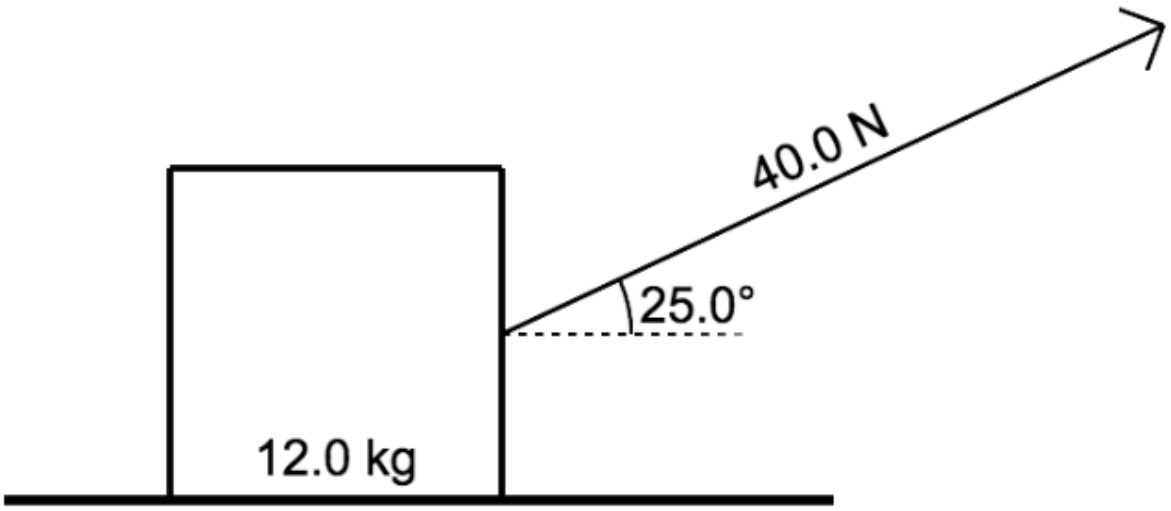
For full credit on each of these problems, you must clearly and carefully show your work. Imagine that you are not only trying to give the correct answer, but convince someone who doesn't believe you that you *have* the correct answer.

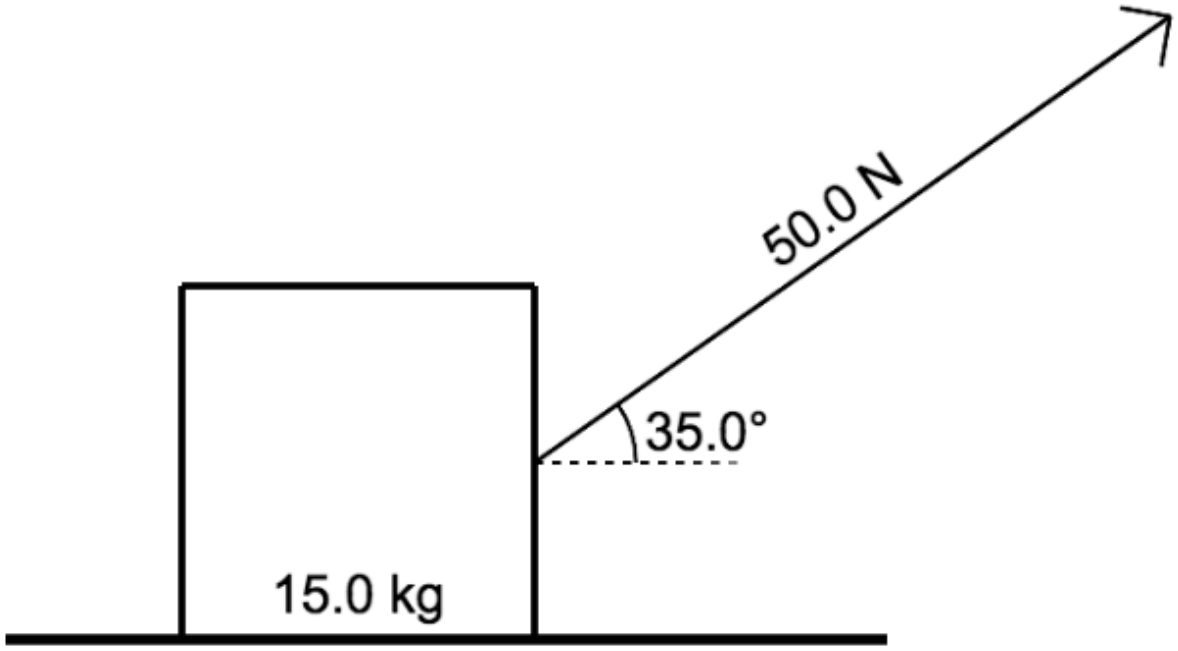
Also, every free-body diagram must be drawn on the diagram with the following guidelines:
- Each force arrow must be draw emanating from the point at which that point is applied.
- For each force on the box, you must indicate the *name* of the force and the *magnitude* of the force correctly.
- The length of each arrow should correlate roughly to the relative magnitude of each force.

1. A box is dragged along a flat surface at a constant velocity.
The box is pulled by a force of 40.0 Newtons at an angle of 25.0 degrees to the horizontal.
The box has a mass of 12.0 kilograms.
Draw a free-body diagram of the situation on the diagram below:



What is the coefficient of kinetic friction?

2. A box is dragged along a flat surface at a constant velocity.
The box is pulled by a force of 50.0 Newtons at an angle of 35.0 degrees to the horizontal.
The box has a mass of 15.0 kilograms.
Draw a free-body diagram of the situation below:



What is the coefficient of kinetic friction?

Answers:

1. 0.360
2. 0.346

number 1

Fg = 117.6 N
Fx = 36.25 N
Fy = 16.9 N
Fn = 100.7 N
Ffr = 36.25 N because the box is being dragged at a constant velocity, it must equal the forward force
muk = 0.360

number 2

Fg = 147 N
Fx = 40.958 N
Fy = 28.68 N
Fn = 119.32 N
Ffr = 40.958 because the box is being dragged at a constant velocity, it must be equal to the forward force
muk = 0.343