

17 SHM graphs and energy — Part 2

— Answers

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Work through these after trying the questions yourself.

17.1 The largest displacement from equilibrium.

17.2 The time for one full oscillation.

17.3 $f = 1/T$.

17.4 $f = 1/T = 1/2.5 = 0.40$ Hz.

17.5 At the centre (equilibrium).

17.6 Greatest at the ends (maximum displacement). There the mass is momentarily at rest, so the kinetic energy is zero — all the energy is potential.

17.7 SHM theory assumes no friction. In real life air resistance and friction at the pivot remove energy as heat, so the total mechanical energy falls and the amplitude slowly dies away (damping).