Name_____Date_____Block_____

Lab Investigation:
How do cells get energy?
What do they give back in return?

Materials
test tube rack
(2) test tubes
(2) #1 rubber test tube stoppers
dried yeast
sugar packet
electronic mass scales
50 ml beaker
warm water (50° Celsius)

Overview & Purpose
In cell respiration, cells use oxygen to release energy stored in sugars such as glucose. In fact, most of the energy used by the cells in your body is provided by cell respiration. Like photosynthesis, cell respiration is a process that changes starting materials into new products. What are the new products? In this investigation, you will

- discover the process of respiration by mixing yeast with sugar and yeast without sugar
- observe the changes
- compare the changes
- write the chemical equation for the reaction
- compare it to photosynthesis & the photosynthesis chemical equation
- compare it to fermentation
- recognize 2 types of fermentation and examples of each type

Problem
What are the materials (reactants) and what are the products of cellular respiration?

Hypothesis (*If, then, because* statement of what might happen)
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_____
_____
_____

Procedure

With a pencil, label the test tubes #1 & #2 respectively

In test tube #1

1. On the electronic mass scales, measure **0.6 grams** of dried yeast
2. Add the yeast into the test tube
3. Fill test tube ½ way with warm water using the 50 ml beaker
4. Place rubber test tube stopper in tube
5. Cover test tube with thumb and shake
6. Place in test tube rack

In test tube #2

1. On the electronic mass scales, measure **0.6 grams** of dried yeast
2. Add the yeast into the test tube
3. Fill test tube ½ way with warm water using the 50 ml beaker
4. Add 1 packet of sugar
5. Place rubber test tube stopper in tube
6. Cover test tube with thumb and shake
7. Place in test tube rack

Observe & Analyze

1. Identify the constants. What is the same in both tubes?

_____

_____

2. Identify the variables. What is different between the tubes?

_____

_____

3. Observation of tube #1

Initial_____

_____

After 20 minutes *_____

_____

4. Observation of tube #2

Initial_____

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After 20 minutes *_____

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Conclusion (What happened? Was your hypothesis right or wrong? Why?)

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Clean Up – Wash all equipment with soap & Water. Invert test tubes on rack.

<u>*During the 20 minute wait time, answer the following questions:</u>

What is the chemical equation for cell respiration? (Look it up!)

_____

What is the chemical equation for photosynthesis? (Look it up!)

_____

How is fermentation *similar* to cell respiration?

_____

_____

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How is fermentation *different* from cell respiration?

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Draw a Venn diagram to compare and contrast fermentation and cell respiration.

Describe the different types of fermentation. Give an example of each type.

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