

Karate Strikes Note Sheet:

Name: _____

Period: _____

This note sheet must be completed in order for you to be eligible for the extra credit associated with the final question. Pay close attention!

1. What are some testable aspects of karate strikes? That is, list some variables in a board-breaking demonstration that can be quantitatively measured and compared to the outcome of the experiment.
2. What are some aspects of karate strikes that are **not** testable in terms of physics (as we know it)? List some things that cannot be quantitatively measured and compared to the outcome of the experiment.

Various Karate Strikes:

In the different kind of karate strikes that follow, attempt to explain what part of the impulse-momentum formula...

$$F \Delta t = \Delta(mv) \quad \text{or} \quad F = \frac{\Delta(mv)}{\Delta t}$$

... is being emphasized and how it affects the outcome of the strike. These points will be discussed in class.

3. Typical "karate-chop" or hammer-fist.
4. Forward straight punch with a "sloppy" board holder.

5. Forward straight punch with a "solid" board holder.
6. Forward straight punch (with snap).
7. Overhead axe-kick.
8. Front kick with ball of foot.
9. Front heel kick.
10. The Grande Finale – using a hammer-fist to break five boards simultaneously.

VideoPoint Analysis:

Striking with only the mass of the hand.

F = _____

Striking with the mass of the body.

F = _____

Questions:

1. What are some of the most important factors in determining the effectiveness of a karate strike? Explain how these factors influence the force delivered by a particular strike. Use your observations earlier to address these questions.
2. Explain why it is that when Mr. Lowry hits the boards with his hands he uses the fleshy parts of his hand instead of his knuckles.
3. Why do karate practitioners place their hands (or feet) down several times on the target before going through with the strike?
4. What is the purpose, when doing hand strikes, of pulling the non-striking hand back as the strike is initiated? Would the strike be more or less effective without doing this? Explain why or why not.

Extra Credit:

In the grand finale break, as well as the VideoPoint demo, what is the purpose of the small spacers between the boards? Give a written concrete, physical explanation for your reasoning!