

- 4 A spring is supported so that it hangs vertically, as shown in Fig. 4.1.

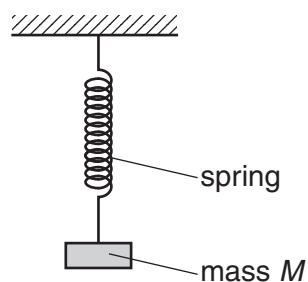


Fig. 4.1

Different masses are attached to the lower end of the spring. The extension x of the spring is measured for each mass M . The variation with x of M is shown in Fig. 4.2.

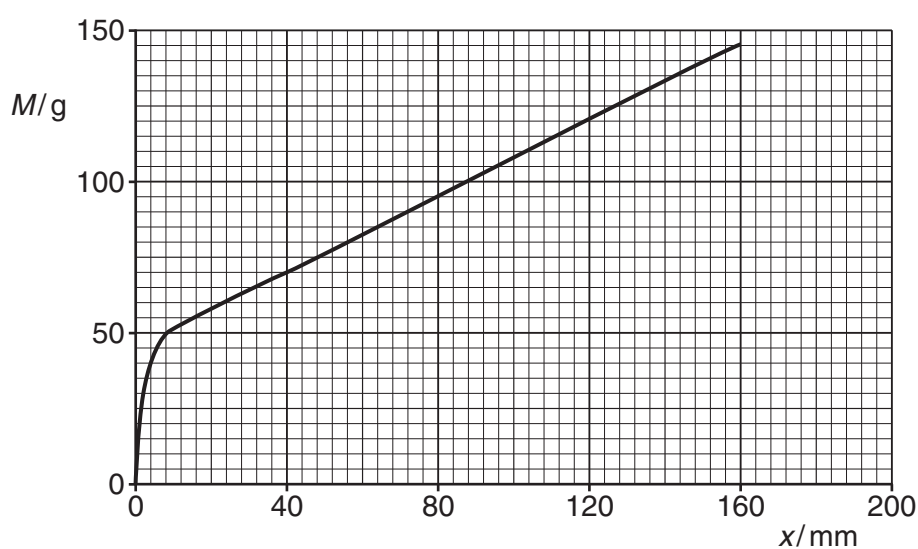


Fig. 4.2

- (a) State and explain whether the spring obeys Hooke's law.

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.....[1]

- (b) State the form of energy stored in the spring due to the addition of the masses.

.....[1]

- (c) Describe how to determine whether the extension of the spring is elastic.

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.....[1]

(d) Calculate the work done on the spring as it is extended from $x = 40.0 \text{ mm}$ to $x = 160 \text{ mm}$.

work done =J [3]

[Total: 6]