



**Science Autumn 1 Year 3 Physics -Magnets and Forces**

**TAPS Assessment: Magnet Tests**

**Key vocabulary:** Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole

National Curriculum	Week	NC - Coverage	Disciplinary Knowledge	Substantive Knowledge	Activity Outline
<p><b>The national curriculum for Science aims to ensure that all pupils:</b></p> <p><b>Working Scientifically Lower KS2</b> pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>§ asking relevant questions and using different types of scientific enquiries to answer them</li> <li>§ setting up simple practical enquiries, comparative and fair tests</li> <li>§ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment,</li> </ul>	<b>1</b>	Notice that some forces need contact between two objects.	Observing closely, using simple equipment.	Knows that some forces need contact between two objects	Give children a carousel of activities where they explore a range of toys/games that involve forces to move them. Ask children to identify how them move. Teacher to demonstrate a push and a pull and ask children to think of things that they could move by pushing, pulling or both. Ask children to record this in a way of their choosing.
	<b>2</b>	Compare how things move on different surfaces. Notice that some forces need contact between two objects.	Setting up simple practical enquiries, involving how things move on different surfaces	Knows that some forces need contact between two objects	Give children a ramp and four surfaces. Leave a range of measuring equipment left out for them to choose from. Give children a table to record their results and prompt them to try each surface three times.
	<b>3</b>	Notice that some forces need contact between two objects.	Record and report on findings from investigations, involving how things move on different surface	Knows that some forces need contact between two objects.	Present results (lesson 2) in a bar chart and the teacher to ask them to talk to each other about their graph.



<p>including thermometers and data loggers          § gathering, recording, classifying and presenting data in a variety of ways to help in answering questions          § recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p>	<p>4</p>	<p>Describe magnets as having two poles          Predict whether two magnets will attract or repel each other, depending on which poles are facing</p>	<p>Make and investigate predictions on whether two magnets will attract or repel, depending on which poles are facing.</p>	<p>Knows whether two magnets will attract or repel each other, depending on which poles are facing          Knows that some forces need contact between two objects, but magnetic forces can act at a distance</p>	<p>Give children some magnets and other resources in a box to explore 'attraction and repulsion'. Teacher to show an animation of the poles of two magnets attracting and repelling each other highlighting this new key vocabulary. The children then verbally explaining what they had learnt to a partner and then consolidate it in writing and drawings</p>
<p>§ 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</p> <p><b>Subject Content</b></p>	<p>5&amp;6</p>	<p>Compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials</p>	<p>Compare and group materials following magnetic testing, recording findings and use the outcome to answer questions about which materials are magnetic.</p>	<p>Knows that magnets attract or repel each other and attract some materials and not others</p>	<p>Ask children to use their strongest magnet and test how the surface affects the distance the paperclip needs to be from the magnet in order to be attract to it. Record results in a table and then draw their own conclusions e.g. the best surface was....</p>



- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing

**School Context**

Classroom resources that are magnetic Applying forces of push and pull around the school

Common Misconceptions

Some children may think:

- the bigger the magnet the stronger it is
- all metals are magnetic.

--	--	--	--	--	--



**Science Autumn 2 Year 3 Physics - Light**

**TAPS Assessment: Making Shadows**

**Key vocabulary:** Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous



National Curriculum	Week	NC - Coverage	Disciplinary Knowledge	Substantive Knowledge	Activity Outline
<p><b>The national curriculum for Science aims to ensure that all pupils:</b></p> <p><b><u>Working Scientifically Lower KS2</u></b> pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> <li>§ asking relevant questions and using different types of scientific enquiries to answer them</li> <li>§ setting up simple practical enquiries, comparative and fair tests</li> <li>§ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including</li> </ul>	1	Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces..	To make predictions about how easy it would be to see different objects if there were different amounts of light. of light.	Knows that light is needed to see things and that dark is the absence of light Knows that light is reflected from surfaces.	KWL grid: Ask children to think about what they already know about light and shadow and give some key words to prompt them – see, dark, light, reflection, shadow. Ask children to make predictions about how easy it would be to see different objects if there were different amounts of light.
	2	Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces.	To observe that light can be reflected off surfaces.	Knows that light is needed to see things and that dark is the absence of light  Knows that light is reflected from surfaces.	Children to work in pairs, choose from a selection of closed boxes that each contain a different object and try to identify the object by looking through a small eye hole. Make sure there is a second small hole in each box so children can control the amount of light entering by covering it with their hand or tracing paper or leaving it uncovered. Children to write their findings from their testing in the previous lesson. Provide writing frames to clearly identify pupils understanding.
	3	Recognise that they need light in order to see things and that dark is the	'Investigate the visibility of different materials (eg shiny; foil,	Knows that shadow are formed when the	Give children different materials and a torch and allowed time to explore their



<p>thermometers and data loggers</p> <p>§ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>§ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>§ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>§ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>§ identifying differences, similarities or changes related to simple scientific ideas and processes</p>		<p>absence of light.</p> <ul style="list-style-type: none"> <li>• Notice that light is reflected from surfaces.</li> </ul>	<p>mirrors and matt; sugar paper) in a darker environment according to which reflect most light.'</p>	<p>light from a light source is blocked by an opaque object.</p>	<p>reflectiveness, children to then write up their findings.</p>
	4	<p>Recognise that they need light in order to see things and that the dark is the absence of light</p>	<p>Observe and identify the difference in shadows of opaque, translucent and transparent objects/materials.</p>	<p>Knows how the shadows of transparent, opaque and translucent materials vary.</p>	<p>Teacher to define key vocabulary – opaque, transparent and translucent. Ask children to find objects around the room and record whether they were opaque, transparent or translucent.</p>
	5	<p>Find patterns in the way that the size of shadows changes</p>	<p>Observe how shadows are formed and affected by different circumstances. Use oral and written explanations to report on why shadows are formed and how the length and size</p>	<p>Knows and can explain some of the reasons why the size of shadows changes.</p>	<p>Take children outside into the playground and allow them to explore making different shaped shadows with their bodies. Bring children inside and give them a circular object. Ask children to move the torch in various ways to see the effect on the shadow. Ask children to determine what happens to the <b>size</b> and <b>shape</b> of the shadow.</p>



<p>§ using straightforward scientific evidence to answer questions or to support their findings</p> <p><b>Subject Content</b></p> <ul style="list-style-type: none"> <li>recognise that they need light in order to see things and that the dark is the absence of light</li> <li>notice that light is reflected from surfaces</li> <li>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>find patterns in the way that the size of shadows changes</li> </ul>	6	<p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p>	<p>of a shadow can be changed.</p> <p>Classify materials according to their properties (opaque, translucent, transparent)</p>	<p>Knows that light from the sun can be dangerous and that there are ways to protect the eyes</p>	<p>Show a film of people watching the eclipse to the children. Ask children to consider why people are wearing glasses or looking through colanders. Remind children this so to prevent people damaging their eyes. Give children a range of materials and ask them to test them to consider which would be most suitable for making a pair of sunglasses. The children shone a torch through the material and observed the light coming through.</p>
---	---	---	---	---	---



**School Context**

Reflective playground signs and clothing for cycling to school

**Common Misconceptions**

Some children may think: • we can still see even where there is an absence of any light • our eyes 'get used to' the dark • the moon and reflective surfaces are light sources • a transparent object is a light source • shadows contain details of the object, such as facial features on their own shadow • shadows result from objects giving off darkness.

--	--	--	--	--	--