Friction Worksheet

1. (a) Where on a bicycle do you want to *reduce* friction? How is this done?

(b) Where on a bicycle do you want friction?

2. (a) What is meant by the **coefficient of kinetic friction**?

(b) Why are there no units attached to values of μ?

(c) A force of 120 N is needed to push a box along a level road at a steady speed. If the force

of gravity on the box is 250 N, what is the coefficient of kinetic friction between the box and the road?

3. The coefficient of kinetic friction between a steel block and an ice rink surface is 0.0100. If a force of 24.5 N keeps the steel block moving at steady speed, what is the force of gravity on the block?

4. A copper block has dimensions 1 cm x 2 cm x 4 cm. A force of 0.10 N will pull the block along a table surface at steady speed if the 1 cm x 4 cm side is face down on the table. What force will be needed to pull the same block along when its 2 cm x 4 cm side is face down?

ANS 1(a) steering, axles, chain, sprocket. Lubricants. (b) brakes, tires/road 2. (a) μ = *Ff FN* ; (b) The units cancel. (c) 0.480 3. 2.45 x 103 N 4. Friction force is independent of surface area