CONSERVATION OF MOMENTUM

Collisions:

1. Consider a 900.0-kg car moving with velocity of 120km/h [NW] and a 2075.0-kg truck that moves with velocity 85 km/h [SE]. The two vehicles are headed towards each other and experience a head-on collision.

a) Find the total initial momentum of the closed isolated system containing the two vehicles.

b) Draw a diagram of the "before" and "after" scenario.

c) Provided that the collision is in one dimension, what is the final velocity of the wreckage is the vehicles stuck together following the accident?

Explosions:

1. An 8.0-g object moving 35.0m/s [E] explodes into two equally massive parts. Provided that one of the parts is now moving at 20.0m/s [W], what is the velocity of the other part?

Include a labelled diagram of the "before" and "after" scenario.

2. What was the initial momentum of a 10.0-kg object that exploded into two parts, if the 4.0kg part moved at 6m/s [S] and the other part moved at 25m/s [N] immediately after the explosion? **Include a labeled diagram.**