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| **PH 201 Post-Lab 05** | **Force and Acceleration** | **Name** |  |

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| 1. We know from Newton’s second law that F = ma. If we decided to plot ln(F) on the y-axis and ln(m) on the x-axis, what would we find for our slope? |
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|  | **Slope =** |  |

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| 2. Considering the ln(F) – ln(m) plot in question (1), what would we find the y-intercept to be? |
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|  | **Y-intercept =** |  |

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| 3. Alternatively, one might plot Force (F) on the y-axis and mass (m) on the x-axis, a best straight line of this plot gives the equation, F = 2.30 (N/kg) m + 1.4 N. What was the constant acceleration used in collecting the data that resulted in this equation? |
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|  | **Acceleration =** |  |

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| 4. What can you say about the y-intercept of 1.4 N? |
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| 5. Assuming the track was frictionless, draw a free body diagram for the cart mass and the hanging mass independently. |
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| 6. Write out the three relevant sum of the forces equations. |
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| 7. From these equations determine the acceleration of the masses and the tension in the string. |
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