

Unit Two – Momentum Homework
Chapter 3 Section 1 Pages 61-64

Unit Two Essential Questions:

1. How can conservation of momentum be used to predict the relationship between the motion of objects before and after a collision?
2. How do momentum, force, and time relate to minimize the net force on a macroscopic object during a collision?

Part A- Define Vocabulary and answer Questions #1-5

Vocabulary

Momentum	Inertia	Law of Conservation of Momentum	Impulse
Newton's First Law	Newton's Second Law	Newton's Third Law	

Questions:

1. Why are faster objects harder to stop?
2. How is momentum different than inertia?
3. What symbol is used to represent momentum?
4. Write out the formula for momentum and show each variables corresponding unit.
5. What is very important when calculating momentum?

Part B- Answer Questions #6-13

6. Use impulse to explain how force is related to changes in momentum.
7. What do you notice about the units in the impulse formula?
8. Write out the formula for impulse and show each variables corresponding unit.
9. See example problem on page 62 and show all work and unit cancellations (if any) for the following problems:
 1. A 15N force acts for 10 seconds on a 1kg ball initially at rest. What is the ball's final momentum? Show all work. Answer: 150 kg m/s.
 2. How much time should a 100N force take to increase the speed of a 10kg car from 10m/s to 100m/s? Answer: 9s
10. Explain the law of conservation of momentum and how it relates to Newton's third law.
11. Describe Figure 3.7
12. Why is it important to include all forces in a system? What happens to the momentum when there are outside forces such as friction and gravity?
13. See example problem on page 64 and show all work and unit cancellations (if any) for the following problems:
 1. Two children on ice skates start at rest and push off from each other. One has a mass of 30kg and moves back at 2m/s. The other has a mass of 15kg. What is the second child's speed?
Answer: 4m/s
 2. Standing on an icy pond, you throw a 0.5kg ball at 40m/s. You move back at 0.4m/s. What is your mass? Answer: 50kg

*** Draw a problem solving box in your notes if needed to answer questions 9 and 13.

Looking For:	Solution:
Given:	
Formula:	

