

## Measuring and Plotting



This fact sheet outlines the essentials of measuring and plotting at all ages. Anyone who measures a child, plots or interprets charts should be suitably trained, or be supervised by someone qualified to do so. If you have never been formally taught, this fact sheet will introduce you to what you need to know. If you have been taught you can use it to refresh and check on your knowledge.

Topics covered in this fact sheet include:

- ✓ Measuring weight, length, height and head circumference
- ✓ Plotting measurements on the chart
- ✓ Calculating age
- ✓ Understanding centile positions

### Calculating age

Age calculation errors or misplotting of age are the commonest mistakes made when plotting charts.

To prevent errors in calculating age, calculate in weeks for at least the first 6 months, then in calendar months.

When calculating **age in weeks** use a ...

- ✓ Calendar
- ✓ Date wheel

When calculating **age in calendar months** use the day of the birth date. If a child's date of birth was 23/1/10 then the child will be 9 calendar months old on 23/10/10, 10 months old on 23/11/10 and so on ...

- ✓ Remember there are 13 weeks per 3 calendar months

### How to measure

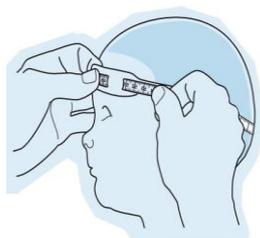
(Video clips of proper measuring technique are available at: [www.growthcharts.rcpch.ac.uk](http://www.growthcharts.rcpch.ac.uk))

#### Measuring weight

Babies should be weighed without any clothes or nappy. Children older than two years can be weighed in vest and pants, but without shoes, footwear, and any dolls or teddies in hand. Only class III clinical electronic scales in metric setting should be used, to give accurate readings.

#### Measuring Head circumference

Head circumference should be measured using a narrow plastic or disposable paper tape and measurement should be taken where the head circumference is widest. It is good practice to take three measurements and use the average.



Any hat or bonnet should be removed.

### Measuring length and height

Proper equipment is essential for both. Always remove shoes or other footwear. Length should also be measured without nappy using a length board or mat. It is good practice to take three measurements and use the average.

- ✓ Under two years of age, measure length using a length board or mat



- ✓ Over 2 years, measure height using a rigid upright measure with a T piece or a stadiometer

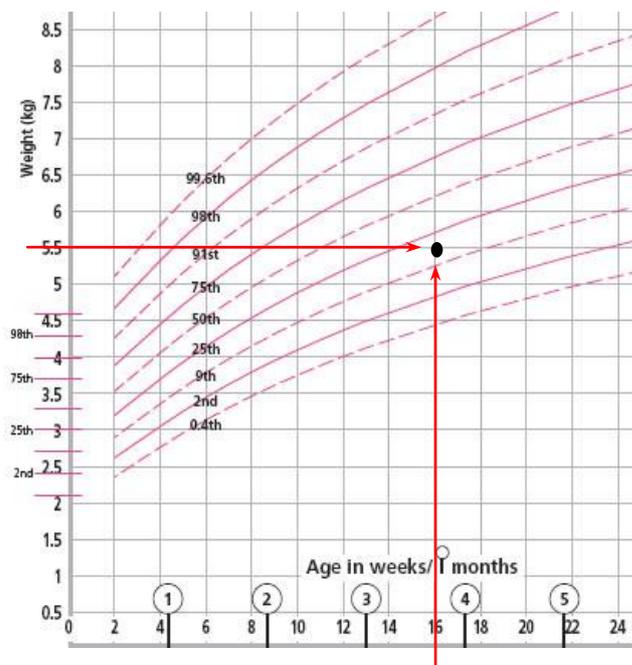


### Plotting measurements on the chart

#### Basic plotting

Whatever measurement is being plotted an accurate calculation of age is needed.

The chart section below indicates correct plotting using age and weight. The point on the graph is marked with a small but noticeable dot • drawn with a pencil, *not an ink pen*.



This chart section also shows the plotted weight of a child who is 16 weeks old and weighs 5.5kg. This child is described as being between the 9<sup>th</sup> and 25<sup>th</sup> centile for weight.

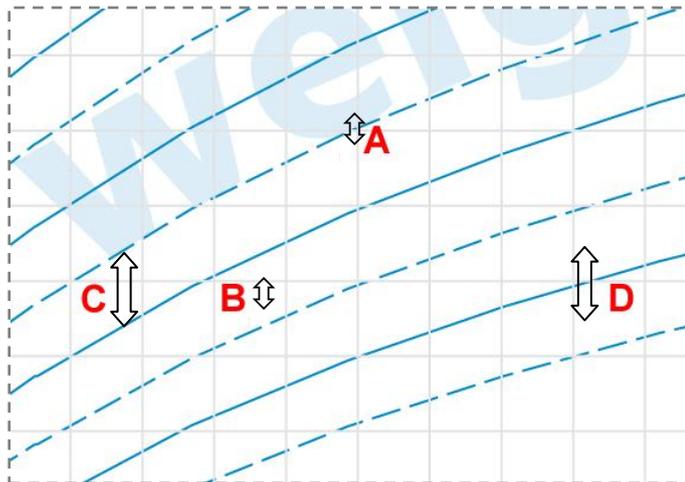
## What do centiles show?

### Finding the right centile

There are centile labels at both ends of each curve. The 50th centile does not stand out on the new charts to avoid suggesting to parents that all children should be on or near this line. However the 50th centile is easily identifiable as the curve label ("weight", "length" etc) always sits on the 50<sup>th</sup> centile

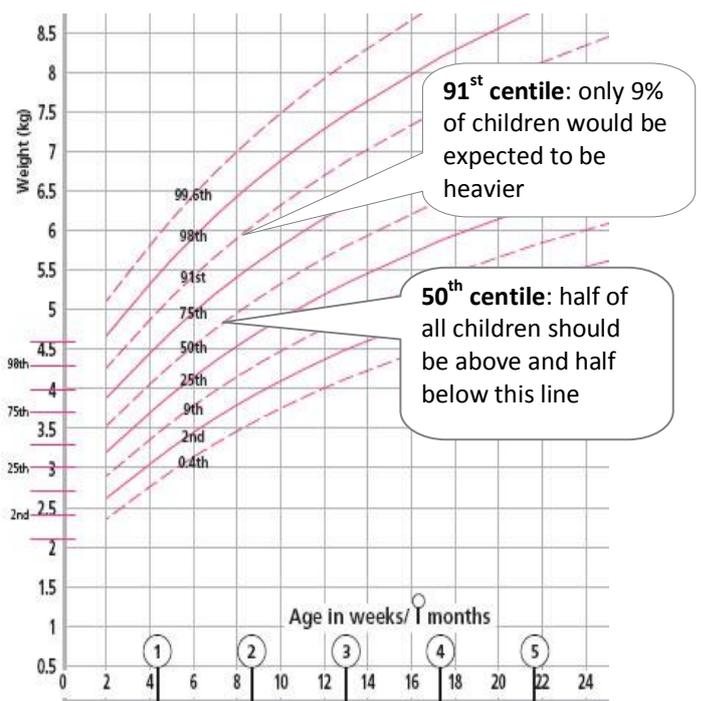
### Understanding centile positions

Once plotted on a chart, a child's measurement will be described as being on a centile or between two centiles.



If the point marked is within 1/4 of a space of the line (see **A** above) the child is described as being on the centile: e.g. on the 91<sup>st</sup> centile. If the point is further away, they should be described as being between the two centiles (**B**): e.g. between the 75th-91<sup>st</sup> centile.

A centile space is the distance between two of the marked centile lines (**C**), or equivalent distance if midway between centiles (**D**).



**Remember:** Growth monitoring is a process of taking measurements and plotting to see the changes over time. It is important that each measurement is accurate and plotted correctly so that the **pattern** of growth can be properly assessed.

### Measurement Summary

- ✓ All measurers should be trained
- ✓ Weighing:
  - Use only class III electronic scales
  - Weigh babies naked, toddlers in vest and pants, without shoes
- ✓ Head circumference:
  - Use narrow, paper or plastic tape round widest part of the head?
  - average of three?
- ✓ Length (up to age 2):
  - Proper equipment essential (length board or mat)
  - Shoes and nappy removed
- ✓ Height (after age 2):
  - Rigid rule with T piece, or stadiometer
  - Shoes removed
- ✓ Never measure or weigh in shoes

### Plotting Summary

- ✓ Record measurement and date in ink
- ✓ Plot in pencil
- ✓ Age errors are commonest source of plotting mistakes
- ✓ Centile describes the percentage expected to be below that line
- ✓ A child is:
  - on a centile if within 1/4 space of line
  - between the two centiles if not
- ✓ A centile space is the distance between two centile lines

