

Important Concepts . . .

Preview Review



Science

Grade 7 TEACHER KEY

***W1 - Lesson 1: Interactions and
Interdependencies***

Important Concepts of Grade 7 Science

W1 - Lesson 1	Interactions and Interdependencies
W1 - Lesson 2	Nutrient Cycles, Energy Flows, and Changes in Ecosystems
W1 - Lesson 3A	Environmental Impacts of Human Activities
W1 - Lesson 3B	The Particle Model of Matter, Temperature, Heat, and Change of State
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Materials Required.

Textbook:
Science in Action 7

Science Grade 7

Version 5

Preview/Review W1 - Lesson 1 TEACHER KEY

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Preview/Review Concepts for Grade Seven Science

TEACHER KEY



*W1 - Lesson 1:
Interactions
and Interdependencies*

OBJECTIVES

By the end of this lesson, you should be able to

- identify characteristics of living organisms
- identify basic needs of living organisms
- identify environmental parts as either biotic or abiotic
- identify and define various types of ecological interactions
- identify and explain the purpose of various ecological adaptations

GLOSSARY

abiotic - not living

adaptation - a feature or behaviour that helps an organism survive certain conditions

biotic - living

community - a group of populations living and interacting in a specific area

interact - have contact with

interdependent - rely on each other for something

population - the members of one species in an area at one time

species - one kind of living thing that can reproduce

symbiotic relationship - a close relationship between two species

Introductory Information for Teachers

Preview/Review courses are aimed mainly at students who have complete the regular course but who need to review before beginning the next grade. Other students may find Preview/Review courses useful in preparing for the new materials they will study in their next grade. No Preview/Review course is intended to replace the regular course because all cover only some important concepts from the Program of Studies for each grade.

Preview/Review materials are intended for use by teachers in one-subject and one-grade classrooms.

This Preview/Review course contains fifteen lessons in three sections. Each section has five lessons with homework. A short quiz is provided at the end of each section to test students' knowledge of the material studied. In a classroom, the course will likely be completed in three weeks.

Students may attend one, two, or all three sections. Because Science has five units per grade and does not divide into three sections, Sections 1 and 2 cover two units each and Section 3 covers the final unit.

In Science, textbooks are central to Preview/Review. That is, the textbook must be read and used to complete the activities proficiently.

Textbooks required:

- Grade 7: *Science in Action 7*
- Grade 8: *Science in Action 8*
- Grade 9: *Science in Action 9*

W1 - Lesson 1: Interactions and Interdependencies

We, and a multitude of other living organisms, live on Earth. Each type of living organism has its own set of unique characteristics. However, all living things also have a common set of characteristics. Living things interact with their surroundings – living and non-living. They are interdependent with other living and non-living things around them.

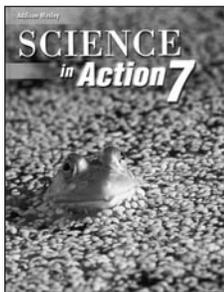


All **living** organisms have shared characteristics. To be considered living, something must

- grow
- move
- use food which it makes or eats for energy
- reproduce
- respond to stimuli

Living things do all these activities in an ecosystem where they interact with **abiotic** and other **biotic** factors.

Living things of many types live in each ecosystem. The level of classification of most concern in this course is the **species**. When members of a species live in a particular area, they are called a **population**. Populations living in the same area interact and are called a **community**.



Regardless of where organisms live, they have certain basic needs that must be met if they are to survive. Read pages 12-15 of *Science in Action 7*.

1. List the basic needs that all living organisms have. Then, give an example of how one type of organism meets that need.

a. *need energy (e.g. plant - traps sunlight during photosynthesises and stores the energy in glucose to use*

for growing)

b. *need food (e.g. A coyote eats a mouse.)*

- c. most need oxygen (e.g., Fish use gills to get oxygen from water.)
- d. need suitable living conditions (e.g., A pileated woodpecker needs old growth forest.)
- e. need water (e.g., Living organisms can survive only a short time without water. A camel stores fat in its hump. When fat is broken down for energy, water is released.)

2. Look around where you are right now, and list some biotic and abiotic things that you see.

Biotic	Abiotic
<i>Answers will vary, but some examples are</i>	
<i>people</i>	<i>air</i>
<i>plants</i>	<i>water</i>
<i>dogs</i>	<i>rocks</i>

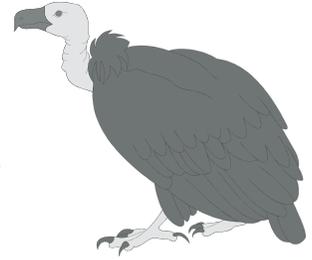


3. Can the removal of abiotic parts of an ecosystem affect the biotic parts of the ecosystem? Explain.

Yes. Many abiotic features are essential for organisms' survival. For example, water, rocks, can provide minerals, Oxygen + carbon dioxide. Some provide shelter etc.

Interactions

There are many interactions and interdependencies between organisms. For example, one organism may depend on another to be its source of food or shelter. **Consumers** rely on **producers** for food. **Scavengers** and **decomposers** (pages 28, 31-33 in your textbook) depend on other organisms for waste or wait for them to die so they can use the remains as an energy source. In turn, other organisms rely on them to clean up wastes and return matter to a state where it can be used again.



4. Define the following terms.

- a. producer *an organism that makes its own food;*
converts unusable to usable energy
- b. consumer *an organism that must eat other organisms*
to get energy and matter
- c. herbivore *a consumer that eats only plant matter*
(e.g., a deer)
- d. carnivore *a consumer that eats only meat*
(e.g., a wolf)
- e. omnivore *a consumer that eats both plants and meat*
(e.g., humans)
- f. scavenger *an organism that eats dead matter it finds*
(e.g., a raven eating road kill)

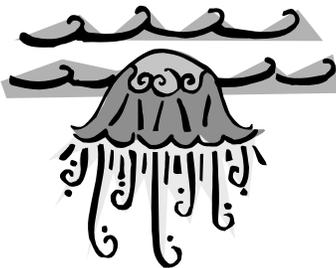
When organisms live in habitual close contact, they are in a **symbiotic relationship**. There are three types of symbiotic relationships. Some of these relationships occur over the whole lifetime of the participants, some for shorter periods of time. Read pages 16 and 17 of *Science in Action 7* for more details.

5. Name and describe the three types of symbiotic relationships. Give an example of each.

a. *parasitism - one member in the relationship is harmed, the other benefits (e.g., a tapeworm in a dog)*

b. *mutualism - both members of the relationship benefit from it (e.g., cleaner fish and various reef fish)*

c. *commensalism - one member benefits, the other is not affected either way (e.g., Man-of-War fishes and Man-of-War jellyfish)*



6. What will happen to a parasite if its host dies?

It will also die unless it can find another host.

7. In a commensalism relationship such as an orchid living on a tree, what will happen to the tree if the orchid dies?

Nothing. It is not affected by the orchid.

Adaptations

Organisms must adapt to the biotic and abiotic factors they interact with. Adaptations are features such as body parts or behaviours that species develop over time to help an organism survive the conditions where it lives. For example, an animal such as an Arctic fox needs to grow a very warm coat of winter fur if it is to survive the cold Arctic winter. It would also have behaviours that would help it survive. Read page 19 of the textbook.

8. What types of adaptations would you expect the following organisms to have? Be as specific as possible.

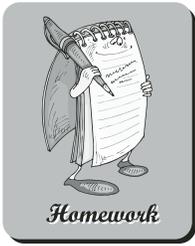
a. A desert hare *speed for escaping predators, a means of getting rid of excess heat (e.g., large ears)*

b. a plant in the muskeg *the ability to live in wet conditions and low nutrient level areas (e.g., a pitcher plant can catch insects)*

9. If organisms have adapted to a particular set of biotic and abiotic factors, but their environment changes suddenly, what would happen to them?

They would have difficulty surviving, probably. If they could move, they may. Otherwise, they will probably die off in that area.

You should now understand the characteristics and needs of living organisms. You should be able to discuss how living things interact with other living things and their environment. As well, you should be able to explain the adaptations of a variety of living organisms. In your homework, you are required to apply what you learned in this lesson.



Homework

When you go home, look at an outdoor area – your backyard or somewhere nearby that has a variety of living and non-living parts.

- a. Identify as many biotic and abiotic parts as possible.

Answers will vary. Examples are

Abiotic - snow, rocks, air

Biotic - trees, grasses, birch

- b. List some consumers and some producers in the area.

Answers will vary

- c. Describe some adaptations you have noticed. Explain what purpose they may have.

Answers will vary

- d. Identify some relationships you see or that you know exist there.

Answers will vary

