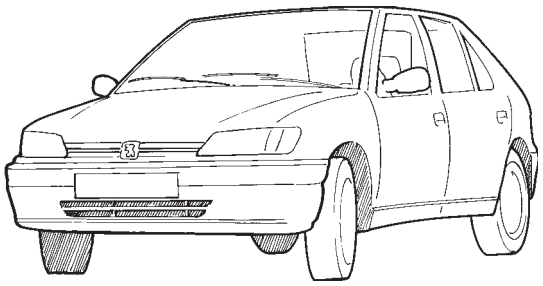
FRICTION

When one surface moves against another, the resistance that opposes movement is called friction. If you push a pile of books over a table surface you can feel the friction between the table surface and the book in contact with it. Before the books start to move, there is a greater resistance. This is called *static* friction. When the books are moving, the resistance you feel is called *dynamic* (moving) friction.

If we divide the force just needed to move the books by their weight (in newtons) we get a figure called the coefficient of friction or 'μ'. This is expressed mathematically by saying:

$\mu = F/N$ (F = force, N = mass)

The coefficient of friction for any two materials sliding against one another tells us how easily they slip against one another. The smaller the number, the less friction there is. If you look at the table below, you will see that metal on ice has a very low value - which explains why ice skates work as well as they do. Rubber on a typical road surface has the highest coefficient. Why is this important for cyclists and motorists?



Materials	Lubrication	Approx. coefficient of friction (low pressure)
Metal on metal	none	0.20
Cast iron on hardwood	none	0.49
Cast iron on hardwood	some lubrication	0.19
Metal on hardwood	none	0.60
Metal on hardwood	some lubrication	0.20
Leather on metal	none	0.4
Rubber on metal	none	0.40
Rubber on road	none	0.90
Nylon on steel	none	0.3-0.5
Acrylic on steel	none	0.5
Teflon on steel	none	0.04
Metal on ice	–	0.02