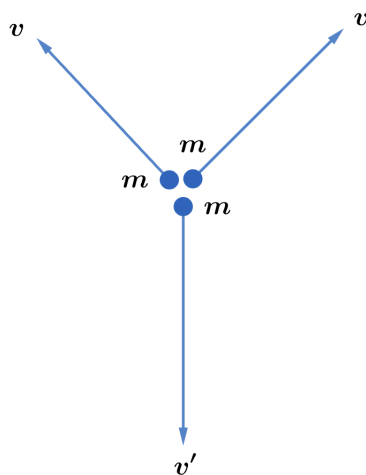
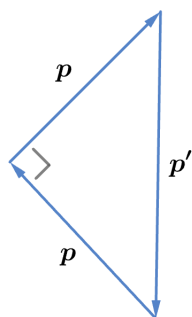


2012 F=ma Exam: Problem 4

Kevin S. Huang



We have conservation of linear momentum since there are no external forces. Initially, there is no momentum so the final momentum vectors of the particles should add to zero. Since two particles emerge at right angles, the final momenta form the sides of a right triangle:



We have

$$p' = \sqrt{p^2 + p^2} = p\sqrt{2}$$

$$mv' = mv\sqrt{2}$$

$$v' = \sqrt{2}v$$

so the answer is B.