

SCREE SLOPES

Purpose

To determine how size, shape and height of fall affect the distance a particle moves down a scree slope.

In this experiment the scree slope is represented by the curved sloping board covered with pebbles and the cliff by a wooden block which can be raised.

Instructions

Activity I Effect of size

- 1. Record the size of the grains on the scree slopes*
- 2. Choose a pebble and record its letter and intermediate diameter.*
- 3. Adjust and record the height of the cliff. Start with it at 0*
- 4. Place the pebble on the top and then slowly and gently push it off.*
- 5. Record the position it comes to rest (if it rolls off the side start again).*
- 6. Repeat with the same pebble until you get three readings and then average them.*
- 7. Repeat with pebbles of different sizes and with the cliff at different heights*
- 8. Repeat instructions 1 to 7 with a different board.*
- 9. For each board plot your average distances against grain size and distance against height of fall. Draw your conclusions.*

Activity II Effect of shape

- 1. Repeat instructions 1 to 9 using the Fimo shapes using first the smaller size and then the larger size.*

Activity III

Examine the photographs. Are the large boulders at the top or bottom of the scree slope?

Teacher's Section

Requirements

2 Plywood boards 60cm by 30cm supported as shown in diagram.

Angular pebbles labelled A to G with the following intermediate diameters

A 10mm, B 15mm, C 20mm, D 25mm, E 35mm, F 45mm

Fimo shapes: a disc, sphere, roller and cube each weighing 2.0g and a second set each weighting 3.0g. See making Fimo shapes.

Tape measure (cloth one is best)

Photographs of scree slopes

Making the equipment (2 hours per slope)

Follow the diagram to make the board. The plywood boards should have angular pebbles glued on to them using Unibond or a similar glue. Spread glue thickly over the board and then cover it with pebbles. Once the glue has set shake off the loose pebbles. One board should have pebbles 2 to 4cm and the other 1 to 2cm. The board should have the same curvature as shown in the diagram so that it mimics the curve of actual scree slopes.

Notes

As there is a wide variation in the distance travelled by any one pebble it might be better to take an average of more than three readings. It is useful to use some statistics to see if the conclusions are valid.

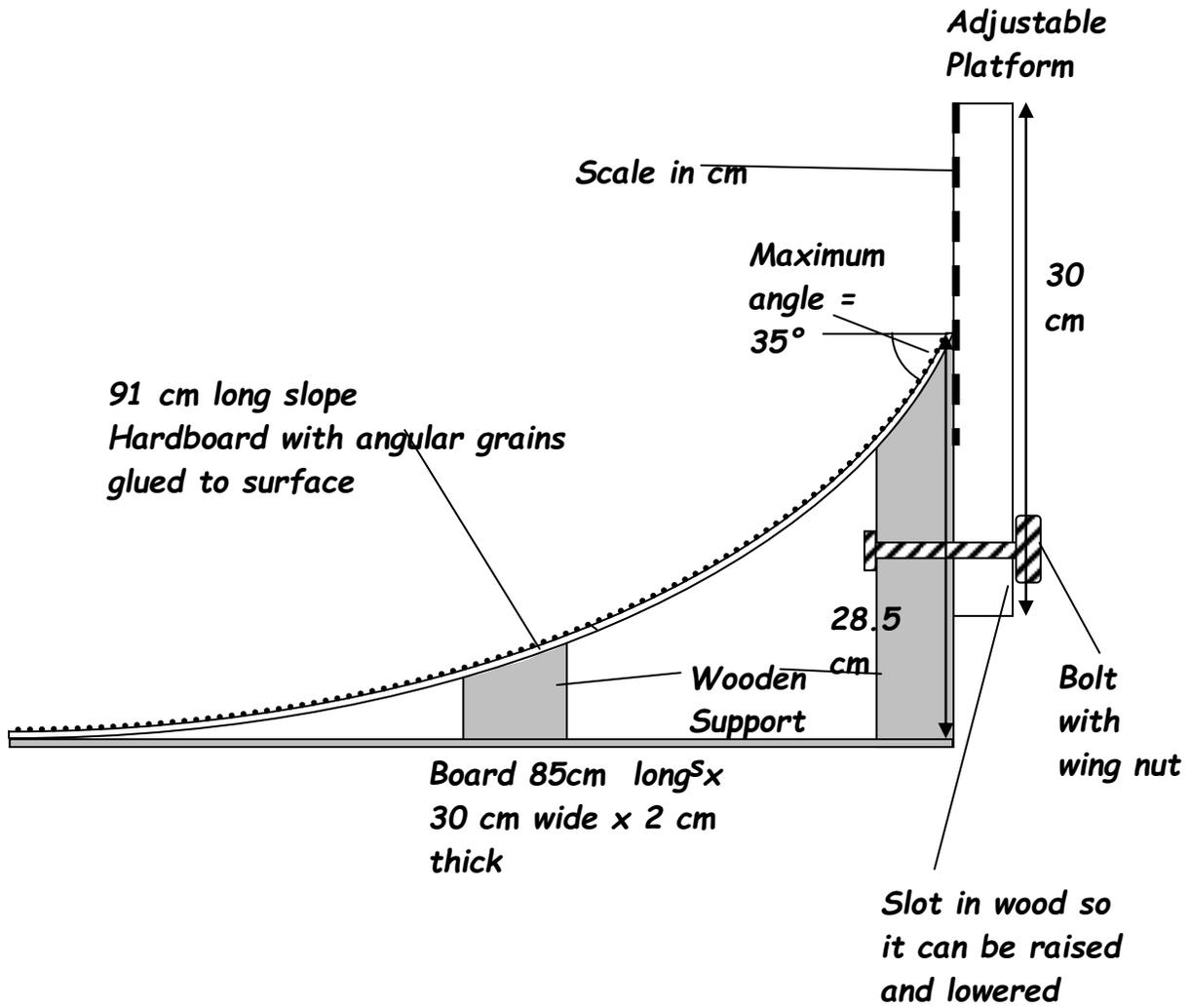
Results

The distance travelled increases with the size of pebble but surprisingly the height of fall makes little difference. Spheres travel furthest, then cubes, then discs and rollers travel the least distance.

10. Time

About 40 minutes for each board for Activity I and the same for Activity II. Activity III 5 minutes

Scree slopes





Rear view showing mechanism for changing height of cliff



View of scree slope

