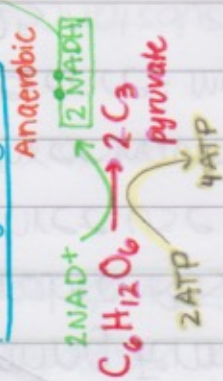


Respiration

cytoplasm

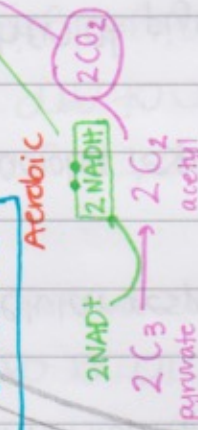
1. Glycolysis



Item	In	Out	Comment
Carbon	$C_6H_{12}O_6$	$2C_3$	rearrange carbon
NAD ⁺	$2NAD^+$	$2NADH$	reduction
ATP	$2ATP$	$4ATP$	net gain 2ATP substrate-level phosphorylation

entering mitochondria

2. Pyruvate oxidation



Item	In	Out	Comment
Carbon	$2C_3$	$2C_2 + 2CO_2$	decarboxylation
NAD ⁺	$2NAD^+$	$2NADH$	reduction
ATP	✓	✓	

matrix

3. Krebs Cycle



Item	In	Out	Comment
Carbon	$2(C_2)$	$2(2CO_2)$	decarboxylation
NAD ⁺	$2(3NAD^+)$	$2(3NADH)$	reduction
FAD ⁺	$2(FAD^+)$	$2(FADH_2)$	reduction
ATP	$2(ADP)$	$2(ATP)$	substrate-level phosphorylation

intermembrane

4. Oxidative Phosphorylation



Item	In	Out	Comment
Carbon	$2(C_2)$	$2(2CO_2)$	decarboxylation
NAD ⁺	$2(3NAD^+)$	$2(3NADH)$	reduction
FAD ⁺	$2(FAD^+)$	$2(FADH_2)$	reduction
ATP	$2(ADP)$	$2(ATP)$	substrate-level phosphorylation