**Comparing Photosynthesis and Cell Respiration Handout #\_\_\_\_\_**

**Look for Similarities (*Compare*) and Differences (*Contrast*)**

|  | **Photosynthesis** | **Respiration** |
| --- | --- | --- |
| Chemical reaction: | Carbon dioxide and water combine in presence of sunlight to produce **glucose.** | Glucose (food) is broken down into water and carbon dioxide to make **energy (ATP).** |
| **Production of ATP:** | **Yes** | **yes, 36-38** |
| ***Requirement of sunlight:*** | *Can occur only in presence of sunlight* | *Occurs at all times.* |
| **Fate of oxygen and carbon dioxide:** | **Carbon dioxide is absorbed and oxygen is released.** | **Oxygen is absorbed and carbon dioxide is released.** |
| *Product:* | *C6H12O6 and O2* | *CO2 and H2O* |
| **Main function:** | **Production of food. Energy Capture.** | **Breakdown of food. Energy release.** |
| **Location****(Main structure):** | **Chloroplasts** | **Mitochondria** |
| *Reactants:* | *CO2 (Carbon Dioxide) and H2O* | *C6H12O6 (glucose) and O2(oxygen)* |
| **Stages:** | **2 stages (The light dependent reaction, light independent reaction).** | **3 stages (Glycolysis, pyruvate oxidation, Krebs cycle).** |
| **Equation:** | ***6CO2 + 6H2O light* *energy*--> C6H12O6 + 6O2** | **6O2 + C6H12O6 -->** ***6CO2 +6H2O + energy(heat)*** |
| **Occurrence:** | **Occurs in plants, protista (algae)** **and some bacteria.** | **Occurs in all living organisms.** |
|  |

## Energy Needs energy Produces energy

## Definitions of Photosynthesis and Respiration

* **Photosynthesis** is a process that converts carbon dioxide into organic compounds in presence of sunlight.
* **Respiration** is the set of metabolic reactions that take in cells of living organisms that convert nutrients like sugar into ATP (adenosine tri phosphate) and waste products.