

## *Physics 11 - Chapter 4 and 5 Review Problems*

1. A physics teacher accelerated a 0.250 kg trolley from rest to a speed of 6.00m/s in a time of 0.200s. What was the average force that was applied to the trolley? (neglect friction)
2. Calculate the coefficient of friction between a 22.7 kg garbage can and your driveway if a force of 210N is required to keep it in motion at a constant speed.
3. A 45kg boy on roller skates is given an acceleration of  $0.70 \text{ m/s}^2$ . How large an unbalanced force was acting upon him?
4. A constant force acts on a 5.0kg scooter and reduces its velocity from 7.0m/s to 3.0m/s in 3.00s. What was the net force on the scooter?
5. A 600.0kg car is moving on a level road at 30.0m/s.
  - (a) How large a frictional force is required to stop it in a distance of 70.0m?
  - (b) What is the minimum coefficient of friction between the tires and the roadway if this is to be possible?
6. A tow rope will break if the tension in it exceeds 1500N. It is used to tow a 700.0kg car along level ground.
  - (a) What is the largest acceleration the rope can give the car if the frictional force is 950N?
  - (b) What would the acceleration be if the tension on the tow rope were 750.0N? Describe the cars motion in words.
7. A 70.0kg box is pulled along the floor by a 400.0N force. The coefficient of friction between the box and the floor is 0.50. Find the acceleration of the box.
8. A 71.4 kg man stands on a scale on the floor of an elevator. What is the scale reading (in Newtons) if the elevator has an acceleration of:
  - (a)  $1.8 \text{ m/s}^2$  up
  - (b)  $1.8 \text{ m/s}^2$  down
  - (c)  $9.8 \text{ m/s}^2$  down
  - (d)  $0.0 \text{ m/s}^2$(hint - draw a free body diagram, and consider what the scale reading means)
9. A 65 kg astronaut weighs herself on the moon where  $g=1.60 \text{ N/kg}$ . What does the scale read (in Newtons)?