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February 2021 – Spring Term

#SolveItWithSTEM@Home

Secondary Activity Pack

*Friday 19<sup>th</sup> February 2021*

# Hey everyone...

Welcome back everybody!...  
We hope you are having a fun half term and enjoying the week.

Last week we focussed on **Colour** – my personal favourites were the rainbow eggs and the secret code. We hope you liked them!

This week we turn our attention to **Movement**....



....Movement happens everyday in so many aspects of our lives. We have a couple of activities surrounding the human body, we hope you enjoy them!

Please remember to share the packs with your family and friends online via **[www.fawleyonline.org.uk](http://www.fawleyonline.org.uk)**

Catch you next week,  
Alice and Eddie

# Activity: The human body

1. Tick the correct statement(s) about the skeleton.

The function of the skeleton is...

- To support the body
- To protect some of the vital organs of the body
- To help the body move
- To make blood cells

2. Bones are linked together by joints. Most joints allow different parts of the skeleton to move. The human skeleton has joints called **synovial joints**.

Can you correctly label the features shown below using the words provided?

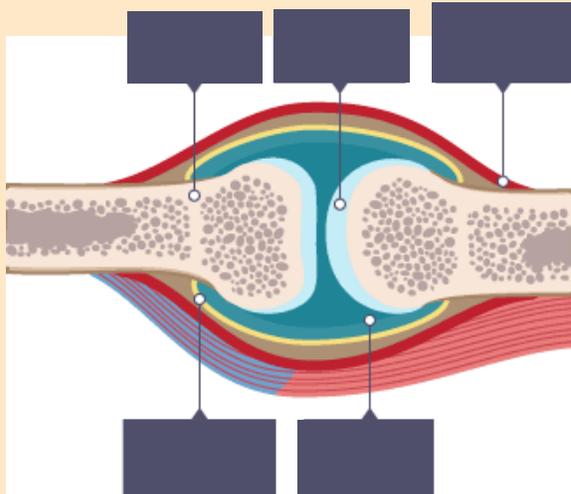
Synovial membrane

Cartilage

Bone

Synovial fluid

Ligament



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3. Muscles can only pull and cannot push. This would be a problem if a joint were controlled by just one muscle. As soon as the muscle had contracted and pulled on a bone, that would be it, with no way to move the bone back again. This problem is solved by having muscles in pairs, called **antagonistic muscles**.

For example, your elbow joint has two muscles that move your forearm up or down. These are the biceps on the front of the upper arm and the triceps on the back of the upper arm:

- to raise the forearm, the biceps contracts and the triceps relaxes
- to lower the forearm again, the triceps contracts and the biceps relaxes

Using the space below, illustrate what the muscles are doing to raise the forearm and to lower the forearm.

This page focusses on movement of the body. Why not take a look at the questions and have a go answering them. If you need help, follow the link provided:  
[Muscles - Skeletal and muscular systems - KS3 Biology Revision - BBC Bitesize](#)



# Experiment: Lung capacity

(Make sure you have an adult help you with this activity)

## Materials:

- 2 litre plastic bottle
- Water
- Large bowl
- Length of rubber tube
- Permanent marker
- Measuring cup

## Steps:

- Measure out 200ml of water into the bottle and put a mark where it goes up to. Repeat until you get to the top of the bottle.
- Place the now full bottle upside down into a container full of water. Without lifting the bottle out of the water, place the tube into the bottle.
- Take a deep breath and blow into the tube.
- Count how many lines the water lowered by and multiply by 200ml. You have worked out your vital lung capacity!

## Observation

How much air did you blow into the bottle? Does this surprise you?

## How's and Whys

Air is less dense than the water. When you exhale through the straw into the bottle, the air pushes water out of the bottle as it moves to the top. The air pushes out its identical volume of water, so you can measure how much air was in your lungs by calculating how much water was displaced from the bottle.

Do you know how much air your lungs can hold? Make your own spirometer to find out. The results may surprise you...

This experiment was taken from the following website:

<https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zm3xh39>



# Maths: Movement mathematics!

## Question 1:

Jacob was watching his animals walk into a new grassland area when he noticed one third of them are goats, the rest are sheep. There are twelve more sheep than goats.

How many animals are there altogether in Jacob's flock?

## Question 4:-

Tommy was pouring water into his cup when he realised it holds 480ml when it is one quarter empty.

How much does it hold when it is one quarter full?

How much will it hold when full?

Why not give these questions a go!

Answers will be provided next week...



# Answers: w/e 12<sup>th</sup> February 2021 STEM Pack

## Activity: Understanding colour (Page 3)

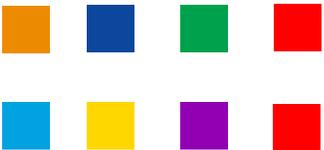
### What are light and colour?

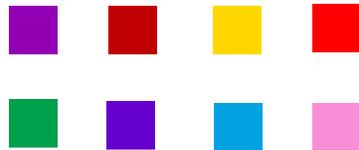
White light from the Sun is a mixture of colours, each with a different **frequency**. You can use a prism to split (or **disperse**) white light into a spectrum of colours: red, **orange**, yellow, green, blue, indigo and **violet**. Dispersed means that the colours are **separated** out. We see **higher** frequencies of light as blue or violet, lower frequencies of light are seen as red and orange. **Green** light is in the middle.

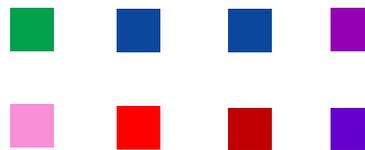
### Eyes and colour

Our eyes only detect **three** colours: red, **green** and blue. By combining these, however, we can perceive many different colours. By mixing red light and green light, for example, we can see **yellow**. If all three are mixed together we see **white light**. Objects **absorb** and **reflect** light differently. A lemon reflects yellow light, all the other **colours** are absorbed and so are not seen by our **eyes**.

## Maths: Secret Code (Page 5)


$$\begin{array}{r} + \\ = \\ + \\ = \end{array} \begin{array}{r} 1530 \\ 4270 \\ \hline 5800 \end{array}$$


$$\begin{array}{r} + \\ = \\ + \\ = \end{array} \begin{array}{r} 7920 \\ 3648 \\ \hline 11568 \end{array}$$


$$\begin{array}{r} + \\ = \\ + \\ = \end{array} \begin{array}{r} 3557 \\ 8096 \\ \hline 11653 \end{array}$$

We hope you enjoyed this week's activities.

Another pack will be on its way to you next week...

Best wishes

The ExxonMobil Fawley #SolveItWithSTEM Team!

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