

# **UKMA** news

The newsletter of the UK Metric Association

Campaigning for a single rational system of measurement

Volume 10, No 2

## www.ukma.org.uk

1

April 2012

# In this issue:

Facebook	1	
AGM and Annual Conference	1	
The link between measurement skills and numeracy	2	
DfT admits: no basis for blocking metric signs	3	
Just how much does not being fully metric cost UK economy?	the 5	
Metric (or not) matters found in USA	7	
The case of disappearing km/h markings on car		
speedometers	9	
Can anyone get it right?	10	
More stories from Ronnie Cohen	10	
Answers to John Frewen-Lord's puzzles	11	

#### Facebook

UKMA has a Facebook page: www.facebook.com/UKMetric

The page aims to report on events relating to metric usage in the UK. Activity of the Facebook page reflects that in the media, but it includes a feed from UKMA's Twitter site and also notes about new articles on our blog, Metric Views.

The page allows links to news stories and photos and, unlike Twitter, is not limited to 140 characters per post. The public have access to the page and can add comments to posts.

Since it was created in February 2012, there have been about five items posted each week

#### **AGM and Annual Conference**

The 2012 AGM and Annual Conference will take place on Saturday 7 July 2012. The Conference will follow the AGM, which will start at 10:00. The proceedings will conclude at about 16:30.

We have booked a new venue this year:

**Ouantum House** 

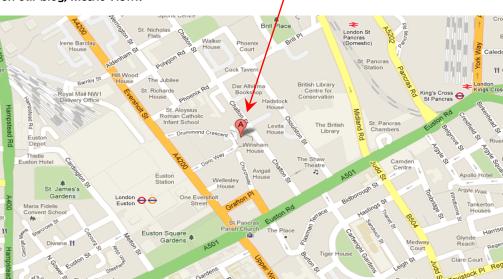
66 Churchway

London, NW1 1LT.

#### http://www.trainingroomforhire.com

This venue is close to Euston Underground station, and to Euston, St Pancras and Kings Cross national and international rail stations.

See location on map below



# The link between measurement skills and numeracy

From MetricViews by Ronnie Cohen



Scene taken from BBC News - item 1 below, note how Kevin's weight loss is shown as 1kg 200g rather than 1.2 kg. The reporter actually said it correctly, so why write it like this?

One member of the public said that she would be able to give an answer if the question was in pounds and ounces, so why wasn't this tested? See 'Just how much does not being fully metric cost the UK economy?' on page 5.

Poor numeracy is blighting Britain's economic performance and ruining lives, says a new charity launched to champion better maths skills.

You can find recent BBC reports on this topic on the following web pages:

- 1. "Could you do this calculation?", http://www.bbc.co.uk/news/uk-17236806
- "Poor numeracy 'blights the economy and ruins lives", http://www.bbc.co.uk/news/education-17224600
- 3. "Test your maths skills", http://news.bbc.co.uk/today/hi/today/newsid\_9701000/9701303.stm

In order to test the numeracy skills of members of the public, the BBC interviewer put sample questions to them. All the questions involved measurement, and all except the one on cooking times used metric units. These questions focus on real-world problems and have practical applications. Here are some key quotes from the "Poor numeracy" BBC report:

- "Millions of people struggle to understand a payslip or a train timetable, or pay a household bill."
- "Almost half the working population of England have only primary school maths skills."
- "Weak maths skills are linked with an array of poor life outcomes such as prison, unemployment, exclusion from school, poverty and long-term illness."
- "Only 22% of people have strong enough maths skills to get a good GCSE in the subject down from 26% when the survey was last carried out in 2003."

Chris Humpries, chairman of National Numeracy, called poor maths skills a peculiarly British disease that does not happen in other parts of the world and said that "just 15% of Britons studied maths after the age of 16, compared with 50-100% in most developed nations." A KPMG report showed that poor numeracy skills cost the government £2.4 bn. The BBC report pointed to the damaging effects poor maths skills had on our science, technology and engineering industries, and on the ability to earn a living and to do jobs well.

Despite the fact that all the sample test questions from the Skills for Life survey published by the BBC involved measurement, it is extraordinary that no one mentioned the elephant in the room, namely the measurement mess that we face on a daily basis and how it undermines adults' numeracy skills. We can guess why no one dared to mention it. Metrication has been a taboo subject for politicians for years because they are afraid to challenge the eurosceptics, the tabloid media, intransigent market traders, opponents within their own parties, the Department for Transport and public opinion.

Most of our competitors in the developed world do not face this problem. We have to deal with it on a daily basis, yet the Government refuses to admit it exists. Alan Young, a maths teacher with several decades of teaching experience, ran the 'Dr Metric' website before it was taken down. He outlined on the site the problems that British school children face on a daily basis with our dual measurement system.

Here is a quote:

"Measurement is not just one element of the Primary Mathematics syllabus, it is the origin of virtually all the concepts at this level. Consequently, it is very important to have just one system of units in place.

Because of our continued use of imperial units, British children:

- do not understand that we live in a world that is almost exclusively designed and built using metric
  units
- do not see the relevance of what they learn about the metric system at school
- are confused when reporters and weather forecasters mix and match imperial and metric units in the same report (often in the same sentence)
- have to use measuring instruments outside the classroom that have dual scales and are very confusing to read – the use of digital weighing scales does not normally solve this problem
- have to convert between metric and imperial units in both directions
- have their science teaching undermined when weather forecasters and media reports suddenly change to degrees Fahrenheit when the temperature becomes very warm
- are not able to compare their body measurements with those of their parents as parents are mostly still using imperial units a set of units, incidentally, that they themselves do not properly understand
- lose everyday opportunities to undertake simple mathematical calculations at home based on measurement
- often move to secondary school without a good foundation in basic measuring skills and number work
- often see mathematics as boring and irrelevant and give up with the subject

It is not hard to see why children in most other economically comparable countries do considerably better in mathematics than our children. The banishment of imperial units from all aspects of our life would remove just about all of the problems given above that only our children have to face on a day by day basis."

The Department for Education commented on the numeracy issue as follows: "We want the vast majority of young people to study maths up to 18 within a decade to meet the growing demand for employees with high-level and intermediate maths skills." Unfortunately, it would seem that politicians prefer to see the UK languish at the bottom of the international numeracy league tables rather than to admit the link between numeracy and measurement or to challenge the current myths, misinformation and misconceptions about the stalled metric transition. The consequences of this lack of leadership are now becoming evident.

# DfT admits: no basis for blocking metric signs

From MetricViews



Does the thought of implementing signs like this cause nightmares at the DfT?

After finally admitting they were wrong to try to withhold this information, the DfT have now published their analysis of the responses to their earlier consultation on the proposed phasing out of imperial-only height and width restriction traffic signs. What this shows is that the responses gave little or no support for the irrational decision by the then Secretary of State, Philip Hammond, to cancel the proposal – thus allowing imperial-only signs to remain in place indefinitely (and even permitting new ones to be erected).

The background is that in September 2009 the Department for Transport (DfT) consulted on the proposal that all imperial-only height and width restriction signs should be replaced with dual metric/imperial signs within 4 years. This was obviously a measure intended to reduce expensive bridge strikes, was justified on cost-benefit grounds and was supported by the major players such as Network Rail, the County Surveyors Society and the police. An amendment to the Regulations was drafted accordingly.

However, in June 2010, a month after the General Election, the new Secretary of State issued the following (little reported) statement:

"Today I am scrapping Labour's plans to force councils to spend £2m changing road signs to include metric measurements.

"It's bad enough that Labour were hellbent on replacing feet and inches with metres. It is completely unacceptable that they were going to spend over £2m of taxpayers money to do so when we have one of the biggest budget deficits in Europe.

"It's almost as if Gordon Brown's Government sat around thinking of new ways to waste taxpayers' money.

"I am clear that from now on we will ensure that every pound of money the Department for Transport spends will be well spent."

This statement did not in fact come to light until December 2011 (as a result of a Freedom of Information (Fol) request). In the meantime UKMA had written to Philip Hammond and then to his successor, Justine Greening, asking them to review or give a proper explanation of the decision. Neither replied personally, but a brush-off letter was received from a Department official giving no further relevant information.

UKMA therefore made a further Fol request asking the DfT to publish the responses to the 2009 consultation (which, in breach of an earlier promise, they had previously failed to do). As this document was over 600 pages long, UKMA then inquired whether the DfT had carried out a summary analysis of it. In reply, the DfT confirmed that such an analysis existed, but said that they would not release it on the grounds that it 'relates to the formulation or development of government policy'.

As this is not a valid ground for withholding information once the policy decision has been taken (which obviously it had), UKMA then wrote formally requesting the release of this document and also asking for "any other background papers of a factual or statistical nature that are relevant to the decision." At the same time UKMA made a formal complaint that the original request had not been properly dealt with.

The DfT have now admitted (8 March) that they were wrong to try to withhold this information, and have now published it together with an apology.

What emerges from the comments is a complete indifference bordering on hostility to metrication. See comments such as

"This response from [deleted] is nothing more than a metrication argument and should be dealt with in the usual way".

"It is not appropriate at this stage to change to metric-only signs"

"metric-only signs are a non-starter at this stage".

It is noteworthy that the author seized on the minority of responses that complained about the short term cost of replacing imperial-only signs, while ignoring the majority who accepted the original cost estimates or did not respond to the consultation.

The author's comments probably reflect a deep cultural problem within the DfT.

On a lighter note, the exchange on the fatuous proposal to give cycling distances in units of time is quite amusing. See footnote 1.

In the 8 March letter, in response to UKMA's second question, the DfT replied that "we do not hold any factual or statistical background papers on this subject" and added that "the only information we hold is a briefing paper dated 22nd July 2010 [after the decision had been taken - Editor] which was prepared for the Special Advisors to the (then) Secretary of State". This document is actually Annex B to the 8 March letter. The "Special Advisers" (or "spads" as they are known – see footnote 2) are in fact political and/or media advisers, and it is clear from the briefing that its purpose was to enable the spads to advise on the political presentation of what might appear to the media as an irrational or perverse decision and which would be opposed by the rail industry.

#### Conclusions

So what conclusions can be drawn from all this (assuming it is all true)?

- The DfT claim to hold no factual or statistical information "on this subject" (presumably meaning the
  cost or incidence of bridge strikes and the costs of signage).
- Therefore the Secretary for Transport could not have received any briefing from his Department that might have provided a reasoned justification for his decision.
- The decision was therefore purely political, based on anti-metric prejudice, and the desire both to appeal to the Eurosceptics in his (and other) parties and to score points off the previous Government.
- There is an underlying assumption at a civil servant level within the DfT that metrication is off the agenda, and any proposals to advance metrication will be opposed and blocked.

- There was considerable disquiet within the DfT about the "daft idea" of measuring cycling distances in minutes. Nevertheless, the daft idea prevailed.
- Some DfT civil servants have not received adequate training in their obligations under the Freedom
  of Information Act.

#### Footnote 1 - cycling times

The exchange went as follows:

Consultee comment:

"Cycling issues para 12: the new diagram 2602.1 expresses better than any words could convey the sheer fatuousness of replacing distances with journey times. Presumably the times are based on an assumption that a cyclist travels at 8mph, or something in that region. So here I am; on my way to Wells (perhaps intending to collect the Holy Grail as I pass Glastonbury). 1hr 15 mins (should that be "min", by the way?). Er ... so how long will that take me? I know I can do about 6mph, but I don't know what the clever clogs at DfT assumed when they calculated the journey time. If only they'd said something useful, like "12 miles", I'd be able to work it out for myself. Ruddy bureaucrats, sitting at their desks drinking tea all day. Where was I? Oh yes, how long will it take me to get to Wells? Have I time for a cream tea before I continue? No way of knowing... The problem is even worse for pedestrians, where the time differences (and the effort) might be even greater. This is the daftest idea ever to appear in TSRGD, but I suppose there's no way of stopping it now."

Response from document author:

"Journey times on cycle signs – quote "This is the daftest idea ever to appear in TSRGD, but I suppose there's no way of stopping it now." Oh yes, there is – we have had sufficient objections (including mine) to this proposal to abandon it for now. Explanation as to why it is a "daft idea" couldn't be better."

Sadly and incredibly, however, the "daft idea" has now been implemented. Sometimes mad proposals gather a momentum of their own and do indeed become unstoppable.

#### Footnote 2 - "spads"

The two "spads" were in fact:

Siân Jones is [was] transport secretary Philip Hammond's policy adviser, a role that she also performed in opposition when he was shadow chief secretary to the Treasury. She worked in the CRD [Conservative Research Department] from 2005-07 as an adviser on work and pensions before moving to Hammond's office shortly after his move to the Treasury portfolio. She studied modern languages at Cambridge and has also worked in management consultancy and journalism.

Paul Stephenson acts [acted] as Hammond's media spad. He was formerly head of research at Open Europe, a think-tank which argues that the EU requires radical reform based on economic liberalisation and a more flexible structure. Stephenson is a specialist in EU regulation and the co-author of publications including A Guide to the Constitutional Treaty and Less Regulation: 4 Ways to Cut the Burden of EU Red Tape.

Source: http://network.civilservicelive.com/pg/special report/csw/read/609384/the-coalition-special-advisers

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

From Metric Views

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 guestions.
- 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.
- 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.
- 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?
- 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.

Answers to the puzzles are on page 10

# Metric (or not) matters found in USA

On a recent trip to relatives living in the USA, your editor had his eyes open for anything metric, or otherwise.

The first impression was, not unexpectedly, that metric measures were not a hot topic of conversation. Vehicle engine sizes were expected to be stated in litres rather than cubic inches as this change must have been made long ago. Road signs, of course, are all in miles with exit distances given in feet.

Food packaging, however does show some metric indications, notably in the 'Nutrition Facts' panels. Most packaging sizes are, of course, in US customary units, though there does not seem to be a consensus on whether or not to use decimals with these units.

It seemed that the closer items were to the pharmacy counter, the more likely there would be items packaged in rounded metric units. Notice the label for mouthwash.

Package sizes in general seemed to be such that it was difficult to compare prices between manufacturer's products and no unit prices were seen on shelf edges.

At Home Depot (the parent of B&Q) metric tape measures were nowhere to be seen, the only ones immediately visible were inch-only, not even dual inch-metric as in the UK. So are these tape measures unique to the UK only? If so, how much more do we pay for the privilege?

Also at Home Depot, some metric threaded fasteners were available, though in amongst mainly inch-based items. In the UK, it is virtually impossible to buy anything but metric threaded nuts and bolts (wood screws are incongruously sold in both metric and inch-based measures, perhaps due to their source).

Here are a few samples of US product labelling:





Nutrition Facts from
Publix hash brown
potato packet.
Note serving size using 3
measurement units.



Note rounded metric measure on 'medical' product



# The case of disappearing km/h markings on car speedometers

Has anyone bought a new car recently?

Your editor has not but has been able to peek into a new Seat Ibiza.

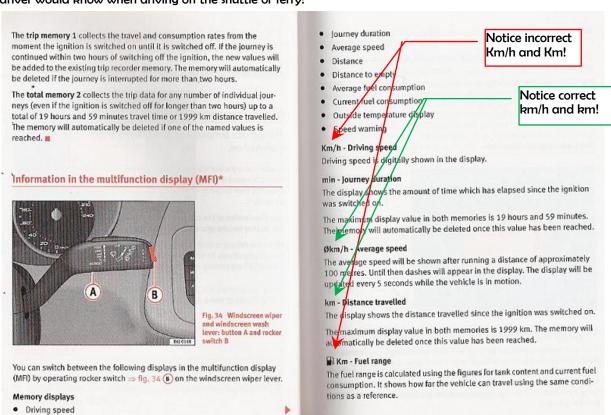




Note that there are no km/h indications at all.

The handbook makes no mention of the fact that the speedometer is calibrated in miles per hour for UK vehicles and not as illustrated (in km/h). Even the section 'Driving abroad' only refers to availability of unleaded petrol and spares parts where the vehicle model is not sold. No information to tell the user how to observe speed limits in km/h!

The driver would have to read the section 'Multifunction display' to work out that driving speed is also shown in this display if the switch on the windscreen wiper lever has been set. Hardly the sort of thing the average driver would know when driving off the shuttle or ferry!



# Can anyone get it right?

More examples of sloppy metric signage:





These pictures were taken at Stevenage town centre and the Howardsgate car park in Welwyn Garden City. Why is the distance to Autun not shown as 940 km? Do signpost makers have any lower case font templates?

The signmaker for the car park sign obviously does not have that problem but surely 1.675 m would have been possible, though we could have been spared the level of precision that is not apparent from the imperial measure.

### More stories from Ronnie Cohen

Take a look at these confused speed limits signs. The top one says that the maximum speed limit is 10mph



whereas the bottom one shows a speed limit of 5mph. This picture was taken at the taxi rank of the Mill Hill Broadway station in London. Interestingly, the smaller 5mph speed sign has got the "mph" abbreviation written on it. This is rare to see as the TSRGD only allows speed limits to be expressed in miles per hour.

This sign to Willesden Sports Centre shows the distance to the venue and uses "mi" for miles. Why can't the DfT do the same and avoid using "m" for miles and use "mi" or "miles" instead? It makes no sense to use "m" for



both metres and miles. When will the DfT accept the basic principle that the same symbol should not be used for more than one measurement unit?

The picture of the height restriction bars at the Morrisons car park in Chalk Farm shows one side of the same bar. On this side, the double quote mark is used for inches. On the other side, only a single quote mark is used for inches and is the same symbol that is used for feet. It seems that somebody screwed up when the signs were erected. The erroneous sign seems to express a height of "7 feet and 6 feet", which is absurd.



Why is the height restriction expressed in millimetres?

This is poor use of the metric system. It would have been best to show 2.3 m. Even 230 cm would have been more sensible than the 2300 mm shown on the bars.

The sign that shows the distance to the taxi rank in Stratford in east London uses metres to express the



distance to the taxi rank. It says "TAXI RANK (160m)" with an arrow pointing in the direction toward the taxi rank. The taxi business is confident that the public understands distances expressed in metres. This is just another sign that shows how much the DfT is out of step with the modern world.

# Answers to John Frewen-Lord's puzzles

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