Friction-Force Worksheet/Problems

(1) A horizontal force of 400.0 N is required to pull a 1760 N trunk across the floor at constant speed. Find the coefficient of sliding friction.

(2) How much force must be applied to push a 1.35 kg. book across the desk at constant speed if the coefficient of sliding friction is 0.30?

(3) If a 1500.0 N force is exerted on a 200.0 kg crate to move it across the floor. If the coefficient of friction is .250, what is the crate's acceleration?

(4) An 10,000 N elevator is supported by a cable that has a maximum tensile strength of 100,000 N. If the average passenger weighs 800 N, what is the maximum number of passengers the elevator can carry safely at an acceleration of 1.5 m/s^2?

(5) A 20 000-N car is parked on an incline that makes an angle of 30° with the horizontal. If the maximum force the brakes can withstand is 12000 N, will the car remain at rest?

(6) A 65 N boy sits on a sled weighing 52 N on a horizontal surface. The coefficient of friction between the sled and the snow is 0.012. What is the magnitude of the frictional force? The sled is pulled at constant speed by a rope held horizontally. What is the tension (the pull) in the rope?

(7) An object weighing 40 N rests on a surface. The coefficient of friction between the surface and the object is 0.35. What is the frictional force between the object and the surface? A 20 N force is applied to pull the object horizontally. What is the magnitude of the unbalanced force? What is the acceleration of the box?

(8) ***A rocket of mass "m" is accelerated upward by a force giving it an acceleration of 3 g (or three times the acceleration due to gravity). What is the magnitude of this force in terms of "m" and "g?"

(9) Mr. Robayo drags a cart across the RHS hallway and exerts a force of 200 N. If the cart has a mass of 50 kg and it is being accelerated at 2 m/s^2 then what is the force of friction?

(10) Essay: How does a lubricant work to lessen friction and what are common applications of lubricants in everyday life? Explain. (must be a half page long)