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1. A 75.3 kg parachutist is falling steadily to earth while supported by two chutes as shown. Find the weight of the parachutist in N then the tensions in cords A and B.
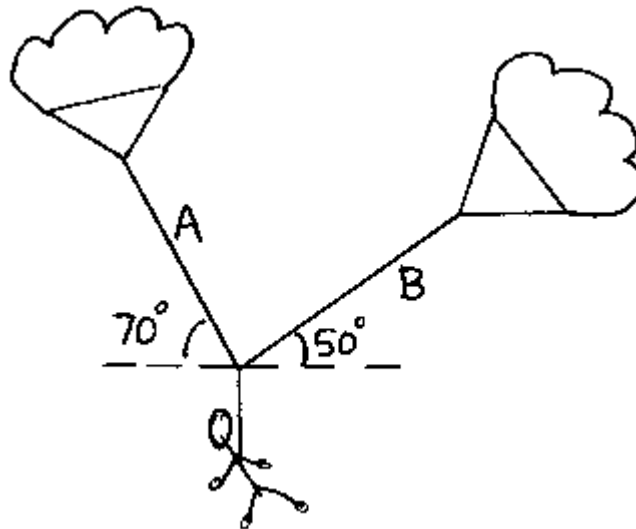

2). Solve for the acceleration of the blocks and the tension in the cord for the following case.
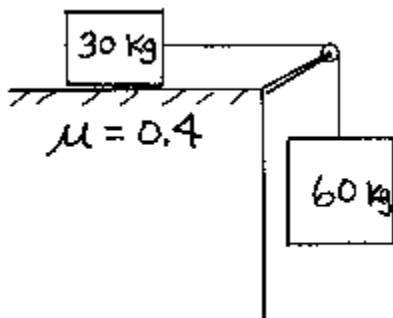
3). A Wal-Mart shopper pushes a grocery cart of mass 21.5 kg a distance of 3.82 m along the aisle. The shopper exerts a steady force of 27.9 N directed at an angle of 40.3° downward from the horizontal. The cart starts from rest and is moving 0.728 m/s after being pushed.
   a) What is the work done on the cart by the shopper?

b) From the average velocity of the cart, remember the cart starts from rest, determine the amount of time the shopper spends pushing the cart the 3.82 m.

c) What is the average power output of the shopper to the cart?

d) What is the kinetic energy of the cart at the end of the push?

e) How much work is lost to friction?

4) A spherical mass of 1.64 kg is pushed downward against a spring of force constant 435 N/m. The spring has negligible mass and is compressed by 28.6 cm. The mass is released and flies straight upward into the air. How high above its release level does it go?
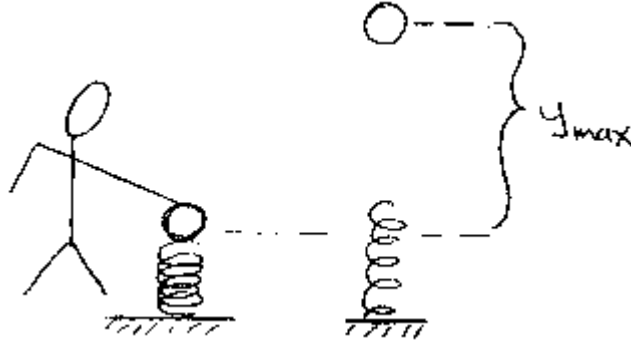
5). A boxcar (train car) rolls along a track to the right at 0.881 m/s. It couples (hits and attaches) to two other cars, each of mass equal to the first boxcar, initially moving to the left at 0.112 m/s. What is the velocity of the three-car combination after the coupling? Assume no friction is present and no brakes are used.
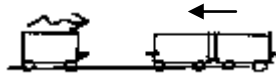
6). A 1090 kg automobile moving 14.8 m/s strikes a 0.675 kg basketball that is at rest on the road. The collision is perfectly elastic and the basketball moves directly forward. After the collision what is the speed of the ball?

By how much does the car slow down due to the collision?