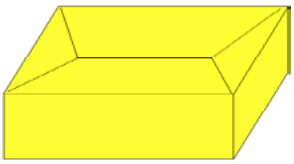
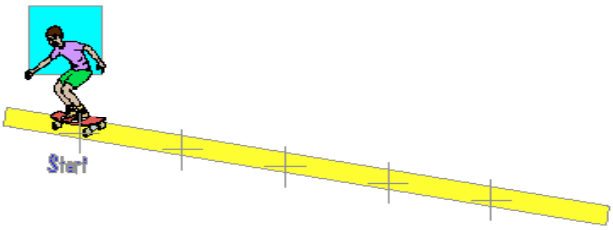
How much pulling must you do to move brick?



The friction, or friction force of a surface will affect how easy it is to pull a brick along it. You can use a force meter and string to pull a brick over carpet, wood, drinking straws, marbles and measure the force needed. It's easy to record results in a **spreadsheet** and turn these into a bar graph. You can point the children to the graph and ask: which surface needs the least force to pull the brick? Which surfaces are almost the same?



What is it about the surface that makes it hard to pull the brick? What can they do to change this? How would oil, or grease or margarine on the surface change it?

Similarly, the children can graph how much force it takes to pull a chair over carpet, paper and vinyl. Does it take more force to move it over some surfaces? They can use their forcemeter to record how much force is needed to move different things in the room. Why do different things need different amounts of force?

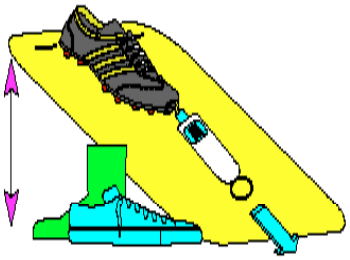
IT: Handling information

How does the surface affect how far a toy car travels?

A surface can transfer some of the energy of a car rolling down a slope. The friction force reduces the energy of the moving car. You can get the children to see the effect of different surfaces - and they can use a **spreadsheet** to record and graph how far the car goes. If you have **light gates** or light switches for your sensor box, the children could instead measure the speed of a car as it rolls down different surfaces. Which surfaces are the best? Do you think a real car would use less petrol on a smoother road? What is not so good about a smooth road?

IT: Measuring

Should granny wear trainers in poor weather?



As with the brick activity above, the children might test a number of shoes to see which have the most grip. You might ask how they might get a wet surface and what they will do about shoes that are heavier than others. Again they can use a spreadsheet to record their results. They can sort their shoes into order and draw a bar graph to answer: which shoes are the most grippy?

IT: Handling information

How big a load can a balloon-rocket carry?

You can make a balloon-rocket by threading string through a straw taped to a balloon. Get the children to investigate how different loads, or different lengths of straw affect its movement. Then get them to record and graph their results using a **spreadsheet**. Does the length of the straw affect the rocket? How does the graph tell you this? Does the load affect the rocket? Why might this be?

IT: Handling information