DSA Newscast

Time, Distance, and Mass

The Dozenal Society of America is a voluntary, nonprofit educational corporation, organized for the conduct of research and education of the public in the use of dozenal (also called duodecimal or base twelve) in calculations, mathematics, weights and measures, and other branches of pure and applied science.

A REPEATED OBJECTION dozenalists receive when explaining that there is life beyond decimal is, "But the metric system is the system of the future, and it's all based on tens!" Here, as everywhere, dozenal provides a better way; multiple better ways, in fact.

It's worth noting, though, that referring to it as "*the* metric system" is chauvinistic in the extreme. It is *a* metric system, a particular metric system with a particular base and particular base units, along with particular policies for new units and multiples of those units, any of which might be well or badly chosen. Like the much-maligned customary-imperial system, it has virtues and vices—mostly the latter.

The customary-imperial system used primarily in the United States is completely nonsystematic, with unrelated units and nearly every factor between two and sixteen used at some point or another. On the other hand, the SI metric system is *mostly* consistently decimal, at least, but contains several significant irregularities (e.g., in the definition of the liter and of the mole), and also suffers from its own raison d'etre, being decimal.

This *Newscast*, in its next series of featured articles, will be describing one of the most prominent of the proposed dozenal metric systems, TGM. Standing for its three primary units—the Tim (time), the Grafut (length), and the Maz (mass)—TGM seeks to be a consistently coherent dozenal system of measure.

Before we begin exploring the details of TGM, however, we need to examine what exactly TGM is trying to be. To sum up, TGM is a *coherent* metric system, and it's a *consistent* metric system.

A metric system is *coherent* if the equations between quantities in its units are identical, including multiples, as the equations between the quantities themselves. For example, if the unit of speed—let's call it the "speedel"—is 37 distance units per time unit, then an extraneous factor needs to be introduced to produce the answer in speedels. If, rather, a speedel is one length unit per one time unit, then the equations of the quantities and the equations of the units are the same.

Coherency cannot practically extend throughout the entire metric system; some quantities are simply *non-commensurable*. In other words, they are necessarily out of scale from one another. The unit for electrical force, for example, is simply non-commensurable with the unit for mass; maintaining coherence would result in a unit of electrical force which is meaninglessly small. So scaling factors have to be introduced at certain places if we want to have practically useful units.

For reference, SI metric introduces non-coherent units in volume (for practical, though not scientific, measure; the liter is (approximately) a cubic *deci*meter, introducing a factor of ten); in chemical measure (the number of particles in *twelve* grams of Carbon-10, introducing a factor of twelve); and arguably in mass (the basic unit of mass is the *kilo*gram, which introduces a covert factor of 6ᘓ4, even if that's hidden by pretending that a gram is really a millikilogram). The "customary-imperial" coherent unit system only has three coherent

units (the poundal, pound-mass, and feet-per-second-squared), and the entirety of the rest of the system is incoherent, with a few exceptions (e.g., a pint is also a pound of water, if you're loose with your definition of water).

TGM introduces non-coherent units in the minimal number of places; that is, two:

in the transition to electrical units and the transition to light units. These latter are a *benefit* to the system.

Most usefully, however, TGM is *dozenal*, which gives it immeasurable benefits against customary, imperial, and SI that they simply cannot equal.

So keep an eye on these pages for an

overview of TGM, step-by-step; for the impatient, go check out the definitive text on the system, *TGM: A Coherent Dozenal Metrology*, available at http://www.dozenal.org, and can be purchased in print at the end of this *Newscast*.

Dozenal News

New Dozenal Article, by Naomi Wray

New member Naomi Wray (#704) wrote, for a school project, an excellent and well-designed article on dozens, which we are proud to republish on our website:

http://www.dozenal.org/drupal/content/wray_naomi_dozenal.html

Citing our publications several times (including one of our limericks from *Newscast* 3:10!), the article is well worth reading.

History of English Podcast Tackles Arithmetic

For those not familiar, the *History of English Podcast* is a phenomenal piece of scholarship, well worth listening by anyone interested in our language. Now, the podcast has tackled arithmetic and measurement:

http://www.historyofenglishpodcast.com/2018/

07/26/episode-114-the-craft-of-numbering/
http://www.historyofenglishpodcast.com/2018/08/21/episode-115-the-measure-of-a-person/

That is, it has tackled *gerimcræft*, "number-art," and includes a good deal of information regarding number bases and the roots of both our number system and our measurement system. Have a listen!

Dozenal in Excel

For those using Microsoft Office, this article provides some tips for getting Excel to display dozenal numbers for you:

http://excelribbon.tips.net/T009666_Numbers_in_Base_12.html

Both strategies are pretty basic; if you can enter formulas in Excel, you can follow them. Try them out!

The Power of Dozenal

Kousik, a chemistry grad student, many years ago posted a pretty complete explanation of dozenal:

http://kousik.wordpress.com/2007/03/31/12-or-10-base-whats-your-choice-part-1/

He does a great job of showing that dozenal isn't just *different* from decimal, but actually *easier*.

Ishango Bone and Dozenal

An interesting, albeit speculative, interpretation of the famous Ishango bone as showing knowledge of our favorite number base:

http://www.arxiv.org/pdf/1204.1019.pdf

The Ishango bone is extremely old, and represents the first known attempt of humanity to express quantity in written form. An interesting take on an enigmatic artefact.

Society Business

Volunteers Needed

As mentioned earlier, the DSA is an all-volunteer organization, and we pay no salaries. As a result, everything that we do comes out of the spare time of our members, time that they have to take away from their families, jobs, or other obligations.

We all love dozenals and enjoy assisting the Society in educating people about them; however, as the Society expands and does more, we find ourselves in need of more help.

Fortunately, the Society has a large membership with a very broad range of professions and experience. If you think you can spare any time or effort for the cause of

educating the world about dozenals, please let us know:

contact@dozenal.org

You can help as much or as little as you'd like. Thank you.

Our Next *Bulletin*

Though the delay since our last issue may make this hard to believe, work on the next *Duodecimal Bulletin* continues apace. Have an article? A letter containing a question (common or uncommon) you'd like answered? Send them in!

editor@dozenal.org

Remember that our *Bulletin* is designed to cover all aspects of mathematics, from the most basic to the most advanced, from a dozenal perspective, so no question or topic is too easy or too complex. Don't be shy!

Annual Meeting

Your Board has at last scheduled a date and location for our annual meeting for 1202!

We will be at the now-familiar location of the Atlanta AMA Conference Center in downtown Atlanta, GA, on 24 (28.) September 1202, from 10;00–15;00 in the afternoon. Once again, we are looking forward to some excellent presentations from the likes of Jay Schiffman (#2ᶘ8) and Michael deVlieger (#37ᶗ), so we hope many will be able to join us.

This will likely be our last meeting in Atlanta for some years, so if you're in the area, please do drop by! It's a great time for some education, conversation, and fellowship.

Poetical Diversion

Stopping by a Base on a Lovely Evening

Whose base this is, I think I know;
but to its everlasting woe
it cannot handle factor Three,
but claims to run the radix show.

My better base is fill'd with glee
to think of mediocrity
that's offer'd by the decimal base
which yet refuses still to flee

but uses all its stolen grace
to run the ruling radix race,
while claiming it does not need three
a wicked grin on decimal face!

But Twelve will always boast the Three,
and Ten will under Dozen be;
for Good will ever vict'ry see,
and Good will ever vict'ry see.

With thanks to Robert Frost and his brilliant Stopping by Woods on a Snowy Evening.

Donations

Members, please remember that while dues are no longer required for membership, we still rely on the generosity of members to keep the DSA going. Donations of any amount, large or small, are welcome and needed.

A donation of $16; ($18.) will procure Subscription membership, and entitles the payer to receive both a digital and a paper copy of the *Bulletin* if requested. Other members will receive only a digital copy. To invoke this privilege, please notify the Editor of the Bulletin, John Volan, at

editor@dozenal.org

As members know, we are a volunteer organization which pays no salaries. As such, every penny you donate goes toward furthering the DSA's goals.

It may be worth considering a monthly donation; say, $3, or $6, or whatever seems reasonable to you. This can be set up quite easily with Paypal, which is available at our web site.

Of course, if you prefer to donate by check, you may send them to our worthy Treasurer, Jay Schiffman, payable to the Dozenal Society of America, at:

Jay Schiffman
604-36 South Washington

Square, #815
Philadelphia, PA 19106-4115

Remember, too, that the DSA is a 501(c)(3) tax-exempt organization; as such, your contributions may be tax deductible under applicable law.

Thanks again for your assistance; it's your donations that keep the DSA going. We can't keep doing it without you.

For Sale

The DSA is pleased to offer the following for sale. These are all either at cost, or the proceeds go to the Society. The exception is *Basic Dozenal Arithmetic*, which is a private production.

Item	Price ($)
Dozenal Wall Calendar, 1202	9.05
Dozenal Planning Calendar, 1202	8.32
TGM: A Coherent Dozenal Metrology	8.00
Manual of the Dozenal System	3.46
A Dozenal Primer	4.50
Basic Dozenal Arithmetic	15.00

Prices are, unfortunately but by necessity, in decimal. If for some reason the links above do not work, simply go to: `http://www.lulu.com/shop/shop.ep`
and enter the appropriate terms. E.g., searching for "TGM dozenal" will turn up the TGM book.
We hope to offer other titles, and even some other items (such as dozenal clocks and the like), in the future.

Each one, teach one