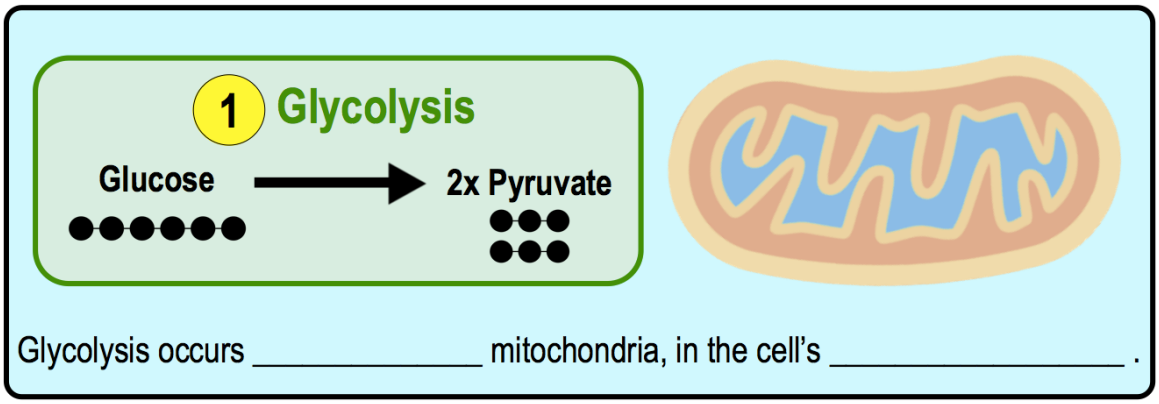
CONCEPT: GLYCOLYSIS

●**Glycolysis**: 1st step of cellular respiration that *breaks down* _____ into 2 _____ molecules.

□ "Glyco" = _____. □ "Lysis" = to _____.

□ Glucose has _____ **carbon atoms**, all which end up being converted to **CO_2** in the 2nd & 3rd steps of respiration.

□ ONLY step that occurs *outside* mitochondria (in the cell's _____) & does _____ require Oxygen.



PRACTICE: Where does the first stage of aerobic cellular respiration take place within a cell?

a) Mitochondrial matrix.
b) Inner mitochondrial membrane.
c) Intermembrane space.
d) Cytoplasm.

Phases of Glycolysis

●Glycolysis consists of a series _____ reactions, which can be grouped into _____ phases:

1) **Energy Investment Phase**: requires an _____ of energy by *using* _____ ATP molecules.

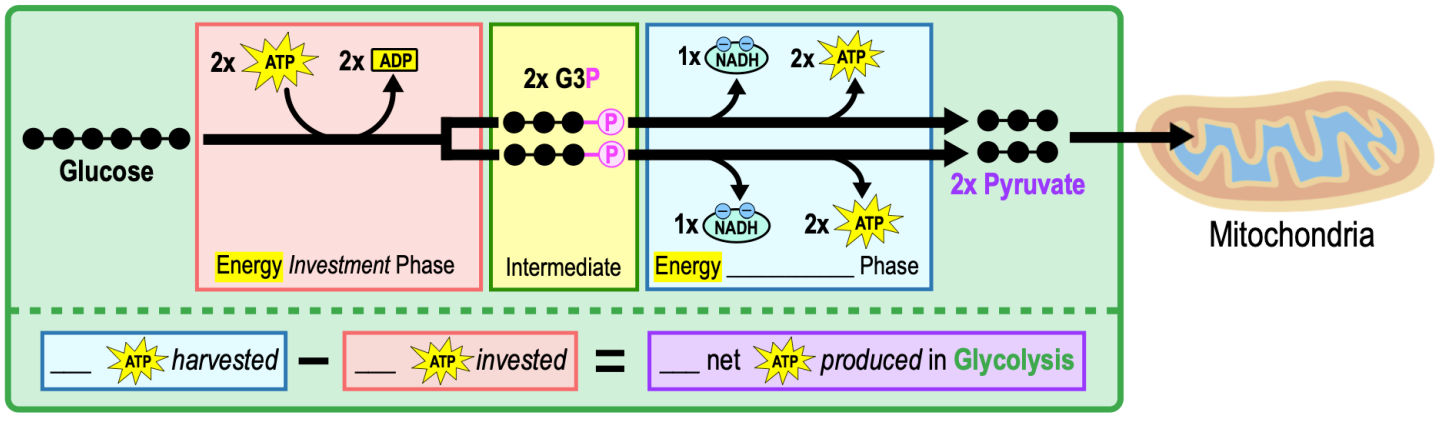
□ **Glyceraldehyde-3-Phosphate (_____):** the intermediate molecule between the two phases.

2) **Energy Harvest Phase**: _____ energy by *forming* _____ NADH & _____ ATP molecules.

□ *Net* products from 1 single glucose molecule = ____ pyruvate, ____ NADH, & ____ ATP molecules.

□ 2 pyruvates transported to the _____ *matrix* for the next step of *cellular respiration*.

EXAMPLE: Phases of Glycolysis.



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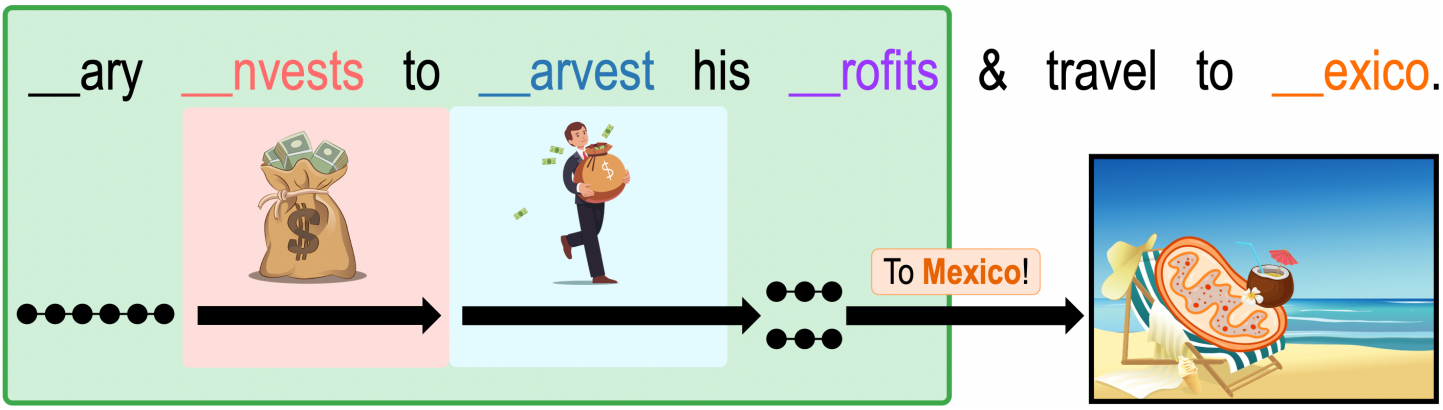
Remembering Phases of Glycolysis



EXAMPLE: There is an energy investment step needed to get glycolysis started, requiring the use of _____ ATPs.

a) Two. b) Four. c) Three. d) One. E) Five.

PRACTICE: Starting with one molecule of glucose, glycolysis results in the net production of which of the following sets of energy-containing products?

a) 2 NAD^+, 2 pyruvate, and 2 ATP.
b) 2 NADH, 2 pyruvate, and 2 ATP.
c) 4 NADH, 2 pyruvate, and 4 ATP.
d) 6 CO_2, 2 pyruvate, and 2 ATP.

PRACTICE: Which of the following is a result of glycolysis?

a) A net gain of four ATP per one glucose molecule.
b) Conversion of FAD to $FADH_2$.
c) Conversion of one glucose molecule to two pyruvate molecules.
d) Conversion of NADH to NAD^+.