

## Constant Acceleration

### Apparatus

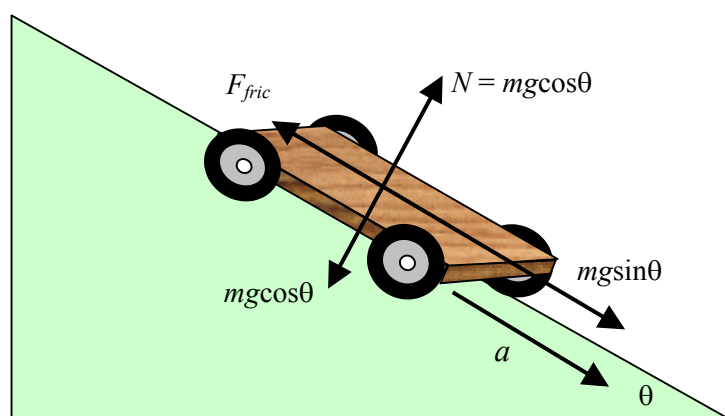
spring balance, smooth ramp, trolley

### Action

The trolley is allowed to roll down the ramp unimpeded. The students should identify the component of force acting to accelerate the trolley, and estimate its magnitude. They should recognize that the acceleration is constant.

### The Physics

When the trolley accelerates down the ramp it is not in equilibrium. The unbalanced forces are the component of gravity parallel to the ramp and the frictional force up the ramp.



### Accompanying sheet

#### Constant Acceleration

Release the trolley at the top so it accelerates down the ramp.

Draw a free body diagram showing the forces acting on the trolley.

Identify the unbalanced forces (or components of forces)  
which accelerate the trolley.