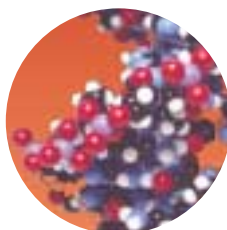


TeachAssist Resource Worksheets

Series 6 of 16



"pH change when acid added to alkali"



TeachAssist Resources

TeachAssist resources are written with the practical needs of science teachers in mind. Each resource covers a practical activity that is integral to the QCA schemes of work to provide quick and easy preparation for practical classes.

Please feel free to photocopy the sheets to suit your needs.

Each TeachAssist resource contains:


- Student worksheet with practical instructions and activities.
- Technicians' equipment list for a class of 30 students.
- Reference to allow trouble-free ordering of materials and resources.

A summary table links each resource to the National Curriculum programme of study which allows TeachAssist practical activities to be quickly included into lesson plans and schemes of work.

If you require other booklets in the series, please telephone the Griffin Education Sales team or send your request to the following address:-

Griffin Education
Bishop Meadow Road
Loughborough
Leicestershire LE11 5RG

STUDENT WORKSHEET

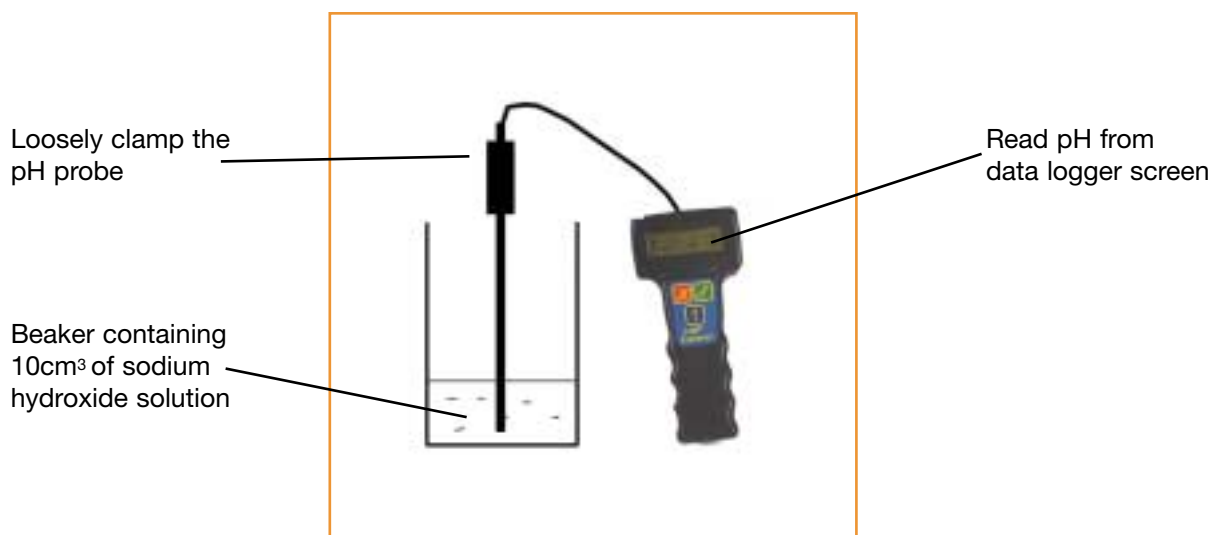


Important information:

Follow all the safety instructions that your teacher gives you.
 Wear safety glasses.
 Wash off with water any solutions that get onto your skin.
 Inform the teacher immediately of any spillage.

What happens when acids and alkalis are mixed.

The pH of a solution measures whether it is acid, alkali or neutral. You will measure the change in pH when an acid is added to an alkali.



- Set up the equipment as it is shown in the diagram.
- Use the data logger to measure the pH of the sodium hydroxide solution.
- Accurately measure 1cm³ of hydrochloric acid using the plastic pipette and add it to the sodium hydroxide in the beaker.
- Mix the solution in the beaker.
- From the data logger, note the pH of the solution.
- Repeat this until 20cm³ of the acid has been added to the beaker.
- Draw a table like the one below for your results.

cm³ of acid added	No acid	1	2	3	4			18	19	20
pH of solution										
Acid, alkali or neutral?										

Draw a graph of your results. You could use a spreadsheet on a computer to do this.

- Is sodium hydroxide an acid or alkali?
- What happens to the pH of the solution when you add the acid? Does it go up or down?
- Look at your graph. Find the amount of acid you would need to add to get a solution that is neutral.
- What happens as you add more and more acid to the solution?

TECHNICIAN'S EQUIPMENT LIST

QCA Unit 7E: Acids and alkalis

Date:	Room	Time/Period:
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Equipment Class of 30 pupils, working in groups of three.	Quantity	Check	Out	Back
LogIT Explorer	10			
LogIT Explorer pH probe	10			
10ml of 0.4M NaOH in 50ml beaker	10			
1ml plastic pipette	10			
25ml of 0.4M HCl in 50ml beaker	10			
Retort stand and clamp	10			

Important information:



- The activity contains reagents and procedures that can be hazardous.
- It should not be performed unless an appropriate risk assessment has been made.
- The solutions in use are classed as irritants and corrosive. They should be handled with the appropriate safety precautions.
- Students should wear safety glasses at all times.
- Check that there is a sufficient depth of solution for the pH probe to function. If necessary, add distilled water.

ORDER REQUISITION

Equipment	Griffin Catalogue No.	Page	Unit cost (£)	No. Required	Cost (£)
LogIT Explorer (starter pack, Windows™, USB)	CRD-600-030N	324	179.99		
LogIT Explorer pH probe	CRD-650-020E	325	69.99		
Hydrochloric acid (2M, 2,5litres)	J/4250/17	159	7.61		
Sodium hydroxide (pellets, 500g)	S/4880/53	200	3.47		
Beaker borosilicate glass, 50ml (pack of 10)	FB33109	362	10.10		
Plastic pipette 1ml graduated (pack of 500)	PMK-400-021U	397	15.95		
Safety glasses	FB55125	492	2.25		
Data Logging activity masters (7-16 years old)	CRD-130-608G	338	14.95		
Total cost					
VAT					
Order total					

Complete the order form above and place your order with Griffin Education in your usual way. Prices are correct at time of print, please contact the Griffin Sales Office or check on the Griffin Education website for the latest prices.

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By fax: 01509 231893

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Loughborough
Leics. LE11 5RG

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On-line: www.griffineducation.co.uk

SUMMARY TABLE

QCA unit	KS3 NC programme	Y7 TeachAssist	Activity	Relevant experience from Key stage 2
7A: Cells	Sc1.2f Sc2.1a	1	How to use a microscope and prepare an onion epidermis slide	Use of hand lenses and basic microscopes. Plants and animals, including internal body organs and plant structures
7C: Environments and feeding relationships	Sc1.2g	2	Using a data logger to monitor environmental conditions	Some use of data loggers How organisms are suited to their environment
	Sc1.1a,c,d Sc1.2h,k,o	3	Wood lice in choice chambers	Asking questions and designing a fair test How organisms are suited to their environment
	Sc2.5b,e	4	Organisms and food chains in leaf litter	How organisms are suited to their environment Food chains as a feeding relationship
7E: Acids and alkalis	Sc3.3d	5	Finding the pH using universal indicator solution	Little or no previous coverage of pH
	Sc1.2g Sc3.3e	6	Using a data logger to monitor changes in pH when an acid is added to an alkali	Some use of data loggers Identification of patterns and trends
	Sc3.3e	7	Investigating the neutralisation of acids with antacid tablets	Use of tables and line graphs to represent data Mixing materials can lead to a change
7F: Simple chemical reactions	Sc3.3a	8	Reactions of metals with acids	Describing how materials change when mixed or heated and how irreversible changes produce new materials
7H: Solutions	Sc1.2a Sc3.1h	9	Purifying salt from rock salt	Use of dissolving, filtering and evaporation to separate mixtures
	Sc3.1h	10	Simple distillation	Knowledge of evaporation as a separation technique
	Sc3.1h	11	Paper chromatography of ink	Separation of colours in food colourings such as sugar-coated sweets
7I: Energy resources	Sc1.2f	12	Using the Bunsen burner	Possible use of methylated spirit burners or candle-burners
	Sc4.1c Sc4.5a,e	13	Demonstrating solar energy: solar cells and absorption of heat energy by different surfaces	Little or no previous coverage of energy
	Sc4.5a	14	Finding the energy content of foods	Little or no previous coverage of energy
7J: Electrical circuits	Sc4.1a	15	Current in series and parallel circuits	Construction of series circuits from circuit diagrams
7K: Forces and their effects	Sc1.2f,g,j,k Sc4.2b	16	Extension of springs and elastic bands	Push and pull in springs Testing elastic band catapults. Some may have extended bands with masses Measurement of forces and weight