



## G.A.T.E.WAYS

### The Brainwaves Club – Semester 2 2009 at Brighton Grammar School

#### *The SciSpies – Years 3 and 4*

#### **'The Archimedes Legacy'**

#### **Presented by Herwig Waldhuber**

#### **Weeks 1-4**

What did Archimedes really discover? How is his 'Principle of Displacement' applied today? Archimedes may have sat in a bath tub, but his discovery had far reaching consequences, even in this modern age. The science behind Archimedes is truly amazing. 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. Hmm.... that's very interesting... Let's take a closer look at this. Sci-Spies will conduct experiments and use the scientific method to explore the science behind this phenomenon. Using some necessary detective work, SciSpies will discover the link between Archimedes and other scientific phenomenon including gas balloons. Gravity also will play an impressive role within the science we will explore during this program.

#### **SciSpies will develop skills such as:**

- \* An appreciation of the wisdom of great thinkers and scientists of the past
- \* Critical analysis, reasoning and logical thinking
- \* Drawing your own conclusions based on the information before you
- \* Careful observation and listening skills
- \* An ability to follow instructions, construct models and evaluate your design.
- \* Co-operation and team work.

#### **Session 1**

We'll meet Archimedes and be introduced to his body of scientific work, including his 'Principle of Displacement'. Hands on activities will allow us to explore this further. Come prepared to take home an exciting mini project.

#### **Session 2**

Why do objects actually float or sink? What is meant by scientific terms like *up thrust* and *equilibrium*? Do some liquids help objects to float more efficiently? Let's go on a whirlwind tour to find out. We'll conduct a series of experiments and record our results.

#### **Session 3**

This week the SciSpies will uncover the links between the Principle of Displacement, gases and gravity. Which gases are lighter or heavier than air? Why is air a special gas? Students will construct their own hot air balloons in eight easy steps.

#### **Session 4**

Students will fly, test and evaluate the hot air balloons they made last session. What is the secret life of hydrogen and helium balloons? What is the role of gravity? And finally we'll use our knowledge, skills and the scientific method to solve a challenging balloon problem.

#### **About the Presenter**

**Herwig Waldhuber** has been interested in astronomy for over 40 years. He has designed and taught basic astronomy courses, observed eclipses, occultations, transits, meteor showers and comets. Bringing astronomy to the people, particular to children, is an important focus of his efforts. "Young minds should be opened to the wonders of the universe." He has run a number of successful GATEWAYS programs on a wide range of astronomy topics.

**The SciSpies will continue their program in mathematics and science in Term 4. Program outlines coming soon.**