

Part 1. Riddle me this... (day 1)

Using the list of systems handed out in the introduction to homeostasis packet, write in the answers to the following questions.

1. I absorb and deliver digested nutrients to the cells of the body after you eat. _____
2. I am the “command center” and maintain homeostasis by working with all systems. _____
3. The diaphragm controls my function so I interact with the muscular system to breathe. _____
4. I make white blood cells in my marrow which I give to this system. _____
5. I work closely with the nervous system to release hormones to maintain homeostasis. _____
6. I am in the digestive organs and contract to help push food through. _____
7. As I sweat, the excretory system removes cellular waste through me. _____
8. I am tasked with removing waste materials from the blood. _____
9. I am called the “2nd circulatory system” and return fluid to the blood as well as store white blood cells that fight disease. _____
10. I receive hormones from the endocrine system that tells me to start making sex cells. _____

Part 2. What makes us up?

In the fields below, identify what each term is.

organ	tissue	cell
biosphere	ecosystem	molecule
organism	atom	organ system
electron	system	organelle

Put the following terms in order from SMALLEST to LARGEST.

(Smallest) _____ → _____ → _____
 → _____ → _____ → _____ →
 _____ → _____ → _____ →
 _____ → _____ → _____ (Largest)

Part 3. Introduction to Homeostasis (day 1/2): *keeping everything in balance*

“homoeo” = similar to (Latin), and “stasis” = standing still

Objective: to design and conduct an experiment on human activity that is centered on heart pulse rate.

Big Question: How does the body respond to changes in its internal or external environment to maintain a balanced internal state?

Directions: you will design an experiment to investigate different aspects of how the body maintains its internal state around activity. This will be done through a series of activities that student groups will plan to gather **pulse rate data** for that will serve as evidence for the body’s attempt to maintain homeostasis.



Groups will develop a plan around 5 minutes of activity compared to sitting in a classroom looking at a calming video.

The options can be such things as walking around the science department office, jogging around the science department office, doing squats with no weight, laying down, or something else that is approved by Mr. F.

I. Experimental plan:

Experiment Title: The effect of _____ on _____
Independent variable Dependent variable

i. The variable that we will measure (**dependent variable**) is _____

ii. The variable that we will change (**independent variable**) is _____

iii. The **control variable** (trials with no change at all) is _____

Why do we use a control variable? _____

iv. We will keep these components of the experiment the same in every trial (**constants**):

_____	_____
_____	_____
_____	_____
_____	_____

v. Now that you have an idea of what you want to examine, you need to develop a prediction, or educated guess (**hypothesis**) about what you think will happen.

If _____, then _____

_____ will happen, because _____

Purpose. Why you did the experiment. To test/investigate the effect of _____ on _____
Independent variable Dependent variable

viii. **Analysis & Conclusions.** This is where you look at your data and make sense of it.

What **trends (patterns)** did you see in your data? What were the **major findings**?

Why did you conduct this experiment (**purpose**)?

Did these patterns **support your hypothesis**? If they did not, explain **why** they did not.

What did the experiment teach you about homeostasis? Use data and observations to answer this. Remember, support your claim (hypothesis) well here!

What potential **experimental errors** could you have made, in either the experimental design or when carrying out the experiment. **IMPORTANT**, human error is not a valid experimental error!

If you were to **redesign** the experiment, what would you **improve** for the next time? Why would you change these things? Discuss how you would correct any experimental errors you mentioned in the last question.