



**Year 9
Summer
Term**

Pathway 2/3/4

**Subject: Design Technology (Mechanisms)
To Design and make a moving toy using cams and linkages.**

Learning Intention: Electronics and materials This Unit will extend the students knowledge on mechanisms by using cams and linkages to design and make a moving toy. By investigating mechanisms and making a focused practical task of a cam and linkage toy.

Key knowledge that should be learned during this SoW

All (Pathway 2)

Most (Pathway 3)

Some (Pathway 4)

Concept:

FPT=Focused Practical Task

To design and make a hand cranked moving toy with cams and linkages to make a movement.

To learn about a range of mechanisms and moving forces including cams ,linkages, gears and pulleys. Students will explore how they help things to move in certain ways but focus on cams and linkages. Students will make a FPT of a moving toy and use some of this knowledge to make their own design.

Knowledge:

All students will learn about the different types of mechanisms, cams ,linkages and pulleys. Different types of movement.

All students will learn about how to construct a FPT of a moving toy

Most students will be able to understand about the different types of mechanisms and movement including cams, linkages, pulleys and gears.

Most Students will understand how the FPT is put together and make it

Some students can understand the theory of mechanisms and the types of movement so they can describe how their moving toy would work.

Some Students will be able to incorporate more than one type of movement into their moving toy eg

	<p>precut.</p> <p>All students will design and make using the theory to construct a moving toy of their own design. With help in designing</p> <p>All students will name and select the correct tool to make this including how to use a pillar drill safely with assistance.</p> <p>All students should be able to make a moving toy using existing examples. To design a toy with at least one cam mechanism. With help to research and design</p>	<p>with a little help.</p> <p>Most students can name and select the correct tool to make this project including how to use a pillar drill safely with supervision</p> <p>Most students will use their knowledge from the FPT and pictures of existing moving toys to design their own moving toy using 2 cams to move a part of the toy.</p>	<p>up and down sound and around.</p> <p>Some students are able to select and name all the tools they need and all the relevant parts on a pillar drill including safety rules. independently</p> <p>Some students will use examples of other moving toys from research, to design their own moving toy and incorporate their movement types into it using cams and linkages. independently</p>
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<p>Key Skills:</p>	<p>To know some properties, types of mechanisms and movements.</p> <p>To know how to use a pillar drill safely</p> <p>To know the names of 2 mechanisms and 2 types of movement.</p> <p>To be able to draw 2 different designs of moving toys.</p> <p>Be able to use the correct tools to make the moving toy and assemble it.</p>	<p>To know all the main types of mechanisms and movement</p> <p>To know the names and what the tools are needed for making the moving toy and use of a pillar drill safely.</p> <p>To be able to name 3 types of mechanism and movement for the moving toy</p> <p>To be able to draw at least 3 designs of moving toy with some parts labelled.</p> <p>To be able to assemble the design that has been chosen to be made.</p>	<p>To know all the main types of mechanisms and movement and some of their uses.</p> <p>To know the names and what the tools are needed for making the moving toy and being able to select them and use a pillar drill safely.</p> <p>To be able to name 4 types of mechanism and movement for the moving toy</p> <p>To be able to draw at least 4 designs of moving toy with all parts labelled.</p> <p>To be able to assemble the design that has been chosen to be made accurately..</p>
<p>Language and/or communication skills:</p>	<p>Coping saw, tenon saw bench hook,G clamp, vice steel ruler tri square cordless drill. Pillar drill hammer</p>	<p>Cams linkages in wood push rods pivots,cam followers and frame.</p> <p>Drawing in 2D and 3D</p>	<p>MDF in various thicknesses ,pva glue 6mm dowel rod hardwood</p>
<p>Curricular Links</p>	<p>Links to other learning within the subject are: Science ,maths</p>		

