Impulse and Momentum

Momentum = "mass in motion"
> ➢ The momentum of an object is the product of the object's mass and velocity.

Formula: _____   Units: _____ = _____

> ➢ Momentum is a vector quantity whose direction is the same as the direction of the object's velocity.

Impulse-Momentum Theorem
> ➢ The impulse of an object is defined as the change in the object's momentum.

Formula: Units: _____ = _____

Note: All calculations have to be carried out in base units: kg, s, m/s, m/s^2

Example 1: A car with mass 725 kg is moving at 115km/h [E]. What is the momentum of this car?

Example 2: What is the velocity of 2175kg vehicle that has the same momentum as the small car in Example 1?

Example 3:
The driver of the small car in Example 1 suddenly applies the brakes hard for 2.0 s.
As a result, an average force of 5.0×10^3N is exerted on the car to slow it down.

    A) What is the change in momentum of the car?

    B) What is the impulse of the car?

    C) What is the car's velocity after the 2.0 seconds its brakes were engaged?