A close up of a toy

Description automatically generated

National 5 Assignment

Projectiles and Height Guide Sheet: C

National 5 Assignment

LDR distance Guide Sheet: A

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**Variations in range of a projectile with launch height**

**Equipment**

Ball, projectile launcher, protractor, metre stick or tape measure, sand, tray, carbon paper.



launcher

projectile

tray of sand/ carbon paper

adjustable height

tape measure

metre stick

**Instructions**

* Set up the apparatus as shown in the diagram above.
* Set the projectile launcher to an angle of 0° to the horizontal.
* Measure the height of the launcher from the landing height.
* Fire the ball from the launcher.
* Adjust the position of the sand tray or carbon paper so that the ball lands in the sand or on the carbon paper and leaves a clear mark
* Fire the ball a second time from 90 ° to the horizontal and repeat the measurement.
* Set the projectile launcher to greater vertical height and measure the range of the ball for each height.

**Risk Assessment**

* Mark off the launch area so that people remain out of range.
* Check that the launch area is free of people who could get hit.
* Ensure no projectile is left unattended where it could become a trip hazard.
* Wear safety goggles as the projectiles are likely to be smaller than the eye socket, and may not always be very well aimed!