What do all living organisms need to sustain life?

- Oxygen and water

What is energy?

- The capacity to perform work

What are the different types of energy?

- Kinetic (is the energy of motion) and Potential (stored energy)

What is a **calorie**?

- A calorie is the amount of energy that raises the temperature of one gram of water by one degree Celsius.

What is a **Calorie**? (there is a difference between this one and the one above.)

- Calories are tiny units of energy

What is the conservation of energy principle?

- A principle stating that energy cannot be created or destroyed, but can be altered from one form to another.

What is entropy?

- A measure of the amount of disorder, or randomness, in a system

What is activation energy?

- The energy that activates the reactants in a chemical reaction

What is an enzyme and how do they work?

- Proteins that speed up chemical reactions

What factors affect how well enzymes work?

- Temperature, pH, induced fit, enzyme inhibitors

How does an enzyme inhibitor work?

- Some bind to the active site, as substrate imposters
- Bind at a remote site, changing the enzyme's shape

What is a receptor?

- Mediated endocytosis: is triggered by the binding of external molecules to membrane proteins

What is ATP and what is it used for?

- Adenosine Triphosphate; also known as the energy currency in all cells.
- It is used

How do you get energy from ATP?

- Cellular respiration

What is the difference between diffusion and osmosis?

- Diffusion is passive transport and does not use energy
- Osmosis is passive transport and takes place across selective permeable membrane

What is hyper, hypo and isotonic?

- A hypertonic solution has a higher concentration of solute.
- A hypotonic solution has a lower concentration of solute.
- An isotonic solution has an equal concentration of solute.

What happens to red blood cells if you place them in a hyperosmotic, hyperosmotic or isosmotic?

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Be able to look at two solutions and tell which is hyper or hyperosmotic.
Be able to look at two solutions and tell which way osmosis will occur.

What is a producer? Consumer?

- Producers produce their own source of food
- Consumers gain energy by eating things like plants and animals

What is an autotroph? Heterotroph?

- Autotrophs are self feeders and make own organic matter (plants)
- Heterotrophs cannot make organic molecules (humans)

What is the difference between cellular respiration and breathing?

- Cellular respiration takes place in the cells
- Breathing uses the lungs
- Glucose is the product of cellular respiration

What is the relationship between photosynthesis and cellular respiration?

- In Photosynthesis, plants use the sun's energy as light to transform carbon dioxide and water into glucose.
- In cellular respiration, glucose is ultimately broken down to yield carbon dioxide and water, and the energy from this process is stored as ATP molecules.

What is the equation for photosynthesis?

- Carbon Dioxide + Water → Light Energy → Glucose + Oxygen Gas

What is the equation for cellular respiration?

- Glucose + Oxygen → Carbon Dioxide + Water + ATP

Where does photosynthesis occur? Where does cellular respiration occur?

- Photosynthesis occurs in the chloroplasts
- Cellular respiration occurs in the mitochondria

Know where the reactants and products of cellular respiration and photosynthesis come from and are used.

What is an electron transport chain used for?

- Shuttles electrons during the redox reactions that release energy used to make ATP; located in inner membrane of mitochondria

What are the steps of photosynthesis? What occurs at each step of photosynthesis?

- The light reactions convert solar energy to chemical energy
- The Calvin cycle makes sugar from carbon dioxide

Why are plants green? Why do leaves turn colors in the fall?

- Chlorophyll

What are alternative forms of photosynthesis?

- C3, C4, CAM

What is a photosystem?

- Light harvesting unit of a chloroplasts' thylakoid membrane

What occurs in the Calvin cycle?

- Plants use energy that NADPH and ATP contain to build high-energy compounds that can stored up to a long period of time

Why is cellular respiration important?

- Cellular respiration is important since it is the process that releases the chemical energy stored in food

Define Anaerobic vs. aerobic respiration

- Anaerobic does not use air
- Aerobic uses air

Where do the steps of cellular respiration occur and what is important about each step of cellular respiration?

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How much energy is made from cellular respiration?

- 32 ATP

What is glycolysis?

- The multistep chemical breakdown of a molecule of glucose into two molecules of pyruvic acid; the first stage of cellular respiration in all organisms

Where does glycolysis occur?

- Cytosol

What do you get out of glycolysis?

- ATP

How many ATP's does glycolysis produce?

- 4

Where do the steps of cellular respiration occur and what is important about each step?