

**Unit 4A**  
**Momentum and Impulse**  
**Note-Taking Guide TEACHER**

**Main Ideas, Key Points, Questions:**

*After watching the video segment, write down key points, main ideas, and big questions.*

**Objective(s):**

- *Define momentum and impulse.*
- *Understand the relationship between the impulse an object experiences, the force an object experiences, and time.*

**Notes:**

*During the video segment, use words, phrases, or drawings to take notes.*

**Summary:**

*After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"*

Answer the following.

1. Define momentum in your own words.

*Momentum is defined as an object's quantity of motion.*

2. What is the equation for momentum?

$$\Delta p = m\Delta v$$

3. Define impulse in your own words.

*Impulse is an object's change in momentum. It is equal to the force exerted over a given period of time.*

4. What is needed to change an object's momentum?

*A force must be applied over time to change an object's momentum.*

5. If two objects, like the eggs in the video, experience the same change in momentum but over time periods of different lengths, how do the forces experienced by each object compare?

*The longer the stopping time, the less force that is required for the same change in momentum.*

6. Why does it hurt more to land on the wooden floor of a gym than on a padded mat?

*The stopping time on the gym floor is shorter, so the person would experience a greater force.*

7. If an object experiences an impulse and stops, what is its final momentum?

*An object's momentum is zero if it has no velocity.*

8. Two cars, one twice as heavy as the other, move down a hill at the same speed. How does the momentum of the heavier car compare to that of the lighter car?

*The heavier car will have twice the momentum of the lighter*

*car because it has the same velocity but twice the mass.*