Impulse and Momentum: Group Questions

1. A 450g ball is thrown against a wall at 6.0m/s east. It is a very good ball and bounces straight back at 6.0m/s west.
   1. What is the change in the ball’s momentum?
   2. What impulse does the wall impart to the ball?
2. A 275g ball bounces off of a wall as illustrated below:

2.6m/s

35o 35o

2.6m/s

1. What is the change in the ball’s momentum?
2. What impulse is experiences by the ball?
3. A 1500kg car changes velocity from 80.0km/h north to 120km/h north, on level ground, in 12.0s. If we assume there is no ‘drag’, what force must be supplied by the engine?
4. A 1500kg car changes velocity from 80.0km/h north to 120km/h north, on level ground, in 12.0s. If we assume there an average 1200N of drag, what force must be supplied by the engine?
5. A 1500kg car changes velocity from 80.0km/h north to 120km/h north, up a 7.0o incline, in 12.0s. If we assume there is no ‘drag’, what force must be supplied by the engine?
6. An 82.0 kg object moving east at 110 m/s explodes into two unequal fragments, as shown below. After the explosion, a 62.0 kg fragment moves north at 230 m/s.

v1 = 230 m/s

m1 = 62.0 kg

N

v = 110 m/s

W

E

82.0 kg

S

v2

What are the velocity of the other fragment?