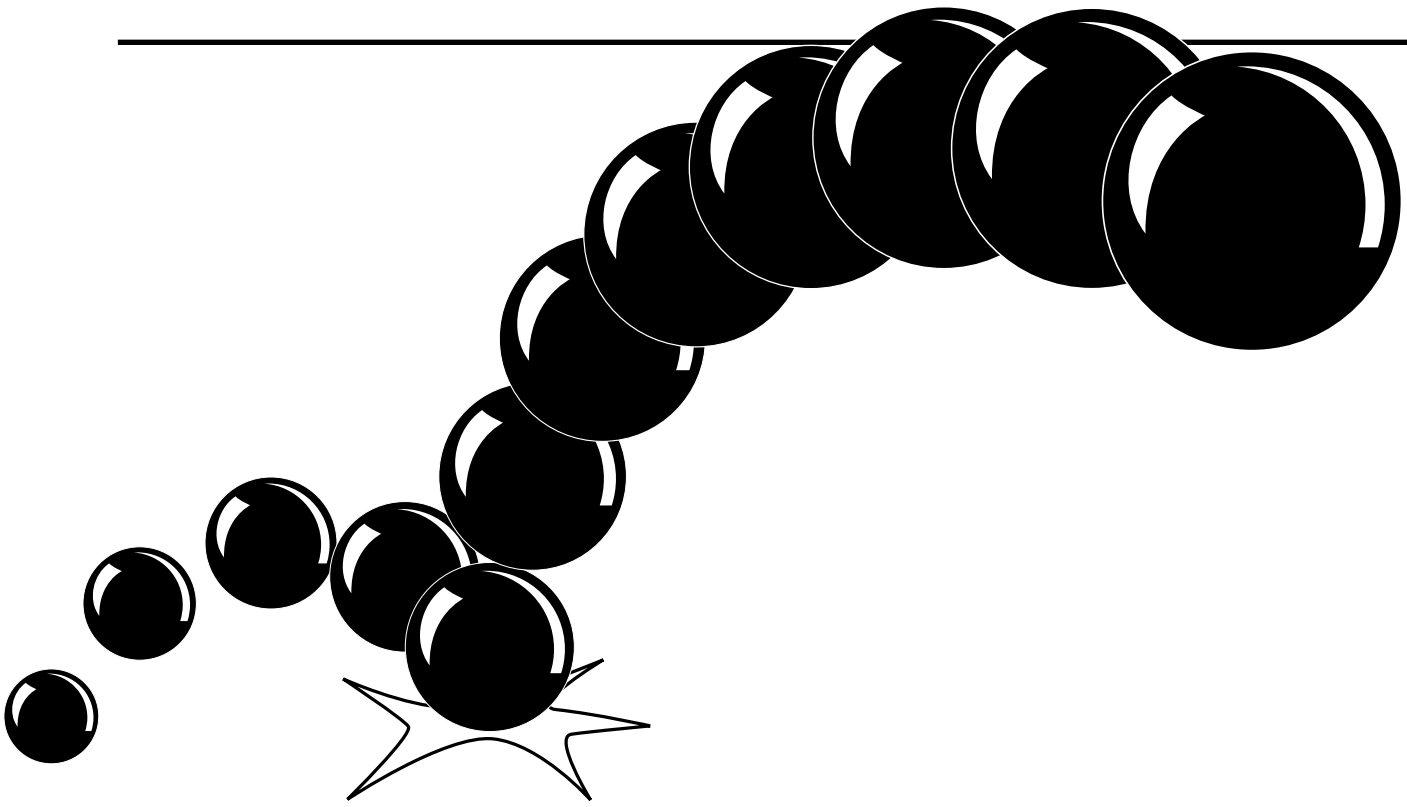
HYPERLAUNCHER SUPERBALL FACTORY



HYPERLAUNCHER SUPERBALL FACTORY

INTRODUCTION

The **HYPERLAUNCHER SUPERBALL FACTORY** kit contains a selection of fun and educational activities that have surprising consequences! There are opportunities to make a range of 'bouncers' 'COSMIC RAY LAUNCHERS' and 'SUPERSONIC BOUNCERS'.

Pupils will learn about elasticity, energy and motion.

The kit contains all you need to carry out the activities safely.

The kit contains a comprehensive instruction manual with clear guidelines for safety.

The HYPERLAUNCHER SUPERBALL FACTORY activities are designed for children of 8 years and over, i.e. pupils in K.S.2.

HYPERLAUNCHER SUPERBALL FACTORY activities are linked to NATIONAL CURRICULUM.

SC1. Scientific enquiry. There are opportunities for thinking creatively, predicting what might happen, using scientific equipment and presenting findings in a range of ways.

SC3. Materials and their properties. There are opportunities to observe changes to materials.

SC4. Physical processes. There are opportunities to observe forces and motion.

Links can also be made to the Q.C.A. units of study.

LINKS TO Q.C.A. CONTINUED

Unit 3C. HYPERLAUNCHER SUPERBALL FACTORY provides opportunity to describe the characteristics of materials.

Unit 3E. HYPERLAUNCER SUPERBALL FACTORY can help to illustrate motion and force.

Unit 6D Reversible and irreversible changes.

Unit 6E Balanced and unbalanced forces.

OUTLINE OF THE SCIENTIFIC BACKGROUND LINKED TO THE HYPERLAUNCHER SUPERBALL FACTORY ACTIVITIES.

Isaac Newton discovered that ‘for every action there is an equal and opposite reaction’. This means if you hit a ball with a stick it exerts the same amount of force onto the stick. When you drop your HYPERLAUNCHER, it hits the floor with force. We know the floor exerts the same force back onto the big ball but this has to go somewhere! So the big ball passes this on to the next and the next and so on.

INTRODUCTION TO CLASSROOM ACTIVITIES

The following activities are designed to take place in a classroom.
It is assumed that pupils will be working in groups of 4.
Bear in mind that time is needed between making the HYPERLAUNCHER and testing it as it needs time to dry for the activity to be successful.

Prior to conducting the experiments and activities, make a collection of different balls (different sizes and materials), in order to promote discussion and understanding of movement.
Measuring equipment such as weighing scales and tape measures could be used to conduct a weight / size / bounce experiment.

Additional equipment for the HYPERLAUNCHER SUPERBALL FACTORY activities;

A selection of elastic bands.
Bowls of water.
Small spoons.
Small plastic trays. (e.g. meat or fruit tray from supermarket).
Centimetre ruler, tape measures and pencils.
Newspaper.
Camera to record results.

CLASSROOM ACTIVITY SHEET 1

This gives pupils the opportunity to examine the equipment and read through what is needed.
They can then select the appropriate equipment and list and draw it adding labels.

INTRODUCTION TO CLASSROOM ACTIVITIES

CLASSROOM ACTIVITY SHEET 2.

This follows up the activity to make the HYPERLAUNCHER. Pupils will have followed the instructions in the manual and have made their HYPERLAUNCHER but not yet tested it. It requires pupils to write step by step instructions for others to follow.

CLASSROOM ACTIVITY SHEET 3.

This sheet will follow up the testing of the HYPERLAUNCHER. It will require pupils to observe, discuss and respond. It asks pupils to change one aspect of the experiment and re-test. Measuring the results and recording it on a table.

CLASSROOM ACTIVITY SHEET 4.

This activity sheet encourages pupils to work co-operatively as a group. They need to predict an outcome and then devise their own fair test. Pupils are required to select materials and work out ways to ensure the test is consistent. Pupils are then required to draw their findings.

Pupils should be encouraged to record their results in different ways, particularly through I.T. and digital cameras.

Opportunities to discuss successes and failures with other groups should be encouraged.

HYPERLAUNCHER SUPERBALL ACTIVITY SHEET 1

Open your HYPERLAUNCHER SUPERBALL FACTORY kit and take out all the equipment. Discuss this with your group. List the equipment needed for the first activity and draw and label it.

TO MAKE A HYPERLAUNCHER I NEED

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....

EQUIPMENT

1.	2.	3.
4.	5.	6.

HYPERLAUNCHER SUPERBALL ACTIVITY SHEET 2

Follow the instructions to make your HYPERLAUNCHER from the instruction manual.
Write the instructions in your own words for another pupil to follow.

TO MAKE A HYPERLAUNCHER

Step 1. .....

Step 2. .....

Step 3. .....

Step 4. .....

Step 5. .....

Step 6. .....

HYPERLAUNCHER SUPERBALL ACTIVITY SHEET 3

TEST YOUR HYPERLAUNCHER

Now you have made your Hyperlauncher you will find out what it can do.
The 4 balls must be dry and not stick together.
Assemble the balls as in the manual and try out the experiment.

Now try the experiment on 4 different surfaces. Measure, then discuss, the results with your group and record on the table below.

	Surface 1	Surface 2	Surface 3	Surface 4
Height of bounce				

Write down your explanations for the results.

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HYPERLAUNCHER SUPERBALL ACTIVITY SHEET 4

IS THERE A LINK BETWEEN THE SIZE OF A BALL AND HOW HIGH IT CAN BOUNCE?

Write your theory here.

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NOW TAKE A SAMPLE OF 4 OR 5 BALLS OF DIFFERENT SIZES AND WEIGHT.

With your group, devise a system that could measure the height of bounce. Talk about how can you make sure it is a fair test?

DRAW YOUR ACTIVITY.

What did you find out?

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