Instrumental Uncertainty Graphing Task 1

ATL(s) being taught and assessed:
Research - Process data and report results (with a focus on reporting processed data in graphical form)

Research Question
What is the relationship between the time and distance a toy car travels?

Independent variable: distance (d)
Dependent variable: time (t)
Controlled variables: Type of car, initial velocity, nature of surface

Mathematical Model:

speed = distance/time:

Hypothesis:

If we graph the distance against the time then we should get a directly proportional relationship with a gradient of and an intercept of 0.
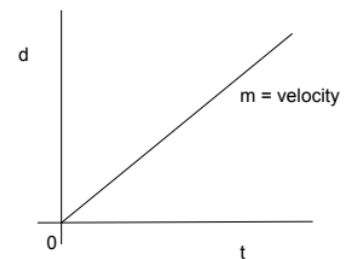

Table of Raw Data:

Distance ± 0.1 / m	Time ± 0.005 / s
0.3	0.802
0.7	1.103
1.0	2.110
1.6	3.615
2.0	4.610

Graph of results:

Value of gradient:

Formative assessment criteria:

Not there yet	Meeting expectations	Beyond expectations
	- Axis correct way round to give the velocity as a gradient - Instrumental uncertainty shown as constant error bars on y axis - Instrumental uncertainty shown as constant error bars on x axis - Line of best fit plotted	

Instrumental Uncertainty Graphing Task 2

ATL(s) being taught and assessed:
Research - Process data and report results (with a focus on reporting processed data in graphical form)

Research Question
What is the relationship between the time and displacement of a toy car?

Independent variable: displacement (d)
Dependent variable: time (t)
Controlled variables: Type of car, initial velocity, nature of surface

Mathematical Model:

velocity = displacement/time:

Hypothesis:

If we graph the distance against the time then we should get a directly proportional relationship with a gradient of and an intercept of 0.
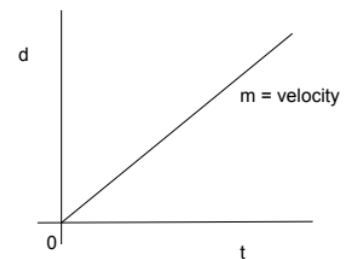

Table of Raw Data:

Displacement ± 0.5 / m	Time ± 5 / s
0	0
5	10
10	19
15	31
20	40
25	52
30	61
35	70

Graph of results:

Value of gradient:

Formative assessment criteria:

Not there yet	Meeting expectations	Beyond expectations
	- Axis choice is the correct way round to give the velocity as a gradient - Instrumental uncertainty shown as constant error bars on y axis - Instrumental uncertainty shown as constant error bars on x axis - Line of best fit plotted	 - Max and min lines of best fit attempted