**MATERIAL WORLD – SEPARATION**

**Electronic Science LabBook**

***Designed by FHR***

When you are required to put an answer in this booklet, the point at which you start typing is marked with a **red X.** Your typed answer should also appear in **red**. Delete the **X** leaving just your answer.

If you are required to paste or draw something, this is stated in **BLUE.** You can then photograph your work and paste it into this LabBook. In many experiments and investigations, you will be asked to photograph or video the experiment. You should insert these in the appropriate place in this LabBook.

When you are asked to look at a website for information to write an answer don’t just cut and paste the information in. Read the information and write an answer in **YOUR OWN WORDS**. You may wish to discuss your answer with your classmates and teacher first to make sure you understand it correctly.

For additional work (e.g. homework, revision) you will use the following books. You will be told which pages to use.

SciPad Book 1 Pg

Science World 9 textbook (written as SW9)

**Learning outcomes for this topic**

[Understand the nature of pure substances and mixtures](#_Understand_the_nature)

[Task 1](#_Task_1)

[Task 2](#_Task_2)

[Describe solutions](#_Describe_solutions)

[Task 3](#_Task_3)

[Task 4](#_Task_4)

[Task 5](#_Task_5)

[Distinguish between dilute and concentrated solutions](#_Distinguish_between_dilute)

[Task 6](#_Task_6)

[Understand that separation methods depend on differences in properties](#_Understand_that_separation)

[Task 7](#_Task_7)

[Task 8](#_Task_8)

[Task 9](#_Task_9)

[Task 10](#_Task_10)

[Task 11](#_Task_11)

[Task 12](#_Task_12)

## Understand the nature of pure substances and mixtures

SW9 Page 61

SciPad Page 27-28

### Task 1

In your own words, describe what pure substances and Mixtures are:

X

Now, check <http://www.dummies.com/how-to/content/how-to-distinguish-pure-substances-and-mixtures.html> for your answer

### Task 2

Give 3 examples for pure substances: X

3 examples for mixtures: X

Insert 1 photo for a pure substance and a mixture each.

Then label them.

Then Explain why the object in the photo is a pure substance, and why the object in the other photo is a mixture. X

## Describe solutions

SW9 Page 62- 65

SciPad Page 31-32

### Task 3

Write down the definition for: this website might help <http://www.bbc.co.uk/schools/gcsebitesize/science/add_gateway_pre_2011/chemical/detergentsrev3.shtml>

Solute: X

Solvent: X

Solution: X

Suspension: X

Sediments: X

Soluble: X

Insoluble: X

Watch this dissolving video

<http://www.youtube.com/watch?v=xdedxfhcpWo>

### Task 4

Suggest an example of dissolving, and name the solute, solvent and solution in your example.

X

### Task 5

Carry out a dissolving experiment and put pictures in the space below to show the substances before and after dissolving.

## Distinguish between dilute and concentrated solutions

SciPad Page 33-35

Show picture of a concentrated and a dilute solution below (the solutions have to be coloured)

See experiment from Scipad.

### Task 6

Someone bought a bottle of pesticide concentrate for their vegetable garden. The bottle says dilution is 1:500. How will they carry this out? What will be the problem if they dilute it too much and also if they don’t dilute it enough? X

## Understand that separation methods depend on differences in properties

### Task 7

List some physical properties you have learned from the topic on MATTER.

e.g. density, X

How do pebbles different to sand? X

How does sand different to Iron sand? X

How does salt crystals different to flour? X

How does oil different to water? X

How would you separate the above mixtures? X

## Describe the following separation methods – evaporation, filtration, decanting, distillation, magnetic separation, chromatography

SW9 Page 67, 70, 73, 74

SciPad Page 29, 30, 36, 38-41

**Separating Techniques**

<http://www.bbc.co.uk/schools/gcsebitesize/science/add_edexcel/covalent_compounds/seperationrev1.shtml>

<http://www.docbrown.info/page01/ElCpdMix/EleCmdMix2.htm> is a GCSE website that works through techniques plus notes.

Investigate how to best separate the following mixtures. Perform an experiment to demonstrate the technique you chose to separate each mixture. Add photos of each experiment.

### Task 7

Iron filings from salt/sugar/stones.

### Task 8

Salt from sand

### Task 9

Isolate salt from water or isolate the water from salt

### Task 10

Two immiscible liquids

### Task 11

Two miscible liquids

### Task 12

Ink into its constituent colours.