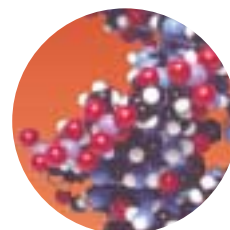


Teach Assist Resource Worksheets

Series 10 of 16



"Simple distillation"



Teach Assist 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:

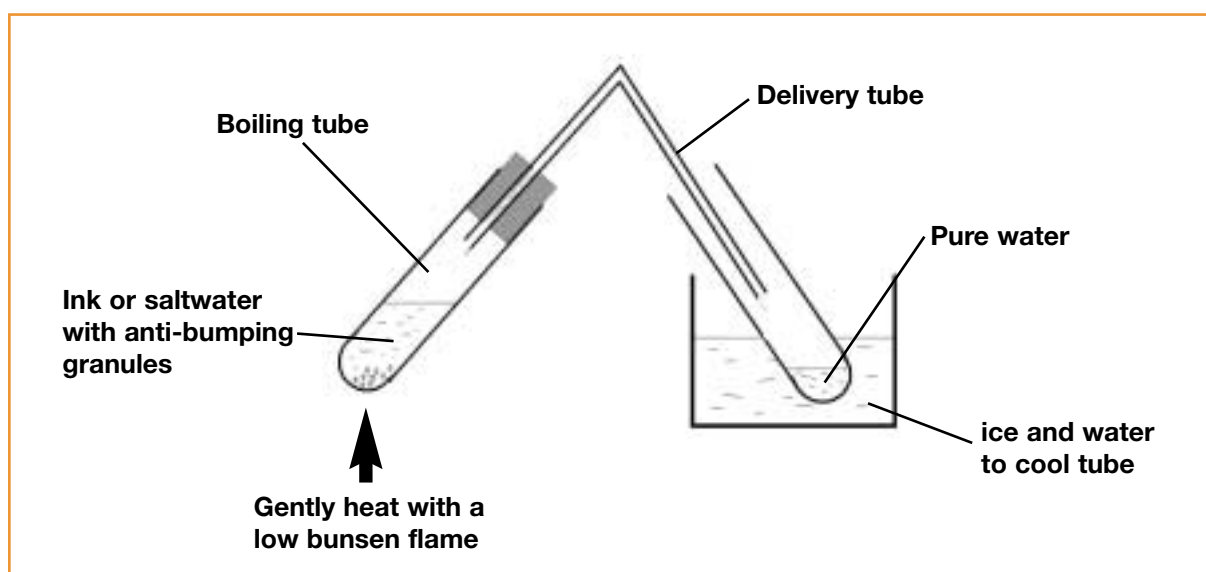
Follow all the safety instructions that your teacher gives you.
Wet the bung and push it gently into the boiling tube.
Do not push or pull on the delivery tube.
Heat the boiling tube with a low, blue flame.
Leave all equipment to cool at the end of the experiment.
Wear safety glasses.

Distillation

Distillation can be used to purify a solution.

When the solution is heated, the water evaporates off and any dissolved solids are left behind. Water is given off as steam. This can be cooled to condense the pure water.

You will get pure water from saltwater or an ink solution.



1. Pour about a 3cm depth of saltwater or ink into a boiling tube.
2. Add anti-bumping granules.
3. Set up the equipment as shown in the diagram. Take care when pushing the bung into the boiling tube. Never push or pull on the glass delivery tube.
4. Light a bunsen burner. Put it onto a blue flame. Adjust the gas tap to get a low flame.
5. Use the low flame to heat the boiling tube.
6. Observe how the steam is produced and condenses in the cold test tube.
7. Stop heating the solution when about 1cm of solution is left in the boiling tube.
8. Leave the bunsen burner and other equipment to cool.

TECHNICIANS' EQUIPMENT LIST

QCA Unit 7H: Solutions

Date:	Room	Time/Period:
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Equipment Class of 30 pupils, working in pairs.	Quantity	Check	Out	Back
Saltwater labelled 'seawater' (100ml in beaker)	10			
Boiling tubes	15			
Bung to fit boiling tube with glass delivery tubes	15			
Retort stand and clamp	15			
Anti-bumping granules				
Test-tubes	15			
250ml beakers	15			
Ice/water mixture	2 dm ³			
Wooden splints	15			
Bunsen burners	15			
Heat-resistant mat	15			
Safety glasses	30			

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.
- Safe use of glassware/ bungs/ clamps should be demonstrated to ensure students understand the hazards of forcing bungs into glassware and of over tightening clamps.
- Demonstrate how to adjust bunsen for slow, gentle heating.
- Dilute solution of ink will demonstrate separation of colourless water from coloured solution.
- Stress need to stop heating before the boiling tube has gone dry.
- If students have no condensate in collecting tube, main defect is a leak of steam from around the bung in boiling tube.

ORDER REQUISITION

Equipment	Griffin Catalogue No.	Page	Unit cost (£)	No.	Cost (£)
250ml beakers, borosilicate glass (pack of 10)	FB33112	362	11.70		
Boiling tubes, medium wall w/rim, (pack of 100)	TES-630-189U	529	59.70		
Test tubes, medium wall w/rim (pack of 100)	TES-630-149J	529	32.75		
Wooden splints (pack of approx. 1,000)	GFD-452-G	424	2.95		
Bunsen burner	BYB-400-026V	375	6.65		
Safety glasses	FB55125	492	2.25		
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 post: Griffin Education
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By fax: 01509 231893
By email: griffin@fisher.co.uk
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