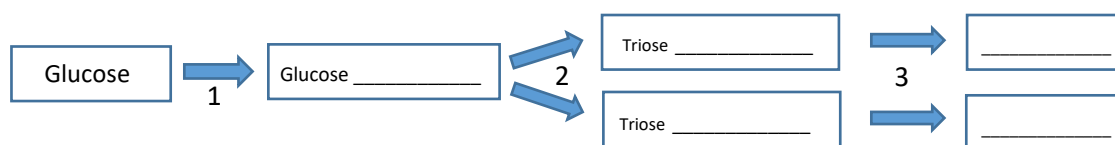


C 1.2 Cellular Respiration HL

1. To understand respiration, it is crucial to understand that oxidation is the _____ of electrons, and reduction is the _____ of electrons. Since hydrogen has an _____, removing it from a substance results in _____ of that substance. The molecule that removes hydrogen by picking it up is called _____ in respiration, so is called a _____. It is converted from _____ to _____. This give and take of electrons in reactions is called _____ for short.

2. _____ is the first step in both _____ and _____ respiration. It takes place in the _____. This is an overall schematic of this process:



Step 1 is _____, where glucose gains _____ from 2 molecules of _____.

Step 2 is _____, which splits _____ into _____ molecules. In step 3, _____ of _____ occurs as it loses H^+ . This is because _____, the electron _____, is reduced. The end-product is 2 molecules of _____. In step 3, there are also _____ molecules of _____ formed, so a net gain of 2 molecules of _____. Each step is controlled by a different _____.

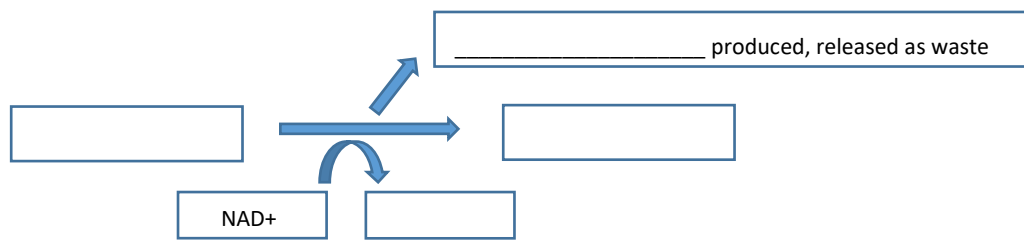
3. _____ can remain in the _____ to undergo _____ respiration, or can move into the _____ (organelle) to undergo _____ respiration which requires _____.

4. In humans, we can _____ muscle _____ when we respire _____ which does not require as much _____. The waste product formed is called _____. In forming this molecule, the _____ is converted back into _____, allowing _____ to continue.

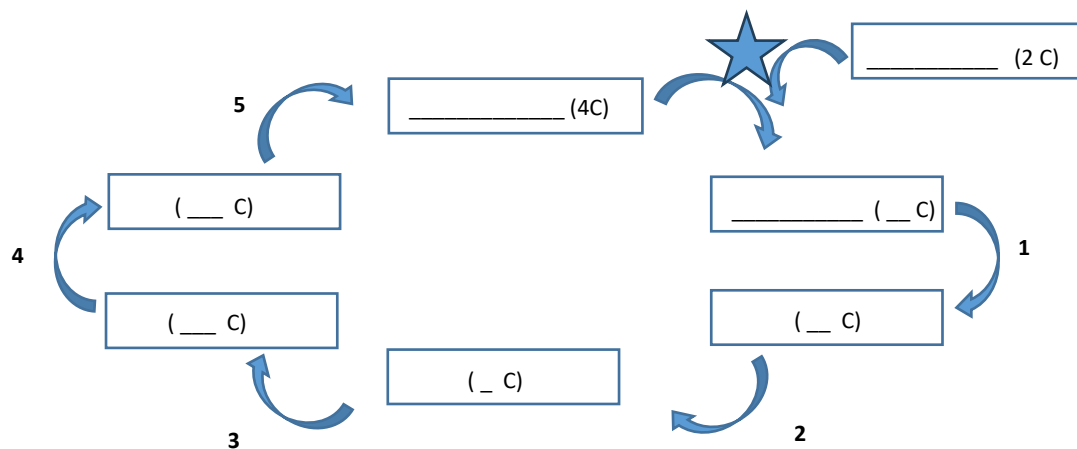
5. Yeast is different. It is useful because of the end-products made during _____, which is a special name for _____ respiration. In yeast, _____ is not regenerated. Instead _____ and _____ gas are produced. The former can be used as a source of fuel, and _____ is important in the _____ industry.

6. The first major step of aerobic respiration takes place in the _____ of the _____. It is called the _____ reaction which requires _____ enzyme.

The schematic below shows the process. Fill in the blanks.



7. _____ produced in the _____ reaction enters the _____ cycle.

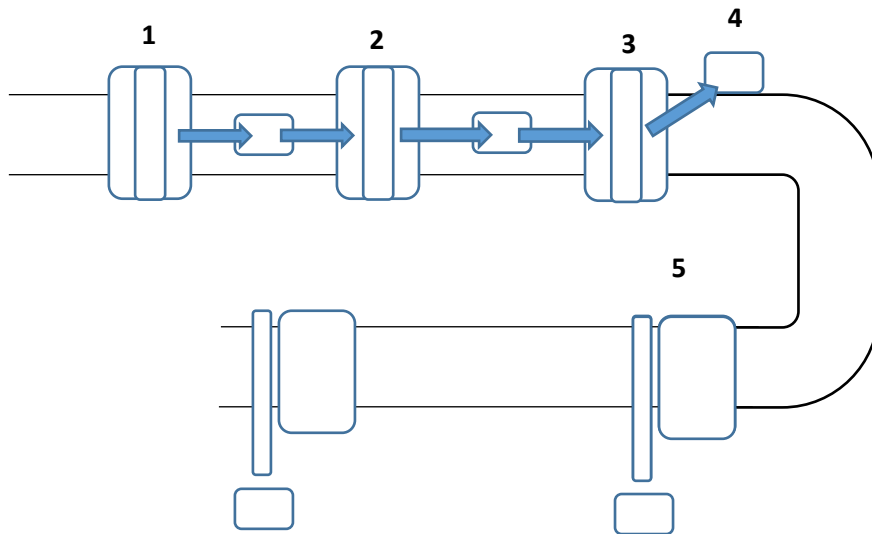


The crucial step, ★, is the joining of _____ to _____, which forms a molecule called _____.

In steps **1** and **2**, _____ gas is produced as waste due to _____, coupled to _____ so the electron carrier, _____ is _____. In step **3** _____ becomes _____, so this is called substrate-level _____. In step **4**, _____ is reduced, becoming _____. In step **5**, _____ is reduced to become _____. This restores _____, and the cycle can continue. In total, there are two _____ and four _____.

Oxidative Phosphorylation and Chemiosmosis HL

1. The _____ carriers formed in the _____ reaction and during _____ cycle, move to the internal plasma membrane of the _____. This is a schematic of what happens:



- (1) The carriers deliver their _____ and _____ to the _____ transport proteins in the membrane.
- (2) As the _____ move along the _____ transport _____ they pump _____ into the _____ space through a _____ (3).
- (3) Energy is lost in the transfers, so _____ transfers it's _____ at a point further along the _____ transport chain to enhance electron flow
- (4) For the _____ to be able to keep flowing, they must be accepted at the final carrier by _____ gas forming _____. Therefore, _____ gas is said to be the _____ electron _____.
- (5) The _____ concentration gradient is important. The _____ ultimately move out of the _____ space, through _____. This produces large amounts of _____.

2. Annotate a diagram of a mitochondria:

8. Cellular respiration occurs because cells need energy in the form of _____. The full name for this molecule is _____. It is important to note that it is a _____, just like _____, _____, _____ and _____ found in DNA. It can _____ and _____ energy, making it an ideal energy _____ within cells. Energy is _____ when _____ is converted by a(n) _____ reaction to _____. This means that _____ is _____ by the reaction. Logically, this also means that energy is _____ to add a _____ group back onto an _____ molecule in order to restore _____.

9. _____ is important for many _____ processes. For example, it is required for _____ transport of molecules across a membrane by a _____ protein, for _____, which is the type of metabolism that _____ larger molecules from smaller ones, and because it can be used to _____ full cells, or cell components such as _____ around.

10. It is crucial to not confuse respiration with _____. Respiration is the process of making _____, whereas the latter is needed to transfer molecules such as _____ and _____ between tissues.

11. There are two types of respiration. The first step in both forms is _____ which takes place in the _____ of a cell. Essentially, it is the process of converting _____ to _____. It only produces _____ molecules of _____. _____ either remains in the _____ and undergoes _____ respiration or enters the _____ to undergo _____ respiration which requires _____.

12. The word equation for _____ respiration is:

13. The word equation for _____ respiration is:

14. Complete the table comparing the two types:

Type of Respiration:		
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Substrates		
Name of first chemical reaction:		
Oxygen required?		
Amount of ATP produced		
Site		
End-products		

15. In aerobic respiration experiments, the _____ of respiration can be measured using an apparatus called a _____. The volume of _____ produced is simply _____ by the _____ to determine the _____. The units could be _____.

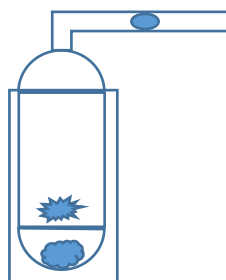
16. This type of apparatus is shown in the schematic below.

An _____ such as _____, absorbs the _____ gas which is produced by the sample, which could be a _____ seed or an _____. The change in volume of _____ gas _____ the pressure in the vessel. This moves the bubble. Draw an arrow showing the direction the bubble will move. Several factors should be controlled, including _____, _____, and _____. Complete the annotations and draw a ruled line to the correct structure.

Glass tube:
measures the _____ in the _____ (cm³)

Sample: The organism being tested, such as a _____ or _____

Wire mesh: prevents _____ from _____ the _____.



Airtight seal:

Water jacket: controls the _____

_____ substance: