Honors Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
NDHS Per: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_

**Cellular Respiration**

Respiration = to breathe  
Breathing at the cellular level

**Purpose**: to  for cellular work by transferring the

**HOW**: Food molecules are  and the  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is captured and

**Uses** :  
 NAD+:  FAD :

**Types of Cellular Respiration**:  
 \_\_\_\_\_\_\_\_\_\_\_\_ – uses  and requires  – in  **\_\_\_\_\_\_\_\_\_\_\_\_** –  and occurs in the  – in **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Structure of the Mitochondria**:

**Cellular Respiration Equation**:

**Steps of Cellular Respiration:**

1. : Glucose is  – same as

- occurs in

2. :

- products of glycolysis are broken down

- occurs in

3.   
 - energized electrons are used to make a

- occurs in the

**GLYCOLYSIS: THE DETAILS**:  
**Two Parts**:   
 1) :

molecules are used to  a glucose molecule  
 This makes it  and it

2) :   
 The phosphates from the 3 carbon molecules are used to make .   
 Two NAD+ gain  to make .   
 The end products are .

**Krebs Cycle:**

Occurs in the  of the Mitochondria

Everything in the Krebs Cycle  because there are  from glycolysis.

1. Pyruvate enters the  and makes a  forming  which binds to an enzyme called\_\_\_\_\_\_\_\_\_\_\_
2. Acetic CoA bonds with a **­**  compound called  to make  (Krebs is also called the Citric Acid Cycle)
3. Citric undergoes many changes and releases
4. At the end the 4 carbon compound, oxaloacetate, is  **.**

**Electron Transport Chain:**

Where:

What Happens:

­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from  enter the ETC and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into the .  
Hydrogen ions pass through .  
Electrons pass from the  which then combines with

The whole process is called .

Chemiosmosis = osmosis of chemicals  
 Phosphorylation = adding phosphates

**ATP Yields**:  
Each NADH **=**   
Each FADH2 =

Totals: 10 NADH x 3 =   
 2 FADH2 x2 =

Total =

**Total Energy Yield for 1 Glucose:**Glycolysis = **\_\_\_\_\_\_\_\_**  
Krebs Cycle = **\_\_\_\_\_\_\_**  
ETC = **\_\_\_\_\_\_\_**  
Total = **\_\_\_\_\_\_\_\_**

**Anaerobic Respiration**

Prokaryotes just use . Each glucose yields  **.**

Eukaryotes use Aerobic Respiration unless the cells become starved of  **\_\_\_\_**.

Lack of oxygen shifts metabolism from **\_**

This is done to keep the cell alive until .

**Types of Fermentation:  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Cells take .   
NADH is used to convert the    
The NAD+ can be used in glycolysis to make .

|  |  |
| --- | --- |
| **Reactants** | **Products** |
|  |  |

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Pyruvate uses NAD+ is used in glycolysis to make .   
Lactic acid causes the muscles to , slowing you down, allowing more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| **Reactants** | **Products** |
|  |  |