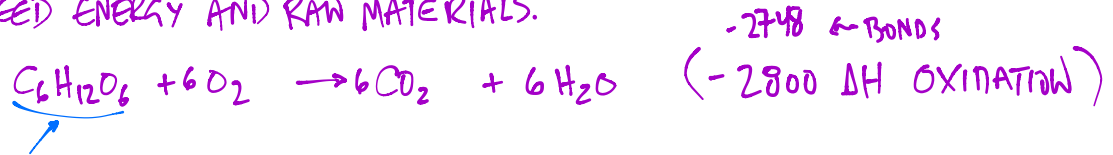


HOW GO FROM SIMPLE TO COMPLEX?

* NEED ENERGY AND RAW MATERIALS.



SHOW STRUCTURE OF GLUCOSE.

BOND ENTHALPY WHERE DOES HEAT COME FROM?

SHOW BOND ENTHALPY TABLE

WEAKER, LESS POLAR BONDS TO STRONGER MORE POLAR BONDS.



WHAT HAPPENS IF WE RELEASE ALL AT ONCE? HEAT!

SHOW FLAME, RXN COORDINATES

* BREAK CATALYSIS INTO STEPS:

- CONTROL
- CAPTURE ENERGY
- USE INTERMEDIATES.

GLYCOLYSIS : GLUCOSE \rightarrow 2 PYRUVATE
10 RXN
2 ATP IN
4 ATP OUT
2 NADH OUT \leftarrow (REDOX)

SHOW GLYCOLYSIS STEPS EN-MASSÉ

* NEED ENERGY CURRENCY

- USEFUL UNITS
- PORTABLE

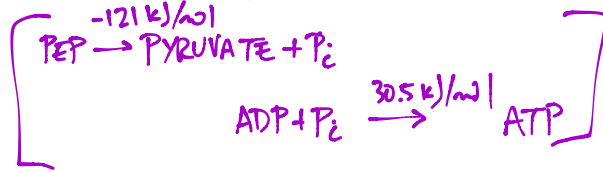
ATP \rightarrow STRUCTURE
 \rightarrow -30.5 kJ/mol
 \rightarrow 250 g ; TURN OVER
40 kg A DAY.

SHOW GLYCOLYSIS LANDSCAPE
HIGHLIGHT ENERGY INPUTS... OUTPUTS.

* INVEST E TO GAIN E \leftarrow MAKE SENSE OF THIS..

SHOW PEP \rightarrow PYRUVATE

* COUPLE REARRANGEMENT TO ATP FORMATION



SHOW ENZYME MECHANISM

* IRREVERSIBLE STEPS ARE POINTS OF REGULATION