**Lab 1 – Determination of the relationship between the surface area of a piece of paper and the diameter of a ball made with it**



**Objective**

To learn how to collect data, calculate averages and errors in direct measurements, express them correctly, make graphs including the error as error bars, interpret results, assess and evaluate the method.

**Procedure**

1. Take two sheets of paper from your notebook and measure the length and width of the paper with a 50 cm (±0.1 cm) ruler.
2. Make a ball with the paper and measure its diameter with the ruler a minimum of 5 times. (Record all data in a suitable table).
3. Divide the second sheet in half and repeat the process (assuming the surface area is half the first one).
4. Continue this process until a minimum of 5 different sized balls have been made and measured.
5. Calculate the average diameter for each paper and display your results in the form of a scatter graph with a line of best fit (diameter vs surface area).

**Conclusion**

* Describe any correlation present in your graph.
* Explain what this correlation means about your investigation.

**Evaluation**

* Go through each step of the procedure in this experiment and consider if there are any possible errors associated with it. (Read the sections on *measurements* in *Unit 1* on the science website and try to use key terms related to error).
* List a minimum of 3 improvements that could be made to improve the accuracy of this investigation.

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| Error sources | Improvements |
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