UKMA news

The newsletter of the UK Metric Association
Campaigning for a **single** *rational* system of measurement
Patrons: Lord Kinnock, Lord Taverne, Prof Jim Al-Khalili, Gavin Esler

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Editorial, by John Austin

I'm sure we all wish the King and Princess of Wales a speedy recovery from their recent cancer scares. Talking of the monarch, we now perhaps see the reason for the absence of the Government units of measurement plans in the King's Speech. The long-awaited results of the Choice on Units of Measurement Consultation has finally been revealed and it has come out overwhelmingly in favour of metrication. Only 0.4% of those responding wanted to return to imperial units only. Most demand was for “no change”, at 81%, which is perhaps not surprising. This quarter's Newsletter is devoted substantially to commentary on the units of measurement consultation. Following this editorial, I summarise the facts, including a letter written by our chairman Peter Burke, and published in The Guardian, outlining the metric case in the context of the survey. Next, Ronnie Cohen provides his interpretation. Also included in this Newsletter is a biography of the chemist Claude Litre, who may or may not be remembered in the unit of that name. This is followed by an article about large and small numbers. Although it is not directly related to the metric system, it impinges upon it. In particular the last two articles provide background information for the End of the Year Quiz, the answers of which are provided next.
The quiz was less about getting the answers right but more about the understanding acquired along the way so do read the fairly lengthy explanations.

Under “small items” we have the usual section devoted to the use and abuse of the metric system. Note that the AGM and annual conference for 2024 has been announced, so put the date of 7July in your diaries now!

Government Consultation: Choice on units of measurement

Shortly after we sent out the last Newsletter, the Government finally reported the results of the Units of Measurement consultation. One can only assume that the release date, being near Christmas, was in the hope that nobody was paying attention. It was another case of bad news for this Government as there was overwhelming support for metric with the breakdown shown in the following table (taken from MetricViews [1]).

Overall preference	No. of responses	% of responses
Status quo (keep metric as primary unit of measurement)	81 867	81.1
More choice (open to increased use of imperial measures)	870	0.9
Purely metric (completely metric system)	17 798	17.6
Purely imperial (completely imperial system)	403	0.4
Total	100 938	100

Thus, 81% favoured no change (which in practice means continuing the measurement muddle) while 18% favoured completing the change to metric. Just 1.3% of those completing the survey wanted to see increased use of imperial units, and just 0.4% wanted units to be expressed in imperial only. Of course if the survey had been better designed, the measurement muddle in the UK might have been made clearer to respondents and the results might have been less in favour of the status quo. The fact that, as we pointed out in this newsletter, the survey was biased against the purely metric case means that we will never know what respondents really thought. It was a waste of public money to achieve absolutely nothing. YouTube vlogger Evan Edinger has produced another great video here [How 99,665 Brits Just Saved the Metric System in the UK (youtube.com)]

Apart from the release date of the survey results, the other Government ploy was to pretend that some benefit had come from the survey. So it was announced that still and sparkling wine could be sold in pint bottles. The BBC on its website initially, provided balanced coverage of the survey outcome, along with a surprising number of newspapers, not always noted for their accuracy. Our eagle eyed Chairman Peter Burke noticed however, that a few hours after the news had broken the BBC changed its headline to focus on an irrelevance --- namely, the selling of wine in smaller

bottles [2]. The inevitable suggestion is that the BBC was leaned on by a member of the Government.

From the BBC webpage Pint-sized bottles of wine to be sold after Brexit review - BBC News
Really? Or was the BBC leaned on?

Both articles from MetricViews have stimulated considerable debate. The essence of this debate is essentially that metric units are preferred by the vast majority of respondents. Regarding the bottle size changes, there is no demand for pint-sized still or sparkling wine and manufacturers would find it expensive to set up a system to cater for a minority interest of this sort [3]. So the fact that theoretically wine merchants could sell to the UK in pint sizes doesn't make it likely ever to happen. In any case most wine is produced in metric-only countries and there are no plans to produce an imperial unit sized bottle when 0.75 L bottles sell here pretty well already! One of the stimulants if you will for the pint-sized bottle was Churchill's declaration that he found a pint of Champagne to be about the right size of drink. Perhaps from a sense of nostalgia this might work, but the irony was that it was unlikely that Churchill ever drank from 568 mL bottles as they would likely have been 570 mL, 600 mL or some other precise size.

Our Chairman Peter Burke was understandably concerned about the BBC change of headline and he complained to the BBC about the suppression of this important story:

> *I wish to complain about a serious lack of balance in the BBC's reporting of the outcome of the government consultation on weights and measures, which was made public on 27th December. On that morning, the BBC News website published an article factually reporting the results of the consultation, including the fact that only 1.3% of respondents were in favour of any movement towards greater use of imperial units.*
>
> *In the course of the morning, that news item was replaced by another, in which the focus shifted to the government allowing champagne to be sold in 568 mL (1 pint) bottles. As almost all commentators have stated, this is a complete irrelevance.*

> *Champagne is already available in standard 750 mL and 500 mL bottles, and the additional size will add little to consumer choice; furthermore in practice hardly any champagne bottlers, most of whom are outside the UK, will have any interest in making that size available, as doing so will carry additional costs. In contrast, the evidence on public opinion is highly significant, particularly as the survey was done by the government itself and was, as has often been pointed out, highly biased in favour of a pro-imperial result. This much more important story was buried at the end of the replacement article, and may well have been overlooked by many readers. It must be asked why the BBC made this change. It is very difficult to resist the conclusion that the BBC was bowing once again to political pressure. Occurrences such as this can only bring the BBC into even further disrepute and should at all costs be avoided. Could I request an explanation and, if applicable, an apology?*

(Copied directly from [2])
You can read the full BBC response on MetricViews [4] but as usual the BBC did not address the complaint and so I have not included it here.

In a busy week for the Chairman, he also published a letter in The Guardian newspaper.

By any yardstick, metric units beat imperial | Letters

Your article rightly mocks the government's announcement that wine can now be sold in 568ml (1 pint) bottles (Pint of wine, anyone? UK looks to bring back 'silly measure', 27 December). If this is as far as the "benefits of Brexit" go then they are very sparse indeed.

Using imperial measures in the retail trade is without logic, and this consultation outcome showed that the British people have sense. Out of over 100 000 respondents, just 0.4% said we should use imperial units only, and just 1.3% said imperial deserved more prominence; 81% favoured the status quo, whereby metric is the primary indicator on packaging; the rest favoured metric only. This despite the consultation using leading questions.

Metric units have been the main units taught in schools since 1974. Few people under 60 remember learning imperial units properly. How many people know how many stones there are in a ton or how many yards in a mile? In metric all you have to do is add zeros.

Ironically, metric is a British invention (John Wilkins in 1668), while imperial is not. After all, the other name for imperial is the French term Avoirdupois.

We can now confidently say that imperial units should go the way of shillings and old pence, and the people are behind us. We are pleased that of the three new wine bottle sizes proposed by the government, two, namely 200ml and 500ml, are metric. Common sense at last!

Dr Peter Burke
Chair, UK Metric Association

[Published in The Guardian on 5 January 2024.]

References

1. Government confirms metric measurements here to stay as 99% reject greater use of imperial units, R. Cohen, MetricViews, 27 Dec 2023.

2. BBC covers up overwhelming public rejection of Government plans to revive imperial units, R. Cohen, MetricViews, 31 Dec 2023.
3. Don't expect to see pints of wine in the shops, R. Cohen, MetricViews, 11 Feb 2024.
4. BBC response to UKMA's chair's complaint about cover up of outcome to Government's imperial units consultation, R. Cohen, MetricViews, 9 Jan 2024.

Statement on the Units of Measurement Consultation, by Ronnie Cohen

On 27 December 2023, the Government responded to the "Choice on units of measurement: markings and sales" consultation, which explored the possibility of bringing back imperial units by removing the requirement to show metric units for selling to the general public. There were over 100 000 responses to the consultation. The response revealed an overwhelming rejection of plans to increase the use of imperial units. Almost 99% expressed a preference for the status quo or exclusive use of metric units. This result was achieved despite no option to say "No" to imperial units. Anyone wanting the status quo or sole use of metric units was forced to use the free text boxes or email their response. This made the result all the more astonishing. It was a humiliating result for the Government, which was hell-bent on turning the clock back on metrication and produced a propaganda-filled document on the perceived virtues of imperial units and a biased survey with limited options in an attempt to force respondents to choose between various imperial options. In other words, they designed the survey to get the results they wanted.

In a rare victory for UKMA, the Government realised that there is no desire to go backwards on metrication in the retail trade and backed down over their policy to bring back imperial units. Only a tiny minority expressed a desire to go back to imperial units. It is really saying something that it is considered an achievement to maintain the status quo on metrication given the hostility towards the metric system among the ruling Conservative party.

Out of over 100 000 responses to the consultation, just 870 preferred an increased use of imperial measures and just 403 preferred a purely imperial system. Just 1273 respondents wanted a greater use of imperial units out of a total of 100 938 respondents. In percentage terms, this is just 1.3% of all respondents. It just shows you how out of touch Jacob Rees-Mogg, Boris Johnson and other prominent politicians in the ruling Conservative party are with public opinion on measurement policy. Unfortunately, they tend to be a noisy bunch and have the sympathetic ear of the editors of several populist national newspapers. If you want to see how out of touch the print media are with their readers on weights and measures issues, just look at the Comments sections below their pro-imperial articles.

UKMA is operating in a harsh political environment that is not conducive to pro-metric changes to measurement policy. There is a now a populist right-wing party to the right of the Conservatives called Reform UK, the successor to the Brexit Party, which has been polling in double digits recently. A large part of the Conservative party and the whole of Reform UK are deeply eurosceptic and tend to hate all EU-derived regulations, including weights and measures regulations, for no other reason than the fact that they originated from the European Union. Let me remind readers that the British played a full part in developing these regulations when the UK was an EU member. The Labour Party is afraid to propose anything controversial that could be attacked by the Conservatives or the populist press and are ultra-cautious on new policy proposals. For this reason, there is little hope that Labour will propose further steps on metrication even if they cost nothing. Other parties have had little or nothing to say on measurement policy recently and there

has been a general lack of interest in the subject given the state of perma-crisis the UK has been in since the EU membership referendum in June 2016, which led to Brexit.

Too many Brexiteers wrongly associate the metric system with the EU and see imperial units as British. They regard the revivial of imperial units (i.e. the ability to trade in imperial units without the requirement to use metric units alongside imperial units) and the introduction of pint-sized wine bottles as a Brexit bonus. This smacks of desperation to find anything to show for the Brexit chaos of the last few years. Is that all they can show for Brexit?

The war on the metric system seems to be one of the Conservative party's culture wars. This is another culture war that bit the dust. I suspect that they have been fighting these culture wars to distract public attention from the numerous problems facing the UK. These problems include crumbling school buildings, record NHS waiting lists, stagnant wages, falling living standards, a shortage of affordable housing, a cost-of-living crisis, a threadbare social safety net, record use of food banks, a huge backlog of immigration cases and a migration policy in disarray. If the Government thinks that bringing back imperial measures will lead to their political salvation, they are deluded.

[Note that the views expressed by the Chairman and Secretary are not the official UKMA position. There are presumably benefits as well as disadvantages to Brexit, although this is not the forum to debate them unless it relates to the metric system. Clearly, the continued use of imperial units in any form is a disadvantage to the UK whether it happens to be in the EU or not.]

The Biography of Claude Émile Jean-Baptiste Litre, *by John Austin*

In celebration of the 200th anniversary of the death of this great investigator, the Conférence Générale des Poids et Mesures decided to use his name for the metric unit of volume. The official abbreviation is L, following the standard prescription of using capital letters for units named for individuals.

The only authenticated portrait of Litre (date unknown).

Claude Émile Jean-Baptiste Litre was born on February 12, 1716, in the village of Margaux in the heart of the Médoc region of France. His father was a manufacturer of wine-bottles, as had been his grandfather and great-grandfather. Indeed, Litre bottles had been a vital adjunct of the Bordeaux wine industry since the 1620s. This family tradition of concern for the problems of liquid containment, and knowledge of the properties of glass, was undoubtedly a major influence upon Litre's later work on the measurement of volume.

By the age of 16, Litre had demonstrated a budding mathematical talent, and he was sent to Paris to study with Pierre de Maupertuis (1698 – 1759), who became his scientific mentor.The young Litre was invited to join the expedition as Maupertuis' assistant in a 1736 expedition to measure the Earth's curvature in Swedish Lapland. In Sweden, the liaison between the French party and Swedish officialdom was handled by Anders Celsius (1701 – 1744), the professor of astronomy at the University of Uppsala.

Celsius travelled to Lapland with the expedition as the official representative of the Royal Swedish Academy, and during the summer of 1736, Litre and Celsius became firm friends. There is no doubt that Celsius' preoccupation with precise measurement, and his dedication to the centigrade division of measured quantities, had a profound influence on Litre's later decision to pursue a career as a scientific instrument maker.

By 1751 Litre was very well established. Before Litre, no one had ever made an accurate cylinder of clear glass, and yet his cylinders varied in internal diameter by less than 0.1% over their whole length. And no one, before Litre, had so precisely graduated a cylinder of glass — into tenths, hundredths, and sometimes even thousandths! His graduated cylinders, and his burettes (he invented the device, and its name) were coveted by chemists all over Europe.

Litre visited England in 1765 to receive a special gold medal struck in his honour by the Royal Society. In return, he donated to the Society a set of his graduated cylinders. Unfortunately these cylinders did not survive the experiments of Sir Humphry Davy (1778 – 1829), who made nitrogen trichloride in them in 1812.

Litre suggested that in any rationalized system of units, volume could be specified in terms of a standard mass of a standard liquid. He suggested mercury. Litre was abstemious, hard-working and in the best of health when he was cut down prematurely on August 5, 1778, during the cholera epidemic of that year.

Litre's dream of a rationalized system of units did not start to materialise until 15 years after his death, when the mathematician Lagrange (1736 – 1813) was appointed to head a commission to draw up such a system. In 1795 the metric system was born. Litre's method of specifying volume was adopted, although the commission decided to use distilled water rather than mercury as the standard liquid.

[I am indebted to Martin Vlietstra for suggesting this article and for pointing me to a more complete Litre biography which is available here https://uwaterloo.ca/chem13-news-magazine/october-2018/feature/chem-13-news-most-memorable-hoax.]

How to deal with large and small numbers, *by John Austin*

The astronomers are well-known for their use of large numbers and of course this has become part of the language when we refer to something as "astronomical". The good news is that the metric system can cope with anything that we throw at it, unlike imperial units. Nonetheless as pointed out by Ronnie Cohen in a Metric Views article [1] the astronomers seem loathe to take advantage preferring to remain using Astronomical Units, solar masses and parsecs to name just a few. There was a debate on the Metric Views site perhaps on balance taking the astronomers' view and I would encourage readers to look at the correspondence there. Of course the SI recently introduced additional unit prefixes to support scientists and computer engineers at the leading edge of technology. We reported this in the newsletter last year [2] and also on Metric Views [3]. I don't see scientists using these extra terms and perhaps not computer engineers either, at least for a long time yet. An alternative view on the usefulness of similar terms for computing has recently been published in Metric Views [4]. I recall a decade ago going to a seminar on "petabyte" computing. I wasn't the only person who went rushing to the dictionary at the time to find out how big a petabyte was, and there were still many more metric multipliers available. Things move on, of course, but you can always find something that is larger than the largest allowable number. In atmospheric sciences, one of our much-used numbers was Loschmidt's number, the number of air molecules in 1 cm^3 of air at standard temperature and pressure. When I first started in atmospheric sciences, I tried to encourage the use of SI, but sadly I made no progress on that front and atmospheric chemistry remained in cgs units. Some care was then required when coupling a photochemical model to a climate model built with SI. Loschmidt's number is 2.693×10^{23} molec/cm^3. It is closely related (I'll spare you the details) to the Avogadro constant 6.022×10^{23} mol^{-1}. These numbers so

far have been conveyed in power notation. It is a notation that is perfectly understood by much of the population. It is apparently a component of Key Stage 3 in maths taught to children 11-14 years of age. So understanding index notation is as much part of normal education as the ability to construct grammatically correct sentences. The interesting thing is that the SI doesn't use the prefixes itself when it comes to the SI defining constants! There is a good reason for this. When scientists work with just the base units, they know the units of their answers straight away. For example, suppose you want to know how much energy is produced by converting 1 g of matter into energy, such as in a nuclear power station. Our famous equation is $E = mc^2$. The energy, E, is in joules when the change of mass, m, is in kg and c is the speed of light (in SI of course). So in power notation this is $10^{-3} \times (3 \times 10^8)^2 = 9 \times 10^{13}$. Thus, without much thought we get an energy of 9×10^{13} J, which equates to about 1 GW for a day. Working with metric prefixes slows the calculation, as it is necessary to convert all the individual terms to the base SI units beforehand and that involves powers of 10 anyway. This is especially problematic with very large and very small numbers and so it is often easier just to use power notation throughout.

So far I have only used large numbers but small numbers have the same issues. What I don't understand is why journalists dumb these numbers down, replacing the power notation very often by long strings of zeroes, or using ambiguous terminology. Last Newsletter [5] we reported on the annual measuring day at the zoo, with the weight of an ant converted, supposedly for our convenience, to a (very small) number of ounces.

In the quiz answers to questions 10 and 11 one of the ambiguities for large numbers arose. Many years ago, when I was a young lad (and that is many years ago indeed) one million was clear but one billion was considered ambiguous (10^9 – American or 10^{12} – British). Over time we have adopted the American billion, primarily due to the influence of finance on our every day lives. Now the word trillion which in Britain used to be 10^{18} has also mostly changed to 10^{12} (American trillion). Large numbers in Britain used to be logical 10^{6n} where n was some obvious representation: something from the Latin/Greek with "illion" at the end. For example b- (2), tr- (3), quadr- (4), pent- (5), sext- (6), sept- (7), oct- (8) etc. I go that far as questions 10 and 11 use octillion which is therefore 10^{48} in Britain. See for example [6]. Alas the USA uses a different understanding and their formula for large numbers is 10^{3n+3}. So for n = 1, we have 1 million, n = 2, 10^9, n =3, 10^{12}. For them 1 octillion is 10^{27}, which can still be handled by metric prefixes if you have the desire. Ironically the US formulation for trillion, quadrillion etc. fits in better with metric prefixes because a new word is used for each multiple of 1000, as suggested to me by Martin Ward.

Nonetheless, the British numbering system, which predates the metric system, is often used for n = 3 or n =4 and above, causing ambiguity. In the UK, then, there is the "large number muddle", perhaps the analogy of the metric/imperial unit muddle. For small large numbers the index is 3n+3. For large large numbers, the index is 6n. No harm in that perhaps, but the meeting point of the two indices is ambiguous.

Another large number muddle in the UK is the "percentage increase". 110 is a 10% increase from 100 (obviously!). 800 (in some people's minds) is an 800% increase (obviously?). See for example [7] where a factor of 5 increase is equated to 500%. Go figure! I suppose many people haven't learnt Key Stage 3 maths or wherever percentages are taught. Incidentally, in the USA a well-known number in power station energy generation is the quad which is 10^{15} BTU, which fits the 10^{3n+3} formula with n = 4 (appropriately). Also, there is always the googol which everyone seems to agree on is 10^{100}, but as far as I can tell it is almost an entirely useless number (Quiz question 9). Perhaps that's why everyone agrees on how big it should be.

References

1. Metric system can meet all astronomers' needs, R. Cohen, MetricViews, Posted on 24 January 2024.
2. First New SI prefixes for over 30 years, R. Cohen, UKMA Newsletter, December 2022, pp.

6-8.

3. First new SI prefixes for over 30 years, R. Cohen, posted on 20 November, 2022.
4. What are binary prefixes?", Isaac, MetricViews, Posted on 18 February 2024.
5. Measurement muddle in the media and on signs, UKMA Newsletter, December 2023, p.8.
6. Number Definition & Meaning - Merriam-Webster
7. Butcher's heartbreaking letter to customers left on door after energy bills rose by 500% (msn.com)

The End of the Year Quiz - Answers, *with contributions from Derek Pollard, Peter Burke, Martin Vlietstra and John Austin.*

So, here are the answers that you've been waiting for. The quiz was not so much about getting the answers "right" but rather in understanding the nuances around some of the questions that were posed. So I won't give a performance rating, but clearly if you have got only a few questions right, why are you a member of UKMA again?

1. What is the correct symbol for five metres? **(b) 5 m**
All the other answers have been used in various places from time to time. Many people neglect the space between the numeral and unit, sometimes the metre symbol is a capital letter and the option (d) 5 MTRS is truly horrible and occurs in other units as well, such as 5 KGS etc. I'm sure many of you groan when you see this. Of course the purposes of a standard representation for the symbol is that it is instantly recognisable and international.

2. Which of the units are from the SI *and* use a non-Roman symbol? **(a) ohm, Ω**
The micron, symbol μ was commonly used under the old cgs system to signify what would now properly be written μm. The other two are less well-known units of dose rate Sv and magnetic field strength, T. A 1 tesla magnet is a monster, such as in a hospital NMR machine. Just make sure you're nowhere near it when wearing jewellery or any metallic object.

3. What is the correct symbol for kilometres per hour? **(d) km/h**
The symbol for kilometres per hour is km/h, which is made up of km for kilometres, / for per and h for hour.

4. How large is an acre (approximately)? (**b) 4047 m^2**
Much beloved by estate agents, relatively few members of the public really know how large an acre is. The usual response is something like "as big as a field". "How Big is an Acre - No-one Knows" was the title of a booklet published by Alan Young a.k.a. Dr Metric. Alan recognised this fact in the title of his booklet.

5. In 1965, the British government announced that it hoped British industry would adopt the metric system over the following ten years. Who was the PM at that time? **(b) Wilson**
It is over 50 years on, and although industry has indeed adopted metric, the public has been going at a snail's pace and that is an insult to snails.

6. When did the UK Met Office switch internally from °F to °C? **(b) 1961**
Although nominally ahead of most of British industry in adopting metric, this switch was driven by the needs of communicating weather data on a global scale.

7. When did it become legal in the UK to use the metric system for all purposes? **(b) 1897**

8. When the metric system was first adopted in France, what was the metre derived from?
(d) The distance from pole to equator
This gave an accuracy of 1 part in 10 000. Improving measurement precision allowed the metre to be replicated with a precision of 1 part in 10 million by 1927 with a carefully engineered platinum bar. After that the unit was defined in terms of a specific wavelength of light emitted by Krypton. Finally, the modern definition in terms of the speed of light was introduced in 1983 which allows the metre to be replicated to a precision of 1 part in 10 billion, an improvement of a factor of 1 million since the first metre definition.

9. What is a googol? **(c) The digit 1 followed by 100 zeroes**
Also written more concisely as 10^{100}, It is larger than the number of all the sub-atomic particles in the known universe, so it's not really a serious number. See also the article on large numbers in this issue.

10. In what year did the UK finally settle on a standard set of imperial measurements? **(a) 1824**
The British imperial system was introduced by the Weights and Measures Act 1824. The imperial system was developed from earlier English units. This is the Act of Parliament that introduced the imperial pint, which is still used for dispensing draught beer and cider in British pubs.

11. A ronnametre is equal to 10^{48} metres. **(b) False**
The ronnametre is equal to one octillion metres. An octillion is 10^{27}. The UK and US use the short scale for large numbers where a billion is one thousand million and a trillion is a million million, and so on. This is standard in English usage across the English speaking world.

12.How many yottas in a quetta? **(d) 1 million**
I don't know if anyone ever uses these more exotic metric prefixes but they are there if desired.

13. John Wilkins first published his ideas on metrication in which year? **(a) 1668**
Of course this predates the modern metric system as described in a previous Newsletter but even though we don't get the credit for this, at least everyone still knows we invented football.

14. Which metric unit of measure derives its name indirectly from a river? **(c) Kelvin**
When William Thomson was ennobled, he took on the title Baron Kelvin after the river that flowed along the boundary of Glasgow University where he was a professor.

15. Which prefix that was part of the original definition of the metric system (1795) has been deprecated? **(b) Myria**
Myria was the prefix for 10 000. It originally had the symbol "My", but in 1905 the CIPM allocated it the symbol "M" which clashed with the International Electrotechnical Committee use of "M" for one million. The CIPM dropped the use of the myria in 1935.

16. In which language is it correct to always write "metre" or "meter" with a capital letter (when not using a prefix)? **(c) German**
In German all nouns start with an upper-case letter, while in English common nouns start with a lower-case letter, but proper nouns start with an upper-case letter. Units of measure are common nouns in all languages.

17. The litre was named after Claude Émile Jean-Baptiste Litre (1716 - 1778) **(b) False**

Claude Émile Jean-Baptiste Litre was a fictional character whose existence was published as an April Fool in 1978 in a newsletter aimed at teachers and subsequently reprinted in the journal "Chemistry International". See the article on page 6 in this newsletter.

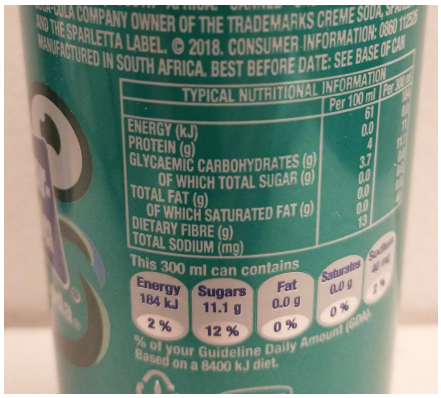
18. How many sheets of A4 paper would be needed to cover one hectare? **(d) 160 000**
There is a quick way to do the calculation. In the A series of paper, each A size differs from the previous size by a factor of 2 in area. So, given that A0 has an area of 1 m^2, A4 has an area 2^{-4} m^2 or 1/16 m^2 so there are 16 sheets per m^2. One hectare is 10 000 m^2 so the number of sheets is 160 000. In practice, the size of the sheets are rounded figures and the coverage of the 160 000 sheets might be about 20 m^2 short.

19. How many units of alcohol are there in a 0.75 L bottle of wine containing 14% alcohol? **(c) 10.5**
One unit of alcohol is 10 mL, although it might have been more logical to have been 1 mL. With the current definition, the simple calculation is to multiply the volume (0.75 L by the % alcohol): 0.75x14 = 10.5. In general this calculation is a lot easier than remembering different drinks and volumes separately. Faced with a pint (sic!) of 4% alcohol beer you can easily calculate 0.568x4 = 2.3 units, or a 50 mL shot at 40% = 0.05x40 = 2.0 units. All drinks nowadays have the alcohol percentage indicated, even in pubs.

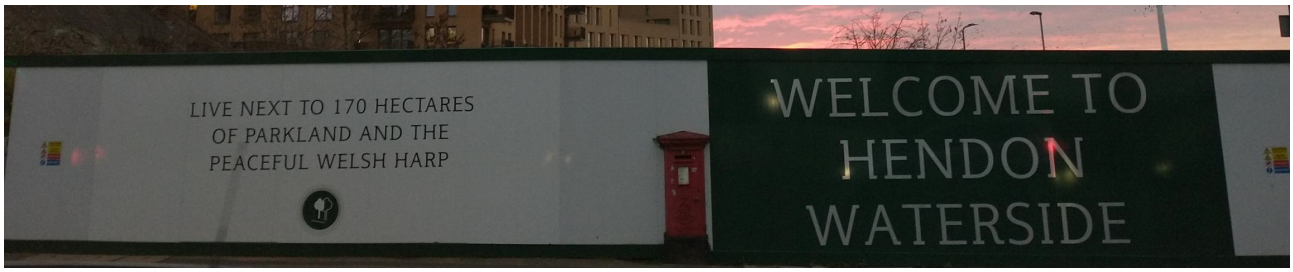
20. What is the approximate metric conversion of one horsepower? **(a) 750 W**
Energy is energy, although heat is the lowest of the low. Cars consume energy as do kettles. Why don't imperial unit enthusiasts use 3 hp kettles for boiling water?

Small items

Measurement muddle in the media and on signs



From time to time products sold in the UK come labelled entirely in SI, perhaps more by accident than design. This can of drink was found in a British supermarket by our eagle-eyed Secretary, Ronnie Cohen who spotted that there was no mention of calories on the can as it is imported from South Africa. Perhaps this is a Brexit benefit (sic!), as EU laws require labelling in kilocalories as well as kilojoules.



It seems to have been a good quarter for metric-only signs. Here (above) is an advert on Hendon Broadside with the park area indicated in hectares. Usually the property development sector and estate agents use imperial, normally without any metric units. Image is courtesy of Ronnie Cohen.

This height limit sign (far left) is also in metric only and appears at the entrance to the Pillar Hotel in Hendon, North West London.

Many readers I'm sure have also seen signs like this (left) which appear on the back of vans and lorries. The vehicles are restricted to 56 mph which is an odd number for British roads marked in multiples of 10 mph. Of course 56 mph converts very closely to 90 km/h and the laws regarding the vehicles have survived the bonfire of EU regulations following Brexit. Images from Ronnie Cohen.

Association News

2024 AGM

The UKMA AGM and Annual Conference will be held online on 7 July, details to be supplied by the Secretary. If you would like to give a presentation at the Annual Conference please contact the Secretary of UKMA.

UKMA Committee

A reminder of the committee for 2023-2024. There is a further vacancy under “other members” and anyone interested in applying should contact the Secretary. Contact details of the Secretary may be found here: https://ukma.org.uk/about/contact/

UKMA Officers

Chairman	Peter Burke
Secretary	Ronnie Cohen

Press Secretary
Alex McDowell

Recent articles posted on MetricViews

You may have missed the following articles posted on MetricViews, https://metricviews.uk, since the last newsletter. The number of comments are indicated, as of 26 March.

“International Organisation for Legal Metrology”. Posted on 28 March 2024.

“CMA report explains how to encourage more use of unit pricing”. Posted on 21 March 2024.

“Tesco announced it will show unit pricing for Clubcard offers”. Posted on 15 March. 10 comments.

“How did campaigners for the metric system get their message across 120 years ago?”. Posted on 8 March. 6 comments.

“Government ideology compromises Emergency Services.” Posted on 29 February. 10 comments.

“House of Lords votes in favour of full adoption of the metric system”. Posted on 23 February. 10 comments.

“What are binary prefixes?”. Posted on 18 February. 8 comments.

“Don't expect to see pints of wine in the shops”. Posted on 11 February. 12 comments.

“Universal metric or particular imperial”. Posted on 5 February. 8 comments.
“Metric system can meet all astronomers' needs”. Posted on 24 January. 9 comments.

“DfT refuses to explain why they changed their views on the metrication of road signs”. Posted on 15 January. 11 comments.

“BBC response to UKMA Chair's complaint about cover-up of outcome to Government's imperial units consultation”. Posted on 9 January. 7 comments.

“BBC covers up overwhelming public rejection of government plans to revive imperial units”. Posted on 31 December 28 comments.

“Government confirms metric measurement rules to stay as 99% reject greater use of imperial units”. Posted on 27 December. 54 comments.

“Mismatch of units in the energy sector has led to thousands of billing errors”. Posted on 24 December. 4 comments.

Draft articles for MetricViews are welcome and should be e-mailed to: secretary@metric.org.uk

UKMA websites

UKMA began as an internet forum, and the internet is our principal vehicle for carrying our message to the public. Two new UKMA social media accounts have been added to the growing list

A BlueSky page, https://bsky.app/profile/ukmetric.bsky.social.
A Threads page, https://www.threads.net/@uk_metric.

We also have:
The main UKMA web site, https://ukma.org.uk.
A factual web site, https://thinkmetric.uk.
A blog, https://metricviews.uk.
A Twitter page, https://twitter.com/UKMetric.
A YouTube channel, https://www.youtube.com/user/UKMetric.
and a Facebook page, https://www.Facebook.com/UKMetric.

These are available to all, not just members.

Can you help?

The Committee is looking for volunteers who may be able to help in the following areas:

- Responding to technical consultations by ISO and BSI.
- Reviewing printed media for stories to link to our Twitter and Facebook pages.
- Assisting with the production of material for uploading to YouTube.

If you think you may be able to help, please contact secretary@metric.org.uk

About this newsletter

UKMA News is published by the UK Metric Association, the object of which is to promote the full adoption of the International System of Units (SI), commonly known as 'the metric system', as the legal and default system of weights and measures throughout society in the United Kingdom.
Your feedback and comments on UKMA News or on the UK's stalled metric upgrade are welcome. To submit, or if you no longer wish to receive UKMA News, please email secretary@metric.org.uk

