

Task #2 – Breathe, Baby Breathe – Part I

Focus Question: Have you ever heard the statement, “Your body “burns” food to get energy?” What is the similarity between a burning candle and what your body does in order to get the energy it needs?

1. What did you see as the candle burned that would be **absent** in the type of oxidation (burning) of food molecules that occurs in your body cells?

2. On the basis of what you have learned about **respiration**, what reactants do you think are essential for cellular respiration?

3. When a candle burns, you can easily observe the energy that is released in the form of heat and light. But what evidence can you find to show that your body releases energy during cellular respiration? Pour 5 ml of room temperature water into a test tube. Record the starting temperature: _____ degrees C
4. Leave the thermometer in the water. Put a straw in the test tube, bend the straw slightly toward you, and gently but steadily blow into the water for about 2 minutes. Others at your table can help you if you run out of breath. Record the ending temperature: _____ degrees C
5. What was change in temperature after you exhaled into the water?
_____ degrees C
6. What would a change in the temperature of the water indicate about your exhaled air? _____
7. Where do you think this production of heat comes from? _____

8. Wax is the essential product, or “fuel” in the combustion of a candle. What do you think is the essential product, or “fuel” involved in cellular respiration?

9. Using a clean and dry test tube (it must be dry!), insert a straw into the bottom of the test tube and blow your breath into the straw for 1 minute. Observe the inside of the test tube. What do you see that has formed in the test tube?

10. When the candle went out in Task #1, recall that the same product (water) was seen on the inside of the beaker. What conclusion can you draw about the similarity of the products of the combustion of a candle and the product of cellular respiration you see in the test tube?

Task #2 – Breathe, Baby Breathe – Part II

The purpose of this activity is to show evidence of carbon dioxide, a waste product of cellular respiration.

1. Fill a large test tube with 50ml of water. Add a few drops of bromothymol blue to the water.
2. Place a straw into the test tube and exhale air through it until you see a definite color change in the test tubes.
3. What substance in your breath caused this color change?

4. In Breathe, Baby Breathe parts I and II, you have now determined **three** products of cellular respiration that are found in exhaled air. What are they?

5. How does this compare with the products of combustion of the candle?

6. Complete the Venn diagram to show the relationships you have learned in this activity.

