

Cardboard Arcade

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<https://www.youtube.com/watch?v=falFNkdq96U>

Project: Create a cardboard arcade game that people can play and explain the physics behind winning your game.

You must produce:

- A Cardboard arcade game: Should be challenging, and playable. You must think about the mechanics of the game as well as the construction.
 - o The game must be created by you and not store bought. You may use items purchased such as basketball hoop etc.
- A Document explaining the game mechanics. You must explain:
 - o what the game is and where you got the idea for the game
 - o how to play the game
 - o the physics behind winning (include fully worked out solutions)
- You will also be asked to explain the game to the whole class before we play it

You may work in pairs but you must each provide your own individual document.

Once we are finished with our games, we will have an arcade day where we will present our games and play them

Examples:

Basketball shootout



Given a set initial velocity there are two possible angles that a person could shoot to score a basket. You could work out these two given angles based on an initial velocity and measured distances. **(Multi-angle problem)**

Pinball machine



The pinball machine is purposely tilted to ensure the ball rolls down towards the bottom of the machine. Use a force diagram and some calculations to determine the acceleration of the ball. (**Forces on incline plane**)

Claw machine



Work out the tension in the rope, the frictional forces between the ball and the claw, the time it takes for the claw to grab an object and bring it back given a constant velocity and delay time for pick up. **(Tension, friction, constant velocity, etc.)**

Other ideas:

Soccer shoot out
Hockey Shoot out
Corn hole
Root beer pong
Skee ball

Due Friday Before Spring Break