

Advent 2
Design & Technology – Structures: Y3

Scripture Link:

National Curriculum Objective:

Design, make and evaluate a _____ (product) for _____ (user) for _____ (purpose) [Link to topic?](#)

	Lesson 1	Lesson 2	Lesson 3
Learning intention for each lesson	I know what a structure is and know their purposes.	I know how a shell structure contains, protects or presents.	I can construct a range of 3D geometric shapes using nets.
Recall and Retrieval	<ul style="list-style-type: none"> that a structure is something built for a reason. that structures can be large e.g. buildings and bridges) or small (e.g. chairs or tables) that freestanding structures are structures that can stand up without being attached to something else. that freestanding structures need to support their own weight. 	<ul style="list-style-type: none"> what makes a strong, stable, rigid structure. I know that shell structures are structures with a solid outer surface (which may be curved or flat) and a hollow inner area. I know that shell structures can serve many different purposes. Often, they are used to protecting, containing and/or presenting (e.g. packaging). I know that some examples of shell structures are food packaging, tunnels, helmets, drinks cans, and boats. 	<ul style="list-style-type: none"> I know how to turn 2D nets into 3D structures. I know that a rounded outer surface is particularly strong, because it spreads forces throughout the whole structure, which means every part of the structure supports only a small part of the load. I know the importance of strength and stiffness in structures.
Sequence of substantive knowledge throughout the lesson	<p>Evaluate:</p> <ul style="list-style-type: none"> I know that structures are things that are built for a purpose, for example to support something or hold something. I know that shell structures are structures with a solid outer surface (which may be curved or flat) and a hollow inner area. I know that shell structures can serve many different purposes. Often, they are used to protecting, containing and/or presenting (e.g. packaging). I know that some examples of shell structures are food packaging, tunnels, helmets, drinks cans, and boats. 	<p>Evaluate:</p> <ul style="list-style-type: none"> I know that shell structures may be used to contain things. I know that shell structures may be used to protect things. <p>I know that shell structures may be used to present things.</p>	<p>Make:</p> <ul style="list-style-type: none"> I know that nets can be used to make 3D products. I know that a net is what a 3D shape would look like if it were opened out flat. I know that nets can then be assembled using either CAD (computer aided design) systems or by hand. I know that scoring is the process of marking a sheet to make it easier to fold. I know that outer edges of the net can be cut out (apparatus depends on material). I know that tabs are additional strips on the net that can be scored and folded to make a surface for sticking vertices together.

	<ul style="list-style-type: none"> I know that a rounded outer surface is particularly strong, because it spreads forces throughout the whole structure, which means every part of the structure supports only a small part of the load. I know the importance of strength and stiffness in structures. 		
Key Skills/disciplinary knowledge			<p>Make:</p> <ul style="list-style-type: none"> I can construct a range of 3D geometric shapes using a net by: cutting along the bold lines. folding along the dotted lines. keeping the tabs, the correct size. making crisply folded edges. Constructing the net using glue to make a geometric shape.
Key Vocabulary	Structures, Shell Structures, Packaging, Purpose, Forces, Style, Font, Durable, 3D Nets, Tabs, Folding/Layering, Corrugating/ Ribbing, CAD		Castle, net, shape, structure
Main teaching activity <i>If the school has another short term planning format, this does not need to be included.</i>			
Scaffolding	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> could keep slide 15 of the presentation on the board to support their drawing; could use the Activity: Cut and glue castle (with or without the supporting placement map) and complete either by looking at the example on slide 15 or by assembling a design from their own imagination. 	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> should make simpler geometric shapes (i.e. cuboid, cylinder, cone). 	<p>Pupils needing extra support:</p> <ul style="list-style-type: none"> can create simpler structures and configurations. can work in pairs or groups.
Challenge	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> should label their castle drawing with the key castle features and explain which of the 3D shapes help to make the castle strong and stable based on their previous Structures unit 	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> should advance to more complex geometric shapes; can attempt to design their own nets (i.e. hexagonal prisms); can create specific features relevant to the person or purpose they are designing for. 	<p>Pupils working at greater depth:</p> <ul style="list-style-type: none"> should create more complex and wide-ranging structures. should use more sophisticated configurations using a mixture of their own nets and collected objects.

	knowledge and/or can justify their own thoughts and ideas as to why this might be		
Diversity Links			
Catholic Social Teaching Principles			
British Values			
Wider links			

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	Lesson 4	Lesson 5	Lesson 6
Learning intention for each lesson	I can create a design criteria for my structure.	I can make my structure.	I can evaluate my structure.
Recall and Retrieval	<ul style="list-style-type: none"> that some materials are stronger and more rigid than others e.g. card and paper. that structures can be made stronger and more rigid by making sure that parts and materials are properly joined together. I know that some examples of shell structures are food packaging, tunnels, helmets, drinks cans, and boats. 	<ul style="list-style-type: none"> I know that a design specification is a list of success criteria for a product. I know that shell structures are structures with a solid outer surface (which may be curved or flat) and a hollow inner area. I know that shell structures can serve many different purposes. Often, they are used to protecting, containing and/or presenting (e.g. packaging). 	<ul style="list-style-type: none"> I know how I could make my design better. I know that a design specification is a list of success criteria for a product. I know that structures are things that are built for a purpose, for example to support something or hold something.
Sequence of substantive knowledge throughout the lesson	Make: <ul style="list-style-type: none"> I know that a design specification is a list of success criteria for a product. 		
Key Skills/disciplinary knowledge			Evaluate: <ul style="list-style-type: none"> I can evaluate my own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. I can suggest points for modification of the individual designs.
Key Vocabulary	Design, net, Scoring, structure, tab	Design, net, Scoring, structure, tab	
Main teaching activity <i>If the school has another short</i>			

<i>term planning format, this does not need to be included.</i>			
Scaffolding		Pupils needing extra support: <ul style="list-style-type: none"> • may need to create simpler structures and configurations. 	
Challenge		Pupils working at greater depth: <ul style="list-style-type: none"> • should create more complex structures and include more sophisticated configurations from a mixture of their own nets and collected objects. 	
Diversity Links			
Catholic Social Teaching Principles			
British Values			
Wider curriculum links			