Phy 113: Physics of Sports
Homework Problems
Set #1: Due Wednesday, September 6, 2017

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. (5 points) David Villa, a star striker of NYCFC, has already scored 19 goals in this season so far. Amazingly despite his age (35), recently he has been called to serve on the Spanish national team! It shows that hard working and dedication pay off. His height is 175 cm. How tall is he in feet and inches?

3. (6 points) NY Yankees outfielder, Aaron Judge is a rookie phenomenon who is known to hit monstrous homeruns. He is 6’ 7’ tall and weighs 282 lbs. How tall is he in cm, and how heavy is he in kg?

4. (10 points) Roger Federer is seeking his 20th Grand Slam singles title at the U.S. open. Astonishingly, he won two grand slam singles titles this year at age 36! His average first-serve speed is about 125 mph. What is the speed in km/h and m/s?

5. (10 points) Takuma Sato (Japan) won the 2017 Indy 500 race by holding off Helio Castroneves (Brazil) and Ed Jones (UAE) on the final lap. Sato became both the first driver from Japan and the first driver from Asia to take victory in the 500. His average speed was 250.084 km/h. What is the speed in mph and in m/s?

6. (10 points) At the same race, the pole position was held by Scott Dixon, and his pole speed was staggering 103.787 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?