Worked example

A light scale-pan is attached to a vertical light inextensible string.
The scale-pan carries two masses A and B.
The mass of A is 300g and the mass of B is 200g.
A rests on top of B.
The scale-pan is raised vertically, using the string, with acceleration 0.25 ms^{-2}.

(a) Find the tension in the string.
(b) Find the force exerted on mass B by mass A.
(c) Find the force exerted on mass B by the scale-pan.

Your turn

A light scale-pan is attached to a vertical light inextensible string.
The scale-pan carries two masses A and B.
The mass of A is 400g and the mass of B is 600g.
A rests on top of B.
The scale-pan is raised vertically, using the string, with acceleration 0.5 ms^{-2}.

(a) Find the tension in the string.
(b) Find the force exerted on mass B by mass A.
(c) Find the force exerted on mass B by the scale-pan.

a) $10\ N$ (2 sf)
b) $4.1\ N$ (2 sf)
c) $10\ N$ (2 sf)

Worked example

A person travels in a lift. The mass of the person is $40\ kg$ and the mass of the lift is $860\ kg$.
The lift is being raised vertically by a vertical cable which is attached to the top of the lift. The lift is moving upwards and has constant deceleration $4\ ms^{-2}$. By modelling the cable as being light and inextensible, find:

a) The tension in the cable
b) The magnitude of the force exerted on the woman by the floor of the lift

Your turn

A person travels in a lift. The mass of the person is $50\ kg$ and the mass of the lift is $950\ kg$.
The lift is being raised vertically by a vertical cable which is attached to the top of the lift. The lift is moving upwards and has constant deceleration $2\ ms^{-2}$. By modelling the cable as being light and inextensible, find:

a) The tension in the cable
b) The magnitude of the force exerted on the woman by the floor of the lift

a) $7800\ N$
b) $390\ N$