HW: Lab Make Up

Using F=ma (as well as other equations we’ve seen in the past)

What would be the net force on the following objects?

1. You push your grandma on a skateboard (mass of 70 kg) and she accelerates at a rate of 1.5 m/s/s right.

2. You and your friends have a tug-a-war contest. You pull left with 80 N. George pulls left with 110 N. Simeon pulls left with 115 N. Ali, Mustafa, Branden, and Jake each pull right with 60 N of force.

4. A car crashes from 30 m/s to a stop in 0.1 seconds. It has a mass of 900 kg.

5. A jet speeds up from 200 m/s to 260 m/s in 3 seconds. It has a mass of 500 kg.

6. Draw a freebody diagram for the jet from Question 5.

7. Grandpa in his rocket-powered wheelchair is riding down the race track. He and his wheelchair have a combined mass of 90 kg and start out moving with a speed of 0 m/s. Friction pulls against him with a constant force of 120 N, but he accelerates forward anyways (due to the rocket-powered wheelchair) at a rate of 2 m/s/s. What is the net force? With how much force is the wheel chair pushing?

8. How far would Grandpa (from above) travel after 45 seconds?

9. What would happen to the acceleration of an object if you applied a stronger force to it?

10. What would happen to the acceleration of an object if you applied the same force, but you added more and more mass on top of that object?