

# Year 1 & 2 Design and Technology Knowledge Organiser

## Term 5&6- Mechanisms: Wheels and Axles.

### Vocabulary:

**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 component through which an axle fits and rotates.

**Chassis** –the frame or base on which a vehicle is built.

**Friction** – resistance which is encountered when two things rub together.

**Dowel**– Wooden rods used for making axles to hold wheels.

### Key Skills:

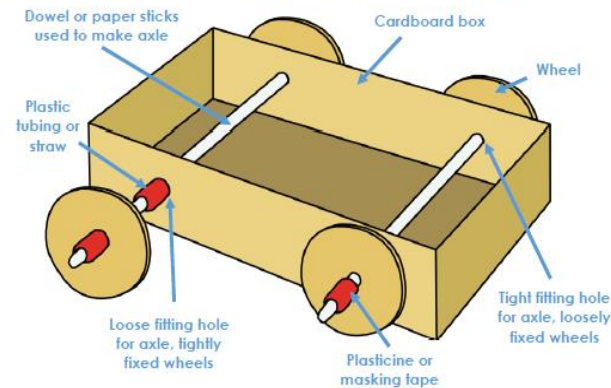
**Designing:** You will create vehicle for explorers travelling in extreme weathers of the polar regions.

**Making:** Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.

**Evaluate:** You will evaluate your ideas throughout and your vehicle against your design criteria.

**Technical Knowledge:** You will explore and use wheels, axles and axle holders. As well as distinguishing between fixed and free moving axles.

### Two different ways to fix wheels



### Types of wheels



### Wheel and Axle Examples



### 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.



### Careers:

Suspension & Axle Design Engineer

Bicycle Technician

Railcar repair person

Vehicle maintenance technician

