

Year A Summer

Lostwithiel Primary School

Year Six

Topic/Theme



DT Knowledge Organiser

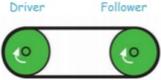
Conkers Class

**Prior Learning:**

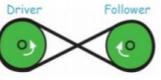
- Children will have prior experience of building electrical circuits (Year 4) and using to create products (Year 6)

**Key DT knowledge and skills:**

- A variety of products which incorporate a pulley and a drive belt and are driven by a motor or a computer
- Control systems are used in everyday life
- Model ideas using mechanisms, by using construction kits or making a model from a set of instructions
- Incorporate mechanical and electrical systems in their products
- Mechanical and electrical systems have an input, process and output
- Include an electric motor in a simple circuit
- The direction of rotation and speed of an electric motor can be controlled
- Rotation can be transferred from one part of a model to another by using pulleys and a belt
- Gears and pulleys can be used to speed up, slow down or change the direction of movement - reverse the direction of rotation (by twisting the belt through 180 degrees); turn the plane of rotation through 90 degrees (by twisting the belt through 90 degrees); increase or decrease the speed of rotation (by using different size pulleys)
- Conversion of circular motion (of the handles) into other forms is achieved through intermittent steps (1) up and down (2) and sideways (3)



The pulleys rotate in the same direction.



The pulleys rotate in different directions.

**Pulleys**  
A pulley is a wheel with a grooved rim, around which a cord passes, which changes the direction of a force.  
A pulley can be used to raise heavy weights.

**A Driver**  
A driver is the gear that has the force or motion input. The load is a heavy thing that is carried or about to be carried.

**(1) Geneva Wheel**  
A model showing a star-shaped wheel (B) meshing with a circular wheel (A) to create intermittent motion.

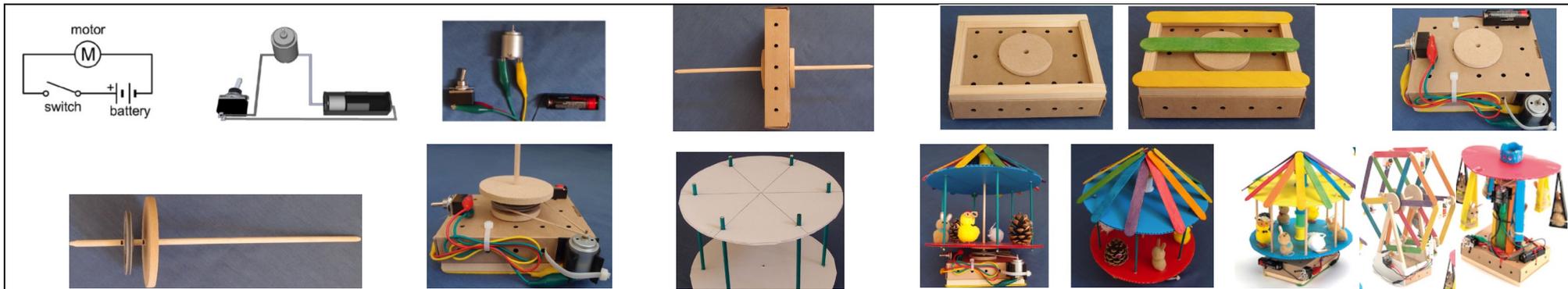
**(2) Intermittent Drive**  
A model showing a circular wheel (C) with a slot meshing with a crank (B) to create intermittent motion.

**Eccentric**  
Eccentric in this context simply means "out of centre". The centre of wheel A is slightly offset from the axle.

**Scotch Yoke**  
A model showing a crank (A) connected to a yoke (B) to convert circular motion into linear motion.

**(3) Positive Action Cam**  
A model showing a cam (A) with a follower (B) to create intermittent motion.

- Use tools (junior hacksaws, clamps, hand drills) safely and accurately
- Some materials are best to stiffen and reinforce by selecting them due to their properties
- Some shapes are strong and will support the most weight in a structure
- Construct products using permanent joining techniques



### Key DT Vocabulary -

### General Terms and Cross Curricular Vocabulary

<b>Gearing up/down</b>	Changing the rotational speed of a product by the use of pulleys or gears. When a small pulley or gear is used to drive a larger one, the rotational speed is reduced and the product has geared down.	<b>Prototype</b>	A model made to test whether a design will work.
<b>Drive belt</b>	The belt which connects and transfers movement between two pulleys.	<b>Linear</b>	In a straight line.
<b>Gear</b>	A wheel with teeth around its circumference.	<b>Reciprocating</b>	Backwards and forwards in a straight line e.g. a slider.
<b>Driver</b>	The gear or pulley that provides the input movement to the system.	<b>Rotary</b>	Round and round e.g. a wheel, cam, pulley, gear wheel.
<b>follower</b>	The gear or pulley that provides the output movement to the system.	<b>Oscillating</b>	Backwards and forwards in an arc e.g. a lever.
<b>Motor spindle</b>	The rod on the end of the motor onto which a gear or pulley is attached.	<b>Attractions</b>	A place which draws visitors by providing something of interest or pleasure
<b>Pulley</b>	A grooved wheel over which a drive belt can run.		

### DT Outcome

### Cross Curricular Links

The children will work in pairs to design a fairground ride, create a model of their ideas before creating and making their final design. They will evaluate their finished product against a set of given criteria.

Science - Explore forces (Y5)

Maths - Design and calculate costs of setting up and running a fairground (post SATs project. 3D shape structures.

English - descriptive writing

*As night falls, the fairground glows luminous against the black sky. The fair is a myriad of colours: dazzling lights flash and flicker; rides accelerate, hurtling through the air; rich scents waft through the air. The places is alive with booming music, exhilarated screams, delighted squeals and cheerful shouts. Colossal, gyrating rides with vibrant, pulsating lights tower over the excited visitors. A roller coaster spirals and coils, which makes it look like an elongated snake twisting through the fair. Excited, thrilled, delighted children race to join the spectacular rides. A lone girl waits by the big wheel smiling and tapping her feet (inside she is petrified of the dizzying heights).*

Linked documents: Class Overview, DT Whole School Progression document and Class Medium Term Planning.