

PRIOR KNOWLEDGE

Children have already experienced, investigated and adapted circuitry with a number of components including lights, buzzers and switches - **Buzz Games** Y4, and **Night Lights** Y5.

This unit offers the opportunity to build on Y6 Science unit where symbols in circuit diagrams is introduced.

LEARNING OPPORTUNITIES

Children briefly **research** the history of **carousels** and **Ferris Wheels**, gathering information about them including differences and similarities.

They **investigate** and **experiment** with **pulley systems** and use **circuitry** to drive them.

As a class, they produce a simple **specification guide** to focus their thoughts and in small teams use the internet to look at fairground rides for **inspiration** for their own **design**, **planning** their product and **allocating roles** and **responsibilities** within the **team**.

Having researched rides, and agreed on the type of ride they're going to make, children produce a detailed **plan** including *a theme – space, Disney, teacups, horses etc., the colour scheme and name of the ride, sketches with annotated ideas for their ride, cross-sectional and 'blow-up bubble' diagrams for clarification, and a list materials and tools needed.*

Being mindful of **time restraints**, and working within a team, children make their fairground ride over a two-lesson period.

Through constant **evaluation**, children consider where they've encountered problems and where **modifications** have been made. They can comment on what has gone well and offer tips and considerations for others to contemplate.

Y6 - MECHANISMS – Fairground Ride

GLOSSARY

Carousel - a merry-go-round at a fair.

Ferris wheel - a fairground ride consisting of a giant vertical revolving wheel with passenger cars suspended on its outer edge.

Theme - give a particular theme or setting to (a leisure venue, event, etc.) "the amusement park will be themed as a Caribbean pirate stronghold".

Cross-section - a surface or shape exposed by making a straight cut through something.

Blow-up diagram bubbles - An **exploded view drawing** is a diagram, picture or technical drawing of an object, that shows the relationship or order of assembly of various parts.

Circuitry equipment – components needed to make a circuit or system of circuits.

Pulley – a wheel with a grooved rim around which a cord, band or belt passes.

Dowelling and dowels - cylindrical rods (wooden)

Glass (sand) Paper - used to smooth slight irregularities in surfaces of wood

Axle – a rod or spindle (either fixed or rotating) passing through the centre of a wheel or pulley.

Drive-belt - a belt that transmits drive (movement) from a motor or engine to a moving part.

Modification - a change that is made, or the act of changing something once a plan is in place. Making a slight change or improvement to the original plan is a modification.

VOCABULARY

carousel

Ferris wheel

theme

cross-section

blown-up diagram bubbles (exploded view)

circuitry equipment

pulley

dowelling

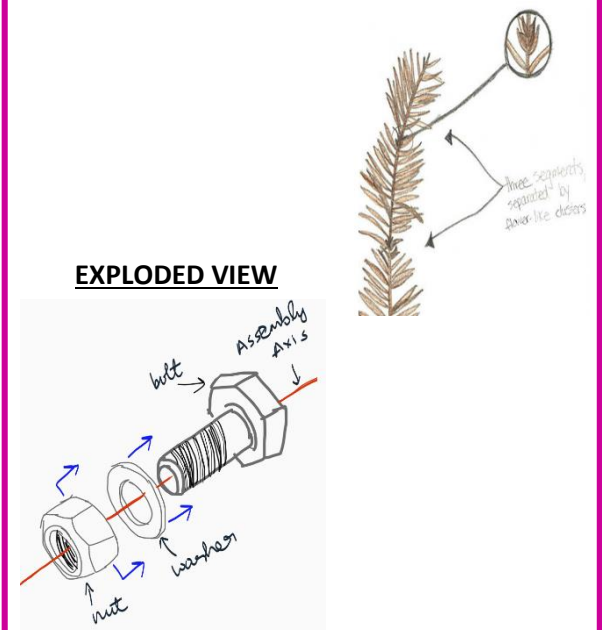
glass paper (sand paper)

axle

drive belt (elastic band)

modification

BLOW-UP DIAGRAM BUBBLES



CAROUSEL



A carousel is an amusement ride that has a rotating platform on which are placed seats for riders in the shapes of different animals (most commonly horses).

The oldest predecessor of carousels comes from 6th century Byzantium, but the real inspiration for modern carousels were cavalry games and jousting of 12th century Europe and Asia. Horsemen of that time played games on jousting competitions in which a group of horsemen would ride in a circle and throw to each other breakable balls full of perfume which needed a great skill.

This game changed in 17th century when horsemen tried to spear small rings that were hanging from poles overhead and rip them off. Cavalry ended the practice of jousting but cavalry games remained and commoners started to participate in them. At that time appeared the first simulation of carousel for children with wooden horses.

The carousels became bigger and the first one started appearing in late 18th century when they started spreading in central Europe and England where they became popular at fairgrounds. The first platform carousel (operated manually) was made in 19th century and had a platform that rotated with the animals and chariots fixed on it.

The first steam-powered carousel was invented by Thomas Bradshaw in 1861 and was a part of the Aylsham Fair.

Frederick Savage began making his carousels in 1870 and invented the now classical mechanism that made carousel horses go up and down like they are galloping.

Carousel horses have basically three stances - all four legs on the ground are called "standing figures", two back legs on the ground and two in the air are called "prancers" and all legs in the air are called "jumpers" which also move up and down.



FERRIS WHEEL

Ferris wheels, sometimes called big wheels, are large, round, revolving structures with gondolas where people sit. They are popular at amusement parks and fairs and are named after Pittsburgh builder, George Washington Gale Ferris, Jr., who made the first modern wheel for the World's Columbian Exposition in 1893.

When he built it, it was 264 feet tall. They called it the "Chicago Wheel" after Chicago, Illinois where it was on display. It was the tallest attraction when it was opened to the public on June 21, 1893.

There were 36 cars, each fitted with 40 revolving chairs and able to accommodate up to 60 people, giving a total capacity of 2,160. The wheel carried some 38,000 passengers daily, and took 20 minutes to complete two revolutions, the first involving six stops to allow passengers to exit and enter and the second a nine-minute non-stop rotation, for which the ticket holder paid 50 cents.



CIRCUITS AND COMPONENT SYMBOLS

This circuit – used to drive the pulley system – consists of the following components:

battery
switch
motor
wires

