**Practice Problem on Motion**

**PSC 100**

**A 65 kg athlete pushes backward on the starting blocks with a force of 350 pounds (1 pound = 4.45 Newtons).**

**a. What will be forward force exerted on her by the starting block?**

**b. What will her forward acceleration be?**

**c. How long will it take her to reach her maximum speed of 10.5 m/s, assuming she maintains**

 **the same forward acceleration?**

**d. What distance will she travel during the time you calculated in part c?**

**e. Assume she now travels at a constant speed of 10.5 m/s for the rest of a 100 m race. What**

 **will be the total time for her race? Does she beat the world record of 10.49 seconds, set by**

 **Florence Griffith Joyner?**

**f. What was her average speed for the entire race?**

**g. Now, after finishing the 100 meter race, she skids to a stop on a very slippery surface which supplies a frictional force of only 40 Newtons. What will be here acceleration?**

**h. How long will it take her to come to a stop and what distance will she travel before she stops?**

**i. What will be her average speed while stopping? What did you just discover?**

**j. Sketch graphs of a vs t and of v vs t for the entire event.**