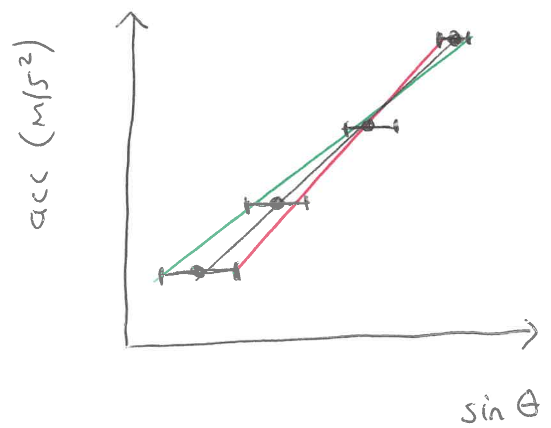
h) In an effort to explain the difference (calculated in part f), Joan suggested that due to thickness of their ramp and other factors, their measurement of the height of the end of the ramp was only accurate to within ±1 cm.

Using this assumption, and the graph that you constructed in part d), explain a method that you could use to test the effect that this would have on your calculated value of 'g' (you do not need to carry out this method on your graph, but you do need to explain it step by step). (4 marks)

Consider the graph; if the height of the ramp is off by ± 1cm, this would result in an uncertainty on sin θ, which we could represent with horizontal error bars. (eg. --)



Using these error bars, we could calculate the maximum & minimum possible gradient allowed by them (pictured left in red & green respectively). This, in effect, allows us to calculate an error in our value for 'g'.

Marking Key:

✓ - Use error in height (± 1cm) to calculate error in sin θ.

✓ - Put this error onto the graph in the form of horizontal error bars.

✓ - Use these error bars to construct new lines-of-best-fit, to calculate a maximum & minimum possible value for the gradient, and therefore for 'g'.

✓ - State 'g' with newly-calculated uncertainties.