Physiology Unit: Homeostasis

I. Differentiation: process which turns _____ into specialized cells
   a. After egg is fertilized by sperm, the cells begin to divide. Early in this process, what each cell will become has not been determined. These are stem cells.
   b. Then Differentiation begins, which causes cells to develop into specific types of cells:
      Ex. _____

II. 5 Levels of Organization
   1. _____= each type of specialized cell has specific structure and task
   2. _____= groups of similar cells work together to perform a specific function
   3. _____= various tissues function together to form an organ
   4. _____= 2 or more organs work in coordination
   5. _____= made up of organ systems

   Example of each level of organization:

III. Homeostasis: regulation and maintenance of _____
   Ex.

IV. Feedback Loops: monitor_____ and make _____ when the body moves to far away from its set point
   a. Negative Feedback has a stabilizing effect. Example: _____
   b. Positive Feedback has a destabilizing effect. Example: _____

V. Diabetes: Example of Homeostasis disruption
   Glucose levels are controlled by 2 hormones: _____ & _____
   a. When glucose levels are too high, pancreas releases _____ (makes cells take in more glucose, stores extra as glycogen in the liver)
   b. When glucose levels fall, pancreas releases _____ (stimulates liver to release stored glycogen)
   c. The release of these hormones is an example of _____ feedback
   d. Diabetes is when the pancreas fails to do its job:
      A build up of glucose in the blood can damage cells in every _____ & every _____
   e. Body systems coordinate to keep an organism healthy

      Thermoregulation = _____
      *At rest = body heat produced by liver, heart, brain and endocrine glands
      *In motion = skeletal muscles produce 30-40 times the heat generated by rest of body
      *Hypothalamus (part of brain) monitors body temperature.
         Endocrine and nervous systems make adjustments when too hot
         Muscular, respiratory and circulatory adjust when too cold
   f. Exercise requires more energy
      To make more energy, cells must: 1) convert glucose into ATP (_____)

      1) Bring more oxygen to the cell and remove carbon dioxide (respiratory & _____)
      2) Monitor and remove excess heat produced by cell respiration (nervous, circulatory and endocrine)