CHAPTER 5 Review

Time

45–60 min

Skills and Processes

The Chapter Review provides an opportunity for students to demonstrate their understanding of and their ability to apply the key ideas, vocabulary, and skills and processes.

Program Resources

BLM 0.0-10 Chapter Key Ideas
WS 5.0-1 Matter and Change Crossword
Chapter 5 Quiz
Nelson Science Probe 9 website
www.science.nelson.com

Chapter 5 Review Chart

- Have students find and write about examples from their own experiences to illustrate the key ideas.
- Assign student each a different key idea and ask them to write a question about it in the form of *Who Wants to Be a Millionaire, Jeopardy,* or *20 Questions.*
- Have students use *BLM 0.0-10 Chapter Key Ideas* to review the key ideas in the chapter.
- Encourage students to visit the online quiz centre on the Nelson Science website and complete the *Chapter 5 Self-Quiz.* As well, they can use *WS 5.0-1 Matter and Change Crossword* as a study aid.
- Have students review their *Chapter 5 Study Guide Outline* notes to recall what they have learned in this chapter.
- Have students complete the *Chapter 5 Quiz* in the Student Workbook to review the vocabulary and concepts in this chapter.

Review Key Ideas and Vocabulary—Suggested Answers

1. **(a)** corrosion
   (b) deposition
   (c) malleability
   (d) solidification
   (e) density
   (f) non-flammable
   (g) ductility
2. The two properties possessed by all matter are mass and volume. (Note: These are extensive properties and vary with the amount of substance present.)
3. (b) (Heating water vapour does not produce a change in state because it is already a gas.)
4. **(a)** sublimation
   (b) melting
   (c) condensation
5. (c) (A chemical property requires the production of new substances with new properties and (c), a reaction with acid to produce bubbles, is an example of chemical change.)

6. (c) (An observation is based on what is sensed and is as objective as possible. A conclusion takes one or more observations and fits it, or them, into a model to explain the observation(s). Careful observations should not vary much from person to person. Thus, A, B, and D are observations, while (c), "The gas is carbon dioxide," is a conclusion.)

7. (b)

8. **(a)** Solids do not flow or pour: A, B, C, and D

   (b) Solids cannot be easily compressed: A, B, and D

   (c) As the temperature is increased, many solids melt and become liquid: E

   (d) Some solids form crystals: A, B, and C

9. Answers will vary and might include precipitate reactions, cooking, burning, corrosion, or reactions with acids.

10. 3.4 g/cm^3 (Although the mass and volume of a material vary with amount, density does not. Density is calculated by dividing the mass of the object by its volume, D = M/V, and its units can vary, although g/cm^3 or g/mL are commonly used. The volume of the object was determined indirectly because of its irregular shape.

    M(ass) = 22.4 g

    V(olume) = 27.8 mL – 21.2 mL = 6.6 mL or cm^3

    Density = M/V = 22.4 g/6.6 cm^3 = 3.4 g/cm^3)

Use What You've Learned—Suggested Answers

11. Density is clearly not the reason for the switch. The tensile strength of carbon fibre is greater/gram than aluminum. The carbon fibres can also be woven in specific directions to enable part of the bike to be stiff in one direction and flexible in another.

12. Answers will vary, but possible suggestions include

    (a) The particles of the solid are in precise positions, the particles of the liquid are moving in between the particles of the solid, and the particles of the solution are very evenly distributed.

    (b) The particles of the solid do not seem to be vibrating, the particles of the liquid do not seem to be moving around each other, and the particles of the solid are not moving much in the solution.

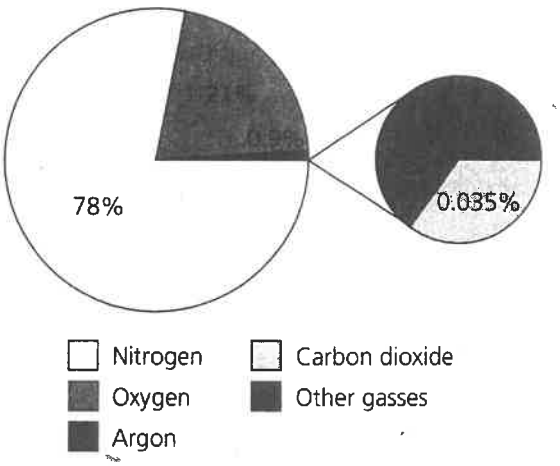
13. This is a physical change. The substance remains the same before and after the change. It has the same properties, and no new substance is produced.

14. There may be slight variations in the numbers, but the percentages should be in the order of those in the following table. (Note that gases are usually measured by volume, although some students may use mass.)

Earth's Atmosphere		
Gas	**% by Volume**	**% by Mass**
nitrogen	78	75.5
oxygen	21	23
argon	0.9	1.3
carbon dioxide	0.035	0.06
neon	0.002	0.001
water vapour	0–4	0–5
helium	0.0005	0.00007
krypton	0.0001	0.0003
hydrogen	0.00005	negligible
xenon	8.7×10^{-6}	0.00004

Although nitrogen and oxygen are the predominant gases, the small to trace amounts of the other gases are very important. The noble gases, because they do not react, are found mainly in the atmosphere. Not surprisingly, the percentage of water vapour is quite variable. Of particular interest, however, is the very low amount of carbon dioxide in the atmosphere. Unfortunately, the greenhouse effect that produces global warming is caused by these low levels.

Earth's Atmosphere



15. Physical properties—Gold has a beautiful yellow colour, making many ancient cultures believe that it came from or was part of the sun. Gold is also one of the most malleable of the metals, allowing it to be worked by artists into a wide variety of jewellery and art.

    Chemical property: Gold is very unreactive, which means that it does not tarnish or corrode. For this reason, we find the gold jewellery of kings and queens from over two thousand years ago that looks the same as the day it was buried.

Think Critically—Suggested Answers

16. Care must be taken with carbon dioxide fire extinguishers because the carbon dioxide is so cold it will freeze anything that it touches, particularly human flesh.
17. It takes heat to change the water into steam, heat that comes from the fire. Sometimes the removal of heat is enough to extinguish a fire. The steam produced is denser than air meaning that it settles on the fire, pushing oxygen away from the fire and smothering it.
18. By compressing the gas, the student is adding more particles of the gas to the bicycle and, therefore, increasing its mass. In other words, by increasing the density of the gas, the student negates the low density of the helium that makes it suitable for floating balloons.

Reflect on Your Learning—Suggested Answers

19. Answers should and will vary greatly on this question. Students may comment on the role of certain solids, liquids, or gases in their lives. They may comment on some new understanding of a phenomenon with which they were previously familiar.

Meeting Individual Needs

ESL

- Monitor students, particularly during work periods, to identify any individuals needing help with vocabulary. Find alternative ways to say some of the technical terms. Many students are shy and unwilling to ask for help; when possible, try to visit these students in class and ask them some questions about the material, particularly the vocabulary.
- If you have asked students to create their own glossary for the unit, students could use a database or tables in a word-processing program to organize their information for the chapter, and then print it out and use it to help them review key vocabulary and concepts.

Extra Challenge

- There are a wide variety of topics that students may be interested in researching; for example, the future of lighter-than-air-craft travel, the formation of Earth's atmosphere, or the role of carbon dioxide in global warming.