

Use your book to find the answers:

Section 1

1. What percent of the water on our planet is sea water? _____
2. Out of 100 grams of seawater, how many grams would be pure water? _____ salt? _____
3. The earth originally did not have water on its surface. Where did it come from? _____

Section 2

1. Why did the moon and mercury lose their water? _____
2. Besides mercury, which other planet probably had a large amount of water? _____
3. Which gas in our atmosphere is probably not present in the atmosphere of the other larger planets? _____ and nitrogen. Why? _____

Section 3

1. A water molecule is held together by covalent bonds, which means that atoms _____ electrons.
2. For an ionic bond to form, electrons must be either _____ or _____
3. Common table salt, with the chemical formula, _____, is held together by ionic bonds.
4. When ionic bonds form, atoms always develop a _____
5. Like molecules are often attracted to each other by _____ forces.
6. In the space below, draw a picture (model) of a water molecule making the angle between the atoms 105° (use a protractor)

7. Because hydrogen atoms are so small and an oxygen atom is so big, the type of bond formed between a hydrogen atom and an oxygen atom is called a _____ bond.

8. Place a star next to the type of bonds that can be broken by sunlight energy at the surface of the ocean.
covalent bonds

ionic bonds
hydrogen bonds
van der Waals bonds

Section 4

1. The three states of matter are _____ and _____ and _____

Section 5

1. Water has a high heat capacity, that is, if we heat water, its temperature will change very _____
2. How do the oceans of the earth affect high and low temperatures in our atmosphere?
High temperatures _____ Low temperatures _____
3. A calorie may be defined as the amount of energy that can change the temperature of _____ gram of water _____ degree _____
Solve the following problem: How many calories would be required to raise the temperature of a glass of just liquid water with a mass of 10g a total of 1°C

SECTION 6

1. Viscosity can be described as internal _____ or resistance to _____.
2. Which has a greater viscosity: water or pancake syrup? _____
3. How is viscosity affected by: 1. Increasing depth (pressure)? _____
2. Increasing temperature? _____
4. Viscosity is most important to what size organism? _____

SECTION 7

1. Salinity is defined as the number of grams of salt per _____ of _____
2. The symbol for parts per thousand is _____ also written as _____.
3. 99 percent of sea salt, in order of abundance, is composed of the ions:

4. Simple Problem: 400 grams of sea water is evaporated to dryness, and the amount of remaining salt is found to weigh 12.4 grams. What was the salinity of the sea water?
_____‰

SECTION 8

1. Density determines whether a substance will _____ or _____
2. A simple formula used to calculate density is $D = \frac{m}{V}$
3. Pure water freezes at 0°C, but pure water has its greatest density at _____°C (round off)
4. As water in a fresh water lake cools off it will _____ become well mixed at the above temperature. Below 4° only the surface water will become cooler and eventually _____
5. "Overturning" does occur in the ocean because of the _____ in the water
6. Look at figure 4-8. What is the approximate density of normal seawater (35‰) at a temperature of 10°C? _____ (PLEASE DO NOT DRAW LINES ON THE GRAPH IN THE BOOK)
7. What is the approximate density of ice, rounded to two places after the decimal? _____

SECTION 9

1. Cl, Na, SO₄, Mg, Ca, & K are the major constituents of sea water. Their proportion to each other seldom changes so they are considered to be _____ properties of sea water
2. The relative abundance of the minor constituents of sea water sometimes change so they are considered to be _____ properties.
3. What are two ways that non-conservative properties are commonly changed in sea water?
1. _____ 2. _____
4. Look at Appendix 3 in your text. How many of the elements found in sea water are listed in this table? _____ (Some are conservative and some are non-conservative properties)

SECTION 10

1. According to this section, what will lower the freezing temperature of water and also increase the viscosity of water?
ANSWER: An _____ in _____.

SECTION 11

1. If the temperature of water is increased, can the water hold **MORE** or **LESS** dissolved gas?

2. When water has as much dissolved gas in it that it can possibly hold, the water is said to be _____ with that gas.
3. Sea water is often not saturated with what two gases? _____ & _____
4. For the above statement, WHY? _____
5. Which gases are usually nearly saturated in sea water? (Give symbols)

