Force Problems II

1. Shiva is pulling Suki, who is sitting in a wagon. Shiva is pulling with a force of 250 N. Suki and the wagon have a combined mass of 75 kg. If there is also a frictional force of magnitude 100 N acting on Suki and the wagon, what is Suki's acceleration?

2. Sasha is pushing Kara with a force 350 N. Kara has a mass of 50 kg. If Kara is accelerating with a rate of 2 m/s^2, what is the force of friction acting on Kara?

3. A car of mass 1500 kg is accelerating with a rate of 3 m/s^2. If the magnitude of the force of friction is 6000 N, how much force must the engine be producing?

4. A 250 kg crate is being pushed with a force of 1000 N. If the crate has an acceleration of 1.5 m/s^2, what is the force of friction on the crate?

5. A wooden block of mass 0.35 kg is accelerating at 2.2 m/s^2 across a lab table because you are pulling it. There is 0.9 N of friction acting on the block. With how much force are you pulling the block?

Force Problems II

6. Faisal is pushing a 150 kg box to the right with a force of 300 N. At the same time, Meera is pulling the box to the right with a force of 400 N. If somehow there was no friction, what is the acceleration of the box?

7. Faisal is pushing (again) a 150 kg box to the right with a force of 300 N. At the same time, Meera is pulling the box to the right with a force of 400 N. However, this time there is a friction force of 500 N acting on the box. What is the acceleration of the box?

Answers: *1) 2 m/s²* *2) (–)250 N* *3) 10,500 N* *4) (–)625 N* *5) 1.67 N*
6) 4.67 m/s² *7) 1.33 m/s2*