

General Physics I–Honors: PHYS 101H (Fall 2023)
Quick quiz 4

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Instructions

These quick quizzes are low-stakes assessment tools to help cement your understanding of our material. They will help you remember the key facts and can serve as a study guide to help you focus on material you are less familiar with. These quizzes do not contribute to your grade and are for your own use.

1. **Without looking at your notes or the textbook, and without consulting with your neighbour**, write your answer to each question in the **first column**.
2. Discuss with your neighbour and use your notes or the textbook as needed to answer each question and write your answers to each question in the **second column**. You should complete the second column, but do not add anything to your first column.

There are four questions.

Question 1

Why has a hurricane never been observed in the (north) Atlantic between the equator and 7 degrees north of the equator?

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Question 2

Two cars, one twice as heavy as the other, are at rest on a horizontal track. A person pushes each car for five seconds. Ignoring friction and assuming equal force exerted on both cars, the kinetic energy of the light car after the push is:

- (a) smaller than
- (b) equal to
- (c) larger than

the kinetic energy of the heavy car.

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Question 3

Two objects collide inelastically. Can all the initial kinetic energy in the collision be converted to other forms of energy?

- (a) Yes, provided the objects are soft enough.
- (b) Yes, provided the object have certain initial speeds.
- (c) No, this violates a conservation law.

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Question 4

Neglecting air resistance, how much would you have to raise the vertical height if you wanted to double the impact speed of a falling object? How does your answer change if you include a linear model of air resistance?

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