

## KS2 Prototypes- Greenhouses

### Key Vocabulary

<b>Model</b>	A representation of a real object.
<b>User</b>	The person using the end product.
<b>Aesthetics</b>	What something looks like
<b>Purpose</b>	The reason why something is made and how this changes depending on who it is created for
<b>Strong</b>	A structure that can support itself
<b>Sturdy</b>	Strongly and solidly built
<b>Airtight</b>	Not allowing air to escape or pass through

### The Project

<b>Introduction</b>	This project builds on your previous learning on how to make models by now using design to build geometric shapes, creating more complex prototypes
<b>Purpose for Project</b>	To design a model of a greenhouse that can be used to help grow herbs ready for the summer when children at Gamlingay Village Primary will be cooking

### Design

<b>Geometric designers</b>	<p>The type of shape you will be designing for your greenhouses are <i>geometric shapes</i>. This is where the same 2D shape is repeated over and over again. Famous designers include Buckminster Fuller and Sir Nicholas Grimshaw, designers of the Eden Project in Cornwall.</p>
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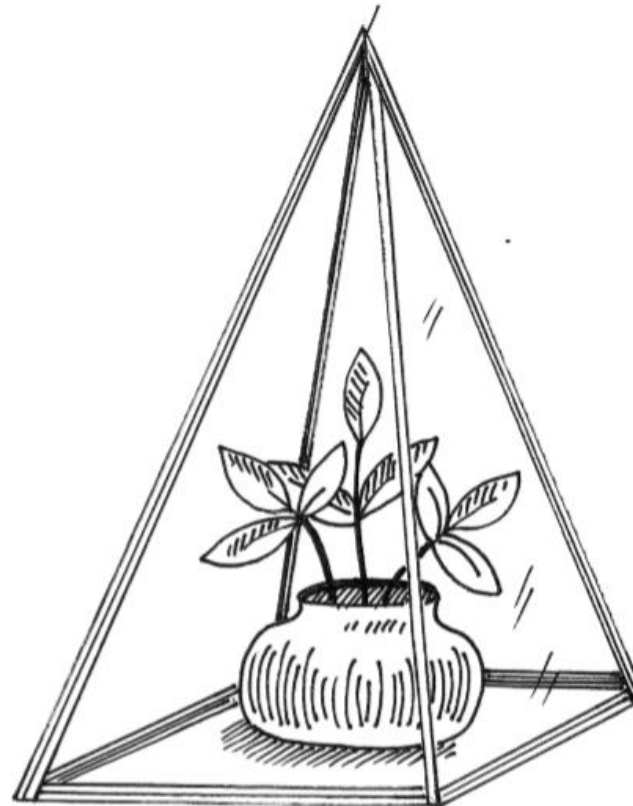
Buckminster Fuller



Sir Nicholas Grimshaw

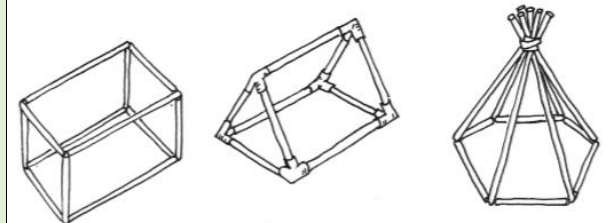
### Research

<b>Purpose</b>	<p>The purpose of greenhouses are:</p> <ul style="list-style-type: none"> <li>- To shield crops from too much cold or heat and to protect them from pests such as slugs.</li> <li>- A greenhouse makes it possible to grow certain types of crops year round such as fruits, vegetables and flowers.</li> </ul>
<b>How they work</b>	<p>Greenhouses work by sunlight shining into the greenhouse and warming the plants and air inside.</p> <div style="text-align: center;"> </div> <p>At night time, it's colder outside, but the greenhouse stays warm because the glass walls of the greenhouse trap the Sun's heat.</p>
<b>Key Research Questions</b>	<p>How does <b>design</b> affect the effectiveness of a greenhouse ?</p> <p>Do greenhouses need to be <b>airtight</b>?</p> <p>How <b>effective</b> are mini greenhouses compared to full scale ones?</p>



<b>Geometric Design</b>	<p>Using your learning on how to draw 3D shapes and cross sectional drawing, design geometric greenhouses.</p> <p>Start by considering what shape you would wish to repeat in your design and begin there, slowly adding to this using a pencil and ruler to create a 3D shape.</p>
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<b>Geometric Design</b>	<p>As you will be using art straws, include in your design <i>where</i> there will be joins, either in the corners with masking tape or where more than two straws will meet.</p>
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Using straws

### Make

#### Joining Art Straws

Not all straws you use will be the same size, you will need to measure and cut (usually in half) some straws to help make the base (if it is a pyramid) or to alter the height of the green house (if it is a cuboid).

Through testing, decide on which method you prefer in joining art straws together.



One straw creased and inserted

Flattened and glued

Sleeve glued around joint

Sticky tape

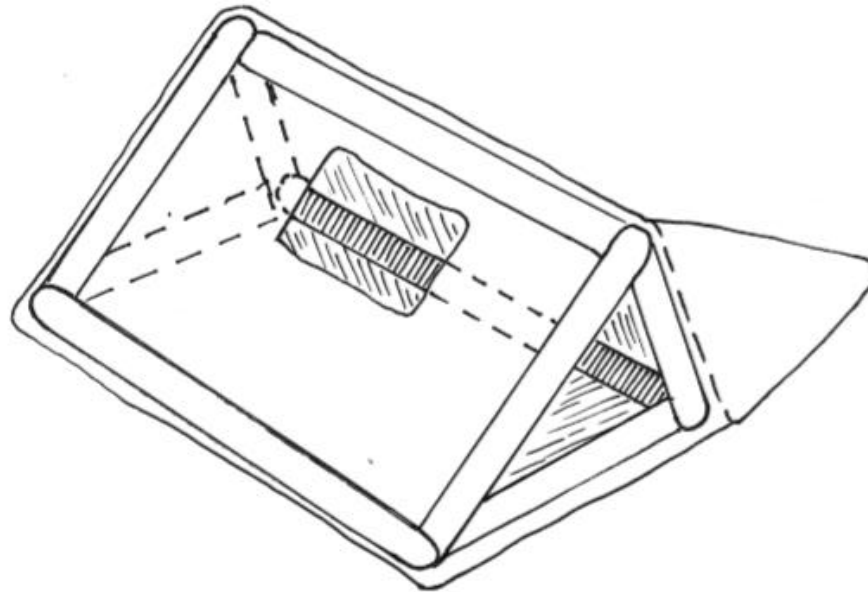
#### Attaching the Plastic sheet

To retain heat to ensure a successful green house, clear plastic sheet will be attached.

To attach either cut plastic into strips the same size as the green house but larger (a seam allowance).

Use cellotape to stick them down from the inside.

Alternatively use a hole punch to make the holes and fix with string or cable ties.



### Evaluate

#### You will learn how to

Think critically about your project against the design criteria

Ask a peer to give their reflection of the successes of your project, outlining one area to work on

Reflect on the problems you encountered and how you over came them

Suggest how you could extend this project further if you were to do it again.