

$$g = \frac{2d}{t^2 \sin(\alpha)}$$

Situation 1 Constant mass = 90g

Constant distance = 1.4 m

We change the angle of inclination α .

$\alpha \pm 1 \text{ deg}$	$t \pm 0.5 \text{ sec}$	estimation of g
1.5	3.3	11.88
	2.8	
	2.9	
3	2.0	7.5
	2.2	
	2.2	
7	1.3	12.24
	1.3	
	1.4	

average value : $g = 10.54 \text{ ms}^{-2}$

Situation 2 Constant mass = $90g \pm 0.5g$

Constant angle = $1.5 \pm 1^\circ$

We change the distance d

$d \pm 0.5 \text{ cm}$	$t \pm 0.5 \text{ sec}$	estimation of g
1.4	3.3	11.88
	2.8	
	2.9	
1	2.7	10.48
	2.7	
0.7	2.3	10.56
	2.2	
0.5	2.0	9.55
	2.0	

average value : $g = 10.61 \text{ ms}^{-2}$

Situation 3 Constant distance 1.4 m

Constant angle = $1.7^\circ \pm 1^\circ$

We change the distance d

$m \pm 0.5g$	$t \pm 0.5 \text{ sec}$	estimation of g
90	3	9.82
	3.2	
90+50	3	10.14
	3.1	
90+100	3.1	9.82
	3.1	

average value : $g = 9.92 \text{ ms}^{-2}$

Average value of f for the 3 experiments : 10.36 ms^{-2} (relative error = 5.6 %)