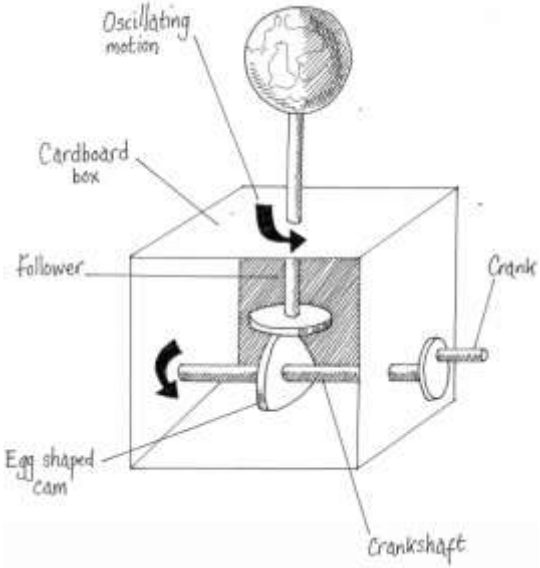
UKS2 Mechanisms- Mechanical Toys

Key Vocabulary	
Aesthetic	Attractive design.
Audience	Who the project is intended for.
Mechanism	Different pieces working together to help something move.
Cam	Rotating or sliding piece in a mechanical linkage used especially in transforming rotary motion into linear motion.
Crank	The handle that turns the crankshaft.
Crankshaft	The rotating shaft (dowel) a crank is joined to.
Follower	A bar that follows a cam around its circumference and moves the toy.
Rotary motion	Movement that goes round.
Oscillating motion	Moving to and fro around a pivot point, as in a lever.
Reciprocating motion	Backwards and forwards movement.

Design

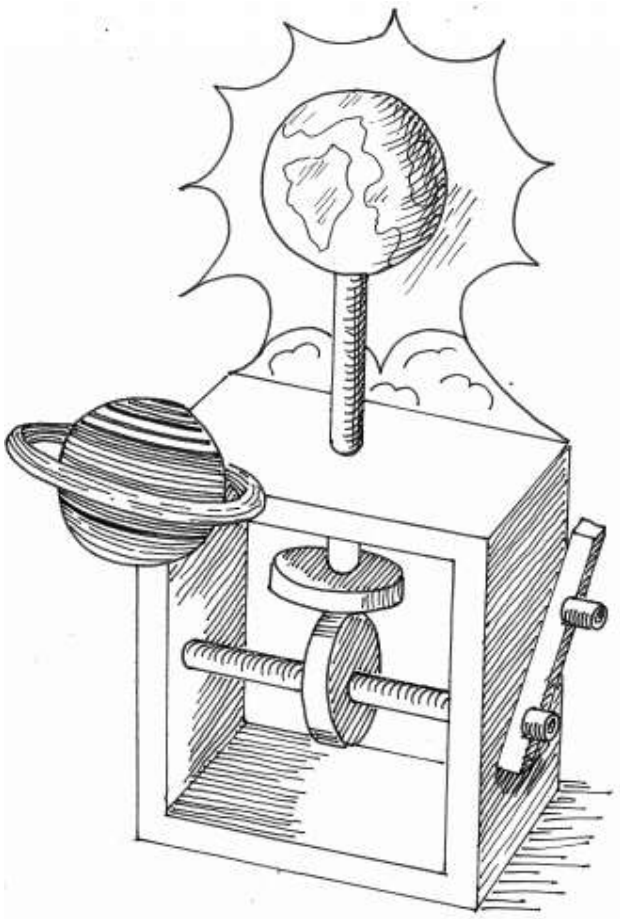
Labelled Diagram

Draw a 3D, cross sectional diagram of your mechanism that includes the direction of motion of your cam as well as designs that will be on top.



The Project

Introduction	Working in small groups, this project is designed to use your structure and mechanism skills to create a toy that moves using one or more cams.
Purpose of Project	To design and make a moving toy for young children to enjoy.



Research

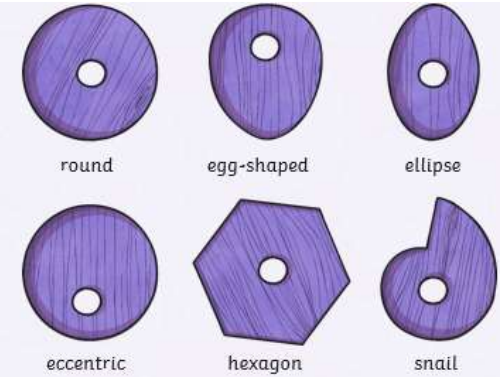
Mechanical Toys

Different parts of a toy are enabled to moved by mechanisms call cams. This movement either helps tell a story or bring an animal, person or thing to life.



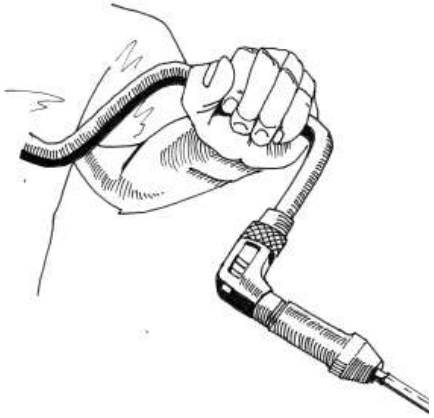
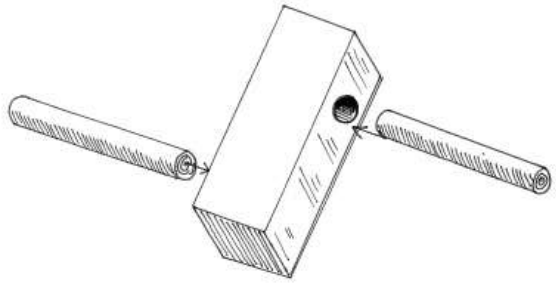
Cams and their movements

A Cam creates all different forms of movement and motion depending on it's shape. For example all of these Cams would provide vertical (up and down motion) in a variety of ways. You will test these out for yourself.



Research Questions

What is the **purpose** of these mechanisms?
What is the **mechanism** that helps move each picture?
Why would children want to play with these toys? Think toy **interesting design** and **aesthetics.**
How does this help create an **effective** story?

Make		
Operating a hand drill	You will be using a hand drill to drill your holes for crank shaft. To safely use a hand drill, loosen the chuck and insert the appropriate drill bit, then tighten the chuck. Place the bit's tip where you want to cut a hole, making sure the bit is at the same angle as the desired hole. Turn the cranking handle to rotate the bit and drill the hole. With smaller drill bits, be careful not to apply excess pressure on the handle or the bit may bend or break.	
Creating the crank	Drill two small holes into a block of wood ready for your handle. Add a few drops of glue into each hole. Insert a dowel into one end, this will be your handle. Stick both pieces on your crank shaft and let it set.	

Evaluate	
You will learn to	- Think critically about your project against the design criteria. - Ask a peer to give their reflection of the successes of your project, outlining one area to work on. - Reflect on the problems you encountered and how you over came them. - Test the product with the intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.