

1

A bungee jumper of mass 60 kg is attached to an elastic rope which starts to stretch after a short time of free fall. The gravitational potential energy of the bungee jumper is 0 J when she has fallen through 40 m to the lowest point.

(a)

	gravitational potential energy / kJ	elastic potential energy / kJ	kinetic energy / kJ
top		0	0
half-way		2.6	
bottom	0		

Fig. 1.1

Fill up the missing energies at the top, bottom and half-way positions in Fig 1.1. Drag forces can be considered negligible.

[2]

(b)

Show that the unstretched length of the elastic rope is 10 m.

[2]

(c)

Determine at what extension will the kinetic energy of the bungee jumper be the highest.

extension = m

[3]

[Total: 7]