

Chapter 1 Sample questions

- 1) The coefficient of static friction between a tennis player's hand and her racket is 0.45. How hard must she squeeze the racket if she wants to exert a force of 200 N along its longitudinal axis?

- 2) The coefficient of static friction between the sole of an athletic shoe and the basketball court floor is 0.67. Tyler wears these shoes when he plays basketball. If Tyler exerts a normal contact force of 1400 N when he pushes off the floor to run down the court, how large is the friction force exerted by Tyler's shoes on the floor?

- 3) A sprinter is just coming out of the starting block, and only one foot is touching the block. The sprinter pushes back (horizontally) against the block with a force of 500 N and down (vertically) against the ground with a force of 800 N. What is the resultant of these forces?

- 4) The ground reaction force acting on a long jumper is 4500 N acting forward and upward at an angle of 78° from horizontal.
 - a. What is the vertical component of this ground reaction force?
 - b. What is the horizontal component of this ground reaction force?

- 5) A golfball leaves the tee with a horizontal velocity of 50 m/s and a vertical velocity of 7 m/s.
 - a. What is the direction the ball is traveling?
 - b. What is the magnitude of the resultant velocity as it leaves the tee?