Ch 8 #26

The tricky things you might not know at a glance are…

1. When they tell you amount of torque needed, this value is the same whether you're exerting your force at a large distance or small distance. So use this torque value for both parts of the problem.
2. On the second part, you're asked for the force applied near *each* of the six points. So if you solve for a force and it seems about 6 times larger than the right answer, well you might have some dividing to do.

Ch 9 #18

If you pay attention to symmetry, you can probably answer part b without showing much work, and that's okay.

Ch 9 #24

Begin by calculating the 'angle of sag', if the backpack hangs down at the indicated height.

Then, realize that there's only one rope holding up the pack, so the tension must be consistent throughout. Therefore, $2T_y = F_{g,pack}$.

Ch 9 #27

This one's a doozy! Begin by thinking of torques about an axis through the base of the ladder, thereby negating F_{cx} and F_{cy}. You can use this to calculate F_w. (And it's a LOT easier if you think about it with the concept of lever-arm!)

Then use balanced force ideas to calculate F_{cx} and F_{cy}.

Lastly, realize that $\mu = F_{cx} \div F_{cy}$ in this situation.

Ch 9 #31

The torque caused by F_M is balancing the torque caused by $F_{g,shotput}$ and $F_{g,arm}$

Ch 9 #32

a. If the axis is placed at the shoulder joint, the torque caused by the y-component of F_M balances the torque caused by $F_{g,arm}$.

b. Use balanced force ideas to find F_{Jx} and F_{jy}, and then combine those perpendicular vector components into a total F_J.