Student 3: Low Merit

Aim: *To find a relationship between the distance travelled by a marble down a ramp and the time taken.*

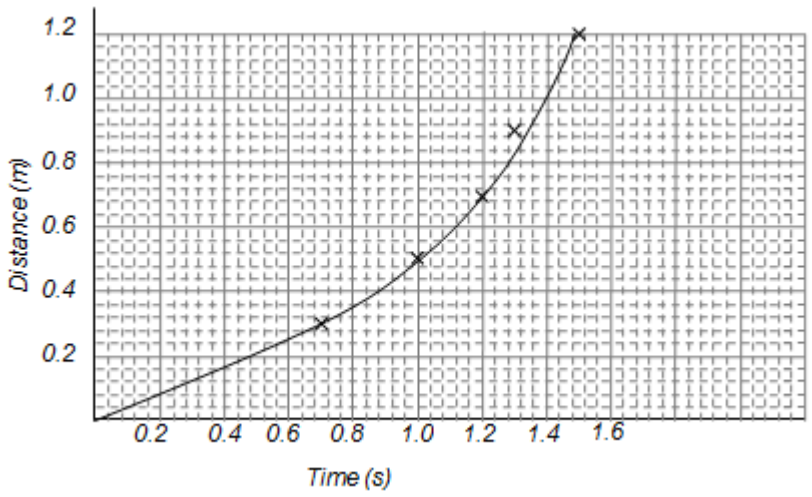
Method

To improve accuracy in this investigation I will stay at eye level with the marble as it rolls down the wooden channel so I am able to know when the marble is released and when it stops. This will help prevent parallax error. (1)
To further improve accuracy in this investigation I will take 3 measurements at each release height to be as accurate as possible. This will help to prevent reaction time error.
To improve accuracy I will check each measurement that was made on the wooden channel using a one metre ruler. But by using a one metre ruler, zero error presents itself, so I will measure from the first measurement of the ruler rather than the beginning / end of the ruler.
I will control the angle of the wooden channel to the bench by using play dough to keep it in place. I will also control the mass and shape of the marble by making sure it is clean and round. (2)

Results Table

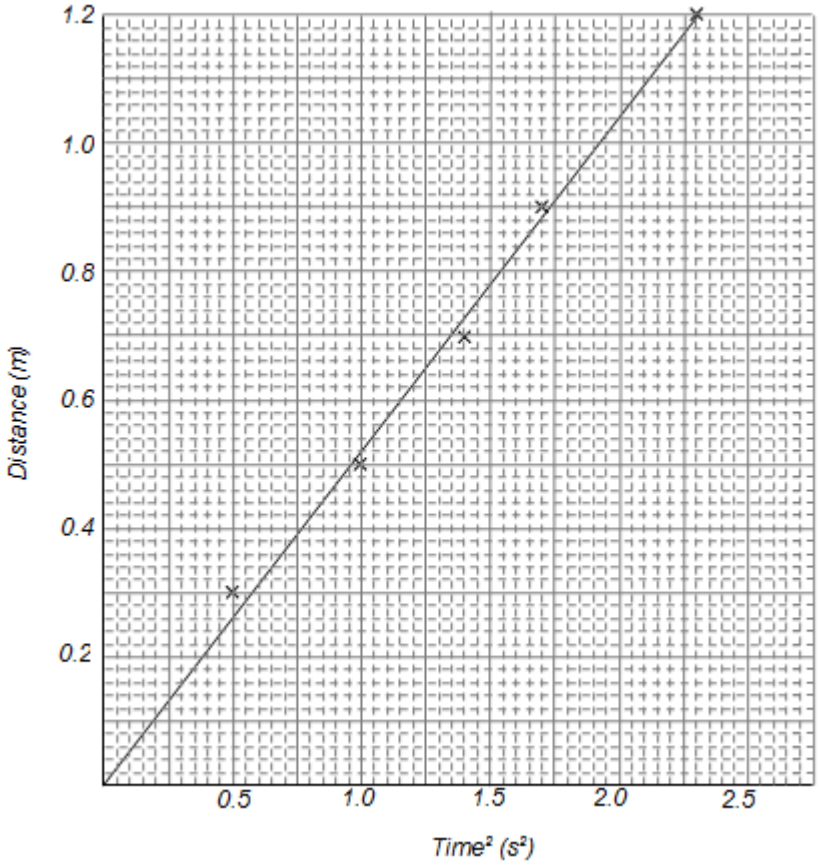
Distance (m)	*Time 1 (s)*	*Time 2 (s)*	*Time 3 (s)*	*Time ave*	*T^2 (s^2)*
			(3)		
0.300	*0.8*	*0.7*	*0.7*	*0.7*	*0.5*
0.500	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
0.700	*1.2*	*1.1*	*1.2*	*1.2*	*1.4*
0.900	*1.3*	*1.3*	*1.3*	*1.3*	*1.7*
1.200	*1.5*	*1.4*	*1.5*	*1.5*	*2.3*

Initial Graph



Relationship: $y \propto x^2 \quad = \quad d \propto t^2$

Linear Graph



Conclusion

Gradient = 0.52 m s^{-2}

Equation is $d = 0.52t^2 + 0.00$ (4)