CALCULATING FORCE WORKSHEET

Calculate the force in the following problems by using the equation:

Force = mass x acceleration **F = m x a**

Be sure to(1) ALWAYS write the equation, (2)plug in the numbers and units, and (3) give the answer with the correct units.

1. A man hits a golf ball (0.2 kg) which accelerates at a rate of 20 m/s^2. What amount of force acted on the ball?

2. You give a shopping cart a shove down the isle. The cart is full of groceries and has a mass of 18 kg. The cart accelerates at a rate of 3 m/s^2. How much force did you exert on the cart?

3. The wind pushes a paper cup along the sand at a beach. The cup has a mass of 25 grams (= ? kg) and accelerates at a rate of 5 m/s^2. How much force (in Newtons) is the wind exerting on the cup?

4. You push a friend sitting on a swing. She has a mass of 50 kg and accelerates at a rate of 4 m/s^2. Find the force you exerted.

5. How much force would it take to push another, larger friend who has a mass of 70 kg to accelerate at the same rate of 4 m/s^2?

6. A worker drops his hammer off the roof of a house. The hammer has a mass of 9 kg, and gravity accelerates it at the usual 9.8 m/s^2. How much force does the earth apply to the hammer?

7. A car whose mass is 1000 kg is traveling at a <u>constant</u> speed of 10 m/s. Neglecting any friction, how much force will the engine have to supply to keep going the same speed? (tricky question) (think INERTIA) (look at the units)