Frozen fingers

Key objective:
Solve a problem by extracting and interpreting information in charts and graphs.

What you need
- Whiteboards and marker pens; copies of activity sheet 'Frozen fingers' (p89); rulers; coloured pencils

Further support
Some children may need reminding of the mental strategies that will help them to add up a set of numbers quickly. Encourage these children to make jottings – for example, adding the tens, then the units, and then adding both together. Children who are still unsure about interpreting graphs will need to be reminded how to find the intermediate values on the scales, for example, to find 2½ hours they will need to look halfway between the 2-hour mark and the 3-hour mark.

Oral and mental starter

Revise the mathematical language associated with data handling; 'mode', 'range', 'median' and 'mean'. Ask the children if they can remember the meanings of the terms and ask for volunteers to explain them. Correct any mistakes in their explanations.

Write the following set of data on the board:
Corey's spelling test results

11	16	15	11	9	11	16	15	14
20	20	20	20	20	20	20	20	20

Ask the children to find the mode (11), range (7), median (14) and mean (13) of this set of data, showing their workings on whiteboards. Check their answers.

Main assessment activity

Provide each child with a copy of the activity sheet 'Frozen fingers'. Explain that the graph shows the results of a science experiment conducted by a group of children. Read through the context information at the top of the activity sheet. Explain that their task is to complete the unfinished graph. Study the graph together. Ask:
- *What type of graph is it?* (Line graph)
- *What are the intervals of measurements on the y axis?* (1 square = 100ml)

Point out that the graph is not titled and the axes are not labelled and discuss with the children what these titles/labels could be.

Ask the children to complete the activity sheet.

Plenary

Once the graphs have been completed, ask the children the following questions:
- *How much water had melted from each hand after 2½ hours? 5½ hours?*
- *How much water would be in the warm room tray after 7 hours?* Ensure that the children realise that there cannot be any more than 1000ml, as only 1 litre of water was in the glove to start.
- *How long might it take for the ice in the cold cupboard to melt completely? Give a reason for your opinion using the existing measurements.*

Name Date

Frozen fingers

A group of children have been conducting a science experiment to see how quickly ice melts. They fill two large rubber gloves with 1 litre of water in each and freeze them overnight. The next day, the gloves are peeled off the ice and the frozen hands placed on trays. One is put in a warm room and the other in a cold cupboard. The children check the hands every hour and measure the amount of melted water in the tray.

Here are their results:

	1 hour	2 hours	3 hours	4 hours	5 hours	6 hours	7 hours
Cold cupboard	25ml	75ml	150ml	250ml	375ml	550ml	
Warm room	75ml	200ml	375ml	500ml	750ml	900ml	

1. The children have to go home before the 7 hour reading. Write in each box what you think it could be.

2. The next day, the children plot their results on a graph. Unfortunately, they do not have time to enter the warm room information. Help them by completing the graph for them.