

## Secondary Workshop Programme

A “Workshop Day” normally comprises three sessions of the same workshop delivered to three classes. The cost to the school is £435 (+VAT) per day. Please note that there might be a small contribution towards accommodation/travel if the Workshop Leader is not local to your area.

All our workshops support the overall aim of the Curriculum to

- pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility.
- understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas.
- evaluate risks.
- ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience.
- make predictions using scientific knowledge and understanding.
- select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate.
- use appropriate techniques, apparatus, and materials ... paying attention to health and safety.
- make and record observations and measurements ... and suggest possible improvements
- apply mathematical concepts and calculate results.
- present observations and data using appropriate methods.
- interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions.
- present reasoned explanations, including explaining data in relation to predictions and hypotheses.
- evaluate data, showing awareness of potential sources of random and systematic error.
- identify further questions arising from their results.
- undertake basic data analysis including simple statistical techniques.

### **Chromatography**

Students use different forms of chromatography (including radial and ascending) before investigating how to separate the pigments in grass.

Space required: laboratory.

Time: 90 minutes

### **Citrus**

Students investigate the amount of Vitamin C in different fruits using DCPIP solution. They need to identify and control all variables to produce accurate results.

Space required: laboratory or classroom with sink

Time: 90 minutes

### **Electricity**

Students investigate different electrical circuits (including the use of different components) using solar cells in lieu of batteries.

Space: classroom and outdoors (weather permitting). Lamps will be used in bad weather.

Time: 60-90 minutes

### **Marble Run Challenge**

In small teams, and with a fixed set of materials, students have to design and build a runway for a marble. The best runway being the one where the marble takes the longest time.

Space required: large room

Time: 45 minutes

### **Rollers**

Students each build and test a wind-up toy to determine the optimum value for each variable. They can retain their toys for further testing.

Space required: hall

Time: 75 minutes

### **Space**

Students carry out simple investigations into phases of the moon, the solar system, stars, the night sky, and shadows. They also need to evaluate the modelling concepts used.

Space required: hall

Time: 90 minutes

### **Straw Tower Challenge**

In small teams, and with a fixed set of materials, students have to design and build a tower that will hold a marble aloft. The best tower is the tallest one.

Space required: hall

Time: 45 minutes

### **Wind**

Students are challenged to design a model wind turbine and then to make it more efficient by investigating different variables. Their wind turbines will be tested using an electric fan.

Space required: hall

Time: 90 minutes

To book workshops, please contact us at [email@spherescience.co.uk](mailto:email@spherescience.co.uk)