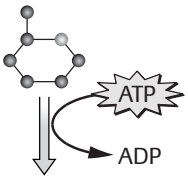
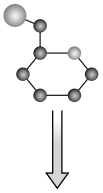
Glycolytic Pathway, Solution

Fill in the blanks on the right side of the worksheet and in the steps of glycolysis. Also fill in the molecule names A to F.

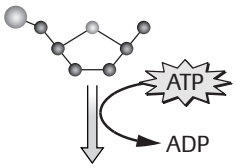
A. glucose

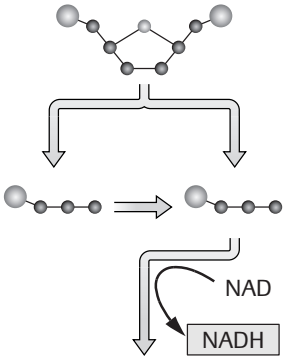


B. glucose 6-phosphate

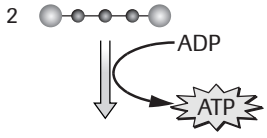


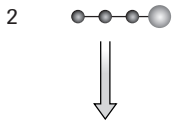
C. fructose 6-phosphate

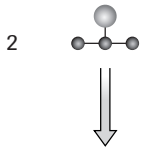




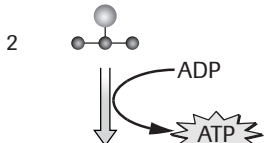
D. 1, 3-bisphosphoglycerate







E. phosphoenolpyruvate



F. pyruvate

1. Glucose Activation

During the first four steps of glycolysis, two phosphate groups are transferred to glucose via phosphorylation, where ATP is converted to ADP. The end product is fructose 1, 6-bisphosphate.

2. Sugar Splitting

Fructose 1, 6-bisphosphate gets split into two fragments, dihydroxyacetone phosphate (DHAP) and glyceraldehyde 3-phosphate (G3P). DHAP then gets converted into G3P.

3. Oxidation

Both molecules of G3P become oxidized using NAD, which becomes NADH. This process releases energy, which is used to attach phosphates to the sugars, making them 1, 3-bisphosphoglycerate.

4. Formation of ATP

During the last four steps of glycolysis, the phosphate groups of the molecules are transferred to ADP, creating ATP. This is done via the process of substrate-level phosphorylation.

carbon oxygen phosphate