5(a)(i)	straight line through the origin shows that *a* is proportional to *x*
	negative gradient shows that *a* is always in the opposite direction to *x*
5(a)(ii)	$a_0 = \omega^2 x_0$
	$\omega = 2\pi / T$
	$T = 2\pi \sqrt{(x_0 / a_0)}$ $= 2\pi \sqrt{(1.2 / 13)}$ $= 1.9$ s
5(b)(i)	loss of energy of oscillations
	due to <u>resistive</u> force(s)
5(b)(ii)	line starting from $x = \pm 1.2$ cm at $t = 0$
	line starting from non-zero value of *x* from $t = 0$ to $t = 2T$ that is entirely either above or below the *t*-axis
	curve from $t = 0$ starting from non-zero *x* value, with both magnitude of *x* value and magnitude of gradient continuously decreasing

7(a)(i)	loss of energy (of oscillations)
	due to resistive forces
7(a)(ii)	amplitude (of oscillations) decreases gradually **or** oscillations continue (for several periods)
7(a)(iii)	cutting of (magnetic) flux causes induced e.m.f. (in coil) **or** induced e.m.f. causes current (in resistor / circuit)
	current causes dissipation of thermal energy in resistor **or** current in resistor causes dissipation of thermal energy
	thermal energy comes from energy of oscillations
7(b)	(for any given e.m.f.) current is lower so thermal energy dissipated at a lower rate **or** (for any given e.m.f.) current is lower so the resistive force is lower
	oscillations are less damped **or** smaller decrease in amplitude of oscillations (in each period) **or** oscillations continue for longer

4(a)	(motion in which) acceleration is (directly) proportional to displacement
	(motion in which): acceleration is (always) in the opposite <u>direction</u> to displacement **or** acceleration is (always) directed towards a fixed point
4(b)(i)	$\omega = 2\pi / T$
	$\omega = 2\pi / 3.0$ $= 2.1$ rad s^{-1}
4(b)(ii)	$E = \frac{1}{2} m \omega^2 x_0^2$
	$= \frac{1}{2} \times 0.81 \times 2.1^2 \times 0.036^2$ $= 2.3 \times 10^{-3}$ J
4(c)	sketch: line starting at (0, 0.036) and not reaching $x = \pm 0.036$ m at any other time
	smooth curve, with no sudden changes in gradient, showing continuously decreasing magnitude of *x* from maximum displacement at $t = 0$ to final displacement of zero where the gradient is also zero
	displacement reaches final value of zero between $t = 0.75$ s and $t = 3.0$ s at the latest