Animals – What's inside our bodies

Name_____ **Class**_____

What you will need for this lesson: some cling film, a balloon, Sellotape, a straw, elastic bands, some Blu-Tack, scissors and an empty clear 2 litre bottle.

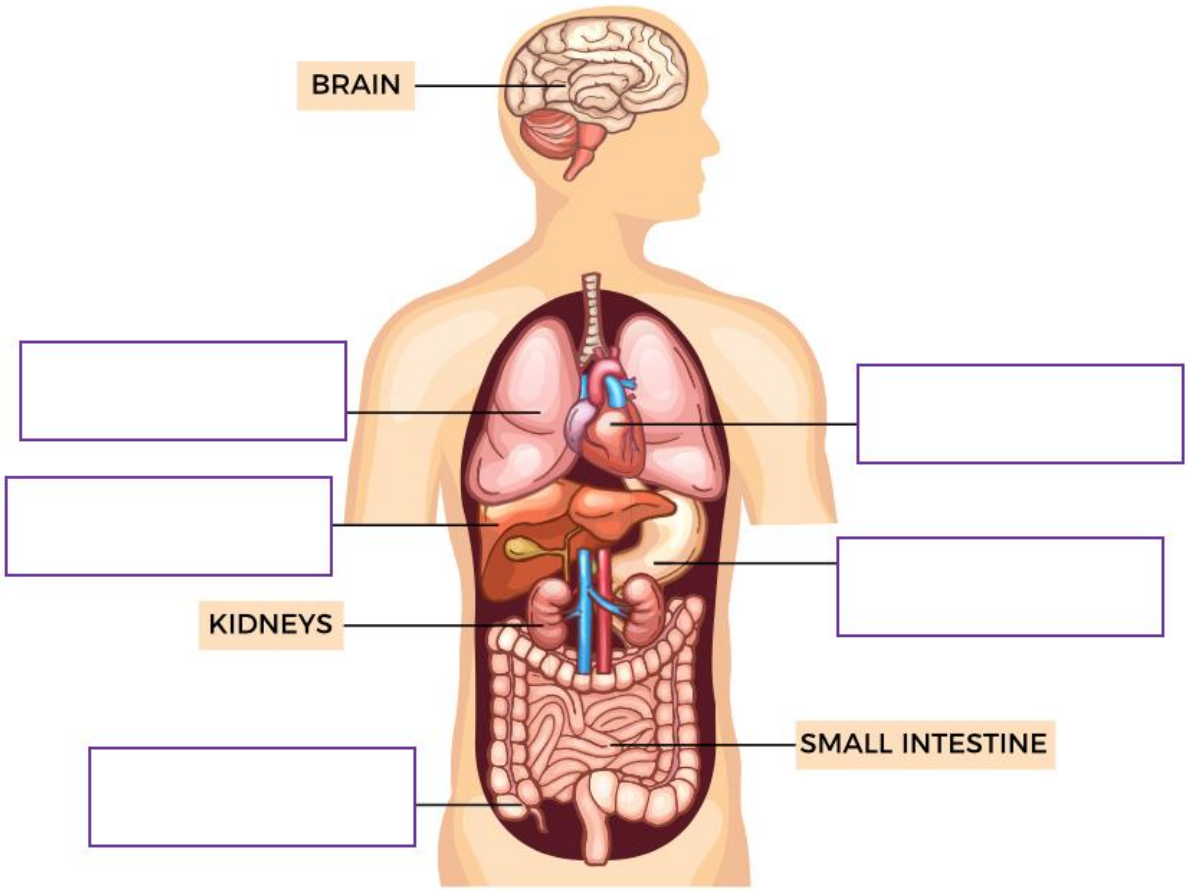
You will also need a pen, a pencil and if you have it, access to a computer, tablet or iPad.

LESSON STARTER

Look at the picture below. It is a picture of the organs inside our bodies. Every organ has a special job to do to keep us healthy.

Some of the organs have not been named. They are: **the heart, the lungs, the stomach, the large intestines and the liver.**

Can you write the correct name in the right box?



What are the jobs of each of these organs? Write them down if you know or can find out.

The Heart:

The Liver:

The Large Intestine:

The Stomach:

The Lungs:

When you've finished, watch the video to see how many you got right.

The Investigation

You are going to make model lungs! You will need to ask an adult for some help!

Do your mini lungs work?

What happens when you pull downwards gently on your cling film?

What happens when you pinch the cling film and push the cling film inwards?

Think of a question you would like to answer in your investigation.

WORKING SCIENTIFICALLY

Our next focus is about working scientifically. All scientists apply these principles whenever they are investigating anything and we've divided them into different skill units.

Find the section your teacher has asked you to focus on and answer the questions in the relevant section.

A. Planning or

B. Presenting and analysing data or

C. Evaluation

A. Planning

Every scientist wants to solve a problem and so takes the following steps

1. **Decides on a question that needs answering.** e.g. does the size of the balloon affect how much it inflates?
2. **Decides what the independent variable (the thing that is changed) might be in order to work out the answer to the question** e.g. we will have 3 different parallel experiments and the thing we will change is different sized balloons.
3. **Decides what the dependent variable might be (how to measure the differences in each different example**) e.g. we will observe and take pictures of the size of the inflated balloon.
4. **Last of all decide what elements have to stay the same in order to make it a fair test** e.g. we would keep the size of the bottle the same.

Now using this knowledge, see if you can answer the questions below!

Write below one or more examples of a question you might want to find the answers to.

_____

Year 3 -What might be the independent variable you would use in your investigation, in other words what would be the thing that you would change to investigate your question?

_____

Year 3 - What would be your dependent variable, in other words what would you measure to record the difference?

_____

Year 3 -What was your control variable, in other words what did you keep the same to make sure that it was a fair test?

_____

_____

Year 4 and 5 – Design the question you would ask if the following were your independent and dependent variables.

The independent variable is **the size of the bottle**

The dependent variable is **the balloon inflating and deflating**

Planning continued..

My question is: _____

_____

_____

Year 6 - Read the following question:

Does the type of material used for the diaphragm affect whether the balloon can inflate and deflate?

What do you think will happen? Write your **prediction** below.

Scientists will always write a **prediction** when they are carrying out an investigation.

My prediction is:

_____

_____

_____

_____

B. PRESENTING & ANALYSING DATA

When scientists carry out investigations, it is really important that they capture data to make sure they can then answer the questions that they have set themselves.
The scientist on the video has asked you to complete the following:

Year 3 pupils – You are carrying out experiments to answer the following question:

Does the width of the straw affect the straw's ability to inflate and deflate?

What kind of data would you capture to show what happens and why?

Year 4 & 5 pupils – You are carrying out experiments to answer the following question:

Does the size of the bottle used affect the ability of the balloon to inflate and deflate?

What kind of data table would you use and why?

PRESENTING & ANALYSING DATA continued

Year 6 – This is your question:

Does the type of material used for the diaphragm affect the balloon's ability to inflate and deflate?

Design a suitable data table to present your investigation results. Use the space below to draw your table. Then carry out the investigation and fill in your table!

My Table

C. EVALUATION

Evaluating how an investigation went as well as the data that comes from a science experiment is a really important part of science. It may be that you feel your experiment could have been done better or more thoroughly and it is important to understand this.

Answer the question below and then explain why you came to this answer:

Year 3 pupils: Did your experiment work?

Year 3 pupils: Why? Try and explain your answer using diagrams if it helps.

Year 4, 5 and 6: Carry out an investigation to try to answer the following question:

Does the size of the bottle used affect the ability of the balloon to inflate and deflate?
Record your data and try to spot any anomalies.
An anomaly is an odd result. Make a note of them below.

EVALUATION continued

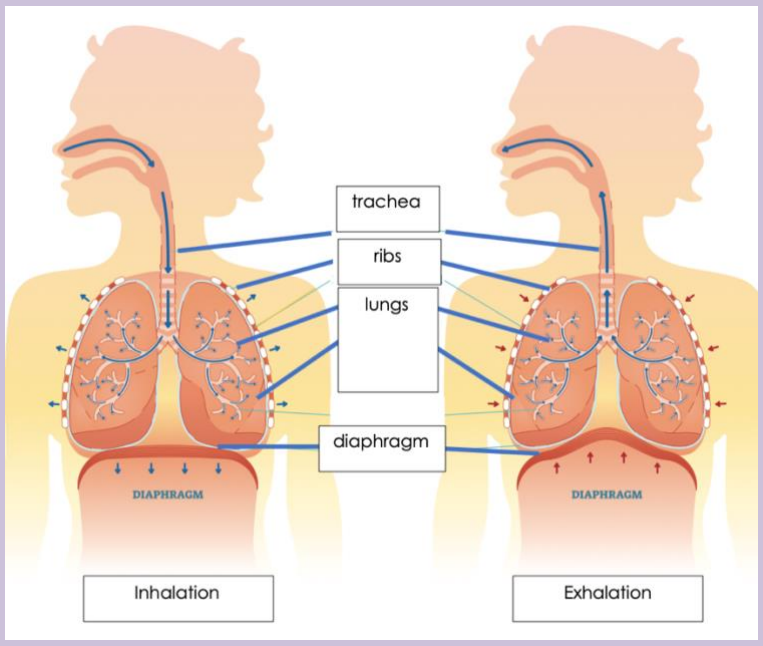
Year 5 & 6 Can you work out why there were any anomalies? Explain below what you think caused those anomalies.

The science behind the investigation

The tube that travels from the mouth to the lungs is called the **TRACHEA**. In investigation the straw is the trachea.

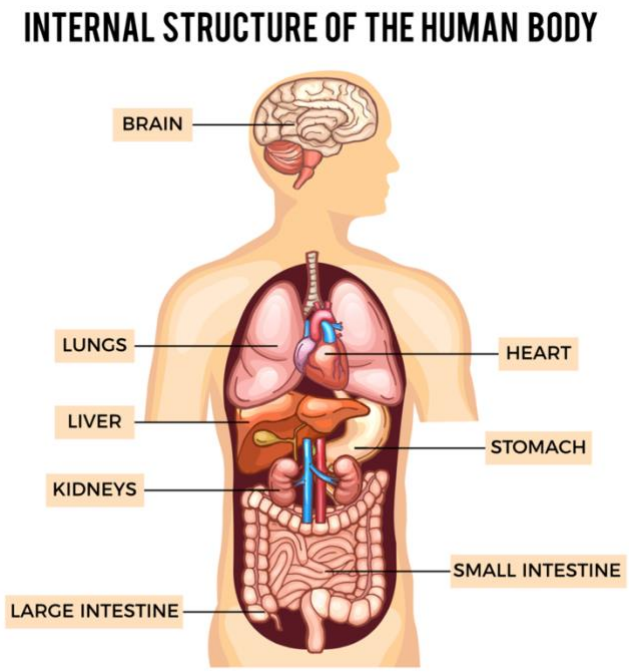
The muscle that sits underneath our lungs is called the **DIAPHRAGM**. In our Investigation, the cling film is our diaphragm.

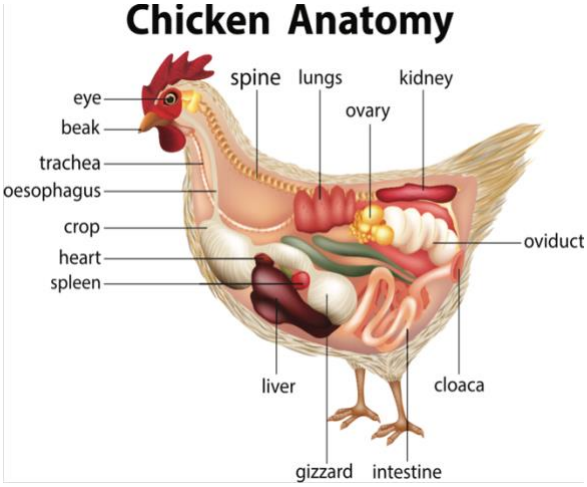
When the diaphragm contracts, it drops downwards in the chest. This allows more room in chest cavity and means the lungs can expand. When this happens the pressure in the lungs is lower than outside and so the air is pulled into the lungs. This is called **INHALATION.**
When the diaphragm relaxes it moves back upwards. This means the lungs have less room in the chest cavity and so the pressure becomes higher than outside once again. The air is then pushed out. This is called **EXPIRATION or EXHALATION.**

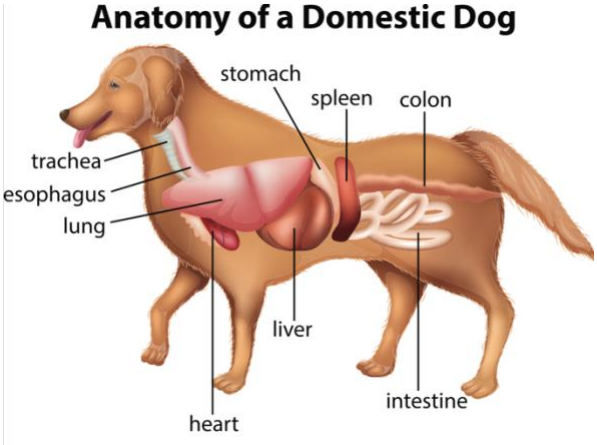


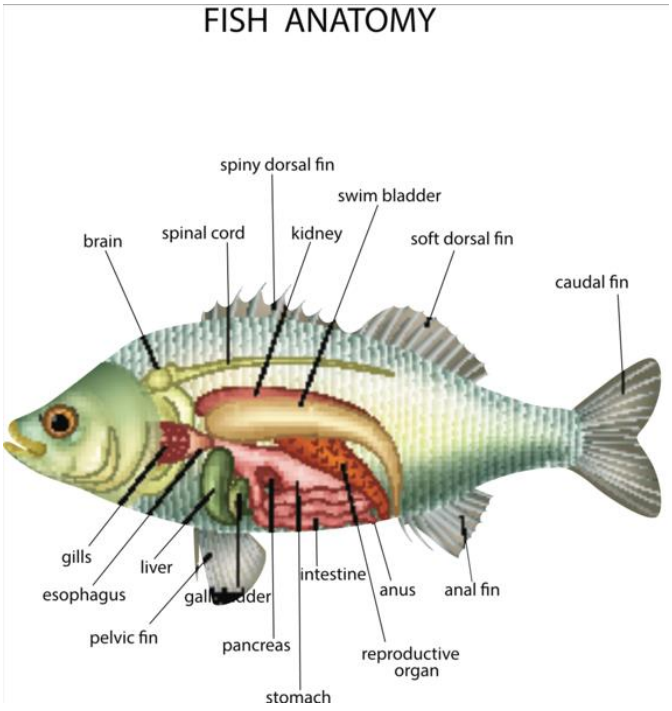
Your challenge!

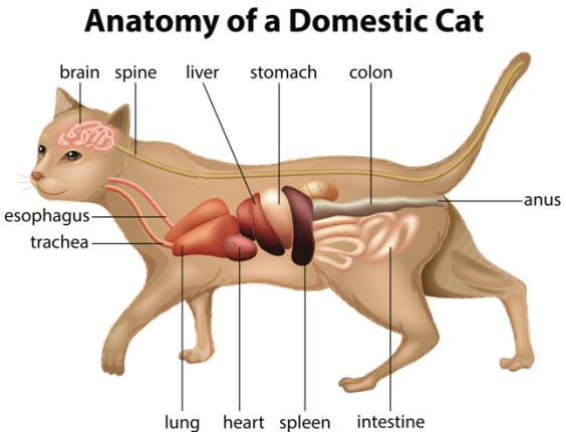
On the next page there are pictures showing the organs of different animals. Compare them to the organs in the human body. Can you work out which are similar and which are different? Put your answers in the table on the last page.











Your challenge!

On the next page there are pictures showing the organs of different animals. Compare

Similarities	Differences

Can you work out what the job of any organs that are different might be?

_____

_____

_____

What was your score?

_____