

BBC



Motion





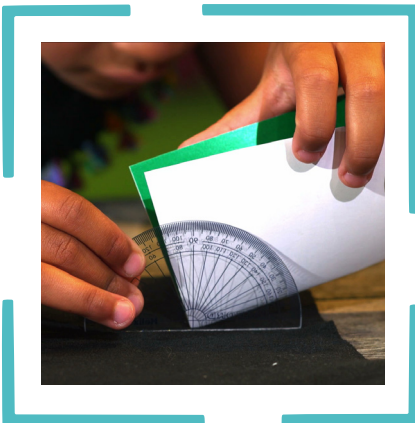
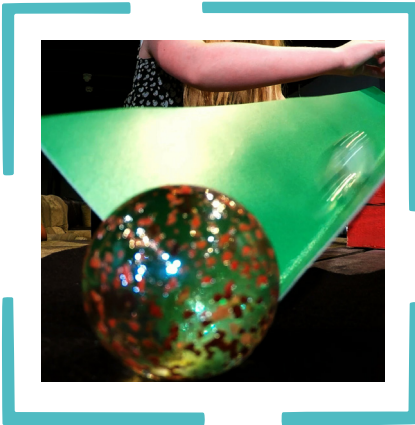
Expected duration

Approximately 1 hour.

Equipment needed

- A bag of different sized marbles
- An assortment of different materials. For example: an A3 sheet of cellophane, aluminium foil, bubble wrap, sand paper or fleece
- Protractor
- Ruler
- Tape measure
- 100cm x 10cm length of card (carefully fold this in half lengthways for making the ramp)





The investigation – instructions

Set up your card ramp and position a large marble at the bottom. The aim is to work out how to use a small marble moving down the ramp to move the larger marble as far as possible.

1. Free exploration

Work in a small group. Explore rolling marbles down the ramp and observe how making changes to the size of the (rolling) marble, the start position on the ramp, the angle of the ramp or the type of material they roll on to affects the distance they travel off the end of the ramp. Discuss what you found out and make notes about your findings.

2. Directed discovery

Place the ramp at a low angle such as 15 or 20 degrees. Put a large marble at the bottom of the ramp. Release a small marble from the top of the ramp and measure how far the large marble travels. Now repeat the activity, but with the ramp at a higher angle such as 30 or 40 degrees.

3. Challenge

Make the large marble travel as far possible using the small marble, the ramp and any of the material provided.

Use your findings from the free exploration and directed discovery activities to attempt the challenge.

Record how far you were able to get the large marble to travel and how you achieved this.

Repeat your method to check the validity of your results.

Compare your results with those of other groups.