

# Investigating Conduction

## Resources:

- Glass beaker
- Cold butter
- Beads
- Test materials (e.g. wooden, metal and plastic spoons or knitting needles)
- Hot water **ASK A GROWN UP TO HELP WITH THIS!**

## Activity:

1. Cut the butter into small pieces of equal size and use these to stick a small bead to one end of each material. **Note:** Try to ensure they are an equal distance from the opposite end of the spoon/needle.
2. Stand the items upright in a beaker, with the beads and butter are at the top end. Here is an example.



3. Carefully, **pour hot water into the beaker**, covering the bottom ends of the spoons or needles to a depth of around 6cm.
4. Watch carefully and note the order in which the beads fall off the materials. **Note:** This could be timed to provide data for accurate comparison.

### Explaining the Science

Heat energy from the water is conducted through the materials at different rates. When the energy reaches the end of the material it melts the butter, causing the bead to fall. The best conductors carry the heat energy the quickest. Metals are good conductors of heat because in addition to the vibrations of the atoms, they contain free electrons that can move from atom to atom. Non-metals do not contain free atoms, so they transfer heat solely by vibrations. They are, therefore, better thermal insulators.