

2 <sup>nd</sup> half of term		Science	Brief Notes
Week	Lesson	Main Learning Intention	Focus ~ Investigation / Activities
7	1	<ul style="list-style-type: none"> <li>That solids consisting of very small pieces behave like liquids in some ways.</li> </ul>	Powders & their properties
7	2	<ul style="list-style-type: none"> <li>The same material can exist as both a liquid and a solid</li> </ul>	Melting & freezing (solid to liquid & vice versa)
8	1 & 2	<ul style="list-style-type: none"> <li>Different solids melt at different temperatures</li> <li>That melting and solidifying or freezing are changes that can be reversed and are the reverse of each other</li> </ul>	Research information Watch PowerPoint Presentation Complete activity sheets
9	1	<ul style="list-style-type: none"> <li>Solids can be mixed &amp; it's often possible to get the original solids back</li> </ul>	Simple investigation ~ separating mixed size solids
9	2	<ul style="list-style-type: none"> <li>That changes occur when some solids are added to water</li> <li>Make careful observations, record &amp; compare</li> </ul>	Investigation ~ mixing powders with water.... What happens?
10	1	<ul style="list-style-type: none"> <li>That when solids do not dissolve or react with water they can be separated by filtering</li> </ul>	<ul style="list-style-type: none"> <li>Investigation to <b>focus on choosing appropriate equipment:</b></li> <li>Dirty River Nile water ~ How can you clean it? (separating un-dissolved solids from water)</li> </ul>
10	2	<ul style="list-style-type: none"> <li>As above..... Begin to appreciate that filtering does not remove dissolved solids</li> </ul>	Building a simple water filter using own choice of materials from a given range (cotton wool, sand, gravel, paper & plastic coke bottle)
11	1 & 2	<ul style="list-style-type: none"> <li>That some solids dissolve in water to form solutions and although the solid cannot be seen it is still present</li> <li>To predict whether salt or sugar can be separated from a solution by filtering &amp; to test the prediction to see if it was correct</li> <li>To decide what apparatus to use</li> <li>Know when it is safe to taste things to test them</li> </ul>	Sugar & Salt solutions Predict: Can they be separated by filtering? Test & see Taste to test prediction. (Use only clean apparatus ~ cups)  Extension Activity: Consider how to separate a dissolved solid from a solution. (Use of evaporation)
12	1 & 2	<ul style="list-style-type: none"> <li>Assessment Week</li> </ul>	Activity/ies to be decided Complete: "I can statements"

<b>Science</b>	
Unit over view:	<b>Unit 4D Solids, liquids and how they can be separated</b> <span style="float: right;">Weeks 6 to 12</span>
<p><b>About the unit:</b>                  In this unit children learn about the differences between solids and liquids and recognise that the same material can exist as both solid and liquid. They identify changes that occur when solids and liquids are mixed and how to separate undissolved solids from a liquid. They learn that melting and dissolving are different and recognise that when a solid dissolves it is still there.</p> <p>Experimental and investigative work focuses on:</p> <ul style="list-style-type: none"> <li>• deciding what apparatus to use</li> <li>• making and recording observations and measurements</li> <li>• drawing conclusions.</li> </ul> <p>Work in this unit also offers opportunities for children to explain everyday observations about processes such as dissolving and filtering using scientific ideas.</p>	
<p><b>Vocabulary:</b> In this unit children will have opportunities to use:</p> <ul style="list-style-type: none"> <li>• terms relating to states of matter and to separation <i>e.g. solid, liquid, melt, freeze, solidify, dissolve, solution, filter, undissolved, dissolved</i></li> <li>• expressions for making suggestions using ‘if’, ‘might’, ‘could’</li> </ul> <p>descriptions using a sequence of ideas.</p>	
<b>Expectations at the end of this unit</b>	
<i>most children will:</i>	describe the differences between solids and liquids; describe melting and dissolving and give everyday examples of each; name some materials that will and some that will not dissolve in water; explain why undissolved solids can be separated from a solution by filtering and show how to do this; recognise that although it is not possible to see a dissolved solid it remains in the solution
<i>some children will not have made so much progress and will:</i>	name some solids and liquids; describe that when ice melts it turns to a liquid, that salt or sugar dissolves in water but sand won't and separate an undissolved solid from a liquid by filtering
<i>some children will have progressed further and will also:</i>	state that some materials <i>e.g. metals</i> have to be heated to a very high temperature before they melt and explain that when solids dissolve they break up so small they pass through the holes in the filter paper

Science



Week 6  
Lesson 1

Timing: 1 ¼ hrs

Resources:

Resources: A range of solids and liquids.  
Where actual object is not possible supplement with pictures.

Unit 4D Solids, liquids and how they can be separated

Learning intention	Teaching strategies	Key questions	Differentiated task / activities	Product outcomes	Plenary	Planning prompts
<p>Children should learn to:</p> <ul style="list-style-type: none"> <li>identify solids &amp; liquids</li> <li>that there are liquids other than water</li> </ul>	<p>Elicit children's existing knowledge of materials:</p> <ul style="list-style-type: none"> <li>presenting them with collection of solids &amp; ask to group them according to their own criteria, recording reasons for their choices →</li> </ul> <p>Revise language for describing properties →</p> <p>Present children with additional items → (include liquids of differing viscosity) and ask them to divide them into two groups only. →</p> <p>Discuss groupings Introduce terms 'solid' &amp; 'liquid'.</p> <p>See key questions on QCA do</p> <p><u>Other adult</u> Support BA: •develop vocabulary •reinforce understanding via guided questioning</p>	<p>Class introduction:</p> <p>How could you describe this material without giving its name?</p> <p>Can you put these into groups?</p> <p>How have you chosen these groups?</p> <p>Can you group these materials in two groups?</p> <p>How have you grouped the items?</p> <p>What is a liquid? Can you name some?</p> <p>What does it mean if we call a material a solid?</p> <p><b>Key Words</b> Sort, group, similar, similarities, different, difference, solid, liquid, hard, rigid, runny, wet, pour</p>	<p>AA Group a set of materials identifying &amp; know properties for each group. Record results  (Children might use Venn diagrams)</p>	<p>Be able to:</p> <ul style="list-style-type: none"> <li>name some solids and some liquids</li> <li>describe the differences between solids and liquids</li> <li>name a variety of solids and describe some of their properties</li> </ul>	<p><u>From group activity:</u> Ask one or two groups to show how they grouped the items.</p> <p>Pool / share vocabulary used to differentiate between/ group the solids</p> <p><u>Vocabulary extension:</u></p> <ul style="list-style-type: none"> <li>Ask for other words to describe the various properties of the solids.</li> </ul> <p>Show two liquids and two solids:</p> <ul style="list-style-type: none"> <li>Ask children to describe them and then suggest two groupings.</li> </ul> <p>Reinforce notion of solid &amp; liquid.</p> <p>Ask for a definition of</p> <ul style="list-style-type: none"> <li>a liquid</li> <li>a solid</li> </ul> <p><u>Extend</u> with more difficult examples e.g. a sponge</p>	<p><u>Synthesis</u> Compose, design , invent, create, hypothesis, construct, forecast, rearrange parts, imagine, interpret <u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique <u>Analyse</u> Investigate, classify, categorise, compare, contrast <u>Application</u> Demonstrate, use guides, maps, charts, build, cook <u>Comprehension</u> Describe, compare, explain <u>Knowledge</u> Remember and retain facts, definition</p>
			<p>A Group a set of materials naming criteria / properties and record using a suggested format</p>	<p>Be able to:</p> <ul style="list-style-type: none"> <li>name some solids and some liquids</li> <li>describe some differences between solids and liquids</li> </ul>		
			<p>BA Discuss what each of a small set of materials is like. Work with some support to group these using prepared sheet.</p>	<p>Be able to:</p> <p>name some common solids and liquids</p> <p>identify, from a simple range, solids and liquids</p> <p>state some of the differences between solids and liquids</p>		

Suggestions for Homework:

List of some liquids and some solids that you find in your kitchen at home.

<p><b>Science</b></p> 	<p><b>Week 6</b> <b>Lesson 1</b></p>	<p>Additional Notes including those from QCA Scheme</p>
<p><b>Example Questions:</b></p>	<ul style="list-style-type: none"> <li>▪ Are all the liquids colourless?</li> <li>▪ What happens to the liquid if you change the container it is in?</li> <li>▪ What happens to a liquid if you pour it onto a flat surface such as a table?</li> <li>▪ What happens if you place a solid onto a flat surface?</li> <li>▪ Can you spill the solids?</li> </ul> <p>Draw children's attention to particular properties.</p> <p><b>Extend the activity</b> by presenting children with some 'difficult' items e.g. cotton wool, sponge, sand, rice and ask them to classify these as solids or liquids.</p>	
<p><b>Notes:</b></p>	<p>Children would not be expected to know the term viscosity, 'runniness' is an adequate description.</p> <p>Materials such as sponge can be classified as solids at this stage although they change shape easily because of the air within them.</p>	

Science



Week 6  
Lesson 2

Timing: 1¼ hrs

**Resources:**  
Measuring cylinders (volume)  
Variety of different shaped containers for liquids.  
Water, paper towels

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>To make careful observations and measurements of <u>volume</u></p> <ul style="list-style-type: none"> <li>recording them in tables and using them to draw conclusions.</li> </ul> <p>Knowing that:</p> <ul style="list-style-type: none"> <li>liquids do not change in volume when they are poured into a different container.</li> </ul>	<p>Revise how volumes of liquids are measured.→</p> <p>Ask children to find out and record in a table what happens to shape and volume when liquids are poured from one container into a different shaped container→</p>	<p>How can I find out how much liquid is in this jug?</p> <p>What standard unit of measure could we use?</p> <p><i>When group activity completed..... see "Plenary Questions"</i></p> <p>e.g. Is there more, the same or less water in here now?</p> <p>What can we say about a liquid when it is poured into different containers?</p>	<p>AA Complete task sheet 1 unaided.</p> <p>Measure capacity of containers and record.</p>	<p>All pupils to have recorded ideas using task sheet/s.</p> <p>All pupils to have:</p> <p>Measured capacity of containers and recorded.</p> <p>All pupils:</p> <ul style="list-style-type: none"> <li>to appreciate that volume is maintained but shape can alter depending upon the container used.</li> <li>To measure accurately &amp; record volume.</li> </ul>	<p>Plenary session used to review results and assess general levels of understanding.</p> <p>Recorded work for formative/individual assessments.</p> <p>(Please not assessments do not need to be recorded at this stage)</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>
	<p>Talk with children about their results and ask them to use them to make a generalised statement.</p>	<p>AA Complete task sheet 1 after discussion with teacher.</p> <p>Measure capacity of containers and record.</p>				
	<p><u>Other adult</u></p> <ul style="list-style-type: none"> <li>Assist children with drawing and use of table.</li> <li>Reinforce, with BA, notion of conservation of volume.</li> </ul>	<p>BA Complete task sheet 2, practical experience and support.</p> <p>Measure capacity of containers and record.</p>				

Homework

Collect two empty containers that are designed to hold the same quantity of liquid. Sketch and measure height.  
Safety: Do not bring glass to school.



Science



Week 7  
Lesson 1

Timing: 1¼ hrs

**Resources:** A range of powders & solids consisting of small particles.  
Containers.  
Volume measures.  
Plastic tea-spoons.

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>That solids consisting of very small pieces behave like liquids in some ways.</p>	<p>Ask children to explore and describe how powders and solids consisting of many small pieces e.g. rice, salt, sand are different to liquids e.g. by tilting jars containing these, by trying to use sand to turn a water wheel, by sieving through gauze or fine mesh sieve.</p> <ul style="list-style-type: none"> <li>▪ Try emptying the same volume of water and a powdered solid using a tea-spoon.</li> </ul> <p>How many spoonfuls of does it take to empty same volume?</p>	<p>Explain: We are going to see how very small solids can behave like liquids.</p> <p>What is a liquid? What is a solid? Is sand liquid or a solid?</p> <p>What happens when:</p> <ul style="list-style-type: none"> <li>• a pot containing sand/salt/sugar is tilted?</li> <li>• You empty salt onto a flat level surface?</li> <li>• You empty the same amount of water and then salt out of a pots?</li> <li>• How many spoonfuls needed?</li> <li>• Can you explain results?</li> </ul>	<p>Working in small groups: <b>Investigate:</b></p> <ul style="list-style-type: none"> <li>• what happens to solids consisting of very small pieces when the container they are in is tilted sharply.</li> <li>• emptying the same volume of water and small particle solids using a tea-spoon. (try sand, salt or sugar)</li> <li>• what happens when small particle solids are emptied from their container</li> </ul> <p><b>AA</b> <b>Sketch results &amp; write own notes.</b></p> <p><b>A</b> <b>Sketch and complete notes</b></p> <p><b>BA complete sheet</b></p>	<p>All children to know that:</p> <ol style="list-style-type: none"> <li>1. Powders are made up of <u>very small solid particles</u></li> <li>2. Other very small solids also behave in a similar way to liquids.</li> </ol> <p>All children to know some of the ways in which <b>solids with small particles</b> behave:</p> <ul style="list-style-type: none"> <li>• They can flow</li> <li>• They can “pour”</li> <li>• They will take up the space they are poured into</li> <li>• Together they will “settle” and form heaps when poured on to a flat surface.</li> </ul> <p>←Complete tasks as detailed ~ left.</p>	<p>Emphasise that powders consist of very small solid particles.</p> <p>Particle=very small piece</p> <p>Review findings from group activities.....</p> <ul style="list-style-type: none"> <li>• Discuss results</li> <li>• Review recorded work</li> </ul> <p><b>Together with class:</b></p> <ul style="list-style-type: none"> <li>• write a definition of a “powder”</li> <li>• write statement about similarities &amp; differences to liquids</li> </ul>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>
	<p><u>Other adult ~ if present</u> Aid BA with completion of sheet &amp; supporting activities.</p>	<p><u>Key Words</u> Solid, particle, pieces, powder, flow, pile, heap, shape, settle, similar</p>				

Homework

Possible homework activities: Make a list of solids in the home that have small particles.

Science



Week 7

Lesson 2

Timing: 1 ¼ hrs

**Resources:**

Support Activity: 'Solids & Liquids' printed sheet and on PC

Possible materials: an ice-cream, ice-cube, candles, wax, pre-melted and misshaped chocolate bar, thermometers – Link with Numeracy ~ reading scales

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>That the same material can exist both as a liquid and a solid.</p> <p>That liquids can be changed to a solid by cooling and this is freezing or solidifying.</p> <p>That a solid can be changed to a liquid by heating and that this is melting.</p>	<ul style="list-style-type: none"> <li>Ask children to suggest when they have seen water freezing, and what conditions are necessary for this to happen.</li> </ul> <p>Ask them to suggest how to make ice melt.</p> <ul style="list-style-type: none"> <li>Elicit other familiar examples of substances melting or solidifying e.g. wax running down the side of a candle, chocolate melting etc.</li> </ul> <p>Let them explore what happens to wax if it is held in the hand or put in a warm place ( <b>No naked flames</b>) Ask children how to keep familiar materials e.g. ice, chocolate, butter from melting &amp; help them to appreciate relative temperature.</p>	<p>Tell children main learning objective.</p> <p>What makes water turn solid?</p> <p>When and where would you see ice?</p> <p>What would make ice melt?</p> <p>What other solids will melt?</p> <p>How could we prevent some of these solids from melting?</p> <p>All groups: Hold chocolate / wax in hand say what happens.</p>	<p>AA Complete own written notes and drawings explaining changes in state of everyday solids &amp; liquids.</p> <p>A Complete support sheet with own notes and sketches.</p> <p>Hold chocolate / wax in hand say what happens.</p> <p>BA Complete:  <ul style="list-style-type: none"> <li>drawings to show changes in state of common solids.</li> <li>task sheet Solids &amp; Liquids ~ Drop down text fields for multiple choice answers on PC</li> </ul> </p>	<p>See Learning Intentions</p> <p>Be aware that at certain temperatures some everyday solids will melt or turn to a solid.</p> <p>See Learning Intentions</p> <p>Be aware that at certain temperatures some everyday solids will melt or turn to a solid.</p> <p>See Learning Intentions</p> <p>Be aware that at certain temperatures some everyday solids will melt or turn to a solid.</p>	<p>BA</p> <p>To read completed "Solids &amp; Liquids" task sheet ~ agree correct responses.</p> <p>AA</p> <p>Share ideas and discuss changes that occur through cooling and heating.</p> <p>Discuss how solids can be prevented from turning into liquids.</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>
	<p><u>Other adult</u></p>	<p><u>Key Words</u> Solid, liquid, change, heat, melt, cool, freeze, solidify Could, might, if</p>				

Science



Week 8  
Lesson 1 & 2

Timing: 2 1/4 hrs

**Resources:**

Use secondary sources e.g. video about volcanoes, Library reference materials  
CD-ROM pictures, PowerPoint Presentation  
Task Sheet: Everyday temperatures & Changing Water  
Main Library and additional Schools' Library Service Project Loan.

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>Different solids melt at different temperatures</p> <p>That melting and solidifying or freezing are changes that can be reversed and are the reverse of each other</p>	<p>Use secondary sources e.g. video, CD-ROM pictures to illustrate molten metals or lava and emphasise that many materials have to be heated before they melt.</p> <p>Ask children to use secondary sources to find out more about melting metals and to record information about why this is important.</p>	<ol style="list-style-type: none"> <li>1. What makes some solids melt?</li> <li>2. At what temperature does ice begin to melt?</li> <li>3. Is this the same temperature at which chocolate melts?</li> <li>4. Can you find the melting point of other solids?</li> <li>5. <b>Once something has melted can it be changed back again?</b></li> <li>6. How?</li> <li>7. Why is it useful to melt and solidify some solids?</li> </ol>	<ol style="list-style-type: none"> <li>1. Complete tasks sheets</li> <li>2. Watch PowerPoint Presentation</li> <li>3. Use variety of reference books for additional information about uses of melting &amp; solidifying.</li> <li>4. Write a recipe for making an ice-lolly.</li> <li>5. Find out which foods need to be defrosted before they are cooked.</li> </ol> <p>AA &amp; A Record own information about uses of melting &amp; solidifying solids.</p> <p>BA Use grid / table to record information as above but with use of drawings &amp; words.</p>	<p>See Main Learning Intention</p> <p>Be aware of the range of temperatures at which water freezes, melts &amp; boils.</p> <p>Know that rock will melt if the temperature is extremely high.</p> <p>Know that it reforms when it cools.</p> <p>Know that many other solids will melt rather than burn when heated.</p> <p>Know that we use melting and solidifying of solids to change their shape.</p>	<ul style="list-style-type: none"> <li>• Ask groups to present information that they have gathered.</li> <li>• Review ice-lolly recipes</li> <li>• Together discuss / explore info about common solids that are melted and reformed e.g. <i>chocolate in cooking, solid cooking fats, jelly, metals for casting, plastics in manufacturing</i></li> </ul>	<p><u>Synthesis</u> Compose, design, invent, create, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>

**Key Words:**

terms relating to states of matter e.g. *solid, liquid, melt, freeze, solidify,*

Other Adult ~ if present:

Assist BA recording

Possible Homework Activity

Design Ice-lolly at home and create recipe. Create advertising poster to sell new lolly,.

Science



Week 9  
Lesson 1

Timing: 1 ¼ hrs

**Resources:**  
A range of sieves in different sizes.  
A range of solid materials: rice, dried-peas, dry sand, marbles.

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts	
<p>That solids can be mixed and it is often possible to get the original materials back</p> <p>To choose appropriate apparatus for separating a mixture of solids.</p>	<p>Demonstrate to children how solid particles of different sizes can be separated by sieving. (Link with earlier work on soils KS1)</p> <p>Challenge children to separate a mixture of e.g. sand, rice, dried peas and paper clips using their own techniques and to explain why these worked.</p>	<p>How could I separate this mixture of different sized solids?</p> <p>Can you think of some solids with tiny particles that are mixed when someone cooks?</p> <p>Imagine there had been a mistake in the recipe and I needed to separate the solids. How might I do this?</p> <p>What have you found works to separate the mixture of solids that you were given?</p>	<p>AA Show intentions. Separate mixture of sand, rice and paper-clips. Explain how this was done.  Draw &amp; label equipment used.</p> <p>A Use planning sheet to show intentions. Separate mixture of marbles, sand and rice.  Draw &amp; label equipment used. Write briefly what was used for which solid.</p> <p>BA Choose equipment.</p>	<p>Children have chosen appropriate equipment to separate given mixture.</p> <p>Notes and diagrams used to show understanding of process.</p> <p>Planning sheet shows choice of equipment.</p> <p>Mixture separated efficiently.</p> <p>Statements reflect understanding of process.</p> <p>Sensible choice of equipment made.</p> <p>Mixture separated.</p> <p>Sketches show understanding of process.</p>	<p>BA Group to explain their choice of equipment giving reasons for selection.</p> <p>A Explain separation technique and degree of success.</p> <p>AA How was mixture separated paying particular attention to paper-clips &amp; choice of equipment.</p> <p>If time available:  Give children examples of how sieving is used to separate other materials e.g. gravel &amp; sand, peas from pea shucks, grain from stalks.....</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>	
	<p><u>Other adult</u></p>	<p><u>Key Words</u> Mixture, separate, sieve, Particle size,</p>	<p>Separate mixture of cm cubes and sand.</p> <p>Use sketches to show what happened &amp; write simple statement.</p>	<p>Separate mixture of cm cubes and sand.</p> <p>Use sketches to show what happened &amp; write simple statement.</p>	<p>Separate mixture of cm cubes and sand.</p> <p>Use sketches to show what happened &amp; write simple statement.</p>	<p>Separate mixture of cm cubes and sand.</p> <p>Use sketches to show what happened &amp; write simple statement.</p>	<p>Separate mixture of cm cubes and sand.</p> <p>Use sketches to show what happened &amp; write simple statement.</p>

Homework

Possible extra voluntary homework activity: Find examples of when sieving is used at home. Say why it is useful.

Science



Week 9

Lesson 2

Timing: 1 ¼ hrs

**Resources:**

Range of powders (solids); teaspoons; beakers; water. Timer or access to clock with seconds hand, Paper-towels

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>That changes occur when some solids are added to water.</p> <p>To make careful observations, recording results in tables &amp; make comparisons.</p>	<p>Ask children to explore what happens when a range of materials <i>e.g. salt, instant coffee, sugar, flour, powder paint, chalk, sand, glass beads or marbles, plaster of Paris</i>, are mixed with water and to group the solids according to what happens, recording their results in a table.</p>	<p>What happens when solids are mixed with water?</p> <p>How could we investigate this question?</p> <p>How could we record the results?</p> <p>What do you expect to find?</p> <p>What conclusions can we draw for each solid?</p> <p>Can we make any general observations?</p>	<p>Working in groups:</p> <p>Provide children with plastic cups or beakers and a range of small particle solids (powders), teaspoons</p> <p><b>AA</b></p> <ul style="list-style-type: none"> <li>record intentions and expectations</li> <li>Complete investigation recording results</li> <li>Discuss conclusions with teacher &amp; write statements</li> </ul> <p><b>A</b></p> <ul style="list-style-type: none"> <li>As above but with increased guidance at planning stage</li> </ul> <p><b>BA</b></p> <ul style="list-style-type: none"> <li>Carry out investigation as directed</li> <li>Record results &amp; discuss conclusion with adult.</li> </ul>	<p><b>AA</b> Improve ability to plan and carry out independent investigations.</p> <p>Know some powders are soluble in water and some are not.</p> <p>Refer to collected data when considering conclusions.</p> <p><b>A</b> Carry out an investigation systematically, measure and record data accurately.</p> <p>With guidance: Draw conclusions and form written statements explaining findings.</p> <p><b>BA</b> Follow instructions &amp; carry out investigation.</p> <p>Measure and record results accurately</p> <p>Discuss results</p>	<p>All pupils to know:</p> <ul style="list-style-type: none"> <li>Some powders/ solids will dissolve in water and some will not.</li> <li>Solution becomes “saturated” and will not allow any more powder to dissolve in it</li> </ul> <p>During plenary:</p> <p>Ask children to discuss their investigations....</p> <p>What did they think would happen?</p> <p>Is this what actually happened?</p> <p>What conclusions can be drawn?</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>
	<p><b>Other adult</b> Support either BA or A of available to do so.</p>	<p><b>Key Words</b> Liquid, solid, small particles, powder, dissolve, saturate/d If, when, because, Prediction, conclusion <b>Soluble, insoluble</b></p>				

Science



Week 10  
Lesson 1

Timing: 1 ¼ hrs

**Resources:**  
Tank of “dirty” River Nile water Washing up bowls to stand apparatus in, range of sieves, jugs, beakers, e.g. muslin, paper towels, gauze bandage, blotting paper, fabrics,( filters papers for later)

Learning intention	Teaching strategies	Key questions	Differentiation Task / activities	Product outcomes	Plenary	Planning prompts
<p>That when solids do not dissolve or react with the water they can be separated by filtering</p> <p>to choose apparatus to separate an undissolved solid from a liquid</p>	<p>Ask children to suggest and try out how they could clean the “River Nile Water” of stones &amp; sand.</p> <p>Discuss why stone can be separated from water by coarse sieves but sand cannot.</p> <p>Ask for suggestions of how to modify the apparatus to get sand back possibly illustrating ideas using tea bags or coffee filters.</p> <p>Children try out apparatus and materials e.g. muslin, paper towels, gauze bandage, blotting paper, fabrics they have suggested and describe and explain what they did.</p>	<p>How can I remove the (large solids) stones from this water?</p> <p>How could I remove the (small solids) sand?</p> <p>Can you decide what apparatus would you use?</p> <p>Does the water look clean?</p> <p>If there is anything left in it what might it be?</p> <p>(If children mention germs use opportunity to emphasise safety)</p> <p>Dissolved solids lead onto Week 11 Science...</p>	<p>Present sample of “Dirty River Nile Water” and ask children to consider, individually, how they would remove:</p> <p>a) the stones then b) the sand</p> <p>Children to use drawings and simple notes to explain ideas.</p> <p>Next show range of equipment and allow them to choose which they would use.</p> <p>Work in groups/pairs to remove the undissolved solids.</p>	<p>Children to have considered problem and recorded suggested methods &amp; equipment.</p> <p>After choosing equipment carry out task.</p> <p>Record results / conclusions.</p> <p>AA &amp; A Use diagrams and written explanations.</p> <p>BA Use drawings and receive assistance with writing statements.</p>	<p>Discuss what happened and what children discovered.</p> <p>Why were coarse sieves not able to remove small particles of sand?</p> <p>Of those children who successfully removed sand particles, who managed to remove very fine particles and how?</p> <p>Show children filter papers designed for the job.</p> <p>Ask: When is filtering needed?</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>
	<p><u>Other adult</u></p>	<p><u>Key Words</u> separate, mixture, undissolved solids, filter, sieve, <b>Soluble, insoluble, solution</b></p>				

Science



Week 10  
Lesson 2

Timing: 1 ¼ hr

Resources: Plastic coke Bottles (one per 2 children), gravel, sand, cotton wool, grit, coarse stones  
Tank of "River Nile Water" to be filtered, paper towels.  
Support sheet/s

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>That when solids do not dissolve or react with the water they can be separated by filtering</p> <p>to choose apparatus to separate an undissolved solid from a liquid</p>	<p>Look at water &amp; tell children they are going to build a simple water filter. → → → → →</p> <p>Ask them → → → → →</p> <p>Children follow set up instructions but choose filtering materials and order. → → → → →</p> <p>Ask them to predict what will / will not be removed from the "dirty" water.</p> <p>Refer to undissolved solids → → → → →</p> <p>Other adult Support SEN ~ if available</p>	<p>What is in this water to make it "dirty"?</p> <p>What methods &amp; materials could we clean it with?</p> <p>Can you use the equipment provided and select filter medium to make a simple water filter.</p> <p>How efficient will it be?</p> <p>Is it safe to drink now?</p> <p>What is left in the water?</p>	<p>Working in pairs or threes:</p> <p>Set up equipment as shown (see additional sheet)</p> <p><b>Use support sheet/s:</b></p> <p>Record "layers" of filtering medium diagrammatically.</p> <p>AA ~ predict results in diagram and notes</p> <p>A ~ predict results and label diagram</p> <p>BA ~ draw predicted results &amp; label</p> <p>Complete "filtering"</p> <p>Draw conclusions either record or discuss.</p>	<p>Children to:</p> <ul style="list-style-type: none"> <li>Know that undissolved solids (non soluble) can be removed by filtering</li> <li>have identified the most appropriate materials for filtering mixed size undissolved solids.</li> </ul> <p>Safety.....</p> <ul style="list-style-type: none"> <li>That water that looks "clean" is not necessarily clean enough to drink but may contain unseen chemicals or bacteria.</li> </ul>	<p>Look at results of filtering and ask children to discuss:</p> <ul style="list-style-type: none"> <li>Water clarity</li> <li>What was removed?</li> <li>.....not removed?</li> <li>Is water safe to drink?</li> </ul> <p>Do they see that undissolved solids are mainly removed?</p> <p>Encourage use of scientific vocabulary: <i>Filtering, filtration, solids, undissolved, dissolved, filtering medium,</i></p> <p><b>Note:</b> If child/ren comment that dissolved solids are not removed by filtering.</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>

Homework

Additional work only: Find out a) uses of filtering in the home b) where our water comes from c) how it is treated

Science



Week 11  
Lesson 1 & 2

Total Time: 2½ hrs

**Resources:**  
Drinking quality water; salt; sugar; → prepare clean sugar and salt solutions before lesson  
Clear plastic cups, labels for children to identify solutions

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
<p>That some solids dissolve in water to form solutions and that although the solid cannot be seen it is still present</p> <p>To predict whether salt or sugar can be separated from a solution by filtering and to test the prediction to see if it was correct</p> <p>To decide:</p> <ul style="list-style-type: none"> <li>what apparatus to use</li> <li>when it is safe to taste things to test them</li> </ul> <p><b>Remind children of care with substances!</b></p>	<p><b>Remind children</b> that when salt &amp; sugar are added to water clear solutions are obtained, and if necessary show them this again.</p> <p><b>Ask children</b> to say what they think has happened to the salt and sugar, remind them <i>e.g. of adding sugar to tea or salt to cooking vegetables</i> and to suggest how they could find out <i>e.g. by tasting the solution.</i></p> <p><b>Ask children</b> to predict whether the salt or sugar could be separated by filtering.</p> <p><b>Discuss</b> what they would need to do to find out whether their prediction is correct <b>and help them</b> to decide how to do this. Find out by testing whether their prediction is correct or not.</p> <p><u>Other adult</u> Where available ~ work with BA</p>	<p>What happens if we add sugar or salt to water?</p> <p>What is the mixture called?</p> <p>What simple test could you do to find out if water contains dissolved sugar or salt?</p> <p>Can you predict whether salt or sugar can be separated from water by filtering?</p> <p>How could we find out if our ideas are correct?</p> <p>COMPLETE TEST</p> <p>Were the predictions correct? Why?</p> <p><u>Key Words</u> Solution, dissolved solids, separate, filtering, predict, if, when, because,</p>	<p>AA Plan and carry out investigation. * Check results and record conclusions.</p> <p>A Plan &amp; carry out investigation with assistance at planning stage. * Check &amp; record results. State conclusions.</p> <p>BA Discuss intentions, predictions &amp; method of investigation with adult.</p> <p>Use planning &amp; recording sheet. * Discuss results.</p>	<p>Simple planning format completed &amp; followed.</p> <p>Test carried out &amp; conclusions drawn.</p> <p>See LI</p> <p>As above</p> <p>As above but with assistance.</p> <p>Planning and recording assisted by differentiated sheet using diagrams and simple labelling.</p>	<p>Ask volunteers / target groups to discuss &amp; present their work:</p> <ul style="list-style-type: none"> <li>what was prediction</li> <li>how tested</li> <li>what result</li> <li>conclusion</li> </ul> <p>Draw overall conclusion from children's observations.</p> <p>Teacher to investigate any misconceptions and try to rectify..... ask for help from class.... Discuss.</p> <p>Together write statement which summarises conclusions.</p> <p>Extension Activities:</p> <p>Consider ideas for separating a dissolved solid form a solution.</p> <p>Set up "evaporation" test using salt or sugar solutions.</p>	<p><u>Synthesis</u> Compose, design , invent, hypothesis, construct, forecast, rearrange parts, imagine, interpret</p> <p><u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique</p> <p><u>Analyse</u> Investigate, classify, categorise, compare, contrast</p> <p><u>Application</u> Demonstrate, use guides, maps, charts, build, cook</p> <p><u>Comprehension</u> Describe, compare, explain</p> <p><u>Knowledge</u> Remember and retain facts, definition</p>

Science



Week 12  
Lesson 1

Timing: Time

Resources:

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
Review.....  And assessment activities to be decided.	Review work on solids, liquids and separating solids and liquids by presenting children with a series of cards showing everyday processes <i>e.g. using a tea bag, adding salt to cooking, warming fat in a pan for cooking vegetables, putting ice cubes in a drink, warming a frosted windscreen, getting lumps out of flour</i> and cards naming processes <i>e.g. filtering, dissolving, melting, sieving</i> and ask children to match the cards.  Talk with children about how they knew how to match the cards		AA			<u>Synthesis</u> Compose, design , invent, create, hypothesis, construct, forecast, rearrange parts, imagine, interpret <u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique <u>Analyse</u> Investigate, classify, categorise, compare, contrast <u>Application</u> Demonstrate, use guides, maps, charts, build, cook <u>Comprehension</u> Describe, compare, explain <u>Knowledge</u> Remember and retain facts, definition
			A			
			BA			
	<u>Other adult</u>	<u>Key Words</u>				

Homework

Science



Week 12  
Lesson 2

Timing: Time

Resources:

Learning intention	Teaching strategies	Key questions	Differentiation task activities	Product outcomes	Plenary	Planning prompts
			AA			<u>Synthesis</u> Compose, design , invent, create, hypothesis, construct, forecast, rearrange parts, imagine, interpret <u>Evaluation</u> Judge, evaluate, give opinion, viewpoint, prioritise, recommend, critique <u>Analyse</u> Investigate, classify, categorise, compare, contrast <u>Application</u> Demonstrate, use guides, maps, charts, build, cook <u>Comprehension</u> Describe, compare, explain <u>Knowledge</u> Remember and retain facts, definition
			A			
	<u>Other adult</u>	<u>Key Words</u>	BA			

Homework