**Homeostasis Review**

1. What process does your body use to remain at its **steady state**?

homeostasis

1. Explain the difference between a positive and negative feedback loop.

positive feedback 🡪 doesn’t have ON and OFF switch, turns ON until it reaches an end point when the stimulus is no longer present

negative feedback 🡪 has ON and OFF switch, constantly fluctuating between ON and OFF based on internal conditions reaction to the external environment

1. Identify each component of the homeostatic feedback loop for the following examples. Remember to include all of the following parts:

1. stimulus 2. receptor 3. control center 4. effector 5. response

Ex.1: You step outside on a **cold** winter morning, draw the feedback loop and identify its parts.

negative feedback loop 🡪 have ON and OFF switch

stimulus 🡪 drop in temp

receptor 🡪 nerve cell (thermoreceptor)

control center 🡪 brain (hypothalamus)

effector 🡪 shivering

response 🡪 increase in temp

Ex. 2: You are leaving school and late getting to your bus. You run to catch it. When you reach the bus you notice your **heart is beating fast**, but eventually it slows down. Draw the feedback loop and identify its parts.

negative feedback loop 🡪 have ON and OFF switch

stimulus 🡪 increase in heart rate (increase in breathing rate)

receptor 🡪 nerve cell (baroreceptor)

control center 🡪 brain (hypothalamus)

effector 🡪 slowed breathing

response 🡪 decrease in heart rate

**Extension:** On your run to catch your bus you notice, in addition to your heart beating fast, you are breathing heavily. Why is this? Explain what your body is getting from breathing heavily (what is in the air that your body needs) and why your body needs it.

Ex. 3: You are walking out to your car when you slip and fall on ice. On your fall, you scrap your knee. You feel a **sharp pain** in your knee, but by the time you have gotten up and to your car, the pain is gone. Draw the feedback loop and identify its parts.

negative feedback loop 🡪 have ON and OFF switch

stimulus 🡪 feel pain when landed on ice

receptor 🡪 pain receptor in knee

control center 🡪 brain

effector 🡪 release of pain-killer hormones

response 🡪 reduced pain

Ex. 4: When you get to your car, you notice you are bleeding. You do not have a band aid so you leave it alone. When you arrive at home, the bleeding has stopped. Draw the feedback loop and identify its parts.

positive feedback loop 🡪 does not have ON and OFF switch

platelets and chemicals recruited to stop bleeding, once at site of injury they recruit more platelets and chemicals to build up platelet block

**Extension:** for the above example, identify if they are positive or negative feedback loops and briefly explain why you know.