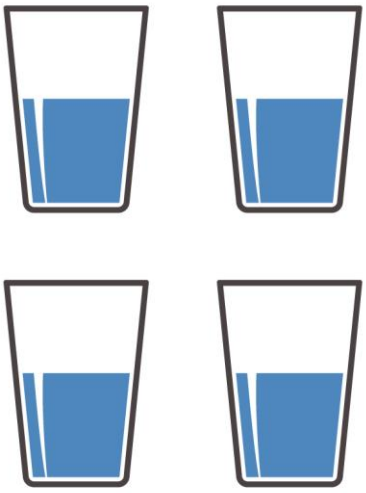
# Which freezes quicker, hot or cold water?

The answer to this may appear obvious but it is not as clear cut as GCSE physics tells you.

## Method

1. Read about the background to this experiment at https://en.wikipedia.org/wiki/Mpemba_effect
2. Now try to do this yourself. Think carefully about making this a fair test. Scientific method says that you must only change one thing (called independent variable) in order to observe some other property changing (dependant variable) but the hard part is to keep everything else the same (control variables) for what is often called, a fair test. With my freezer I needed to look at the water every 15 minutes and so I set myself a timer to remind me on my phone and I photographed them when I saw any changes (and my phone conveniently recorded the time).
3. **Safety: don't use water that is too hot to drink (water from the hot tap is best) or put it too close to frozen food (or it will defrost it)!**



4. Have similar containers (eg cups) of water at different starting temperatures (independent variable = starting temperature) and put in the freezer (not too close to anything else, being careful not to defrost food, especially meat or fish). You need to keep checking on this. If you have a thermometer you can record the temperature of each against time but if not, just observed every so often to and not any evidence of freezing (you could photo them).
5. The more times you do this the better, maybe changing the control variables (eg cup size) a little between tests!

## Full professional scientist's explanations can be found at:

https://physicsworld.com/a/when-cold-warms-faster-than-hot/