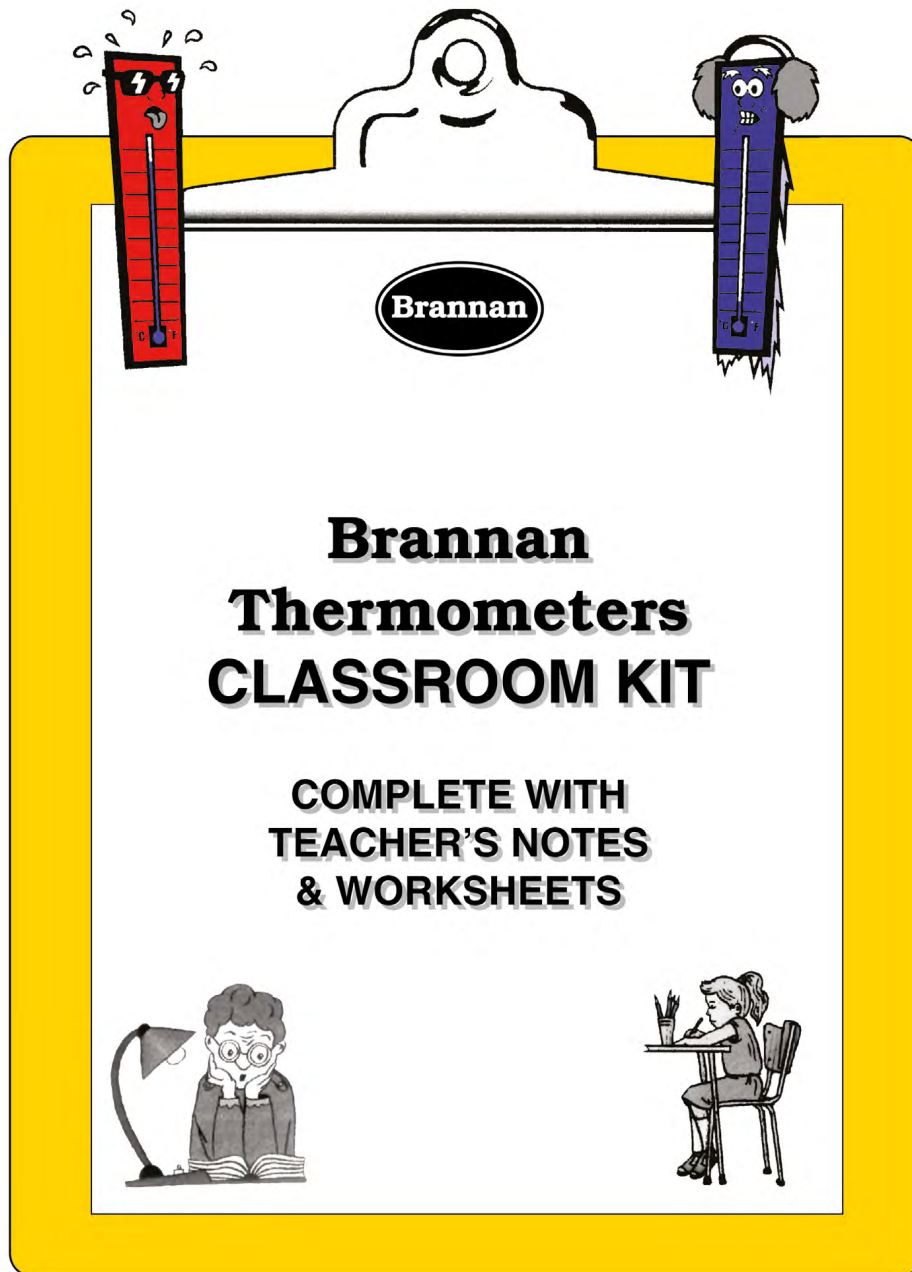


Brannan Thermometers Classroom Kit



- To assist teachers to operate within the National Curriculum
- Comprises a variety of laboratory thermometers
- Includes classroom worksheet

Measurement for life.





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Brannan Thermometers

Classroom Kit

Kit contents

8pcs x 150mm green -10/110°C stirring thermometers

7pcs x 300mm green -10/110°C stirring thermometers

1pc x ungraduated stirring thermometer
(suitable for use with boiling water)

1pc x teacher's notes and worksheet booklet

Introduction

This kit contains a range of thermometers which have many different uses inside and outside the classroom. They are essential measuring devices at key stages 1 and 2 particularly in fulfilling the requirements of the Programme of Study for Sc1: Experimental and Investigative Science.

These notes give you:

1. Information on the use of Brannan stirring thermometers. In each case there are suggestions for activities to carry out with the thermometers. These include some experiments, which are largely teacher-initiated and teacher-led.
2. Freely photocopiable worksheets for use within the purchasing establishment which can be useful in the assessment of children's ability to read temperature scales.
3. Investigations to carry out with thermometers for children at key stage 1 and 2. These are briefly outlined to offer some flexibility for children to plan, carry out measurements and assess results at an appropriate level of challenge.

Temperature

Temperature is measured in degrees Celsius - named after a Swedish scientist (Anders Celsius 1701 to 1744). The Fahrenheit scale is no longer widely used in Europe.

- 273°C - absolute zero
- 0°C - freezing point of water
- 25°C - swimming pool temperature
- 37°C - human body temperature
- 60°C - hot water
- 100°C - boiling point of water

You may hear the unit Kelvin (K) used. This is the standard scientific way of reporting temperature. $1\text{K} = 1^\circ\text{C}$. The lowest temperature possible is zero kelvin which is equivalent to -273°C . There is no theoretical upper limit to temperature.



Notes on the National Curriculum

There are many places where use of thermometers is indicated but here are some of the main ones:

What we should teach?

Key Stage 1 Programme of Study : Sc1 2b and 2c

Key Stage 2 Programme of Study : Sc1 2a, 2b and 2c.

Assessment

At level 3 children are expected to measure quantities and to look for patterns in their measurements.

At level 4 children are expected to select suitable equipment and to make a series of measurements. They should use bar charts and point out trends in their data.

At level 5 they should select their instruments and make a series of measurements with appropriate precision.

Investigations with thermometers

Investigations differ from the experiments suggested in these notes since children need to control the planning, carrying out and interpretation of the work. This does not mean that the teacher does not have any role to play, but it does suggest that the children will be making many of the decisions normally made by the teacher. In general, children should do a full investigation such as this about twice a term.

A typical Y1 / Y2 investigation using thermometers

Ask the children which they think is the warmest classroom in the school. How could they find out?

A typical Y3 / Y4 investigation using thermometers

Ask the children to investigate which material would make the best glove to keep their hands warm.

A typical Y5 / Y6 investigation using thermometers

Ask the children if they could find a pattern in the maximum and minimum temperatures measured in different places in the room over a 24 hour period.

Brannan stirring thermometer

Introduction

The Brannan stirring thermometers included in this kit are spirit filled and have a specially moulded glass non-roll device to help prevent breakage within the classroom.

Remind the children to read the thermometer before taking it out of the liquid. Also remind them not to hold the thermometer near the bulb when measuring air temperature.

Please note all the stirring thermometers within this kit measure temperatures between -10° to 110°C . They are ideal for measuring high temperatures and are very accurate indeed. They are suited to the increased need for accuracy at the top of key stage 2.

Assessment

Check that children can read the thermometer scale. This can be done by asking them to read an actual temperature or by giving the children Workcard 1 which tests their ability to read a stirring thermometer scale.

Using the Brannan stirring thermometers

- Set up three containers with water at different temperatures. Show the children the correct way to measure the temperature by having their eye level with the top of the spirit column.
- Set up a can containing hot water. Take the temperature every 3 minutes as the water cools. Draw the resulting graph. *Safety Precaution - This should be directly supervised by an adult as it involves hot water.*
- Set up three or four identical cans with different coverings. Add the same amount of water to each can. The initial water temperature of each can should be the same. Measure the temperature every three minutes as each can cools. Compare the insulation properties of each material. This is an ideal experiment to talk about a “fair test” and controlling variables.
- Start each experiment with water at about 70°C .
Safety Precaution - This should be directly supervised by an adult as it involves hot water.
- Measure the rate at which 100 cm^3 of water cools.
- Measure the rate at which 500 cm^3 of water cools.
- Measure the rate at which 1000 cm^3 of water cools.
- The children will see that the bigger the container the slower the cooling. This partly explains why only large animals like Polar Bears can live in the intense cold of Arctic regions.
- Find the temperature of melting ice. Put plenty of ice in a container and add a little cold water. Take the temperature of the water - theoretically it should be 0°C but you may find that it registers a little above this. (Without the water you will measure the temperature of the air between the ice cubes which is likely to be well above freezing.)
- Plot the temperature of the ice as it melts and warms up over a three hour period. (You will need to take the temperature every ten minutes).
- To obtain temperatures below 0°C you will need to add several teaspoons of salt to the ice. This will result in temperatures as low as -12°C . The physics of this is difficult, but the effect is unexpected and fascinating.



Workcard 1: Brannan stirring thermometer

Write the temperature shown by each of these thermometers



(1) _____ °C



(2) _____ °C



(3) _____ °C



(4) _____ °C

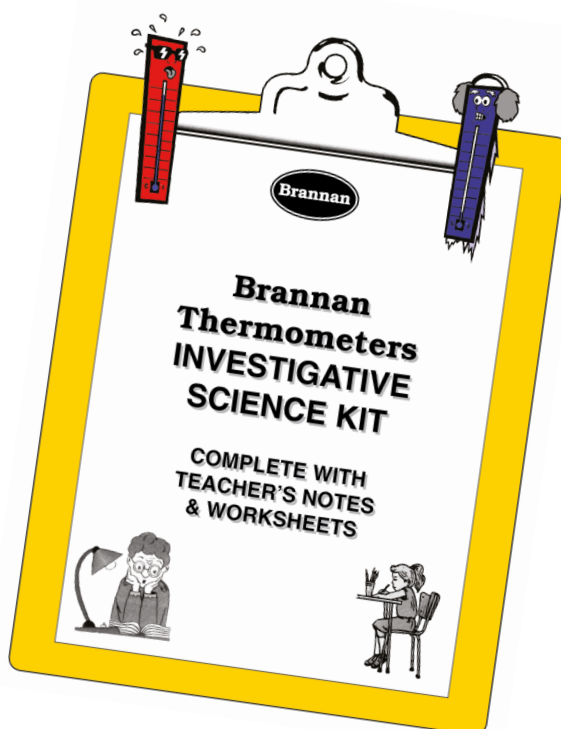


(5) _____ °C

Name: Class: Date:

Also available:

To help you get the most out of the National Curriculum, Brannan Thermometers have worked with leading educational consultants to bring you the Investigative Science Kit...



This kit contains a wide range of different types of thermometers suitable for whole class use. They are accompanied by relevant teacher's notes and a classroom worksheet.

Contact your dealer for details.

Measurement for life.

