Name_____Date_____Hour_____

Homeostasis – Positive & Negative Feedback

Adapted from: http://www.madison-schools.com/cms/lib4/MS01001041/Centricity/Domain/620/Homeostasis%20Worksheet.pdf

BILL #50, write #1 & 2

For 1-2, circle the appropriate term.

1. In NEGATIVE feedback systems, the response (reverses or strengthens) a change in a controlled condition.

2. In POSITIVE feedback systems, the response (reverses or strengthens) a change in a controlled condition

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(a) If blood temperature rises too high, specialized neurons in the hypothalamus of the brain sense the change. These neurons signal other nerve centers, which in turn send signals to the blood vessels of the skin. As these blood vessels dilate, more blood flows close to the body surface and excess heat radiates from the body and it cools down.

This is an example of _____ feedback.

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(b) If the blood temperature falls too low, specialized neurons in the hypothalamus of the brain sense the change and signals are sent to the cutaneous arteries (those supplying the skin) to constrict them. Warm blood is then retained deeper in the body and less heat is lost from the surface and it increases temperature.

This is an example of _____ feedback.

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(c) Part of the complex biochemical pathway of blood clotting is the production of an enzyme that forms the matrix of the blood clot. This has a self- catalytic, or self-accelerating effect, so that once the clotting process begins, it runs faster and faster until, ideally, bleeding stops.

This is an example of _____ feedback.

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(d) During childbirth stretching of the uterus triggers the secretion of the hormone oxytocin, which stimulates uterine contractions and speeds up labor.

This is an example of _____ feedback.

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(e) The walls of arteries stretch in the presence of high blood pressure. Baroreceptors located in these walls also stretch and as a result, a signal is sent to the brain, which in turn slows down the body's heart rate. This slows the flow of blood through the arteries causing less pressure. As BP drops the baroreceptors become flaccid and a signal is sent to speed up the heart rate.

This is an example of _____ feedback.

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(f) When you have an allergic reaction, like hayfever, the biochemical loop, scientists say, links the amount of immunoglobulin E (IgE) antibody, overabundant in people with allergies, to the number of immune cell IgE receptors, which, upon exposure to allergens, trigger a cascade of biological events that cause wheezing, sneezing, itching and swelling so common this time of year.

This is an example of _____ feedback.

In lab groups, decide if the scenario indicates negative or positive feedback, wording leads you to your decision, and draw a picture of the phenomenon:

(g) When you get exposed to the influenza virus, an antigen that it recognizes, they bind to the pathogen; a macrophage then engulfs the pathogen; the macrophage also presents antigen on its surface and secretes 5 different chemical messengers called cytokines. This will activate lymphocytes, initiate the inflammatory response, and possibly trigger fever, just to list a few of the events that would take place in this particular pathway.

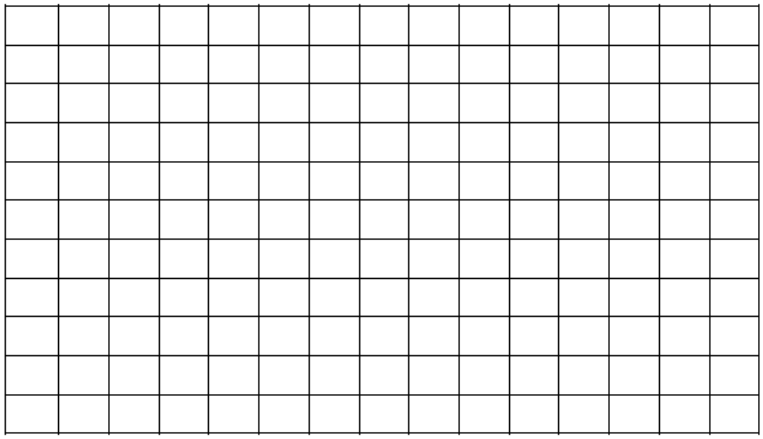
This is an example of _____ feedback.

Homeostasis – Positive & Negative Feedback

For the following graphs, make sure you LABEL YOUR AXES. Graph time on the horizontal axis (the x-axis)

1. A man with heart disease has his blood pressure monitored closely. Heart disease has been linked to increased blood pressure. Normal is 130 mm Hg)

TIME	BP (mm Hg)
7 am	200
8 am	190
9 am	170
10 am	150
11 am	130
12 noon	110
1 pm	70

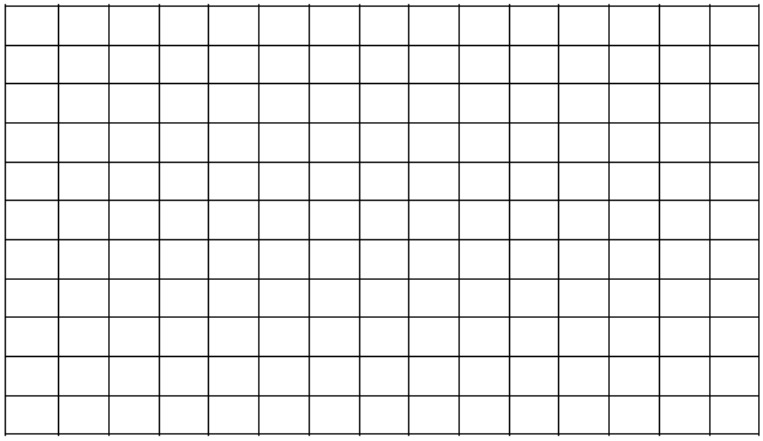


Claim: This is an example of _____ feedback.

Evidence and Reasoning: (data from the table/graph with EXPLANATION)

2. A woman is being tested for diabetes mellitus. Her blood glucose is measured over a period of time. Recognize that the normal range for blood glucose is 70-110 m/dl.

TIME	Blood Glucose mg/dl
0	100
1 hour later	120
2 hours later	110
3 hours later	90
4 hours later	80
5 hours later	85



Claim: This is an example of _____ feedback.

Evidence and Reasoning: (data from the table/graph with EXPLANATION)