

Ch 4 #15

This one's a little weird for two different reasons. One reason is that you weren't told mass. But that just means that mass must be irrelevant, so you can write a bunch of m 's, and they'll eventually cancel out.

The second weird part is the wording about the normal force. Since the scale only reads 0.75 of the real weight, F_N must be 0.75 times the usual weight. So in this problem,
 $F_N = (0.75)(9.8m)$.

Ch 4 #23

The only really difficult thing about this is to understand that the rope's tension is kind of pulling up on her twice. It's as if she has two separate ropes tied to her, each pulling with the same force. Now if you think just about the vertical parts of this equilibrium situation, you should be able to solve it pretty easily.

Ch 4 #31

This is a connected objects problem, and is most easily worked if you think about the entire system. The only forward force is the weight of mass B, and there is no resistive force on the whole system, since there's no friction.

Ch 4 #33

This one is only difficult because there are a lot of different parts, asking you to look at the problem from lots of different perspectives. But if you just take it step by step, you should be fine.

Ch 4 #34

You'll need to start with finding the acceleration of the system with the 2nd law and connected object ideas. Then find the 'launch speed' of the lighter block using kinematics. Then find how far the lighter block moves as a free-fall object on the way to its max height. Finish by adding all of the distances moved upward by the light block.

Ch 4 #35

This one is weird because the rope itself has some mass, which you've never dealt with before. This means that the tension at the front end of the rope (F_{TA}) is greater than the tension at the back end (F_{TB}), because F_{TA} is accelerating 13kg worth of mass, while F_{TB} is only accelerating 12kg worth of mass.