

# Science Medium Term Plan: 3C Materials and their uses

School -

Year 3:

Term: Autumn 1

<p><b>SEN / EAL:</b> write up investigations on writing frames. Support from more able partners in mixed ability work. Additional adult support.</p> <p><b>G + T:</b> encourage to support other lower ability pupils in mixed ability groups and write up experiments in a more formal manner, with use of scientific vocabulary</p>	<p><b>Cross-curricular links:</b></p> <p>ICT: children will be using the smartboard and Internet during this unit          Numeracy: children will be using and preparing tables and charts.          Literacy: children will be using a dictionary and writing instructions          D + T: thinking about which materials are used for different purposes</p>
<p><b>Vocab:</b></p> <ul style="list-style-type: none"> <li>• words describing the characteristics of materials eg strong, hard, flexible, absorbent, transparent</li> <li>• words related to the investigation of these properties eg investigate, test, describe, explain, comparison, fair, conclude, evidence</li> <li>• words which have different meanings in other contexts eg test, fair, conclude, nouns and related verbs</li> </ul>	

The schools that I have worked at in London have access to Collins Virtual Experiments through the London Grid for Learning (LGFL). If you are in London, and google LGFL virtual experiments, from your school you should be able to automatically access them. From home you need your fronter log-in and password.

wk	Learning objective	Teaching activities	Assessment: Success Criteria	Resources	Lesson Evaluation
1	Formative assessment exercise  30 mins	<p>Children complete a mind map on what they already know about types of materials and words to describe materials.</p> <p>This will hopefully tell me what they already know, and therefore what they need to learn.</p> <p>In this lesson each child will write in one particular coloured pencil. In the last lesson the children will return to their mind maps to add what they have learnt in a different coloured pencil.</p> <p>Plenary:            Children discuss their mind maps in partners, and think of questions they would like answered on the topic of materials.</p>	Complete a mind map	Mind map frame	

2	<p>To recognise properties such as hardness, strength and flexibility and to compare materials in terms of these properties.</p> <p>1 hour</p>	<p>Think, pair, share words children already know to describe materials, including what the words mean. Take suggestions. (15 mins)</p> <p>House competition: Explain task Children given a list of properties and definitions. They have to cut up the list and match each property to its correct definition (give them dictionaries) (25 mins)</p> <p>Plenary: Have list and definitions on the IWB so that children can move the right property to be with the right definition Go through examples e.g. rough – feel the carpet, smooth – feel the table (15 mins)</p>	<p>MUST: realise that different materials have different properties</p> <p>SHOULD: use scientific terms for properties e.g. flexible, absorbent</p> <p>COULD: use scientific terms for properties e.g. flexible, absorbent to describe why materials are suitable for making different things</p>	<p>List of properties and their meanings</p> <p>Scissors</p> <p>Glue</p> <p>A3 paper in house colours</p> <p>Homework sheet</p> <p>Dictionaries</p> <p>ICT suite / laptops</p>	
3	<p>To identify a range of common materials and that the same material is used to make different objects.</p> <p>Materials WOOD METAL GLASS PLASTIC FABRIC (cotton/nylon) CERAMICS</p> <p>1 hour</p>	<p>On the carpet discuss how we can tell what material things are made from (look, feel sound, texture) Discuss using the word 'materials' to describe what things are made of (10 mins)</p> <p>Children walk around school and carry out a survey to find materials that have been used for different purposes (metal, plastic, wood, glass). (20 mins)</p> <p>Complete 'Materials around the school' worksheet Extension: Complete 'Which material would be best?' (20 mins)</p> <p>Discuss what materials would be unsuitable for making different things and why e.g. why would a table not be made of fabric? (10 mins).</p>	<p>MUST: list items made of different materials around the school</p> <p>SHOULD: explain why those materials are suitable</p> <p>COULD: use scientific terms to explain why those materials are suitable</p>	<p>Worksheets</p>	
4	<p>To learn that materials are suitable for making a particular object because of their properties and that some properties are more important than others when deciding what to use.</p> <p>1 hour</p>	<p>Model how to navigate and use BBC Schools Science activity at <a href="http://www.bbc.co.uk/schools/ks2bitesize/science/activities/materials.shtml">http://www.bbc.co.uk/schools/ks2bitesize/science/activities/materials.shtml</a> Show children how to complete the tables (15 mins)</p> <p>Children use BBC Schools Science activity to complete the following tables: Table 1: Properties of materials. Table 2: Best material for making objects Table 3: Worst material for making objects (30 mins)</p> <p>Ext: Children complete activity at LGFL virtual experiments: list properties of different materials activity 1.</p> <p>Plenary: quiz on BBC schools site (15 mins)</p>	<p>MUST: realise that different materials have different properties</p> <p>SHOULD: describe the properties of the material and why it is suitable for an object.</p> <p>COULD: identify inappropriate materials for an object and explain why.</p>	<p>Laptops / ICT suite</p> <p>Worksheet</p>	

5	<p>To plan a test to compare the absorbency of different papers, to decide what evidence to collect, to consider what to change, what to keep the same and what to measure.</p> <p>To make comparisons and to draw conclusions.</p> <p>2 hours (with 10 min break)</p>	<p>Discuss with the children how they could find out which paper would be best for mopping up spills.</p> <p>Discuss how to plan a fair test fair: conditions the same.</p> <ul style="list-style-type: none"> <li>• How measure where the water gets to?</li> <li>• Timing</li> <li>• Dipping into the water at same depth</li> <li>• Size of paper</li> </ul> <p>Model how changing these things would be unfair and explain why this is the case. (15 mins)</p> <p>Children write aim, prediction and method, then carry out the investigation by:</p> <ol style="list-style-type: none"> <li>1. Cutting a piece of paper</li> <li>2. Dipping the paper in a tray of water for 1 minute</li> <li>3. Marking how far up the water reaches (45 mins)</li> </ol> <p>10 minute break</p> <p>Model recording of investigation in a bar chart and explain how to use tick list on investigation frame. Write conclusion, encouraging use of scientific words such as most / least, absorbent and because (30 mins)</p> <p>Plenary: which paper was most absorbent and why? Did different groups get different results? Compare and discuss results. (15 mins)</p>	<p>MUST: plan and carry out an experiment by using an investigation frame, <i>with</i> adult support</p> <p>SHOULD: plan and carry out an experiment by using an investigation frame, <i>without</i> adult support</p> <p>COULD: link predictions and conclusions to scientific knowledge and use scientific language</p>	<p>Paper towel</p> <p>Tissue paper</p> <p>Paper</p> <p>Toilet paper</p> <p>Wax paper</p> <p>Newspaper</p> <p>Water</p> <p>Trays for water</p> <p>Pencils/scissors/rulers</p> <p>Timer</p>	
6	<p>To plan a test to compare the strength of different papers, to decide what evidence to collect, to consider what to change, what to keep the same and what to measure.</p> <p>To make comparisons and to draw conclusions.</p> <p>2 hours (with 10 min break)</p>	<p>Discuss with the children how they could find out which paper would be able to take the most weight.</p> <p>Plan a fair test fair: conditions the same.</p> <ul style="list-style-type: none"> <li>• Force with which you put weight on</li> <li>• Timing</li> <li>• Same increase in weight each time</li> <li>• Size of paper</li> </ul> <p>Model how changing these things would be unfair and explain why this is the case. (15 mins)</p> <p>Emphasise need to be careful weights don't drop on toes</p> <p>Children write aim, prediction and method, then carry out the investigation by:</p> <ol style="list-style-type: none"> <li>1. Cutting a piece of paper</li> <li>2. Selotaping a piece of paper to a table at one end and to a cup at the other end</li> <li>3. Putting increasing amount of weight in to the cup, until the paper breaks (45 mins)</li> </ol> <p>10 minute break</p> <p>Model recording of investigation in a bar chart and explain how to use tick list on investigation frame. Write conclusion, encouraging use of scientific words such as most / least, strongest and because (30 mins)</p>	<p>MUST: plan and carry out an experiment by using an investigation frame, <i>with</i> adult support</p> <p>SHOULD: plan and carry out an experiment by using an investigation frame, <i>without</i> adult support</p> <p>COULD: link predictions and conclusions to scientific knowledge and use scientific language</p>	<p>Paper towel</p> <p>Tissue paper</p> <p>Paper</p> <p>Toilet paper</p> <p>Wax paper</p> <p>Newspaper</p> <p>Weights</p> <p>Cups</p> <p>Pencils/scissors/rulers</p> <p>Timer</p>	

		Plenary: which paper was strongest and why? Did different groups get different results? Compare and discuss results. (15 mins)			
7	<p>To plan out how to find out which pair of tights is most stretchy, making a fair comparison.</p> <p>To decide what to change and what to keep the same and what to measure.</p> <p>To make careful measurements of length, to present measurements as a bar chart and to draw conclusions.</p> <p>2 hours (with 10 min break)</p>	<p>Discuss with the children how they could find out which tights stretch the most.</p> <p>Plan a fair test fair: conditions the same.</p> <ul style="list-style-type: none"> <li>• Bean bag</li> <li>• Wait for tights to stop bouncing before measuring</li> <li>• Push bean bag right to the bottom of tights</li> </ul> <p>Model how changing these things would be unfair and explain why this is the case. (15 mins)</p> <p>Children write aim, prediction and method, then carry out the investigation by:</p> <ol style="list-style-type: none"> <li>4. Cutting the foot part of some tights</li> <li>5. Putting a bean bag right down to the foot</li> <li>6. Measuring how much the tights stretch (45 mins)</li> </ol> <p>10 minute break</p> <p>Model recording of investigation in a bar chart and explain how to use tick list on investigation frame. Write conclusion, encouraging use of scientific words such as most / least, stretch, thick / thin and because (30 mins)</p> <p>Plenary: which tights stretched the most and why? Did different groups get different results? Compare and discuss results. (15 mins)</p>	<p>MUST: plan and carry out an experiment by using an investigation frame, <i>with</i> adult support</p> <p>SHOULD: plan and carry out an experiment by using an investigation frame, <i>without</i> adult support</p> <p>COULD: link predictions and conclusions to scientific knowledge and use scientific language</p>	<p>Variety of tights</p> <p>Bar graph sheets for LA</p> <p>Bean bags as weights</p> <p>Rulers</p> <p>Graph paper</p>	
8		<p>Children return to their mind maps from the first week and add what they have learnt over the past few weeks to them in a different coloured pencil.</p> <p>This will hopefully show me (and them) what they have learnt.</p>		<p>Mind maps from first lesson</p>	

### Assessment

Some children will note have made so much progress and will:	Most children will:	Some will progress further and achieve
<ul style="list-style-type: none"> <li>• identify uses of some common materials, suggesting a reason why the material is suitable</li> <li>• make measurements of length using standard units</li> </ul>	<ul style="list-style-type: none"> <li>• identify uses of some common materials, suggesting several reasons why the material is suitable</li> <li>• make measurements of length using standard units</li> <li>• explain it is important to test materials to find out whether descriptions of characteristics are reliable and to recognise when a test or comparison is unfair</li> </ul>	<ul style="list-style-type: none"> <li>• explain how to make a test fair and represent measurements in a bar chart</li> </ul>