Name: _____

Class: _____

WORKSHEET

6.1 Cellular respiration

Read pages 66–9 of *Human Perspectives Units 1 & 2* and fill in the missing words to complete this summary of cellular respiration.

Glucose metabolism

Cellular respiration = glucose oxidation

Glucose + oxygen → carbon dioxide + water + energy (ATP)

This reaction does not occur in one simple reaction, but involves over _____ individual reactions, each controlled by specific enzymes.

What is an enzyme?

Explain why each step in the complete breakdown of glucose to carbon dioxide and water requires a different enzyme.

Approximately 60% of the energy is released as _____. This is important in keeping the _____ constant.

ATP, or _____ _____ is a compound formed when an inorganic _____ group is joined to a molecule of _____, or ADP.

This cycle of energy release and storage can be illustrated using a flow diagram. Draw this in the space below. (Referring to Figure 6.5 in your textbook may be helpful.)

The first phase in the breakdown of glucose is called _____.

When oxygen is in short supply or absent _____ (without oxygen) _____ takes place.

This occurs in the _____ of the cell. For example, in times of intense exercise, an _____ debt may be incurred.

Complex compounds are broken down to release energy, but are not completely broken down.

$$\text{Glucose} \xrightarrow{\text{enzymes}} \text{lactic acid} + \text{energy}$$

The energy released is only $\frac{1}{16}$ that of _____ respiration.

Lactic acid must be removed from cells and taken to the _____ where it is converted into _____.

Too much lactic acid may cause pain and muscle cramps. Intense exercise incurs an oxygen debt which is 'repaid' by _____.

The complete breakdown of glucose to $CO_2 + H_2O$ requires oxygen and is referred to as _____.

It occurs in the _____ of the cell.

From one molecule of glucose, there is a maximum yield of _____ ATP molecules.

Mitochondria are known as the '_____' of the cells because _____.

Mitochondria have a folded inner membrane. This is important because _____ _____.