

ADVENT TERM
DESIGN AND TECHNOLOGY – YEAR 5 - MEDIUM TERM PLANNING – MECHANISM
Pneumatic machines

<u>LESSON 1</u>	<u>LESSON 2</u>	<u>LESSON 3</u>
Mechanisms LEARNING INTENTION: To know that a pneumatic system uses air to exert a force. Disciplinary Knowledge: <ul style="list-style-type: none"> Use pneumatics to create movement. Aim: Build and apply a repertoire of knowledge understanding and skills in order to design and make high quality products for a wide range of users.	Mechanisms LEARNING INTENTION: To know that pneumatic systems use stored energy. Disciplinary Knowledge: <ul style="list-style-type: none"> Use pneumatics to create movement. Aim: Critique, evaluate and test their ideas and products and the work of others.	Mechanisms LEARNING INTENTION: To know that different mechanisms can work together to perform a function. Disciplinary Knowledge: <ul style="list-style-type: none"> Grow in confidence about trying new / different ideas. Aim: Develop the creative, technical, and practical expertise to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
Key Vocabulary: pneumatic, exert force, compressed air, low maintenance	Key Vocabulary: pneumatic system, compressed air, energy, inflate	Key Vocabulary: pneumatic, mechanism, frameworks, strong, stable, cross braces, diagonal struts
Recap & retrieval Recap from Year 3: <ul style="list-style-type: none"> The rigid frame gives the structure shape and support. Adding diagonal struts adds strength and stability. 	Recall & retrieval <ul style="list-style-type: none"> A pneumatic system uses air to exert a force. 	Recall & retrieval <ul style="list-style-type: none"> A pneumatic system uses air to exert a force. Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth.
Key Knowledge:	Key Knowledge:	Key Knowledge:

<p>Child:</p> <ul style="list-style-type: none"> • A pneumatic system uses air to exert a force. • This force is used in pneumatic jacks to lift vehicles, in paint sprayers to force paint out at high speed, in jackhammers to break up pavements and in train and bus brakes. • Pneumatic systems are low maintenance, compact and safe as only air can leak from the system. <p>Teacher:</p> <ul style="list-style-type: none"> • Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. • These effects can be achieved using syringes and plastic tubing. 	<p>Child:</p> <ul style="list-style-type: none"> • Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. • These effects can be achieved using syringes and plastic tubing. <p>Teacher:</p> <ul style="list-style-type: none"> • Testing a product against the design criteria will highlight anything that needs improvement or redesign. • Changes are often made to a design during manufacture. 	<p>Child:</p> <ul style="list-style-type: none"> • Different mechanisms and systems can work together to perform a function. • A strong and stable structure is necessary to support different mechanisms in a machine. <p>Teacher:</p> <ul style="list-style-type: none"> • There are many rules for using tools safely and these may vary depending on the tools being used. • For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. • All tools should be cleaned and put away after use, and should not be used if they are loose or cracked. • Various methods can be used to support a framework. • These include cross braces, guy ropes and diagonal struts. • Frameworks can be built using lolly sticks, skewers and bamboo canes.
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<u>LESSON 4</u>	<u>LESSON 5</u>	<u>LESSON 6</u>
Design LEARNING INTENTION: To know that a prototype design needs to meet specific criteria to meet a desired function. Disciplinary Knowledge: <ul style="list-style-type: none"> • Begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose. • Use cross-sectional planning and annotated sketches. Aim: Build and apply a repertoire of knowledge understanding and skills in order to design and make high quality products for a wide range of users.	Make LEARNING INTENTION: To know that an iterative process allows for testing and changing a design. Disciplinary Knowledge: <ul style="list-style-type: none"> • Mainly accurately measure, mark out, cut and shape materials/components. • Begin to be resourceful with practical problems. Aim: Develop the creative, technical, and practical expertise to perform everyday tasks confidently and to participate successfully in an increasingly technological world.	Evaluate LEARNING INTENTION: To know that a focus group can be used to evaluate your product. Disciplinary Knowledge: <ul style="list-style-type: none"> • Evaluate ideas and finished product against specification, considering purpose and appearance. Aim: Critique, evaluate and test their ideas and products and the work of others.
Key Vocabulary: safety features, pneumatic , annotated , diagrams , prototype , lift	Key Vocabulary: materials, iterative process , prototype , initial plan , redesign , test	Key Vocabulary: focus group , survey , evaluate
Recall & retrieval <ul style="list-style-type: none"> • A pneumatic system uses air to exert a force. 	Recall & retrieval <ul style="list-style-type: none"> • A pneumatic system uses air to exert a force. 	Recall & retrieval <ul style="list-style-type: none"> • A pneumatic system uses air to exert a force.

<ul style="list-style-type: none"> Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. A strong and stable structure is necessary to support different mechanisms in a machine. 	<ul style="list-style-type: none"> Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. A strong and stable structure is necessary to support different mechanisms in a machine. Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber. 	<ul style="list-style-type: none"> Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. A strong and stable structure is necessary to support different mechanisms in a machine. Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber. Testing a product against the design criteria will highlight anything that needs improvement or redesign.
<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> Pneumatic systems can be used to lift heavy loads, raise and lower platforms or soften a force by acting as a shock absorber. The product needs to be practical in the home including size, safety, weight. <p>Teacher:</p> <ul style="list-style-type: none"> Safety features are often incorporated into products that might cause harm. Some examples include the child-safety caps on medicine bottles, seatbelts in cars, covers for electrical sockets and finger guards on doors. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> Design is an iterative process. Once an initial prototype has been designed, it is continually tested and improved until the final product is deployed. Testing a product against the design criteria will highlight anything that needs improvement or redesign. <p>Teacher:</p> <ul style="list-style-type: none"> Changes are often made to a design during manufacture. Materials should be cut and combined with precision. 	<p>Key Knowledge:</p> <p>Child:</p> <ul style="list-style-type: none"> A focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be used to edit and change the design of a product. <p>Teacher:</p> <ul style="list-style-type: none"> Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria.
<p>Assessment</p> <p>Cumulative Quiz. Retrieval Practice.</p>		