

Directions: Put the following examples in the correct order to illustrate a proper negative feedback relationship.

A. Regulation of oven temperature at 375°F

1. Heating unit is activated.
2. Oven temperature rises above 375°F
3. Open oven door- cold air goes in, temperature falls.
4. Temperature in oven rises.
5. Temperature inside oven decreases because heating unit is off.
6. Heating unit shuts off.

B. Regulation of swimming pool chemicals.

1. Chlorine level in the pool rises.
2. Lifeguard adds water.
3. Lifeguard tests for chlorine level and the result is decreased levels of chlorine.
4. Lifeguard tests for chlorine level and the result is increased levels of chlorine.
5. Lifeguard adds chlorine.
6. Pool water level rises, diluting chlorine concentration.

C. Blood Pressure regulation.

1. Increase in heart rate causes an increase in blood pressure.
2. Decrease in heart rate causes a decrease in blood pressure.
3. Receptors in blood vessels detect decrease in blood pressure.
4. Brain's control center for heart rate responds which decreases heart rate.
5. Receptors in blood vessels detect increase in blood pressure.
6. Brain's control center for heart rate responds which increases in heart rate.

D. Blood Glucose Regulation

1. Decreased uptake of glucose in tissue provides more glucose for the brain, glycogen break down to glucose, glucose synthesized, fat is broken down which increase glucose in the blood and release from the liver.
2. Pancreas detects increase in blood glucose (after a meal).
3. Decreased blood sugar causes decreased secretion of insulin, sympathetic stimulation and epinephrine.
4. Increase in insulin secretion because of increase in blood sugar and parasympathetic stimulation.
5. Increased uptake of glucose due to insulin; excess converted to glycogen (stored in muscle, liver) or fat (stored in adipose tissue) which causes decrease in glucose in blood.
6. Pancreas detects decrease in glucose. Physical activity causes increased sympathetic stimulation of pancreas; increase in epinephrine from adrenal medulla.

E. Body Temperature Regulation

1. Heat-conserving and heat-generating mechanisms within the body are activated by the brain.
2. Body temperature increase is detected by receptors in skin and brain.
3. Receptors in skin and brain cause decrease in body temperature.
4. Heat-loss mechanisms activated by brain's response to receptors.
5. Blood vessels in skin constrict, shivering occurs. Behavioral modifications take place which increases heat in the body.
6. Sweating increases, blood vessels in skin dilate which decreases body temperature.