****A Knotty Problem**

**Problem:** find out whether the length of a string changes in a ***predictable*** way with the number of knots tied in it. You will be provided with:

* About a metre of string

Image: Wikipedia, Creative Commons.

* A metre rule

**READ ALL OF THIS WORKSHEET BEFORE DOING ANYTHING ELSE**

**Describe** what you will do, what data you will collect, and what graph you will plot with your data:

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Draw your table of results below, and plot your graph on the separate sheet of graph paper:

Give **three** reasons why it is useful to draw a graph of data:

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What does the **y-intercept** of your graph represent?

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What does the **gradient** of your graph represent?

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Using information from your graph, **write an equation** that describes the relationship between the length of a string and number of knots in it:

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**Why** do you think the length of the string changes in this way?

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Discuss any **uncertainties** in your data (giving numerical values) and suggest ways of reducing them:

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Do you think the equation you obtained above could be applied to strings or rope of any ***thickness***? Explain your answer and suggest how you could test it:

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