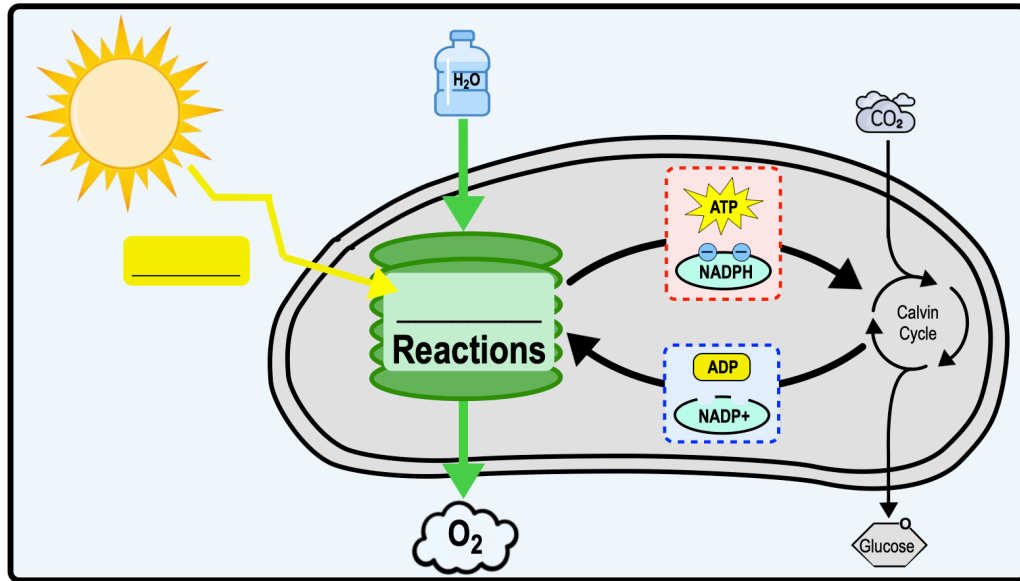


CONCEPT: LIGHT REACTIONS OF PHOTOSYNTHESIS

● **Light Reactions:** 1st stage of photosynthesis that occurs in the _____ membrane/space.

- Synthesizes _____ & _____ to “power” the *Calvin Cycle* while producing _____ as a byproduct.
- **NADPH:** an _____ carrier that transports _____ energized electrons.



EXAMPLE: The light reactions are powered by _____ energy. In normal photosynthesis the products of the light reactions are used to power _____.

- a) potential; photorespiration.
- b) sunlight; photorespiration.
- c) sunlight; the Calvin cycle.
- d) potential; the Calvin cycle.

PRACTICE: Describe the primary function of the light reactions of photosynthesis.

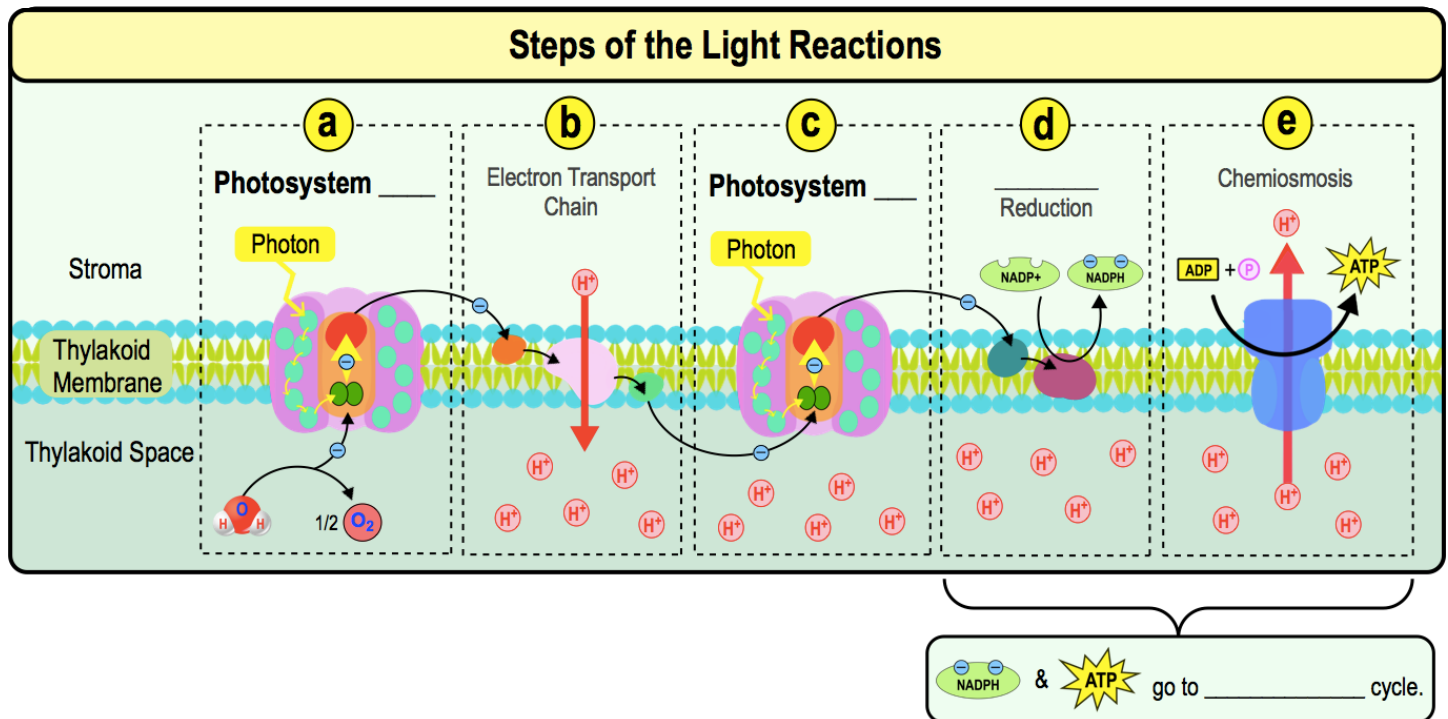
- a) Production of NADPH used in cellular respiration.
- b) Use of ATP to make glucose.
- c) Conversion of chemical energy to light energy.
- d) Production of ATP and NADPH.

CONCEPT: LIGHT REACTIONS OF PHOTOSYNTHESIS

Steps of the Light Reactions

- Recall: *Light Reactions* occur in the _____ within chloroplasts, which contain *photosystems*.
 - Photosystem II** absorbs *photons* of light to energize *electrons* donated by a _____ molecule.
 - Water molecules are _____ to provide electrons & react to form _____ gas (O_2).
 - Electrons move from **Photosystem** _____ to **Photosystem** _____ via an **Electron Transport Chain**.
 - Generates a *hydrogen ion* (_____) *gradient*.
 - Photosystem I** *electrons* are energized even MORE & continue through the **Electron Transport Chain**.
 - NADP⁺** serves as the “*final electron acceptor*” & is _____ to form _____.
 - Hydrogen ion* (_____) *gradient* formed by the ETC is used to generate some _____ via *Chemiosmosis*.

EXAMPLE: The light reactions of photosynthesis.



PRACTICE: Where do the electrons that are excited in photosystem II come from?

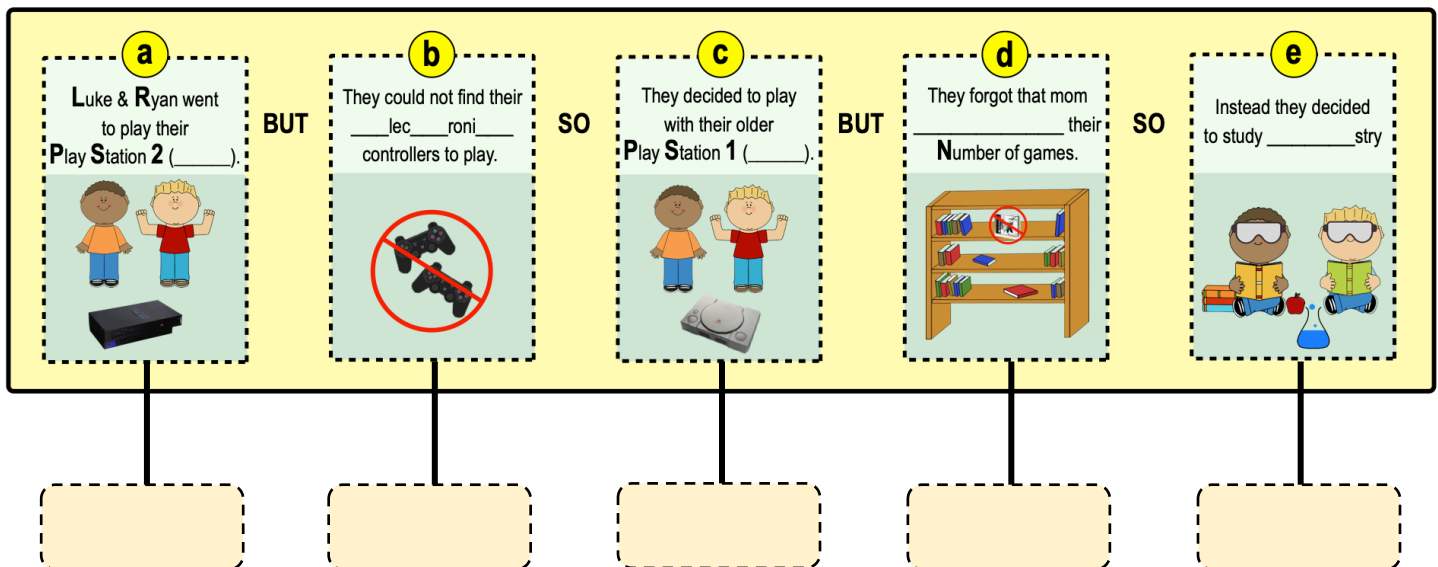
- a) CO_2 . b) O_2 . c) Glucose. d) Photosystem I. e) Water.

PRACTICE: During the light reactions, photosystem I functions to _____, and photosystem II functions to _____.

- a) Reduce CO_2 ; oxidize NADPH. c) Produce O_2 ; oxidize NADPH.
b) Synthesize ATP; Produce O_2 . d) Reduce NADP⁺; oxidize H_2O .

CONCEPT: LIGHT REACTIONS OF PHOTOSYNTHESIS

How to Memorize the Light Reactions of Photosynthesis



PRACTICE: What is the correct order of steps of the light reactions of Photosynthesis?

- a) photosystem I, ETC, photosystem II, NADP⁺ reduction, chemiosmosis.
- b) photosystem I, photosystem II, ETC, NADP⁺ reduction, chemiosmosis.
- c) photosystem II, ETC, photosystem I, NADP⁺ reduction, chemiosmosis.
- d) photosystem II, photosystem I, ETC, NADP⁺ reduction, chemiosmosis.