

Key Vocabulary

cam, peg cam, shaft, housing,	snail cam, pear shaped cam, crank, rotation,	off-centre cam, axle, handle, user
oscillating motion, design specification annotated sketches, input movement, functionality, authentic,		reciprocating motion process exploded diagrams, output movement, innovation, purpose,



Prior Learning

- Experience of axles, axle holders and wheels that are fixed or free moving.
- Basic understanding of different types of movement.
- Experience of cutting and joining techniques with a range of materials including card, plastic and wood.
- An understanding of how to strengthen and stiffen structures.

Key Information

The children will make a moving toy which could be put on display in a shop. They will be incorporating cam-driven components for their toy with oscillating, rotating or reciprocating movements.

They will have the opportunities to design, make and evaluate their product and develop key skills.

The children will:

- Demonstrate how to assemble the parts using the equipment provided. Learn about the ways in which cams move and rotate.
- Apply their understanding of how cams work when creating a moving toy.
- Be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task

Key Skills

DESIGN: Generate innovative ideas by carrying out research using surveys, interviews, and research. Develop a simple design specification to guide their thinking. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.

EXPLORE: Look at and analyse different types of cams and toys with cam mechanisms. Explore the different types of movement: rotary, oscillating and reciprocating.

MAKE: Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished.

EVALUATE: Compare the final product to the original design specification. Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work.

TECHNICAL KNOWLEDGE: Understand that mechanical systems have an input, process and an output. Understand how cams can be used to produce different types of movement and change the direction of movement. Know and use technical vocabulary relevant to the project.

