Name:		Class/Section: 7	Date:
Unit: Life Science	**Chapter 2:** Human Body Systems	**Lesson 2:** Systems Interacting	**Textbook p.: 82-85, 87-91**
SUPPLEMENTAL READING/NOTES			

Objectives:

- **Identify stimulus-response situations.**
- **Identify how systems interact to maintain homeostasis.**
- **Identify what may happen if one body system stops interacting with another.**
- **Identify how healthy choices affect organ systems.**

Directions: Read the following passage, highlight main ideas and answer the required questions.

Vocabulary:

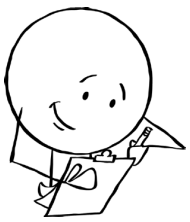
- Homeostasis: an organism's internal environment stays stable despite outside factors
- Stress: reaction of your body to threatening, challenging, and uncomfortable events

How does your body stay balanced?

There are times when you feel calm, like while you are watching your favorite TV show. When you are about to take a test, after you have ran 5 miles, or when you are outside on a very cold day without a jacket, you probably will not feel calm. These situations will usually bring on stress for most people. Stress looks different for everyone. Stress could mean being anxious, sad, or mad. Stress can be internal making you worry, or it can be physical making you shiver or sweat.

Luckily, our body is designed to be able to regulate itself despite these conditions. Homeostasis is when an organism's internal environment stays stable despite outside factors. Keeping balance is necessary in order to survive. Some factors that our body regulates or helps to keep in order are its temperature, amount of food, and water. It is able to do this by giving you signals when something is needed. Shivering or sweating tells us when we are hot or cold. Deep breathing helps us to slow down our heart rate and lower our body temperature. Feeling thirst or hunger tells us when we need more water or food.

Keeping balanced.



Each human body system works together to maintain homeostasis. The nervous system is kind of like the command center, it is in charge of making sure most human body systems keep the body balanced. For example, if you are outside without a coat and it is cold, you may start to shiver. Shivering is a signal that you are cold. It is also the body's way of making you feel warmer as the muscles in the muscular system move. Once you feel warmer, your body stops shivering.

However, when you are too warm, different body systems work together to cool you down. The endocrine system releases hormones triggering the integumentary system to perspire, or sweat. When the sweat evaporates, it cools the body. The circulatory and integumentary systems (skin, hair, and nail system) also help your body maintain its proper temperature. Blood flow helps to carry heat away or prevent heat loss.

It is important to note that human beings are warm-blooded (endothermic) animals, so their body temperature is not changing with the temperature of the environment, like a cold-blooded or ectothermic animal. An ectothermic animal must use behavior like finding a hot rock in the warm sun to keep its temperature regulated.

Which body systems work together to regulate body temperature?

Energy. The endocrine system tells the nervous system when you are hungry. Once you eat and are full, the hormones of the endocrine system alert the nervous system to tell you to stop eating. The muscular system moves the food along to allow the digestive system to do its job of taking the energy it needs from the nutrients and eliminating the rest. As the food is digested, the respiratory system takes in oxygen used in the cells to release energy.

Answer this question: 1. Which body systems work together to help give the body energy?

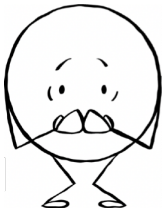
_____

_____

Water: Water is very important for our survival, so the body has indicators to tell you when you are in need of more. The nervous system will send signals to the body to tell it that it is thirsty. Water passes through the digestive and circulatory system. When you drink too much water, the excretory system eliminates it through urine, sweat, and exhaling.

Which body systems work together to keep water balanced?

Stress. Picture this scene in your mind. You come to school and walk into your math class, a class that is not easy for you and your teacher announces that you are having a pop quiz. What happens? Stress. Stress is the reaction of your body has to possibly threatening,



challenging, or uncomfortable events. Your endocrine system jumps into action pumping hormones throughout your body. Adrenaline is spread through the bloodstream. In turn, your heart starts to beat faster to get it to all body systems and your breathing starts to increase. Other reasons like classroom presentations, talking to someone you have a crush on, or being called to the principal's office will create these changes in the human body.

Your body is equipped to deal with stress, and it is normal and healthy to feel stressed now and then. Stress can be a concern if you are feeling it for extended periods of time. This is unhealthy and can interrupt homeostasis. Often, you may get headaches or feel sick because it is affecting your immune system. In serious situations, stress can lead to digestive problems and other health ailments. Understanding what is making you feel stressed and figuring out how to cope with it is very important. How does your body maintain homeostasis through stressful situations?

Answer the following questions:

2. _____ The condition in which the body keeps the internal environment stable despite outside factors.

a. stress b. homeostasis c. equilibrium d. homeopathy

3. _____ True or False: The human body systems work together to maintain homeostasis.

4. It is normal for the body to have some stress. What are some ways you can manage stress?

_____

_____

5. Which systems work together to allow you to move?

_____

6. Which systems work together to regulate your body temperature?

_____

7. Which systems work together to keep you balanced (upright when walking etc)?

_____

Solve the following questions in your textbook: Page 87 + Page 89 (figure 7)

KEY TERMS: _____

_____

_____

Systems Work Together

Systems in the human body work together to do many necessary functions for life:

1. **Movement**: _____

   _____

2. **Controlling Body Functions**: _____

   _____

3. **Transporting Materials**: _____

   _____

4. **Stimulus and Response**: _____

   _____

Stimulus and Response

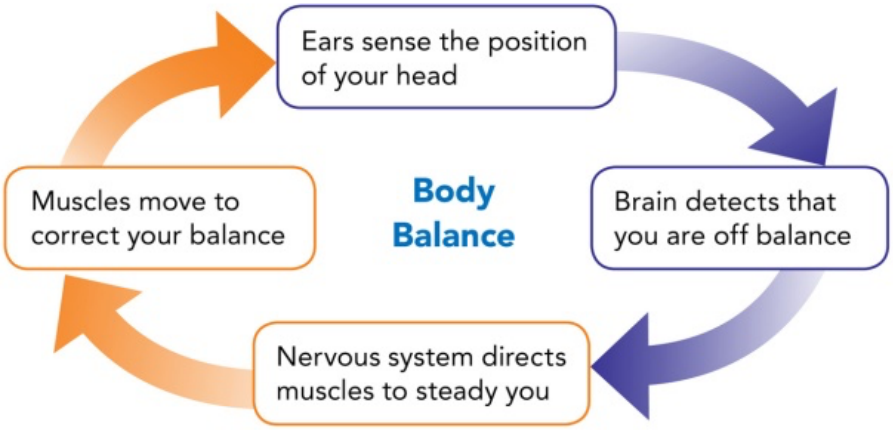
- Any **change** in the environment (ex. change in smell etc) or **signal** (ex. red light) that makes you respond a certain way is called a _____.
- The _____happens due to the stimulus is called a **response.**
- When you see food and you reach out for it your _____ work together to make you reach out for it; while your _____digests your food.
- Example: When the traffic light changes to the green light it's a _____, then your _____ _____is to drive along the road.

Homeostasis

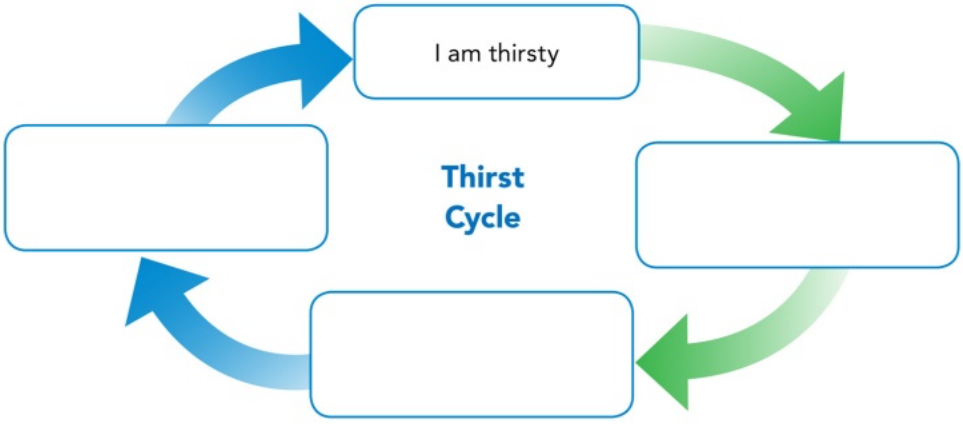
- Living things require specific _____to function. _____these conditions is necessary for life to continue.
- _____is the ability to maintain **stable**/balanced conditions internally despite changes in external conditions
- Your body has to
    - **Regulate**/control **body temperature**: for example, when it's cold your nervous system sends to signals to your other systems to warm you up: your _____system makes you

shiver and your_____gives you goosebumps. These actions help you raise your body's temperature warm up.

- Your body has to
  - **Maintain balance-** your _____ work together to keep you balanced. Your ears sense your body's balance.



  - **Meet energy needs-** your _____ sends signals to your brain to make your hungry and signals your brain when you're full.
  - **Maintain water balance-** your _____ makes you feel thirsty. Your _____ _____systems allow you to reach out for the water. When you drink water, the water passes through your _____system than you_____ system. When you're full, your_____system signals to you to stop drinking water.



  - **Manage Stress- stress** is your _____to difficult, threatening, or disturbing events. Stress can affect homeostasis and weaken your _____.
  - **Fight Disease-** your _____ works to return your body's health.