CONCEPT: TOTAL ENERGY FROM GLUCOSE

- Complete oxidation of ___ glucose molecule produces the following:

Metabolism of 1 Glucose Molecule

Glycolysis: Glucose → ___ Pyruvate + 2 NADH + 2 ATP

Pyruvate Oxidation: 2 Pyruvate → 2 Acetyl CoA + 2 NADH + ___ CO_2

Krebs Cycle: 2 Acetyl CoA → 6 NADH + 2 $FADH_2$ + ___ ATP + 4 CO_2

EXAMPLE: Glycolysis yields ___ ATP and ___ NADH molecules, pyruvate oxidation yields ___ NADH molecules.

- Total _____ yield from 1 glucose molecule is summarized in the table below.

	Glycolysis	Pyruvate Oxidation	Krebs Cycle (Citric Acid)	Oxidative Phosphorylation	TOTALS
Start Molecule	Glucose	2 Pyruvate	2 Acetyl-CoA	NADH & $FADH_2$	
O=C=O			4	0	
ATP			2		
$FADH_2$			2	0	
NADH			6	0	
End Molecule	2 Pyruvate	2 Acetyl-CoA	Oxaloacetate	H_2O	

- ATP yield through oxidative phosphorylation:

10 NADH x _____ ATP = _____ ATP
+ 2 $FADH_2$ x _____ ATP = _____ ATP

_____ ATP molecules*

CONCEPT: TOTAL ENERGY FROM GLUCOSE

PRACTICE: Which stage of glucose metabolism produces the majority of ATP?

a) Citric acid cycle

b) Digestion

c) ETC + Oxidative Phosphorylation

d) Glycolysis

PRACTICE: How many total equivalent ATP molecules would be produced from 3 moles of glucose through glycolysis in aerobic environment?

a) 2 ATP b) 6 ATP c) 7 ATP d) 21 ATP

PRACTICE: The total equivalent ATP yield from: 2 pyruvate $\longrightarrow$ 2 Acetyl CoA + 2 CO_2.

a) 0 ATP b) 2 ATP c) 5 ATP d) 10 ATP