



Design and Technology Knowledge Organiser

Year 2: Autumn Term – Mechanisms

Wheels and Axles

Design, make and evaluate an emergency service vehicle for themselves for a toy vehicle to play with.



Key Knowledge

Learn this information

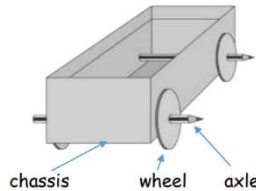
Wheels:

Wheels can be found on many objects. They rotate (turn) to make the object or vehicle work.



Vehicles:

A vehicle carries something (people or things). The main parts of a vehicle are the chassis, wheel and axle.



Fire Engines:

17th Century Keeling Fire Engine:



This fire engine was pulled by men and moved on its wooden wheels. It was worked by four men who pumped the arms to pump the water from the barrel through the spout at the top.

Modern Fire Engine:

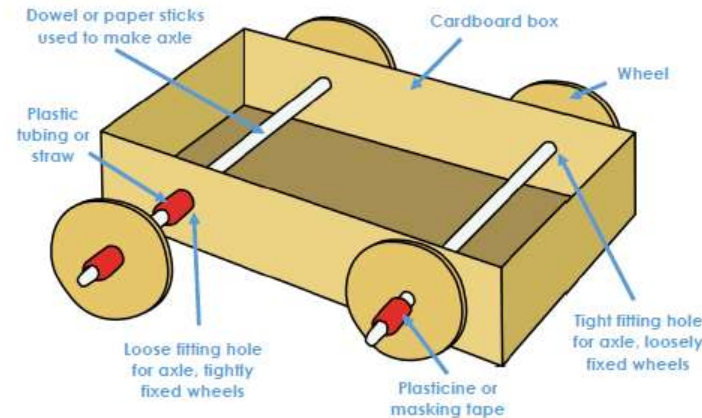
This fire engine is driven in the cab and has an engine to allow it to move. It pumps water through a hose.



Key Skills

Practise and perform these skills

Two different ways to fix wheels:



Ways to hold moving axles:

Use **pairs of clothes pegs** glued with PVA to the underside of a box. Check the peg holes are large enough to allow axles to move freely. Make sure they are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.



Use **card triangles** with holes for the axle. Check the holes are large enough to allow the axle to move freely. Make sure opposite triangles are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.



Use **large paper/plastic straws** fixed with masking tape to the underside of a box. Check straws are positioned carefully so the vehicle will move in a straight line when the wheel and axle mechanisms are added. Make sure the straw hole is large enough to allow the axle to move freely. The wheels must be fixed tightly to the axle.



Key Vocabulary

Understand these key words

Vocabulary	Definition
Axle	A rod on which one or more wheels can rotate, either freely or be fixed to and turn with the axle.
Axle Holder	The part through which an axle fits and rotates.
Cab	The part where the driver sits to control the vehicle.
Chassis	The frame or base on which a vehicle is built.
Design	To make, draw or write plans for something.
Dowel	Wooden rods used for making axles to hold wheels.
Fix	To mend something so that it will work properly again.
Fixed	Cannot move.
Free	Can move.
Friction	The resistance when two things rub together.
Mechanism	Parts of an object that move together to make something work.
Test	To find out whether something works as it should.
Vehicle	A thing for transporting goods or people.
Wheel	A circular object that turns around. It can be fixed to a vehicle like a car or bicycle to allow the vehicle to move easily over the ground.