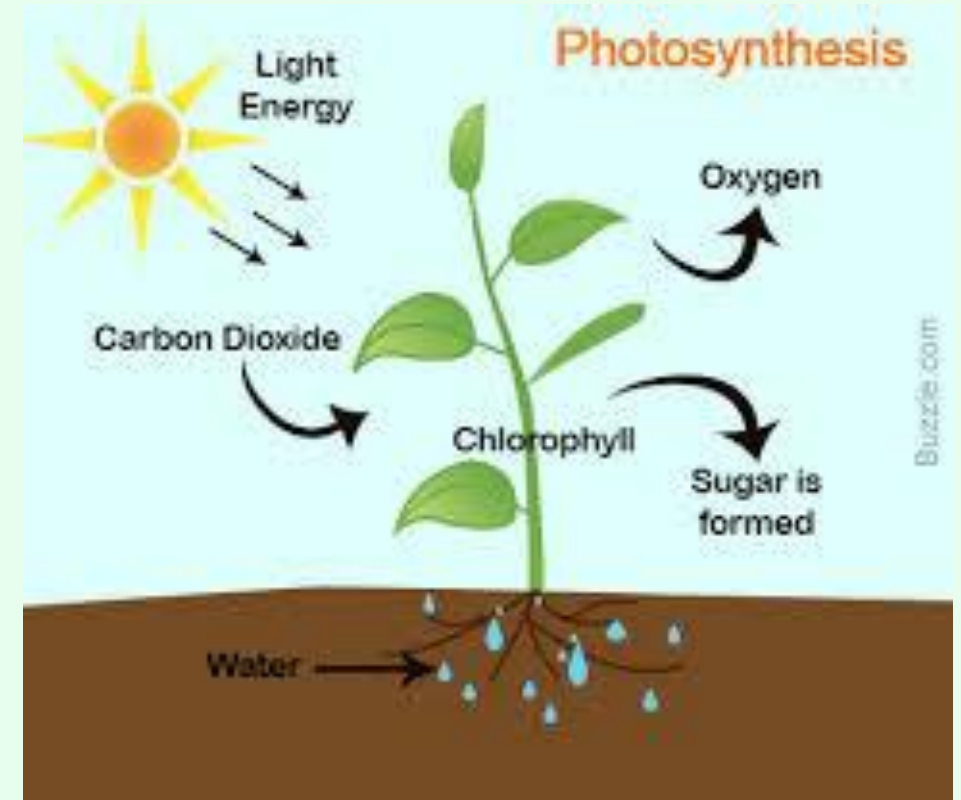


# Title: Aerobic respiration

06/11/2020

## Do-now:

1. Which layer of the leaf is responsible for photosynthesis?
2. Which cell structure is responsible for photosynthesis?
3. Write the word equation for photosynthesis.



Lesson Title

# Aerobic Respiration

06/11/2020

Learning Intent

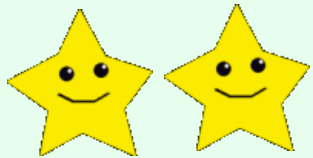
Understand how we get energy from the breakdown of glucose

Success Criteria



Recall the equation for respiration

3



Describe how aerobic respiration is carried out

4



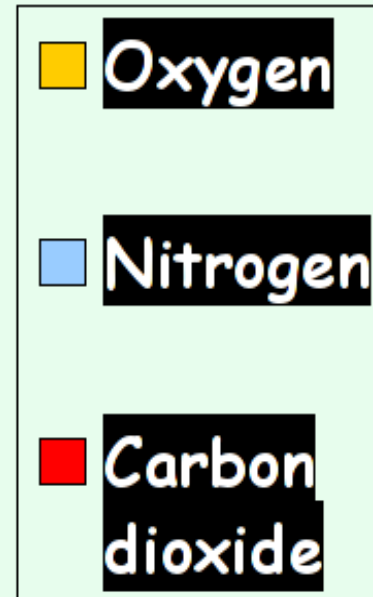
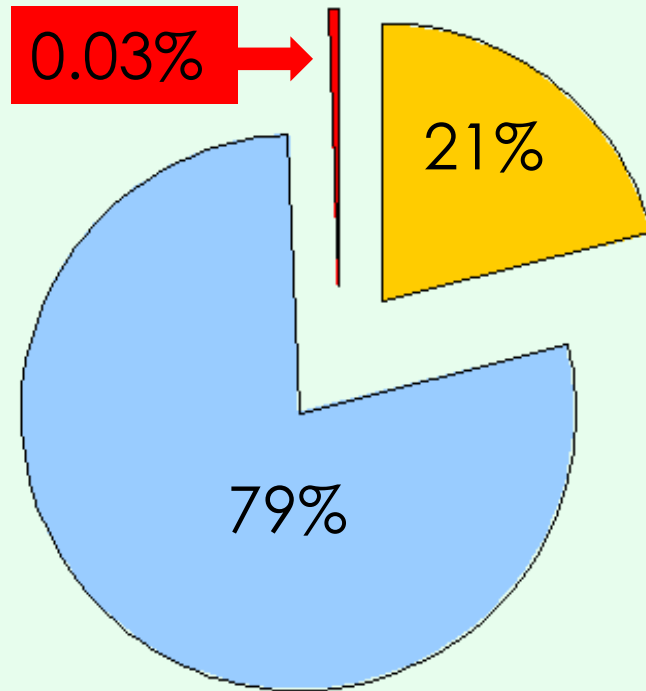
Explain why respiration is important for organisms

5-6

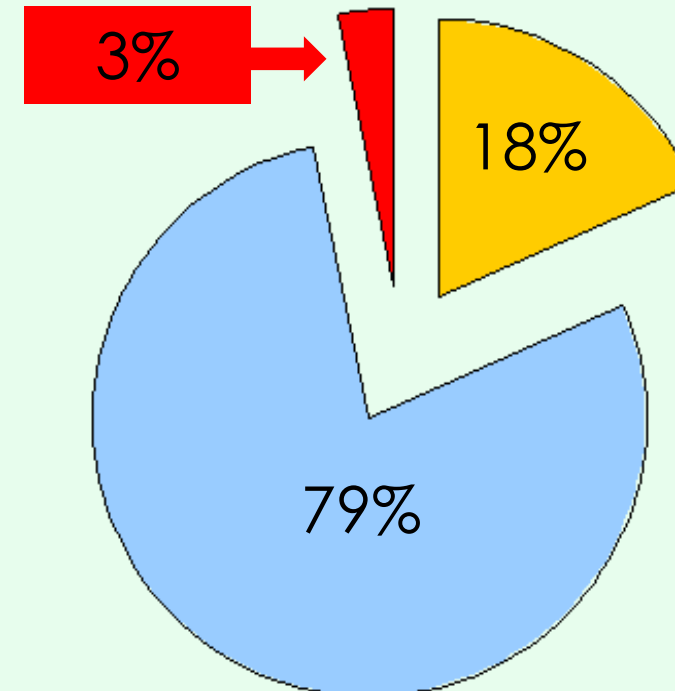


# Gas Exchange

Air breathed in



Air breathed out



# How is digested food used by the body?

Practice with aid

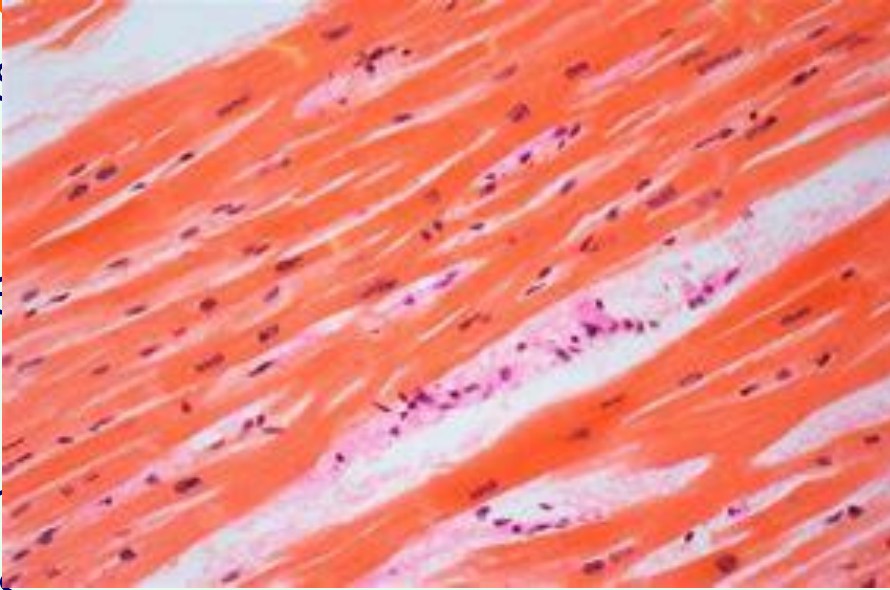
The body needs a constant supply of **energy** which comes from digested food.



Pair Whisper

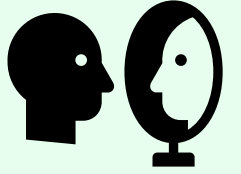
**Glucose** from digested carbohydrate is an important substance and chemical

When **oxygen** a lot of **mitochondria** are released from the cells. Some of the energy is used for the body and the rest is used for the body.

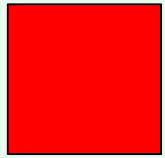


The release of energy from glucose is called...

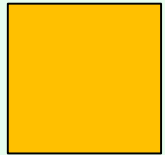
**Aerobic respiration**



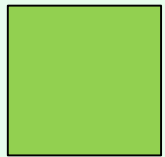
Which of these is correct?



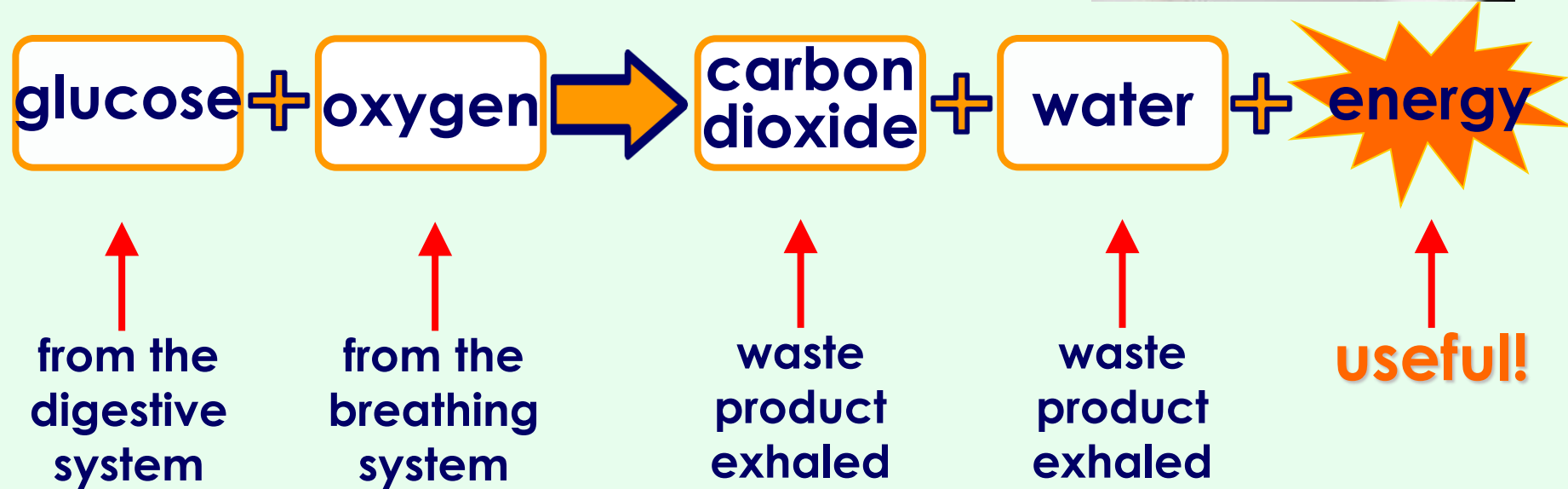
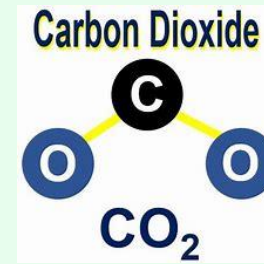
Respiration is breathing



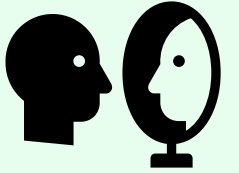
Respiration is the breakdown of glucose



Respiration is the digestion of glucose



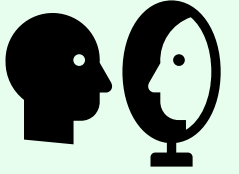
This type of respiration is called **aerobic** respiration because energy is released **with oxygen**.



## Question 1

Which organelle is the site of respiration?

Mitochondria

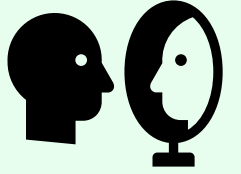


## Question 2

Reactant used in respiration which we get from food

Glucose

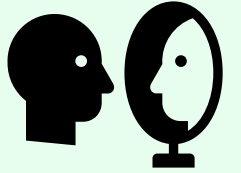




## Question 3

What are the products of respiration?

Water and Carbon Dioxide (+ energy)



## Question 4

How is glucose carried around the body?

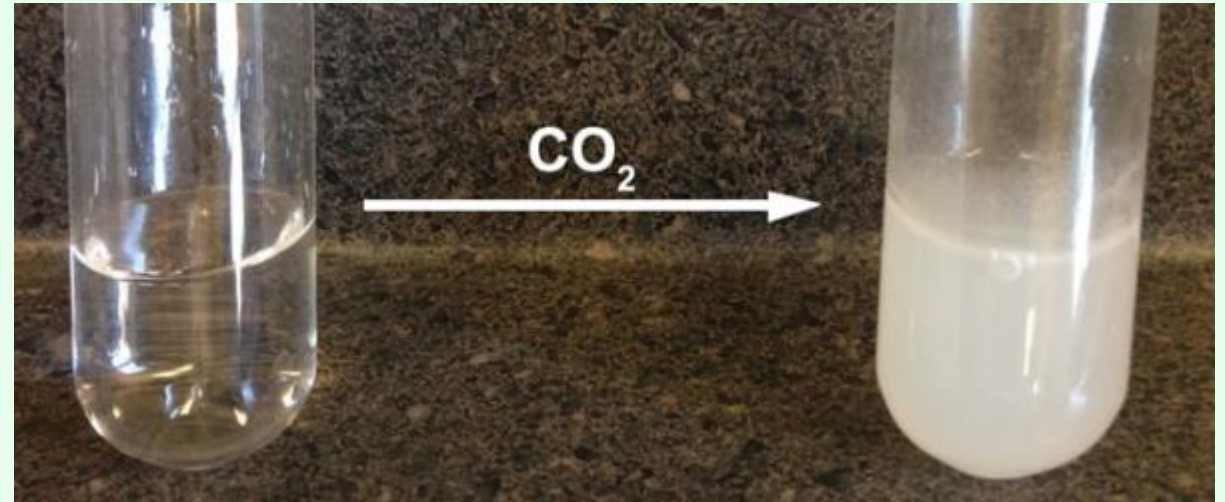
In the blood

### L3: Explain the importance of aerobic respiration

Thinking time



**Yeast cells**



**Limewater**

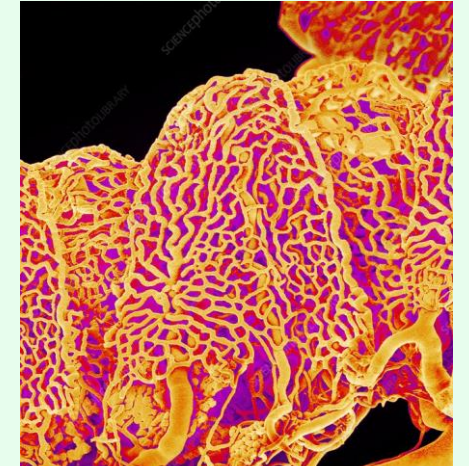
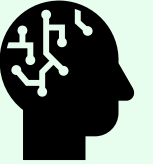
### L3: Explain the importance of aerobic respiration

Answer Q in **full sentences** in your books.

1. Write the word equation for aerobic respiration.
2. In which part of the cell does respiration take place?
3. Which solution can we use to test for carbon dioxide, what would you see?
4. Suggest why there are many mitochondria in muscle cells?
5. Why is it important that your small intestines have lots of capillaries?
6. Write the symbol equation for aerobic respiration.
7. Why do the levels of Carbon dioxide and Oxygen stay the same in a terrarium (hint, think about respiration and photosynthesis).

## Application of learning

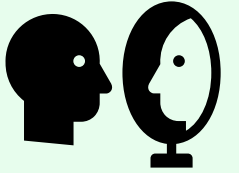
Independent  
Whisper





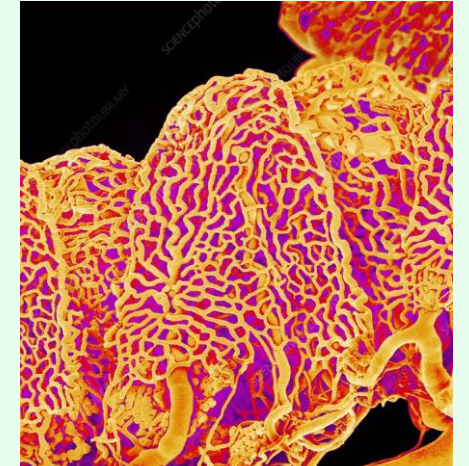
### L3: Explain the importance of aerobic respiration

## Reflection and Reteach



Answer Q in **full sentences** in your books.

1. Glucose + Oxygen  $\rightarrow$  Carbon dioxide + Water + (energy)
2. Mitochondria
3. Limewater, it would go cloudy
4. It enables more respiration, releases more energy for muscle contractions
5. Surrounded by blood to absorb and transport more glucose away for respiration
6. Write the symbol equation for aerobic respiration.
7. Oxygen produced during photosynthesis is taken in by the plants for respiration (release energy for growth). Carbon dioxide released from respiration is used for photosynthesis.

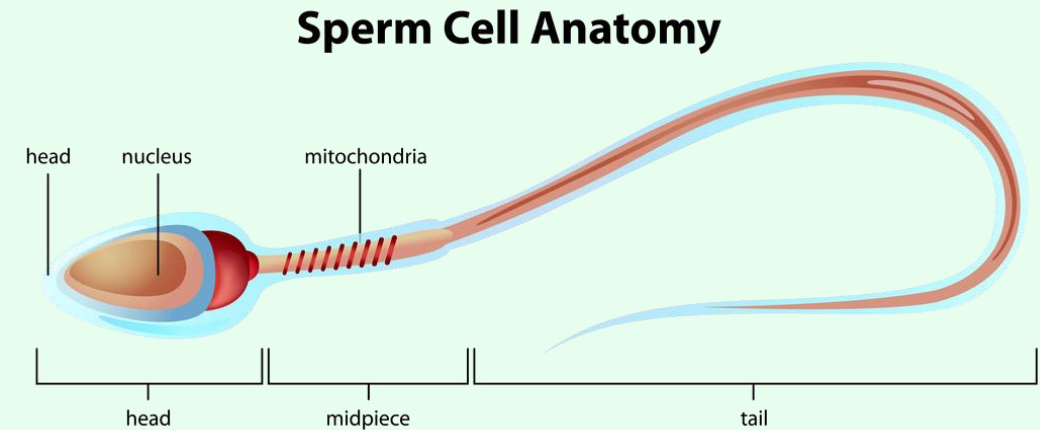


# Title: Anaerobic respiration

06/11/2020

## Do-now:

1. What is the role of the stomata?
2. Which cell structure is responsible for aerobic respiration?
3. Sperm cells have many mitochondria, why is this useful?



Lesson Title

# Anaerobic Respiration

06/11/2020

Learning Intent

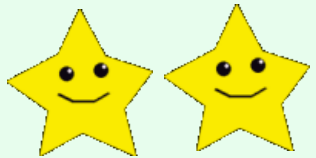
Understand how we get energy from the breakdown of glucose

Success Criteria



Recall the equation for anaerobic respiration

3



Describe what is meant by oxygen debt

4



Describe the structure of the breathing system

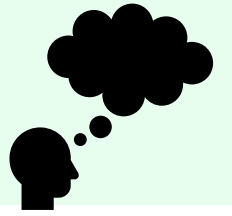
5

Compare anaerobic and aerobic respiration

6

## L2: Describe the process of aerobic respiration

Thinking time



- What happens to your body when you exercise?

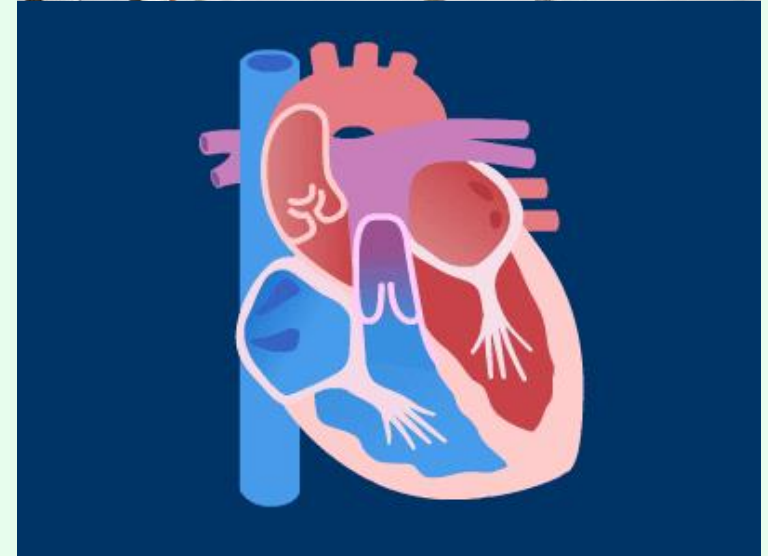
Heart rate increases

Breathing rate increases

Become hot,  
sweat to reduce  
body heat

- Why do you get cramps after prolonged exercise?

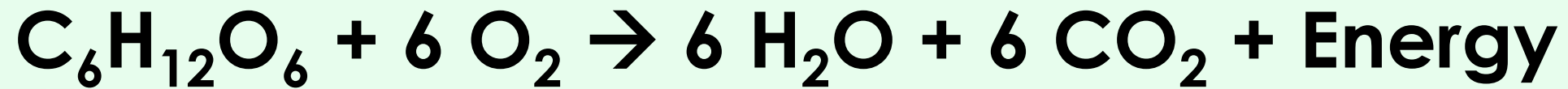
Toxic lactic acid builds up in the muscles





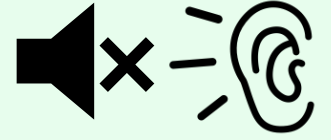


# Aerobic Respiration

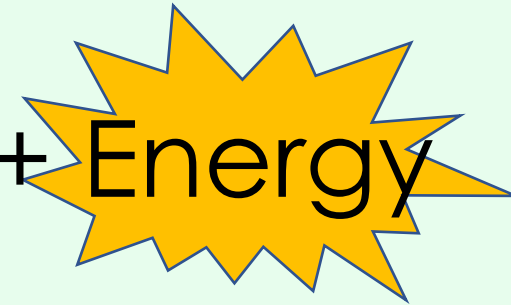


But we still need energy ...



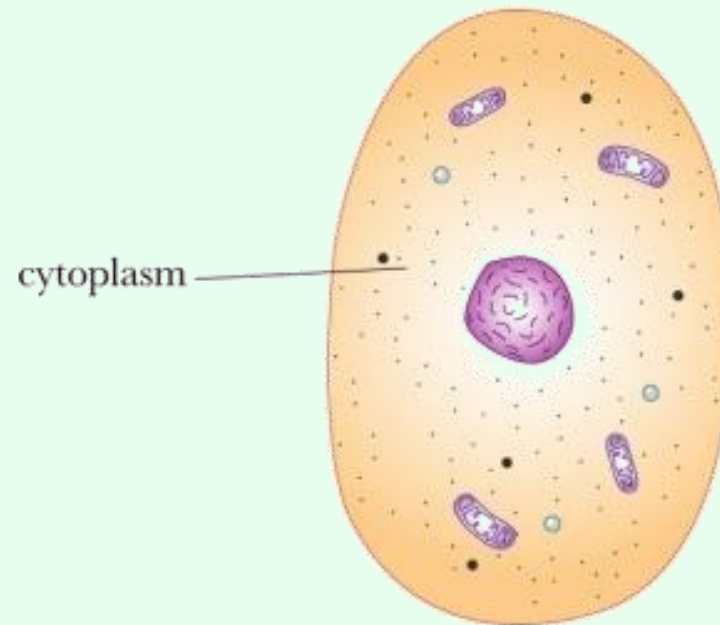


# Anaerobic Respiration Equation



**Where does this occur?**

**Cytoplasm**

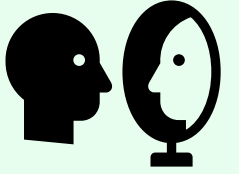


**Glucose not fully broken down = less energy**

**Anaerobic  
respiration**

**Aerobic  
respiration**

## Reflection and Reteach



Releases more energy **Aerobic respiration**

Produces lactic acid **Anaerobic respiration**

Uses oxygen **Aerobic respiration**

In mitochondria **Aerobic respiration**

Glucose breakdown incomplete **Anaerobic respiration**

Produces carbon dioxide and water **Aerobic respiration**

In the cytoplasm **Anaerobic respiration**

L2/4: Describe what is meant by oxygen debt/Compare aerobic and anaerobic respiration

## Practice with aid



Task: Put these statements in the correct column

### Aerobic respiration

### Anaerobic respiration

In the mitochondria

In the cytoplasm

Releases more energy

Releases less energy

Produces toxic lactic acid

Produces carbon dioxide

Uses

oxygen

No oxygen

used

Glucose fully broken  
down

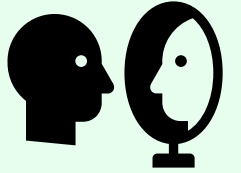
Glucose breakdown  
incomplete

#### Challenge:

During anaerobic respiration, a person develops an **oxygen debt**.

A certain amount of oxygen is needed to break down the lactic acid, this is referred to as oxygen debt. Use the **graph**:

1. When is anaerobic respiration used, How do you know?
2. What is the maximum concentration of lactic acid?
3. When is the person using aerobic respiration? How do you know?
4. When is the oxygen debt repaid?
5. How does the lactic acid concentration compare before and at (60s)?



## Aerobic respiration

## Anaerobic respiration

In the mitochondria

In the cytoplasm

Releases more energy

Releases less energy

Produces carbon dioxide

Produces toxic lactic acid

Uses oxygen

No oxygen used

Glucose fully broken down

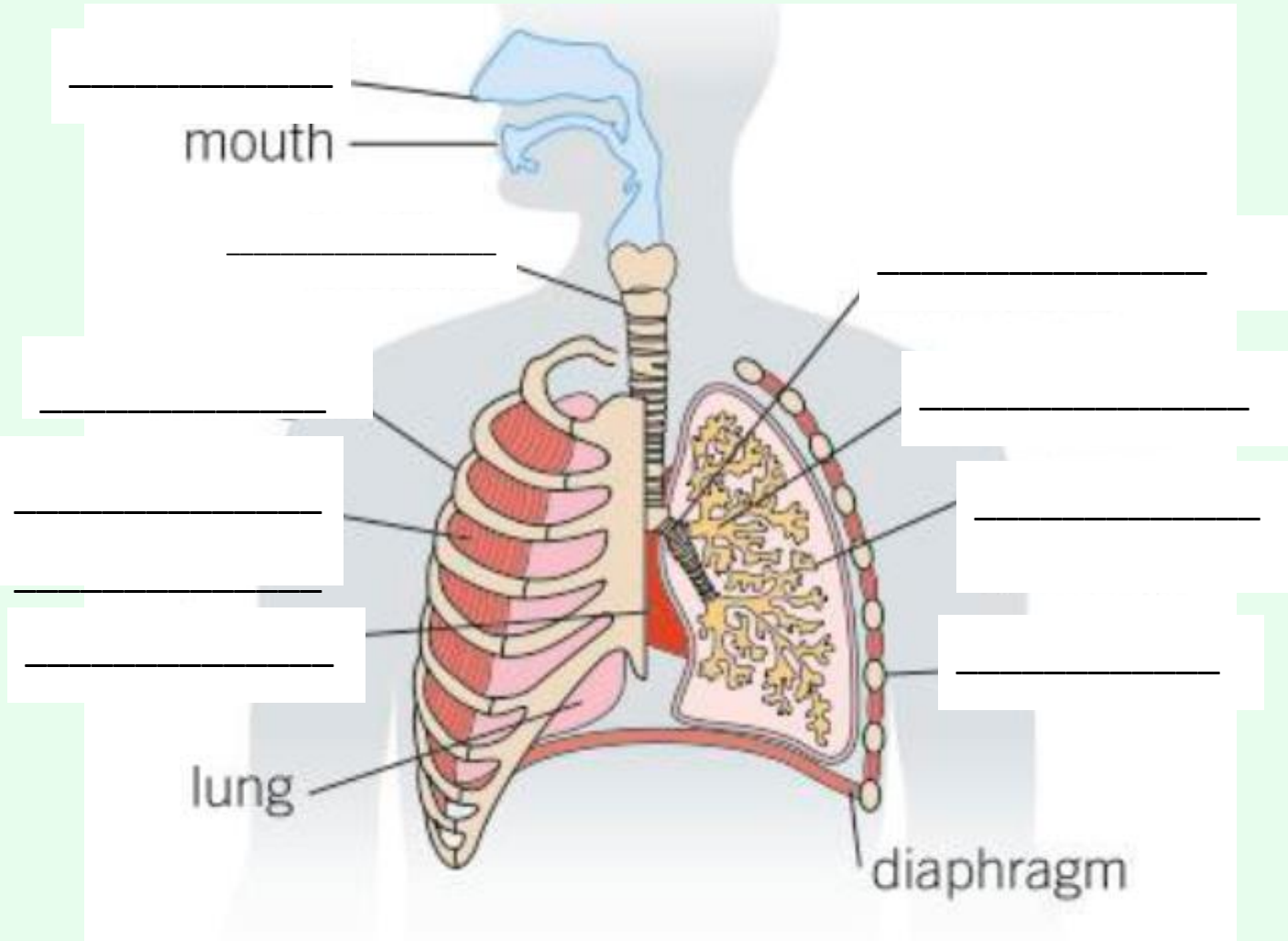
Glucose breakdown incomplete

**SA**  
**/5**

1. **A-B, C-D – there is a sharp increase in the amount of lactic acid in the blood.**
2. **11 mmol/litre**
3. **B-C, no extra lactic acid produced, must be respiring aerobically.**
4. **D**
5. **At the start, it was 1 mmol/l, while at the end it was around 5 mmol/l**

# Title: Lungs and Gas exchange

Label your diagrams during the video.



**Diaphragm, Alveoli, Rib Cage,  
Rib, Intercostal muscles,  
Bronchus, Bronchioles, Trachea,  
Nose, Heart**

# Homework:

- Research the process of **fermentation**, how does it happen, what food products are produced using fermentation, equation for fermentation.
- Why is anaerobic respiration in **paddy fields** increasing climate change?