

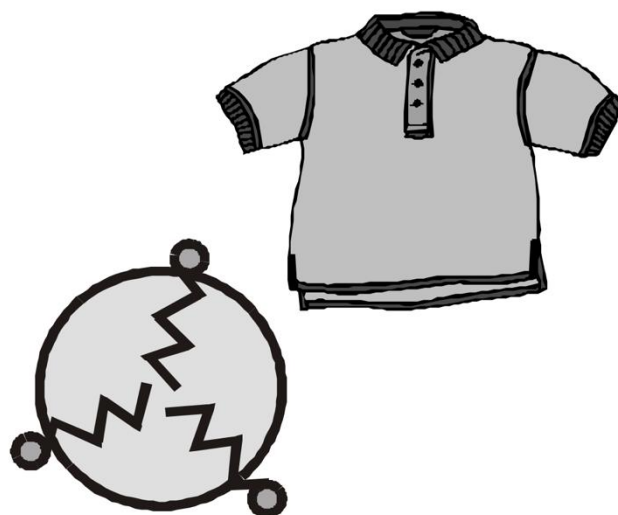


# JABchem



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## Intermediate 1 Int 1 Chemistry



# Section 6

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# Personal Needs

## Intermediate 1 Chemistry Unit 2: Everyday Chemistry

### Section 6: Personal Needs

LO	Lesson	Text Book	Learning Outcome	Int1 Only
1	6.1	p95	When cleaning hair, skin and clothes the main problem is oil and grease; this is because oil and grease are insoluble in water alone .	
2	6.2	p96	Cleaning chemicals are required to break up the oil and grease into tiny droplets which can then mix with water; this happens because cleaning chemicals are soluble in both water and oil and grease.	
3	6.2	p97	Examples of manufactured products which contain cleaning chemicals include soaps, detergents, shampoos, washing-up liquids and powders.	
4	6.3	p97	Some soaps form a scum with hard water.	
5	6.3	p97	Soapless detergents are used to form a lather with hard water.	
6	6.3	p98	<b>Dry-cleaning uses special solvents which are particularly good at dissolving oil and grease stains.</b>	Int1
7	6.5	p100	Clothing fabrics are made from thin strands called fibres.	
8	6.4	p100	Natural fibres come from plants and animals.	
9	6.4	p101	Synthetic fibres are made by the chemical industry.	
10	6.4	p100- p101	Examples of natural fibres include silk, wool and cotton; examples of synthetic fibres include polyesters e.g. terylene and nylon.	
11	6.5	p102	Synthetic fibres can be used to make fabrics with specific properties.	
12	6.5	p103	<b>Fibres are made up of long chain molecules called polymers.</b>	Int1
13	6.6	p106	Dyes are coloured compounds which are used to give bright colours to clothing.	
14	6.7	p105	<b>Chemists have developed ways of treating fabrics to improve their properties.</b>	Int1
15	6.5	p104	<b>Some fibres form strong bonds with water molecules; these fibres are hard to drip-dry but they do not feel 'sweaty' to wear because they soak- up perspiration.</b>	Int1

## 6.1

## Oil and Water

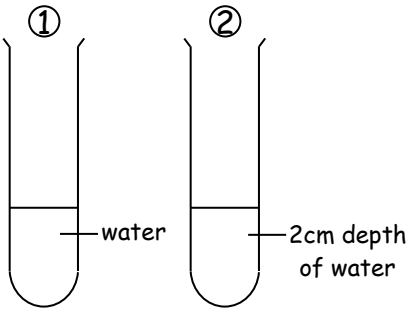
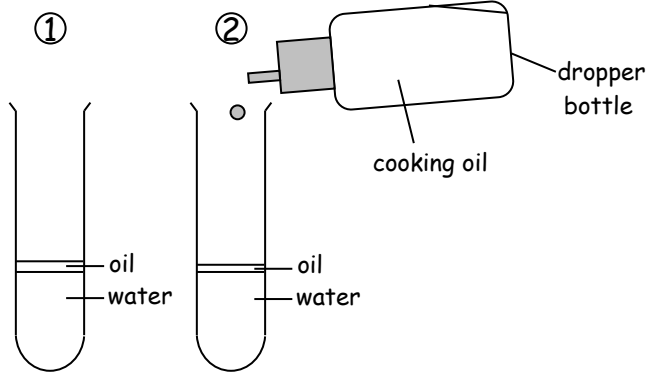
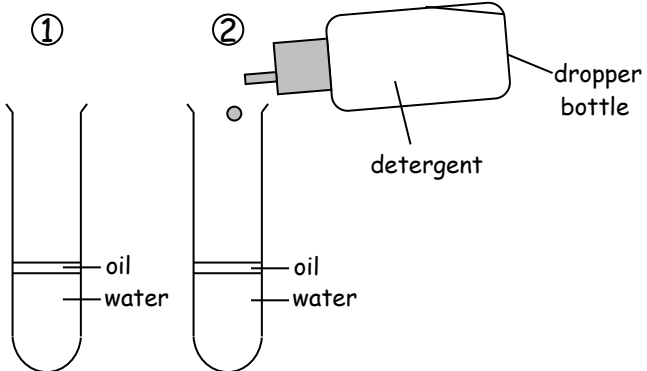
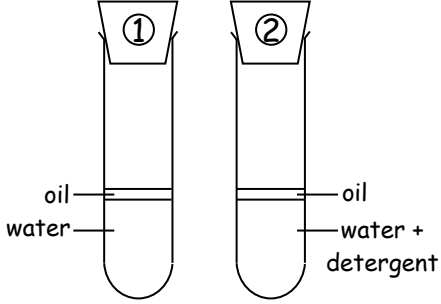
a) **Copy** the following passage into your notes.

Oil and grease are very hard to get off your hands, even when you rinse your hands under the tap.

This is because oil and water do not mix with each other.

Oil and grease are insoluble in water.

b) **Carry out** the following experiment.

<p>1</p>  <p>Fill 2 test tubes with water to a depth of 2cm.</p>	<p>2</p>  <p>Add 5 drops of oil to both test tubes from a dropper bottle.</p>
<p>3</p>  <p>Add 5 drops of detergent to test tube 2 <u>only</u></p>	<p>4</p>  <p>Stopper each test tube and shake each test tube 20 times.</p>
<p>5 Sit both test tubes in a test tube rack and watch the test tubes settle for 2 minutes.</p>	

c) **Answer** the following questions in your jotter.

1. What happens to the oil and water mixture in test tube 1 once it settles after shaking?
2. What happens to the oil/water/detergent mixture in test tube 2 once it settles after shaking?

a) **Copy** the following passage into your jotter.

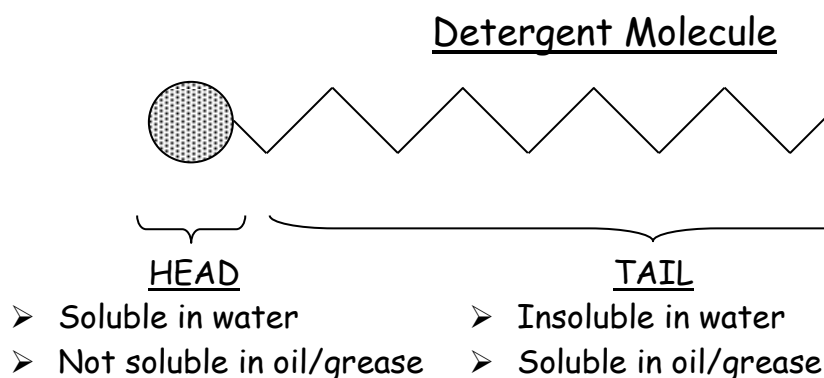
Detergents and soaps can help remove oil and grease from clothes and other places.

This is because cleaning chemicals are soluble in both water and oil/grease.

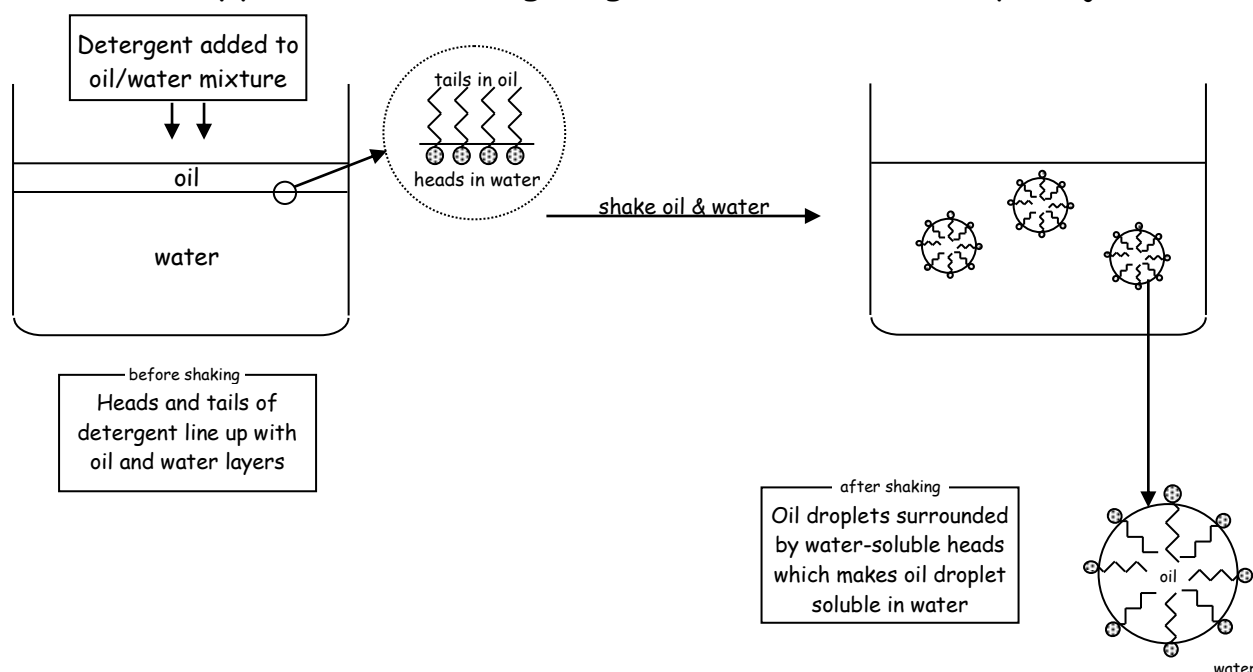
There are many different types of cleaning chemical:

- Soap
- Detergent
- Washing up liquid
- washing powder
- shampoo

b) **Draw** the following diagram in your jotter.



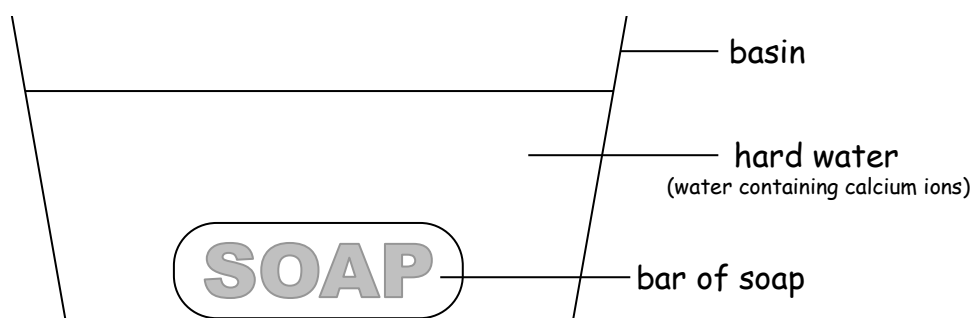
c) **Collect** a copy of the following diagram and **stick** it into your jotter.



a) **Copy** the following passage into your jotter.

Some parts of the UK, mainly in the south, have tap water which is described as *hard water*. What is the difference between soft water and hard water?

b) **Carry out** the following experiment.



1. Wet hands and soap and rub together to create a soapy lather.
2. Rinse hands in the hard water in the basin.
3. Watch the water carefully as the soap reacts with the hard water.

c) **Copy** and **complete** the following passage using the word bank.

1. Soap forms a ..... with hard water.

2. .... detergent is used in hard water areas to prevent this problem and form a lather.

wordbank	
scum	soapless

d) **Copy** the following passage into your jotter.

Dry cleaning is used for cleaning certain clothes which do not like *wet* washing with detergent. Dry cleaning uses *special solvents* which are particularly good at dissolving oil/grease.

a) **Copy** the following passage into your jotter.

We wear clothes all the time but we rarely think about what they are made of. There are 2 main types of material used in clothing.

i. natural materials

- natural materials come from plants and animals

ii. synthetic materials

- synthetic materials are made by the chemical industry (man-made)

b) **Copy** the following table into your jotter and use the word bank to **complete** your table.

wordbank	kevlar	silk	terylene
nylon	wool	polyester	cotton

Natural Materials	Synthetic Materials

a) **Copy** the following passage into your jotter.

Clothing fabrics are made of thin strands of material called fibres.

Synthetic fibres can be used to make fabrics with specific properties:

e.g.        nylon jackets are waterproof.

polyester swimming costumes dry quickly.

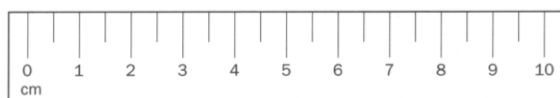
kevlar is used for protection in bullet-proof vests.

Synthetic fibres are made of long-chain molecules called polymers.

b) **Design** a fair test experiment to compare the water-proofing properties of cotton and nylon.

cotton material

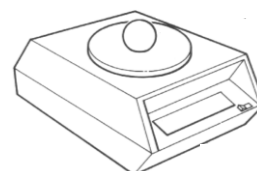
nylon material



ruler



stop watch



balance



measuring cylinder

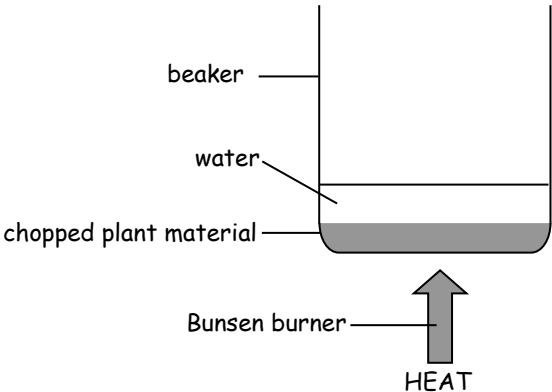
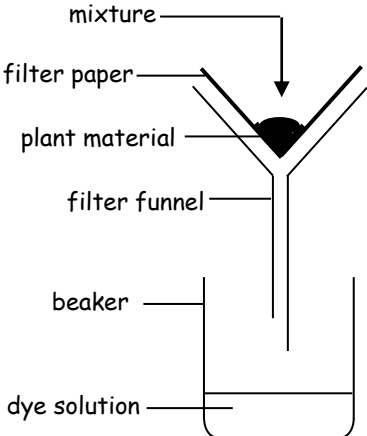
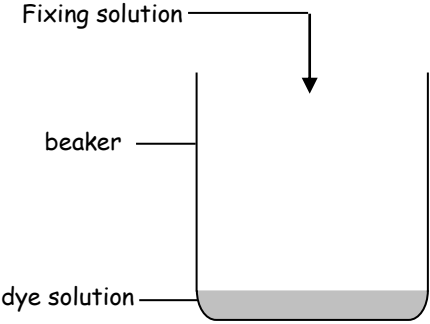
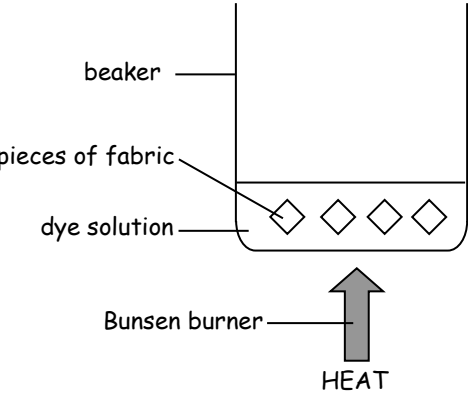
any other science equipment you need

a) **Copy** the following passage into your jotter.

Clothes would be very boring if they were all the same colour.

Dyes are used to colour fabrics to give us more choice in the colours we wear.

b) **Carry out** the following experiment.

1	Chop/grind/mash the plant material into small pieces.	
2	Boil water for 30 minutes 	3 Filter to remove the remaining plant material from the dye solution 
4	Add fixing solution to dye solution 	5 Add fabric to beaker and boil the solution gently for 10 minutes 
6	Rinse the pieces of fabric thoroughly with water	



## 6.7

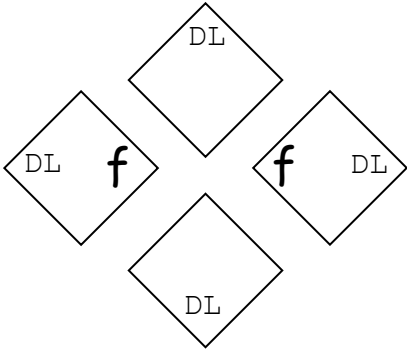
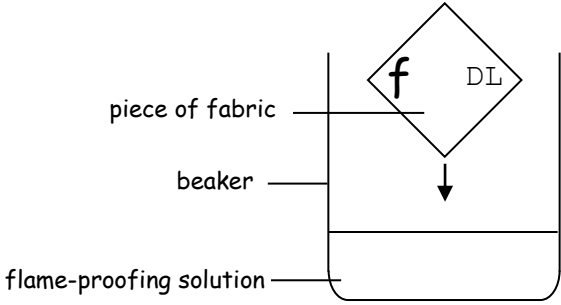
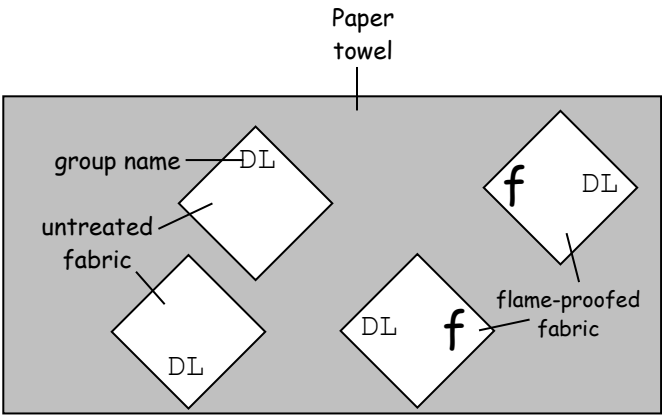
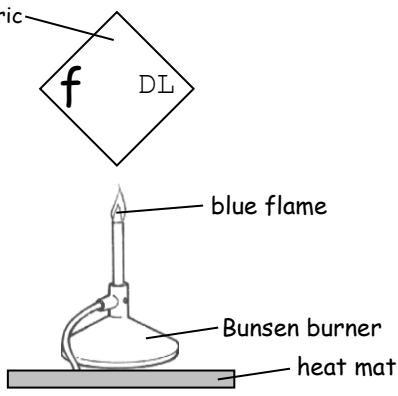
## Flame-Proofing Materials

a) **Copy** the following passage into your jotter.

Fabrics can be improved by treating them with chemicals:

- Materials can be made water-proof to improve its properties
- Dyes will change the colour of a fabric
- Flame proofing chemicals can be used to fire resistant properties of a fabric

b) **Carry out** the following experiment.

<p>1</p>  <p>Cut fabric material into 4 equal sized pieces. Put your groups' initials on each piece for identification.</p>	<p>2</p>  <p>Dip 2 pieces of your material into the flame-proofing solution (use tongs to hold fabric)</p>
<p>3</p>  <p>Leave your pieces of fabric to dry overnight.</p>	<p>4</p>  <p>Time how long each piece of fabric takes to catch fire</p>
<p>5 Record your results in a table in your jotter.</p>	

# Access 3/Intermediate 1 Revision Questions

## Access 3 Level Revision Questions

1. When oil and grease are added to water, the oil/grease is  
**soluble or insoluble**
2. Which fibre is a natural material?  
**polyester or cotton**
3. What is formed when soap is used in hard water?  
**lather or scum**
4. What type of fibre is wool?  
**natural or synthetic**
5. If a clothing material comes from a plant or animal source, the material is described as:  
**synthetic or natural**
6. To form a lather with hard water, the cleaning chemical used is:  
**a detergent or a soapless detergent**

## Intermediate 1 Level Revision Questions

7. Detergent can break up an oil layer into soluble droplets because
  - A. Water is soluble in detergent but oil is insoluble in detergent
  - B. Oil is soluble in detergent but water is insoluble in detergent
  - C. Neither water or oil are soluble in detergent
  - D. Both water and oil are soluble in detergent
8. a) What is formed when soap is used in hard water?  
  
b) What sort of detergent should be used with hard water?
9. Which fibre is a natural material?  
A. terylene                      B. silk                              C. polyester                      D. nylon
10. Which fibre is a man-made material?  
A. wool                              B. silk                              C. polyester                      D. cotton