Quiz 6

Name: _____

1. Consider elastic, inelastic and perfectly inelastic collisions.
   a. What does each type have in common?
   b. What is different about each type?
   c. Which equations apply to each type?

2. Two vehicles collide head on. Initially the first vehicle is traveling at 20.0 m/s due North and the second vehicle, which is twice the mass of the first, is traveling due South at 30.0 m/s. After the collision, the first vehicle is traveling due South at 35.0 m/s.
   a. What is the final velocity of the second vehicle?
   b. Was the collision perfectly elastic? Support your answer with calculations.
   c. What is the impulse delivered to each vehicle.

$\vec{p} = m\vec{v}$ $\quad \vec{F}\,t = \Delta\vec{p}$ $\quad KE = \frac{1}{2}\,m\,v^2$ $\quad PE = mgh$ $\quad g = 9.8\ m/s^2$ $\quad P = W/\Delta t = F\,v$

$W = F/\Delta x$ $\quad \Sigma\vec{F} = m\vec{a}$ $\quad F_g = mg$ $\quad f = \mu n$

$\sin\theta = opp/hyp$ $\quad \cos\theta = adj/hyp$ $\quad \tan\theta = opp/adj$

$x = x_o + v_o t + \frac{1}{2}\,at^2$ $\quad v = v_o + at$ $\quad v^2 = v_o^2 + 2a(x - x_o)$