AS90935 v3

Carry out a practical physics investigation that leads to a linear mathematical relationship, with direction

With direction means

- general instructions for the investigation will be given in writing
- direction will be given in the form of a purpose, an outline of the method, and the equipment and/or materials from which to choose.
- a template or suitable format for planning the investigation will be provided.

Achieve	***Merit***	***Excellence***
developing a method for collecting the data • either a suitably described method or from evidence that appropriate data has been gathered	developing a method for collecting the data • either a suitably described method or from evidence that appropriate data has been gathered	developing a method for collecting the data • either a suitably described method or from evidence that appropriate data has been gathered
	controlling the variable(s) that could have a significant effect on the results	controlling the variable(s) that could have a significant effect on the results
	using technique(s) that increase the accuracy of the measured values of the dependent (and independent, if appropriate) variable (Students are not required to specifically define which variable is the independent & which one is the dependent).	using technique(s) that increase the accuracy of the measured values of the dependent (and independent, if appropriate) variable (Students are not required to specifically define which variable is the independent and which one is the dependent).
collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a reasonable range and number of values	collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a reasonable range and number of values Appropriate units need to be stated for each variable.	collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a reasonable range and number of values Appropriate units need to be stated for each variable.
drawing a graph, based on the data	drawing a linear graph, valid for the data	drawing a linear graph, valid for the data
writing a conclusion that links the processed data to the identified trend on the graph	writing a conclusion that states the equation of the relationship	writing a conclusion that states the equation of the relationship

A graph based on the data is considered to be plotted points with a single best fit straight line, ruled to represent the trend.
Do NOT simply rule lines to connect each plotted point.

Discussion:
a justification for the accuracy-improving techniques used
a reason that there is a limit to either end of the value chosen for the independent variable
a justification why a variable needs to be controlled
a description of any difficulties encountered when making measurements and how these difficulties were overcome
a link between investigation findings and applicable physics ideas
a description of any unexpected outcomes of the processing of the results and a suggestion of how these outcomes could have been caused and/or the effect they had on the validity of the conclusion.