



# UKMA news

The newsletter of the UK Metric Association

Campaigning for a single rational system of measurement

Volume 9, No 1

[www.ukma.org.uk](http://www.ukma.org.uk)

April 2011

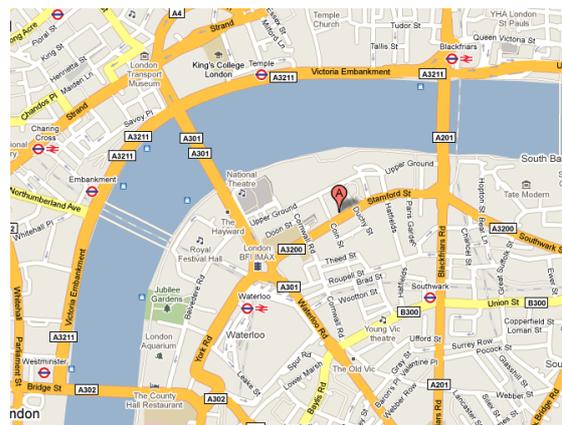
## In this issue:

Fukushima nuclear power	1
Annual General Meeting	1
UKMA likely to seek charitable company status	2
UK Nuclear Directorate design assessment	3
Red tape challenge	5
Road traffic sign survey in Northern Ireland	6
More on road signs	7
Conversion errors	8
Metric-only tape measures	9
Minister confirms business as usual	9
A Frame of Reference for Celsius	10

## Annual General Meeting

Date Saturday, 2 July 2011  
 Venue Room 2.80, Franklin-Wilkins Building,  
 Kings College London,  
 150 Stamford Street,  
 London,  
 SE1 9NH

The AGM will begin at 10:00, and the Conference will conclude at about 16:30.



## Fukushima nuclear power



Photo from DigitalGlobe-Imagery

The terrible tragedy suffered by the Japanese people following the earthquake and tsunami shows just how critical safety measures are in the design and operation of nuclear power plants.

In the UK, plans for new nuclear power stations are under scrutiny by the Nuclear Directorate of the UK's Health and Safety Executive.

These plans will no doubt be under even greater levels of investigation following the Japanese experience.

Will metrication, or the lack of it, affect safety at possible future UK sites?

See page 3 to find out.

### Topics for discussion:

- how to keep the campaign going when nothing is happening?
- how to meet our charitable objectives?
- how to educate and inform the public?

### UKMA likely to seek charitable company status

Readers of the Chairman's message in our last issue will have noticed that UKMA's Committee has been considering the pros and cons of seeking charitable status for the Association. Following a consultation with members (which was overwhelmingly in favour), the Committee has now decided in principle to pursue this course. As a result it is likely that formal proposals will be put to the next AGM on 2 July.

The advantages of charitable status are

- tax relief on donations, including subscriptions, and on bequests (At present these are limited, but conceivably they could be substantial in the future)
- enhanced status – in the eyes of politicians and other decision makers, the media and potential supporters and donors

There do not appear to be any significant disadvantages. The declared emphasis of UKMA's work would shift from overt "campaigning" to defined "charitable objects", but these largely reflect what UKMA already does, and would make little difference in practice. The regulatory requirements (at our present size and resources) are modest and easily manageable.

A related issue is whether UKMA should be "incorporated". At present, UKMA is simply an association of individuals, and it therefore has no "legal personality" and cannot act as a body – e.g. by owning property or employing staff. All its actions (such as a room booking) are done in the name of individuals (who therefore are personally responsible).

Hitherto, organisations wishing to be both charitable and incorporated (i.e. "charitable companies limited by guarantee") have had to register separately with both the Charity Commission and Companies House – which was somewhat onerous. However, under the Charities Act 2006, a new animal – a "Charitable Incorporated Organisation (CIO)" – will be available, requiring one single, streamlined registration process. Unfortunately, this provision has not yet been formally implemented, and the official "Guidance" is still awaited from the Commission.

Further details of the Commission's requirements for charitable status can be read on their website at <http://www.charity-commission.gov.uk/>.

On the assumption that CIO status will soon be available, the Committee has, after consultation, provisionally agreed a new set of "Objects", which are given below. These have to be exclusively "charitable" (as defined in the Act – see <http://bit.ly/cGckNg>) and for "public benefit". It is stressed that "campaigning" is by no means ruled out (think of "Shelter" and "RSPB"), but it should not be the primary purpose of the organisation (see also <http://bit.ly/fkMGKI>). Needless to say, charitable status does not affect the ability of individual members to act independently. Further guidance on "public benefit" is given at <http://bit.ly/ic2C5V>, but in principle it means that the benefit must be identifiable and must accrue to the general public or a section of the general public.

Further changes to UKMA's Constitution will also be needed (e.g. the Committee members would become either "Directors" or "Trustees"), but these cannot be drafted until the Commission's Guidance is published.

The proposed Objects are as follows:

Charitable objectives for UKMA (agreed by the Committee on 2011-03-07)

For the public benefit:

- to advance education in, and understanding of, the International System of Units (SI), commonly known as "the metric system".
- to advance understanding of the science and practice of measurement by sponsoring, commissioning or publishing relevant research.
- to advance consumer protection by promoting consistent and transparent pricing, labelling, product description and advertising of goods and services
- to improve road safety by promoting the use of signage that complies with the best international practice and standards through the use of internationally understood units and symbols.
- to advance public health by promoting the exclusive use of SI units of measurement throughout all branches of public and private sector healthcare, sports and health and fitness clubs.
- to remove unnecessary barriers to communication, especially between scientists and the general public, and hence advance public understanding of science, by promoting the use of the International System of Units as the default system of weights and measures for all purposes in the UK.

## UK Nuclear Directorate design assessment

A report from:

<http://www.platts.com/RSSFeedDetailedNews/RSSFeed/ElectricPower/8583252>

### ***UK concerned over Westinghouse plan to use non-metric parts in AP1000***

UK nuclear regulators are concerned that Westinghouse's proposal to base many of the UK AP1000 reactor's components on imperial units could lead to unresolved safety issues when a generic design assessment programme wraps up in June.

While Westinghouse said the reactor design will be largely based on the metric system, it told regulators that many of the bolts, nuts and parts of the steel infrastructure would be based on imperial measurements.

Westinghouse plans to import "a significant amount of US materials" to imperial measurements, including reinforcing bar, steel sections and bolts for construction of the design in the UK, the Nuclear Directorate of the UK's Health and Safety Executive said earlier this week. UK regulators require metric designs.

HSE said it is "not currently convinced" by Westinghouse's proposal because it believes the different measurement schemes could affect the safety case and other safety documentation on the design.

"Westinghouse's proposal is not to have a fully metric AP1000 design, but to make it substantially metric, with certain defined exceptions," the HSE said earlier this week in releasing its latest quarterly progress report on the reactor design review programme.

The agency said the proposal has implications for construction, operation and maintenance of the reactor design, adding that while the Westinghouse proposal, submitted December 31, is "currently under consideration ... are not currently convinced."

HSE spokesman Jason Green said the Westinghouse design "is based on US steel girder sizes, US reinforcing bar sizes and strengths, and US concrete, including the type of aggregate used in the concrete mix, which are not necessarily available in the UK.

"For example, US reinforcing bar is about half the strength of that used in Europe," he said.

"Westinghouse needs to be able to demonstrate that issues around the choice and sourcing of materials can be addressed," the spokesman said.

The issue affects pipe flanges, valves and bolting as well, the HSE said.

The HSE design review began in 2007 and is scheduled to be completed on the 30<sup>th</sup> June 2011.

### ***Possible consequences of using incompatible standard parts and fittings***

While the initial construction of a project such as a nuclear power station should be successful whatever standards of components are used, it is in the subsequent maintenance over the lifetime of the whole power station that problems could occur with incompatible 'standard' parts and tools.

For example, in the UK, most suppliers of nuts and bolts only stock metric sizes. To purchase inch-based fixings it is necessary to select a specialist supplier. The correct tools should be used as damage can occur otherwise.

What would happen if after 30-40 years of operation, a maintenance crew had to fix some pipe work at a power station and for some reason, the correct replacement parts for the inch-based design were not available?

### ***British Airways BAC 1-11 accident***

A near catastrophe occurred with a British Airways BAC 1-11, on the 10th of June 1990 that suffered a windscreen blow-out in flight. Investigations concluded that incorrect bolts had been used. This was not a metric for imperial mix-up but a similar result could have happened if this was the case.

Accident investigators found that a replacement windscreen had been installed 27 hours before the flight, and that the procedure had been approved by the Shift Maintenance Manager. However, 84 of the 90 windscreen retention bolts had Unified Coarse threads, while the remaining six had Unified Fine threads of the correct diameter but were too short. The correct bolts for the application as designed should have had Unified Fine threads but with a longer length than the six UNF bolts used to fit the replacement windscreen.

# UKMA news - the newsletter of the UK Metric Association

## Fasteners used in PCs

Did you know that personal computers use a mixture of inch-based and metric screws?

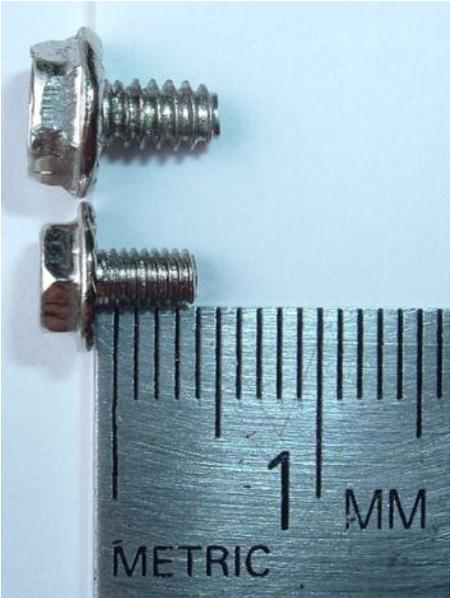
There is such a jumble of applications for these screws inside a PC case. Often the cases themselves have side panels held in place with 6-32 American inch-based screws but this is by no means universal. These screws are also used for fixing hard drives into the inner part of the case.

Optical disk drives and floppy drives, however have always needed M3 metric screws for fixing into the case.

Why two screw types in the same product? It probably depends on the original place for the design of the respective parts.

Problems can occur for the unaware PC builder in that the screws look so similar and damage to the threads will result if the wrong screw is used.

This is, of course, not life-threatening as could be the case with a nuclear power plant or aircraft but indicates how accidents can happen.



Comparison between screws used in PCs  
Image from [en.wikipedia.org/wiki/Computer\\_case\\_screws](http://en.wikipedia.org/wiki/Computer_case_screws)



6-32 inch-based screws  
Image from [www.hardwaresecrets.com](http://www.hardwaresecrets.com)



M3 metric screws  
Image from [www.hardwaresecrets.com](http://www.hardwaresecrets.com)

## Red tape challenge

The government has launched this programme which includes a section on Weights and Measures that might interest UKMA members...



This is the introduction from the website at <http://www.redtapechallenge.cabinetoffice.gov.uk/home/index/>:

*Good regulation is a good thing. It protects consumers, employees and the environment, it helps build a more fair society and can even save lives. But over the years, regulations – and the inspections and bureaucracy that go with them – have piled up and up. This has hurt business, doing real damage to our economy. And it's done harm to our society too. When people are confronted by a raft of regulations whenever they try to volunteer or play a bigger part in their neighbourhood, they begin to think they shouldn't bother.*

*If we want to reverse this trend and encourage greater responsibility in our society, then we have got to trust people and give them more freedom to do the right thing. So this government has set a clear aim: to leave office having reduced the overall burden of regulation. With more than 21,000 regulations active in the UK today, this won't be an easy task – but we're determined to cut red tape.*

### **Weights and measures**

*This is one of the sections in the retail business category. The website text is as follows:*

*These regulations are designed to give consumers reassurance over the quantities they are purchasing.*

*You can find all 42 regulations that relate to weights and measures here*

*[<http://www.legislation.gov.uk/all?theme=weights-and-measures>]. (I have inserted the actual link – Ed.)*

*Tell us what you think should happen to these regulations and why, being specific where possible:*

- *Should they be scrapped altogether?*
- *Can they be merged with existing regulations?*
- *Can we simplify them – or reduce the bureaucracy associated with them?*
- *Have you got any ideas to make these regulations better?*
- *Do you think they should be left as they are?*

### **An example taken from the 42 regulations:**

*Weights and Measures Act 1985*

*“...the yard or the metre shall be the unit of measurement of length and the pound or the kilogram shall be the unit of measurement of mass by reference to which any measurement involving a measurement of length or mass shall be made in the United Kingdom; and—*

- a. the yard shall be 0.9144 metre exactly;*
- b. the pound shall be 0.453 592 37 kilogram exactly.”*

Since the United Kingdom is a member of the International Bureau of Weights and Measures (BIPM) and as a result avoids the need to maintain standards such as this, how about getting rid of all it altogether and simply refer to the relevant SI documentation at <http://www.bipm.org/en/si/>

For anyone needing reference to imperial measures, the International Bureau of Weights and Measures (BIPM) website includes a link to the US standards body for conversion factors (<http://physics.nist.gov/Pubs/SP811/appenB9.html>).

## **Road traffic sign survey in Northern Ireland**



Image from Wikipedia

Speed limits in the Republic of Ireland were converted from mph to km/h in January 2005. Distance signs had already been changed to metric in the preceding ten years. With the success of this changeover in mind, one of our supporters, Michael Glass, carried out a survey last autumn of members of the Northern Ireland Assembly. The question he asked was:

*"I was amazed to discover that Northern Ireland uses miles and miles per hour on the roads when the rest of Ireland uses kilometres and km/h. This makes no sense, especially as some roads wind back and forth over the border. It is obviously a safety issue to have two measuring systems used on the roads in one island.*

*Do you support the idea of using one system of measures on all Irish roads?"*

Michael has now collated the replies and reports as follows:

"I counted 108 members of the Northern Ireland Assembly. However, I cannot guarantee that I have not made some mistakes in this summary.

Five members of the Assembly do not publish an email address, and ten emails bounced. That left 93 with valid email addresses, of whom 39 replied to my email. That's a remarkably high proportion, so obviously the topic had a lot of interest for them.

Of the 39 who replied, 23 favoured the Imperial measures, 14 favoured metrication, one was ambiguous and one, Mr William Hay, the Speaker, stated that convention meant that he was unable to comment. All but one of the opinions for Imperial measures were from the DUP and the UUP. Opinions in favour of metrication came from Sinn Fein, the Alliance, the SDLP and a Green. Opinion seemed to divide on whether to conform with the UK (Unionists) or with the rest of Ireland so opinions split on party lines. Six members of Sinn Fein pointed out that the Assembly did not have the power to change the signs. However, while one appeared to accept the status quo, the other five stated that Sinn Fein had a pro-metric policy. These five sent me almost identical replies. One reply indicated that the member thought I was asking for the Republic to switch back to using miles and miles per hour."

One of the more interesting replies was from Conor Murphy, Minister for Regional Development in the NI Government. He said:

*"Roads Service has no plans to introduce metric road signs. The legislation governing the units of measurement used on traffic signs is a reserved matter and can therefore only be devolved with the consent of the Secretary of State. As a consequence, the Minister does not have the power to make such a change even if he was minded to.*

*In any case, the conversion to metric of all road signs in Northern Ireland would incur a significant capital cost, as all existing signs would need to be retrofitted or replaced. These costs would be disproportionate to any overall benefit to be derived from the change and, given the current budgetary pressures on the Department, would be difficult to justify.*

*You mention the interface between Northern Ireland and the Republic of Ireland, and question whether there a corresponding road safety issue with one jurisdiction using imperial measurements and the other using metric. As you may be aware, metric speed limits were introduced in the Republic of Ireland on 20 January 2005, and at that time, due to road safety concerns, Roads Service erected additional signing at the border to inform motorists of the change in measurement units. However any concern has proved unfounded as, to date, Roads Service is not aware of any difficulties with different measurement units being used on either side of the border.*

## UKMA news - the newsletter of the UK Metric Association

*Interestingly, the Republic of Ireland operated a dual system of metric distance measurements and imperial speed limits for over ten years without any reported difficulties."*

Perhaps the most surprising reply came from a DUP MLA who wrote:

*"I think it helps emphasise that we are British when we have pounds rather than euros and miles rather than kilometres."*

The full survey results are available from [secretary@metric.org.uk](mailto:secretary@metric.org.uk).

---

### More on road signs

#### 1. A few snippets from a Lib Dem blog

(<http://www.libdemvoice.org/20000-road-signs-in-kilometers-an-evil-eu-plot-17417.html>)

*20,000 road signs in kilometers – an evil EU plot?*

*By Iain Roberts | Published 3rd January 2010*

*This is the first Christmas that anyone travelling on our motorways really couldn't avoid signs measuring distance in – whisper it – kilometers.*



Trunk road marker(s)

*Every 500 meters or so along just about every motorway – and some trunk roads – in Britain, one of these blue signs helpfully tells the stranded, mobile-phone wielding, motorist not only which road and carriageway she's on but how many kilometers he/she is along it. Not miles. Not even good old British furlongs or barleycorns (which is a shame). But evil revolutionary French kilometers.*

*Some EU plot to force us to go metric?*

*No. We might have our litres, kilos and decimal currency. We even have generations growing up knowing how many miles to the gallon their car does without having the faintest idea how much a gallon of petrol actually is, but we're not being forced to start measuring distance on our roads in kilometers (though I guess we might choose to one day, and I can't say it would bother me personally too much if we did).*

One may wonder why Iain uses the US spelling of kilometre. The responses make interesting reading, however, and mirror those that Michael Glass received from Northern Ireland politicians.

One response from the author of the blog:

*"Although I agree completely that we shouldn't change to metric for road signs, I'm struggling to understand the argument from cost. Road signs are frequently amended with stickers (actually metal plates stuck over part of the sign with suitable adhesive) so it clearly works and clearly wouldn't cost thousands of pounds per sign. But, to repeat, I don't think it should be done and don't see any benefit in doing it."*

Another response from someone called 'Hughster'

*"Ah, metrication. Britain's own shining trophy of incompetence."*

## UKMA news - the newsletter of the UK Metric Association

*The Eurosceptics have got us all believing metric road signs would pave the way for an EU takeover. The ultra-conservatives claim they would cause mass confusion and civil disobedience because "nobody understands metric". The DfT have tried to put it off by claiming fitting them would lead to financial ruin.*

*However, the embarrassing truth is that Canada, Australia, New Zealand, South Africa, Jamaica and (most recently) Ireland all managed to convert their road signs from imperial to metric within the last 40 years without any of these things happening.*

*Ultimately, there is nothing standing in the way of us getting on with it NOW and finally putting metrication to bed. We're just collectively procrastinating because we've lost momentum.*

*It's a bit like the lazy sod who starts building a house, finishes most of it, gets bored, then spends the next few years giving his family exaggerated excuses as to why he can't finish it today as they struggle on living inside an awkward, undecorated shell. Everyone inconvenienced, all just for a little bit of extra effort to dust off the tools and finish the job.*

*Those in a position to do something about it should ask themselves: just how much longer do we want Britain to be known as the only nation in the world that started metrication but only got half way because it couldn't be arsed to finish it?"*

### **2. Ezra Steinberg says (in response to Metric View article 'Will the Americans get there first? A challenge to Obama':**

*"The DfT (once it was forced to admit its budget estimates for changing road signs is totally ridiculous) could at a minimum start an immediate switch to meters for warning signs (since as a practical matter they are equivalent to yards for the purpose they serve) and begin converting distance signs to kilometers (as the Irish did at the beginning of their transition). This would signal the eventual demise of miles and miles per hour on road signs and allow for thoughtful planning and a publicity campaign for an "M Day" for speed limit signs by putting up decals to cover up the existing numbers on speed limit signs.*

*But the bottom line is the fact that the current government officials have bought into the idea that there is something noble and heroic about "saving the mile and the pint for Britain" and its symbolic value as a proxy for resisting the EU. Until that mindset changes, no proposal — no matter how reasonable — will be accepted and implemented by this lot.*

*As I have suggested before, I believe most likely only the most powerful British business interests, should they see the economic value of finishing metrication, could possibly convince the government to change its mind."*

As Ezra implies in his closing sentence, money will make the difference. So where is this likely to be? How can the UKMA, or anyone else, persuade 'powerful British business interests'?

Why don't vehicle manufacturers make a stand? – though one could argue that there are no British manufacturers left! They will gain by being able to standardise the speedometers with the much higher volume usage of metric-standard devices. By the way, UK vehicle configurations would then be the same as for Eire.

Manufacturers won't let on as to the actual costs or benefits that depend on production volumes, but as an engineer at one time practising product costing, your editor will confirm that every penny counts!

Who else is likely to make direct financial gains apart from sign makers?

Money talks, being reasonable won't cut the mustard. Let's have some ideas!!

---

## Conversion errors

### **Costs per square metre understated by a factor of 130 due to a conversion error.**

The February 2011 edition of 'Civil Engineering', published by the Institution of Civil Engineers, included this discussion on a previously published paper entitled "San Diego stress ribbon bridge sets a record":

Contribution by reader:

*"What a fun concept bridge! The only problem seems to be the costings given. Did it really cost US\$ 8.5 million? If yes, then this seems to work out at US\$ 6500/m<sup>2</sup> and not the US\$ 50/m<sup>2</sup> given in the paper."*

Author's reply:

The contributor is correct. Due to a conversion error – caused by dividing rather than multiplying to convert from US\$/ft<sup>2</sup> to US\$/m<sup>2</sup> – the bridge construction cost was incorrectly stated as US\$ 50/m<sup>2</sup>. The actual bridge construction cost is approximately US\$ 6500/m<sup>2</sup> as the contributor correctly points out.

## UKMA news - the newsletter of the UK Metric Association



From SAN DIEGO 6 News :  
The world's longest stress-ribbon bridge, which spans Lake Hodges from Rancho Bernardo to Escondido, opened on Friday 14 May 2009 for cyclists and pedestrians.

---

### Metric-only tape measures

Why is it so difficult to buy tape measures without those imperial markings, especially since most (bar the Homebase own brand) have the inch markings on the top, making metric usage awkward?

It has been suggested that contracts for the supply of measuring equipment to the NHS should mandate metric-only indications. This idea could be extended to the whole of the public sector.

Metric-only tape measures are available, however, on-line, as shown by this illustration taken from an internet retailer's website:



---

### Minister confirms business as usual

Published on MetricViews by derekp

In response to letter from the British Weights and Measures Association (BWMA), the Minister of State for Universities and Science, David Willetts MP, has confirmed that there is no change in Government policy on the units of measurement in use for trade.

A month after the last general election, BWMA's Director, Mr Gardner, wrote to Mr Willetts at the Department for Business, Innovation and Skills, requesting a meeting with a view to promoting the use of imperial measures for trade. Mr Willetts' reply to BWMA, dated 6 July 2010, is reproduced below. This letter has only recently come to the attention of MetricViews, and we regret that we were not able to share it with our readers sooner.

*"Dear Mr Gardner*

*Thank you for your letter of 6 June about units of measurement in use for trade and your suggestion that units of measurement legislation be repealed.*

*The Government recognises that the enforced switch to metric units of the 1990s has been unpopular with many consumers and traders who prefer imperial units. We are committed to fair trade and want to see a system of measurement that is fair to everyone in the UK. We also recognise that for much of UK business*

## UKMA news - the newsletter of the UK Metric Association

and science the use of metric units is essential to ensure that they can continue to compete with the best in the world.

The UK is already substantially metric and so turning back the clock to a single system of imperial units is no longer an option. To do so would create a major disadvantage for UK plc in its dealings with the rest of the world, put us in breach of our European obligations, and impose additional costs on business and the public sector.

There are no further deadlines to end the remaining uses of imperial units. Imperial units remain as primary indications for a limited number of uses. They are still preferred by some consumers and they are used by many traders and manufacturers alongside metric units in dual labelling. We are committed to retaining the right to use imperial units in dual labelling and have no plans to introduce any further metrication.

However, it remains important for fair trade that there is a single set of units in use in trade. Returning to the use of imperial units even for a narrow range of goods would, at this stage, unfairly disadvantage the vast majority of businesses who have already switched over to metric units. It would also reduce consumer protection as buyers would no longer be able to compare prices, undermining consumer confidence in the marketplace and leading to a potential market failure.

In any case, the scope of Directive 80/181/EC (as amended) is very wide and is not restricted to cross border trade. Hence the importance of the continued derogations for imperial units for milk, draught beer and cider and road traffic, even though these usages do not have any impact on cross border trade. As you know, that Directive was amended just last year and is unlikely to be subject to review before 2019.

You have suggested a meeting and I can confirm that my officials would be happy to meet you to discuss these issues further ...

Yours sincerely, David Willetts”

---

## A Frame of Reference for Celsius

Edited from US metric association's Metric Today:

Even knowing that 0 °C and 100 °C are the freezing and boiling points of water, if you grew up with Fahrenheit you might find it less than obvious how to interpret Celsius temperatures in a weather report or on your outdoor thermometer. USMA member Lou Bryan suggests a simple way to have a frame of reference based on the first digit; just memorize the sequence:

0—cold (0–9 degrees Celsius); 1—cool (10–19); 2—warm (20–29); 3—hot (30+).

Here's another way to remember:

Thirty is hot;  
Twenty is nice;  
Ten is cool;  
Zero is ice.

