Phy 113: Physics of Sports
Homework Problems
Set #1: Due Wednesday, September 4, 2019

Note: Students are encouraged to work together and discuss the problems. However, each student must arrive at her/his own final answers. Show all your work step by step. Do not just write down the answers. Simply copied homework will result in zero.

1. (6 points) The U.S. Open tennis tournament has just started in Flushing, New York. The size of a tennis court is 78 ft in length and 36 ft in width. Convert these dimensions in meters?

2. (8 points) Serena Williams’s height is 5’9”. How tall is she in cm? In comparison, Yao Ming, a former NBA player, is 7’6” in height. How much is Yao taller than Serena in cm?

3. (6 points) NY Yankees outfielder, Aaron Judge is known to hit monstrous homeruns. He is 200.7 cm tall and weighs 282 lbs. How tall is he in feet and inches, and how heavy is he in kg?

4. (10 points) Roger Federer is seeking his 21st Grand Slam singles title at the U.S. open. Astonishingly, he won a grand slam singles title 2018 at age 37! His average first-serve speed is about 125 mph. What is the speed in km/h and m/s?

5. (10 points) Simon Pagenaud (France) won the 2019 Indy 500 race. Simon’s average speed for the race was 282.913 km/h. What is the speed in mph and in m/s?

6. (10 points) At the same race, the pole position was held also by Simon Pagenaud, and his pole speed was staggering 102.816 m/s! What was his average speed in mph? (Obtain the answer in six digits.)

7. (12 points) Usain Bolt won the men’s 100-m sprint race in the 2009 World Championship game in Berlin at 9.58 s. What is his average speed in m/s, ft/s, km/h and mph?