

Quick jelly

- Your task

Your neighbour is in a hurry to go to the shops but has to make a jelly. She asks you what is the quickest way to dissolve the jelly cubes in water.

PLAN YOUR WORK. Try to make your experiment a fair test of your ideas.

- The experiment must be repeatable.

Based on a suggestion by J.J. Palmer.

Time

Total time = 140 minutes. But this time can be split into 2 lessons.

Group size

2–5 depending on ability and class size.

Equipment & materials

Eye protection may be needed depending on the methods chosen. It is always a sensible idea when liquids are being heated.

General

You could make use of some of the items below if students were able to work in the Home Economics department (students could put equipment lists in for the technician):-

Heat source (Bunsen burner/hot tap/electric kettle/cooker/microwave). Containers (beaker/mixing bowl/pyrex dish/saucepan). Measurers (measuring cylinder/measuring jug). Stirrers (glass stirring rod/wooden spoon/fork). To make jelly pieces smaller (knife/scissors/cheese grater/potato masher/whisk/food processor). Thermometers. Stop clocks. Jelly moulds.

Per group

Jelly or a vegetarian alternative – 3 cubes. Water.

Health & Safety notes

This is an open-ended problem solving activity, so the guidance given here is necessarily incomplete. Teachers need to be particularly vigilant, and a higher degree of supervision is needed than in activities which have more closed outcomes. Students must be encouraged to take a responsible attitude towards safety, both their own and that of others. In planning an activity students should always include safety as a factor to be considered. Plans should be checked by the teacher before implementing them.

You must always comply with your employer's procedures and in some cases may decide that a particular activity is inappropriate in your situation. Further information on Health and Safety should be obtained from reputable sources such as CLEAPSS [<http://science.cleapss.org.uk>] in England, Wales and Northern Ireland and, in Scotland, SSERC [<https://www.sserc.org.uk>].

Be aware of the safety aspects of eating jelly in laboratory.

It is the responsibility of the teacher to carry out a suitable risk assessment.

Curriculum links

Rates of reaction. Dissolving.

Possible approaches

This problem is open-ended. Many scientific points to consider, eg temperature of solution, particle size of jelly, rate of stirring. If this experiment could be done in the Home Economics department students could actually eat their results (experiment has cross-curricular possibilities). Suggested write-up: student to write a note to neighbour telling her how to make a "quick jelly".

Extension work

- Ask students to "make the jelly solidify quickly".
- "How quickly can you get the jelly to dissolve without raising the temperature of the solution quickly"? (Try and explain why this worked.)
- FURTHER IDEAS:- Draw a plan of a machine that would make a jelly for a large party.

Credits

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Health & safety checked May 2018

Page last updated October 2018