

# Facing the Future

## Design Situation

Our environment is under pressure, we need innovation and cooperation to work towards a more sustainable future, especially concerning the conservation of energy, materials and water. We may have to think about the built environment in a whole new way.

## Design Brief

*Facing the Future* is challenging young people to collaborate in the creation of an innovative sustainable built environment.

Design a built environment that utilises sustainable materials and can harvest alternative forms of energy and water. Your built environment could fit any of the architectural, environmental, interior, landscape or structural design categories, but it must be presented as a scaled model with a supporting portfolio.

## Assessment

1. ePortfolio presented using Google Sites.
  - Criteria for success – will be established early in the project and be used as an ongoing evaluation tool to monitor progress and determine success.
  - Research & Experimentation – renewable and non-renewable resources; experiments into sustainability relating to energy, water and materials; energy efficiency; built environments.
  - Design Ideas – sketches, design modification, justification of design decisions, responses to peer feedback.
  - Final Design - scaled drawings supported with notes and/or legend to clarify all details, including environmental and sustainability considerations.
  - Construction – documentation from initial ideas to finished product (video, photographs, diary)
  - Evaluation - project evaluated against the identified design needs, specifications, quality, innovation, environmental and sustainability considerations. Assess the collaborative management processes of the group and identify areas for improvement.
2. Scaled Diorama/Model
3. Group Presentation

Grade	Area	Criteria
<b>A</b>	Science	<p>Demonstrates deep knowledge of renewable and non-renewable resources including current innovative technologies and applies this to problem solving.</p> <p>Demonstrates a deep understanding of the underlying scientific principles relating to renewable and non-renewable resources. Demonstrates a thorough understanding of sustainability and relates this to current examples.</p> <p>Clearly identifies all components of the scientific method. Analyses data from experiments and clearly presents findings using tables and/graphs.</p> <p>Clearly justifies decisions made to design and clearly evaluates.</p>
	Technology	<p>Analyses data from research and experimentation and uses this to justify decisions when following a design process to produce an innovative sustainable built environment.</p> <p>Independently use available tools, materials and techniques to produce an accurately scaled model.</p> <p>Demonstrates a deep understanding of the use of a design process to create good design solutions through a well-documented design portfolio.</p>
	Mathematics	<p>Calculates ratios and rates, solves real- life problems involving ratios and rates, and converts information into a simplified rate. Define and label angles. Recognises the geometrical properties of angles at a point complimentary, supplementary and adjacent angles. Identifies straight angles, revolution, vertically opposite angles. Identifies properties of special quadrilaterals, distinguishes between convex and non-convex, line and rotational symmetry, determine lines of symmetry and the order of rotational symmetry of polygons.</p> <p>Communicates mathematically, problem solves and reasons when justifying solutions to solve the problem.</p>
<b>B</b>	Science	<p>Demonstrates good knowledge of renewable and non-renewable resource including current innovative technologies.</p> <p>Demonstrates a good understanding of the underlying scientific principles relating to renewable and non-renewable resources. Demonstrates a good understanding of sustainability and relates this to current examples.</p> <p>Clearly identifies most components of the scientific method. Analyses data from experiments and presents findings using tables and/graphs.</p> <p>Clearly justifies decisions made to design and evaluates.</p>
	Technology	<p>Evaluates data from research and/or experimentation and justifies decisions when applying this through a design process to produce an innovative sustainable built environment.</p> <p>Effectively used available tools, materials and techniques to produce an accurately scaled model.</p> <p>Demonstrates a good understanding of the use of a design process to create design solutions.</p>
	Mathematics	<p>Calculate ratios and rates, solves some problems involving rates or ratios. Define and label angles. Recognises the geometrical properties of angles at a point complimentary, supplementary and adjacent angles. Identifies straight angles, revolution, vertically opposite and adjacent angles. Identifies properties of special quadrilaterals, distinguishes between convex and non-convex, line and rotational symmetry, determine lines of symmetry and the order of rotational symmetry of polygons.</p> <p>Communicates mathematically for some strategies and describes solutions to solve the problem.</p>
<b>C</b>	Science	<p>Demonstrates sound knowledge of renewable and non-renewable resource including a current technology.</p> <p>Demonstrates sound understanding of the underlying scientific principles relating to renewable and non-renewable resources. Demonstrates sound understanding of sustainability and relates this to current examples.</p> <p>Identifies some components of the scientific method. Analyses data from experiments and presents findings using tables and/graphs.</p> <p>Shows some justification of decisions made to design and attempts to evaluate.</p>
	Technology	<p>Uses data from research or experimentation and identifies reasons for decisions when using a design process to produce a sustainable built environment.</p>

		Used available tools, materials and techniques to produce a scaled model. Demonstrates a sound understanding of the use of a design process to create a design solution.
	Mathematics	Calculates simple ratios and rates. Defines and labels angles. Recognises some angle properties. Identifies straight angles, revolution, vertically opposite and adjacent angles. Identifies properties of special quadrilaterals. Determine lines of symmetry and the order of rotational symmetry of polygons. Communicates the strategies used and describes a solution to solve the problem.
<b>D</b>	Science	Demonstrates a basic knowledge of renewable and non-renewable resource including a current technology. Demonstrates a basic understanding of the underlying scientific principles relating to renewable and non-renewable resources. Demonstrates a basic understanding of sustainability. Identifies some components of the scientific method. Attempts to analyse data from experiments and attempts to present findings using tables and/graphs. Shows basic justification of decisions made to design and shows a basic evaluation.
	Technology	Uses data and identifies some reasons for decisions when using a design process to produce a sustainable built environment. Use available tools, materials and techniques to produce a model. Demonstrates a basic understanding of the use of a design process to create a design solution.
	Mathematics	Calculates some ratios and rates. Defines and labels some angles. Recognises some angle properties. Identifies some angles as straight angles, revolution, vertically opposite and adjacent angles. Identifies properties of some special quadrilaterals. Determine lines of symmetry and the order of rotational symmetry of some polygons. Communicates some information and shows the mathematics they are using to solve the problem.
<b>E</b>	Science	Demonstrates a limited knowledge of renewable and non-renewable resource including a current technology. Demonstrates a limited understanding of the underlying scientific principles relating to renewable and non-renewable resources. Demonstrates a limited understanding of sustainability. Identifies some components of the scientific method. Shows a limited analysis of data from experiments. Shows limited justification of decisions made to design.
	Technology	Produces a basic sustainable built environment with limited justification of decisions. Used available tools, materials and techniques. Produced limited or no documentation of a design process.
	Mathematics	Calculates some ratios and rates. Labels some angles. Recognises some angle properties. Identifies some angles as straight angles, revolution, and vertically opposite. Identifies properties of some special quadrilaterals. Determine some lines of symmetry and the order of rotational symmetry of some polygons. Communicates some information about the strategy used to solve the problem.