

UNIT 12:

**Water...Salty
or Fresh??**

Teacher's Notes

WATER...SALTY OR FRESH?

Water covers nearly 75% of the earth. When we think of water, we think of rain, lakes and rivers because they are parts of our daily lives. Water is also found in the atmosphere, underground, in snow, ice, seas and oceans. It is in constant motion and recycles itself through the Water Cycle.

Most of the earth's water is salty or permanently frozen. **95.1% of water on earth is estimated to be salt water. Fresh water totals only 4.9% of all water on earth.** Fresh water is found in ice, lakes, rivers, streams and underground. Only about **0.01% of earth's water is found in rivers and lakes.**

Humans need water to live. The most common sources of drinking water come from groundwater (wells), lakes, rivers and streams. Having such limited amounts, it is ironic that we continually pollute and misuse this vital life line.

Cities and towns throughout the world have always developed near a water source. As population and economic activities increased, inefficient water use practices were and are being used. The swift rate of industrial development in the last century has isolated and removed citizens from their water sources. Lake harbors are often industrialized, local rivers and streams are unpleasant and polluted and groundwater is not visible because it is located underground. It is not surprising to find that that many people do not know where their drinking water comes from. Water conservation and protection are challenges faced by all rural and urban communities on earth.

A large part of the Greater Toronto Area (GTA) relies on water from Lake Ontario for their drinking supplies. All the water that leaves GTA homes, as well as rain water that runs off lawns and roads, returns into Lake Ontario. Areas outside of the GTA use groundwater, which is obtained, from local wells. These include Regions such as Waterloo, Wellington and parts of north Peel, to mention a few. In total, 26% of Canadians rely on groundwater for their drinking supplies.

Water is an active part our daily lives (bathing, cooking, cleaning etc.), yet we take it for granted everyday. Did you know that one drop of car oil will make 25 litres of water unfit for drinking? It is important to have an awareness of water's limited availability and realize the impact that daily actions can have on local water quality. Each one of us has the responsibility of protecting and conserving water, a little care goes a long way. **Clean Water - Life Depends on It!**

Sources: Clean Water Life Depends On It! Freshwater Series, A-3. Environment Canada. Ottawa, 1992.

Water Conservation - Every Drop Counts. Freshwater Series, A-6. Environment Canada. Ottawa, 1992.

Water - Here, There and Everywhere. Freshwater Series, A-2 Environment Canada. Ottawa, 1992.

Water...Salty or Fresh??



Overview of Activity:

Students learn about salt water and fresh water. They recognize water sources and use mathematical tools to discover that fresh water supplies are limited.

Outcomes:

- Discover types of water on earth (fresh and salt water).
- Conceptualize amount of water available for drinking.
- Recognize that humans and all living things need water to live.

Purpose:

In small groups students taste-test and "brainstorm race" to discover sources of salt water and fresh water.

Materials Needed:

- a globe
- glasses of water
- salt
- Diagram 1; Activity Sheets 1 & 2

Procedure:

PART 1: Taste Test

- Students look at a globe. Do they see more land or water? Explain that water covers about 75% of the earth. Use Diagram 1 to graphically represent their findings.
- Class Taste Test - Have students taste 2 glasses of water - have tap

water in one and add salt to the other.

Ask students which is tap water. Which would their pet drink?

- Stress that many creatures need fresh water to survive.

PART 2: Brainstorm Race

- Students form small groups. (*Groups should prepare for "Brain Storm" races!*)
- Give groups 5 minutes to write lists of places where water can be found. The group with the longest list wins.
- Use *Activity Sheet 1*. Create a class list of salt water and fresh water sources. Have students complete *Activity Sheet 2*.

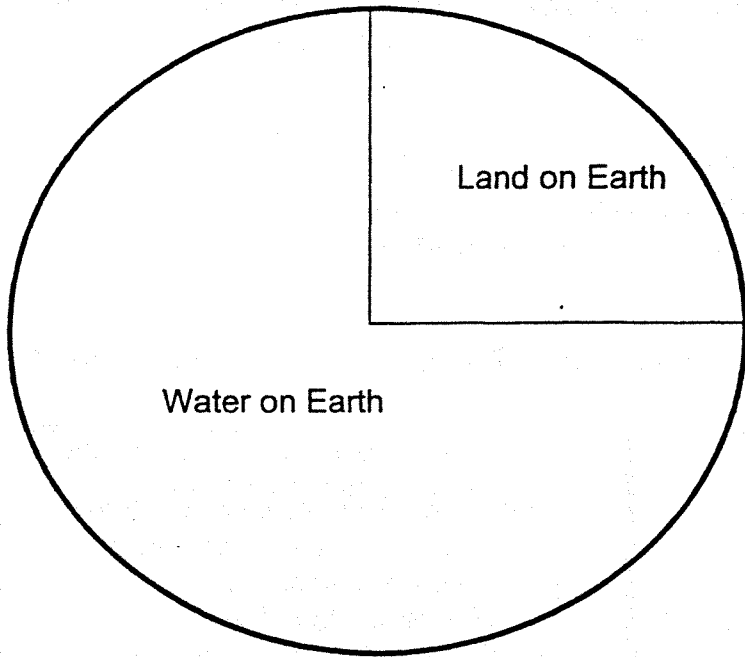
Observations:

See *Water: Salty or Fresh? Activity Sheets 1 & 2*

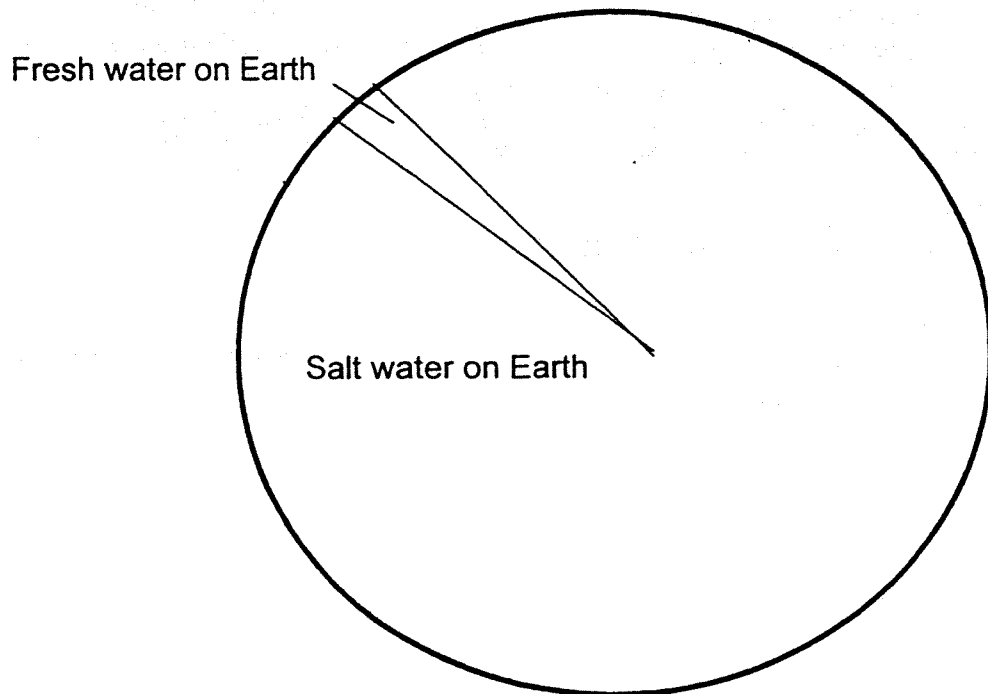
Conclusions:

Students develop team work skills and learn about fresh water and salt water availability and use.

**Diagram 1:
Distribution of Water on Earth**

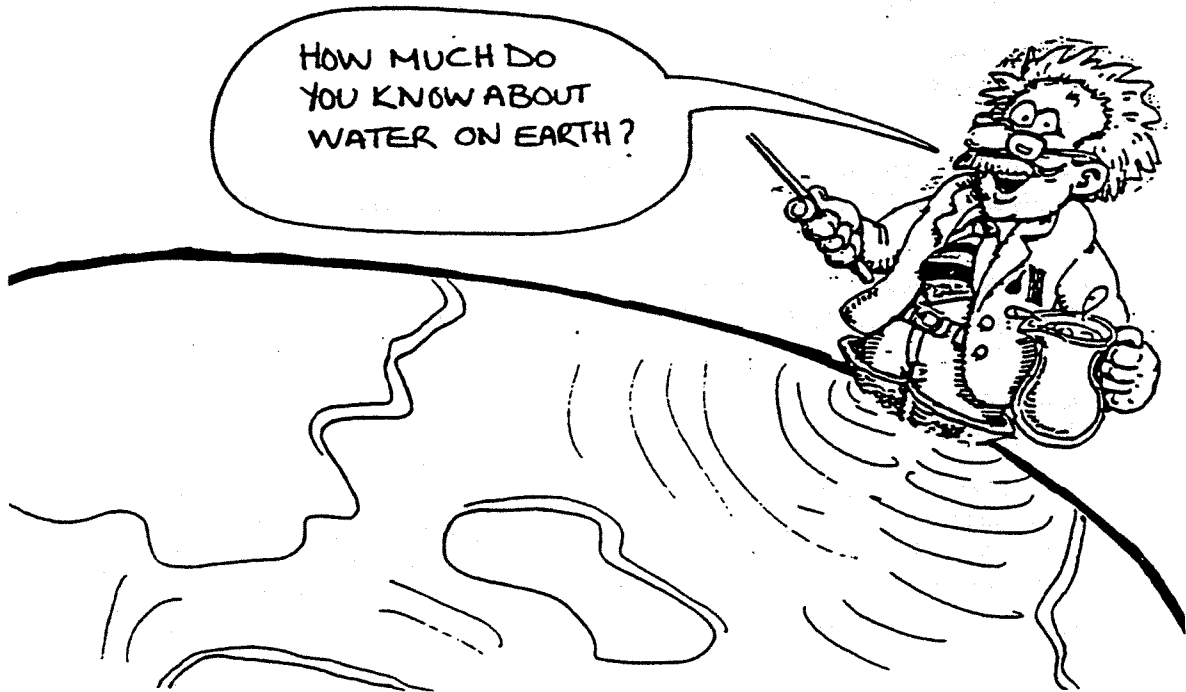


Distribution of Fresh Water to Salt Water



Teacher's Notes
Water... Salty or Fresh? Activity Sheet 1

Where We Find Water	Salt Water	Fresh Water
lake		<u>x</u>
bathroom		<u>x</u>
puddle		<u>x</u>
stream		<u>x</u>
river		<u>x</u>
ocean	<u>x</u>	
kitchen		<u>x</u>
underground		<u>x</u>
sky		<u>x</u>
as snow		<u>x</u>
as rain		<u>x</u>

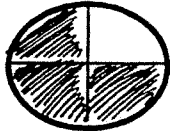


Teacher's Notes
Water... Salty or Fresh? Activity Sheet 2

- 1 a) If the earth would be split into 100 parts with 25 parts covered with land, how many parts of the earth's surface would be covered with water? Subtract to find your answer.

100 parts of earth - 25 parts land = 75 parts water

- b) This circle represents earth if it were split into 4 equal parts. Colour the land parts brown. Colour the water parts blue. Make sure it agrees with your answer in the last question.



2. a) If all the water on earth was placed into 100 glasses, 95 glasses would be salt water. How many glasses would be fresh water? Subtract to find your answer.

100 glasses - 95 glasses of salt water = 5 glasses of fresh water

- b) If all the water on earth was divided into 10 water holding tanks, how many of the holding tanks would hold salt water? Illustrate your results by shading in the appropriate number of circles.



3. Salt water is found in oceans and seas. Can you think of places where we find fresh water?

a) lakes

b) natural springs

c) rivers

d) ponds

e) streams

f) the sky

4. Almost all freshwater on earth is found in groundwater.

- a) Where can we find groundwater?

underground.

- b) How do people get groundwater to their homes?

through wells that pump water up to the surface

- 5.a) Name 4 living creatures that need fresh water to survive.

1) people 2) plants 3) animals 4) trees

- b) Name 2 living creatures that need salt water to survive.

1) whales 2) sea plants

- 6.a) If all the fresh water on earth was polluted, what do you think would happen to animals; to plants; and to people?

- health would suffer
- they would become sick
- many would die

• people would have to find ways to clean the polluted water, avoid further pollution and desalinate salt water.

Water...Salty or Fresh! Activity Sheet 1



Where We Find Water	Salt Water	Fresh Water
<i>Example: In a lake</i>		✓

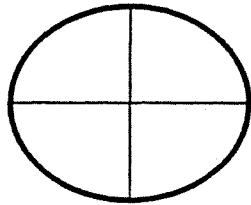


Water: Salty or Fresh? Activity Sheet 2

- 1 a) If the earth would be split into 100 parts with 25 parts covered with land, how many parts of the earth's surface would be covered with water? Subtract to find your answer.

100 parts of earth - 25 parts land = _____ parts water

- b) This circle represents earth if it were split into 4 equal parts. Colour the land parts brown. Colour the water parts blue. Make sure it agrees with your answer in the last question.



2. a) If all the water on earth was placed into 100 glasses, 95 glasses would be salt water. How many glasses would be fresh water? Subtract to find your answer.

100 glasses - 95 glasses of salt water = _____ glasses of fresh water

- b) If all the water on earth was divided into 10 water holding tanks, how many of the holding tanks would hold salt water? Illustrate your results by shading in the appropriate number of circles.



3. Salt water is found in oceans and seas.
Can you think of places where we find fresh water?

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

4. Almost all freshwater on earth is found in groundwater.

a) Where can we find groundwater?

b) How do people get groundwater to their homes?

5.a) Name 4 living creatures that need fresh water to survive.

1) _____

2) _____

3) _____

4) _____

Please Use
Water
Wise!



b) Name 2 living creatures that need salt water to survive.

1) _____

2) _____

6.a) If all the fresh water on earth was polluted, what do you think would happen to animals; to plants; and to people?
