

Name _____ Date _____

Characteristics and Composition of Ocean Water

An average ocean water sample with the mass of one kilogram contains about 35 grams of dissolved salts. Four kinds of ions make up 97% of the dissolved salts. Of those four kinds, ions of sodium and chlorine ions (called chloride ions) make up the largest percentage of the 35 grams. The relative amounts of the four kinds of ions are shown in the table below. Each value represents the percentage of the ions present. Use the table to answer the questions.

Ion	Percent (%) of Total Salts
Chloride (Cl)	55.0
Sodium (Na)	30.6%
Sulfate (SO ₄)	7.7
Magnesium (Mg)	3.7

1. Suppose the ice cap at the North Pole melted. How might this change the salt content in a kilogram in mass of ocean water?
2. Define salinity.
3. What factors can increase and decrease salinity?
4. Where do the salts that are dissolved in seawater come from?
5. Name the two most abundant salts in the ocean.
6. Name the salt used to flavor food.
7. How do volcanoes affect the composition of the oceans?
8. What happens to the temperature of ocean water as the depth increases?
As depth decreases?
9. What happens to the pressure of ocean water as the depth increases? As depth decreases?
10. Would you expect the seawater just below the floating ice in the Arctic Ocean to be higher or lower in salinity than the water in the deep zone there? Explain.

On the back of this sheet, construct a bar graph of the data listed in the table above.

Name _____ Date _____

Composition of Ocean Water

An average ocean water sample with the mass of one kilogram contains about 35 grams of dissolved salts. Four kinds of ions make up 97% of the dissolved salts. Of those four kinds, ions of sodium and chlorine ions (called chloride ions) make up the largest percentage of the 35 grams. The relative amounts of the four kinds of ions are shown in the table below. Each value represents the percentage of the ions present. Use the table to answer the questions.

Ion	Percent (%) of Total Salts
Chloride (Cl)	55.0
Sodium (Na)	30.6%
Sulfate (SO ₄)	7.7
Magnesium (Mg)	3.7

1. Calculate how many grams of chloride ions are present in 50 grams of ocean salts. Show your work.
2. How many grams of magnesium ions are present in 50 grams of ocean salts?
3. Suppose you collect 1000 kilograms of sea salt by evaporating ocean water. How much of the 1000 kilograms is sulfate?
4. If you wanted to collect 245 grams of sea salt, how many kilograms of ocean water would you need?
5. Suppose the ice cap at the North Pole melted. How might this change the salt content in a kilogram in mass of ocean water?
6. Define salinity.
7. Where do the salts that are dissolved in seawater come from?
8. Name the two most abundant salts in the ocean.
9. Name the salt used to flavor food.
10. How do volcanoes affect the composition of the oceans?

On the back of this sheet, construct a bar graph of the data listed in the table above.