

**General Physics I–Honors: PHYS 101H (Fall 2023)**  
**Quick quiz 3**

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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**

When Clifford stands stationary on the Earth's surface, the net force on Clifford is zero: the force due to gravity is equal and opposite to the normal force exerted on him by the Earth. Suppose Clifford now jumps upwards to catch a frisbee. What happens to the relative magnitudes of these forces in the instant before he jump upwards (i.e. while his feet are still in contact with the ground)?

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**Question 2**

Suppose you are spinning a ball on a string in a horizontal circle. What happens to the ball when you cut the string? Explain your reasoning and **draw a diagram** of the ball's motion.

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**Question 3**

Suppose that three blocks are placed on a frictionless table, as in the figure. If  $N_1$  is the normal force between blocks 1 and 2 and  $N_2$  is the normal force between blocks 2 and 3, then which of the following is correct:

- 1.  $F = N_1 = N_2$
- 2.  $F + N_1 = N_2$
- 3.  $F < N_1 = N_2$
- 4.  $F > N_1 = N_2$
- 5.  $F < N_1 < N_2$
- 6.  $F > N_1 > N_2$

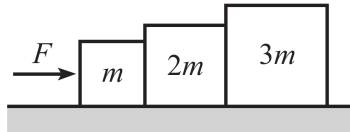


Figure 1: Three blocks on a table (question 4).

How does your answer change if we add friction and assume that the blocks are all made of the same material?

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**Question 4**

Is the mass that appears in Newton's second law the same as the mass that gravity acts on? If so, why? If not, why not?

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