KEY

This is P110, Quiz 7. As usual, you are allowed to use a cheat sheet and a calculator.

In last Friday's Group problem, you should have found that it takes about 120 lbs of force to spike a 270 g indoor volleyball at 50 mph.

1. A beach volleyball is about 1.5 times heavier than an indoor ball. What is the force required to spike a beach volleyball at 50 mph?
   a) Same
   b) 180 lbs
   c) 60 lbs
   d) 88 lbs
   e) 40 lbs

$F\Delta t = m\Delta v$

F: $\frac{3}{2}$ bigger

1.5x's same

2. A partially deflated beach volleyball sticks to the spiker's hand for twice as long as a properly inflated ball – what is the speed if it is struck with 120 lbs of force?
   a) Same
   b) 100 mph
   c) 66 mph
   d) 25 mph
   e) 33 mph

See above Δt: 2x's

↳ Δv: 2x's

In class we discussed collisions and the conservation of momentum. The remaining questions refer to such collisions.

3. A cue ball strikes a nine ball square and stops dead. Relative to the cue ball speed, what is the nine ball speed?
   a. Same
   b. Twice
   c. Half
   d. Cannot be determined

$MV + \phi = mv + \phi$

same so $V = v$

4. A cornerback weighing 200 lbs sacks a quarterback of equal weight with a sack of perfect form (i.e., he wraps up and they fall together to the ground). How does the speed of the pair just after the collision compare to the speed of the cornerback just before?
   a) It is the same
   b) It is twice
   c) It is half
   d) It is ¾
   e) It is 3/2

$MV = (M+m)v$

All m's same so $v = \frac{1}{2}V$

5. Who is the greatest basketball player of all time?
   a) Shaq – Can't win without Kobe
   b) MJ – many rings.
   c) LB – no rings
   d) Kareem] together for all championships.
   e) Magic]