Important Concepts . . .

# Preview Review

*Science* *Grade 8* *TEACHER KEY*

## *W2 - Lesson 4: Body Systems - Part 2*

V5-07

## Important Concepts of Grade 8 Science



## Materials Required

Textbook:
*Science in Action 8*


Science Grade 8
Version 5
Preview/Review W2 - Lesson 4 TEACHER KEY

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# Preview/Review Concepts
# for
# Grade Eight Science

## *TEACHER KEY*

***W2 - Lesson 4:***
***Body Systems - Part 2***

# OBJECTIVES

By the end of this lesson, you should

- name the basic parts and explain in general terms the working of the excretory system
- name the basic parts and explain in general terms the working of the nervous system

# GLOSSARY

**excretory system** - filters wastes from the blood and removes them from the body

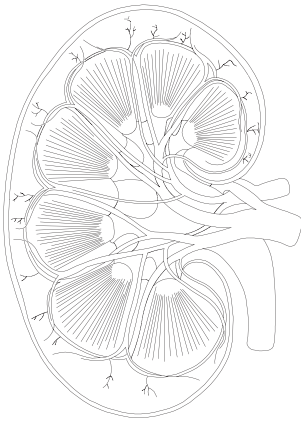
**nervous system** - coordinates and controls everything in the body (Detects, processes, and responds to stimuli.)

# W2 - Lesson 4: Body Systems Part 2

Welcome to W2 - Lesson 4. This lesson is designed to teach you about the excretory and nervous systems. It should take about 1.5 hours to complete; there will be a small homework assignment at the end.

## The Excretory System

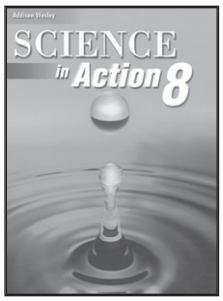
**Excretion** as defined by *Science in Action 8* is the job of waste removal. You learned previously that blood carries wastes such as carbon dioxide to the lungs where they can be removed from the body. One other place wastes are carried to is the kidneys, the major organ of the **excretory system**.



When cells break down proteins, a very toxic compound called ammonia is formed. The liver converts ammonia to a less toxic substance called **urea**. Kidneys take materials such as urea, excess water, and salts out of the blood.

Nephron

Each kidney is made up of many tiny units called **nephrons**. They are filters with extremely small pores. Particles such as water, salt, and urea are forced through the filter from the blood. Larger particles such as proteins stay in the blood. The nephron then returns needed materials such as glucose, some of the salt, and most of the water to the body. The remaining liquid, **urine**, is stored in the bladder until it is released from the body.




## Activity 1

Read and understand pages 141 to 145 in *Science in Action 8*. Then, answer the following questions.

1. What is the excretory system?

   ***It is a system that removes wastes from the body.***

2. What are the main organs of the excretory system?

   ***kidney, ureter, bladder***

3. What role does the liver play in waste control?

   ***It takes ammonia out of the bloodstream, converts it into urea, and releases it into the bloodstream.***

4. What is the function of the kidneys?

   ***The kidneys act as a filter to the blood. They strain out unwanted urea, water, and salts, and they produce urine.***

5. What is the function of your skin in relation to excretion?

   ***The skin has sweat glands that release water and excess salt from your blood.***

6. Where is urine stored after it is produced from the body?

   ***The bladder.***

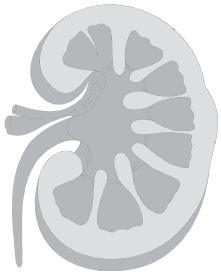
7. Through what tube is urine released from the body?

***The uretha.***

8. What health problems might a person have if his or her urine contained protein or glucose?

***Protein in the urine is a sign of kidney damage and glucose in the urine is a sign of diabetes.***

9. Describe the process of dialysis.



cross section of a kidney

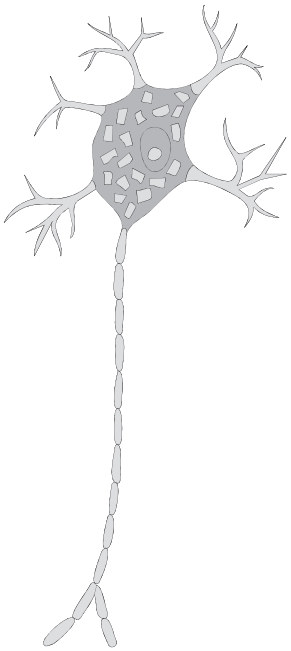
***The person's blood is run through a machine with selectively permeable tubing surrounded by fluid. Wastes from the blood diffuse into the fluid, and certain substances from the fluid diffuse into the blood. Cleaned blood is then returned to the person. The process takes four to six hours.***

10. Why can most people donate a kidney and still lead normal lives?

***A person has 2 kidneys; he or she should be able to function adequately with one.***

11. If you drank more water than usual, and you were not doing a lot of activity that caused you to sweat, what would your body's response be to this increased intake of fluid?

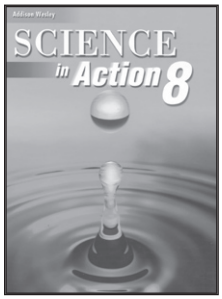
***Your body would produce more urine.***



## Nervous System

The control system in humans is the nervous system. It is made of two general parts–the central and the peripheral nervous systems. Your **central nervous system** (CNS) including the brain and spinal cord is the control centre. All other parts are in the **peripheral nervous system**.

The main unit in the nervous system is the **neuron** (basically a nerve). Neurons are special cells that can transmit signals or messages very quickly. Some of them send signals to the CNS from various parts of the body; some transmit the other direction. An example of how the nervous system works follows. If you touch a piece of cold metal, a message is sent from the touch receptors on your hand to the CNS. The CNS sends a message to the muscles in your hand and arm. In response, your hand moves away from the cold and is protected.




### Activity 2

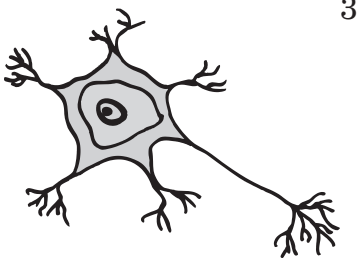
Read pages 146 to 151 in *Science in Action 8*. Then, answer the following questions.

1. Define the word stimulus and give an example.

   ***A stimulus is a change in the environment that results in a "response". Answers will vary with the example. A puck shot at a goalie is a stimulus; the response is to block the shot.***

2. What is the central nervous system composed of?

   ***the brain and spinal cord***



3. What is the autonomic nervous system?

   ***This is a division of the peripheral nervous system that controls involuntary responses such as breathing and heartrate.***

4. What parts of the body provide the brain with stimuli from the outside world?

***Information is gathered by the sense organs: the eyes, ears, mouth, nose, and skin (receptors such as pain and temperature). Internal receptors also send information to the CNS.***

5. What are the two functions of the spinal cord?

***It connects the brain to the peripheral nervous system, and it acts as a highway for messages between the brain and the body.***

6. What is the role of the nervous system?

***For our own survival, it allows for us to be within limits that assures our safety or comfort. It allows us to take in information and respond to it.***

7. If someone survived a spinal cord injury and had part of her body paralyzed, what could she do to adapt to this situation?

***Answers will vary. Student may include using a wheelchair, or adapting the home, and working with equipment to make a more handicap-friendly environment such as using of hand controls to control vehicles.***

8. Describe, in general, how a reflex works.

***Message travels from sensory organ to CNS. It goes as far as the spinal cord. Rather than continuing on to the brain, the message is sent back immediately to a part, such as a muscle, that can "deal with the situation".***

**You should now be able to meet all the objectives listed at the beginning of the lesson. Go through the list to see if there is anything you need to spend more time on.**

## Extended Activity (Homework)

Go for a walk outside for about 15 minutes. Make a list of information you collected with your 5 senses. If you did not use some of your senses, do not include them in your list. What sense did you use to collect the most information on your list? What sense did you use the least?

***Answers will vary.***