
PHYS 1110 Group Work Sheet
Friction

With your group, discuss how to answer these questions and write your group answer in the space provided.

A 1500-kg full of circus clowns travels on pavement at a speed of 30. m/s. The car has rubber tires, coefficient of static friction $\mu_s = 0.80$ and coefficient of kinetic friction $\mu_k = 0.50$.

- a. What is the car's weight?
- b. What is the normal force on the car?
- c. If the car brakes, what is the maximum force of static friction acting on the tires?
- d. What is the maximum (backwards) acceleration of the car?
- e. If the driver brakes gently, so that the car accelerates (backwards) at a rate of 0.50 m/s^2 , what is the magnitude of the force of static friction on the tires?
- f. A 20,000-kg truck carrying circus elephants drives on the same road, also on rubber tires with $\mu_s = 0.80$. If it brakes, what is its maximum (backwards) acceleration?
- g. The driver brakes hard, so that the tires lock and the car skids. What is its acceleration?