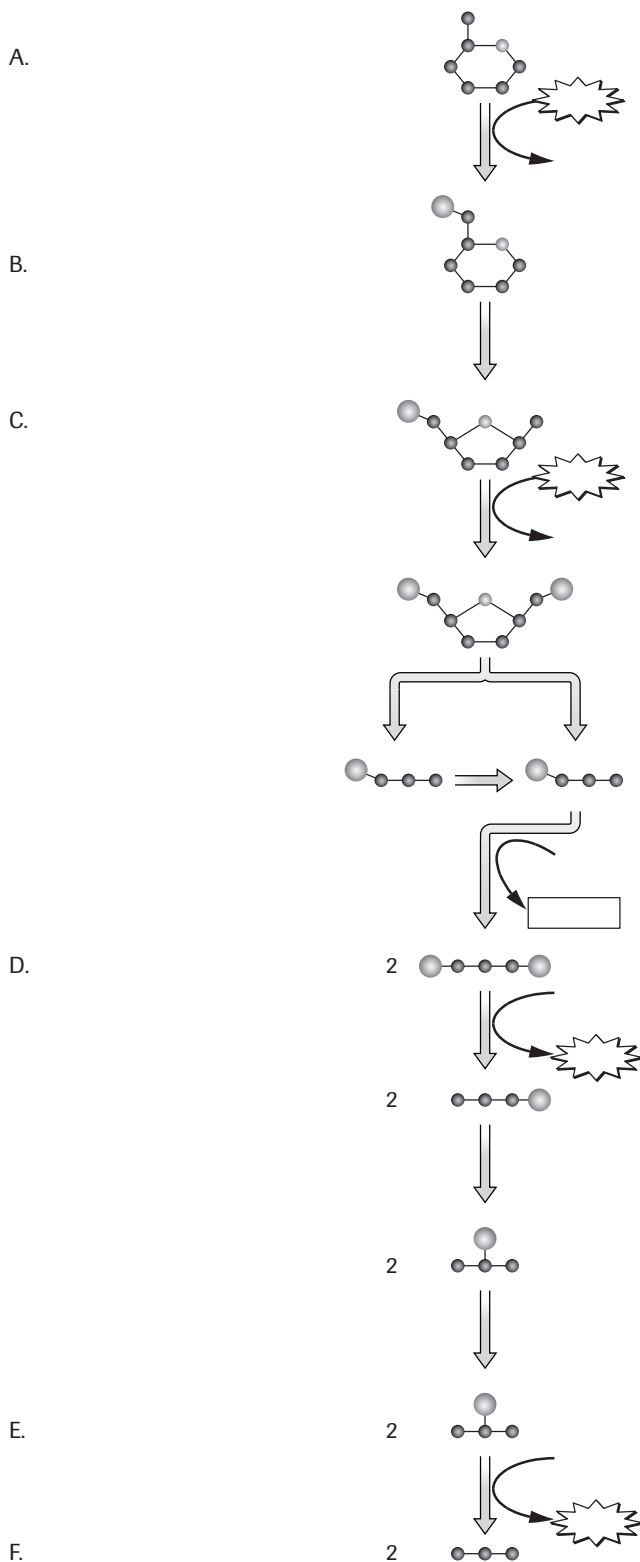


# Student Worksheet

## Glycolytic Pathway

LSM 2.2-1

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 E.



### 1. Glucose Activation

During the first four steps of glycolysis,

\_\_\_\_\_ are transferred to \_\_\_\_\_ via \_\_\_\_\_, where \_\_\_\_\_ is converted to \_\_\_\_\_. The end product is \_\_\_\_\_.

### 2. Sugar Splitting

\_\_\_\_\_ gets split into two fragments, \_\_\_\_\_ and \_\_\_\_\_. \_\_\_\_\_ then gets converted into \_\_\_\_\_.

### 3. Oxidation

Both molecules of \_\_\_\_\_ become oxidized using \_\_\_\_\_, which becomes \_\_\_\_\_. This process releases \_\_\_\_\_, which is used to attach \_\_\_\_\_ to the sugars, making them \_\_\_\_\_.

### 4. Formation of ATP

During the last four steps of glycolysis, the \_\_\_\_\_ groups of the molecules are transferred to \_\_\_\_\_, creating \_\_\_\_\_. This is done via the process of \_\_\_\_\_.

● carbon    ● oxygen    ● phosphate

## 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

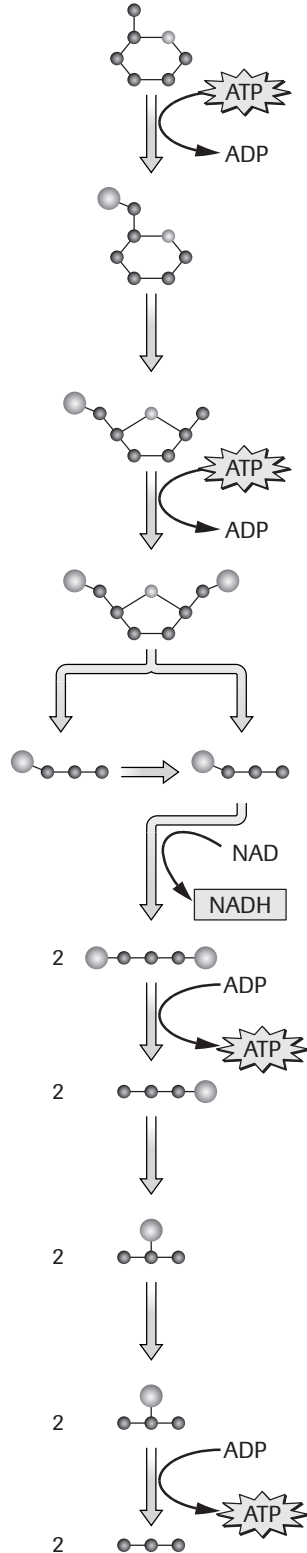
B. glucose 6-phosphate

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