



Highsted Knowledge Organiser

Year 10 Terms 3-4: Design & Technology

What I need to know:

Mechanical Devices Systems approach & Electronic Materials and working properties

Key Vocabulary:

System, properties

Levers

1st Class Lever:
Fulcrum in the centre
E.g. Scissors

2nd Class Lever:
Load in the centre
E.g. wheelbarrow

3rd Class Lever:
Force in the centre
E.g. Lifting a dumbbell

Motion

Linear

Oscillating

Rotation

Reciprocating

Forces

Tension

Shear

Compression

Gears and Pulleys

A Pulley is a grooved wheel, that has a belt running through it.

This uses rotary motion and is often used to help with heavy loads, and transfer force from a motor to a tool in machines like drills, etc.

Gears have teeth that mesh together with each other (like teeth on a zip).

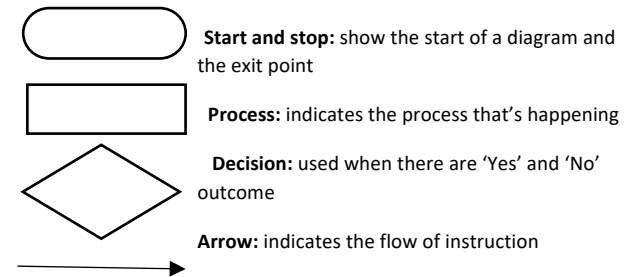
They mainly focus on rotary motion on tools and machinery e.g. car steering and pillar drills

Physical properties	
Absorbency	The ability to soak up or draw heat, light or moisture
Density	The mass per unit volume
Electrical Conductivity	The measure at which a material can transport electricity
Fusibility	The ability of a material to be converted from a solid to a fluid state by heat and combined with another material.
Thermal Conductivity	The measure of a material's ability to transfer heat.

Working properties	
Ductility	The ability of a material to be stretched or drawn or pulled without breaking.
Elasticity	The ability to return to its original shape after stretching or compression.
Hardness	The ability to withstand impact, wear, abrasion and indentation.
Malleability	The ability to be bent and shaped without cracking or splitting.
Strength	The ability to withstand a force such as pressure, compression, tension or shear.
Toughness	The ability to absorb shock with fracturing.

Input	Process	Output
LDR – Light dependent resistor	Resistor	Buzzer
Pressure sensor	Microcontroller	Light emitting diode (LED)
Switch		Lamp
Thermistor		Speaker

Flowcharts: Flowcharts describe the operation of a program in simple terms.



Challenge question: 1. Describe the difference between toughness and hardness. 2. Create a flow chart for creating a comb joint using a jig.

Suggested reading: BBC GCSE Bitesize, Technology Student, AQA GCSE DT Specification