



# Levers and Linkages

## What are levers?

**Lever**  
The simplest type of **mechanism**. A lever is a stiff bar which moves around a **pivot**.

Diagram showing a main lever and several smaller levers connected to it. Labels include "main lever" and "levers".

## What are Linkages?

**Linkage**  
The part of the **mechanism** used to join one or more levers to produce the type of movement required.

Diagram showing a linkage connecting multiple levers. Label includes "linkage".

## What are Pivots?

**Loose Pivot**  
Joins the levers together.

Diagram showing a loose pivot joining two levers. Label includes "loose pivot".

**Fixed Pivot**  
Joins the levers to the overall object.

Diagram showing a fixed pivot joining levers to a base. Label includes "fixed pivot".

**Levers** are rigid bars that move around a **pivot**.  
When you push or pull a lever, it creates a **motion** that moves something that is attached to that lever by a pivot. Levers are used in many everyday products. Scissors are a good example of a lever and pivot.  
**Linkages** are a group of levers that are joined together.

## Where are levers and linkages used?



Pop-up books, toys and cards

## Inputs and Outputs

**Exploring Mechanical Systems**  
Many **mechanisms** take one type of **input motion**, and **output** it as a different type of **motion**.  
In lever and linkage **mechanisms**:

**Input** - The movement of the main lever by the user.

**Output** - The movement that is made by the smaller levers.

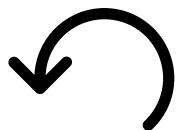
Diagram showing input motion on a main lever and output motion on smaller levers. Labels include "input" and "output".



# Types of Motion in Mechanical Systems

A device used to create movement in a product. Lever and linkage mechanisms usually produce oscillating or reciprocating movement

## Rotary Motion



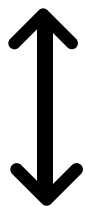
Turning round in a circle like a wheel

## Linear Motion



Moving in a straight line like a paper trimmer

## Reciprocating Motion

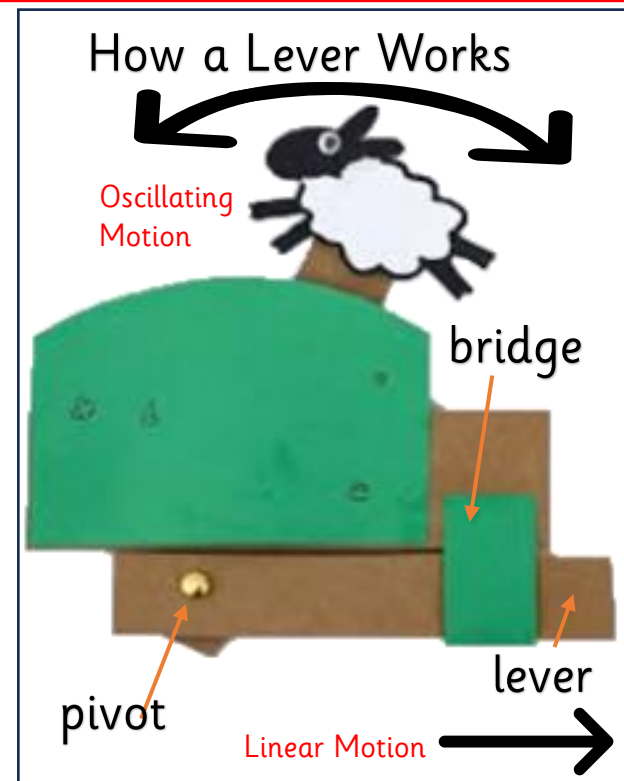


Moving forwards and backwards in a straight line like a saw

## Oscillating Motion



Swinging from side to side like a pendulum in a clock



## Vocabulary

<b>Mechanism</b>	Something that uses related components which act together to create a movement
<b>Motion</b>	Movement from one place to another
<b>Pivot</b>	To turn on a central point
<b>Lever</b>	A push or pull control that is the input to the mechanism. Pushing or pulling will result in movement in the output
<b>Linkage</b>	The card strips joining one or more levers to produce the type of movement required
<b>Slot</b>	The hole through which a lever is placed to enable part of a picture to move
<b>Guide /bridge</b>	A short card strip used to keep lever and linkage mechanisms in place and control movement.
<b>Product</b>	Something that we use in every day life.