1 What is a reasonable estimate of the kinetic energy of a car travelling at a speed of $30\,\mathrm{m\,s^{-1}}$?

   A $10^2\,\mathrm{J}$ **B** $10^4\,\mathrm{J}$ **C** $10^6\,\mathrm{J}$ **D** $10^8\,\mathrm{J}$

2 The frequency f of vibration of a mass m supported by a spring with spring constant k is given by the equation

$$f = Cm^p k^q$$

   where C is a constant with no units.

   What are the values of p and q?

	p	q
A	$-\frac{1}{2}$	$-\frac{1}{2}$
B	$-\frac{1}{2}$	$\frac{1}{2}$
C	$\frac{1}{2}$	$-\frac{1}{2}$
D	$\frac{1}{2}$	$\frac{1}{2}$

3 The power produced by a force moving an object is given by the equation shown.

$$\text{power} = \frac{\text{work}}{\text{time}} = \frac{\text{force} \times \text{displacement}}{\text{time}}$$

   Which quantities are scalars and which are vectors?

	scalars	vectors
A	displacement, time	force, power
B	power, work	displacement, force
C	power, force	displacement, work
D	work, time	power, displacement