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May 2020

Week 6 #SolveItWithSTEM@Home Experiment Pack for Secondary Schools

featuring Alice and Eddie - our STEM Gurus

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



Hello everyone – we hope you are all well and enjoying the sunshine!
We have now moved onto Week 6!

Alice and I can't believe we have provided ten experiments so far...and still looking to give you much more!

We have included experiments involving a ping pong ball and sweets.

Another maths question is available on page 6 and the answer to Week 5 is on page 7 😊

Have a great week and take care!



Experiment #9: Floating ping pong ball

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

Items Required:

There are two methods to this experiment.

Method one includes:

- Hair dryer
- Ping pong ball

Method two includes:

- Empty plastic bottle
- Glue or sticky tape
- Bendy straw
- Scissors

Instructions:

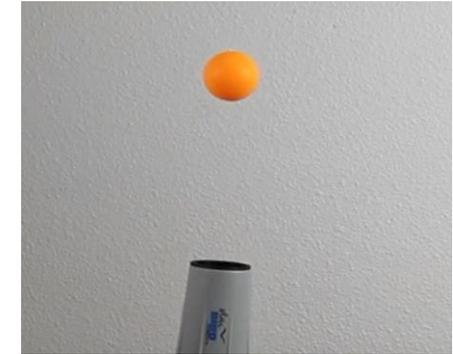
Method One:

- Set the hair dryer to the cool/cold setting and point it upwards.
- Place the ping pong ball in the air flow.
- Attempt to move the hair dryer!

Method Two:

- Take the plastic bottle and cut where the neck begins to widen (you only need to keep the top half of the bottle).
- Make a hole within the bottle top – making sure it is big enough to fit the bendy straw.
- Put the bottle top back on the bottle.
- Insert the straw and use sticky tape or glue to seal it.
- Place the ping pong ball in the plastic area above the straw and blow!

Method 1



Method 2



How does it work?...

The floating ping pong ball is a great way to demonstrate Bernoulli's principle. In the 18th century, Bernoulli discovered that the faster air flows over the surface of an object, the less the air pushes on the surface, thus creating a low pressure area. The low pressure area surrounding the ball pulls the flowing air towards the ball. This makes the jet of fluid (air) flow along the curved surface of the ping pong ball. This phenomenon is called the Coandă effect.

The ball can be observed to move slightly from side to side. The ball is pulled towards the area of lowest pressure but as the ball moves the Coandă effect is increased and thus the ball is sucked back into the middle of the jet stream.

This experiment is from the STEAM experiments website:

<http://steamexperiments.com/experiment/floating-ping-pong-ball/>



Experiment #10: Rainbow in a glass

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



This experiment was taken from www.sciencefun.org – why not take a look!

Items Required:

- Water
- A mug
- 5 separate cups
- A tablespoon
- A clear glass
- A dropper or pipette
- A bag of Skittles (if you can get the sharing bag, you might have a better chance of finding 10 purple ones!)

Instructions:

- Separate the Skittles into the cups, in these amounts: 2 red, 4 orange, 6 yellow, 8 green and 10 purple.
- Heat a mug of water in the microwave so it is hot **but not boiling**. Be careful removing the water from the microwave – it's hot!
- **Very carefully** measure and pour two tablespoons of hot water into each cup, on top of the Skittles.
- Stir each cup carefully so no water splashes out. The cups need to be cool for the next part of the experiment, so leave them somewhere where they won't get knocked over. Stir them every ten minutes or so until the Skittles are dissolved and the water is room temperature.
- Using the dropper, add the coloured water from the five cups to the clear glass. Start with purple, then add green, then yellow, orange, and red last. Go slowly here, we don't want the different layers to mix.
- Congratulations, you made a rainbow!

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Week 6 – Maths Question!

Tom asked his Granny how old she was. Rather than giving him a straight answer, she replied:

"I have 6 children, and there are 4 years between each one and the next. I had my first child (your Uncle Peter) when I was 19. Now the youngest one (Your Auntie Jane) is 19 herself. That's all I'm telling you!"

How old is Tom's Granny?

Why not give this maths question a go...

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



Week 5 – Maths Question Answer!

Pick the next two numbers in the Fibonacci Sequence:

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

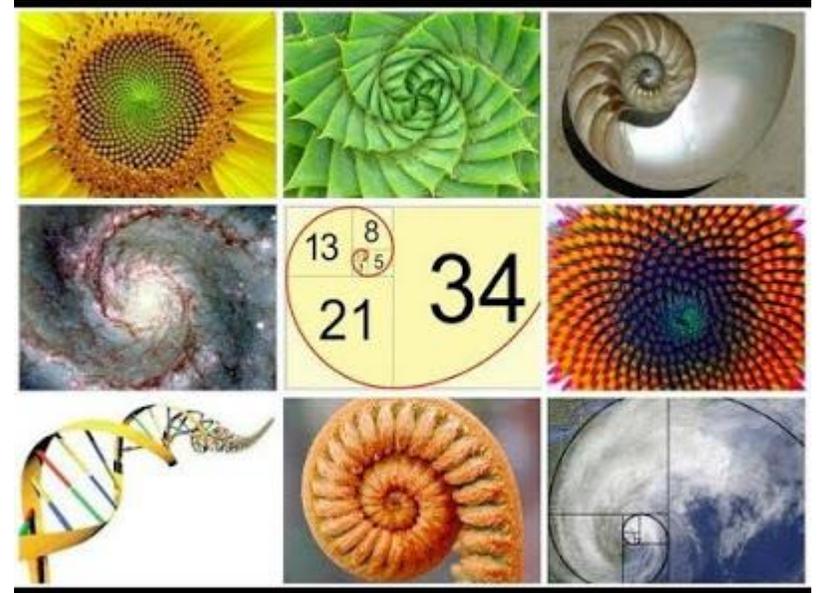
Answer 55 & 89 :-

for example $0 + 1 = (1)$. $1 + 1 = (2)$.

$1 + 2 = (3)$. $2 + 3 = (5)$. $3 + 5 = (8)$.

$5 + 8 = (13)$. $8 + 13 = (21)$. $13 + 21 = (34)$.

$21 + 34 = (55)$. $34 + 55 = (89)$



We hope you enjoyed the Week 6 activities.

Week 7 will be coming soon.

Best wishes

The ExxonMobil Fawley #SolveItWithSTEM Team!