



Mechanisms

Pulleys or Gears

Y5

In this unit, we will design, make and evaluate a revolving ride for a theme park for leisure.

Knowing More Remembering More:

Remembering previous learning

What is a fixed pivot? A fixed pivot fixes the lever to the material and the main object.

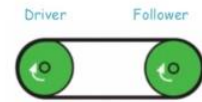
What is a loose pivot? A loose pivot joins the lever to another lever so they both move at the same time.

What is a linkage? A linkage is a mechanism which is made by connecting levers together through joints known as pivot points. The levers in the linkage work together.

How can a lever make things move? Levers can make things move in a linear, reciprocating or oscillating movement.

Techniques

Developing understanding of gears and pulleys



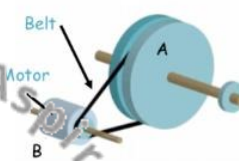
The pulleys rotate in the same direction



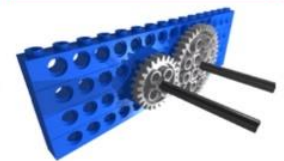
The pulleys rotate in different directions

Using construction kits, ask children to explore gear ratio using combinations of two gears e.g.

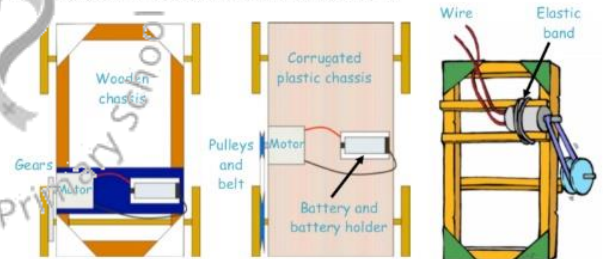
No. teeth	Ratio
8, 16	2:1
8, 40	5:1
8, 24	3:1
40, 40	1:1



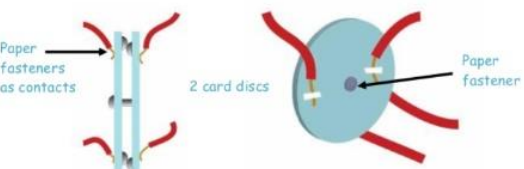
The small pulley (B) rotates much more quickly than the large pulley (A)



Adding gears or pulleys into children's products



An example of a handmade reversing switch



Skills

I will be able to:

Design:

5.1 Record ideas using annotated diagrams (including CAD)

5.2 Use exploded diagrams and cross-sectional diagrams to communicate ideas.

5.5 Devise step-by-step plans

Make:

5.7 Use a wide range of materials using research to inform decisions.

5.8 Use a wide range of tools to measure, mark, cut and assemble accurately.

5.10 Refine their product - review and rework/improve.

Evaluate:

5.11 Research and evaluate existing products using technical vocabulary (including book and web based research).

5.12 Investigate key events and individuals in D&T

5.15 Identify the strengths and areas for development in my work, considering the views of others to improve my work.

Vocabulary

Technical vocabulary

pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram

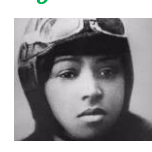
Process vocabulary

annotated drawings, exploded diagrams, mechanical system, input, process, output, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief, names of tools, equipment and materials used

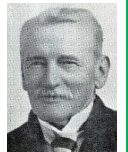
Inspiring Individuals



Sir Isaac Newton



Bessie Coleman



Frederick Savage

Knowing More Remembering More:

Knowing more in Y5

What is a pulley? A pulley is a wheel on a fixed axle.

What does a pulley do? Pulley help objects to move with less effort.

What is a drive belt? A drive belt is the belt which connects and transfers movement between two pulleys.

What is a follower? A follower is the gear or pulley that provides input movement to the system.

What is a gear? Gears are toothed wheels that lock together and turn one another.

What does a gear do? Gears are used to change the speed and direction of movement.

What is gearing up or down? When a small pulley or gear is used to drive a larger one the rotational speed is reduced and the product has been geared down.

What is mesh? Mesh is the point where two gears join together and transfer movement.