

Microscale universal indicator

Integrated instructions



Integrated instructions

Integrated instructions use clear numbering, arrows and simple pictograms (for example, an eye showing when to make observations). They were developed using cognitive load theory and remove unnecessary information. Integrated instructions reduce extraneous load on learners, increasing the capacity of their working memory to think about what they are doing and why.

Read more at rsc.li/47bIKi5.

Full technician notes, including safety, preparation and disposal, are available from rsc.li/4i8Muq6.



	Strong acid (pH 1)	Weak acid (pH 4)	Neutral (pH 7)	Weak alkali (pH 9)	Strong alkali (pH 13)
Bromothymol blue					
Methyl orange					
Phenolphthalein					
Universal indicator					

6 2 drops bromothymol blue

7 2 drops methyl orange

8 2 drops phenolphthalein

9 2 drops universal indicator

1 2 drops strong acid

2 2 drops weak acid

4 2 drops weak alkali

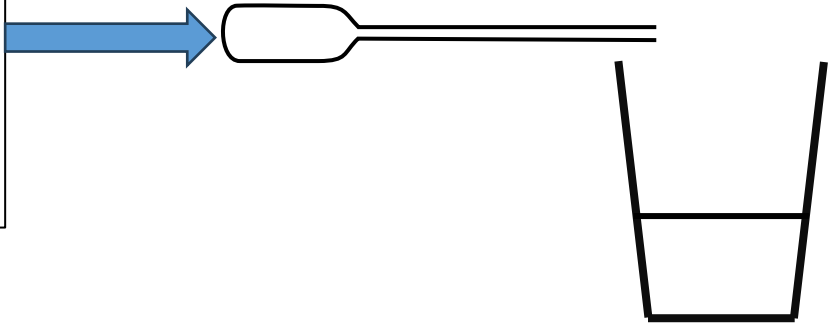
3 2 drops neutral

5 2 drops strong alkali





- 1** 10 drops bromothymol blue
 5 drops methyl orange
 5 drops phenolphthalein



	Strong acid (pH 1)	Weak acid (pH 4)	Neutral (pH 7)	Weak alkali (pH 9)	Strong alkali (pH 13)
Mixed indicator					
Universal indicator					

- 7** 2 drops mixed indicator

- 8** 2 drops universal indicator

- 2** 2 drops strong acid

- 3** 2 drops weak acid

- 5** 2 drops weak alkali

- 4** 2 drops neutral

- 6** 2 drops strong alkali

