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| **PH 201 Pre-Lab 07** | **Uniform Circular Motion** | **Name** |  |

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| In this week’s lab we are going to examine uniform circular motion. We will be using a device which allows us to vary three parameters involved in uniform circular motion: the centripetal force, the radius of motion and the mass of the object undergoing uniform circular motion. In addition to this we can measure the period (time for one complete rotation or cycle of motion) using a stopwatch. In our lab we shall keep the radius and the force constant. We shall vary the mass and see how that affects the period. Remember it is only **uniform** circular motion if the object is traveling with a **constant** speed. |
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| 1. Write down the relationship between the centripetal force and the centripetal acceleration. |
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| 2. Write centripetal acceleration in terms of the constant speed the object is traveling with. |
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| 3. Write down how speed is related to the period. |
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| 4. Combine the results of (1), (2), and (3) to get an equation of the form F=.... |
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| 5. Rearrange part (4) to get an equation of the form T = f (m). |
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| **OVER 🡪** |
| 6. This should be a power law type equation. So, graphing this will not yield a straight line. We shall do a ln-ln plot. What will the slope be? |
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| 7. What is the k constant in this equation? |
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| 8. Which two of the previously mentioned parameters appears in the k constant? |
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