GCSE ISA Homework

1. Match up the term to its definition.

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| Independent variable |  | The variable that you measure in an experiment. |
| Dependent Variable | The maximum and minimum values of the dependent or independent variable. |
| Control Variables | If the investigation is repeated by another person and the same results are obtained. |
| Reproducible | The variable that you change in an experiment. |
| Resolution | A variable that may affect the outcome of the experiment, so must be kept the same during in an experiment. |
| Range | This is the smallest change in the quantity being measured of a measuring instruments that gives a clear change in the reading. |

1. A preliminary experiment works out an appropriate value for a control variable.

**Example**: You are investigating how mass of water affects temperature rise.

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| --- | --- |
| Control variable: | Size of beaker |
| Size of beaker you could use: | 100ml, 250ml, 400ml |
| I would pick the size of beaker that: | Heats water 20oC the quickest |

a) You are investigating how length of exercise affects heart rate.

|  |  |
| --- | --- |
| Control variable: | Type of exercise. |
| Types of exercise you could use: |  |
| I would choose the exercise that… |  |

b) You are investigating how the number of hamburgers eaten affects the mass of a person.

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| --- | --- |
| Control variable: | Make of hamburger. |
| Makes of hamburgers you could use: |  |
| I would choose the hamburger that… |  |

c) You are investigating how \*\*\*.

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| Control variable: |  |
| Types of exercise you could use: |  |
| I would choose the exercise that… |  |

1. Write a simple conclusion for these 3 graphs. **e.g. As the length of exercise increases, heat rate increases.**

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| --- | --- | --- |
| Voltage vs light intensity graph.tiff |  |  |
| Conclusion:  As the voltage increases \_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Conclusion:  As time increases \_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Conclusion:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

4) You did an experiment to investigate how the size of a solar cell exposed   
to light affected the voltage (amount of electricity) produced.

a) These were your results:

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| --- | --- | --- |
| **Size of solar cell (cm2)** | **Mean output voltage (millivolts)** | **Write a conclusion for your data:**  As the size of solar cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 10 | 80 |
| 15 | 110 |
| 20 | 150 |
| 25 | 200 |
| 30 | 230 |
| 35 | 270 |

b) Here are someone else’s results:

|  |  |  |
| --- | --- | --- |
| **Size of solar cell (mm2)** | **Mean output voltage (millivolts)** | **Do they show the same trend?**   * Yes/No (circle one) * Because\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Two pieces of data that back this up are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 6000 | 8000 |
| 5000 | 7600 |
| 4000 | 7140 |
| 3000 | 6800 |
| 2000 | 6360 |
| 1000 | 5900 |

c) Here are someone else’s results:

|  |  |
| --- | --- |
| Colour of light vs solar cell voltage.tiff | **Do they show the same trend?**   * Yes/No (circle one) * Because\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ * Some data to back this up is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |