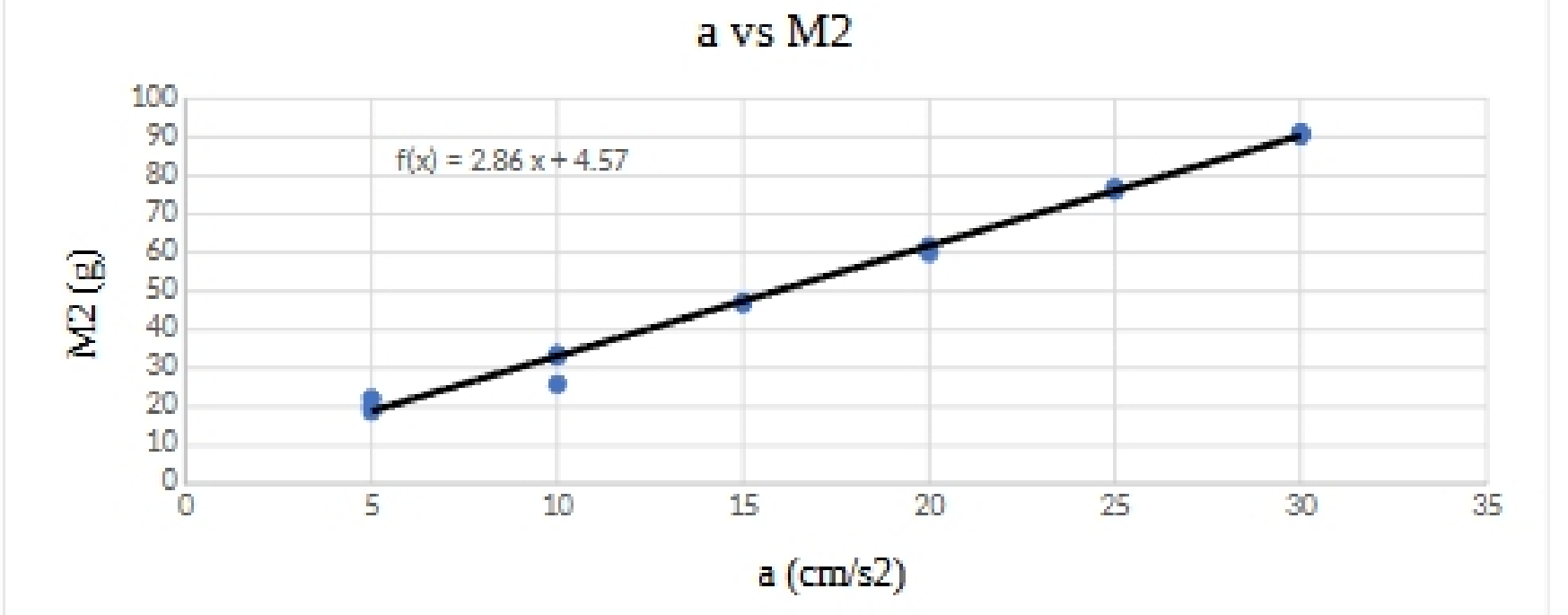
VI-1

M(glider) = 295.1
M(weight hanger) = 5.3

M(g)	M_2 (g)	a (cm/s^2)
0	5	18.8
0	5	18.8
0	5	19.6
0	5	21.9
0	5	22.1
5	10	25.9
5	10	33.6
5	10	33.4
5	10	33.5
5	10	33.1
10	15	47.1
10	15	47.3
10	15	47.3
10	15	47
10	15	46.7
15	20	60
15	20	61.7
15	20	61.7
15	20	61.7
15	20	61.5
20	25	76
20	25	76
20	25	76.9
20	25	76.9
20	25	76.3
25	30	90.5
25	30	91.1
25	30	90.3
25	30	91.2
25	30	90.8



Average acceleratrion was calculated using excel.

Slope	2.86	4.57333333	**Intercept**
Slope uncertainty	0.03624377	0.70574603	**Intercept uncertainty**

Solving for g:

$$a=\frac{M_2 g}{M_1+M_2}$$

$$s=\frac{g}{M_1+M_2}$$

$M_1+M_2=295.1+5.3+5=300.4$ **(this value is a constant)**

$$s=\frac{g}{300.4}\Rightarrow 300.4\,(2.86)=(\frac{g}{300.4})300.4$$ **(300.4 cancels out on the right hand side)**

$g=859.144\,cm/s^2$

Solving for σ_g:

$$s=\frac{g}{M_1+M_2}$$

$$\sqrt{\frac{\sigma_s}{s}}=\frac{\sigma_g}{g}\Rightarrow\sqrt{ccc}$$

$\sigma_g = 859.144\sqrt{\iota\iota\iota}$

$g = 859.144\, cm/s^2$

$\sigma_g = 18.41265054\, cm/s^2$

$g \pm \sigma_g = 859 \pm 18\, cm/s^2$

The accepted value of g, 980 cm/s² does not lie within the range that was calculated.

VI-2

****Average for a_1 using values i V 3 of data sheet****

$$average\ a_1 = \frac{\sum of\ recorded\ accelrations}{number\ of\ recorded\ accelerations}$$

$$average\ a_1 = \frac{61.4+61.2+61.2+61.2+61.1}{5} = 61.22\, cm/s^2$$

****Average for a_2 using the recorded accelerations when $M = 15$:****

$$average\ a_2 = \frac{\sum of\ recorded\ accelrations}{number\ of\ recorded\ accelerations}$$

$$average\ a_2 = \frac{60.0+61.7+61.6+61.7+61.5}{5} = 61.3\, cm/s^2$$

Finding the frictional force:

$$Frictional\ Force = \frac{(M_1+M_2)(a_1-a_2)}{2}$$

$$\text{Frictional Force} = \frac{(300.4)(61.2\text{-}61.3)}{2} = -15.02 \frac{cm*g}{s^2} = 15.02\, N$$

****(We take the positive value of this since we assume all calculations are positive)****

The frictional force is less than the smallest value of $M_2 g$ which is 49.98 N.