Temperature and Drawing graph

*Three systems for measuring temperature are widely used: Celsius scale, Kelvin scale and Fahrenheit scale.

***Units of Temperature**

Fahrenheit **(°F)** , Celsius **(°C)** and kelvin **(K)**

****How to convert between these different scales:***

- From Celsius to kelvin **K = °C + 273**
- From Celsius to Fahrenheit **°F = (°C × $\frac{9}{5}$) + 32**
- From Fahrenheit to Celsius **°C = (°F - 32) x $\frac{5}{9}$**

Temperature Scales

Fahrenheit	Celsius	Kelvin	
212	100	373	Boiling point of water at sea-level
194	90	363	
176	80	353	
158	70	343	
140	60	333	
122	50	323	
104	40	313	
86	30	303	
68	20	293	Average room temperature
50	10	283	
32	0	273	Melting (freezing) point of ice (water) at sea-level
14	-10	263	
-4	-20	253	
-22	-30	243	
-40	-40	233	
-58	-50	223	
-76	-60	213	
-94	-70	203	
-112	-80	193	-89°C (-129 °F) Lowest recorded temperature. Vostok, Antarctica July, 1983
-130	-90	183	
-148	-100	173	

Reference: Ahrens (1994)

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- ***Example 1:*** **Convert 98.6° Fahrenheit *(normal body temperature)* to Celsius and kelvin scales.**

- ***Solution:*** $^{o}C = (°F - 32) \times \frac{5}{9} = (98.6° - 32) \times \frac{5}{9} = 66.6 \times \frac{5}{9} =$

= 333/9 = **37° C**

K = °C + 273 = 37^{o} + 273 = **310 K**

- ***Example 2:*** **Convert 26° Celsius *(a nice warm day)* to Fahrenheit and kelvin scales.**

- ***Solution:*** K = °C + 273 = 26^{o} + 273 = **299 K**

$$°F = (°C \times \frac{9}{5}) + 32 = (26° \times \frac{9}{5}) + 32 = 46.8 + 32 = \mathbf{78.8\,°\,F}$$

Drawing a graph

A graph is drawn to show a relationship between 2 quantities. It consists of two axes called the x-axis (horizontal) and y-axis (vertical) axes. They both intersect at a point called the origin.

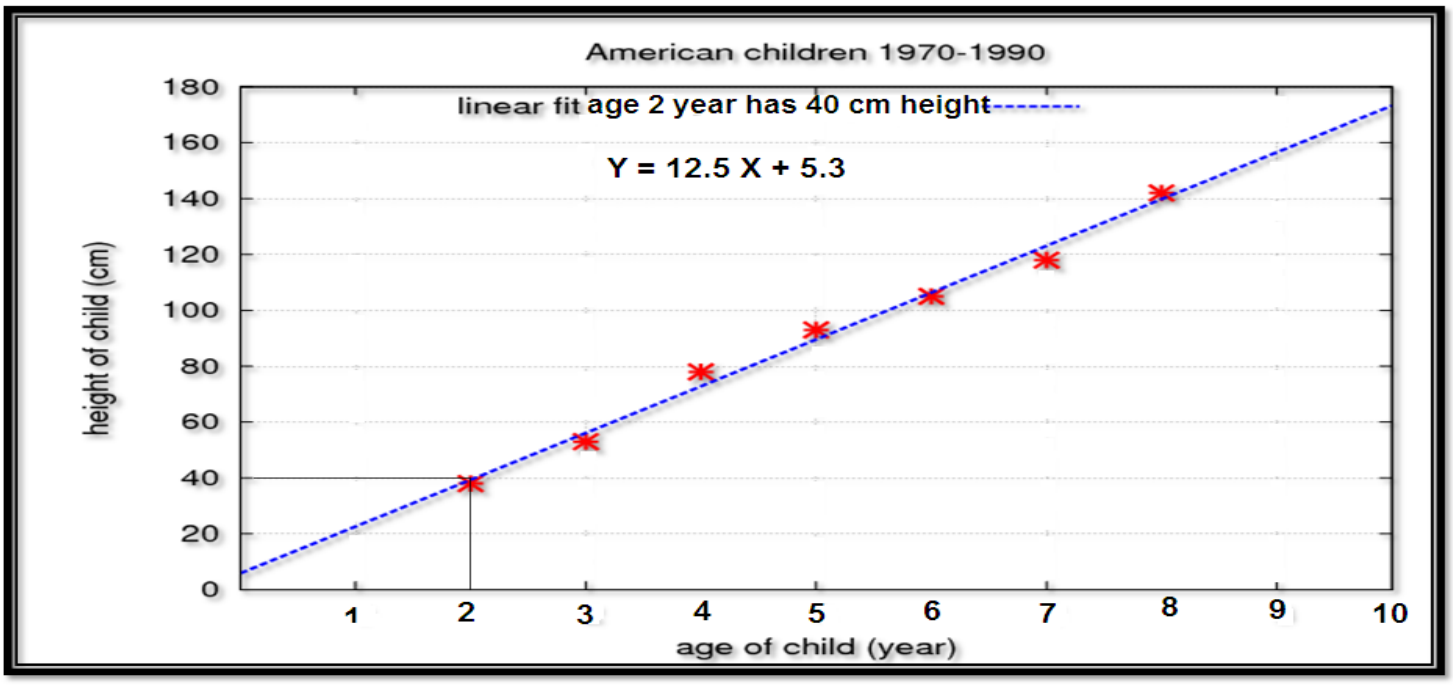
Generally the **dependant variable** (that you measure) is plotted along the **y-axis** while the *independent variable* (that you control in the experiment) is plotted along the *x-axis*.

The line graph: when all the points have been on the graph in form of straight line.

The liner equation (equation of straight-line graph) has the form: **(Y = mx ± b)**

- **m→ Slope value**
- **± b→ Intercept value**

Example: drawing a graph that represent the relationship between the age of American children (years) and their height (cm) in years 1970-1990 and find the slope and intercept of its linear equation.



The slope = 12.5 the intercept = (+5.3 cm).