

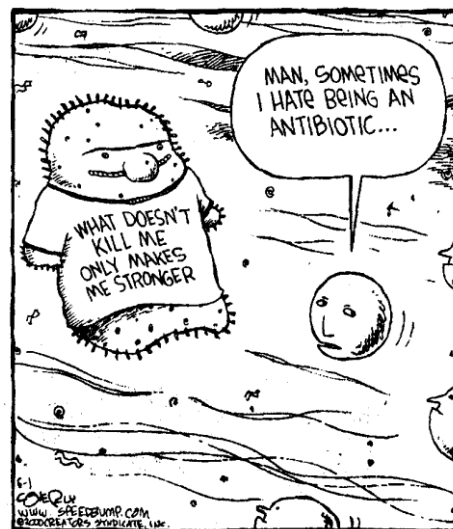
AP Physics – Newton's Laws – 12

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Who you be _____ Per _____

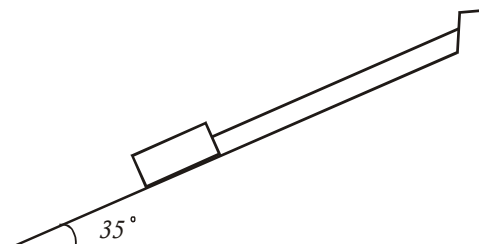
I long to accomplish a great and noble task, but it is my chief duty to accomplish small tasks as if they were great and noble. -- Helen Keller

1. A crow flying horizontally at a speed of 14.0 m/s drops a walnut. The walnut falls to the ground in 3.50 s. (a) How high was the crow flying? (b) How far horizontally does the walnut travel before it hits the ground?



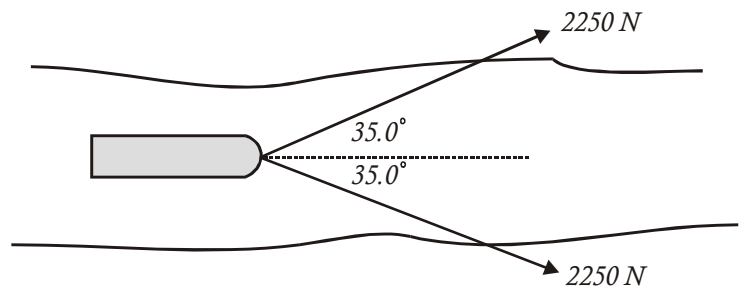
2. How does a rocket work in space if there is no air to push against?
3. A crate rests on very low friction wheels. The crate and the wheels and stuff have a weight of 865 N. You pull on the rope with a force of 145 N. What is the acceleration of the system? How far will it move in 2.00 s?

4. A 34.5 kg block rests on the ramp as shown in the drawing. What is the tension in the line that is connected to the top of ramp?

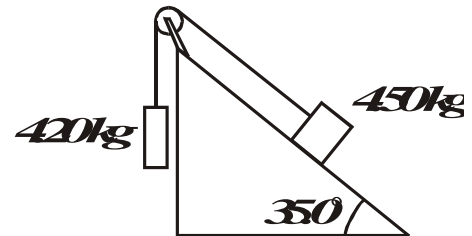


5. A 7.00 kg ball rolls down a 17.5° ramp. (a) What is the acceleration of the ball? (Ignore friction) (b) If the ramp is 2.00 m long, how much time to reach the bottom?

6. A barge is towed by two mules as shown in the drawing. (a) What is the net force acting on the barge when the tow begins if the frictional force that must be overcome is 1 250 N? (b) Later the barge is moving at a constant 2.5 km/h, what is the net force acting on it?



7. A 4.50 kg block rests on a smooth ramp as shown. It is attached to a 4.20 kg block by a very low mass string that is run over a low friction pulley. (a) In what direction will the blocks travel? (b) What will be the acceleration of the blocks when the system is released?



8. Two masses are connected by a light string that runs over a frictionless pulley as shown. What is the acceleration of the system when the masses are released and allowed to move?

