**The Bricklayer and the Barrel**

 Dear Insurance Company:

I am writing in response to your request for additional information. In block number three of the accident form, I put "trying to do the job alone" as the cause of my accident. You said in your letter that I should explain more fully, so I trust the following details will suffice.

I am a bricklayer by trade. On the day of the accident I was working alone on the roof of a six-story building. When I completed my work, I discovered that I had about 200 kilograms of brick left over.

Rather than carry the bricks by hand, I decided to lower them in a barrel by using a pulley, which fortunately was attached to the side of the building just above the sixth floor.

Securing the rope at ground level, I went up to the roof, swung the barrel out, and loaded the bricks into it. Then I went back to the ground floor and untied the rope. Holding it tightly to ensure the slow descent of the 200 kilos of brick.

You will note in block number 11 of the accident reporting form that I weigh 75 kilos.

 Due to my surprise at being jerked off the ground so suddenly, I lost my presence of mind and forgot to let go of the rope.

Needless to say, I proceeded at a rapid rate up the side of the building.

In the vicinity of the third floor, I met the barrel coming down. This explains the broken collarbone.

Slowed only slightly, I continued my rapid ascent, not stopping until the fingers of my right hand were two knuckles deep into the pulley.

Fortunately, by this time I had regained my presence of mind, and was able to hold tightly to the rope in spite of my pain.

At approximately the same time, however, the barrel of the bricks hit the ground, and the bottom fell out of the barrel.

Devoid of the weight of the bricks, the barrel now weighed approximately 35 kilos.

 I refer you again to my weight in block number 11.

 As you might imagine, I began a rapid descent down the side of the building.

 In the vicinity of the third floor, I met the barrel coming up.

This accounts for the two fractured ankles and the lacerations on my legs and lower body.

The encounter with the barrel slowed me enough to lessen my injuries when I landed on the brick pile and, fortunately only three vertebrae were cracked.

I am sorry to report, however, that as I lay there on the bricks, unable to stand and watching the empty barrel six stories above me, I again lost my presence of mind and let go of the rope.

The empty barrel, weighing more than the rope, plummeted down on me and broke both my legs.

I hope I have furnished you with the information you require.

Questions:

During the man’s upward trip:

1. What is the weight of the bricks?

2. What is the weight of the man?

3. What was the net force acting on the man? (Magnitude and direction).

4. What would have been the acceleration of the man? (Magnitude and direction)

During the man’s downward trip

5. What was the weight of the barrel?

6. What was the net force acting on the man? (Magnitude and direction)

7. What was the acceleration of the man during the downward trip? (Magnitude only)