

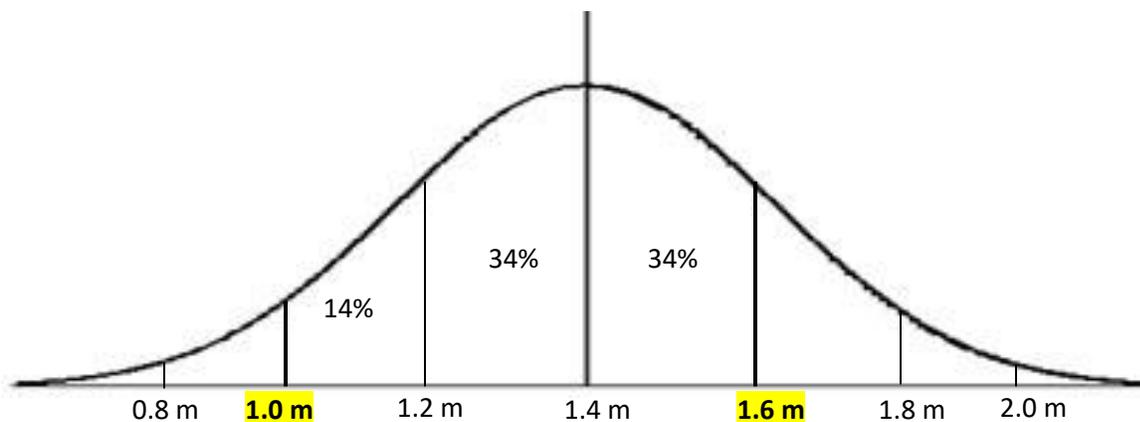
Normal Distribution Calculations using WolframAlpha

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.

WolframAlpha™ computational knowledge engine

normal distribution, mean=1.40, sd=0.2, 1.0 < x < 1.6

- ↑ Tell the search engine that the data is a normal distribution.
- ↑ Enter in the mean/average
- ↑ Enter in the standard deviation.
- ↑ Enter in the range that you are looking to do the calculation for.

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

The results will come out like this:

Input interpretation:

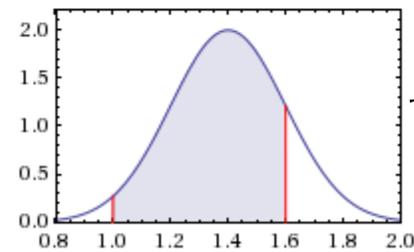
probability	
interval	(1.,1.6)

normal distribution	mean	1.4
	standard deviation	0.2

Result:

0.818595

Image:



Computed by: **Wolfram Mathematica** Download as: [PDF](#) | [Live Mathematica](#)

82%

WolframAlpha even “shades” the area from 1.0 to 1.6 for which you were determining the percentage for.

Click PDF to get a downloadable document with the output results.

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.]