

Density

Racing candles

Convection in gases

You will need....

- ✓ 3 candles of different heights
- ✓ A large empty glass jar with an opening large enough to accommodate the three candles.

Background

When candles burn, oxygen is used up and carbon dioxide is produced as well as water vapour. The less dense products (hot carbon dioxide and water vapour) rise to the top of the glass jar.

Follow these steps:

1. Place the three candles near each other.
2. Light the candles, starting with the tallest one to avoid being burned.
3. Place a glass jar over the candles and observe.

So what happened?

The candle flames go out in order. The tallest goes out first, then the middle one and finally the smallest.

Since carbon dioxide does not support combustion the candles are extinguished from the top down. The water vapour that is formed condenses on the cold surfaces.

What next?

1. Discuss the use of carbon dioxide in fire extinguishers.
2. How can we show that the condensed liquid is water?
3. Discuss why people are advised to stay low in the event of fire.

Safety:

! Always take care with naked flames.

