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| **PH 201 Post-Lab 12** | **Moments of Inertia** | **Name** |  |

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| Just in case you forgot, above we see two views of of this week’s lab set up. |
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| 1. Draw a free body diagram for the hanging mass: |
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| 2. Write out a sum of the force equations for the hanging mass |
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| 3. What force creates the torque on the rotating system? |
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| 4. What is a moment of inertia? |
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| 5. In an experiment similar to this week’s with no masses on the bar, the torque vs angular acceleration graph is plotted and the resulting equation of the trendline on the graph turns out to be |
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| $$τ=0.024 \left(^{mN}/\_{^{rad}/\_{s^{2}}}\right)α+0.031 mN$$ |
|  |
| The same set-up with the two masses flush on the ends of the rod provides a similar graph with the resulting trend line given by.  |
|  |
| $$τ=0.104 \left(^{mN}/\_{^{rad}/\_{s^{2}}}\right)α+0.053 mN$$ |
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| What is the moment of inertia for the 2 masses orbiting alone on the bar? |
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