32. **(a)** State Hooke's Law.

.....

.....[1]

(b) For forces up to 120 N, a spring obeys Hooke's Law.

A force of 120 N causes an extension of 64 mm.

(i) On Fig. 2.1, draw the force-extension graph for the spring for loads up to 120 N. [1]

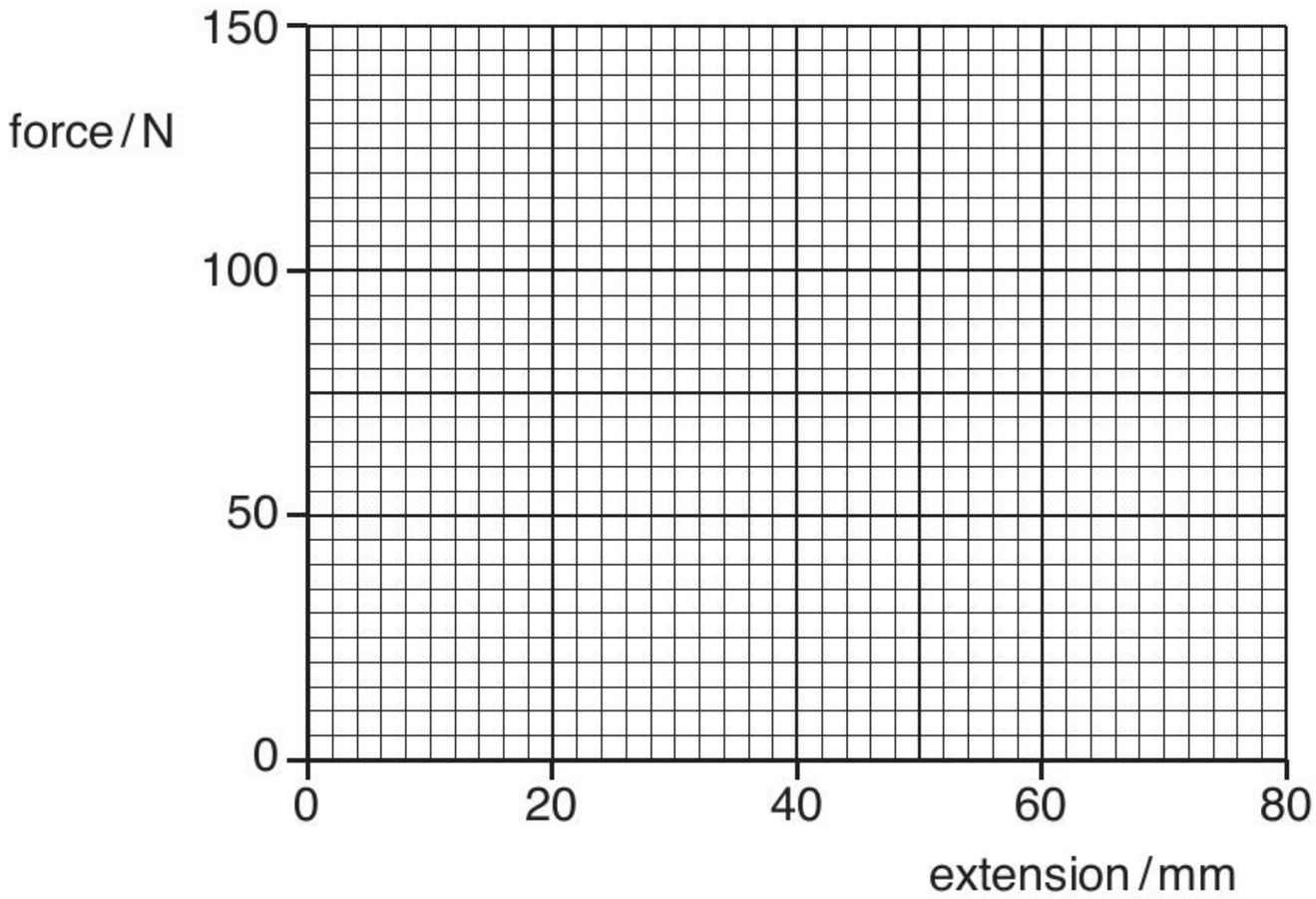

Fig. 2.1

(ii) Calculate the spring constant *k* of the spring.

k = ...[2]

(c) A student makes a spring balance using the spring in **(b)**. The maximum reading of this balance is 150 N.

The student tests his balance with a known weight of 140 N. He observes that the reading of the balance is not 140 N.

Suggest and explain why the reading is **not** 140 N.

.....

.....

.....[2]

[Total: 6]