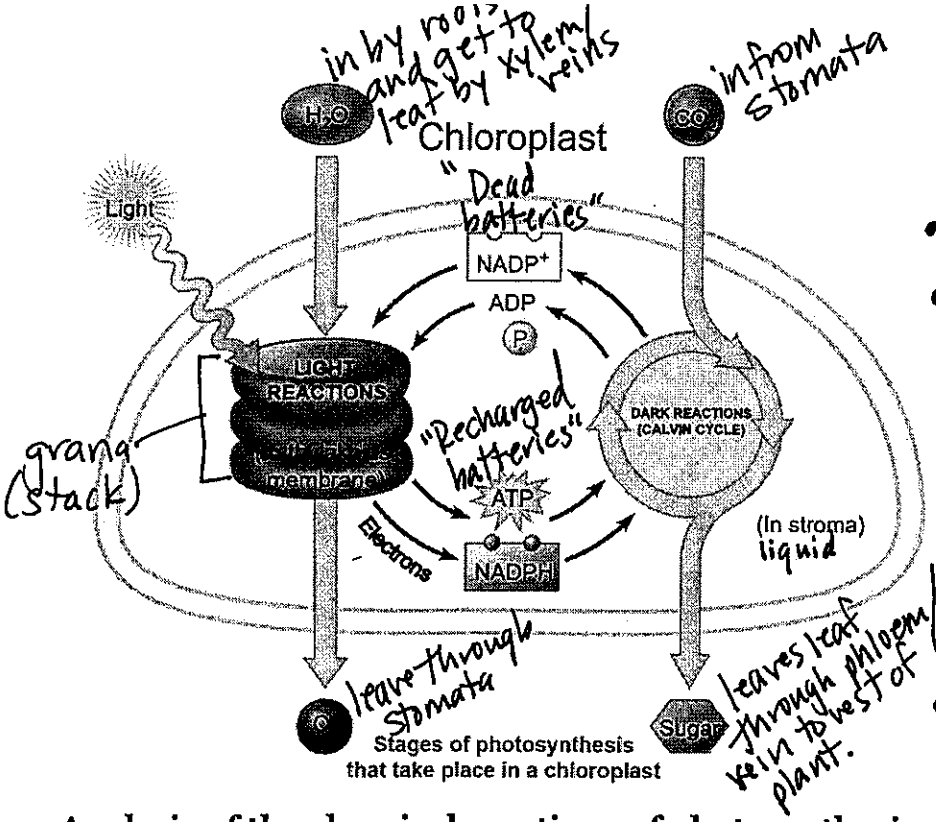

Notes:

$6CO_2 + 6H_2O \xrightarrow{\text{radiant energy}} C_6H_{12}O_6 + 6O_2$

- converts light energy (radiant) to chemical energy (glucose)
- Light reactions produce the energy molecules (ATP & NADPH) that power the calvin cycle at night.
- carbon atoms that make up glucose come from the $6CO_2$ that enters calvin cycle.

Analysis of the chemical reactions of photosynthesis.

Factor to analyze	Light Reaction	Calvin Cycle (Dark Reaction)
Where does the process occur in the chloroplast? Be specific.	In the lumen of the thylakoids that are stacked in grana within chloroplasts.	Stroma (liquid) around the grana stacks.
Inputs → "reactants" & where does the plant get them from?	H_2O - ground water goes into roots and enters the leaf by veins/vascular bundles/xylem. Light - sun. Captured by chlorophyll in thylakoids	CO_2 - from air and enter leaf when stomata open at night.
These represent forms of energy. What type of energy are they, radiant or chemical?	Sunlight = radiant energy; ADP/ATP = chemical ← Both → glucose = chemical; NADP+/NADPH = chemical ← Both →	
Outputs → "products" & where do they go afterward?	O_2 - leave the leaf through the stomata as CO_2 enters. ATP - goes to dark reaction to power it at night. NADPH - same as ATP	glucose - into vein/phloem to the rest of the plant to store in the roots. ADP/NADP+ - these are "dead batteries" that go back to the thylakoid to recharge in the daytime
Is a photosynthetic pigment (coloring) needed? Which one?	Yes. Chlorophyll	No. occurs at night
Depends on sunlight (yes or no)	Yes.	No.