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January 2021 – Spring Term

#SolveItWithSTEM@Home

Secondary Activity Pack

Friday 29th January 2021

Hello Everybody!

Hello all and welcome to this week's pack. We hope you enjoyed last week's which focussed on the **Weather and the Earth**...this week we are talking about **Food**!

...food is a big part of our lives! It is important we keep a healthy lifestyle and this includes what food we consume on a day to day basis.

Did you know we should be having less than **6g** of salt a day? (11+ years)

Did you know that $\frac{3}{4}$ of the salt we need already in the foods we buy?

The NHS has dedicated a page called **Change4Life** which provides tips and tricks on swapping foods and eating smart!



As always, don't forget these packs will be available online at www.fawleyonline.org.uk – please share with family and friends.

Enjoy and see you next week!
Alice and Eddie

Activity: Fruit floating boats

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

This activity focusses on floating and sinking – you can take part in the activity and learn the difference between what floats and what sinks!

Can you predict which fruits will float and which will sink?

The items you will require include:

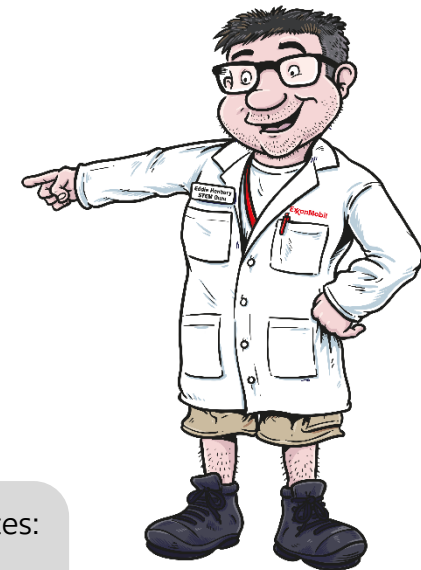
- 1 x lemon
- 1 x melon
- 1 x lime
- 1 x grape
- Cocktail sticks
- Paper to make the sails
- Double sided tape
- Play-doh

How to make the fruity boat...

- Decide how big you want the boat to be – ensure an adult is present to slice the fruit up for you.
- The adult will need to hollow out the fruit (remove the inside of the fruit) with a spoon or knife. Little tip: to minimise waste...you can eat the scooped out fruit!
- If the skin is thick enough, insert the cocktail stick into the flesh or use some play-doh to keep it secure.
- Using paper and double sided tape, create a paper sail for your fruit. Add this onto the cocktail stick. Now see if your fruit boat floats.
- Try this experiment with all the fruits listed above.

Which fruits ended up floating? Which fruits ended up sinking?
Was your prediction correct? Can you do this experiment with other objects?

Liquid pressure is exerted on the surface of an object in a liquid. This pressure causes **upthrust**. An object placed in a liquid will begin to sink. As it sinks, the liquid pressure on it increases and so the upthrust increases. For a floating object, the upthrust is equal and opposite to the object's weight. An object will continue to sink if its weight is greater than the maximum upthrust.



This page was inspired by the following websites:
[Science Sparks – Fruity Lemon Boats](#)
[What is buoyancy? – BBC Bitesize](#)
[Floating Fruit Science Experiment](#)

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Experiment: Growing and Preventing Mould

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

Items Required:

- 6 x Freezer/sandwich bags
- Bread
- Water
- Various Additives (sugar, vinegar, oil and salt)
- Warm location

Instructions:

- Start by preparing your supplies. You need one bag per piece of bread – use plain pieces of bread.
- Label the bags stating what will be in each e.g. Water, Salt, Vinegar, Oil, Sugar and Nothing. You don't have to complete all six, you can choose three or four if you don't have all the ingredients.
- Next add 2 tablespoons of the selected ingredient to the slices of bread. For the salt and sugar, it may be easier to dissolve 2 teaspoons in 2 tablespoons of water and then add to the bread.
- Once this is complete, take each slice of bread and add to the appropriate bag.
- Location is key for this experiment to work. It has to be warm or your mould will grow very slowly (if it grows at all). A large window where the afternoon sun shines in, or near a radiator or warm cupboard
- Tape the bags of bread in your selected location, so they will all have a similar exposure to the heat.
- Watch daily and document any growth.



What should happen?

It takes about a week before you get any mould growth, but hopefully with no surprise where the mould is first found...the bag of bread with just water added as mould loves warm and damp to grow.

A few days later you should have some mould on the bread that had the sugar mixture. While sugar is often used to inhibit mould growth in some items such as jam, at warmer temperatures it isn't nearly as effective. In fact, once the mould started on the sugar bread the bag will expand as mould produces gasses as well (release the pressure before it explodes!).

The plan is to wait until all the bread shows mould. After about 3 weeks, your nose might object and you can photo and throw away any smelly bread.

The salt mixture, oil, and vinegar all should make it past the 3 week mark without mould, as these additives are often used to preserve food.

The plain bread if dried should also show minimal mould because, as mentioned, mould needs moisture to grow.

Please remember the bread will not be suitable for eating so dispose of it properly after you have completed the experiment!

Maths: Fahrenheit and Celsius

Fahrenheit and Celsius are units of temperature used in day to day life when creating food recipes or when you are cooking up a lovely meal for the family. Have a go at answering the following questions – answers will be provided in next week's pack.

Tip: Remember °C to °F is: divide by 5, then multiply by 9, then add 32

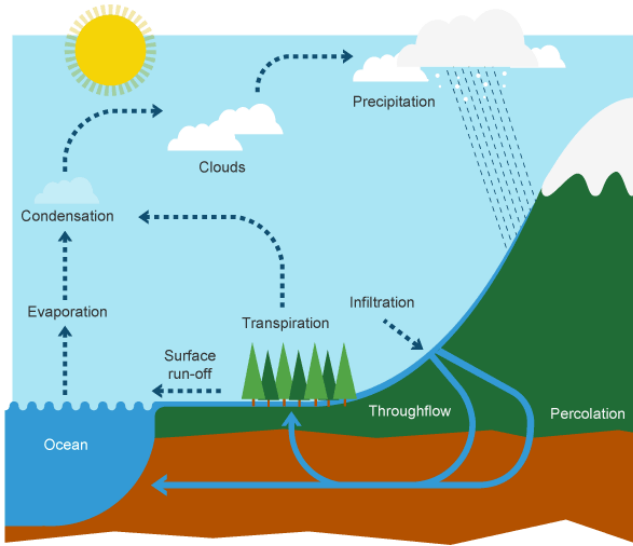
1. I find a recipe which states that my oven needs to be set at a temperature of 400°F. My settings on my oven are in °C. **What temperature should I set my oven to?**

2. **What temperature is 40°C in Fahrenheit?**

3. **What temperature is 100°F in Celsius?**

Answers: w/e 22nd January 2021 STEM Pack

Activity (Page 3): The hydrological cycle



- **Evaporated**
- **Dense**
- **Condensation**
- **Precipitation**
- **Intercepted**
- **Surface run-off**
- **Saturated**
- **Impermeable**
- **Throughflow**
- **Percolates**

This was taken from the BBC Bitesize [website...why not check it out!](#)

Maths (Page 5): We hope these questions aren't too MEAN 😊

Work out what the **median** would be. Answer: **3mm**

Work out what the **mean** would be. Answer: **2.4mm**

Work out the **range** of the temperatures and the **mean** temperature. Answer: **Range is 7 degrees**

Mean is -2 degrees

These questions were inspired by the following websites:
<https://s-cool.co.uk/a-level/maths/the-basics/revise-it/measure-of-central-tendency>
<https://corbettmaths.files.wordpress.com/2013/02/average-s-and-range-pdf2.pdf>

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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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