Grade 7 Science
Chapter 5 – Solutions /216

Name: _____ **Room:** _____

Assignment #1 – (pp. 120-121) **/25**

/07 01. A brainstormed list of the various human uses of water…

/03 02a. Why do some substances dissolve in water while others do not? _____

_____

02b. Why does water not taste the same everywhere? _____

_____

02c. Why does cold water contain more dissolved oxygen than warm water? _____

_____

/09 03. Cold Tea? (p. 121) – Examination of the tea bag…

shape of tea bag _____
texture _____
colour of tea _____
smell of tea _____

size of tea bag _____
type of material _____
size of holes _____
composition of tea _____
do tiny bits of tea escape when bag is shaken? _____

/06 04. Observations and coloured sketches of tea bag…

Before…	During…	After…

Assignment #2 – (pp. 122-125) **/35**

/01 01. In everyday language (do not copy from the text) what is dissolving? _____

_____

/04 02. List 2 pieces of the particle theory that we studied in chapter 4. _____

_____

List two new ideas in the particle theory from p. 123. _____

_____

/09 03. Carefully diagram and label Figure 5.1 to show how the particle theory can be used to explain dissolving.

Before…	During…	After…

04. Carefully diagram and label Figure 5.2 to show how evaporation occurs when a liquid changes to a gas.

/1 03. If you leave a droplet of water on the table, the particles of water will eventually "jump into the air". What are they actually doing? _____

/3 04. Imagine you are making iced tea. You take the powder, put in the liquid, stir it and the iced tea is ready. Identify the solvent: _____ Identify the solute: _____

Identify the solution: _____

05. Is salt soluble in water? What does soluble mean? _____

_____

/1 06. Think of a mixture of 2 substances that is insoluble. _____

/2 07. Describe what a chemical change is. _____

_____

List an example of a chemical change. _____

/6 08. Do number 3 on page 125. a) _____ b) _____

c) _____ d) _____

/2 09. Is fog a solution or a heterogeneous mixture? Explain. _____

_____

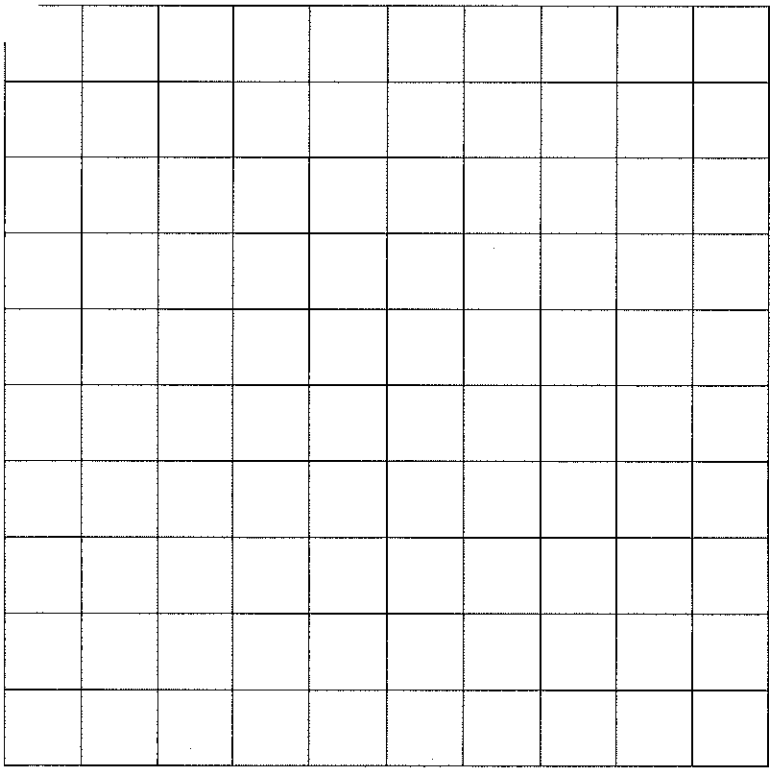
/2 10. Do number 5 on p. 125. _____

_____

_____

Assignment #3 **/16**

Stainless steel is a rust-resistant ally used to make eating utinsels. It is made of approximately 70% iron, 20% chromium, and 10% nickel. In the 10 x 10 block of squares below, each square represents one metal part of the alloy. Based on the composition of stainless steel, how many of these particles will be iron (blue), chromium (yellow) and nickel (green)? Colour your model carefully, remembering that a solution is a homogeneous mixture of substances. (Your model should show this fact).



_____ Particles _____ Chromium (Yellow)

_____ Iron (Blue) _____ Nickel (Green)

Solutions of the Human Bodv

With a partner, brainstorm a list of the solutions found inside the human body. Select each of the solutions you have listed and conduct research to find out about its solutes, solvent, and function in the human body.

Solution	Solute	Solvent	Function
Blood			

Assignment #4 **/06**

What happens to the volume of a solution when equal volumes of the solute and solvent are mixed?

- **Measure 100 mL of sugar in one graduated cylinder and 100 mL of water in another.**
- **Pour the sugar into a beaker. Then add the water.**
- **Stir the mixture until all the sugar has dissolved in the water.**
- **Observe the volume of the solution.**
- **Repeat steps 1-4, using equal volumes of water and alcohol.**

/02 01a. In the first part of the experiment where sugar and water were used, how did the total volume of the solution compare to the volumes of the solute and the solvent? _____

01b. What did you observe when you repeated the experiment using water and alcohol? _____

_____

/02 02. Use the particle theory of matter to explain why the volume changes when a solution is formed.

_____

/02 03. Would you expect to see a similar change in volume when a gas is dissolved in an equal volume of another gas? Explain why or why not. _____

_____

Assignment #5 **/02**

Video – A really Weird Solution – an entertaining clip that demonstrates the behaviour of a <u>thixotropic</u> fluid, a liquid that acts like a solid under certain conditions.

01. What is the solution made of? _____

/01 02. Why does the runny liquid act like a solid when a sudden stress is applied to it? _____

_____

Assignment #6 **/12**

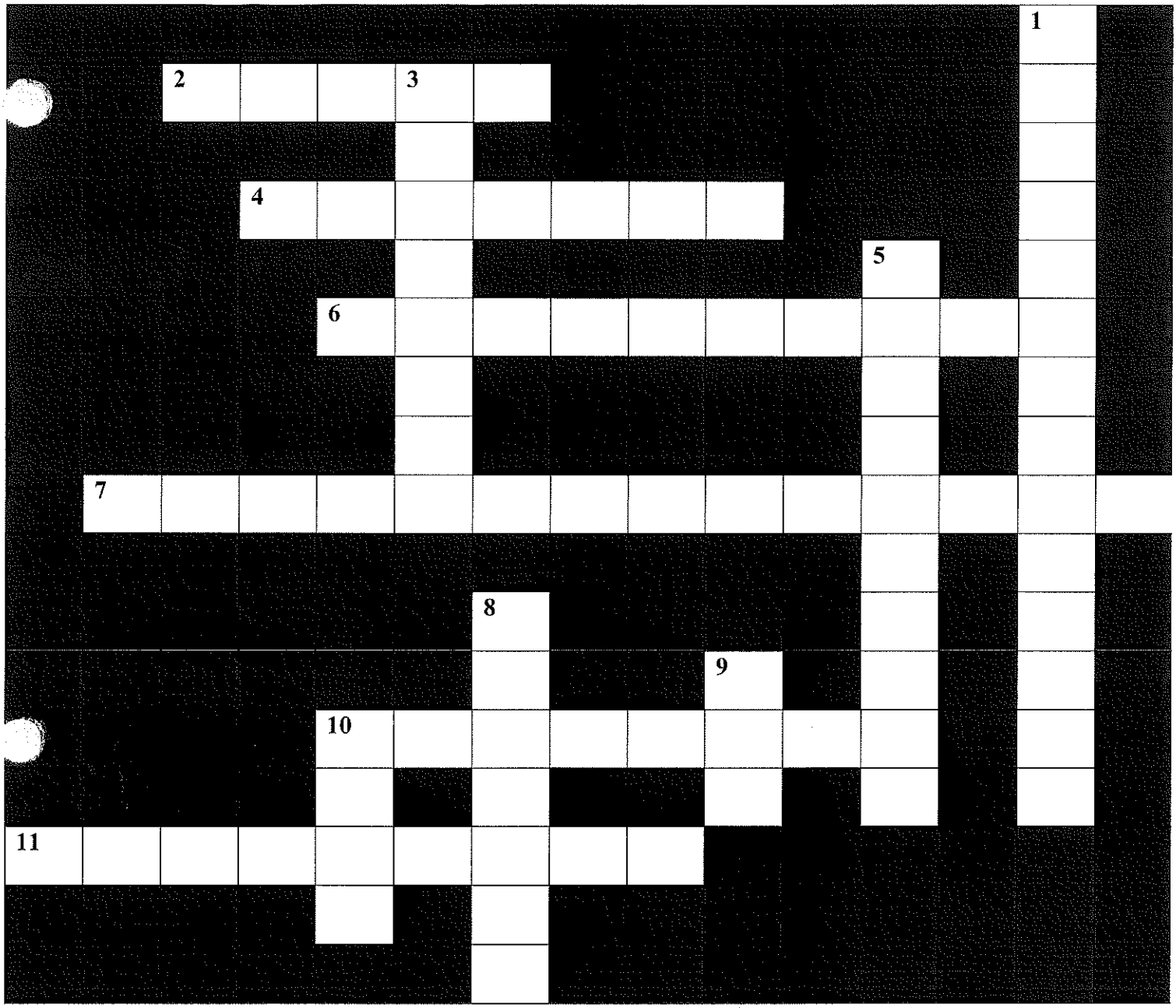
Complete the following crossword puzzle using the clues provided.

Across

02. solution of copper and zinc
04. substance that does the dissolving
06. the behaviour among particles that affects the solubility of a material
07. solvent that is able to remove grass stains
). mixture formed when one substance dissolves in another
11. not able to be dissolved in a particular substance

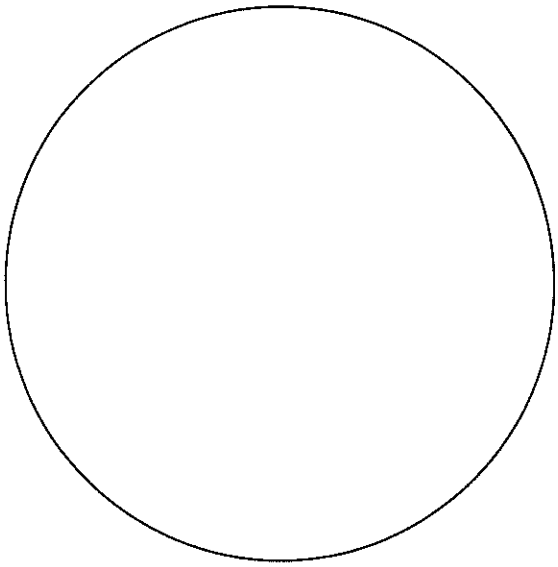
Down

01. solute found in soda water
03. substance that dissolves in another substance
05. solute and solvent becoming evenly mixed
08. able to be dissolved in a particular substance
09. example of a gas-gas solution
10. major solute in ocean or sea water



Assignment #7 **/05**

Draw a circle graph to show the data of Earth's water distribution. Be sure to include a title and labels for each piece of the circle graph.



Assignment #8 (pp. 126-27) /04

/01 01. Describe what it means that water is a universal solvent. _____

_____

/03 02. List three important jobs that water helps your body to do. _____

_____

Assignment #9 (pp. 128-129) /12 - Investigation 5A – Distillation

/03 01a. What did you see in the top half of the flask after the water began to boil? _____

01b. What change of state must have occurred inside the flask? _____

01c. How do you know? _____

/02 02a. Describe what you saw at the end of the rubber tubing in the beaker? _____

02b. What change of state must have occurred inside the tubing? _____

/03 03. After the drops of liquid evaporated, what remained on the glass plate for…
the salt solution? _____ the distilled water? _____

the liquid collected from the end of the tube? _____

/02 04a. Which substance, solute or solvent, did you collect in the beaker in step 4? Explain how you know.

_____

04b. What happened to the substance that you did not collect in this beaker? _____

/01 05. According to the particle theory, solute particles and solvent particles attract each other. In this investigation, what do you think overcame this attraction? That is, what do you think caused the salt particles and the water particles to separate?_____

_____

Assignment #10 (pp. 130-133) **/12**

/05 01. What is distillation? _____

Carefully draw, label and colour Figure 5.6 below.

/01 02. List the addition to the particle theory as described on p. 130. _____

_____

/02 03. What is desalination? Why do countries along the Red Sea do it if it is so expensive? _____

_____

_____

/02 04. What is the difference between hard water and soft water? _____

_____

/02 05. Describe what settling is. _____

Assignment #11 (pp. 134-137) **/13**

/03 01a. What is the purpose of distillation? Use the terms "solute" and "solvent" in your answer.

_____

_____

01b. Use the particle theory of matter to explain how distillation works. _____

_____

/02 02. In the past, people collected rainwater from their roof in a barrel. Water from the rain barrel was used for washing hair and clothes. Why do you think people did this, rather than using water from a river or a well? _____

_____

/03 03a. How does river water become "hard"? _____

03b. How does hardness affect the safety of water for drinking? _____

03c. How does hardness affect the usefulness of water? _____

Assignment #12 (pp. 138-142) /5

/1 01. In everyday words, what does it mean if a solution is dilute? _____

_____

/1 02. In everyday words, what does it mean if a solution is concentrated? _____

_____

03. List one other product sold as concentrate. _____

/2 04. Draw and label a diagram to show a particle model of:

a) a dilute solution

b) a concentrated solution

Assignment #13 – Chapter Review (pp. 144-145) /33

/12 01. Complete #1 on p. 144.

a) _____ b) _____

c) _____ d) _____

e) _____ f) _____

g) _____ h) _____

i) _____

/10 02. Complete #6 on p. 144.

a) ______________________ b) ______________________

c) ______________________ d) ______________________

e) ______________________

/05 03. List the five key points of the Particle Theory of Matter. ______________________

____

____

____

____

/04 04. Complete #08 on p. 145. ______________________

____

____

____

/02 05. Complete #12 on p. 145. ______________________

____

____

Assignment #14 (pp. 108-109) /19

Complete the wordsearch below by locating th e 18 words listed. When you have found all the words, there will be 37 letters left unused. Go across each row, from top to bottom, writing the 37 unused letters in the spaces below. When you are finished, you will have a definition of a special type of water.

S	E	L	A	C	S	E	L	T	T	E	K	P	U
O	E	A	N	U	R	E	A	S	E	N	R	S	O
A	F	T	D	O	U	G	R	O	H	T	E	O	S
P	A	H	I	D	I	E	U	F	R	F	T	L	T
S	S	E	S	I	U	T	T	T	U	N	A	K	I
C	I	R	T	D	S	C	A	L	A	R	W	C	S
U	D	R	I	N	K	I	N	G	E	L	N	L	O
M	L	S	L	E	D	E	P	N	I	O	I	E	P
D	E	V	L	O	S	S	I	D	T	R	A	A	E
E	A	B	E	S	L	M	E	W	A	T	R	N	D
H	A	R	D	E	G	N	I	H	S	A	W	I	R

CLEAN	DEPOSIT	DISSOLVED
DISTILLED	DRINKING	HARD
IRRIGATION	KETTLE SCALES	
LATHER	MINERALS	NATURAL
RAINWATER	RESIDUE	
SAFE	SOAP SCUM	SOFT
USEFULNESS	WASHING	

Water that is _ _ _ _ _ _ _ _ _ _ _

_ _ _ _ _ _ _ _, _ _ _ _ _ _ _ _ _ _ _

"_ _ _ _ _ _ _ _ _ _" _ _ _ _ _ _ _ _.

Assignment #15 /17

Across

01. contains relatively little solute
03. water is called the _____ solvent
08. substance that dissolves or seems to disappear
10. raw material used in the production of sugar
11. sodium chloride is the scientific name of this substance
13. rainwater before it hits the ground is this type of water
14. removing salt from salty water
15. inexpensive method to separate undissolved materials in a liquid

Down

02. the change from a liquid to a gas
04. able to be dissolved
05. contains a lot of solute for the amount of solvent
06. separation method - includes evaporation, condensation, & collection
07. forming a solution by mixing two or more materials together
09. water that contains a lot of dissolved minerals in it
12. the change from a gas to a liquid
13. substance that dissolves another