

Ephemera


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Principles of Complex Systems, Vols. 1, 2, & 3D
CSYS/MATH 6701, 6713, & a pretend number, 2024–2025

Prof. Peter Sheridan Dodds

Computational Story Lab | Vermont Complex Systems Center
Santa Fe Institute | University of Vermont



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The PoCSverse
Ephemera for Season
15 of PoCS, Vol. 1
2 of 36

Various things

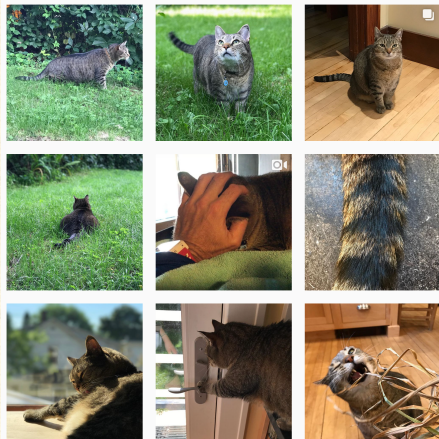
Randomness



References



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 On Instagram at [pratchett_the_cat](https://www.instagram.com/pratchett_the_cat) 

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Outline

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Another great moment in the English language:

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Wlonk [wiktionary] 



Alternative forms: wlanck, wlanck, wlonc, wlong



Etymology: From Old English wlancc, from Proto-West Germanic *wlancc.



Pronunciation: IPA(key): /wlonk/, /wlanck/



Adjective: wlonk (plural and weak singular wlonke)

1. noble, highborn
2. fair, beautiful, gorgeous
3. fine, excellent, splendid
4. proud, boastful



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Suggested (ab)usage:

“Have a wlonkderful day!”



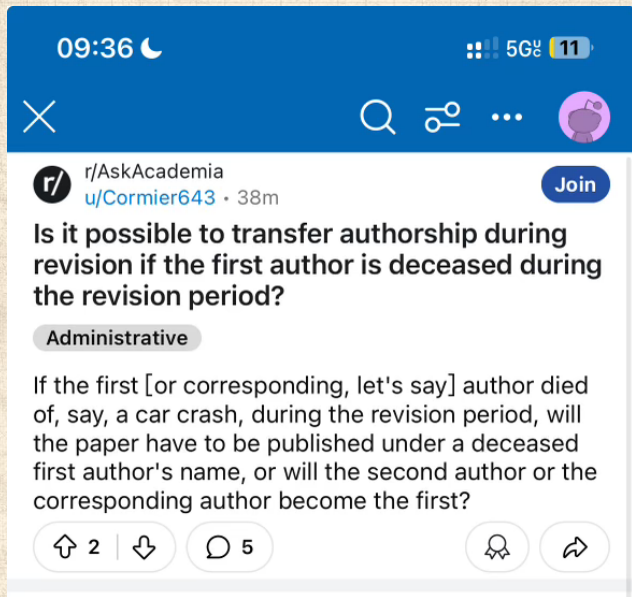
Planning something?




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09:36   5G%  11






    

 r/AskAcademia
u/Cormier643 · 38m 

Is it possible to transfer authorship during revision if the first author is deceased during the revision period?

Administrative

If the first [or corresponding, let's say] author died of, say, a car crash, during the revision period, will the paper have to be published under a deceased first author's name, or will the second author or the corresponding author become the first?

 2 |   5  



Another great moment in loglines :

Which story is this?:

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Another great moment in loglines :

Which story is this?:

Transported to a surreal landscape,

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Which story is this?:

Transported to a surreal landscape,
a young girl



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Which story is this?:

Transported to a surreal landscape,

a young girl

kills the first person she meets



Another great moment in loglines :

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Which story is this?:

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and then



Another great moment in loglines :

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Which story is this?:

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teams up with three strangers



Another great moment in loglines :

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Which story is this?:

Transported to a surreal landscape,

a young girl

kills the first person she meets

and then

teams up with three strangers

to kill again.



The CIA's Simple Sabotage Field Manual ¹ (1944):

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General Interference with Organizations and Production

(1) Insist on doing everything through "channels." Never permit short-cuts to be taken in order to expedite decisions.

(2) Make "speeches." **Talk as frequently as possible and at great length.** Illustrate your "points" by long anecdotes and accounts of personal experiences. Never hesitate to make a few appropriate "patriotic" comments.

(3) When possible, refer all matters to committees, for "further study and consideration." Attempt to make the committees as large as possible — never less than five.

(4) **Bring up irrelevant issues as frequently as possible.**

(5) **Haggle over precise wordings** of communications, minutes, resolutions.


(6) **Refer back to matters decided upon** at the last meeting and attempt to re-open the question of the advisability of that decision.

(7) Advocate "caution." Be "reasonable" and urge your fellow-conferrees to be "reasonable" and avoid haste which might result in embarrassments or difficulties later on.

(8) **Be worried about the propriety of any decision** — raise the question of whether such action as is contemplated lies within the jurisdiction of the group or whether it might conflict with the policy of some higher echelon.

CORPORATE
REBELS



¹Behavior found occurring organically everywhere  in groups of all kinds.

The nonlinearity of paper reading:



“Perceptions of scientific research literature and strategies for reading papers depend on academic career stage” ↗

Hubbard and Dunbar,
PLOS ONE, 12, e0189753, 2017. [1]

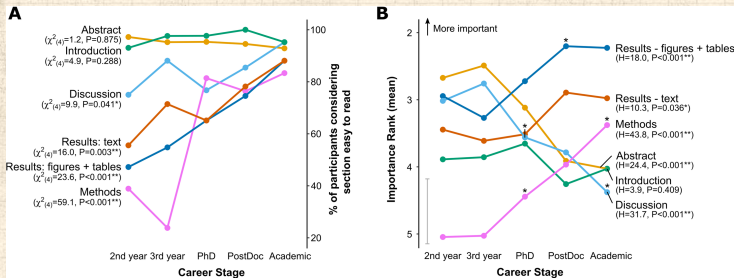


Fig 2. Different sections of scientific papers are considered easy to read and important at different stages of academic careers. A: The proportion of participants considering a section easy to read (presented as ‘Somewhat easy’, ‘easy’ ‘very easy’ combined) as a function of career stage. Results of Chi-square tests are indicated on the left hand side. B: The mean importance rank of sections as a function of career stage. Error bars are omitted from individual points for clarity, with the sole error bar in grey representing the largest 95% confidence interval for any of the data points. Asterisks above data points indicate significant differences in response compared with the previous career stage as determined by Mann-Whitney post-hoc tests.

<https://doi.org/10.1371/journal.pone.0189753.g002>



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‘Buckle said, in his dogmatic way:

Various things

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From  a 1901 autobiography by Charles Stewart ^[2]:


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Various things

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Distilled and misattributed as:

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small minds discuss people.”

S. W. Dodds:

“And galaxy minds discuss food.”



From YojimboJango, Tuesday January 29, 2013 @09:12AM
(#42725321), Slashdot 


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-  Not even God himself coming down from on high and face to face telling every member of the human race not to touch it is going to keep it from being abused.
-  That is the true nature of humanity and by inclusion programmers.”



YojimboJango's taxonomy (1/2):


Various things

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References




YojimboJango's taxonomy (1/2):

 **perl:** An unorganized, but sprawling garden full of almost every imaginable fruit. Regex is a shiny sinful apple at eye level on every single tree.





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-  **ruby:** A newer garden. Heaps of fertilizer make everything grow incredibly fast, but the trees are getting tangled and there's a problem with weeds.
-  **C#:** Someone spent a lot of money crafting this garden correctly. They also planted trees that emit a hypnotic pollen that will murder you if you try to leave the garden.



Various things


Randomness

References

YojimboJango's taxonomy (2/2):




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 **java:** A beautiful garden but only when viewed from space. Every tree has exactly 1 fruit, and getting anywhere takes forever.





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-  **C:** A plot of land and a barn full of seeds. Get to work.
-  **javascript:** There's only 1 tree and it grows upside down, but you can find it resurfacing in all the other gardens. It's also sentient, growing rapidly, and trying to murder you.



Once was DodecaPoCS

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Twelve  is a hero:

Various things

Randomness





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Once was DodecaPoCS

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Twelve  is a hero:

 12 is a superior highly composite number , highly
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-  12 is one of only two known sublime numbers , for which both the number and sum of their positive factors are perfect numbers  (6 and 28).



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-  And ‘dozen’. ‘Dozen’, ‘dozen’, ‘dozen’.
-  Related: The Rampaging On-Line Encyclopedia of Integer Sequences, <https://oeis.org> .



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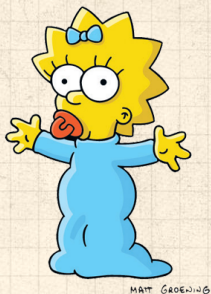
Universal numbers

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MATT GROENING

From here .



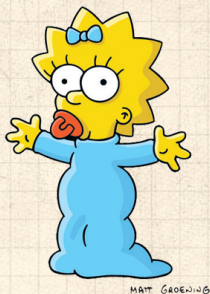
Universal numbers

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Accidents of evolution¹ give us $5 + 5 = 10$ fingers and hence base 10.

From [here](#) .



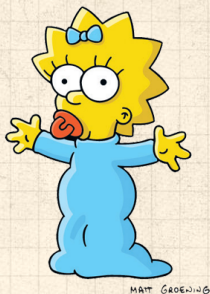
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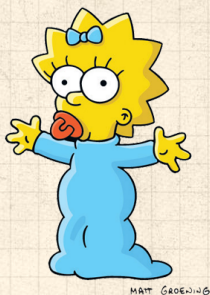
We could be happy with base 6, 8, 12,

...


From [here](#) .




Universal numbers





From [here](#) ↗.


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...

 We like these:

 60 seconds in a minute

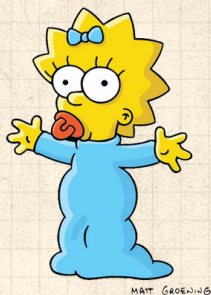
 60 minutes in an hour.

 $2 \times 12 = 24$ hours in a day.

 360 degrees in a circle.



Universal numbers



From [here](#).



Accidents of evolution¹ give us $5 + 5 = 10$ fingers and hence base 10.



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...



We like these:



60 seconds in a minute



60 minutes in an hour.




$2 \times 12 = 24$ hours in a day.



360 degrees in a circle.



¹Maybe 5 fingers are not an accident



We've liked these kinds of numbers for a long time: 

	1		11		21		31		41		51
	2		12		22		32		42		52
	3		13		23		33		43		53
	4		14		24		34		44		54
	5		15		25		35		45		55
	6		16		26		36		46		56
	7		17		27		37		47		57
	8		18		28		38		48		58
	9		19		29		39		49		59
	10		20		30		40		50		



2000 BC: Babylonian base 60/Sexagesimal system.



Other bases  (or radices): 2, 10, 12 (duodecimal/dozenal ) , 6 (senary), 8, 16, 20 (vigesimal), 60.

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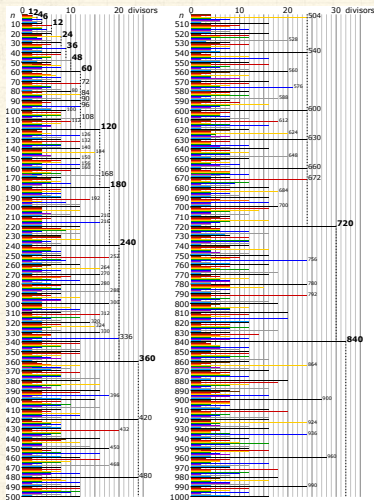


Highly composite numbers:

Various things

Randomness

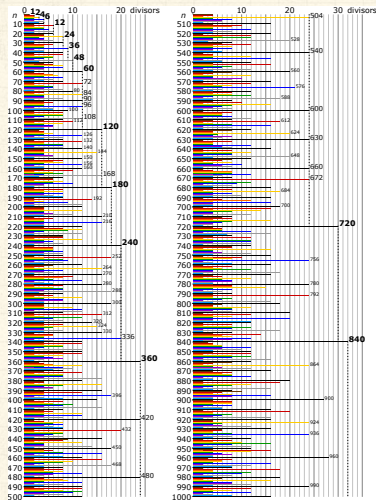
References



HCN = natural
number with more
divisors than any
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Highly composite numbers:



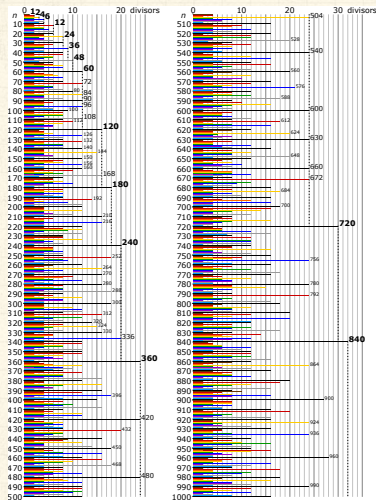
HCN = natural number with more divisors than any smaller natural number.



2, 4, 6, 12, 24, 36, 48, 60, 120, 180, 240, 360, 720, 840, 1260, 1680, 2520, 5040 (Plato's optimal city population ) , ...




Highly composite numbers:




HCN = natural number with more divisors than any smaller natural number.



2, 4, 6, 12, 24, 36, 48, 60, 120, 180, 240, 360, 720, 840, 1260, 1680, 2520, 5040 (Plato's optimal city population ) , ...



OEIS sequence A002182 

Various things

Randomness

References



Superior highly composite numbers:

# prime factors	SHCN n	prime factorization	prime exponents	# divisors d(n)	primorial factorization
1	2	2	1	2	2
2	6	2 · 3	1,1	2 ²	4
3	12	2 ² · 3	2,1	3×2	6
4	60	2 ² · 3 · 5	2,1,1	3×2 ²	12
5	120	2 ³ · 3 · 5	3,1,1	4×2 ²	16
6	360	2 ³ · 3 ² · 5	3,2,1	4×3×2	24
7	2520	2 ³ · 3 ² · 5 · 7	3,2,1,1	4×3×2 ²	48
8	5040	2 ⁴ · 3 ² · 5 · 7	4,2,1,1	5×3×2 ²	60
9	55440	2 ⁴ · 3 ² · 5 · 7 · 11	4,2,1,1,1	5×3×2 ³	120
10	720720	2 ⁴ · 3 ² · 5 · 7 · 11 · 13	4,2,1,1,1,1	5×3×2 ⁴	240




SHCN = natural number n whose number of divisors exceeds that of any other number when scaled relative to itself in a sneaky way:

$$\frac{d(n)}{n^\epsilon} \geq \frac{d(j)}{j^\epsilon} \text{ and } \frac{d(n)}{n^\epsilon} > \frac{d(k)}{k^\epsilon}$$

for $j < n < k$ and some $\epsilon > 0$.




There's more: Superabundant numbers


 n is superabundant if:

$$\frac{\sigma_1(n)}{n} > \frac{\sigma_1(j)}{j}$$


for $j < n$ and where $\sigma_x(n) = \sum_{d|n} d^x$ is the divisor function.

 449 numbers are both superabundant and highly composite.

Yet more: Colossally abundant numbers:

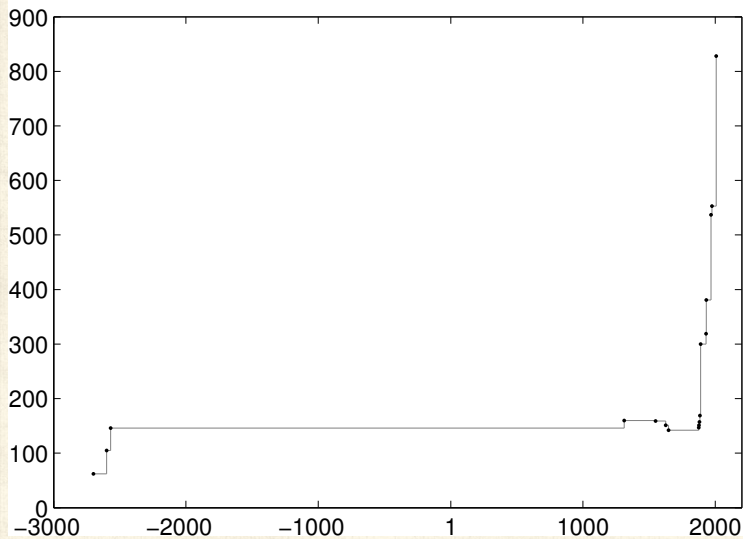
 n is colossally abundant if for all j and some $\epsilon > 0$:

$$\frac{\sigma_1(n)}{n^{1+\epsilon}} \geq \frac{\sigma_1(j)}{j^{1+\epsilon}}$$

 Infinitely many but only 22 less than 10^{18} .



What's this?




Various things

Randomness

References



The walkie-talkie dialect:³

 Stamps:



³From the inciting tweet of excellence:

<https://twitter.com/Flaminhaystack/status/977899605349339137>

The walkie-talkie dialect:³




Stamps: Lickie Stickie




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The walkie-talkie dialect:³

-  Stamps: Lickie Stickie
-  Defibrillators: Heartie Startie
-  Bumble bees:



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The walkie-talkie dialect:³



Stamps: Lickie Stickie



Defibrillators: Heartie Startie







Bumble bees: Fuzzie Buzzie



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-  Stamps: Lickie Stickie
-  Defibrillators: Heartie Startie
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-  Pregnancy test:



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-  Pregnancy test: Maybe Baby



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The walkie-talkie dialect:³






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-  Defibrillators: Heartie Startie
-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork:



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-  Stamps: Lickie Stickie
-  Defibrillators: Heartie Startie
-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie



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-  Stamps: Lickie Stickie
-  Defibrillators: Heartie Startie
-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie
-  Socks:



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-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie
-  Socks: Feetie Heatie



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-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie
-  Socks: Feetie Heatie
-  Hippo:



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-  Defibrillators: Heartie Startie
-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie
-  Socks: Feetie Heatie
-  Hippo: Floatie Bloatie



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-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie
-  Socks: Feetie Heatie
-  Hippo: Floatie Bloatie
-  Nightmare:



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<https://twitter.com/Flaminhaystack/status/977899605349339137>

The walkie-talkie dialect:³

-  Stamps: Lickie Stickie
-  Defibrillators: Heartie Startie
-  Bumble bees: Fuzzie Buzzie
-  Pregnancy test: Maybe Baby
-  Fork: Stabbie Grabbie
-  Socks: Feetie Heatie
-  Hippo: Floatie Bloatie
-  Nightmare: Screemie Dreamie



³From the inciting tweet of excellence:

<https://twitter.com/Flaminhaystack/status/977899605349339137>

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More:



Ambulance:



Various things

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More:



Ambulance: Sendie Mendie





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More:

 Ambulance: Sendie Mendie

 Miniature sausage dog:



More:



Ambulance: Sendie Mendie



Miniature sausage dog: Teenie Weenie



More:



Ambulance: Sendie Mendie



Miniature sausage dog: Teenie Weenie



Shot glass:



Various things

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More:



Ambulance: Sendie Mendie







Miniature sausage dog: Teenie Weenie



Shot glass: Dinkie Drinkie







More:

-  Ambulance: Sendie Mendie
-  Miniature sausage dog: Teenie Weenie
-  Shot glass: Dinkie Drinkie
-  Lifejacket:








More:

-  Ambulance: Sendie Mendie
-  Miniature sausage dog: Teenie Weenie
-  Shot glass: Dinkie Drinkie
-  Lifejacket: Boatie Coatie








More:

-  Ambulance: Sendie Mendie
-  Miniature sausage dog: Teenie Weenie
-  Shot glass: Dinkie Drinkie
-  Lifejacket: Boatie Coatie
-  Low fat desserts:









More:

-  Ambulance: Sendie Mendie
-  Miniature sausage dog: Teenie Weenie
-  Shot glass: Dinkie Drinkie
-  Lifejacket: Boatie Coatie
-  Low fat desserts: Fakey Cakey









More:

-  Ambulance: Sendie Mendie
-  Miniature sausage dog: Teenie Weenie
-  Shot glass: Dinkie Drinkie
-  Lifejacket: Boatie Coatie
-  Low fat desserts: Fakey Cakey
-  Cat:











More:

-  Ambulance: Sendie Mendie
-  Miniature sausage dog: Teenie Weenie
-  Shot glass: Dinkie Drinkie
-  Lifejacket: Boatie Coatie
-  Low fat desserts: Fakey Cakey
-  Cat: Furrie Purrie




A small task—Order the following adjectives to describe a knife (alphabetically ordered):

-  little
-  lovely
-  old
-  orange
-  rectangular
-  steel
-  whittling
-  Victorian

As in “something-something-...-something knife.”





How does these feel?

 “orange lovely knife”,




How does these feel?


 “orange lovely knife”,


 “rectangular old knife”,



How does these feel?


 “orange lovely knife”,


 “rectangular old knife”,


 “Victorian little knife”,




How does these feel?

 “orange lovely knife”,






 “rectangular old knife”,

 “Victorian little knife”,

 “whittling little knife”.



How does these feel?

-  “orange lovely knife”,
-  “rectangular old knife”,
-  “Victorian little knife”,
-  “whittling little knife”.
-  “A whittling, steel, Victorian, orange, rectangular, old, little, lovely, knife.”



Adjective order in English: ⁴

“Adjectives in English absolutely have to be in this order:
opinion - size - age - shape - colour - origin - material - purpose.



⁴<http://www.bbc.com/culture/story/20160908-the-language-rules-we-know-but-dont-know-we-know>

Adjective order in English: ⁴

“Adjectives in English absolutely have to be in this order:
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So you can have a lovely, little, old, rectangular, green,
Victorian, steel, whittling knife.



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But if you mess with that word order in the slightest you’ll
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Adjective order in English: ⁴

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So you can have a lovely, little, old, rectangular, green,
Victorian, steel, whittling knife.

But if you mess with that word order in the slightest you’ll
sound like a maniac.

It’s an odd thing that every English speaker uses that list, but
almost none of us could write it out.”




⁴<http://www.bbc.com/culture/story/20160908-the-language-rules-we-know-but-dont-know-we-know>

Various things

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References


Vowel space fun times (ablaut reduplication):

 Tick-tock not tock-tick.



Vowel space fun times (ablaut reduplication):

 Tick-tock not tock-tick.

 Hip-hop not hop-hip.



Vowel space fun times (ablaut reduplication):



Tick-tock not tock-tick.



Hip-hop not hop-hip.



Bing-bong not bong-bing.



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Ping-pong not pong-ping.





Vowel space fun times (ablaut reduplication):

 Tick-tock not tock-tick.

 Hip-hop not hop-hip.







 Bing-bong not bong-bing.

 Ping-pong not pong-ping.

 Flip-flop not flop-flip.










Vowel space fun times (ablaut reduplication):

-  Tick-tock not tock-tick.
-  Hip-hop not hop-hip.
-  Bing-bong not bong-bing.
-  Ping-pong not pong-ping.
-  Flip-flop not flop-flip.
-  Clip-clop not clop-clip (Onomatopoeia)











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-  Dilly-dally not dally-dilly.












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-  Pitapat not patapit.














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-  Zig-zag not zag-zig.



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-  Dilly-dally not dally-dilly.
-  Pitter-patter not patter-pitter.
-  Pitapat not patapit.
-  Zig-zag not zag-zig.
-  Om not Mo (A-U-M, back to front of the mouth).



The exception to the rule proves the rule:⁵

Vowel sequencing overrules adjective ordering:

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⁴https://en.wikipedia.org/wiki/Coodabeen_Champions 

The exception to the rule proves the rule:⁵

Vowel sequencing overrules adjective ordering:



 Order: opinion - size - age - shape - color - origin - material - purpose.



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-  Little Red Riding Hood (okay: size - color - purpose).



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-  Order: opinion - size - age - shape - color - origin - material - purpose.
-  Little Red Riding Hood (okay: size - color - purpose).
-  Big Bad Wolf (vowel ordering wins: size - opinion).



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-  Order: opinion - size - age - shape - color - origin - material - purpose.
-  Little Red Riding Hood (okay: size - color - purpose).
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-  Lon-lat is horizontal-vertical (x - y) but doesn't sound good.



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-  Lat-lon sounds good but is vertical-horizontal (y - x).



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-  (Separately: $x-y$ is sensibly alphabetic, but we have made an abstraction concrete.)




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-  Lon-lat is horizontal-vertical ($x-y$) but doesn't sound good.
-  Lat-lon sounds good but is vertical-horizontal ($y-x$). Yikes.
-  (Separately: $x-y$ is sensibly alphabetic, but we have made an abstraction concrete.)
-  Trouble-at-mill: Twitter has in the past had lon-lat and lat-lon in a single tweet's json.



⁴https://en.wikipedia.org/wiki/Coodabeen_Champions 

Europe:

 Many errors called out in comments. Why hasn't this been done well?



John Conway's Doomsday rule for determining a date's day of the week:

Memorable Doomsdays:




Month	Memorable date	Month/Day	Mnemonic ^[6]
January	January 3 (common years), January 4 (leap years)	1/3 or 1/4	the 3rd 3 years in 4 and the 4th in the 4 th
February	February 28 (common years), February 29 (leap years)	2/28 or 2/29	last day of February
March	" March 0 "	3/0	last day of February
April	April 4	4/4	4/4 , 6/6, 8/8, 10/10, 12/12
May	May 9	5/9	9-to-5 at 7-11
June	June 6	6/6	4/4, 6/6 , 8/8, 10/10, 12/12
July	July 11	7/11	9-to-5 at 7-11
August	August 8	8/8	4/4, 6/6, 8/8 , 10/10, 12/12
September	September 5	9/5	9-to-5 at 7-11
October	October 10	10/10	4/4, 6/6, 8/8, 10/10 , 12/12
November	November 7	11/7	9-to-5 at 7-11
December	December 12	12/12	4/4, 6/6, 8/8, 10/10, 12/12



Pi day (March 14), July 4, Halloween, and Boxing Day are always Doomsdays.



Outline:

-  Determine “anchor day” for a given century, then find Doomsday for a given year in that century.
-  Remember special Doomsday dates and work from there.
-  Naturally: Load this year’s Doomsday into brain.

Century’s anchor day (Gregorian, Sunday \equiv 0):

$$5 \times \left(\left\lfloor \frac{YYYY}{100} \right\rfloor \bmod 4 \right) \bmod 7 + \text{Tuesday}$$

Offset:

$$\left(365YY + \left\lfloor \frac{YY}{4} \right\rfloor \right) \bmod 7 = \left(YY + \left\lfloor \frac{YY}{4} \right\rfloor \right) \bmod 7$$



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Doomsdays for the Gregorian calendar

Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
1898	1899	1900	1901	1902	1903	→	1904	1905	1906	1907	→	1908	1909
1910	1911	→	1912	1913	1914	1915	→	1916	1917	1918	1919	→	1920
1921	1922	1923	→	1924	1925	1926	1927	→	1928	1929	1930	1931	→
1932	1933	1934	1935	→	1936	1937	1938	1939	→	1940	1941	1942	1943
→	1944	1945	1946	1947	→	1948	1949	1950	1951	→	1952	1953	1954
1955	→	1956	1957	1958	1959	→	1960	1961	1962	1963	→	1964	1965
1966	1967	→	1968	1969	1970	1971	→	1972	1973	1974	1975	→	1976
1977	1978	1979	→	1980	1981	1982	1983	→	1984	1985	1986	1987	→
1988	1989	1990	1991	→	1992	1993	1994	1995	→	1996	1997	1998	1999
→	2000	2001	2002	2003	→	2004	2005	2006	2007	→	2008	2009	2010
2011	→	2012	2013	2014	2015	→	2016	2017	2018	2019	→	2020	2021
2022	2023	→	2024	2025	2026	2027	→	2028	2029	2030	2031	→	2032
2033	2034	2035	→	2036	2037	2038	2039	→	2040	2041	2042	2043	→
2044	2045	2046	2047	→	2048	2049	2050	2051	→	2052	2053	2054	2055
→	2056	2057	2058	2059	→	2060	2061	2062	2063	→	2064	2065	2066
2067	→	2068	2069	2070	2071	→	2072	2073	2074	2075	→	2076	2077
2078	2079	→	2080	2081	2082	2083	→	2084	2085	2086	2087	→	2088
2089	2090	2091	→	2092	2093	2094	2095	→	2096	2097	2098	2099	2100



Works for Gregorian (1582–, haphazardly) and the increasingly inaccurate Julian calendars (400 and 28 years cycles).



Apparently inspired by Lewis Carroll's work on a perpetual calendar.



The bissextile year

“The Julian calendar, which was developed in 46 BC by Julius Caesar, and became effective in 45 BC, distributed an extra ten days among the months of the Roman Republican calendar. Caesar also replaced the intercalary month by a single intercalary day, located where the intercalary month used to be. **To create the intercalary day, the existing ante diem sextum Kalendas Martias (February 24) was doubled, producing ante diem bis sextum Kalendas Martias. Hence, the year containing the doubled day was a bissextile (bis sextum, ”twice sixth”) year.** For legal purposes, the two days of the bis sextum were considered to be a single day, with the second half being intercalated; but in common practice by 238, when Censorinus wrote, the intercalary day was followed by the last five days of February, a. d. VI, V, IV, III and pridie Kal. Mart. (the days numbered 24, 25, 26, 27, and 28 from the beginning of February in a common year), so that the intercalated day was the first half of the doubled day. Thus the intercalated day was effectively inserted between the 23rd and 24th days of February.”



Homo nonprobabilisticus, continued:

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Homo nonprobabilisticus, continued:



Important detour: The final digits of primes are not entirely random  (how did we not know this?).

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Homo nonprobabilisticus, continued:

 Important detour: The final digits of primes are not entirely random  (how did we not know this?).

 Start flipping a coin ...





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Homo nonprobabilisticus, continued:

-  Important detour: The final digits of primes are not entirely random  (how did we not know this?).
-  Start flipping a coin ...
-  Two tosses: What are the probabilities of flipping (1) HH and (2) HT ?









Homo nonprobabilisticus, continued:

-  Important detour: The final digits of primes are not entirely random  (how did we not know this?).
-  Start flipping a coin ...
-  Two tosses: What are the probabilities of flipping (1) HH and (2) HT ?
-  Flip a coin $n \geq 2$ times: What are the probabilities that the last two tosses are (1) HH or (2) HT ?










Homo nonprobabilisticus, continued:

-  Important detour: The final digits of primes are not entirely random  (how did we not know this?).
-  Start flipping a coin ...
-  Two tosses: What are the probabilities of flipping (1) HH and (2) HT ?
-  Flip a coin $n \geq 2$ times: What are the probabilities that the last two tosses are (1) HH or (2) HT ?
-  Estimate: On average, how many flips does it take to first see the sequence HT ?











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-  Important detour: The final digits of primes are not entirely random  (how did we not know this?).
-  Start flipping a coin ...
-  Two tosses: What are the probabilities of flipping (1) HH and (2) HT ?
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-  Estimate: On average, how many flips does it take to first see the sequence HT ?
-  Estimate: On average, how many flips does it take to first see the sequence HH ?












Homo nonprobabilisticus, continued:

-  Important detour: The final digits of primes are not entirely random  (how did we not know this?).
-  Start flipping a coin ...
-  Two tosses: What are the probabilities of flipping (1) HH and (2) HT ?
-  Flip a coin $n \geq 2$ times: What are the probabilities that the last two tosses are (1) HH or (2) HT ?
-  Estimate: On average, how many flips does it take to first see the sequence HT ?
-  Estimate: On average, how many flips does it take to first see the sequence HH ?
-  What's the probability of first flipping a HT sequence on the $n - 1$ th and n th flips?



Homo nonprobabilisticus, continued:

-  Important detour: The final digits of primes are not entirely random  (how did we not know this?).
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-  Estimate: On average, how many flips does it take to first see the sequence HH ?
-  What's the probability of first flipping a HT sequence on the $n - 1$ th and n th flips?
-  What's the probability of first flipping two heads in a row (HH) on the $(n - 1)$ th and n th flips?



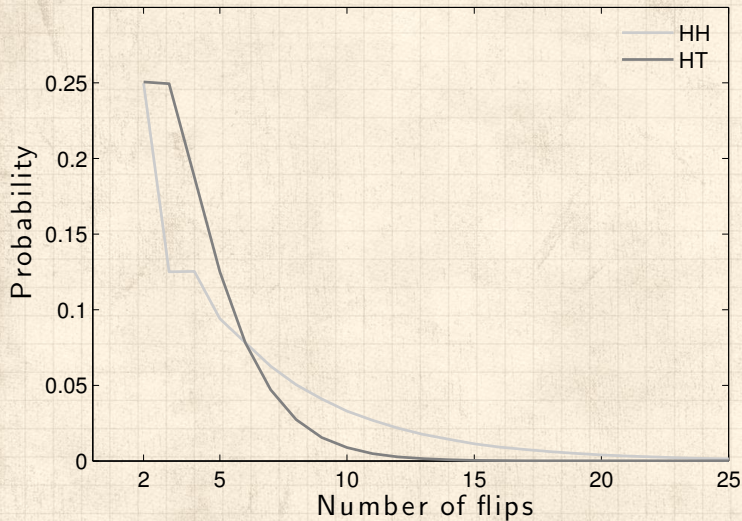
Homo nonprobabilisticus, continued:

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Various things

Randomness

References





Average number of flips: 4 and 6.



Various things


Randomness

References

A most-and-least random supercut  



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