be filled in and totaled correctly.

Evaluation:

Did the student have enough interest in the activity to complete the project?

ACTIVITY 3.3: Water Jeopardy

Goal:

To reinforce facts about uses of water.

Objective:

○ To promote critical thinking about uses of water.

Materials:

- chalk board, bulletin board or standard size poster board
- play money in 4 denominations: (\$1, \$5, \$10, \$20)
(available in toy stores or borrowed from someone's board game)
- tape or tacks
- bell or buzzer
- scissors
- sheets of **Categories, Dollar Amounts, and Water Use Facts**

Procedure:¹

1. Cut out the 4 **Category** labels on the sheet provided and tape or tack them across the top of the board.
2. Cut out the **Water Use Facts** sheets and place them in the appropriate order underneath each category. (See Answer Sheet for correct placement).
3. Cut out the **Dollar Amount** sheets and place them on top of the appropriate facts under each category. When finished, the chart should resemble the one below (the facts will be hidden underneath each dollar amount sheet).

Teacher Note:

¹ On the following pages, cut out the **Categories, Facts, and Dollar Amounts** along the dotted lines. The pages have been formatted to fit a standard size poster board.

HOME USE	AGRICULTURE	INDUSTRIAL	MISCELLANEOUS
\$1	\$1	\$1	\$1
\$5	\$5	\$5	\$5
\$10	\$10	\$10	\$10
\$20	\$20	\$20	\$20

4. Divide the students into 2 teams (or 3, depending on number of students).
5. Select one group to begin the game. They will select a category and a question. Read the question to the students; the first group to know the answer will ring their bell and attempt to answer the question.
6. With the answer sheet in front of you (see the next page), note the students' answer. If the incorrect answer is given, the other group may try to answer.
7. If the team answers the question correctly, give them the appropriate dollar amount (in play money) for that question. They will then be allowed to select another category.
8. After all the questions are answered, the team with the most money wins.

Desired Outcome:

Students will compete against each other in a game which quizzes about water use facts.

Evaluation:

Students will verbally answer questions (or pose questions for the answers given--as in a Jeopardy format). In a competitive game, water facts can be presented in a more stimulating manner.

You may wish to make up additional questions. These could be written on blank sheets of paper and placed under the dollar amount sheets.

References:

The Water Sourcebook: Grades 3-5.
Tennessee Valley Authority, 1993.
Surface Water: The Teacher's Guide.
Alexandria, VA: Water Pollution Control
Federation, 1988.

(Material largely adapted from The Water Sourcebook using Alabama-specific facts)

ANSWERS: Water Use Facts

	HOME USE	AGRICULTURE	INDUSTRIAL	MISCELLANEOUS
\$1	A standard toilet uses this many gallons when flushed. (5-7 gallons)	Agriculture is the largest user of water in the United States. (True)	This is the largest user of water in Alabama. (Electric power generation)	Activities such as swimming, boating, and fishing are under this type of water use. (Recreation)
\$5	The average American uses this many gallons of water each day in the home. (80 gallons)	Agriculture is the largest user of water in Alabama. (False)	This industry uses water to process iron ore. It is important in the Birmingham area. (Mining)	This is the most important use of water. (To support life processes)
\$10	Showers usually use more water than tub baths. (False)	This is a process which uses a system of ditches and pipes to water crops. (Irrigation)	This waterway was built to join two rivers in Alabama and is important to the shipping industry. (Tennessee-Tombigbee Waterway)	Brown's Ferry is a large user of water in Alabama. Name its function. (Nuclear power plant)
\$20	About 10% of Alabamians receive their water from this source. (Private wells)	For this reason, Alabama relies less on water for agriculture than some other states. (It receives more annual rainfall)	Water is used in this form to run engines in the manufacturing process. (Steam)	The human body is made up of this percentage of water. (70%)

WATER USE FACTS: Categories For Water Jeopardy

Directions: Cut out each category title and place across top of poster board, bulletin board on chalk board. On the following pages, cut out the dollar amounts and facts and place on board. Place the dollar amount sheets on top of the fact sheets.

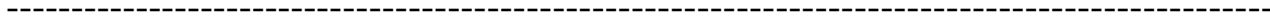
HOMIE USE

AGRICULTURE

INDUSTRIAL

MISCELLANEOUS

\$1



\$5

\$1



\$5

\$1



\$5

\$1



\$5

\$10



\$20

\$10



\$20

\$10



\$20

\$10



\$20

	HOME USE
\$1	A standard toilet uses this many gallons of water when flushed.
\$5	The average American uses this many gallons of water each day in the home.

	HOME USE
\$10	Showers usually use more water than tub baths. (True/False)
\$20	About 10% of Alabamians receive their water from this source.

	AGRICULTURE
\$1	Agriculture is the largest user of water in the United States. (True/False)
\$5	Agriculture is the largest user of water in Alabama. (True/False)

	AGRICULTURE
\$10	This is a process which uses a system of ditches and pipes to water crops.
\$20	For this reason, Alabama relies less on water for agriculture than some other states.

	INDUSTRIAL
\$1	This is the largest user of water in Alabama.
\$5	This industry uses water to process iron ore. It is important in the Birmingham area.

INDUSTRIAL

\$10

This waterway was built to join two rivers in Alabama and is important to the shipping industry.

\$20

Water is used in this form to run engines in the manufacturing process.

	MISCELLANEOUS
\$1	Activities such as swimming, boating, and fishing are under this type of water use.
\$5	This is the most important use of water.

	MISCELLANEOUS
\$10	Brown's Ferry is a large user of water in Alabama. Name its function.
\$20	The human body is made up of this percentage of water.

ANSWER KEY
WORKSHEET 3.1: Definitions

Directions: In the left column are definitions to the *Words to Remember* and in the right column are the words. Match the words with the correct definitions. Place the letter of the correct definition in the blank to the left of the word.

-
- | | | |
|---------------------|---|---------------------------------|
| <u>E</u> 1. | Power produced by using water as a natural resource. | A. agriculture |
| <u>J</u> 2. | Electric power produced using the nuclei (the central parts) of atoms (the tiniest bits of matter) as a natural resource. | B. electricity |
| <u>A</u> 3. | The science of preparing the soil, growing crops and raising farm animals; farming. | C. electric power generation |
| <u>I</u> 4. | The process of getting minerals from the earth. | D. generator |
| <u>G</u> 5. | A system of ditches and pipes which is used to help distribute water to the land for growing crops. | E. hydroelectric power |
| <u>B</u> 6. | A natural form of energy that can be produced by manmade means, using natural resources, to generate heat or light. | F. industry |
| <u>N</u> 7. | A deep hole dug into an aquifer under the ground; it may be used for getting water. | G. irrigation |
| <u>F</u> 8. | A business or factory which makes large amounts of particular types of goods. | H. manufacturing |
| <u>D</u> 9. | A machine that changes mechanical energy into electric energy. | I. mining |
| <u>L</u> 10. | The waterway that was built by joining together the Tennessee and Tombigbee rivers. | J. nuclear power |
| <u>H</u> 11. | Making things, especially by using machinery in factories. | K. steam |
| <u>C</u> 12. | The production of electric energy, or electricity, using natural resources. | L. Tennessee-Tombigbee Waterway |
| <u>K</u> 13. | Hot water vapor which can produce power when under high pressure. | M. turbine |
| <u>M</u> 14. | An engine made up of blades which spin or rotate; flowing water, air or steam causes these blades to spin. | N. well |

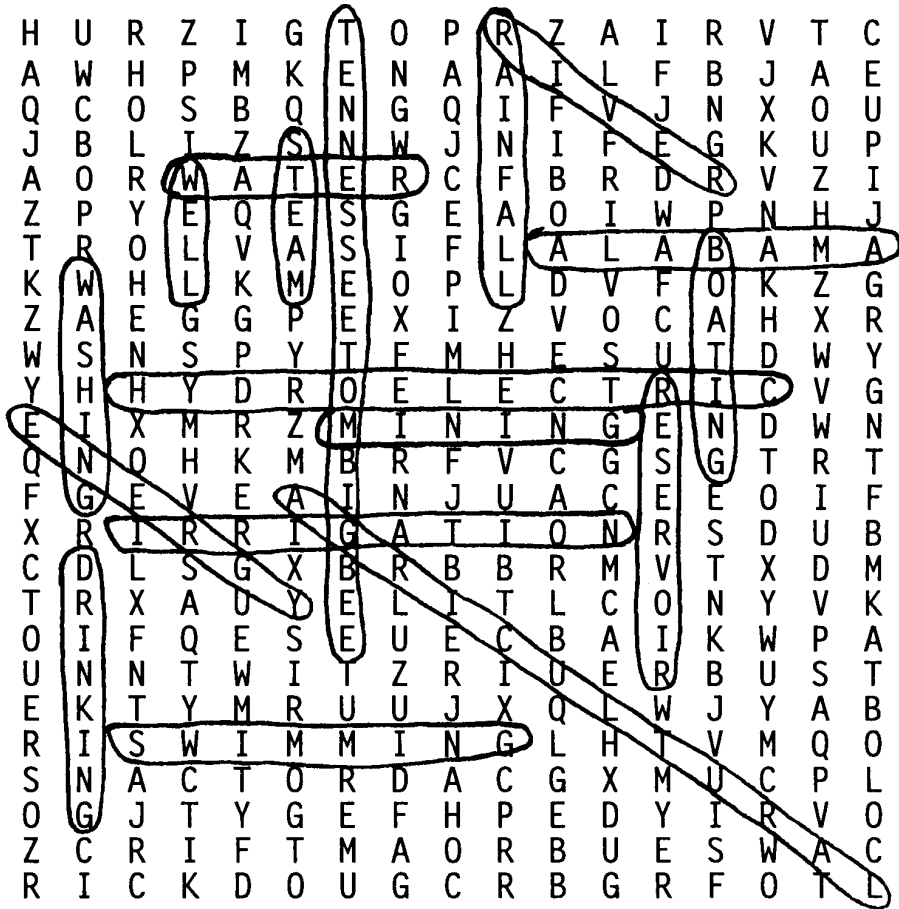
ANSWER KEY
Worksheet 3.2: Vocabulary

Find the following words in the puzzle below:

AGRICULTURE
ALABAMA
BOATING
DRINKING
ENERGY
HYDROELECTRIC

IRRIGATION
MINING
RAINFALL
RESERVOIR
RIVER
STEAM

SWIMMING
TENNESSEE
TOMBIGBEE
WASHING
WATER
WELL



ANSWER KEY
WORKSHEET 3.3: Facts About How Water Is Used

Directions: Below are sentences with words left out. Write the letter of best word in the blank. You may use the *Background Information* to help you.

1. The most important use of water is C .
 - A. to produce cars
 - B. for recreation
 - C. to support life processes

2. Water makes up about C % of the fluids in our bodies.
 - A. 10
 - B. 30
 - C. 70

3. Water lost from the body through daily activities may be replaced by eating foods high in water content and drinking B glasses of water every day.
 - A. 2
 - B. 8
 - C. 20

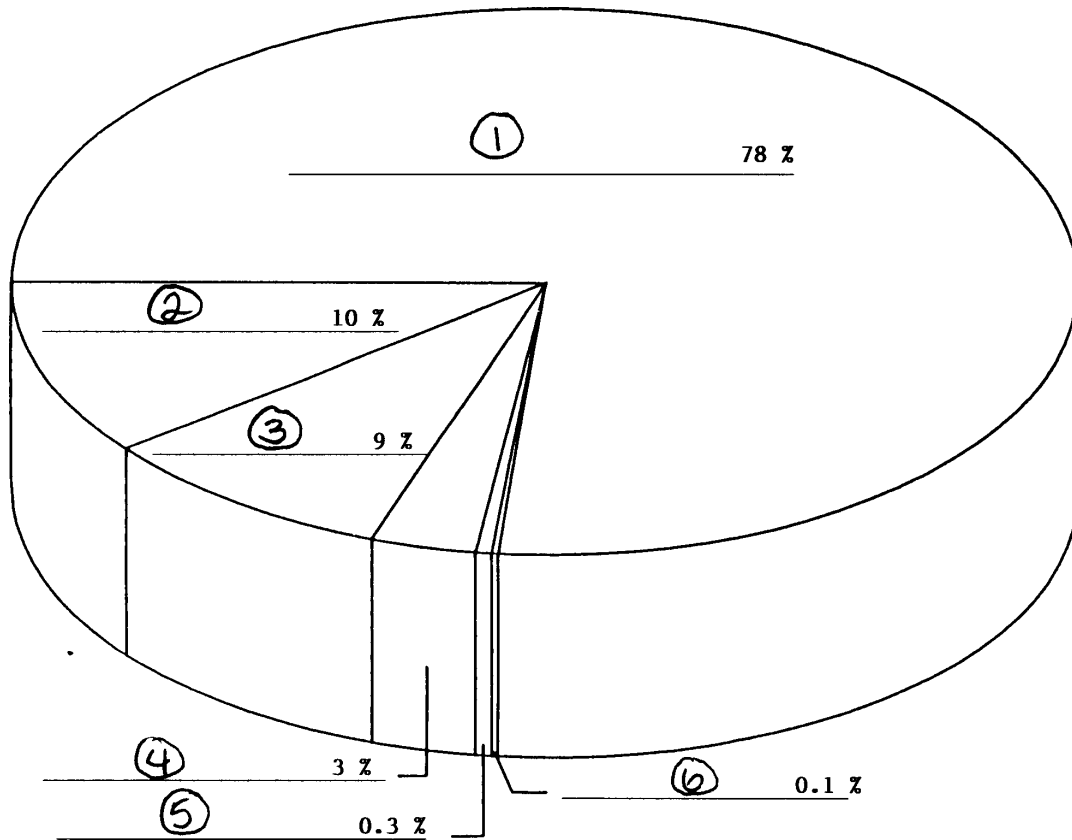
4. The average American uses approximately B gallons of water each day for personal use.
 - A. 10
 - B. 80
 - C. 300

5. Although some states use a major portion of their water for A purposes, this accounts for only 3% of water use in Alabama.
 - A. agricultural
 - B. energy production
 - C. transportation

6. Each day in Alabama, there are approximately B billion gallons of water used.
- A. 1
 - B. 8
 - C. 50
7. Two main types of electric power generation in Alabama use nuclear power and A .
- A. hydroelectric power
 - B. oil
 - C. solar energy
8. One of the uses of water in the agriculture industry in Alabama is for C .
- A. irrigation
 - B. watering cattle
 - C. both A and B
9. One of the most important water systems that improved shipping in Alabama is the B .
- A. inter-coastal canal
 - B. Tennessee-Tombigbee Waterway
 - C. Mobile Bay
10. Most of the water use in Alabama is for C .
- A. irrigation of crops
 - B. drinking water
 - C. energy production

ANSWER KEY
WORKSHEET 3.4: Major Uses of Water in Alabama

Directions: Below is a figure of water uses in Alabama. The percentage of water use is given. Please write the category of water use in blanks below.



1. POWER GENERATION

4. AGRICULTURE

2. BUSINESS AND INDUSTRY

5. PRIVATE SUPPLY

3. PUBLIC SUPPLY

6. MINING

HOW AM I DOING?

<u>Page</u>	<u>Yes</u>	<u>No</u>	<u>Date</u>
3-3 Practice reading and saying Words to Remember	_____	_____	_____
3-6 Answer Questions for Review	_____	_____	_____
3-6 Answer Questions for Thought	_____	_____	_____
3-8 Read Fact Sheet	_____	_____	_____
3-9 Review Glossary	_____	_____	_____
	<u>Possible Score</u>	<u>My Score</u>	<u>Date</u>
3-10 Worksheet 3.1: Definitions	<u>14</u>	_____	_____
3-11 Worksheet 3.2: Vocabulary (Word Puzzle)	<u>17</u>	_____	_____
3-12 Worksheet 3.3: Facts About How Water Is Used	<u>10</u>	_____	_____
3-14 Worksheet 3.4: Major Uses of Water in Alabama	<u>6</u>	_____	_____
	<u>Complete</u>	<u>In-Complete</u>	<u>Date</u>
3-15 Activity 3.1: How Water Is Used	_____	_____	_____
3-17 Activity 3.2: Home Water Use	_____	_____	_____
3-21 Activity 3.3: Water Jeopardy	_____	_____	_____