Contents

NAME: _____

Before You Read

Conservation: What We Can Do

1. Put a check mark (✓) next to the answer that is most correct.

a) What are ice bergs made of?

- ○ **A** solid salt water.
- ○ **B** solid fresh water.
- ○ **C** liquid salt water.
- ○ **D** liquid fresh water.

b) Which of these is *not* a possible solution to a shortage of fresh water?

- ○ **A** Use less water.
- ○ **B** Find more water.
- ○ **C** Drink less water.
- ○ **D** Transport water.

c) Most fresh water is used to:

- ○ **A** irrigate crops.
- ○ **B** supply factories.
- ○ **C** wash clothing.
- ○ **D** take baths.

2. (Circle) the word **TRUE** if the statement is TRUE **or** (Circle) the word **FALSE** if it is FALSE.

a) Some farmers use underground water to irrigate crops.
TRUE **FALSE**

b) Some household water could be used twice.
TRUE **FALSE**

c) Some people collect rainwater that falls on their roof.
TRUE **FALSE**

d) "Desalination" means dissolving salt in water.
TRUE **FALSE**

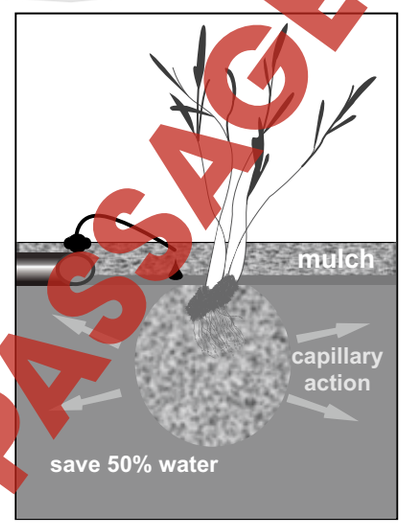
e) Fewer than 10% of homes, worldwide, have no water faucet.
TRUE **FALSE**

Reading Passage

NAME: _____

Conservation: What We Can Do

There are many things that can be done to help solve the problem of the shortage of fresh water. None of these will probably be a solution by itself. First we will look at water **conservation**. It is often possible to get the same benefit from a smaller amount of water. The only thing we can't do is drink less water, and that is a very small part of the world's water need.



Seventy per cent of fresh water is used to irrigate crops. Only the roots of plants need water, but when plants are watered by flooding the fields or by spraying with sprinklers, much of the water either misses the roots or evaporates. **Drip irrigation** can prevent much of this loss by carrying water in hoses to each plant and dripping it just above the roots from small outlets. Fertilizer can also be added to the drip water, reducing hazardous runoff into streams. Some farmers further prevent evaporation loss by covering the ground with sheets of plastic that has holes for the plants to grow out of.

Fresh water use in homes accounts for only about 15% of the total, but conserving this water can also make a difference. Many people now use "low-flow" toilets, shower heads, faucets, and other appliances. In general, these devices work just as well as the older kind and use about half as much water or even less.

STOP

Explain briefly how drip irrigation saves water.

_____

_____

It is also possible to recycle household water that has been used for bathing, laundry, and dishwashing. This water, called "**graywater,**" is less contaminated than water containing sewage. It can be purified more easily than sewage-containing water and

After You Read

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Conservation: What We Can Do

1. Fill in each blank with a word or group of words from the list.

ice berg **rainwater harvesting** **drip irrigation** **desalination** **graywater**

a) Collecting and storing water from the roof of a building is called _____ (a).

b) Scientists have considered towing large _____ (b)s to cities that need fresh water.

c) Water in which someone has taken a bath is considered _____ (c).

d) A major problem with _____ (d) is that in requires a large amount of energy.

e) _____ (e) saves water by delivering water just to the roots of plants, rather than to all the soil in the field.

2. (Circle) the word **TRUE** if the statement is TRUE **or** (Circle) the word **FALSE** if it is FALSE.

a) Some farmers save water by covering their fields with sheets of plastic.
TRUE **FALSE**

b) Half of all fresh water is used in homes.
TRUE **FALSE**

c) The best way to stop climate change is to use less water.
TRUE **FALSE**

d) Low-flow toilets use about half as much water as regular toilets.
TRUE **FALSE**

e) Desalination is a good solution to water shortages in poor countries.
TRUE **FALSE**

NAME: _____

After You Read

Conservation: What We Can Do

3. Answer the questions in complete sentences.

a) Describe how drip irrigation conserves water.

_____

_____

b) Identify the cause of global climate change that people have the ability to change.

_____

_____

Extensions & Applications

a) Describe one way to get more benefit from the same amount of fresh water.

_____

_____

b) Describe one way to increase the amount of fresh water available.

_____

_____

c) Describe two *underlying* causes of the global water shortage.

_____

_____

Activity Four

Build a Drip Irrigation System

If you have a home garden that you water with a hose or sprinkler, you may want to install a drip irrigation system to conserve water. This is less complicated and expensive than you might think.

You can begin by asking questions at a gardening store, plant nursery, or large hardware store. You can also see drip irrigation equipment at these places. You can get more information by searching libraries and the Internet for "drip irrigation." If you go to the sites of companies that sell drip irrigation equipment over the internet, you can see pictures of all the different parts that make up a drip system. The simplest sets of parts to set up a drip system are not very expensive.

To learn the basics in the easiest way possible, you can begin by running a drip line to just one plant or tree. After you see how this works, you can run branching lines to other parts of your garden.

If you don't have a home garden, you could study drip irrigation systems and write a report. These are some things you could include in a report on drip irrigation:

- Pictures or drawings of the different parts of a drip system with explanations of how each part works.
- Diagrams of large and small drip systems.
- Descriptions of systems that irrigate large farms, plant nurseries, and greenhouses.
- Estimates of water and money saved by systems you have visited.
- A description of automated systems that regulate the flow of water to plants.

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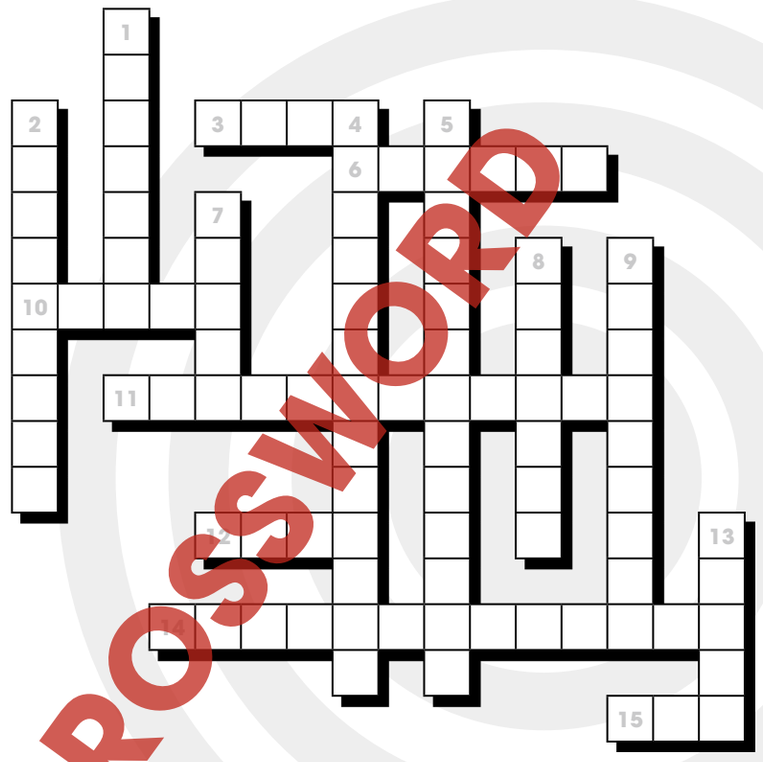
Crossword Puzzle!



Across

3. water-saving kind of irrigation
6. water flowing from a field into a stream
10. the world's most popular drink
11. making fresh water out of salt water
12. to change from solid to liquid
14. the kind of dam electricity comes from
15. solid water

Down

1. a dry spell
2. bathwater or dishwater
4. water falling from the sky
5. Pumping water out faster than it seeps in is _____ use.
7. a big chunk of ice floating in the ocean
8. an undergroud layer of water
9. Some people collect it from their roof
13. Water goes round and round in a _____

Word List

AQUIFER, BERGS, CYCLE, DESALINATION, DRIP, DROUGHT, GRAYWATER, HYDROELECTRIC, ICE, MELT, PRECIPITATION, RAINWATER, RUNOFF, UNSUSTAINABLE, WATER

(Note: For answers of more than one word, do not put a space between the words.)

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Part C

Comprehension Quiz

Answer each question in complete sentences.

1. Explain what "unsustainable" withdrawal of water from an aquifer means. (3)

2. Describe the "greenhouse effect" as it applies to Earth's atmosphere. (3)

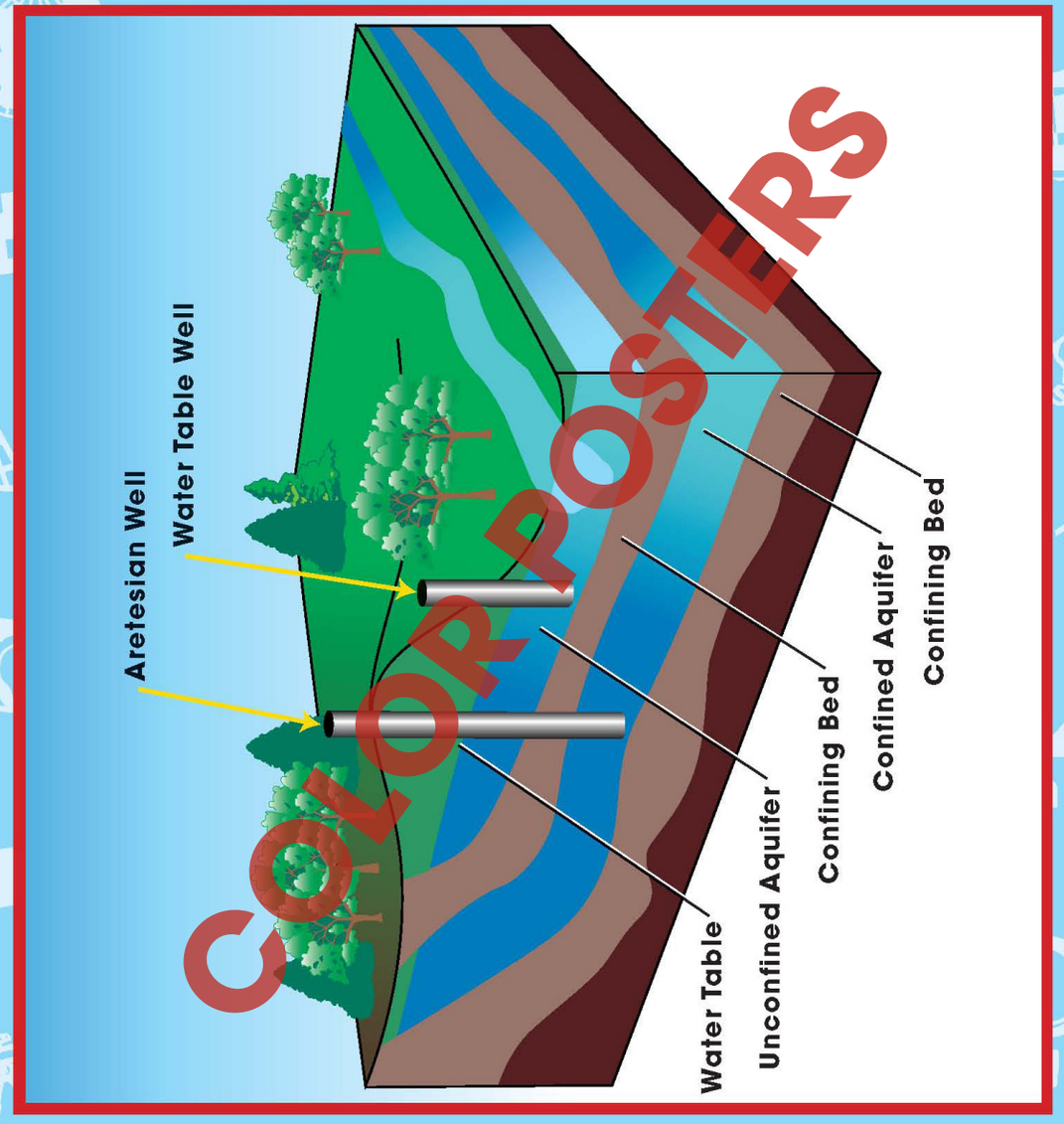
3. Describe one problem that can result when irrigation water for crops runs into a river. (3)

4. Why does a drip irrigation system use less water than a sprinkler system? (3)

5. How is the increasing number of people on Earth related to fresh water shortage? (3)

SUBTOTAL: /15

Underground Fresh Water



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_____

_____

c) Describe two *underlying* causes of the global water shortage.

_____

_____

EASY

3.

a) Water is delivered just to the roots of the plants and not to the whole field. This takes less water and reduces the amount lost to evaporation.

b) People can reduce the amount of greenhouse gases that enter the atmosphere, which will slow global warming.

Evaporation, and condensation (and perhaps runoff) happened in the jar.

Evaporation happened when the jar was heated, and condensation (and perhaps runoff) happened when the jar was cooled.

The weight did not change because the water was recycled and did not leave the jar (answers will vary).

The beads of condensed water did not taste salty.

The temperature was higher inside the jar.

Light came in, heated the inside, and heat was trapped.

- Historians tend to believe water conflicts will not lead to wars.
- Some historians say water is too important to fight over.
- (Answers will vary.) The Jordan, the Nile, the Colorado etc.

(Answers will vary.)

ions & Applications

Answers will vary:

a) Drip irrigation, graywater recycling, etc.

b) Rainwater harvesting, desalination, melt an ice berg, etc.

c) Global population increase and greenhouse gas emissions.