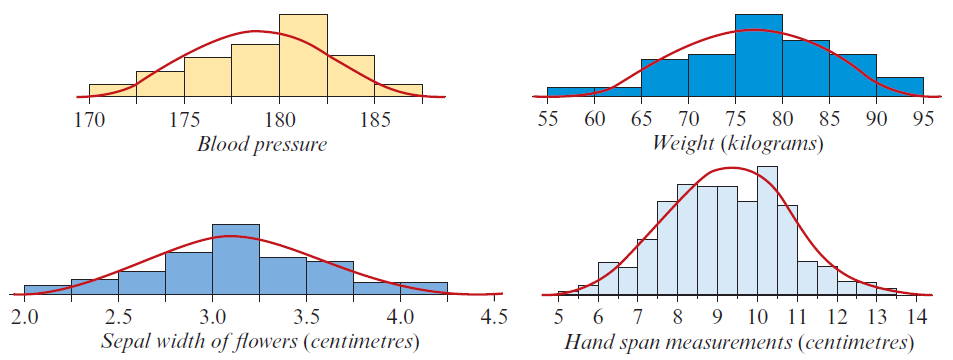
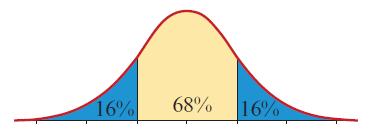
1H – The Normal Distribution

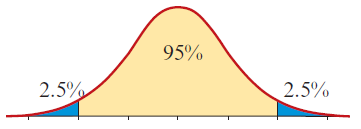
**THE NORMAL DISTRIBUTION**

* Data sets that are approximately \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_ can be modelled by a mathematical function called the Normal Distribution:

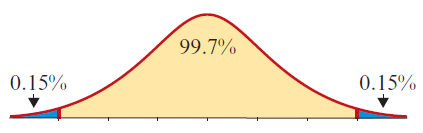




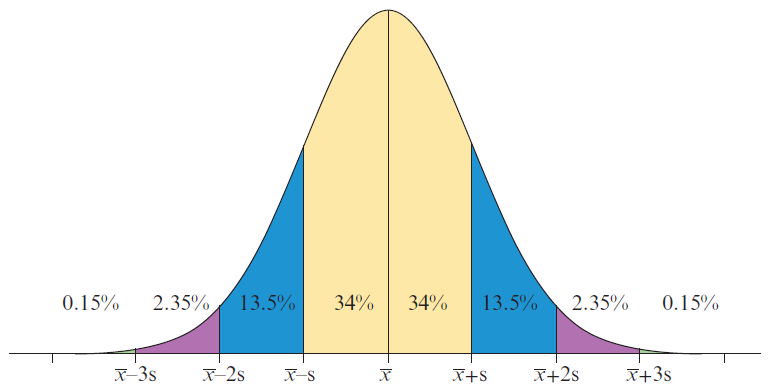
* Approximately **68%** of the observations lie **within \_\_\_ standard deviation of the mean**:



* Approximately **95%** of the observations lie **within \_\_\_ standard deviations of the mean**:



* Approximately **99.7%** of the observations lie **within \_\_\_ standard deviations of the mean**:
* This information can be summarised on a single curve that can allow lots of different percentages of the observations to be calculated:



1H – The Normal Distribution

**APPLYING THE 68 – 95 – 99.7% RULE**

*The distribution of delivery times for pizzas made by House of Pizza is approximately normal with a mean of 25 minutes and a standard deviation of 5 minutes.*

1. *Draw a curve with a horizontal scale to represent this in the space below*
2. *Approximately what percentage of pizzas have the following delivery times:*

*15 – 35 minutes: \_\_\_\_\_\_\_ > 30 minutes: \_\_\_\_\_\_ 20 – 40 minutes: \_\_\_\_\_\_*

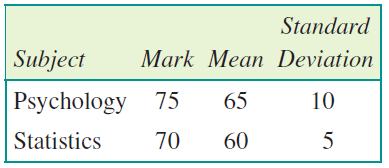
1. *If 2000 pizzas were delivered in one month, approximately how many were delivered in less than 10 minutes:*

**STANDARDARDISED SCORES (z-scores)**

* If you want to **compare scores in different normal distributions**, you need to convert each score to a standardised score
* A standardised score is its number of \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ above or below the mean
* To convert an **actual score to a standardised score**:
* To convert a **standardised score to an actual score**:
* To **calculate the standard deviation**:
* To **calculate the mean**:

1H – The Normal Distribution

**APPLYING STANDARDISED SCORES**



*Jack got a mark of 75 in Psychology and 70 in Statistics:*

1. *Draw the two normal curves with standardised curves underneath and show the position of the Jack’s mark on each:*

*Psychology Statistics*

1. ***Calculate the standardised scores*** *to confirm which mark was better relative to other students:*

*Psychology z-score: Statistics z-score:*

1. *A second student, Jill, got a standardised score of -1.5 on the Psychology test.* ***Calculate the actual score*** *for Jill:*
2. *For Biology, the mean mark was 68. Jill’s actual score of 78 was equivalent to a standardised score of 2.5.* ***Calculate the standard deviation*** *for Biology marks:*
3. *For Chemistry, the standard deviation of marks was 6. Jill’s actual score of 30 was equivalent to a standardised score of -0.5.* ***Calculate the mean*** *score for Chemistry:*