

Ch 4 #47

Hopefully it makes sense that the connection between the new ideas ($F=ma$) and the old ideas (motion and kinematics) is acceleration. So to answer how far it will go, just find the acceleration with force ideas, and then finish with kinematics.

Two additional weird points:

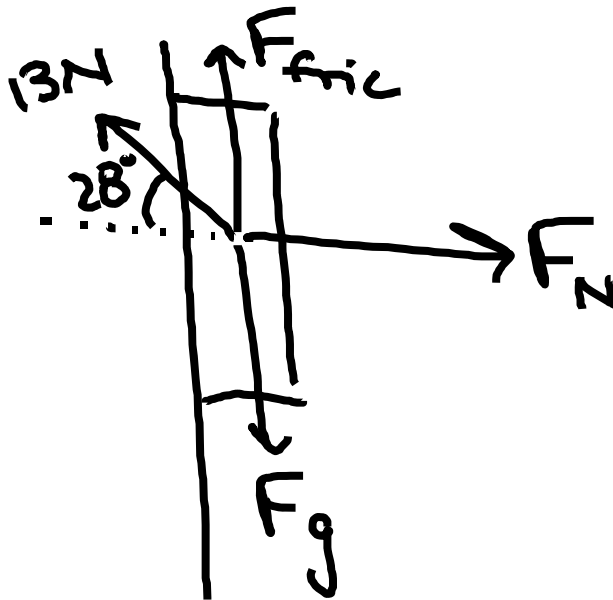
1. They didn't tell you mass. So just use 'm' everywhere and then watch them cancel.
2. While it's sliding and coming to a stop, nothing is pushing it forward, so the only force acting is friction.

Ch 4 #52

This is another one where you might get freaked out because they didn't tell you mass. But if it wasn't told to you, it obviously won't be important. So work the problem as if you knew it, just writing an 'm' anytime you need it. Then you'll see, once you've gotten your 2nd law equation set up, that the m's will all cancel.

Ch 4 #56

Your force diagram should look like the one drawn below. Once it's drawn, you should be able to work the whole thing as a y-direction equilibrium problem.



Ch 4 #60

Don't be worried by the lack of numbers. Use all of your same thinking you always use on these problems, just with variables instead of numbers. Start with a kinematic to find an expression for acceleration, and then substitute this expression into a 2nd law equation. (Keep in mind for your 2nd law setup that while the block is sliding up the incline, there's no force pushing it forward. There's just friction and F_{gx} hindering its motion.)

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Ch 4 #75

Don't forget the example problem we worked in class that's just like this one.

Ch 4 #76

This one requires some thinking, but shouldn't feel too rough after all of the other connected-object problems you've done. The only slightly odd thing is that you need to finish with a subtraction, since it's not asking for the whole mass of the sand-filled bucket, but just asking for the mass of sand added to the 1.35kg bucket.

Ch 4 #83

Just remember (yet again) that when she's coasting to a stop, there's no force other than friction that's affecting her acceleration.