Additonal/Separate Physics ISA 2013-14 Resistance

PART 2

QUESTION 1 FROM THE PHYSICS ISA SUMMER 2013

1 (a) (i) Do your results support the hypothesis that you investigated?

You should use any pattern that you can see in your results to support your answer.

You should include examples from your results.

Q. No.					
1 (a) (i)			results.		...ether ...esis. a pattern **and** some examples from the results.

EXAMPLE ANSWER
VALID STATEMENT: THE _ AFFECTS THE RESISTANCE.
PATTERN: AS INCREASES SO DOES THE RESISTANCE.
IDENTIFYING RESULTS: GIVE TWO EXAMPLES, ONE HIGH AND ONE LOW

(3 marks)

QUESTION 1 FROM THE PHYSICS ISA SUMMER 2013

1 (a) (ii) Did you get any anomalous results?

	0 marks	1 mark	2 marks	3 marks
Q. No. 1 (a) (ii)	No creditworthy response.	There is a correct statement as to whether or not there are any anomalous results.	There is a correct statement as to whether or not there are any anomalous results	There is a correct statement as to whether or not there are any anomalous results

EXAMPLE ANSWER:
THERE ARE NO ANOMALOUS RESULTS
BECAUSE ALL THE DATA IS CLOSE TO THE LINE OF BEST FIT
(QUOTE AT LEAST TWO VALUES TO CONFIRM THIS)

that
at do not fit

ts are

| Additional Guidance | | | to a line of best fit. | | very close |

....

....

(3 marks)

QUESTION 1 FROM THE PHYSICS ISA SUMMER 2013

1 (b) Describe in detail how you could use repeated readings to obtain more accurate results.

SECTION 2			

Q. No. 1 (b)				ould
			of a graph is plotted and a best fit line is drawn ignoring anomalous points.	ded

EXAMPLE ANSWER:
CALCULATE A MEAN READING FROM THE REPEATS.
THIS IS DONE BY ADDING THE REPEATED READINGS TOGETHER AND DIVIDING BY THE NUMBER OF READINGS.
ANY ANOMALOUS READINGS SHOULD BE EXCLUDED SO NOT TO AFFECT THE MEAN.

Additional Guidance	Accept the term 'average' as an alternative to 'mean'.

....

(3 marks)

QUESTION 1 FROM THE PHYSICS ISA SUMMER 2013

1 (c)   What was the independent variable in the investigation that you did?

INDEPENDENT VARIABLE WRITTEN ON CRF

....

What was the range of the independent variable?

MINIMUM VALUE   **MAXIMUM VALUE**

The range was from .... to ....

Explain why this was or was not a suitable range.

EXAMPLE ANSWER:

THIS WAS A SUITABLE RANGE BECAUSE I SAW A TREND.

THIS IS CONFIRMED BY MY RESULTS (QUOTE AT LEAST TWO VALUES)

| Additional Guidance	Look at the candidate's table of results in order to confirm the suitability of the range. The explanation should convey that the candidate understands the term range. Accept lowest to highest, highest to lowest, or the difference. Correct units should appear at least once.
	If the dependent variable is given instead of the independent variable, a maximum of one mark may be given for the correct range of the dependent variable.

(3 marks)

What is meant by a *"sketch"* graph?

- What do you notice about the two graphs below?

Angle of Reflection vs. Angle of Incidence (Attempt 2)
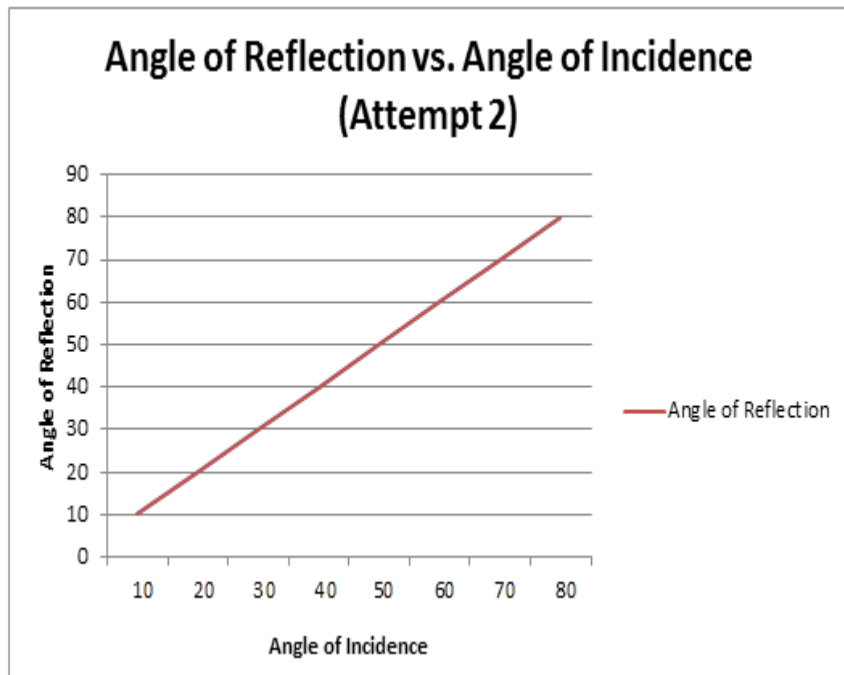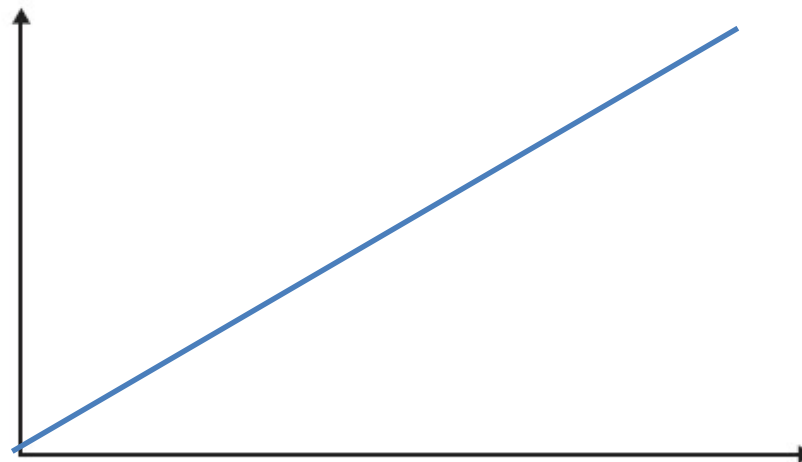
SKETCH GRAPH – JUST A "SKETCH"
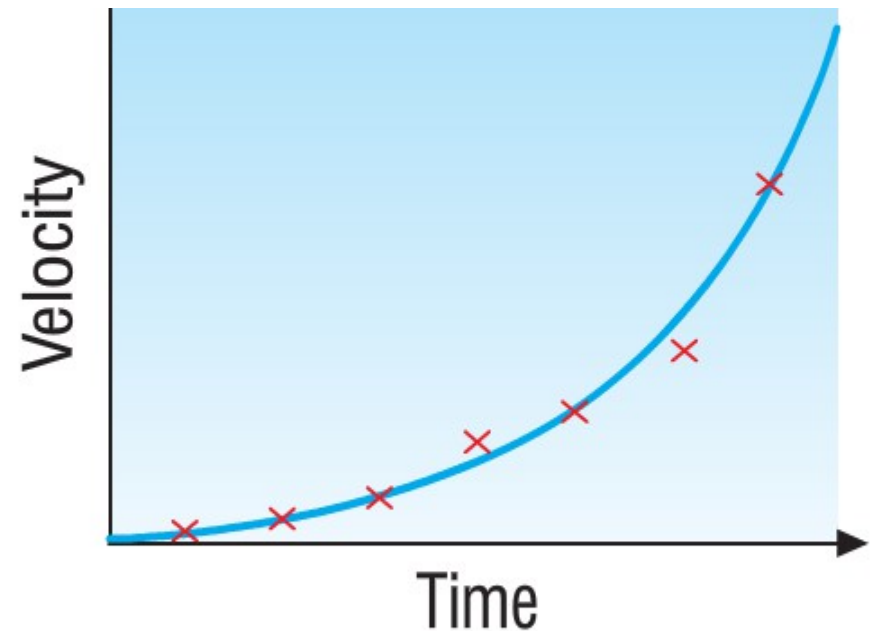
A question from Physics ISA 2011

2   You have been given a Secondary Data Sheet that provides results from similar investigations.

2 (a)   Draw a sketch graph of the results in Case study **1**.

The graph should show how the mean output voltage varies with the area of the solar cell exposed to light.

DEPENDENT VARIABLE

INDEPENDENT VARIABLE

(2 marks)

QUESTION 2 FROM THE PHYSICS ISA SUMMER 2013

A manufacturer of bungee ropes makes this hypothesis:

'The extension of the bungee rope is directly proportional to the force applied.'

Look at Case Studies **1**, **2** and **3**.

Explain whether or not the results in Case Studies **1**, **2** and **3** support this hypothesis.

To gain full marks, your explanation should include appropriate examples from the results in Case Studies **1**, **2** and **3**.

1 mark	2 marks	3 marks
A simple correct statement is made about **at least two** of the Case Studies **1**, **2** and **3**, as to whether or not they support the hypothesis.	Correct statements are made about Case Studies **1**, **2** and **3**, supported by a more detailed explanation of **one** of them.	Correct statements are made about Case Studies **1**, **2** and **3**, supported by a more detailed explanation of **both** Case Studies **2** and **3**.

(3 marks)

Anomalies

Anomalous results are clearly out of line. They are not those that are due to the natural variation you get from any measurement. These should be looked at carefully. There might be a very interesting reason why they are so different. You should always look for anomalous results and discard them before you calculate a mean, if necessary.

- If anomalies can be identified while you are doing an investigation, it is best to repeat that part of the investigation.
- If you find anomalies after you have finished collecting data for an investigation, they must be discarded.

Look at Case Study 4.

Do the results support the manufacturer's hypothesis?

Explain your answer.

....

1 mark	2 marks	3 marks
There is a simple statement saying whether or not the results in Case study **4** support the manufacturer's hypothesis and this is supported by some **qualitative** information quoted.	There is a simple statement saying whether or not the results in Case study **4** support the manufacturer's hypothesis and this is supported by some **quantitative** information quoted.	There is a simple statement saying whether or not the results in Case study **4** support the manufacturer's hypothesis and this is supported by some **quantitative** information quoted. There is also a statement that makes clear the limitations of the results in supporting the hypothesis.

....

....

(3 marks)

A question from Physics ISA 2011

Context: LIGHT BULBS BEING SWITCHED ON/OFF WHEN THEY'RE COLD

3	How could the results from your investigation be useful in the context you have researched?
	You may use information from your Candidate Research Notes to help you to answer this question.

SECTION 2

1 mark	2 marks	3 marks
Results from the investigation or an idea from the research has been related to the context.	Results from the investigation or an idea from the research has been related to the context. There is a **simple** explanation of how the results or idea can be applied and used in the context.	Results from the investigation or an idea from the research has been related to the context. There is a **detailed** explanation of how the results or idea can be applied and used in the context.

(3 marks)