May 2020

Week 5 #SolveItWithSTEM@Home Experiment Pack for Secondary Schools

featuring Alice and Eddie - our STEM Gurus

Good day to you! How's it going?
High five for Week 5!

Eddie and I are back with more experiments and fun questions for this week. Listen to Eddie's reminder!

We have included two of our favourite experiments – we hope you enjoy making them too.

Another maths question is available on page 6 and the answer to Week 4 is on page 7 ☺

Have a great week and take care!

Reminder: Make sure you do the experiment safely and with an adult present!

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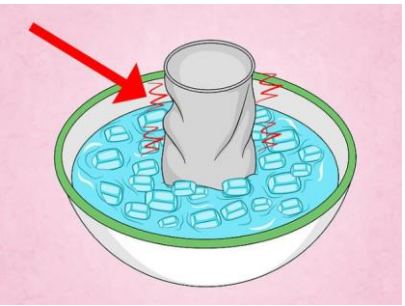
Experiment #7: Crush a can

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

Items Required:

- An empty fizzy drink can
- Kettle
- Water
- Bowl
- Tongs or oven gloves



Instructions:

- Fill a bowl with cold water (and ice if possible).
- Being careful not to touch the fizzy drink can with your hands, fill the can with 15ml of boiling water (steam should be coming out of the can opening). ***If you do need to hold the can while you fill it with the water, make sure you wear the oven gloves for protection or use the tongs (you may need to ask for help at this point).***
- **Using the tongs or oven gloves** – pick up the can and place it upside down in the bowl of cold water.
- The steam in the can will condense and collapse the can…similar to this…

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How does it work?...

The process of boiling the water turned it into a **vapour** and forced the molecules of air out from the can.

When putting the can in cold water, it was suddenly cooled. That cooling caused the water vapour in the can to condense, creating a **partial vacuum**. Because of that, the pressure outside of the can became much greater than the pressure inside, and that pressure difference crushed the can.

This theory is from the STEM Little Explorers website and you can watch the theory on Youtube via STEM Little Explorers: https://www.youtube.com/watch?v=mHzb8QMeZmI

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Experiment #8: Hot ice

(**Make sure you have an adult help you with this experiment**)

Items Required:

- Stainless steel saucepan (or a non stick pan)
- 2 litres of white vinegar
- 3 tablespoons of baking soda
- Coffee filter paper or kitchen towel roll
- Funnel
- Pyrex dish

Instructions:

- Pour 1litre of white vinegar into the saucepan.
- Add the 3 tablespoons of baking soda to the vinegar and it will begin to fizz, allow this to settle.
- Begin to heat the mixture on the hob and slowly add the other 1litre of white vinegar (again it will begin to fizz).
- Continue to heat progressively until a thin crusty film forms on top of the liquid. (white vinegar is about 90% water and the aim is to remove this – if the solution starts to go brown, add more vinegar to lighten).
- Pour the liquid through your chosen filter into the Pyrex dish to remove all particulates. The crystals that form on the side of the pan can be scraped off and saved for later.
- Allow the liquid in the Pyrex dish to slowly cool – it should stay as a liquid once it has cooled down to room temperature.
- Take a crystal that previously formed on the side of the pan, scrape it off, drop it into the cooled liquid (the scientific name is sodium acetate) and watch it crystallise.

Week 5 – Maths Question!

Pick the next two numbers in the Fibonacci Sequence:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ..., ...

Why not give this maths question a go…

The correct answer will be included within next week's pack…stay tuned!

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Week 4 – Maths Question Answer…

What number should appear next in this sequence:

1 5 12 34 92 252 ……

Answer is 688

Add the two previous numbers and times by two.

We hope you enjoyed the Week 5 activities.

Week 6 will be coming soon.

Best wishes
The ExxonMobil Fawley #SolveItWithSTEM Team!