



Y3 We Are Engineers: Catapult Making—Knowledge Organiser



Key Knowledge

Learn this information

A **catapult** is a **lever** propped up by a fulcrum (a pivoting point). The **catapult** magnifies your force to throw a payload. A catapult uses the sudden release of stored potential energy to throw its payload. Most use **tension** or **tor-sion** that was slowly built up via twisted rope, elastic, springs or another material.



The engineer of the catapult:

Dionysius the Elder, a Greek inventor in approximately 400BC.

Catapults were used by: **Greeks, Romans and Medieval.**



At **war**, catapults were used to hurl large stones, spears and arrows over a great distance. Objects were hurled through or over walls and enemy defences.

Catapults are still used **today** but not for war purposes, for items including dog ball

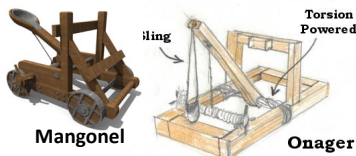


throwers, sling shots and for propelling air craft into the air.

Technologies which fall into the 'catapult'

category:

Onager



Mangonel

Ballista

Trebuchet



Key Skills

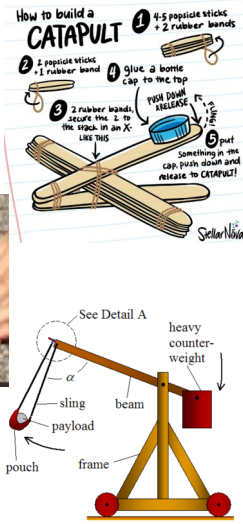
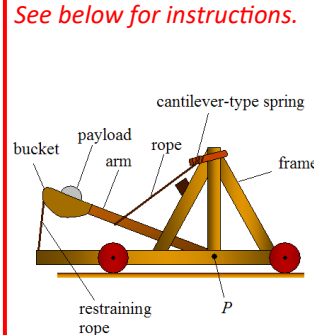
Practise and perform these skills

Create labelled diagrams and prototypes.

Strengthen, stiffen and **reinforce** structures using rubber bands.

Use a **glue gun** safely to fix materials securely.

See below for instructions.



How to use a glue gun safely – wearing protective gloves:

1. Before use, check nozzle is free of old glue residue and that there is a glue stick loaded into the back of the gun.
2. To insert a new glue stick, simply place one end into the circular opening in the back of the gun and slide it in until it stops.
3. Plug the glue gun into the mains and then switch the mains on.
4. The glue gun will start to heat up immediately, wait around 2 minutes for the glue to soften.
5. When glue gun is not in use, rest it on the wire support stand at its base, never lay an active glue gun on its side.
6. Place a piece of scrap cardboard or foil beneath the object you're gluing to catch stray strands of glue.
7. Lightly squeeze the trigger to release melted glue. Aim the nozzle of the glue gun downwards and place it close to the item you will be gluing.
8. Apply the glue smoothly onto the item's surface, leaving the nozzle in contact. Apply glue in dots, swirls or straight lines.
9. Wait for the glue to dry - rest glue gun on it's wire support stand and allow the glue to dry for several minutes. It can be helpful to hold your items with your hands or a clamp as the glue sets for a tight, secure bond.



Key Vocabulary

Understand these key words

Word	Definition	Word	Definition
Catapult	An item used to throw a payload a far distance.	Onager	Most powerful, sling equipped catapult.
Component	A part of something.	Mangonel	Catapult with an arm with a bowl-shaped bucket attached to the end.
Structure	A thing made up of a number of parts joined together.	Trebuchet	Most accurate and efficient catapult, heavy counter-weight used to launch sling up which releases payload.
Strengthen	To make something stronger.	Tension	The state of being stretched: strain.
Stability	The quality of being stable/firm.	Torsion	The state of being twisted.
Accuracy	The condition of being accurate/exact/precise.	Sling	A loop (often made from leather) used to throw an
Aim	To point/direct toward.	Counter-weight	A weight that balances another weight.
Join	To fasten together.	Launch	Throw/propel
Frame	A structure made of parts that are joined together to support a larger object.	Lever	A bar resting on a pivot, used to move a heavy load with one end when pressure is applied to the other.
Arm	The throwing arm is the lever,	Base	The bottom support, on which the catapult stands.
Payload/load	What the catapult is throwing.	Fulcrum	Pivot point, where the arm attaches to the catapult.
Bucket	Used to secure the payload before being launched.	Distance	The measure of space between things.
Rope	A strong cord used to tie, pull or lift.	Ballista	A powerful ancient crossbow.