**Unit 2 - Worksheet 2**

**Finding Individual Forces**

1. A man pushes his child in a grocery cart. The total mass of the cart and child is 30.0 kg. If the force resisting this cart's motion is 15.0 N, how hard does the man have to push so that the cart accelerates at 1.50 m/s/s.
2. A 3.00 kg cart on a track is pulled by a string so that it accelerates at 2.00 m/s/s. The force of tension in the string is 10.0 N. What is the force of friction on the cart?
3. A 2000 kg SUV accelerates from rest at a rate of 3.00 m/s/s. The total amount of force resisting its motion is 1500N. How much force is applied to the SUV’s tires by the ground to make it accelerate?
4. The 2000 kg SUV from problem 4 now drives at a constant 18,0 m/s. The total amount of force resisting its motion is 2500 N. Now how much force is applied to the SUV’s tires by the ground?
5. A shopping bag can provide a force of 65.0 N before breaking. A shopper puts 5.00 kg of groceries in the bag. If the shopper tries to lift the bag with an upward acceleration of 2.00 m/s/s, will the bag break?
6. A 900 kg helicopter accelerates downwards at a rate of 2.50 m/s/s. What is the magnitude of the lifting force on the helicopter by the air?
7. A 0.500 kg model rocket is initially pushed upwards by a thrust force of 8.00 N. If the force of air resistance is 1.00 N, what is the initial acceleration of the rocket?
8. A 70.0 kg skydiver falls towards the Earth. If the force due to air resistance is 500 N, what is the acceleration of the skydiver?
9. The skydiver in the previous problem opens her chute. The force due to air resistance is now 1200 N. What is the acceleration of the skydiver? (What happens to the motion of the skydiver?)