

The **BRAINWAVES** Club

Term 2 2021: Einsteins – Years 3 and 4

Venue: Forest Hill College

Term Fee: \$285

(Semester enrolments available for \$570)

Meeting 5: Lights, Camera (Capillary!), Action

Focus: Physics

Water isn't something we usually think of as having strength, but that's exactly what we're going to be discovering today! How strong are these life-giving, environment-sustaining molecules? What are capillaries? Can surface tension really 'break'? And what impact is our detergent having on H₂O in the world around us? We'll be exploring the effect of forces on a molecular scale, as we investigate adhesion and cohesion.

Meeting 6: Hot or Cold?

Focus: Chemistry/ Physics

Did you know that there is no such thing as cold – only an absence of heat? Melbourne can have either, and often both on the same day! Wouldn't it be nice to work out a way to stay comfortable through our inclement temperatures? In this session we'll be investigating the fundamental principles behind thermodynamics, including how insulation, heat transfer and thermal sensation work. We'll finish up by testing out our hypotheses related to these concepts in a delicious experiment!

Meeting 7: Don't Go Breaking My Heart

Focus: Biology, Anatomy

Did you know the heart can pump the equivalent of up to 7600L of blood around our body each day? Arguably the most important muscle in our body, and the centre of our circulatory system, it's vital that our hearts are kept in good health and working order. What does this mean, exactly? There are a lot of parts to the heart – do all of them have to be functioning perfectly for its owner to be healthy? We'll learn about the heart's chambers, create simulations of heart valves, then get into a tricky dissection to see it all firsthand. This could get messy!

Meeting 8: Amazing Archimedes

Focus: Physics

Now we know about the miscibility, viscosity and density of water, what can we do with this information? How is Archimedes' 'Principle of Displacement' applied today? What did a crown have to do with it? Archimedes may have sat in a bathtub, but his discovery had far reaching consequences, even in this modern age. Have you ever wondered why some objects float on water while others simply sink? "That's easy," you say. "Some stuff is light and some is heavy." We know that steel ships float while some wooden ships sink - yet wood floats while steel sinks. How does that work? In this meeting, we will conduct experiments and use the scientific method to explore the theory behind this phenomenon.

What to bring

Each week please bring a well-stocked pencil case (including scissors, good textas and coloured pencils, pens and/or writing pencils, sticky tape or a glue stick) and an A4 notebook.

About the club leader: Eki Chan

Eki is a secondary school teacher who holds a Bachelor of Science with majors in chemistry and mathematics. She has experience teaching mathematics and science in primary and secondary schools in Singapore, China and Australia, and can't wait to get to know the enthusiastic learners in the Einsteins club!