**Data Collection with a PC-II** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Day/Time:\_\_\_\_\_\_

1. Introduction



|  |  |
| --- | --- |
| Menu | Description |
| 1 |  |
| 4 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |

1. Acceleration due to gravity

Flag Spacing on the picket fence = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write down the kinematic equations below:

*v* vs. *t*:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *x* vs. *t*:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | Measured Acceleration due to gravity | Accepted (m/s2) | % Error |
| *v* vs. *t*(linear fit) | *x* vs. *t*(Quadratic fit) | Average |
| 1. |  |  |  | 9.8 |  |
| 2. |  |  |  | 9.8 |  |
| 3. |  |  |  | 9.8 |  |
| 4.  |  |  |  | 9.8 |  |
| 5. With 50-g mass |  |  |  |  |  |

C. Newton’s Second Law

Purpose: Verify Newton’s second law using Atwood’s Machine.

Apparatus: PC, interface, photogate sensor (head, rod, cable, and pulley), two mass sets, string, and lab stand.

Theory: Newton’s second law is: Net Force = Mass X Acceleration.

|  |  |
| --- | --- |
|     C:\Users\mahesp\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\IMG_1891.jpg |  |

Keeping the total mass = M = m1+ m2 constant, measure the acceleration as you change the net force (m1-m2)g. Collect 8 sets of data, tabulate your data, and plot an appropriate graph to verify Newton’s second law.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| m1 (gram) | m2 (gram) | m1 + m2 (gram) | m1-m2 (gram) | a (m/s2) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |