II-1, 8-16, B

@ The stone and spring are in equilibrium, so the spring pushes up with force equal to the stone’s weight.
@ At the maximum height, $K=0$, so all the energy from the spring has been transferred to gravitational potential.

II-2, 8-25, B

This is a plain, no-frills energy problem. Choosing the spring’s equilibrium position for $y=0$ will probably help. Don’t forget to include $U_g$ in both the initial and final energies.

II-3, 8-29, A

"Show that" problems are always a hoot. As the book’s hint says, if the ball is to "swing" around the peg, that means the string shouldn’t go slack. The minimum speed for the ball at the top of that swing, then, is such that:

$$-W-T = -\frac{1}{2}mv^2$$

So, then, the ball is a distance $d$ below the initial release point, which means you can find its velocity in terms of $d$, using energy conservation. Set that $v$ equal to the $v_{\text{min}}$ above, and see what unfolds.

II-4, 8-32, B

The canister’s initial height is $(1m + 2m)\sin37^\circ$, with the spring compressed $2m$. As it leaves the spring, its height is $(1m)\sin37^\circ$, with the spring uncompressed.

Balance the energies:

$$K_1 + U_1 + U_{sp} = K_2 + U_2 + U_{sp2}$$

II-5, 8-33, A

To move the chain, a force equal to the weight of the hanging portion is needed. But, as the chain is moved, the hanging portion (and thus, the needed force) gets smaller. This calls for an integral. Note that this is a "work" approach to the problem. You can also solve it with a potential energy integral, or just algebra and the idea of center of mass.
As in I-5, you'll need two equations... a force statement regarding the boy's circular motion, and an energy conservation statement. The force pointing in towards the center of motion is $mg \cos \theta - N$, and that must equal $\frac{mv^2}{r}$ while the boy stays on a circular path. As he leaves the surface, $N=0$, so you have $v^2$ in terms of $m, g, r$, and $\theta$. Combine that with an energy statement to eliminate $v^2$ and find the height.

II-7, 8-43, C

You are given the initial speed and height, and the final speed and height, so you can find $\Delta E_{th}$.

II-8, 8-46, C

You are given the initial speed and height, and the final speed and height, so you can find $\Delta E_{ mec}$.

II-9, 8-59, B

Straightforward conservation again. If you call the initial height $y=0$, then $E_0=K_0$, and $E$ just as the block reaches the rough surface is $E_0-mgh$. Then it's just like the friction problems in Group I.

II-10, 8-63, B

The block might slide back and forth many times, but because the sides of the track are frictionless, they don't change the box's $K$ once it gets back to the bottom. Imagine the track looks like this:

Based on $E_0$, you can find how far the box will slide with the given $F_k$ for the flat area.

The first "L" of travel is to the right, the second left, third right, fourth left, and so on. If $d=2.1L$, for example, the stopping point is $0.1 \text{ L left from the ramp on the right}$.