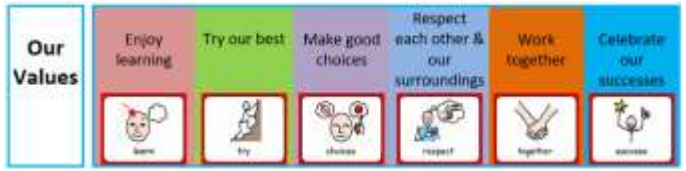
Science



SUBJECT MEDIUM TERM PLANNING – SCIENCE

Year Group: 1	TERM: Autumn 1 and 2	Theme: Materials

National Curriculum:

- distinguish between an object and the material from which it is made
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

Context: -	Concepts: Materials	Vocabulary:
The children will be able to explore and identify different types of material Children will apply their material knowledge to carry out an investigation.		**Materials** – What an object is made from. **Object** – Something that can be seen or touched **Melt** – when a solid changes to a liquid **Freeze** – when a liquid changes to a solid **Float** – when an object stays on top of the water **Sink** – when an object falls to the bottom of the water **Absorb** – when liquid is taken in by a material. **Transparent** – materials you can see through **Opaque** – materials you cannot see through

Prior Substantive Knowledge

- Use all their senses in hands-on exploration of natural materials. (Nursery - Materials, including changing materials)
- Explore collections of materials with similar and/or different properties. (Nursery - Materials, including changing materials)
- Talk about the differences between materials and changes they notice. (Nursery - Materials, including changing materials
- Children will know that objects are made up of different materials and will be able to provide examples of different properties

Prior Displinary Knowledge

- Asking Questions with a yes/no question to aid sorting
- Ask 1 or 2 simple research questions linked to a topic

Future Substantive Knowledge

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

Future Displinary Knowledge

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

• Observation - compare objects based on obvious features • Predictions - Children consider in advance what might happen or what they may find out	• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.
End points /by the end of this unit pupils will...	Crucial Knowledge
• Recall what a material is.	Something that an object is made from.

• Identify what material is used to make these objects. 	
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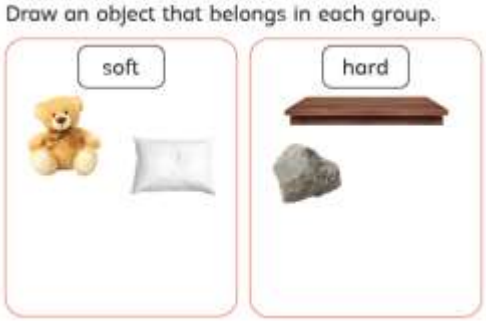
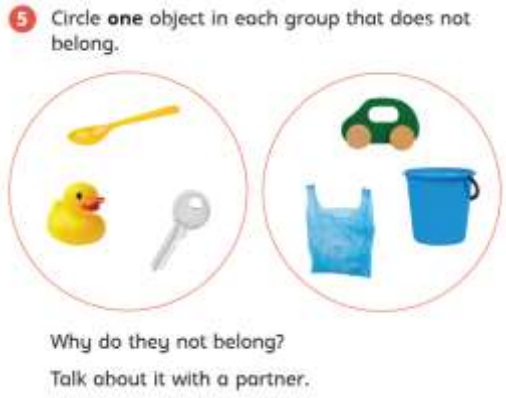
Lesson Number 1 Explore materials – wood, plastic, glass and metal – Step 1		
Key learning: I can organise materials based on properties Context: wood, plastic, glass and metal	Concepts: Materials	Assessment tool – Flashback Introduce that objects are made from materials What different materials do we know? Introduce wood, plastic, glass and metal. Talk about how we handle glass with care.

Success Criteria: This should what the children should be able to do by the end of the lesson I know what a material is. I can name some different materials, I can identify wood, glass, plastic and wood. I can identify properties of these materials. Working scientifically: observe closely, using simple equipment	**Suggested resources:** Objects made from wood, plastic, glass and metal (adult supervision for glass) Hoops	Introduce that materials have different properties. Introduce key words – can children find objects that are soft, hard, shiny and dull Independent task – Children sort the objects into two groups. Children to explain how they have grouped the objects. Can they think of another way? Complete task 1 – identify properties  Task 2 – Spot the error.  Conclude with **odd one out in Explorify** – Generate conversation and expand on vocabulary .
Vocabulary: Materials, soft, hard, shiny, dull		

Lesson Number 2
Rocks – Step 2

<table>
<tr><td>Key learning:
I can organise material based on properties
Context – Rocks</td><td>Concepts: Materials</td><td rowspan="2">Assessment tool – Flashback

Recap that objects are made from materials.
Recap what materials we know and properties they have

Introduce rocks and they came in lots of different ways.
Show pictures of things made from rocks – Can they name any others.

Independent – Complete a rock hunt – walk around school and ask children to collect rock samples. Use hand lenses to look closely at the rocks identify their properties and draw the rocks that they find.
Draw the rocks you find on the rock hunt.

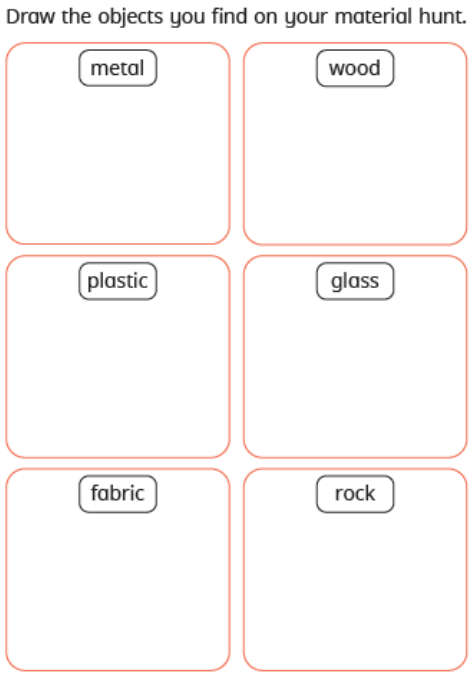
Children then to organise the rocks into:
Hard, heavy, light, rough and smooth</td></tr>
<tr><td>Success Criteria:
This should what the children should be able to do by the end of the lesson

I know what a material is.
I can name some different materials,
I can identify rocks
I can identify properties of rock

Working scientifically: observe closely, using simple equipment</td><td>Suggested resources:

Hand lenses

Labels of hard, smooth, dull, light, heavy</td></tr>
<tr><td colspan="3">Vocabulary:
Rock, heavy, light, rough, smooth</td></tr>
<tr><td colspan="3">Lesson Number 3
Objects and materials – Step 3</td></tr>
</table>

Key learning: Identify different objects based on their materials	**Concepts:** Materials	Assessment tool – Flashback Recap what an object and material is Recap the different material that we have learnt – wood, plastic, glass, metal, rocks As groups, organise the objects into their materials. Independent task – Children to find objects made from different materials and draw in the correct box. 
Success Criteria: This should what the children should be able to do by the end of the lesson I know what a material is. I can name some different materials, I can identify different objects based on their materials Working scientifically – identify and classify.	**Suggested resources:** Different objects made from different materials	

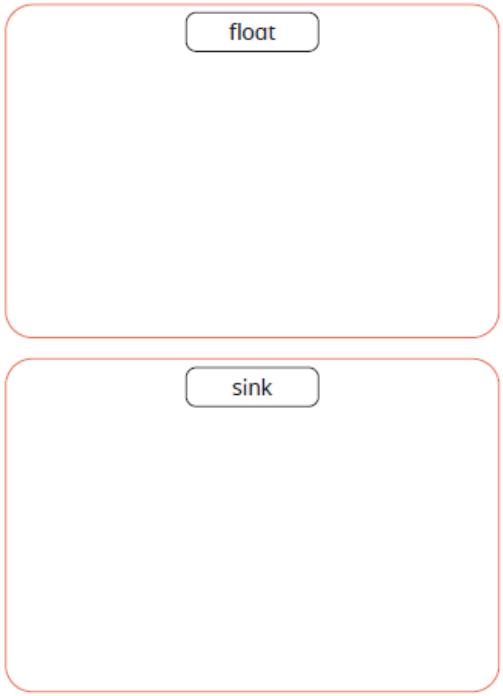
Vocabulary:

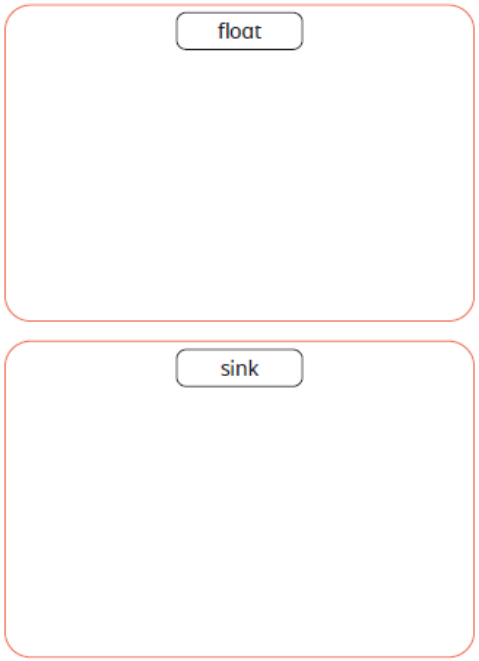
Object, materials, metal, wood, plastic, glass, rock, wool

Lesson Number 4
Melt and freeze – Step 4

Key learning: Identify melting and freezing.	**Concepts:** Materials	Assessment tool – Flashback Show pictures of water and ice – What is the same? What is different? Introduce term of freezing – When a liquid changes from water to ice. Discuss that putting water into a fridge will make it cold but not ice. Water has to go into a freezer. Introduce the term melting. Independent task – Give each child an ice cube. Children observe the ice melting. Ask children what is happening and why they think it is happening. Collect some water Ask children what is the same and what is different. Draw the ice cube at different stages **a)** Draw the ice cube. **b)** Put the ice cube on your hand. What happens to the ice cube? Draw your answer. Freeze a toy in ice.
Success Criteria: This should what the children should be able to do by the end of the lesson Working scientifically – perform simple tests	**Suggested resources:** Ice cubes Freeze a toy in ice. Equipment to release the toy from the ice – gloves, blanket ect	

		In groups, children work together to try and get the toy out. – Work with an adult Which method was the quickest?
Vocabulary: Solid, liquid, melt, freeze, ice		
Lesson Number 5 **Float or Sink? – Step 5**		
Key learning: Identify whether an object will sink or float.	**Concepts:** Materials	Assessment tool – Flashback Recap what an object is and what a material is. Introduce the key vocabulary of sinking and floating. Show pictures of different objects – Do children think they will sink or float (introduce making predictions – what we think will happen) Independent task – Children pick 6 objects and make a prediction of whether they will sink or float – draw the objects in the boxes.
Success Criteria: This should what the children should be able to do by the end of the lesson I can predict whether an object will sink or float. I can identify whether an object will sink or float. Working scientifically – Gather and record data to help answer questions	**Suggested resources:** Different objects Bucket of water	

		Choose six objects from the classroom. Which objects do you think will float? Which objects do you think will sink? Draw your predictions in the boxes.  Drop each object into the water, draw the objects in the correct boxes.

		What did you find out? Draw the objects that did float. Draw the objects that did sink.  Discuss findings – where there any surprises?
Vocabulary: Heavy, light, float, sink, materials		
Lesson Number 6 **Does it absorb water? – Step 6**		
Key learning: Identify whether an object will absorb water or not.	**Concepts:** Material	Assessment tool – Flashback Recap what a material and object is. Recap with materials sank or floated on last experiment.

Success Criteria: This should what the children should be able to do by the end of the lesson I can predict whether an object will absorb water. I can identify whether an object will adsorb water Working scientifically – using observations and ideas to suggest answers to questions.	**Suggested resources:** Cut a 8cm x 8cm square of each material Cardboard Cling film Foil Cotton wool roll Pipette Tray timer	Introduce the term absorb water – show different materials that has absorbed water, Independent task – Cut a 8cm x 8cm square of each material Children to predict whether the material will absorb water Which materials do you think will absorb water? Put a tick if you think it will absorb water. Put a cross if you think it will **not** absorb water.

Material	Will it absorb water?
 cotton wool	
 cardboard	
 foil	
 cling film	

Test the materials by:

- Putting 1 material in the tray at a time.
- Slowly drop water on top of the material using the pipette – start timer
- After one minute check whether the material has absorbed the water

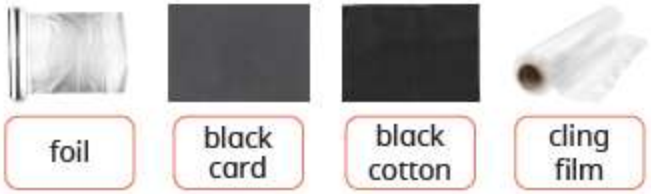
NB – Ensure the tray is dry before repeating with the next material.
Record findings.

		Test the materials. **a)** Circle the materials that absorbed water.  **b)** Circle the materials that did **not** absorb water.  **c)** Which material absorbed the most water?

Vocabulary:
Absorb, independent variable, dependent variable, controlled variable.

Lesson Number 7
Investigate materials – Step 7

Enquiry question: Which material would be best for a pair of curtains?	**Concepts:** Materials	**Assessment tool – Flashback** Recap what an object is and what a material is. Introduce enquiry

Success Criteria:	Suggested resources:	
This should what the children should be able to do by the end of the lesson Working scientifically: Using observations and ideas to suggest answers to questions.	Cardboard box Foil Cling film Sticky tape Black card Black cotton Torch Scissors	Independent task 1. Cut a hole in the front and the top of a cardboard box. 2. Show children the foil, cling film, black card and cotton. 3. Ask children to feel the materials to test whether they are stretchy or stiff. 4. Ask children to predict which material will be the best to use for curtains. Which material do you predict will be the best for a pair of curtains? Tick your answer.  5. Stick the first material across the front cut-out of the house using sticky tape. 6. Shine the torch on one side of the material and ask children to observe through the cut-out on the top of the box. 7. Is the material transparent or opaque? 8. Encourage the use of the terms “transparent” and “opaque” in their observations. 9. Repeat this process with the three other materials. 10. Identify the material that is most appropriate for a pair of curtains.

Which material is the best for a pair of curtains?

Test each material.

Material	Is it a good material to use for curtains?
 foil	
 black card	
 black cotton	
 cling film	

Vocabulary:

Materials, transparent, opaque