

General Physics I–Honors: PHYS 101H (Fall 2023)
Quick quiz 6

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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 three questions.

Question 1

A figure skater pulls in his arms while he is rotating on a single spot on the ice (assumed to be frictionless). Does the skater's rotational kinetic energy increase or decrease after he has pulled in his arms?

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Question 2

What is the centre of mass, how do you calculate it, and why is it useful?

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Question 3

You pull on a roll of toilet paper¹ with a given force F and observe the angular acceleration is α (very normal behaviour for a physicist). A few days later, when the radius of the roll is half of what it was, you pull with the same force F . Neglecting the hollow cardboard tube and assuming the paper goes all the way down to zero radius, what is the ratio of the new acceleration to the old acceleration?



¹Or “loo roll”.