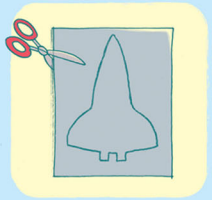
Friction tricks

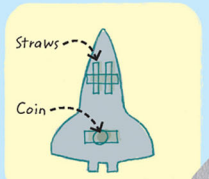
Find out more about friction (the force you get when things rub together) and how to increase and reduce it.

131 Make a rocket

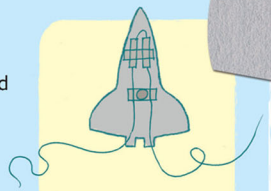
1. Draw a rocket on a piece of thin cardboard and cut it out.



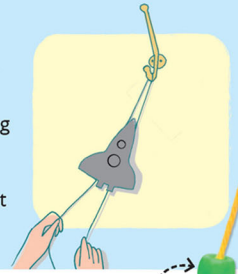
2. Cut two small pieces off a drinking straw and tape them to the rocket. Tape a coin near the bottom of the rocket to add a little weight so it hangs better.



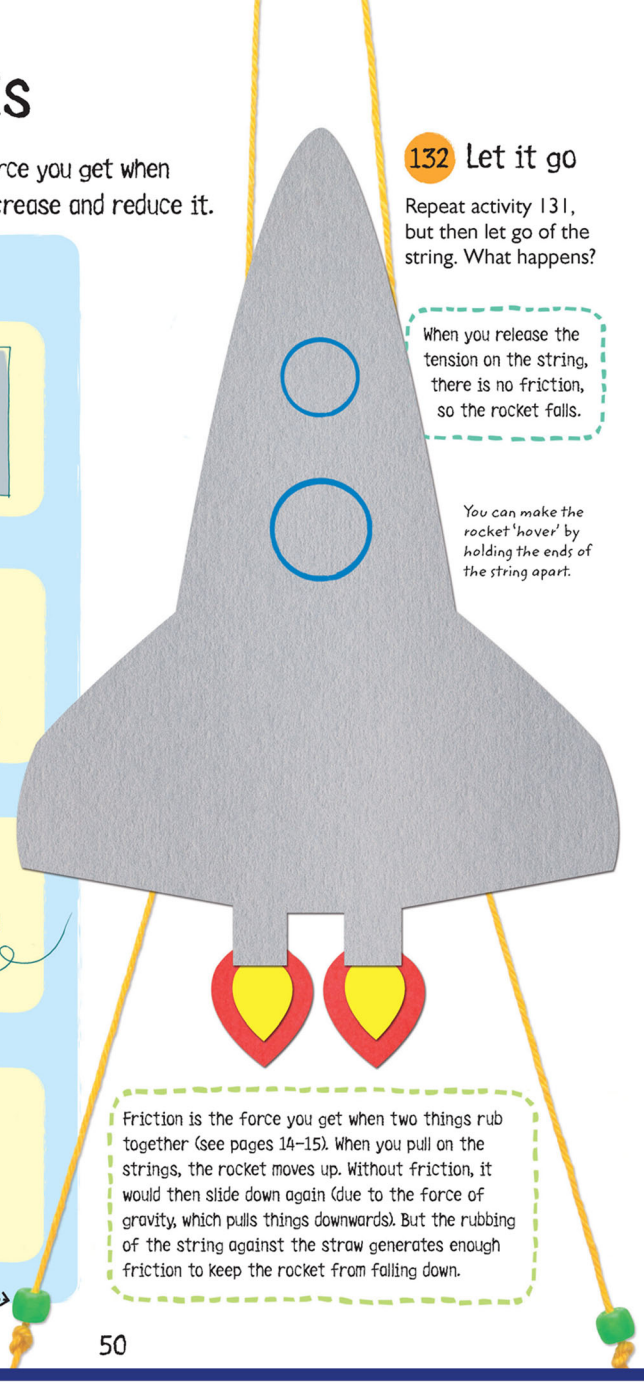
3. Cut a piece of string twice as long as your arm. Thread it up through one straw and down through the other, to make a loop.



4. Hang the loop over a coat hook or door handle. Hold the ends of the string apart and pull on each in turn. Can you make the rocket climb the string?



You could add beads to the ends of the string, like this, to make it easier to grip them.



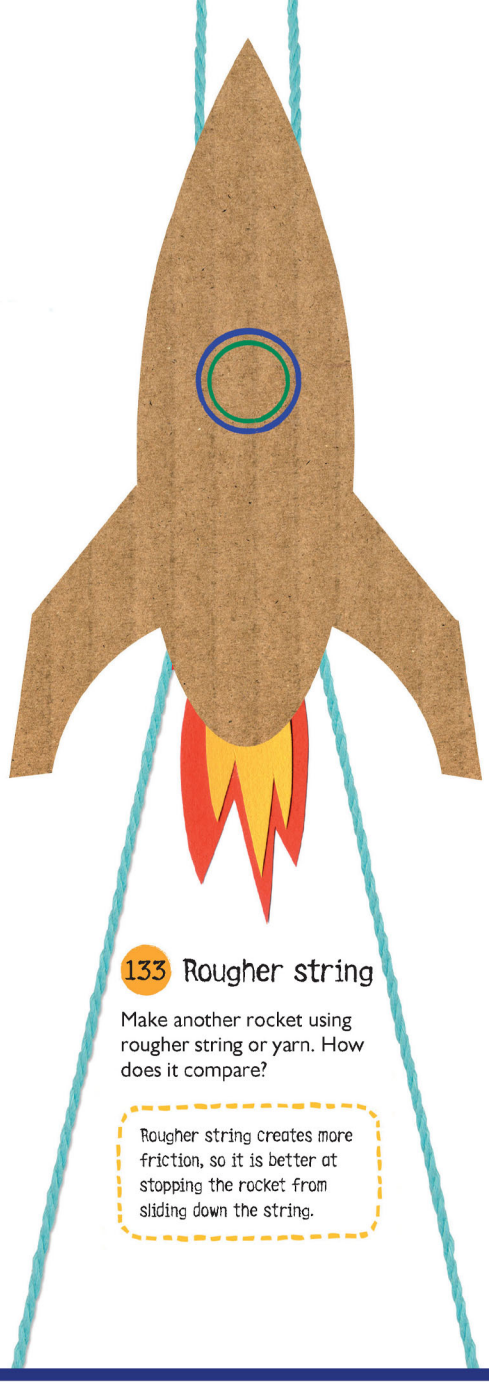
132 Let it go

Repeat activity 131, but then let go of the string. What happens?

When you release the tension on the string, there is no friction, so the rocket falls.

You can make the rocket 'hover' by holding the ends of the string apart.

Friction is the force you get when two things rub together (see pages 14–15). When you pull on the strings, the rocket moves up. Without friction, it would then slide down again (due to the force of gravity, which pulls things downwards). But the rubbing of the string against the straw generates enough friction to keep the rocket from falling down.



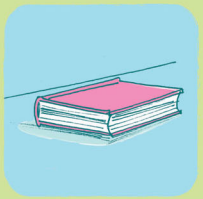
133 Rougher string

Make another rocket using rougher string or yarn. How does it compare?

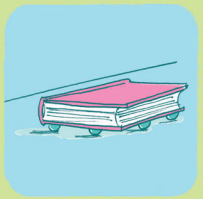
Rougher string creates more friction, so it is better at stopping the rocket from sliding down the string.

134 Reducing friction

1. Place a heavy book on a table. Try pushing the book along the table with your little finger. How easy do you find it?



2. Now place several marbles beneath the book and push the book with your little finger again. How does it compare?



In step 1, there is a lot of friction between the book and the table, so it's hard to move the book. In step 2, the marbles lower the friction by reducing the amount of contact between the book and the table. This makes the book easier to move.

135 Rubbing hands

Rub your hands together quickly for 20 seconds. What happens to them?

Rubbing your hands together creates friction. Friction also makes heat, so your hands start to feel warm.

136 Skiddy feet

Try skidding over a smooth floor in bare feet and notice how it feels. Next, try skidding carefully in your socks, then in sports shoes. How does each compare?

Socks reduce friction between your feet and the floor, so you slide more easily. Sports shoes are designed to have lots of grip and create friction, so it's harder to skid.