

What makes the candle go out?

Time

1 h.

Curriculum links

Control of variables. Hypothesis testing.

Group size

2– 4.

Materials and equipment

Materials per group

- candles of various sizes and of different types.
- matches.

Equipment per group

- heat resistant mats
- gas jars
- safety glasses.

Safety

Eye protection may be worn.

Keep away from flammable/combustible materials.

Risk assessment

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

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/>].

Commentary

This activity is designed to encourage students to take a logical approach in solving a problem with many variables. The brief is to find out what happens when two or more candles are put in a gas jar. After initial investigation, the student should realise that the height of the candle, the type of wick and the type of wax may all influence the results. Therefore a proper conclusion can only be drawn if all the variables, except the one under test, are kept constant. Remember to remind students to check for air leaks and mechanical flaws in the apparatus.

Results show that if two or more similar candles of different heights are used, the tallest one goes out first. If two candles of the same height but different wick thicknesses are used the candle with the thinnest wick goes out first. The type of candle wax is also a factor.

The scientific explanation for these results is unknown!

Extension

This activity has been extended to include three candles of different heights. It was difficult to obtain consistent results, but we don't understand why!

Credits

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Health & safety checked May 2018

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