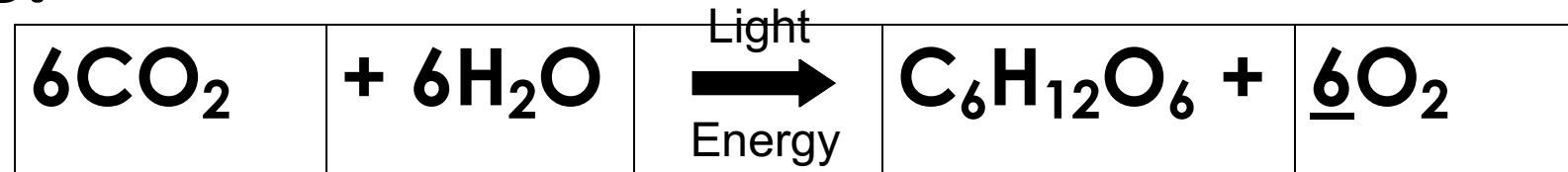
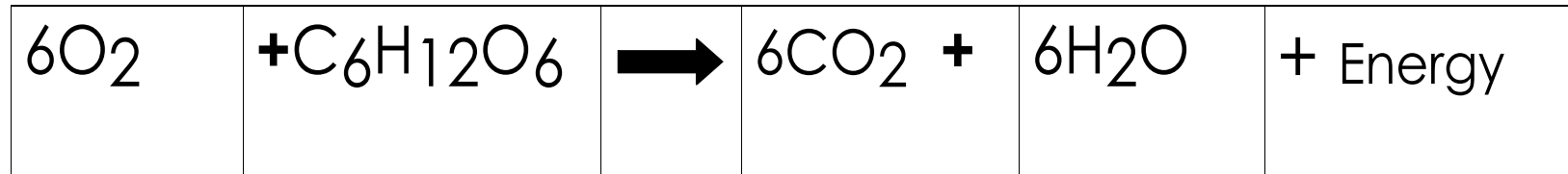


Photosynthesis:



Cellular Respiration:

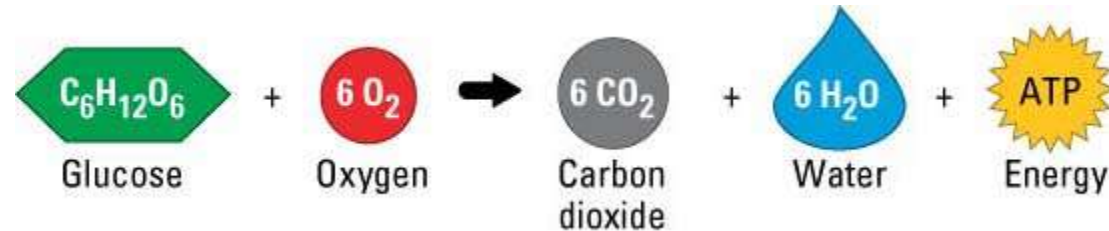


During the respiration reaction glucose bonds are broken and the carbon is released to form CO₂

Cellular Respiration Notes

(Use the NAMES of the molecules) According to your equation, the process of cellular respiration uses _____ **Glucose** _____ and _____ **Oxygen** _____ to produce _____ **Carbon Dioxide** _____, _____ **Water** _____ and release _____ **ATP (energy)** _____.

_____ + _____ → _____ + _____ + _____



Cellular Respiration Notes

In cellular respiration, chemical energy is released from Glucose molecules and transferred to ATP molecules, which cells can use to provide energy for cellular processes.

Cellular respiration occurs in both plants and animals. Given what you know about animals, why does your position for CO_2 and O_2 in the equation make sense?

Because it is a “give and take” relationship – we give plants CO_2 and plants give us O_2

Cellular Respiration Notes

Interpret the chemical reaction - what is the overall purpose of cellular respiration?

The purpose of the chemical reaction is to break down glucose that we get from our food and use oxygen that we inhale to produce and release carbon dioxide and ATP (energy) for us to carry out cellular processes.

What are the two main differences between the chemical reaction for photosynthesis and the chemical reaction for cellular respiration?

- 1. The products and reactants are reversed**
- 2. Cellular Respiration produces ATP energy, and Photosynthesis uses Sunlight energy.**

Two types

1. Aerobic – used when there is enough oxygen
(makes the most ATP)

Steps

a. Glycolysis

b. Krebs Cycle

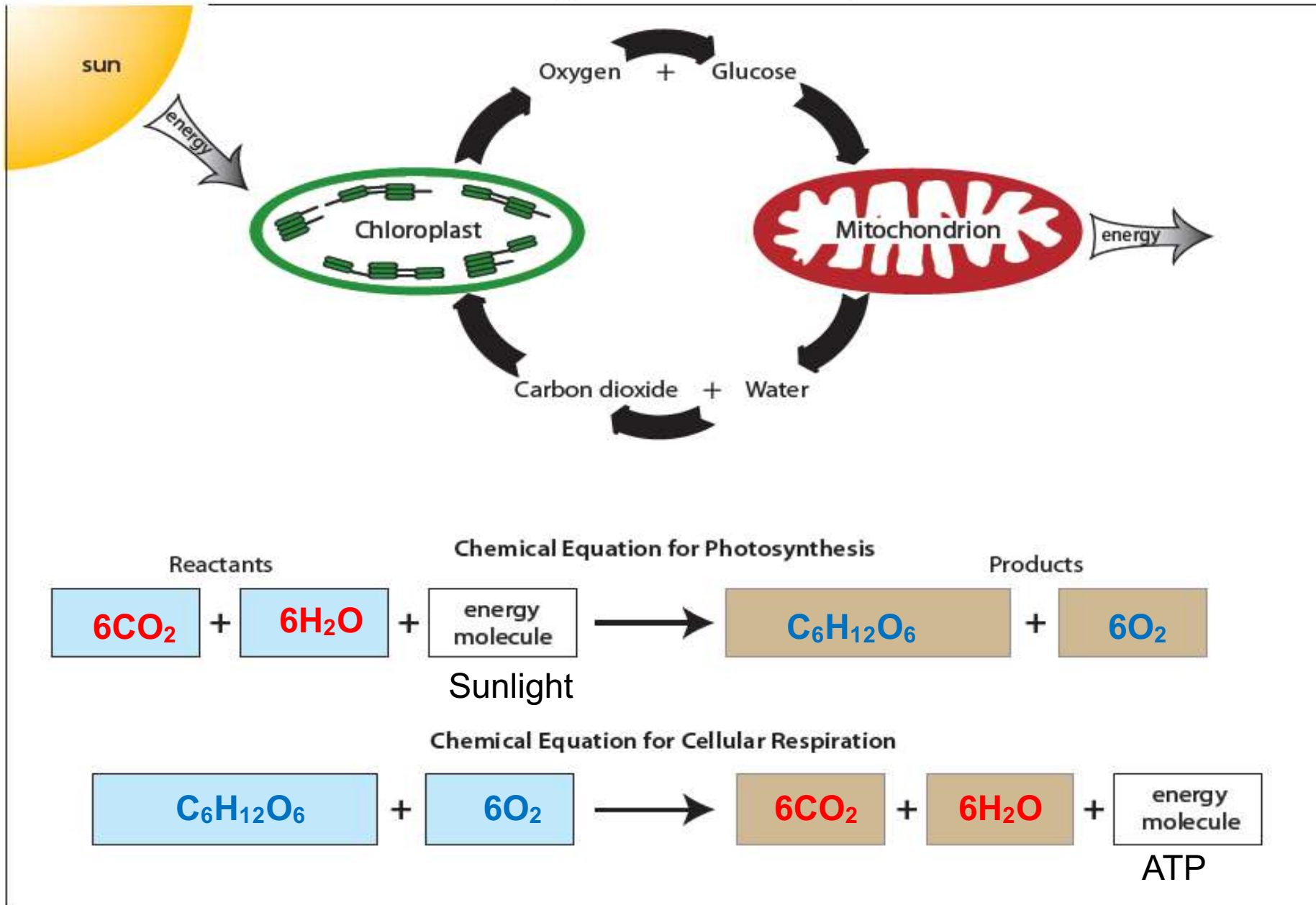
c. Electron Transport chain

What cell in the body needs to complete cellular respiration the most?

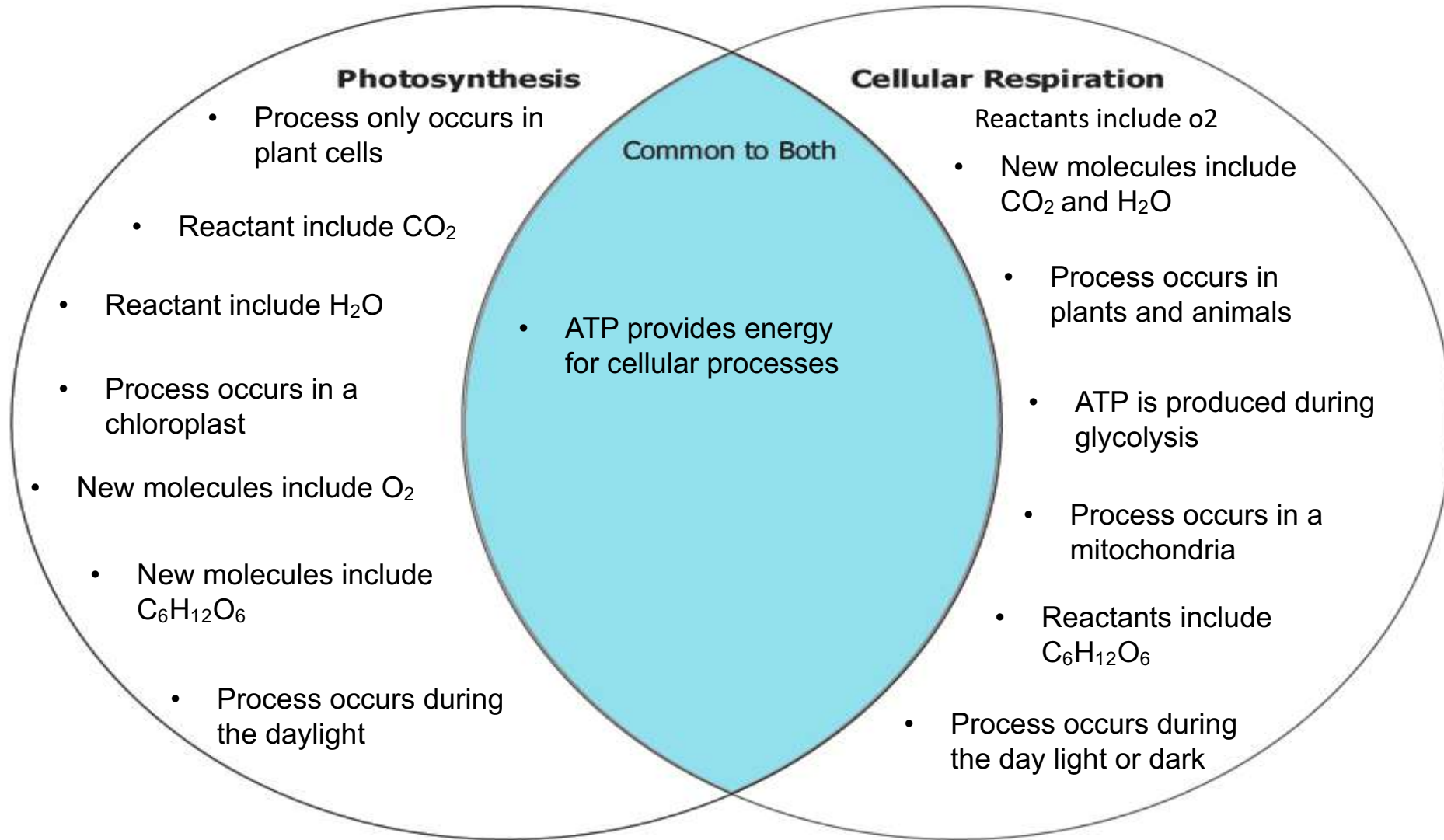
Total Energy for Aerobic

- Glycolysis 2 ATP
- Krebs Cycle 2 ATP
- Electron Transport Chain 34 ATP - produces the most ATP
- Total = 38 ATP

Cellular Respiration and Photosynthesis



Comparing Cellular Respiration to Photosynthesis



Practice, Practice, Practice...

Teach your partner the difference between Cellular Respiration and Photosynthesis. Explain to them:

1. What are the reactants and products – write and say the chemical formula – including how many of each molecule you need?
2. Where or how do they enter the plant or animal?
3. Where in the plant/animal cell does each process takes place.
4. What type of organisms can undergo each process?
5. Two main differences of photosynthesis and cellular respiration are ...

1. What are the reactants and products – write and say the chemical formula – including how many of each molecule you need?
2. Where or how do they enter/leave the plant or animal?

Photosynthesis: carbon dioxide enters the stoma, water enters the stem from the xylem, sunlight enters the top of leaves, glucose is transported throughout the plant through the phloem, and oxygen exits through the stoma.

Cellular Respiration: glucose comes from the foods that we consume, oxygen enters our cells from the lungs by diffusion, carbon dioxide exits our cells into our lungs by diffusion, and water exits out bodies in the form of urine and sweat.

3. Where in the plant/animal cell does each process takes place.

Photosynthesis takes place in the leaves of plants – chloroplast

Cellular Respiration takes place in the cytoplasm and mitochondria

4. What type of organisms can undergo each process?

Photosynthesis – plants and plant like organisms only

Cellular Respiration: Plants and Animals

5. Two main differences of photosynthesis and cellular respiration are ...

1. The Reactants and Products are reversed in the chemical formula/equation.
2. The type of energy they use are different: Photosynthesis uses light energy from the sun , and Cellular Respiration uses ATP energy .

Question with your group

Explain the roles of chloroplasts and mitochondria in cellular respiration and photosynthesis. Be specific in their functions and types of cells.

Answer to questions with group

- **Photosynthesis:** uses the Chloroplast (plant cells only) to make glucose (high energy sugar) and oxygen -
- **Cellular Respiration:** use the Mitochondria (animal and plants cells) to make carbon dioxide, water, and ATP (energy)