Citric Acid cycle

Products per one turn:- 3NADH + 2Co2 + 1 ATP + 1FADH2

3 NADH

NADH
when Isocitrate is oxidized into α keto-glutarate, NAD^+ is reduced into NADH
"step 3"

NADH
when α ketoglutarate is oxidized into succinyl CoA, NAD^+ is reduced into NADH
"step 4"

NAD
when Malate is oxidized into ox
acetate, NAD^+ is
reduced into NAD
"step 8"

2 Co2

Co2
when Isocitrate is oxidized into α ketoglutarate, Co2 is released
"step 3"

when α ketoglutarate is oxidized into succinyl C
Co2 is released.
"step 4"

ATP: when succinylCoA is converted to succinate, 1 ATP is generat
"step 5"

FADH2: when succinate is oxidized into fumarate, 1FAD is reduced into FADH2. "step 6"

Remember:- These products are ment to be for one turn, since Glucose produces 2 Pyruvate molecules, thus 2 AcylH CoA, It needs 2 turns thus the products per one Glucose molecule are 6NADH, 4 Co2, 2ATP, 2FADH

Glycolysis

① Energy investment Phase:

$2ATP \rightarrow 2ADP + 2(Pi)$

- Glucose → Glucose 6 Phosphate "step 1"
- Fructose 6 Phosphate → Fructose 1,6 bisphosphate "step 3"

② Energy Payoff Phase: $2NADH + 2H^+$ // $2H_2O$ // 4ATP

$2NADH + 2H^+$ ← مصدره — 2 G3P molecules oxidized into 1,3- bisphosphoglycer
thus reduced $2NAD^+$ into 2NADH "step 6"

$2H_2O$ ← مصدره — From 2 molecules of 2-Phospho glycerate "step 9"

4 ATP

2ATP

when 2 molecules of 1,3-bisphosphoglycerate are converted into 2 molecules of 3-Phosphoglycerate, 2 ATP molecules are generated "step 7"

2 ATP

when 2 molecules of Phosphoenol-Pyruv
are converted to 2 molecules of Pyru
2 ATP molecules are generated "step 10

Net products of Glycolysis:- $2NADH + 2H_2O + 2ATP$

Oxidation of Pyruvate to Acytel coA

Products:- $2CO_2 + 2NADH +$ 2 Acetyl CoA

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oxidative phosphorylation

aerobic respiraton:- 26-28 ATP because of "Electron shuttle system"