

MathsGoGoGo

Metrication

Part 1. Why we should complete the metrication process in the UK

Part 2. What you can do to help your children

This is a free document for you, the parent/guardian. It outlines those parts of the justification for finishing off the metrication process in the UK that are specifically relevant to your children.

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Part 1: Why we should complete metrication

There is not a single good reason for sticking with the old imperial units. All the reasons given are red herrings of one type or another. I don't have room to answer every one here, but I shall consider those I see as being the most common and supposedly most powerful.

Let me knock two ideas on the head straight away:

The Metric System is European.

The metric system has very little to do with Britain being part of Europe and everything to do with us being part of the World.

It is true that the metric system was originally conceived by the French, but it was done 'For all people, for all time' and to prove this many of the units used were named after scientists well outside France. In particular, the names of Newton, Kelvin and Faraday (all British) were used. Should we not be celebrating the achievements of these great British scientists?



I have heard it said by some devotees of the Imperial System that 'I don't want anything to do with something that was invented by Napoleon!' If that is the case, better go metric because Napoleon was opposed to the metric system and tried to convert France back to imperial units!



93% of the World's population live in countries that are wholly metric which means all the rest of Europe, Asia, Africa, South America and all of the North American continent except that part between Canada and Mexico. Britain and the USA are the only two major countries who have not fully completed the metrication process. But in Britain virtually all commerce, building, industry, engineering, electronics (and just about everything else you can think of) function using metric units. The USA is much further advanced in metrication than most people imagine. We do, in fact, live in a metric world.

The old folk don't understand metric units.

It's a real eye opener when you stop to think for a moment about the so called 'old folk'. These old folk were in their thirties and forties when Britain made a good effort at going metric in the late 1960s and early 1970s. In fact it was the now older generation that implemented all these changes. It was post war teachers who taught my generation metric units in the sixties; it was the engineers, architects, builders, planners and electricians of the time who designed all the new metric rules, building regulations, manufacturing processes and machines at the time – all metric. These people are experts in the metric system – without them we would be years behind in the metrication process.

For sure, there were some people who did deliberately ignore the metrication process and have done so all their lives. Some have the attitude that if they didn't learn something when they were at school, they had no responsibility for learning it over the next sixty years. We have to ask ourselves some simple questions about these people – How much measuring do they actually do nowadays? Is it worth pandering to these people if in doing so we neglect the education of our young people? This may sound controversial, but don't we need to get our priorities right?

Now here is a quick summary of some other objections to metrication and reasons why they are red herrings:

People should have a choice of which units they use in their shopping.

Of course they shouldn't. If shoppers have a choice, so then must sellers and before long some would be selling fruit by the carrier bag full and vegetables by the barrel load and one hundred years of trading standards legislation would be down the pan!



Most measuring is still done in imperial units.

This is utter rubbish. To manufacture a modern car, for instance, about ten thousand measurements must be made – everyone of them is done in metric (including the layout of the figures on the miles per hour speedometer!). All buildings, paper sizes and anything to do with electricity, computers and peripherals (yes, even the 17" screen), water, gas and transport are all designed, manufactured or processed in metric units (even if what they display is dumbed down for the British audience. By the way, this dumbing down process happens all the time – don't you find it insulting?)

The imperial system was good enough for me when I was young.

Yes, it was, but there was an important difference. In the old days, children learnt imperial units at school and went out into an imperial world – coal was sold by the hundredweight, biscuits by the pound and so on. Now we live in a metric world.

I have always used imperial and metric units side by side – why can't children continue to do that today?

If you have managed to do that all your life, you must be pretty bright. Anyone who has taught mathematics for a substantial time knows that only a small percentage of children can manage this – the rest are totally confused and normally give up. We are now getting to the nub of my argument for finishing the metrication process as quickly as possible.

It will cost a fortune to change all the road signs.

Not in the grand scheme of things. The estimated cost is £750 million (Department of Transport's own figures). The cost of the proposed tunnel around Stonehenge is £500 million. The cost, if spread over five years, would amount to about £2.50 per person per year. We pay more than this to have an imperial speedometer and an imperial odometer (milometer) fitted to our new cars. There are many other savings in training costs that would be made that would easily cover the cost of the conversion.



The imperial system is easier than the metric system.

Are you honestly telling me that 6' 3³/₄" is easier than 1925 mm? The imperial measurement uses two units (feet and inches) and a fraction (and fractions can get quite nasty in imperial units). The metric measurement is made using one simple unit.

I can't handle all those metric units.

How can this be true? If you can handle 6' 3³/₄", how come you can't understand 1925 mm?

So, what's the big problem – what's all the fuss about?



Each school year group in Britain has over 600 000 pupils. This means that every year we release 600 000 young people into the adult world, whether it is to go to university and eventually into employment or directly into employment from school.

Imagine you are a young child at school trying to grasp the complexities of the mathematics that you are expected to learn today.

You weigh yourself at school – 42 Kg. You go home. 'Mum,' you say, 'we weighed ourselves at school today, I'm 42 kilos. How much do you weigh?'

'I'm 8 stone 3, darling.'

'We measured our heights too, I'm 1.44m. How tall are you?'

'I'm 5 foot 8, darling.'

You are listening to the weather forecast. 'Tomorrow it will be 16 degrees, that's 61'. What does that mean?

$$16 = 61 ?$$

Have you noticed how, when it gets really hot in summer, the temperature is in the upper thirties and then suddenly it's in the nineties!? Or perhaps it's 101. Just at the moment children are learning that water boils at 100°C. Is their blood going to boil?

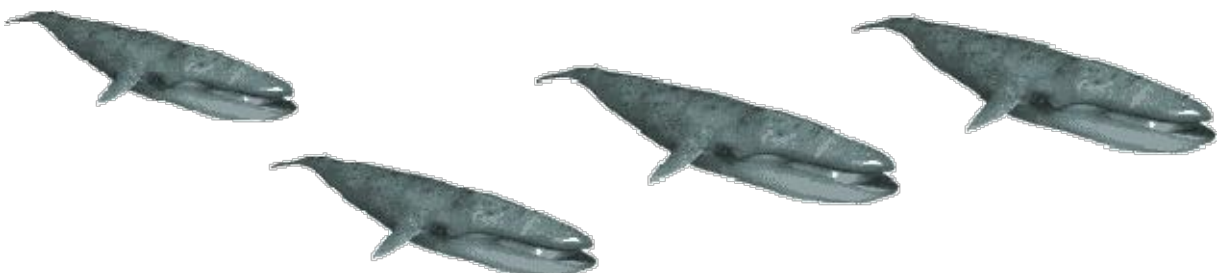
35, 36, 37, 99, 100, 101 ?

You learn to measure at school and as you get older you start to look in the windows of estate agents. Even though you have learnt to measure in metres, even though most of the people buying the houses have learnt to measure in metres, even though all the modern houses were designed and built using metric units, many estate agents still give the room measurements in feet and inches. Why?



You go to buy clothes and all the sizes are in inches, even though the material, the machines that make the clothes and probably the factory were all made using metric units.

You watch an extremely interesting television programme about, say, whales and all the measurements are given in feet and the amount they eat in pounds. Naturally, you don't understand a word of this, so how is this going to encourage you to take an interest in the world around you?



You learn to calculate speeds in kilometres per hour or metres per second. As soon as you step outside school, you see speed signs in miles per hour and distance signs in yards.

This is probably the craziest one of all. Every process in the manufacture of road signs from digging the ore out of the ground to sticking the post into the pavement is done in metric units and – at the very last moment – we stick an imperial measurement on them. How daft is that?

As a young child what are you going to think about mathematics? How is this going to compare with the thoughts of the children in just about every other country in the world where children go to school, learn metric and see metric being used all around them in the everyday world?

Is it any wonder our children are said to be poor at mathematics. It must be something the children are doing wrong. So, our solution – more tests.



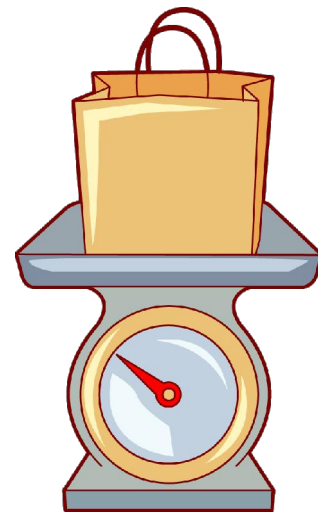
Every time someone insists on using an imperial unit to measure anything, whether it be their own height or weight, temperature, speed or distance, either they are living in ignorance of the effect this has on our children's education or they are admitting they don't care one dot about them.

Part 2: What you can do to help your children

Here are a number of things you can do to help your children with the metric muddle. Some are things you can do now at home and others are longer term and should help in the future if enough people follow your example.

Things to do immediately:

1. Throw away all measuring instruments you have at home that measure in imperial units (or hide them if you are a historian and cannot bear to throw them away). Replace them with instruments that only measure in metric. Most modern weighing scales, both kitchen and body scales, can be switched to metric, so check before you discard. Search out rulers and measuring tapes that only measure in metric.



2. Use the charts on the last pages to record the body weight, height, and baby weight of each person in your family. You can re-measure, or (particularly with your weight as a baby) convert from the imperial to the metric weight/height. Re-measuring is more fun because children can see you measure yourself and do a direct comparison with their own measurement. Where this is not possible, convert each measurement just once and then forget about converting for ever! Converting encourages you to think back to imperial units – the only real way to become familiar with metric units is to use them all the time and never use imperial units.

Try to include as many people as possible such as grandparents, nieces and nephews, and include other body measurements if you wish such as leg length and waist measurement.

Once you have done these conversions, rehearse them in your head for a few days until you know them well.

Baby weights are a particular problem because everyone likes to compare the weights of their babies with their own personal baby weight in the belief that they were weighed in imperial units (which is not true, in fact, as babies' weights in Britain have been measured in metric for over thirty five years!). This causes a great deal of confusion for children. Is it not much more logical to convert your weight when you were a baby to metric and then compare new babies' weights (measured in metric) with your own in metric and forget about all that pounds and ounces stuff. People in most other countries in the world have been doing just that for many decades.



3. Encourage everyone else to do the same by giving them a copy of this booklet (or just the charts, if you wish) and let them carry out the same exercise with their own family. Really encourage them to do this.

Things to do on an on-going basis:

4. Every time you hear someone use an imperial unit ask them if they realise how they are holding back our children's mathematical development and would they please mind using metric units. Practise giving the pro-metric arguments – it's surprising how quickly you can get good at this.

5. Whenever you see **imperial** units displayed in an estate agent's window, pop in and ask them why they are not using metric units when all the building regulations are in metric (even if you are not currently in the market for a property). When they tell you that most people want them in imperial units, point out that they don't and use yourself as an example. If we keep doing this, eventually they will get the idea.

Whenever you see **metric** units displayed in an estate agent's window, pop in and congratulate them. Tell them you will seriously consider going there when you are ready to purchase your next property. So few agents do this at present that they are sticking their necks out a bit and they need a little encouragement or they may go back to imperial units. I have done this several times and it is surprising how grateful and re-assured they feel. Give it a go.

6. Work out your own clothes sizes in metric and whenever you buy clothes that are sold in inches ask them the measurements in metric. Again, don't put up with any arguments that people want imperial measurements – you, for one, don't and there are thousands like us.

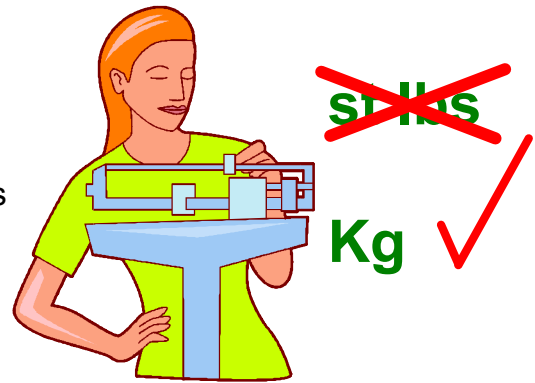


7. If you attend any type of weight watching group insist that your weight is recorded in kilograms. Point out the following:

- the stone is a totally redundant unit – in fact
- it is illegal to sell goods in stones in Britain,
- so it has no proper use whatsoever.

- it is much easier to imagine a kilo of fat (it's a large tub of butter or margarine) and gives you a much better idea of what you have to lose (what does a stone of fat look like?)

- it is much easier to calculate how much you need to lose in metric (try taking 79 Kg from 85 Kg and then try taking 12 st 6lb from 13 st 5lb !)



8. Email everyone you know a copy of this booklet and if they have children also email them a copy of the Mathematics at Home book so they may begin working with their children.

9. Email me at alan@mathsgogogo.co.uk and let me know how you are getting on. It is very easy to feel isolated when you are on this type of mission and getting positive feedback from a fellow fan is often good for the soul.

Things to do in the longer term:

Write to or email your local M.P. If you don't know who this is visit <http://www.writetothem.com>, type in your postcode and this site will tell you your local councillors, county councillors, Member of Parliament and member of the European Parliament. You can even use the site to write to them directly or you can write them a letter. Explain that you would like some of your taxes spent on converting the road signs to metric so that our children will see that we do, in fact, live in a metric world. One counter argument they give is that the Government is waiting until the majority of drivers are those who were taught metric units at school. I believe we are well past this point now and that we should, of course, be considering our young people. I was taught metric units from 1958 – nearly fifty years ago! So when they give you this reply, you know what to say. If you write a physical letter to your M.P. you should receive a letter back on House of Commons headed notepaper – quite a thrill if you have never done this before!



Hint: Don't write to more than one M.P. as any M.P. who is not your M.P. will simply forward your letter to your M.P. and they will start to get annoyed. It is also much better to ask questions as well as giving your opinion as this makes them think much more about what you are saying and they are more likely to feel the pressure when

many people write doing the same. Try to ask questions that need long answers such as, 'What is your personal opinion of the imperial/metric position in the UK and how does this align with Government policy?' If, when they reply, they are not supportive of the metric case, pick up on one or two points in their letter and ask them more questions. Supporting their constituents is what we pay them for, after all.

Remember that your children are entitled to their own opinion in this matter, so get them to write independently – every letter helps. And you never know, you may be able to get your children's teacher to support the cause and get the whole class to write. Point out that writing to an M.P. about such a worthwhile cause is a very good way to practise formal writing and exciting as they too should receive a reply on House of Commons headed notepaper. Good practice for S.A.T.s!

10. Write to weight watching groups and tell them you are considering joining, but only if they weigh in metric units as you no longer support the use of imperial units. Could they please tell you the situation in their group.

11. Spend some time composing a well argued letter giving the metric case and asking why imperial units are still being used in a particular television or radio programme. Leave a space for the name of the program. Every time you watch or listen to a programme involving imperial units, call up the letter, fill in the name of the programme and send it to the producer. It's easy to discover the addresses of the television companies on the internet and once you have found them, you have them forever. Target particularly the weather forecasts as there is absolutely no reason why they should now be using Fahrenheit temperatures at all.

12. Watch out for other situations. I have tried to give you a quick summary of the arguments and practical things you can do, but there are many other things to find out and many other situations to target (golf holes in yards, 8 yard line in football, heights given in newspapers – particularly when someone or something falls, feet seem to make it sound higher - old sailors on ships children visit, information about archery at medieval festivals etc.) And did you know that all imperial units are, in fact metric units, as in 1959 all imperial units were re-defined in terms of metric units so, for instance an inch is now exactly 2.54 cm, not approximately!

I wish you luck in your quest and don't forget – I should love to hear how you are getting on. Please email me and report progress.

Height Conversion Table:

Height (feet/inches)	Height (metres)
2'9"	0.84
2'10"	0.86
2'11"	0.89
3'0"	0.91
3'1"	0.94
3'2"	0.97
3'3"	0.99
3'4"	1.02
3'5"	1.04
3'6"	1.07
3'7"	1.09
3'8"	1.12
3'9"	1.14
3'10"	1.17
3'11"	1.19
4'0"	1.22
4'1"	1.24
4'2"	1.27
4'3"	1.30
4'4"	1.32
4'5"	1.35
4'6"	1.37
4'7"	1.40
4'8"	1.42
4'9"	1.45
4'10"	1.47
4'11"	1.50
5'0"	1.52
5'1"	1.55
5'2"	1.57
5'3"	1.60
5'4"	1.63
5'5"	1.65
5'6"	1.68
5'7"	1.70
5'8"	1.73
5'9"	1.75
5'10"	1.78
5'11"	1.80
6'0"	1.83
6'1"	1.85
6'2"	1.88
6'3"	1.91
6'4"	1.93
6'5"	1.96
6'6"	1.98

Points to note:

Imperial heights are normally rounded to the nearest inch. Metric heights are normally rounded to the nearest centimetre.

1.57m may be given as 157 cm, but giving your height in metres is normally preferred. So, when asked for my height, I normally reply 1.83m and not 183cm, although both are correct.

If you look at the position of the ' character and the " character on a keyboard, you will see it is much easier to type a metric height than an imperial one! Try typing the first few lines of this table and you will see what I mean.

Weight (st/lb)	Weight (Kg)
2st 0lb	13
2st 1lb	13
2st 2lb	14
2st 3lb	14
2st 4lb	15
2st 5lb	15
2st 6lb	15
2st 7lb	16
2st 8lb	16
2st 9lb	17
2st 10lb	17
2st 11lb	18
2st 12lb	18
2st 13lb	19
3st 0lb	19
3st 1lb	20
3st 2lb	20
3st 3lb	20
3st 4lb	21
3st 5lb	21
3st 6lb	22
3st 7lb	22
3st 8lb	23
3st 9lb	23
3st 10lb	24
3st 11lb	24
3st 12lb	25
3st 13lb	25
4st 0lb	25
4st 1lb	26
4st 2lb	26
4st 3lb	27
4st 4lb	27
4st 5lb	28
4st 6lb	28
4st 7lb	29
4st 8lb	29
4st 9lb	30
4st 10lb	30
4st 11lb	30
4st 12lb	31
4st 13lb	31

Weight Conversion Table:

Points to note:

Imperial weights are normally rounded to the nearest pound. Metric weights are normally rounded to the nearest Kg.

Again, we can see how much easier it is to write metric weights than imperial weights. And don't forget each Kg someone is overweight is equivalent to a large tub of butter or margarine. There is no easy way to imagine a stone as this is now a redundant unit or even a pound since this is not longer used for butter or margarine.

Strictly speaking, we should be referring to body mass and not weight (this applies to both imperial and metric units), but one thing at a time!

Weight (st/lb)	Weight (Kg)
5st 0lb	32
5st 1lb	32
5st 2lb	33
5st 3lb	33
5st 4lb	34
5st 5lb	34
5st 6lb	35
5st 7lb	35
5st 8lb	35
5st 9lb	36
5st 10lb	36
5st 11lb	37
5st 12lb	37
5st 13lb	38
6st 0lb	38
6t 1lb	39
6t 2lb	39
6t 3lb	40
6t 4lb	40
6t 5lb	40
6t 6lb	41
6t 7lb	41
6t 8lb	42
6t 9lb	42
6t 10lb	43
6t 11lb	43
6st 12lb	44
6st 13lb	44
7st 0lb	45
7st 1lb	45
7st 2lb	45
7st 3lb	46
7st 4lb	46
7st 5lb	47
7st 6lb	47
7st 7lb	48
7st 8lb	48
7st 9lb	49
7st 10lb	49
7st 11lb	50
7st 12lb	50
7st 13lb	50

Weight (st/lb)	Weight (Kg)
8st 0lb	51
8st 1lb	51
8st 2lb	52
8st 3lb	52
8st 4lb	53
8st 5lb	53
8st 6lb	54
8st 7lb	54
8st 8lb	55
8st 9lb	55
8st 10lb	55
8st 11lb	56
8st 12lb	56
8st 13lb	57
9st 0lb	57
9t 1lb	58
9t 2lb	58
9t 3lb	59
9t 4lb	59
9t 5lb	60
9t 6lb	60
9t 7lb	60
9t 8lb	61
9t 9lb	61
9t 10lb	62
9t 11lb	62
9st 12lb	63
9st 13lb	63
10st 0lb	64
10st 1lb	64
10st 2lb	65
10st 3lb	65
10st 4lb	65
10st 5lb	66
10st 6lb	66
10st 7lb	67
10st 8lb	67
10st 9lb	68
10st 10lb	68
10st 11lb	69
10st 12lb	69
10st 13lb	70

Weight (st/lb)	Weight (Kg)
11st 0lb	70
11st 1lb	70
11st 2lb	71
11st 3lb	71
11st 4lb	72
11st 5lb	72
11st 6lb	73
11st 7lb	73
11st 8lb	74
11st 9lb	74
11st 10lb	75
11st 11lb	75
11st 12lb	75
11st 13lb	76
12st 0lb	76
12t 1lb	77
12t 2lb	77
12t 3lb	78
12t 4lb	78
12t 5lb	79
12t 6lb	79
12t 7lb	80
12t 8lb	80
12t 9lb	80
12t 10lb	81
12t 11lb	81
12st 12lb	82
12st 13lb	82
13st 0lb	83
13st 1lb	83
13st 2lb	84
13st 3lb	84
13st 4lb	85
13st 5lb	85
13st 6lb	85
13st 7lb	86
13st 8lb	86
13st 9lb	87
13st 10lb	87
13st 11lb	88
13st 12lb	88
13st 13lb	89

Weight (st/lb)	Weight (Kg)
14st 0lb	89
14st 1lb	90
14st 2lb	90
14st 3lb	90
14st 4lb	91
14st 5lb	91
14st 6lb	92
14st 7lb	92
14st 8lb	93
14st 9lb	93
14st 10lb	94
14st 11lb	94
14st 12lb	95
14st 13lb	95
15st 0lb	95
15t 1lb	96
15t 2lb	96
15t 3lb	97
15t 4lb	97
15t 5lb	98
15t 6lb	98
15t 7lb	99
15t 8lb	99
15t 9lb	100
15t 10lb	100
15t 11lb	100
15st 12lb	101
15st 13lb	101
16st 0lb	102
16st 1lb	102
16st 2lb	103
16st 3lb	103
16st 4lb	104
16st 5lb	104
16st 6lb	105
16st 7lb	105
16st 8lb	105
16st 9lb	106
16st 10lb	106
16st 11lb	107
16st 12lb	107
16st 13lb	108

Weight (st/lb)	Weight (Kg)
17st 0lb	108
17st 1lb	109
17st 2lb	109
17st 3lb	110
17st 4lb	110
17st 5lb	110
17st 6lb	111
17st 7lb	111
17st 8lb	112
17st 9lb	112
17st 10lb	113
17st 11lb	113
17st 12lb	114
17st 13lb	114
18st 0lb	115
18t 1lb	115
18t 2lb	115
18t 3lb	116
18t 4lb	116
18t 5lb	117
18t 6lb	117
18t 7lb	118
18t 8lb	118
18t 9lb	119
18t 10lb	119
18t 11lb	120
18st 12lb	120
18st 13lb	120
19st 0lb	121
19st 1lb	121
19st 2lb	122
19st 3lb	122
19st 4lb	123
19st 5lb	123
19st 6lb	124
19st 7lb	124
19st 8lb	125
19st 9lb	125
19st 10lb	125
19st 11lb	126
19st 12lb	126
19st 13lb	127

Weight (lb/oz)	Weight (Kg)
4lb 0oz	1.800
4lb 1oz	1.850
4lb 2oz	1.850
4lb 3oz	1.900
4lb 4oz	1.950
4lb 5oz	1.950
4lb 6oz	2.000
4lb 7oz	2.000
4lb 8oz	2.050
4lb 9oz	2.050
4lb 10oz	2.100
4lb 11oz	2.150
4lb 12oz	2.150
4lb 13oz	2.200
4lb 14oz	2.200
4lb 15oz	2.250
5lb 0oz	2.250
5lb 1oz	2.300
5lb 2oz	2.300
5lb 3oz	2.350
5lb 4oz	2.400
5lb 5oz	2.400
5lb 6oz	2.450
5lb 7oz	2.450
5lb 8oz	2.500
5lb 9oz	2.500
5lb 10oz	2.550
5lb 11oz	2.600
5lb 12oz	2.600
5lb 13oz	2.650
5lb 14oz	2.650
5lb 15oz	2.700
6lb 0oz	2.700
6lb 1oz	2.750
6lb 2oz	2.800
6lb 3oz	2.800
6lb 4oz	2.850
6lb 5oz	2.850
6lb 6oz	2.900
6lb 7oz	2.900
6lb 8oz	2.950
6lb 9oz	3.000
6lb 10oz	3.000
6lb 11oz	3.050
6lb 12oz	3.050
6lb 13oz	3.100
6lb 14oz	3.100
6lb 15oz	3.150

Baby Weight Conversion Table:

Points to note:

Imperial weights for babies are normally rounded to the nearest ounce. Metric weights are normally rounded to the nearest 50g. This is so in every country I have investigated.

If you wish, you can give the weight in grams, so 2.350 Kg would be read as 2350 grams.

It may seem as though inaccuracies are creeping in as two different metric weights can lead to the same metric weight. But don't forget that babies are now weighed in metric at birth and have been for many years. The first inaccuracy crept in when the metric weight was converted to imperial in the first place, so go back to the original metric weight if you can. If you cannot, this table is accurate enough as 50 grams is only a small wee, poo or drink. What the heck!

For the third time, we can see how much easier it is to write metric weights than imperial weights.

Weight (lb/oz)	Weight (Kg)
7lb 0oz	3.200
7lb 1oz	3.200
7lb 2oz	3.250
7lb 3oz	3.250
7lb 4oz	3.300
7lb 5oz	3.300
7lb 6oz	3.350
7lb 7oz	3.350
7lb 8oz	3.400
7lb 9oz	3.450
7lb 10oz	3.450
7lb 11oz	3.500
7lb 12oz	3.500
7lb 13oz	3.550
7lb 14oz	3.550
7lb 15oz	3.600
8lb 0oz	3.650
8lb 1oz	3.650
8lb 2oz	3.700
8lb 3oz	3.700
8lb 4oz	3.750
8lb 5oz	3.750
8lb 6oz	3.800
8lb 7oz	3.850
8lb 8oz	3.850
8lb 9oz	3.900
8lb 10oz	3.900
8lb 11oz	3.950
8lb 12oz	3.950
8lb 13oz	4.000
8lb 14oz	4.050
8lb 15oz	4.050
9lb 0oz	4.100
9lb 1oz	4.100
9lb 2oz	4.150
9lb 3oz	4.150
9lb 4oz	4.200
9lb 5oz	4.200
9lb 6oz	4.250
9lb 7oz	4.300
9lb 8oz	4.300
9lb 9oz	4.350
9lb 10oz	4.350
9lb 11oz	4.400
9lb 12oz	4.400
9lb 13oz	4.450
9lb 14oz	4.500
9lb 15oz	4.500