ADVENT TERM Design Technology – Year 5 - Medium Term Planning – Mechanism Design and build a pneumatic machine		
LESSON 1	**LESSON 2**	**LESSON 3**
LEARNING INTENTION: To know that a pneumatic system uses air to exert a force. Skills: Explain how the design of a product has been influenced by the culture or society in which it was designed or made 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.	**LEARNING INTENTION:** To know that pneumatic systems use stored energy. Skills: Test and evaluate products against a detailed design specification and make adaptations as they develop the product. Aim: Critique, evaluate and test their ideas and products and the work of others.	**LEARNING INTENTION:** To know that different mechanisms can work together to perform a function. Skills: Build a framework using a range of materials to support mechanisms. 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:** Design criteria, pneumatic system, compressed.	**Key Vocabulary:** Pneumatic, mechanism, frameworks, strong, stable, cross braces, guy ropes and diagonal struts.
Recap & retrieval Recap from Year 3: • The rigid frame gives the structure shape and support. • Diagonal struts create triangular shapes within a frame structure. • Adding diagonal struts adds strength and stability.	**Recall & retrieval** • A pneumatic system uses air to exert a force.	**Recall & retrieval** • 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: **Child:** • 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	**Key Knowledge:** **Child:** • Pneumatic systems use energy that is stored in compressed air to do work, such as	**Key Knowledge:** **Child:** • Different mechanisms and systems can work together to perform a function.

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. **Teacher:** • 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. • Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. • For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. • The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures.	inflating a balloon to open a model monster's mouth. • These effects can be achieved using syringes and plastic tubing. **Teacher:** • Testing a product against the design criteria will highlight anything that needs improvement or redesign. • Changes are often made to a design during manufacture.	• A strong and stable structure is necessary to support different mechanisms in a machine. **Teacher:** • 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.

ADVENT TERM Design Technology – Year 5 - Medium Term Planning – Mechanism Design and build a pneumatic machine		
LESSON 4	**LESSON 5**	**LESSON 6**
LEARNING INTENTION: To know that a prototype design needs to meet specific criteria to meet a desired function. Skills: Explain the functionality and purpose of safety features on a range of products. 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.	**LEARNING INTENTION:** To know that an iterative process allows for testing and changing a design. Skills: Test and evaluate products against a detailed design specification and make adaptations as they develop the product. Aim: Develop the creative, technical, and practical expertise to perform everyday tasks confidently and to participate successfully in an increasingly technological world.	**LEARNING INTENTION:** To know that a focus group can be used to evaluate your product. Skills: Survey users in a range of focus groups and compare results. Aim: Critique, evaluate and test their ideas and products and the work of others.
Key Vocabulary: Safety features, pneumatic, annotated, diagrams, prototype.	**Key Vocabulary:** Materials, iterative process, prototype, initial plan.	**Key Vocabulary:** Focus group, survey, evaluate.
Recall & retrieval • 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. • A strong and stable structure is necessary to support different mechanisms in a machine.	**Recall & retrieval** • 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. • 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.	**Recall & retrieval** • 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. • 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.
Key Knowledge: **Child:**	**Key Knowledge:** **Child:**	**Key Knowledge:** **Child:**

• 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. **Teacher:** • 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.	• 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. **Teacher:** • Changes are often made to a design during manufacture. • Materials should be cut and combined with precision.	• 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. **Teacher:** • Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria.
Assessment Cumulative Quiz. Retrieval Practice.		