

Technicians in trouble! Which solutions are which?

Education in Chemistry

May 2021

[rsc.li/3ckcZHX](https://www.rsc.li/3ckcZHX)

Some solutions have been mixed up – help the technicians work out which is which

The problem

The science technicians have a problem. A class has returned a set of solutions but the labels have been peeled off. Unfortunately, all the solutions are clear and colourless and another class needs them soon. Can you help the technicians work out which solution is which?

There are five solutions in total. Two of the solutions are hydrochloric acid, but one more dilute than the other. The remaining three solutions are sodium hydroxide solution, distilled water and phenolphthalein.

There aren't any test tubes because they're all being washed, but you do have access to some dropper bottles and a couple of dropping tiles (dimple trays).

Your task

Plan and carry out an investigation into how you can work out which solution is which.

Health and safety

Wear eye protection.

Sodium hydroxide solution is an irritant and phenolphthalein is flammable. Because you don't know which solution is which, assume all of them are irritants and flammable. Work in a well-ventilated laboratory and ensure there are no naked flames.