Week Eight Lab

Physics I

Forces, Vectors, Motion Diagrams

College of the Atlantic

Let's use 10 m/s^2 for g.

Forces, Part I

1. Let $\vec{F_1}$ be the weight of a 250 gram object, pointing due north.
2. Let $\vec{F_2}$ be the weight of a 250 gram object, pointing 30 degrees east of south.
3. Write $\vec{F_1}$ and $\vec{F_1}$ in components.
4. What is $\vec{F_1} + \vec{F_1}$? Write your answer in components and in magnitude–direction form.
5. Let $\vec{F_R} = \vec{F_1} + \vec{F_1}$? If we were to add $-\vec{F_R}$ to $\vec{F_1}$ and $\vec{F_1}$, the sum of the three vectors will be zero. Do this on the force table and see what happens.

Forces, Part II

1. Let $\vec{F_1}$ be the weight of a 300 gram object, pointing due south.
2. Let $\vec{F_2}$ be the weight of a 200 gram object, pointing due east.
3. Write $\vec{F_1}$ and $\vec{F_1}$ in components.
4. What is $\vec{F_1} + \vec{F_1}$? Write your answer in components and in magnitude–direction form.
5. Let $\vec{F_R} = \vec{F_1} + \vec{F_1}$? If we were to add $-\vec{F_R}$ to $\vec{F_1}$ and $\vec{F_1}$, the sum of the three vectors will be zero. Do this on the force table and see what happens.

Motion Diagram

Make a motion diagram for the projectile graphed on a separate sheet. Use your motion diagram to measure the acceleration. The x and y scales on the graph are meters. Be reasonably careful with your measurements.