



## TEACHER GUIDE

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## STUDENT HANDOUTS

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## EASY MARKING™ ANSWER KEY .....

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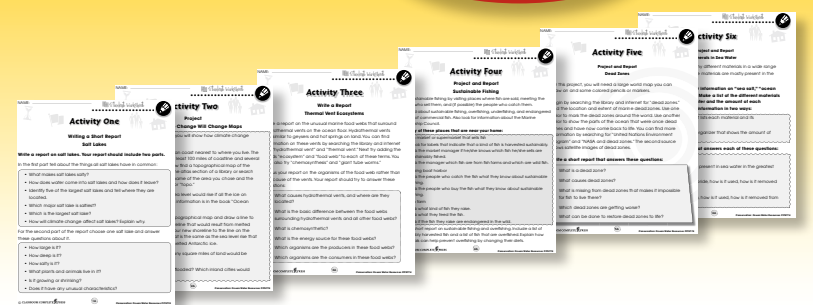
## MINI POSTERS .....

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## How the Amount of Salt Water Could Change

1. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

- a) The Great Lakes are salt lakes because they flow to the ocean.  
**TRUE      FALSE**
- b) All the ice at the North Pole melts every summer.  
**TRUE      FALSE**
- c) The South Pole is located on the continent of Antarctica.  
**TRUE      FALSE**
- d) Sea level is rising about 1.5 meters (4.9 feet) each year.  
**TRUE      FALSE**
- e) Rising global temperature is increasing the size of most salt lakes.  
**TRUE      FALSE**
- f) Rising sea levels will be more of a problem for some countries than others.  
**TRUE      FALSE**

2. Use the words or groups of words in the list to answer each question. Use each word only once. Some words will not be used.

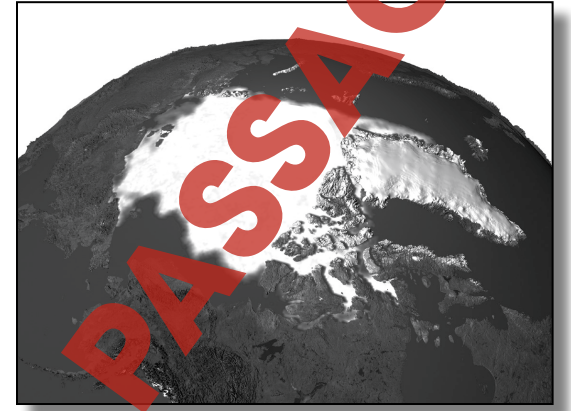
North Pole	South Pole	Greenland	polar ice cap
glacier	fresh	salt	Antarctica

- a) Most fresh water is frozen in Earth's two \_\_\_\_\_s.
- b) \_\_\_\_\_ is a large island near the North Pole.
- c) \_\_\_\_\_ is a continent covered in ice.
- d) Most of Earth's \_\_\_\_\_ water is in the ocean.
- e) A permanent mass of ice slowly moving down a mountainside is called a \_\_\_\_\_.



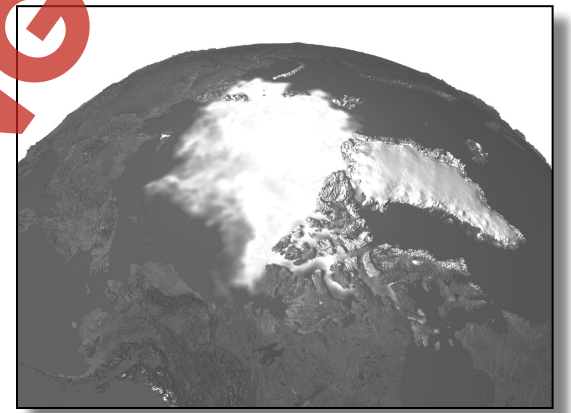
## How the Amount of Salt Water Could Change

As you learned earlier, salt water is located in the ocean and in inland lakes that have no outlet to the ocean. You also saw that there is much more salt water in the ocean than in the lakes. First we will look at the coming change in the amount of ocean water.



Arctic Ice Sheet - 1979

About two-thirds of Earth's fresh water is frozen in the **polar ice caps**. About 90% of this ice is around the South Pole, and 10% is near the North Pole. A much smaller amount of water is frozen in **glaciers** on high mountains in many parts of the world. The pictures show that the ice cap at the North Pole is getting smaller.



Arctic Ice Sheet - 2003

As Earth becomes warmer, these ice caps slowly melt and most of the water eventually finds its way to the ocean. Once in the ocean, the fresh water soon mixes with the salt water, and the amount of ocean salt water increases. You might think the ocean will become less salty, but the difference is very small. Remember, most of the ocean is over two miles deep, and melting ice only adds about 1.5 mm to the depth each year.

An **ice sheet** is a thick layer of ice covering a large area of land. One of Earth's two ice sheets covers the continent of **Antarctica** at the South Pole, and the



## How the Amount of Salt Water Could Change

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

a) Which of these bodies of water is shrinking?

- A the Aral Sea
- B Lake Superior
- C The Arctic Ocean
- D the Mediterranean Sea

b) Where is the South Pole located?

- A Iceland
- B Antarctica
- C Greenland
- D The Arctic Ocean

2. Draw a line from each word or words on the left to its meaning on the right

1	ice sheet	a large island near the North Pole	A
2	Aral Sea	a thick layer of ice covering a large area of land	B
3	Greenland	a permanent ice field slowly moving down a mountainside	C
4	glacier	the location of most of Earth's ice	D
5	Antarctica	a salt lake in Asia	E

## How the Amount of Salt Water Could Change

3. Answer the questions in complete sentences.

a) Compare the amount of ice at the South Pole to the amount of ice at the North Pole.

\_\_\_\_\_

\_\_\_\_\_

b) Explain why increase in human population will cause some salt lakes to shrink.

\_\_\_\_\_

\_\_\_\_\_

### Extensions & Applications

a) Describe how increasing global temperature will affect ocean level and explain why the level will be affected this way.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

b) Describe how increasing global temperature will affect the levels of salt lakes and explain why the levels will be affected this way.

\_\_\_\_\_

\_\_\_\_\_

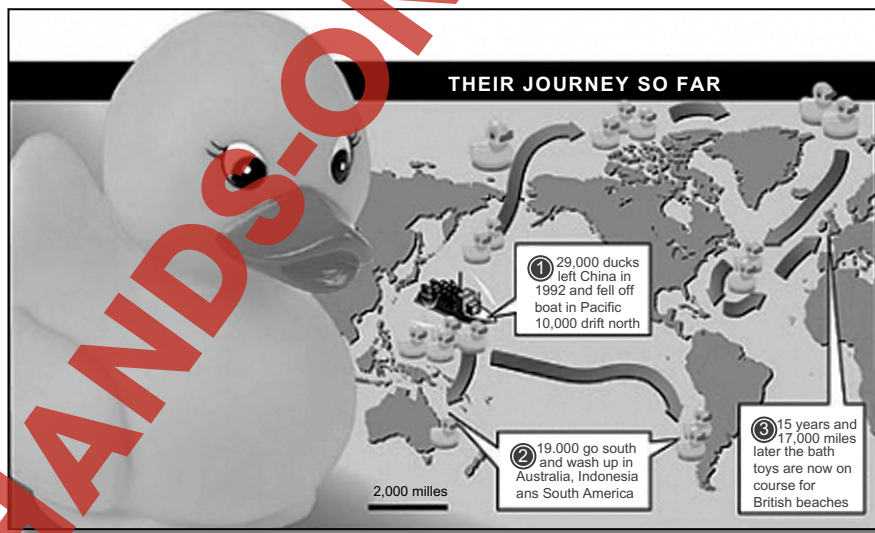
\_\_\_\_\_

## Activity Four

Write a report on rubber duckies:

In 1992, a container ship lost several containers in a storm in the north Pacific Ocean. One of the containers broke open and released 28,000 bath toys, including rubber ducks, into the ocean. Write a report on this spill. You will find information by searching the internet for: "Floatees", "Friendly Floatees", and "Curtis Ebbesmeyer". Try to answer these questions in your report.

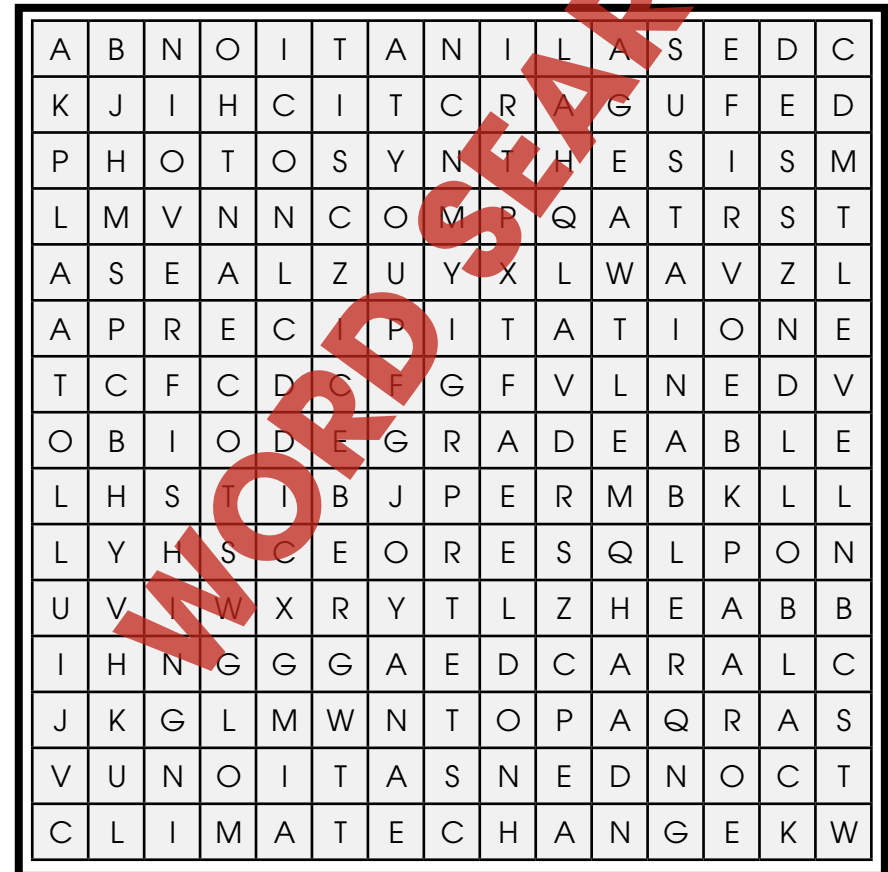
- Where did the bath toys go?
- Why did they last so long?
- How did they get out of their packaging?
- Have there been similar spills of cargo?
- How did scientists use the spill to learn more about the ocean?



## Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

Antarctica	Black (Sea)	fresh (water)	overfishing	(sea) level
Arctic	climate change	ice berg	photosynthesis	sodium (chloride)
atoll	condensation	melt	precipitation	sustainable
Aral (Sea)	(dead) zone	NaCl	salt (water)	(water) cycle
(Aral) Sea	desalination	ocean	(salt) water	(water) vapor



## Part C Comprehension Quiz

Answer each question in complete sentences.

- Compare exploration of the ocean floor to exploration of land surfaces. 3
- Explain why water in all the oceans has about the same salt content. 3
- Explain in terms of food chain relationships which species tend to have the highest concentrations of toxins, like mercury, in their systems. 3
- Describe **two** things individuals can do to help reduce emissions of greenhouse gases into the atmosphere. 3
- Define the word "sustainable" as it applies to the fishing industry and fish populations. 3

SUBTOTAL: /15

## World Population Forecast



NAME: \_\_\_\_\_

After You Read 



# How the Amount of Salt Water Could Change

## 3. Answer the questions in complete sentences.

a) Compare the amount of ice at the South Pole to the amount of ice at the North Pole.

\_\_\_\_\_  
\_\_\_\_\_

b) Explain why increase in human population will cause some salt lakes to shrink.

\_\_\_\_\_  
\_\_\_\_\_

### Extensions & Applications

a) Describe how increasing global temperature will affect ocean level and explain why the level will be affected this way.

\_\_\_\_\_  
\_\_\_\_\_

b) Describe how increasing global temperature will affect the levels of salt lakes and explain why the levels will be affected this way.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### 3.

a) There is about 10 times as much ice at the South Pole as there is at the North Pole.

b) More people will need more water, which they will draw from some of the streams that flow into salt lakes.

#### Activity Two

- Challenger Deep in the Mariana Trench
- 11,000 meters
- 1,095 as great as at the surface
- Yes—flat fish, sea worms
- Two
- Ooze, flatfish, sea worms, shrimp
- Spherical steel cabin, self-propelled, gasoline-filled float, iron shot ballast
- There are currently no vessels capable of carrying people to the Challenger Deep.

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#### Activity Three

- Ocean, 3.5%; Great Salt Lake, about 14%(varies greatly); Dead Sea, 30%
- It would be easier to float in all these bodies of water than in fresh water. It would be difficult to sink in the Great Salt Lake or the Dead Sea.

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#### Activity Four

- To nearly all parts of the ocean.
- They were not biodegradable.
- The packaging decomposed in sea water.
- Yes. One of the largest caused Nike shoes to wash up on beaches all over the world.
- The paths of the toys gave scientists a more accurate idea of the paths followed by ocean currents.

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### Extensions & Applications

a) Increasing global temperature will cause sea level to rise because polar ice will melt and run into the ocean.

b) Increasing global temperature will lower the level of salt lakes because it will increase the rate of evaporation.

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# EASY MARKING

# ANSWER KEY

