

# Homemade Catapult

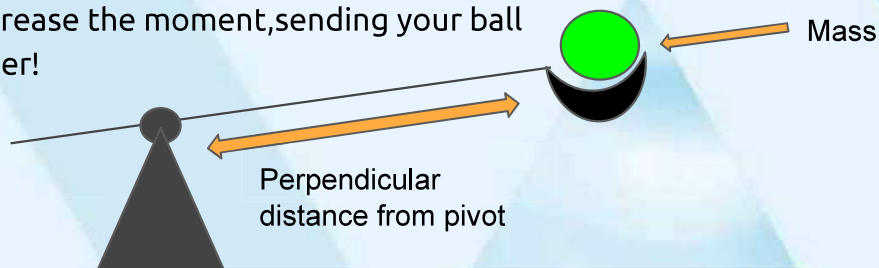
## Design and build a fully functioning catapult from items around your home.

- Using items around your home (such as Pringles tubes, bamboo canes, string etc.) design a catapult capable of firing a tennis ball or similar over 4 meters.
- Your creation must be free standing and must be able to hold the ball itself. For this it will need a strong wide base and a method of holding the ball in place during the firing process, such as a cup or cradle.

## Further Understanding:

- Newton's third law of motion states that "every action has an equal and opposite reaction". This means for you, that if you exert a force into your catapult, the force exerted onto the ball will be both equal and opposite.
- A moment is the turning effect of a force, it is relevant in the context of catapults as that is what will send your ball flying! The moment of a force is calculated by Force x Perpendicular distance from the pivot (the length of your catapults arm from the pivot).

As the tennis balls mass is constant and assuming the force applied will also remain constant. Increasing the length of the catapults arm will increase the moment, sending your ball flying further!



### Notes:

<https://www.bbc.co.uk/bitesize/guides/ztjpb82/revision/1> for more information on the physics.

To make the challenge harder, try hitting a target with your catapult.

## Physical Skill

*Develop and acquire technical knowledge and skills*

### Time:

30+ minutes

### Space:

Any Outdoor Space

### Equipment:

A variety of household 'bits and bobs', String and tape, Tennis Ball

