Respiration in Animals

A. Fill in the Blanks

1. The tiny, balloon-like air sacs in the lungs where gas exchange occurs are called _____.
2. The breakdown of glucose to release energy without the use of oxygen is called _____ respiration.
3. Insects have a network of air tubes called _____ for gas exchange.
4. The product of anaerobic respiration in our muscles that causes fatigue is _____.
5. The large, muscular sheet that forms the floor of the chest cavity is the _____.

B. Match the Following;

Match the animal or structure in Column A with its correct respiratory organ or method in Column B.

Column A	Column B
1. Fish	A. Moist Skin
2. Human	B. Spiracles & Tracheae
3. Earthworm	C. Lungs
4. Cockroach	D. Gills
5. Alveoli	E. Site of gas exchange in lungs

C. Practice Problems

Think a little deeper about the concepts you've learned.

1. What is the difference between breathing and cellular respiration?
2. How do fish breathe underwater? Explain the role of gills.
3. Describe the path that air takes from your nose to the alveoli in your lungs.
4. Why do we sometimes get muscle cramps after a sudden, intense physical activity like sprinting?
5. What is the role of the diaphragm in the process of breathing?
6. How does an earthworm respire without having lungs or gills?
7. What are spiracles, and which group of animals uses them for respiration?
8. Write the simple word equation for aerobic respiration.

9. What happens to your ribs and diaphragm when you exhale?

10. Why is it better to breathe through your nose than your mouth, especially in a dusty area?

D. Warm-up Questions

Answer these quick questions to get your brain working!

1. What is the main gas that our bodies need from the air we breathe in?
2. What is the primary waste gas that we release when we breathe out?
3. Name the main respiratory organs in humans.
4. The process of taking air into the lungs is called _____.
5. Do all animals use lungs for respiration?

E. Challenge Questions

Apply your knowledge to solve these tricky questions.

1. A deep-sea diver needs to carry an oxygen cylinder to breathe underwater, but a fish does not. Explain this difference based on their respiratory systems.
2. Explain in detail why your breathing rate increases significantly when you exercise. Link your answer to the body's need for energy.
3. If an earthworm's skin dries out, it will die of suffocation. Why?
4. Yeast is a single-celled organism used in the baking industry to make bread rise. How is the process of anaerobic respiration in yeast useful here?
5. Compare aerobic and anaerobic respiration in terms of oxygen requirement, breakdown of food, and amount of energy released. Which is more efficient?

F. Word Problems & Application

Read the scenarios and apply your scientific knowledge.

1. An athlete is running a 400-meter race. For the last 50 meters, she is sprinting as fast as she can and feels a burning sensation in her leg muscles. What specific type of respiration is happening in her muscles to cause this?
2. You have two sealed jars. Jar A contains a cockroach and Jar B is empty. After a few hours, you introduce a lit candle into both jars. The candle in Jar A goes out immediately, while the one in Jar B continues to burn for a little longer. What does this tell you about the respiration of the cockroach?
3. A student blows air from his mouth through a straw into a test tube filled with limewater. The clear limewater turns milky. What does this experiment prove about the air we exhale?

4. A frog can survive both on land and in water. What two respiratory organs does it possess that make this possible?
5. An aquarium pump breaks, and the owner notices the fish are swimming near the surface and "gasping". What essential substance for respiration is likely lacking in the water?

G. True or False

1. During inhalation, the diaphragm relaxes and moves up. _____
2. Respiration and breathing mean the exact same thing. _____
3. Fish take in oxygen gas dissolved in water. _____
4. The final products of aerobic respiration are lactic acid and energy. _____
5. Earthworms breathe through small holes on their body called spiracles. _____