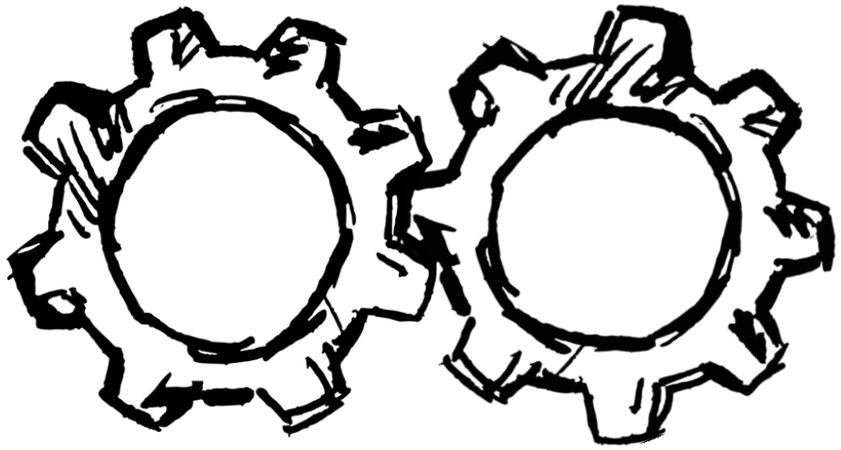
Canal Crane

Definition of Gear and Gear Trains

Gear:

A rotating part with cut **teeth** which **mesh** with another toothed part to transmit rotational energy



Gear Train:

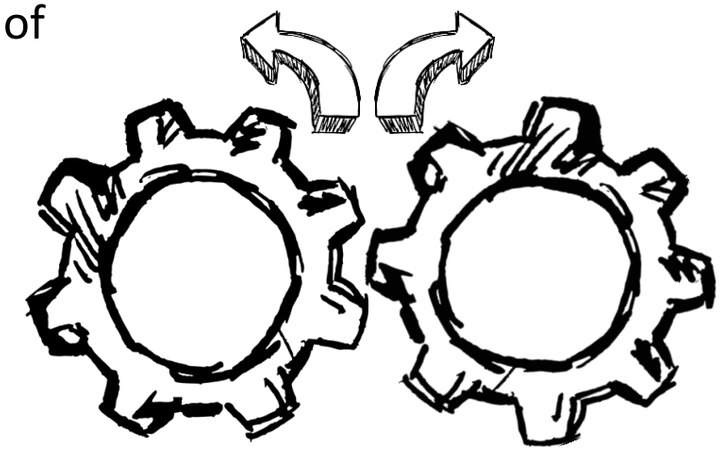
Two or more gears working in a sequence

Developed with support from Rolls-Royce

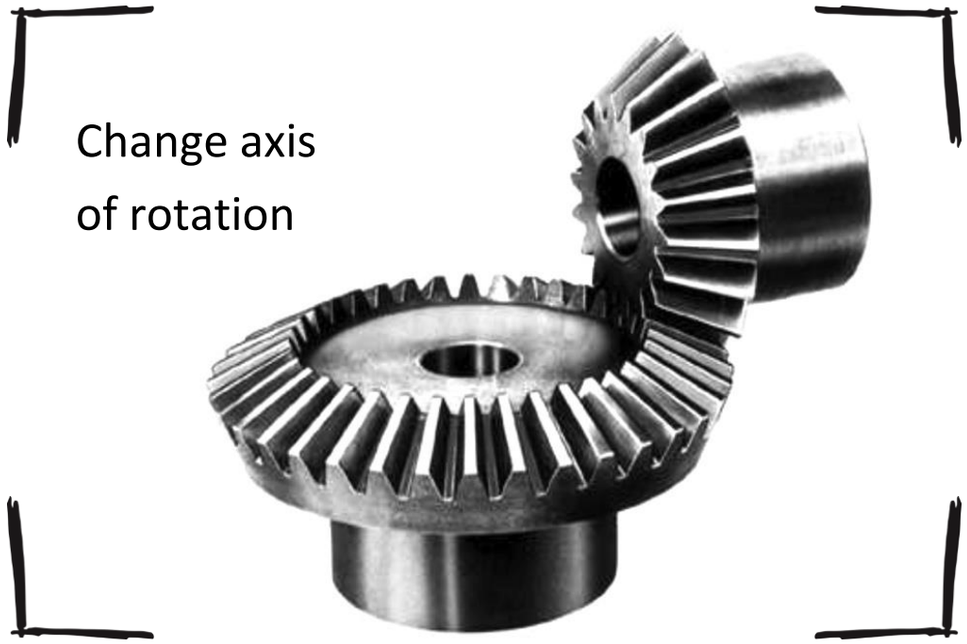
Canal Crane

Why are Gear Trains needed?

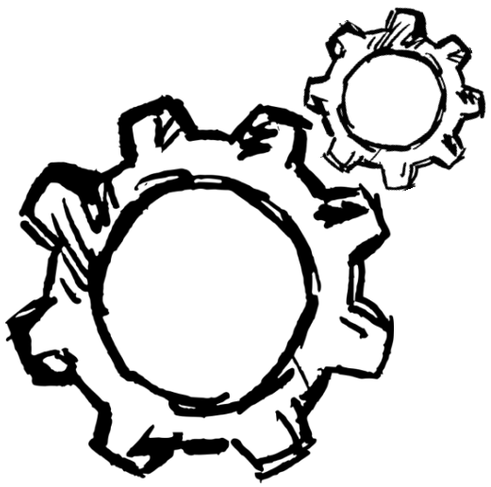
Change direction of rotation



Change axis of rotation



Change speed of rotation



What else?

You will investigate.

Developed with support from Rolls-Royce

Canal & River Trust | STEM

Canal Crane

Experiment 1: Gear Ratio

Steps:

1. Collect a gear set

2. Experiment by turning the small and medium cog wheels

3. Add the large cog wheel

4. Measure the circumference of each gear using a piece of string or by counting the number of teeth

Write down the measurements

5. Write down the number of turns of the small and medium cogs, to a full turn of the large cog

6. Calculate the large:small, large:medium, medium:small gear ratios

Developed with support from Rolls-Royce

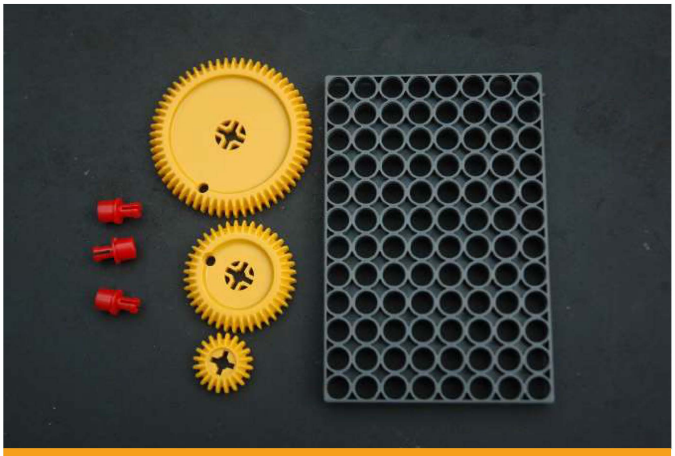
Activity Sheet: Gear Ratio

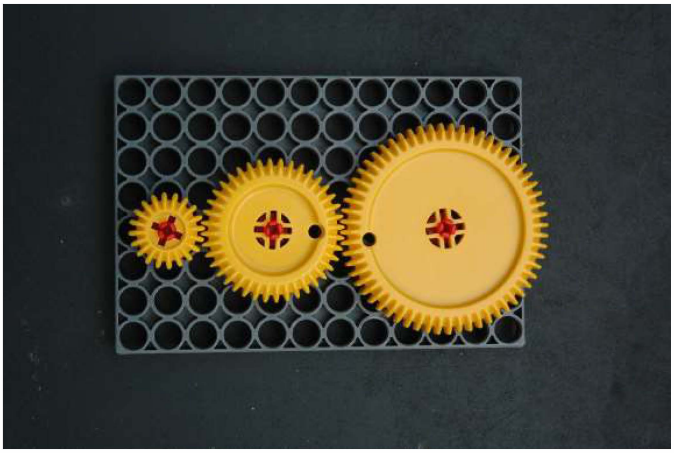
Gear Trains - Experiment 1

1. Collect a gear set
2. Experiment by turning the medium sized and small cog wheels
3. Add the large cog wheel
4. Measure the circumference (in mm) of each gear by putting a piece of string around them or by counting the number of teeth
5. Write down the number of turns of the small and medium cogs, to a full turn of the large cog
6. Calculate the large:small, large:medium, medium:small gear ratios

Cog	Circumference	Number of turns	Gears	Ratio
Large		One full turn	Small	
Medium			Large	
Small			Medium	

What else did you notice?





Parts for Experiment 1