

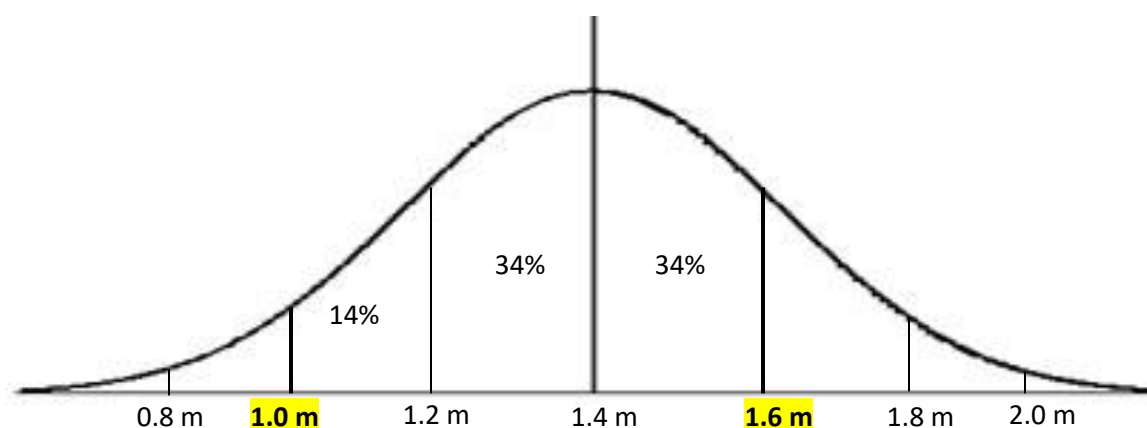
Normal Distribution Calculations using WolframAlpha

Probability calculations for normal distributions can be done quickly and accurately using an online computational search engine called; WolframAlpha. [www.wolframalpha.com]

Consider the question below:

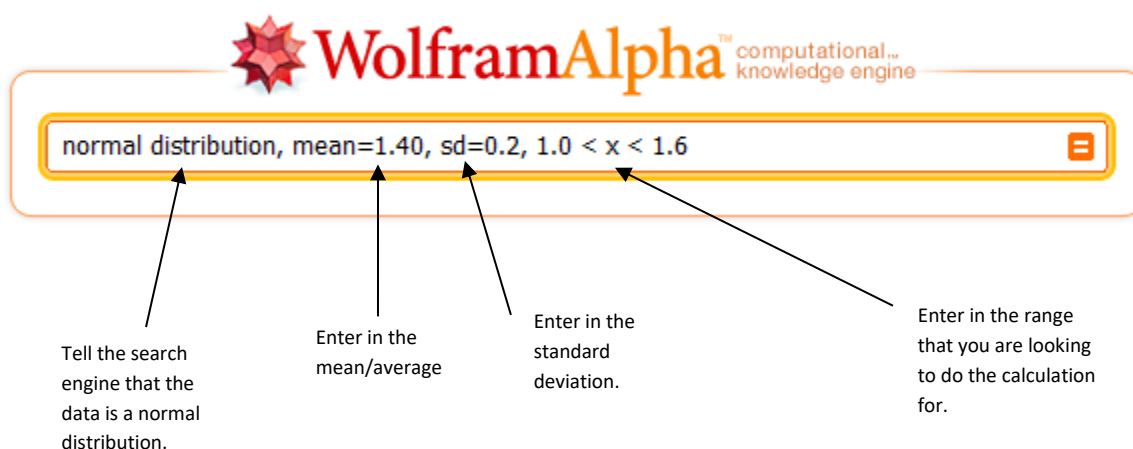
The height of 700 high school students was measured. The **mean (average) length was 1.40 metres** and the **standard deviation was 0.2 metres**.

Making a sketch of the situation and labelling the “approximate” percentages in each range gives.



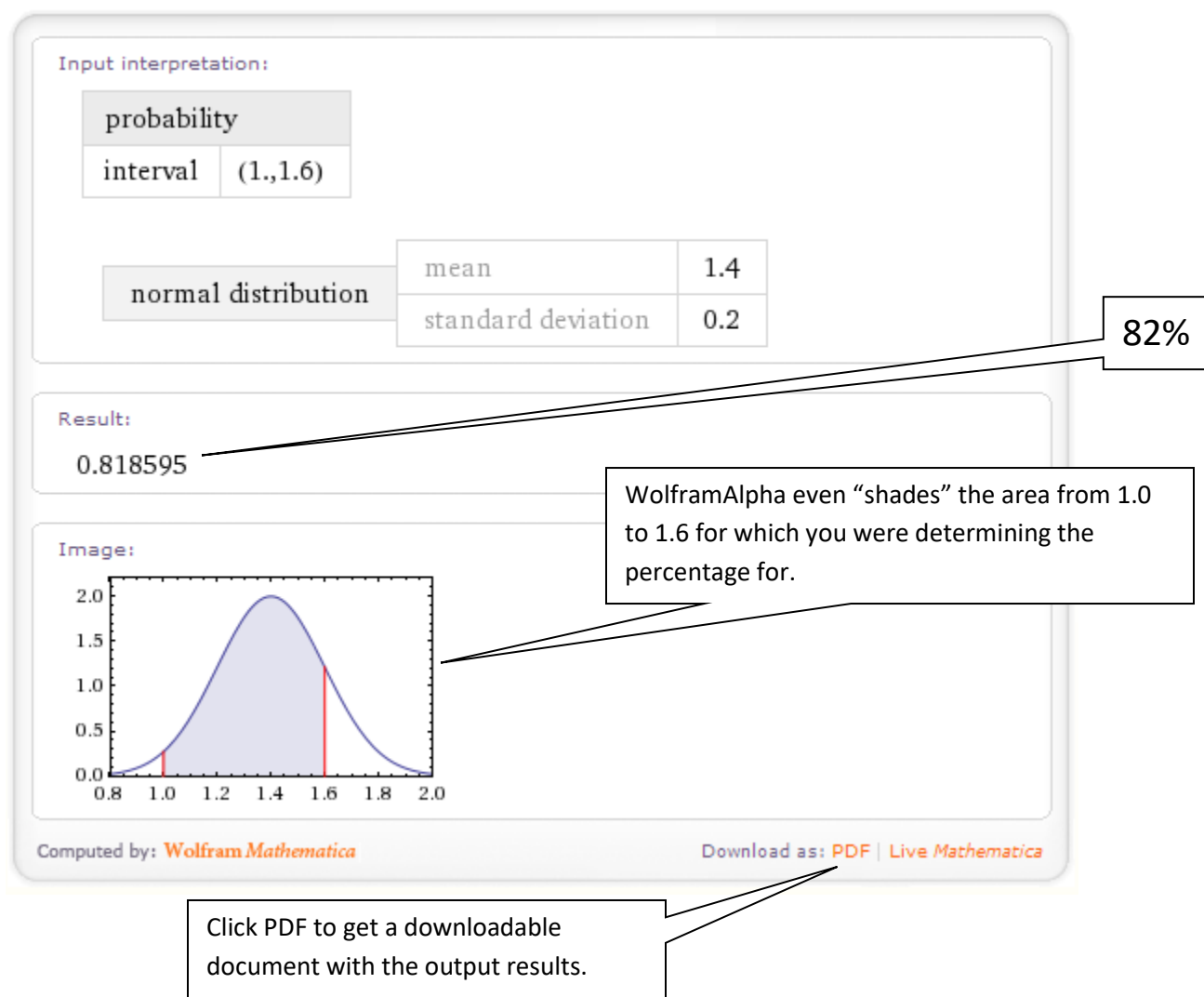
Calculate the percentage of high school students **between 1.0 m and 1.6 m**. From the diagram above and using the standard probability rules the answer is: $14\% + 34\% + 34\% = 82\%$.

You can also do this using WolframAlpha. Go to WolframAlpha online and then enter in the following information into the search engine.



Click the equal/enter button and the search engine will calculate the probability.

The results will come out like this:



Try these; use both methods and check your results with WolframAlpha. In both cases print out the PDF for your notes.

1. Using the data from the question, calculate the percentage of people that are between 1.2 m and 2.0 m.
2. Using the data from the question, estimate/calculate the percentage of people that are between 1.25 m and 1.5 m. [Using the diagram method you can only get an estimate, but WolframAlpha will give you a more accurate answer.]