Biology Grade 7

CHAPTER 3: RESPIRATION OF LIVING BEINGS

Activity 2: Respiratory Gas Exchange

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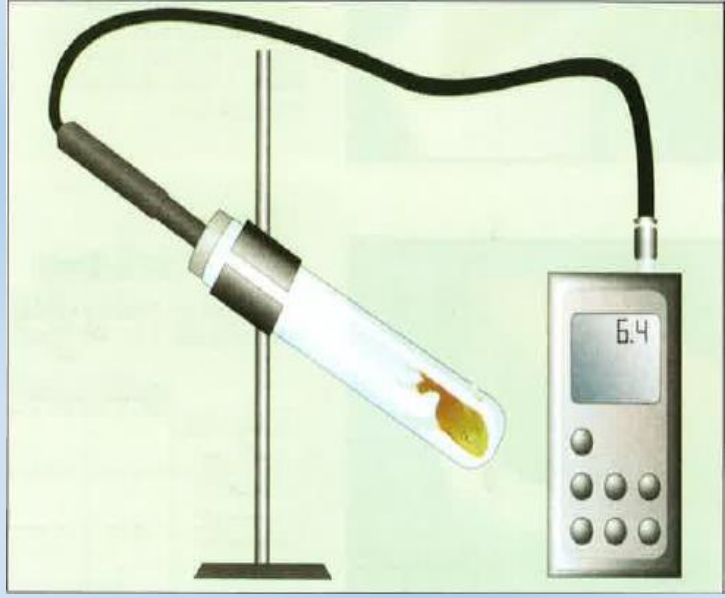
Activity 2: Respiratory Gas Exchange

- Respiration is defined as the gaseous exchange between the organism and the external medium.
- What are the exchanged gases?
- How can they be verified?
- The two respiratory gases:

✓ Oxygen (O_2)

✓ Carbon dioxide (CO_2)

❖ Verification of respiration in a fish



Ahmad wanted to know which gases are exchanged by the fish during its respiration. So, he asked his friend Omar who suggested that fish consumes O2 and releases CO2.

To solve this problem, they conduct the following experiment:

They introduce a fish into a container filled with water and

connected to an oxymeter as shown in the figure. The results are shown in the table:

Time (min)	0	1	3	5	7	8
Quantity of O2 (ml)	7	6.9	6.8	6.7	6.5	6.4

1.Pick out the objective of this experiment.

To know which gases are exchanged by

the fish during its respiration.

2.Pick out the tested hypothesis.

Hypothesis: Fish consumes O2 and releases CO2.

3. What is the role of the oxymeter?

The Oxymeter is used to measure the quantity of oxygen in a certain medium.

4. Convert the table into a graph.

Time (min)	0	1	3	5	7	8
Quantity of O2 (ml)	7	6.9	6.8	6.7	6.5	6.4

Scale:

Title: A graph showing the variation of the quantity of O2 (ml) as a function of time (min).

5. Analyze the obtained results.

As the time **increases** from 0 to 8 minutes, the quantity of oxygen **decreases** from 7 to 6.4 ml.

6. What can you conclude?

Oxygen is absorbed by the fish.

Note :The amount absorbed O2= 7 – 6.4 = 0.6 ml

Results of tests applied on water taken from the tube containing the fish at the beginning (1) and at the end of the experiment (2).

Lime water becomes turbid in the presence of carbon dioxide.

7. Compare the obtained results.

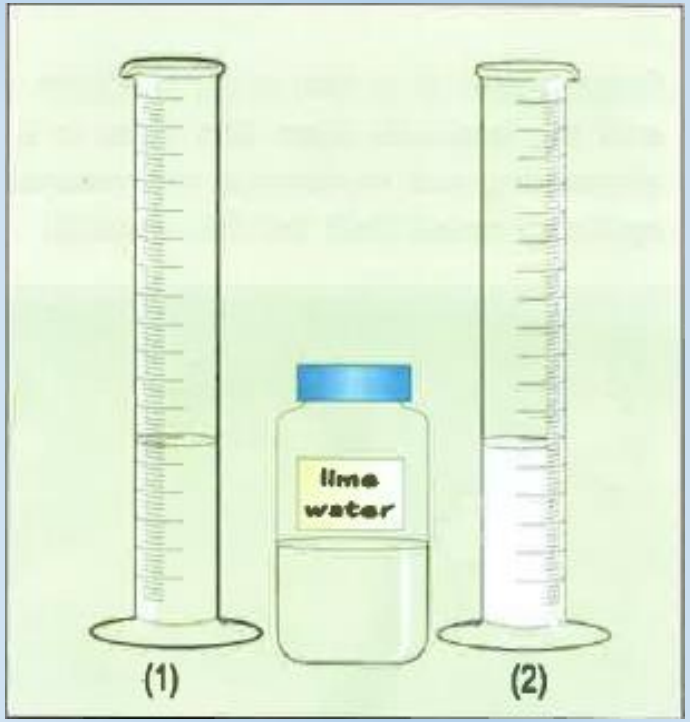
The aspect of the tube at the beginning of the exp. is clear while it is turbid at the end of the experiment.

8. Conclude concerning the presence of CO_2 in each sample.

CO_2 present only at the end of the experiment after 8 minutes.

9. Draw out the origin of CO_2.

The Fish releases CO_2 into the water.



To verify your conclusion, we measure the amount of CO_2 with time, the results are illustrated in the following table.

Time (min)	0	3	6	8
Volume of CO2 (ml)	0	4	8	12

8. Is your conclusion verified? Justify.

Yes, since the amount of CO_2 increases from 0 to 12 ml as the time increase from 0 to 8 minutes.
So the fish is releasing CO_2.