

# Grange Park Primary School Year 4 Spring 1 Design and Technology

## Levers and Linkages (mechanisms): Constructing an Ancient Greek catapult

### Key People and Events

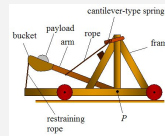
<b>400 BC</b>	Diodorus Siculus, a Greek historian, was the first to document the use of a mechanical arrow firing catapult (early Ballista) in 400 BC.
<b>400 BC to 325 BC</b>	The Mangonel was adapted by the Romans to be used in warfare and throw objects over 1000 feet.
<b>850-900 AD</b>	Vikings used catapults in battle to conquer vast parts of Europe.
<b>1210 AD</b>	Counterweight Trebuchet catapult built from an early design from China dating back to the 3rd century.

### Key types of Catapults

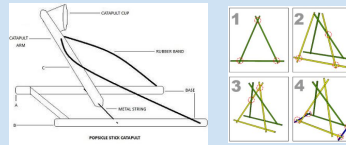
<b>Mangonel</b>	Consists of a large wooden arm that is pulled back and released by a winch, launching a projectile held in a bucket. The weapon has a lot of power but is not accurate.
<b>Ballista</b>	Catapult similar to a crossbow that propels a large projectile with extreme accuracy using built up tension from an attached rope.
<b>Trebuchet</b>	Designed for maximum power and distance. Uses a long arm attached to a counter-balance at one end, and a sling attached to the other. When the counter weight is lifted and released it creates energy.

### Key Knowledge and Skills

**Identifying the different parts of a catapult mechanism**



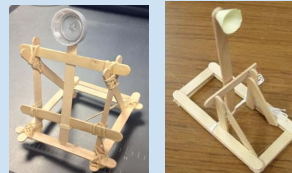
**Creating a prototype by joining materials**



**Adapting materials to fit a purpose and design criteria**



**Joining materials to create a historical functioning model**



### Key Vocabulary

<b>catapult</b>	An ancient military device that can throw objects or missiles at high speed.
<b>linkages</b>	A mechanism made by connecting together rigid links or levers.
<b>levers</b>	A rigid bar that pivots about one point and that is used to move an object or create force. It can also be pushed or pulled to operate a piece of machinery.
<b>fixed</b>	An object that is fastened securely in a position .
<b>propel</b>	To cause something to move forward or onward by means of a force or when a force is applied.
<b>torsion</b>	The twisting of a part to create force.
<b>payload</b>	Another word for the object, missile or projectile that is thrown by the catapult.
<b>counterweight</b>	An equal weight or force used to counter another weight or action.
<b>mechanism</b>	A system of parts all working together and having a particular function to make a machine work or operate
<b>tripod</b>	A three legged stand to support a piece of equipment.
<b>winch</b>	To lift a heavy object by turning a handle or winding up a rope or chain.

**MANGONEL**



**TREBUCHET**

