4 A spring hangs vertically from a point P, as shown in Fig. 4.1.

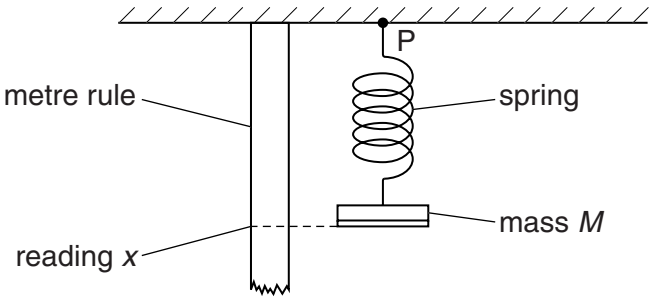

Fig. 4.1

A mass *M* is attached to the lower end of the spring. The reading *x* from the metre rule is taken, as shown in Fig. 4.1. Fig. 4.2 shows the relationship between *x* and *M*.

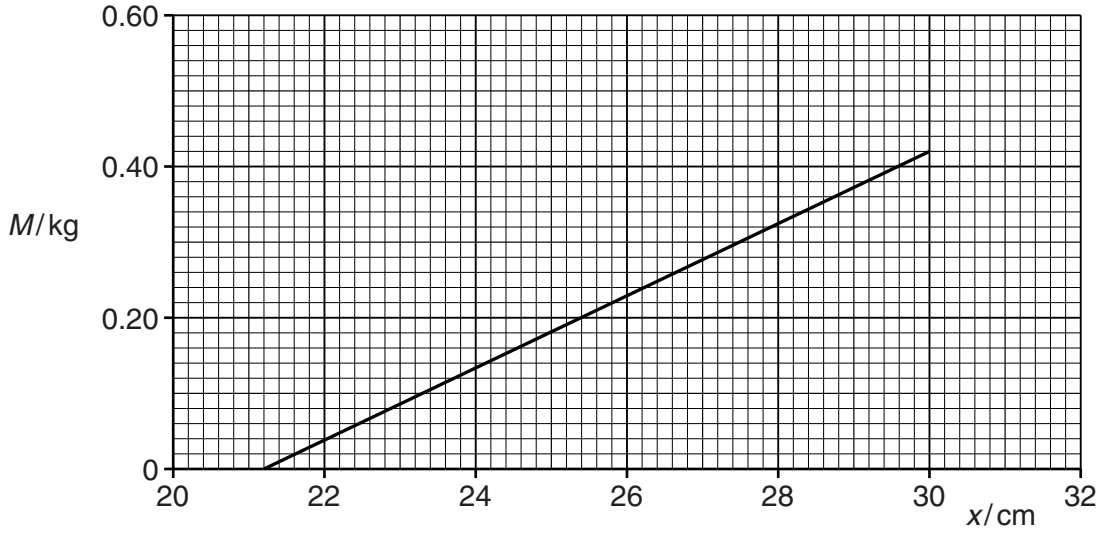

Fig. 4.2

(a) Explain how the apparatus in Fig. 4.1 may be used to determine the load on the spring at the elastic limit.

.....

.....

.....

.....[2]

(b) State and explain whether Fig. 4.2 suggests that the spring obeys Hooke's law.

.....

.....

.....[2]

(c) Use Fig. 4.2 to determine the spring constant, in $N\,m^{-1}$, of the spring.

spring constant = ... $N\,m^{-1}$ [3]