Living Environment
Life Functions

Name_____

Meet Bowser, a hungry fun loving hound dog! Bowser, just like you, has many characteristics of life that he shares in common with all living organisms. Working with your tablemate, write a list of 8 characteristics that Bowser shares with you and all other living things.

Bowser is very curious about the life processes that keep him alive. So, he is off to the library with his guardian to learn about what keeps an organism living.

However, to get started, Bowser needs some help. He knows that as a multicellular organism, his cells are the basic units of life, but he is confused as to what how everything is related. Help Bowser out by putting the following terms in order according to size: **Organs, cells, organ systems, tissues, Bowser**

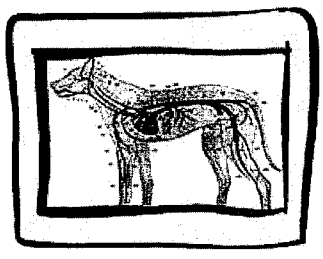
Now that Bowser understands the relationship among the cells and tissues in a living organism, he now realizes that his research must focus on life functions at a cellular level.

Once he learns how the cells function to maintain life, he can then better understand how cells working together can help multicellular organisms function and stay alive. So, let's help Bowser on his quest. ***Working with your table mate, you may use books and/or computers to assist Bowser in learning about life functions.***

Bowser loves to eat! Eating or **NUTRITION** is a necessary life function to sustain all living things. Bowser is interested in anything that has to do with eating, so he asks that you help him to understand the following terms.

1. Define the term **nutrition**.

2. Three processes are involved in nutrition. Briefly describe each life process:
   - ✓ **Ingestion** –
   - ✓ **Digestion** –
   - ✓ **Egestion** –



Bowser visited the vet the other day and saw this image of a dog's circulatory system. Bowser knows that the circulatory system is involved in the life function of **TRANSPORT**. Transport

in living things involves **absorption** and **circulation.** Define these two terms in the space below.

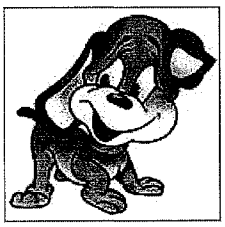
3. **Absorption** -

4. **Circulation** -

Bowser loves to run, so he needs lots of **ENERGY!** Bowser knows that he gets his energy from the foods he eats but he is not sure what process releases the energy from the bonds that hold the molecules of food together.

5. Identify and define the life function that releases energy from the foods we eat. (Hint: it's NOT breathing!)

6. How does breathing differ from the life function you defined above?



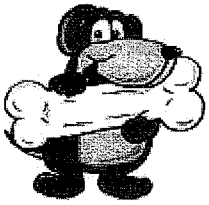
Meet Bowser's son, Waggles. Waggles is only 4 months old. Over the next several months, Waggles will grow and develop.

7. Explain how the life functions of **GROWTH** and **DEVELOPMENT**

differ.

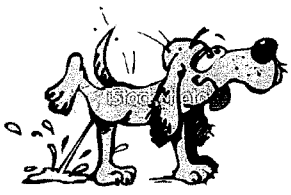
8. If Waggles only grew and did **NOT** develop, what would he look like in 3 years from now?

Now, it's time for a quick self-check to how things are going for you and Bowser. Using the answer key your teacher has given you, please review questions 1-8 and make any necessary corrections to your work. Once you are completed, move onto the next set of questions, unless otherwise instructed by your teacher.



Bowser eats not only to get energy for all of his life processes, but he also needs to eat to get certain materials into his body so that he can make the substances he needs (like proteins) that help him to stay healthy and strong. The process of making larger more complex molecules from smaller, simpler ones is called **SYNTHESIS**. This life function is the opposite of the life process of digestion (breaking down large complex food materials into smaller, simpler molecules).

9. How does **SYNTHESIS** aid in the maintenance of living organisms?

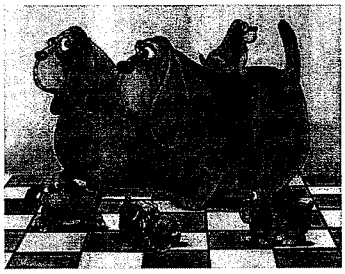


Bowser's friend Scratch has a weak bladder and often urinates on his family's carpet. Although Bowser thinks this is funny, Scratch often gets in trouble with his guardians. Urine, sweat, and the release of carbon dioxide from the lungs are all examples of the life function of **EXCRETION.**

10. Define the term Excretion and **EXPLAIN** how it differs from egestion

(remember - EGESTION is process that is part of the life function of **NUTRITION**).

11. **EXCRETION** eliminates cellular wastes. **WHY** do you think it is necessary for an organism to remove cellular wastes from its body?



Bowser's next door neighbors, the Grrrnets, recently had a litter of puppies. All the puppies are happy and healthy and often visit Bowser and his family. **REPRODUCTION** is the life function responsible for the birth of these puppies.

12. Is **REPRODUCTION** necessary for the survival of an individual organism? **Explain your answer.**

Bowser is a pretty calm dog most of the time, but every once in a while, he gets "wired". Not only does Bowser look stressed, but his current state has also affected his life processes. Now he is out of balance both inside and out. The life function **REGULATION** controls and coordinates the life processes and helps the body maintain **HOMEOSTASIS.** Define each of these terms.

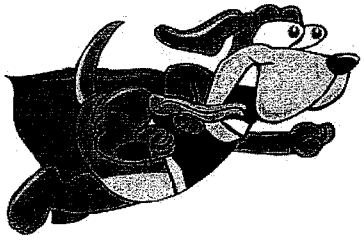
13. **Regulation** -

14. Homeostasis -

METABOLISM is defined as the sum total of all the biochemical reactions in a living organism.

15. Describe the relationship between **METABOLISM** and **HOMEOSTASIS**.

So, to sum things up for Bowser, what are the life functions that are necessary to sustain life?



Bowser is now off to his day job, but he thanks you for all your help!