Photosynthesis Reaction Steps

Step 1: Light Reaction
Light is attracted to the chlorophyll in Photosystem II
An electron is excited and moves down the proteins in the disc, which moves H^+ into the thylakoid discs
More light excites the electrons again in Photosystem I and creates NADPH
Water is split to replace the lost electrons, H+ stays in the disc, and O_2 leaves the plant
H^+ concentration gradient is created in the disc and H+ moves out through ATP Synthase creating ATP
Thylakoid disks are used to make the products: ATP and NADPH (carries H^+ and electrons to be used in the next step)
Step 2: Calvin Cycle
CO_2 binds to a 5-Carbon molecule, RuBP with the enzyme Rubisco in the stroma
6-Carbon molecule immediately breaks down into two 3-Carbon molecules
ATP and NADPH are used to turn the two 3-Carbon molecules into six G3P sugars
1 G3P leaves the cycle and the remaining sugars are recycled back into RuBP
Through a series of reactions in the fluid stroma, a glucose is eventually made
Main Goal = make glucose

Cell Respiration Reaction Steps

Step 1: Glycolysis
Glucose is split into two pyruvic acids (3-Carbon molecule) in the cytoplasm
2 ATPs and a carrier (NADH) are made
Step 2: Krebs Cycle
Two pyruvic acids will lose a CO_2 which leaves the organism
New 2-Carbon molecule, acetyl CoA is created and then binds to another 5-Carbon molecule that is already present in the mitochondria
A series of reactions in the mitochondria occur and 2 ATPs and many carrier molecules (NADH and $FADH_2$) are made
Step 3: Electron Transport Chain
All carrier molecules will release their H+ and electrons one at a time to the electron transport chain in the cristae
H+ moves across the inner membrane to the inner membrane space while the electrons move through the protein chain
O_2 takes the electrons at the end of the chain and binds with a H+ to make water: NO O_2, NO Krebs or Electron Transport Chain
H+ moves back across the membrane through ATP Synthase to make about 34 ATP
TOTAL ATP = about 38
Main Goal = make energy