

## Design and make a Magnetic Compass



<b>Pupil Name</b>	
<b>Key Stage 2 Learning Points (from the National Curriculum 2014) Specific to this project.</b>	
Sc3/4.2b	notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
Sc3/4.2c	observe how magnets attract or repel each other and attract some materials and not others
Sc3/4.2d	compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
Sc3/4.2e	describe magnets as having 2 poles
Sc3/4.2f	predict whether 2 magnets will attract or repel each other, depending on which poles are facing.
Ma4/3.3a	describe positions on a 2-D grid as coordinates in the first quadrant
Ma4/3.3c	plot specified points
Ma4/3.3a	describe positions on a 2-D grid as coordinates in the first quadrant
Ge2/1.4a	use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied
Ge2/1.4b	use the 8 points of a compass, 4 and 6-figure grid references, symbols and key (including the use of Ordnance Survey maps) to build their knowledge of the United Kingdom and the wider world
DT2/1.1a	use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
DT2/1.1b	generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
DT2/1.2a	select from and use a wider range of tools and equipment to perform practical tasks accurately
DT2/1.2b	select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
DT2/1.3b	evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
DT2/1.4c	understand and use electrical systems in their products
DT2/1.1a	use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
DT2/1.1b	generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
DT2/1.2a	select from and use a wider range of tools and equipment to perform practical tasks accurately
DT2/1.3b	evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
<p>Evidence for meeting these strands to come from:</p> <p>Teacher observations and questioning pupils during project.</p> <p>Pupil design sheet.</p> <p>Pupils Self-Assessment on evaluation sheet.</p> <p>Peer Assessment on evaluation sheet.</p> <p>Photographs taken during making / testing process.</p>	
<p>It is recommended that the pupils use their compasses practically to find directions/ bearings around the school environment. This could be linked to a treasure hunt.</p>	



## **Key Stage 2 Learning Points (from the National Curriculum 2014) Generic to all Imagineering Projects**

### **Science: Health and Safety - Pupils should be taught to:**

- recognize that there are hazards in materials and physical processes, and assess risks and take action to reduce risks to themselves and others

### **Design and Technology: Knowledge, skills and understanding**

Working with tools, equipment, materials and components to make quality products:

#### **Pupils should be taught to:**

- select tools, techniques and materials for making their product from a range suggested by the teacher
- suggest alternative ways of making their product, if first attempts fail
- explore the sensory qualities of materials and how to use materials and processes
- measure, cut and shape a range of materials

#### **Evaluating processes and products:**

Pupils should be taught to:

- reflect on the progress of their work as they design and make, identifying ways they could improve their products
- carry out appropriate tests before making any improvements

#### **Design and Technology: Breadth of study**

**During the key stage, pupils should be taught the knowledge, skills and understanding through:**

- focused practical tasks that develop a range of techniques, skills, processes and knowledge
- design and make assignments using a range of materials, including electrical and mechanical components



<b>Pupil Project Record</b>		<b>Date</b>
<b>Name</b>	<b>Title of Project</b>	
<p><b>Before you begin your project... Draw a picture of what you think it will look like.</b></p> <p><b>Who are you making it for?</b></p> <p><b>What safety rules will you need to follow? Why?</b></p>		
<p><b>When you have finished your project... Draw a diagram of your compass. Label the parts. (You could include a photo.) Use a map of the school to plot compass directions from one point to another.</b></p>		
<p><b>What do you think of your finished project? What happened during testing? Could you write a set of instructions on how to use your compass?</b></p>		
<p><b>What would you change/improve if you did it again? Could you make it more attractive?</b></p>		
<p><b>What skills did you use to build your Compass?</b></p>		
<p><b>What does your partner think?</b></p>		