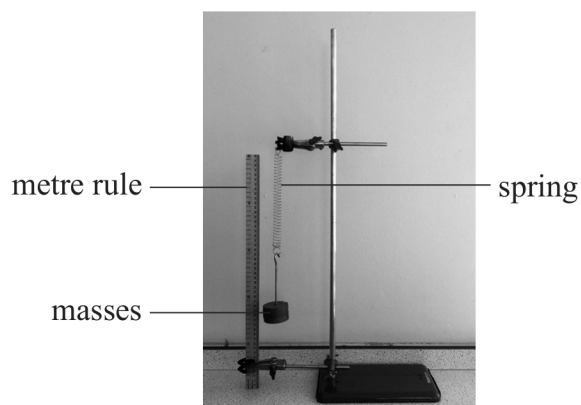
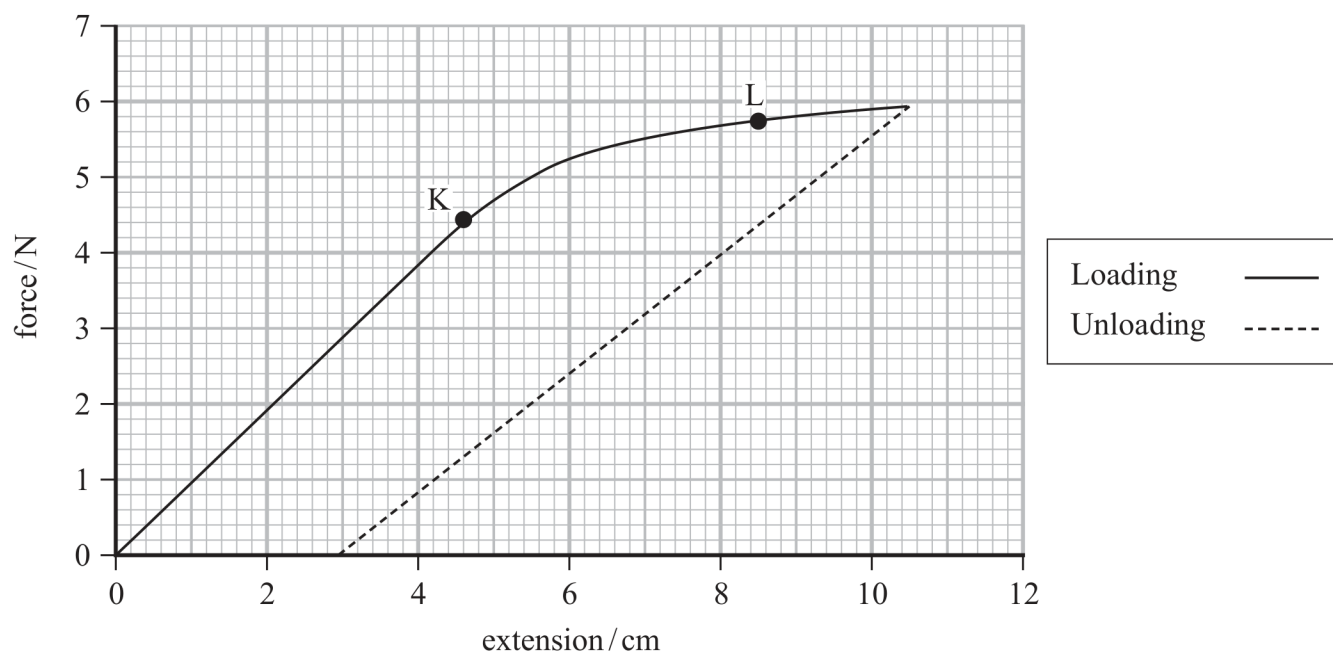


16 A student used the equipment shown to investigate the behaviour of a spring.



The student recorded the position of the spring on the metre rule for increasing loads. He plotted the graph shown for the loading and unloading of the spring.



(a) The student continued to increase the load until the spring exceeded the elastic limit at point L.

(i) State the significance of point K.

(1)

(ii) Explain the significance of point L.

(2)

(iii) The graph for the unloading of the spring is also shown on the axes.

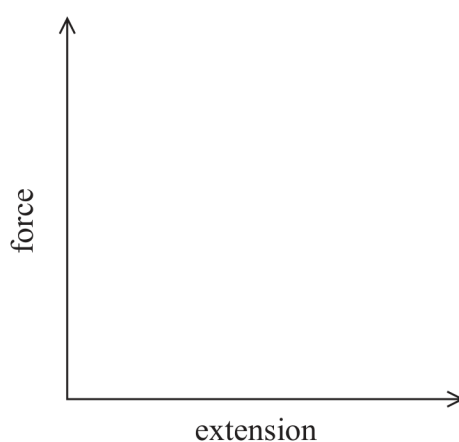
Suggest why the unloading graph has a different gradient to the loading graph.

(1)

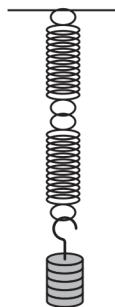
(b) A second student repeated the investigation but forgot to subtract the original length of the spring from his measurements.

Sketch, on the axes below, the shape of the graph he would obtain for the loading of the spring.

(1)



- (c) A third student repeated the investigation using two new springs connected in series as shown.



The springs were identical to the spring used in the original investigation.

Explain why the spring constant for this arrangement of the springs would be half that for one spring.

(4)

(Total for Question 16 = 9 marks)