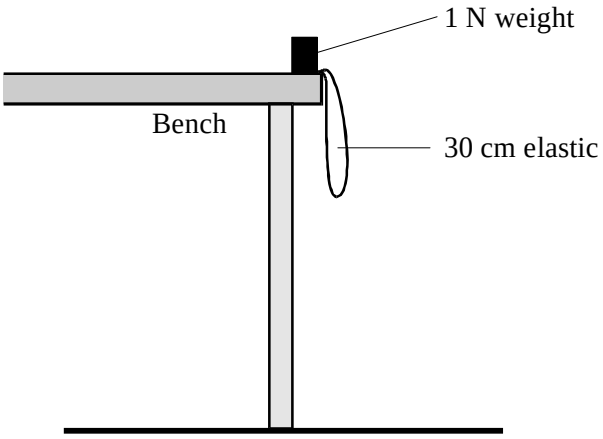
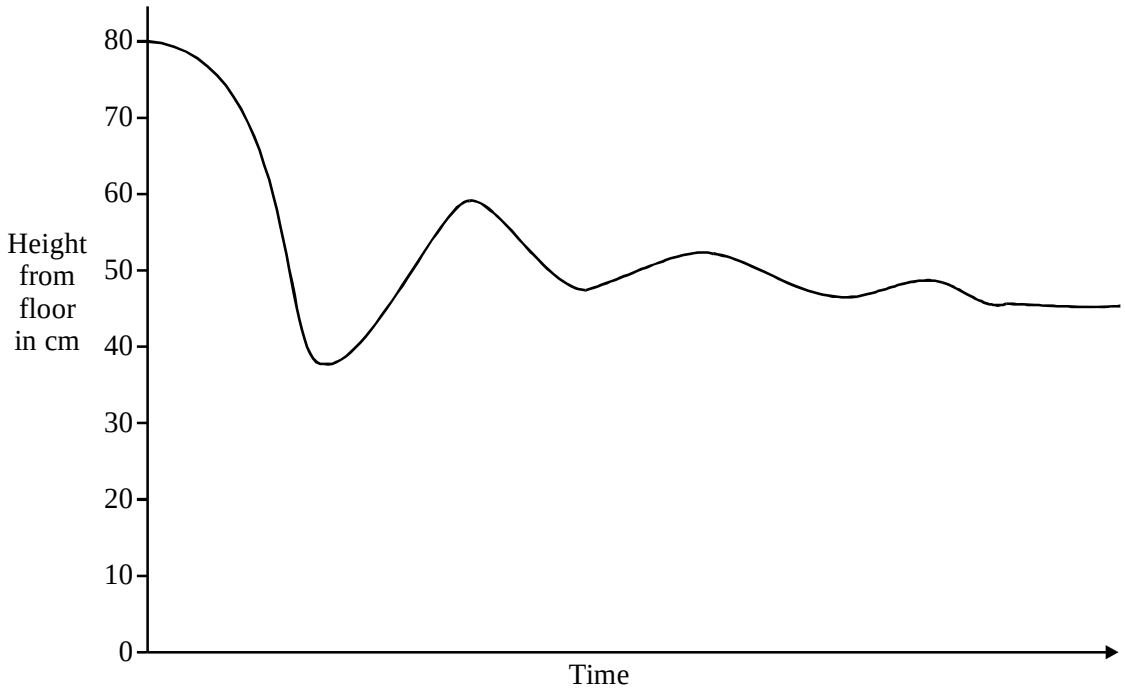
Forces and elasticity

1. A 1 N weight is tied to a 30 cm long piece of elastic. The other end is fixed to the edge of a laboratory bench. The weight is pushed off the bench and bounces up and down on the elastic.



The graph shows the height of the weight above the floor plotted against time, as it bounces up and down and quickly comes to rest.



(a) Mark on the graph a point labelled **F**, where the weight stops falling freely.

(1)

(b) Mark on the graph a point labelled **S**, where the weight finally comes to rest.

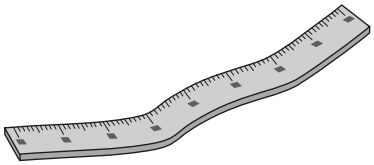
(1)

(c) Mark **two** points on the graph each labelled **M**, where the weight is momentarily stationary.

(1)

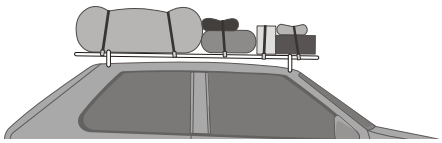
(Total 3 marks)

2. (a) The pictures show four objects. Each object has had its shape changed.



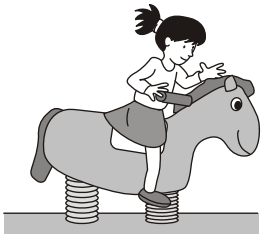
Bent metal ruler

A



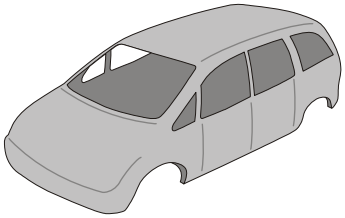
Stretched bungee cords

B



Springs on a playground ride

C



Moulded plastic model car body

D

Which of the objects are storing elastic potential energy?

.....

Explain the reason for your choice or choices.

.....

.....

.....

.....

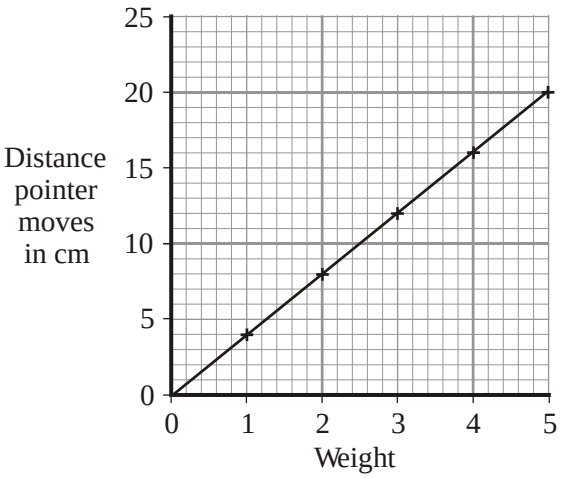
.....

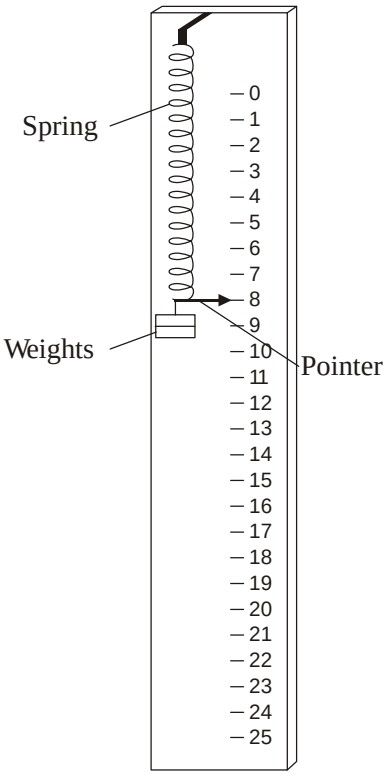
.....

(3)

(b) A student makes a simple spring balance. To make a scale, the student uses a range of weights. Each weight is put onto the spring and the position of the pointer marked.

The graph below shows how increasing the weight made the pointer move further.





(i) Which **one** of the following is the unit of weight?.

Draw a ring around your answer.

joule **kilogram** **newton** **watt**

(1)

(ii) What range of weights did the student use?

.....

(1)

(iii) How far does the pointer move when 4 units of weight are on the spring?

.....

(1)

(iv) The student ties a stone to the spring. The spring stretches 10 cm.

What is the weight of the stone?

.....

(1)

(Total 7 marks)