Knowledge Organiser

Subject: Design & Technology Unit: Making A Fire Engine

Overview
Children will explore modern fire engines and their features, looking at what features are common to all vehicles and which are specific to fire engines. Children will explore how wheels, axles and chassis work together to create the base of a fire engine. They will explore different ways of attaching the chassis to the axles. They will investigate different ways of creating the body of a fire engine, using materials such as cardboard boxes, lolly sticks and other craft materials. They will explore how to create features such as ladders and fire hoses, considering which materials and tools are best suited for different tasks. Children will follow their designs to create their fire engines, using a range of different materials, tools and techniques. Children will evaluate their own fire engines, as well as fire engines made by their peers. They will consider what went well, what could be improved upon and what they could do differently if they were to make their fire engines again.

What should I already know?	Vocabulary:	
Design • Can evaluate an existing product by saying: - how it is useful; how it works and whether they like it and why. • Can make a plan for a structure that is stable • Can investigate how materials can be made stronger e.g., folding, layering and rolling paper and card and testing them for strength • Can communicate their ideas and plan (including its purpose) by describing them to someone else • Can select the appropriate materials and explain their choices **Make** • Can follow a design plan • Can fold, roll and layer to make a sturdy structure **Working with tools** • Can join card and paper using glue and sellotape • Can use tools such as scissors, glue spreaders, tape dispensers accurately **Evaluate** • Can recognise what they have done well and talk about what could be improved • Can assess how well their product works and predict how changes will improve the finished product **Technical Knowledge**	axle chassis wheel washer mechanism similarity difference features design brief template	a piece of metal/ wood joining two wheels together the base frame of a wheeled vehicle a circular object that revolves around an axle in order to move (forward or backwards a piece of metal/ wood used to protect the wheel and axle from rubbing together a number of parts working together (like a machine) the same as different to something else things which make it unique when compared to other things a set of instructions given for a designer to follow to create a model to copy

- Know that a pivot is a central point that something moves around
- Know that a lever is a bar that is attached to a
- pivot that is used to move a load
- Know that mechanism moves because force is put on a lever which is attached to a pivot

What will I know by the end of the unit?

Design

- Can name and describe the features and functions of an existing design (fire engine)
- Can investigate ways to combine wheels, axles and chassis
- Can investigate and plan to make the features of a fire engine (i.e., body, ladder, hose)
- Can make a design for a fire engine that includes wheels, axles, chassis and a body
- Can list and select the appropriate materials and explain their choices
- Can communicate their ideas and plan by describing them to someone else including what the purpose is.

Make

- Can follow a design to make a fire engine that moves

Working with tools

- Can use tools such as ruler, scissors, hack-saw, glue spreaders, tape dispensers accurately and safely.
- Can join card, paper, dowelling and straws using glue, tape (sellotape/masking tape) and threading through

Evaluate

- Can use like and dislike when evaluating their fire engine
- Can recognise what they have done well and talk about what could be improved
- Can assess how well their product works
- Can predict how changes will improve the finished product

Technical Knowledge

- To know that a wheel is a circular object that revolves on an axle
- To know that an axle is a rod that passes through the centre of a wheel

join	to link two or more things together
measure	to take/ make an exact length of something
friction	the action of one surface or object rubbing against another
siren	a device that makes a loud prolonged signal or warning sound
crane	a large, tall machine used for moving heavy objects by suspending them from a projecting arm or beam
fire-hose	broad hosepipe used in extinguishing fires

• To know that a chassis is the base frame of a wheeled vehicle.
• To know that there are two ways of attaching a wheel to an axle: -
  o Fixed (the axle and wheel move together)
  o Rotating (the wheel rotates separately to the axle)