



Design Technology

Mechanisms

Pulleys or Gears

Y5

In this unit, we will design, make and evaluate a revolving ride for a theme park for leisure. We will investigate and evaluate videos, photographs and products or toys with pulleys or gears; engage in focused practical tasks using construction kits which will inform our designing and making. We will test and evaluate our rides, identifying strengths and areas for improvement. We will also research inspiring individuals in this field.

Mechanisms Knowledge:

I will:

- Understand that mechanical and electrical systems have an input, process and an output.
- Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.

Skills

I will be able to:

Design:

- Record ideas using annotated diagrams (including CAD)
- Use exploded diagrams and cross-sectional diagrams to communicate ideas.
- Devise step-by-step plans

Make:

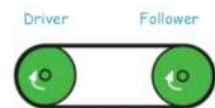
- Use a wide range of materials using research to inform decisions.
- Use a wide range of tools to measure, mark, cut and assemble accurately.
- Refine their product – review and rework/improve.

Evaluate:

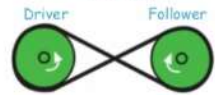
- Research and evaluate existing products using technical vocabulary (including book and web based research).
- Investigate key events and individuals in D&T
- Identify the strengths and areas for development in my work, considering the views of others to improve my work.

Techniques:

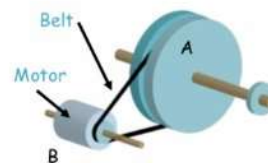
Developing understanding of gears and pulleys



The pulleys rotate in the same direction



The pulleys rotate in different directions



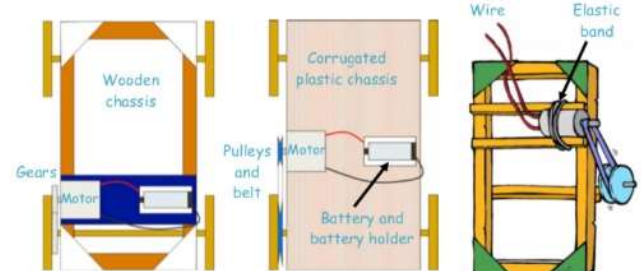
The small pulley (B) rotates much more quickly than the large pulley (A)

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

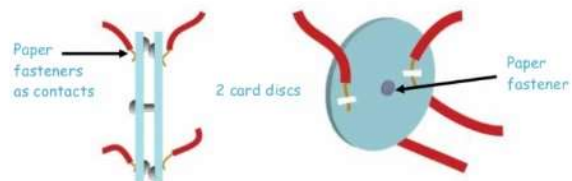
No. teeth	Ratio
8, 16	2:1
8, 40	5:1
8, 24	3:1
40, 40	1:1



Building gears or pulleys into children's products



An example of a handmade reversing switch



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