UKMA news

The newsletter of the UK Metric Association
For a **single** *rational* system of measurement

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In this issue:

Election of Officers and other Committee members for 2013-14

Nominations for Officers and other members of UKMA's Committee for the year 2013-14 will open on 3 May and close on 17 May 2013. In the event of a contest, voting instructions will be distributed on 18 May and the ballot will close on 8 June 2013. The result will be announced during the AGM and the new Committee will take office immediately after the close of the meeting.

Retiring Officers and other Committee members are eligible for re-election.

The Committee comprises Chairman, Treasurer, Secretary and **four** other members. Any member may nominate any other member for any position, and nominations should be sent to the Secretary by e-mail to secretary@metric.org.uk or by post to:
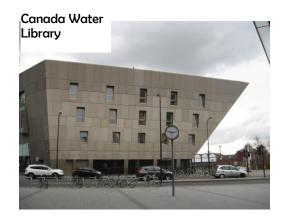
Secretary UKMA,

34 Wroxham Gardens, London, N11 2BA.

If you are considering serving on the Committee but are uncertain as to what is involved, please do not hesitate to contact one of the present Committee members.

Notice of AGM

The AGM of UKMA will take place at 10:00 on Saturday 6 July 2013 at Canada Water Library, 21 Surrey Quays Road, London, SE16 7AN. The library is beside Canada Water Station on the Jubilee line, just 5 minutes from London Bridge. The Annual Conference will follow immediately after the AGM. The agenda for the AGM, the programme for the Conference and travel details for the venue will be e-mailed to UKMA members in June.

Canada Water Library

London Overground and Jubilee line stations

Back from hols...

Your editor has just returned from a trip to New Zealand to visit his youngest daughter.

Amazing how metric the place is – not only road signs and package sizes in shops but everyday 'normal' usage by everyone you speak to.

TV news reporters only use metric and can pronounce kilometre correctly.

Advertisements for weight loss products claim to save 'kay-gees'

There doesn't seem to be any need or desire to choose old-fashioned measurement units in NZ so why do we have to in the UK?

One strange, non-metric, thing I noticed was the usage of am and pm times, even for train timetables, etc. So why is that? Is there a committee of people who decide the standard national format for time?

Other standards-related issues:

- The use of US-like domestic plug and sockets with the earth (ground) pin at the bottom, but with angled line and neutral pins (presumably to prevent any 110 V US equipment being plugged in). The switches comply with UK standards, however, 'down' being the 'on' position.

- Bathroom showers do not have the temperature 'stop' at 38 degrees Celsius (one degree above body temperature), so anyone used to UK safety standards here, beware!

- Some cars have their indicator switches on the right side of the steering wheel, some on the left!

Why is it important to weigh ourselves in kg?

Posted on 2013-04-05 at www.metricviews.org by philh

The measurement mess in Britain is in itself reason enough for the discontinued use of stones and pounds for personal body mass (commonly weight), but is there a case for using kilograms that goes beyond this?

This article proposes that there are possible implications for those trying to lose or maintain weight from a poor choice of measurement units.

To make the case we look at the assessment and subsequent planning and monitoring of changes.

Working out if we need to lose weight

(Please note: For those who don't like maths or have never understood algebra please don't be put off by the use of letters instead of numbers. This is kept to a minimum and alternative explanations in ordinary language are included).

Current main stream health advice tells us that we should have a body mass index (BMI) of between 20 and 25. This is in fact measured in kg/m^2 and calculated as follows:

$BMI = m/h^2$

where m is body mass in kilograms and h is height in metres. In other words divide the weight in kilograms by the square of height in metres. For example suppose someone 1.7 m tall is weighing in at 113 kg. First we need the square of height (h^2):

$1.7 \times 1.7 = 2.89 \ m^2$

Then divide that into the figure for mass:

113 ÷ 2.89 = 39.10

A BMI of 30 or more is considered obese so this person needs to lose a significant amount of weight. But what weight should this person be?

We look at this question shortly but first it must be acknowledged that it is quite possible to measure BMI in units other than metres and kilograms; the concept itself does not depend on the actual units used. The resulting numbers though would be different and the scale for a healthy range something other than 20 – 25.

But it must also be understood that the use of kg/m^2 for BMI is universal even in countries that are not fully metric like the US. It would therefore be irresponsible for any health authority or advisory body to adopt a scheme based on other units.

What weight should we be?

If we re-arrange the formula for BMI we can see how to determine our ideal weight from our height and a chosen value of BMI as follows:

$m = BMI \times h^2$

where BMI is a value between 20 and 25. In other words multiply the required BMI by the square of height in metres.

Taking the previous example of someone 1.7 m tall and a desired BMI of 25; we know the square of height ($2.89 m^2$) so just need to multiply this by 25:

25 × 2.89 = 72.25 kg

Typical bathroom scales are not accurate to anything better than about 0.5% so let's call this 72 kg

Planning a weight loss programme

There is good medical evidence that deliberately losing weight through dieting should not be any more rapid than 1 kg a week on average. Crash dieting can cause problems such as anaemia, irregular heart rhythms and muscle loss. A safe and satisfactory regime is between 500 and 1000 g per week so if we assume say 700 g that works out at 100 g/day. That means 3 kg over 30 days i.e. 3 kg/month.

In our previous example there are 113 – 72 = 41 kg to shed. That will take about 14 months. It is quite achievable though with the right approach.

It is quite extraordinary that respected organizations in the UK that offer people help with this do nothing to encourage the use of the kilogram. Instead they perpetuate stones and pounds leaving people forever burdened with that awkward ratio of 14 lb to a stone, making these kinds of calculations unnecessarily difficult.

Shorter term goals

In the previous example the ultimate aim of getting personal weight down to a safe limit requires quite a long term commitment and a good healthy regime of eating and, advisedly, exercise. It would naturally seem quite daunting in that case.

Recent UK public health advice is telling us that for people who are seriously overweight, losing 10% can have significant benefits. This emphasis on percentages is worthy of note. It makes it all the more important that we have a handy way of reckoning it.

It is not difficult to see that 10% of 113 kg is 11.3 kg.

It is also a straightforward operation to calculate the total percentage loss represented by the ultimate goal as:

41 ÷ 113 × 100 = 36.3%

If the weight were in stones and pounds then any percentage would be an awkward calculation because there are two numbers requiring a conversion to one before the ratio can be calculated. This cannot be done with a single operation even with a calculator. Worse still, many people wouldn't know how to do it anyway.

Monitoring progress

Needless to say, it is dead easy to calculate weight change in kilograms. In imperial units, small changes are mostly straight-forward unless the larger unit, the stone, also changes.

The general advice on personal weighing is to do it no more frequently than once a week, on the same scales and at the same time of day. Body mass varies naturally for obvious reasons, such as gaining from food and fluid intake and losing from perspiring and going to the loo etc. It is helpful therefore to be able to relate the

typical mass values of these elements to that of the whole body in order to predict the effect it may have on scale readings.

Strangely, people in the UK are not shy of measuring food portions in grams and fluid volume in millilitres. Why then do they not simply extend this to whole body mass?

Perhaps people are not generally aware that a litre of water and most of the fluids we drink weigh a kilogram (within the limits of accuracy of everyday weighing equipment), or the amount in millilitres is numerically the same as its weight in grams. What better way then, to assess the immediate effect on body mass after eating or drinking?

For example if we have drunk the recommended 1.5 litres of fluid throughout the day it will, potentially, add 1.5 kg to our body mass. If we go to the loo and pass say 400 ml of water it reduces by 400 g, and so on.

Summary

The foregoing has, hopefully, demonstrated that the use of the kilogram offers greater simplicity to the process of assessing and monitoring changes to personal body weight.

The human body is an animal organism like any other and doesn't warrant the use of obscure units like stone and pounds especially in circumstances where it is important to easily recognize what constitutes a healthy body weight and how it can vary with easily measured components like food and drink.

This article has not touched upon the much more complex topic of how we actually go about losing and maintaining weight because the issues there have more to do with energy balance involving other units. This author is planning another article at a future date that will consider that very important topic and the implications for how we measure it.

Editor's comments:

Sorry to keep harping on about New Zealand, but if they can be as metric as this magazine cover illustrates, so can we.

Whoops Kiwis, don't forget that kilo is a prefix. If kilogram is a bit of a mouthful 'kay gee' is a popular description.

Food labelling accuracy

As philh says in his article above, "bathroom scales are not accurate to anything better than about 0.5%" and that probably applies to kitchen scales as well. So why do we still have to put up with the nonsense of that last 4 g of marmalade (or whatever) in a 454 g jar? By my reckoning 4 is just 0.88% and even the packaging machines of the likes of Tesco's suppliers are not likely to be any more accurate than 0.1% at best.

Why not round to 450 g? How many people would notice, apart from UKMA members?

The French do it right, of course. Can anyone tell the difference between the tastes of the products? Not your editor, but there is a bitter taste left by the ridiculous 454 g label!

Just how much does not being fully metric cost the UK economy?

Posted on www.metricviews.org by derekp

One of our regular readers, John Frewen-Lord, has compiled a quiz, or rather two quizzes, to illustrate the waste resulting from the UK's measurement muddle. The editors of Metric Views are unsure why a penalty of £1 per second has been chosen when scoring the quizzes – this pay rate surely applies only to top bankers, Premier League footballers and workers changing traffic signs for the DfT. If readers are equally puzzled, John will no doubt explain. Anyway, pen, paper, calculator and timepiece at the ready please ....

Most parts of our British life – and especially our economic life – have been metricated over the past 45 years. Everything in our shops that is bottled or packaged is labelled in metric units. We buy our fuel in litres, and our electricity in kilowatt-hours. Our roads, buildings and houses are built to all-metric standards, using all-metric drawings. Our babies are weighed on metric scales in our hospitals and clinics, our prescriptions are specified in milligrams and millilitres. Appliances, cars, computers, mobile phones and pretty well everything else that started life in a factory will have been designed and manufactured to metric standards.

But there is one glaring aspect of our British life that has not yet converted, and that is our road signs. We still use miles, yards, feet and inches on our roads. This forces even our youngest schoolchildren to have at least a working knowledge of these outdated imperial units, when they are not needed otherwise. Our politicians seem to think this does not matter.

But it does matter, for it adds an enormous cost to our British economy – but it is a cost that for the most part is hidden, yet is dragging our competitiveness down at a critical time. This simple quiz, involving the kinds of everyday questions that we all have to resolve may just convince the sceptic. The quiz, consisting of two sets of ten questions, one imperial, the other metric, is quite simple:

Answer one set of questions in total before going on to the second set (start with whichever set you prefer). The two sets of questions, although the same in principle, are NOT exact equivalents, so it is necessary to work out the answers for each set.

Award yourself a starting prize of £200 for each set of questions.

Time yourself in answering the first set of questions, using a stopwatch or timer, and then time yourself again when answering the second set.

The two sets of £200 prize money are then reduced by £1 for each second of time taken to answer each set of questions.

A further £25 is deducted for each incomplete or incorrect answer.

A bonus of £50 is added to each £200 if you do not use a calculator.

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You are allowed to refer to textbooks or the internet to look up any necessary information during the quiz, but the time taken to locate any reference material must be included in the total time taken.

Imperial Questions (start your timer now):

1. A grounds keeper has a 4 acre field to mow. If his mower is 6 ft wide, how many miles will he travel in mowing the field?

   Hints: There are 4840 square yards in an acre. Divide the area of the field by width of the mower to obtain the distance travelled.

2. A car has an odometer showing miles and 10ths of a mile. The driver sees a sign saying 'No hard shoulder for 500 yards'. How many 10ths of a mile will the odometer increment by the time the hard shoulder re-appears?

3. A room measures 20 ft 3 in x 30 ft. How many square yards of flooring are required to cover the floor?

4. Your American customer has ordered a tropical fish tank measuring 20 in x 15 in x 10 in. How many US gallons of water will it hold?

   Hint: There are 7.4805 US gallons in a cubic foot.

5. How many pounds will the water in Q4 weigh?

   Hint: 1 US gallon of water weighs 8.34 pounds.

6. A carton of soup contains 16 imperial fluid ounces. How many cartons will it take to fill a 2 imperial gallon container?

7. A slice of meat weighs 1/2 oz. How many slices will make up 5 lbs of meat?

8. An aircraft travels between two points 1000 miles apart, at an average speed of 500 knots. How long will its journey take?

   Hint: The UK nautical mile is 6080 feet.

9. An aircraft can hold 200 passengers. If each passenger weighs on average 12 stone 9 lbs, how many imperial (long) tons will the passengers weigh when the aircraft is fully loaded?

   Hint: There are 2240 pounds in a long ton.

10. A carpenter is laying a wood plank floor of 280 square feet. He can lay the planks at a rate of 8 linear feet per minute. If the planks are 5 in wide, how long will it take him to lay the floor?

    Hint: Divide the area of the room by the width of each plank to get the total length of planks, then divide that total length by the speed at which he can lay the planks to get the total time.

(Stop your timer when you have answered question 10, and record your time.)

Metric questions (start your timer now):

1. A grounds keeper has a 2 hectare field to mow. If his mower is 2 m wide, how many kilometres will he travel in mowing the field?

   Hints: There are 10 000 m² in a hectare. Divide the area of the field by width of the mower to obtain the distance travelled.

2. A car has an odometer showing kilometres and 10ths of a kilometre. The driver sees a sign saying 'No hard shoulder for 500 m'. How many 10ths of a kilometre will the odometer increment by the time the hard shoulder re-appears?

3. A room measures 5.75 m x 12 m. How many square metres of flooring are required to cover the floor?

4. Your Australian customer has ordered a tropical fish tank measuring 40 cm x 30 cm x 20 cm. How many litres of water will it hold?

   Hint: There are 1000 cm³ in a litre.

5. How many kilograms will the water in Q14 weigh?

   Hint: 1 litre of water weighs 1 kg.

6. A carton of soup contains 500 mL. How many cartons will it take to fill a 3-litre container?

7. A slice of meat weighs 20 g. How many slices will make up 2.5 kg of meat?

8. An aircraft travels between two points 1200 km apart, at an average speed of 800 km/h. How long will its journey take?

9. An aircraft can hold 200 passengers. If each passenger weighs on average 73 kg, how many tonnes will the passengers weigh?

   Hint: There are 1000 kg in a tonne.

10. A carpenter is laying a wood plank floor of 24 m². He can lay the planks at a rate 2.5 m per minute. If the planks are 120 mm wide, how long will it take him to lay the floor?

    Hint: Divide the area of the room by the width of each plank to get the total length of planks, then divide that total length by the speed at which he can lay the planks to get the total time.

(Stop your timer when you have answered question 10 and record your time.)

How well did you do? The average person should be able to do the metric questions in under a minute in total, and without a calculator (£50 bonus). But let's assume you did take a whole minute. At £1 a second deducted, you would lose 60 s x £1 = £60. That would mean you win £200+50-60 = £190. Not bad for 1 minute's work (or even less).

But what about the imperial? Likely a rather different story. For a start, you will need a calculator. Right away, you've lost the £50 bonus. Second, instead of an average of 6 seconds a question, you will need an average of more like 20 seconds a question, even with a calculator, because of all the conversion factors. If you have to look up any necessary information, then longer still. Let's say you knew all the conversion factors, and took 20 s a question.

At £1 a second you would lose £200 – (10 x 20 s x £1) = £0. You would win nothing (negative if you got any question wrong).

Now you may say that easy numbers were picked for the metric. Actually, easy numbers were picked for both metric and imperial. Just that the metric numbers stay easy (that's the nature of metric), and the imperial numbers will always get hard (too many weird conversion factors).

This was just a simple quiz, with simple everyday questions that we learnt (or should have learnt) in secondary school. With metric, you might have won £190. Imperial, you would have won nothing (or even been negative). THAT represents a huge cost to our British economy. Every day, people must make these conversions when working with imperial measures – conversions that are simply unnecessary when working in the metric system. Those conversions cost TIME. And as we all know, time = money.

In today's world, where 95% of the world's population works solely in metric, and where most of our British economy is already metric, we do not need to burden our children (or even ourselves) with having to learn and work in imperial measures – which they (or we) have to do in order to understand our road signs. It is time to convert the last remaining segment of our British life, our road signs, to metric – and save our economy untold amounts in lost, unproductive time, as you have seen for yourself in taking this quiz.

Many people have said that the costs of converting our road signs to metric are too high. Apart from the fact these costs have been grossly exaggerated, the costs of NOT converting are far, far higher – even if they are hidden. Hopefully this test will show that clinging to outdated and redundant imperial measures is a cost that, hidden or not, Britain, in the second decade of the 21st century, can ill afford.

A political dimension! A statement from UKIP

Posted on www.metricviews.org by ronniec

UKIP's recent electoral successes have resulted, quite rightly, in increased scrutiny of its policies. Here, we take a look at a recent statement by the Party's Trade spokesman on the subject of measurement units.

Ronnie Cohen recently contacted the major national political parties, including UKIP (the UK Independence Party) and the Greens about their policies on units of measurement. He asked these parties:

"What is your policy on the use of metric and imperial units for official, legal, trade and administrative purposes within the UK? Can you please tell me about any changes you would like to make in the use of measurement units within the UK."

Only UKIP replied to his query and commented on its policy. Ronnie received the following reply from William Dartmouth, a UKIP MEP and the Party's Trade spokesman:

"Dear Ronnie Cohen,

Thank you for your e-mail concerning metric and imperial measurements.

As I understand it, the law at the moment allows traders to sell and label their produce in two ways:

- in metric units only

- both metric/imperial units simultaneously.

However, traders may not label and sell their produce in imperial only. This last ban was the reason for the famous metric martyrs case, whereby a grocer sold his produce in only imperial measurements. UKIP holds that this current situation is illiberal and unfair.

As a libertarian party, UKIP feels that traders should be free to label their produce in whatever units of measurement they and/or their customers see fit. We do not have a policy per se, but this is the general feeling within the party hierarchy. I would remind you that UKIP policy is currently being revamped, but our policy on imperial measurements will remain as described.

Yours sincerely

William Dartmouth"

Readers may recall that, in 2000, metric measures became a legal requirement for retail sale of both 'loose goods', for example fruit and vegetables, and 'from bulk', for example meat and cheese. Even though customers were still able to ask for pounds and ounces, and supplementary pricing in imperial was permitted, libertarian arguments began to appear. UKMA responded by pointing out the weaknesses of these arguments, and a summary appears on our web site: http://www.ukma.org.uk/what-about-free-speech, and also in our briefing notes, paragraph I: http://www.ukma.org.uk/briefing-notes.

UKMA has no view on the UK's continuing EU membership, but is reassured that UKIP sees Norway and Switzerland as models for a UK outside the EU. Both countries are significant players in the global economy. And, of course, libertarian arguments do not apply when you are trying to sell pound-inch products in any of the metric economies that serve 95% of the world's population.

So what are the consequences of the rise of UKIP for further progress on metrication? It is reported that, when Mao Tse-tung was invited to comment on the implications of the French revolution, he replied, "It is too early to say". This surely applies to UKIP's impact on the stalled UK metric transition. But we should still use every opportunity to inform politicians, including those from UKIP, about the adverse effects of the continuing measurement mess – which will not disappear without government leadership.

Answers to John Frewen-Lord's quizzes

Here are the answers to the quiz:

	Imperial	Metric
1	5 1/2 miles	10 km
2	2	5
3	67 1/2 square yards	69 m²
4	13 US gallons	24 L
5	108.4 pounds	24 kg
6	20	6
7	160	125
8	About 1 hour 44 minutes	1 h 30 min
9	15.8 tons	14.6 t
10	84 minutes	80 min

Articles needed for UKMA's blog

The moderators of UKMA's blog, Metric Views, are always on the look-out for authoritative and original articles. Metric Views is now six years old, and continues to explore new topics. Perhaps you have an idea that you think might spark MV readers' interest. If so, why not draft an article? Then e-mail to chair@metric.org.uk or secretary@metric.org.uk, and leave the rest to us.