How to set a chalkdust crossnumber

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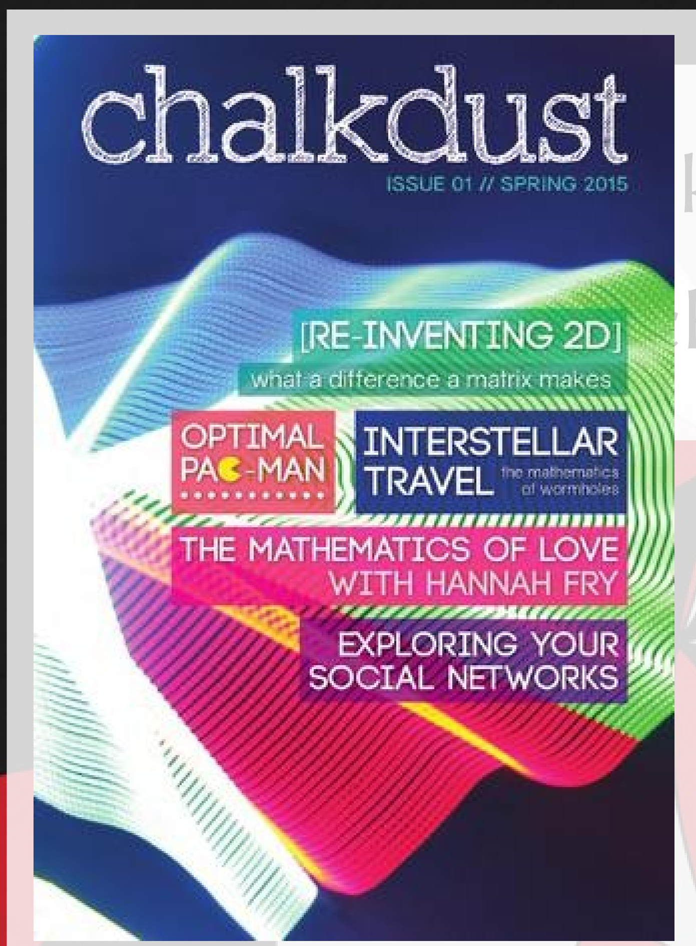

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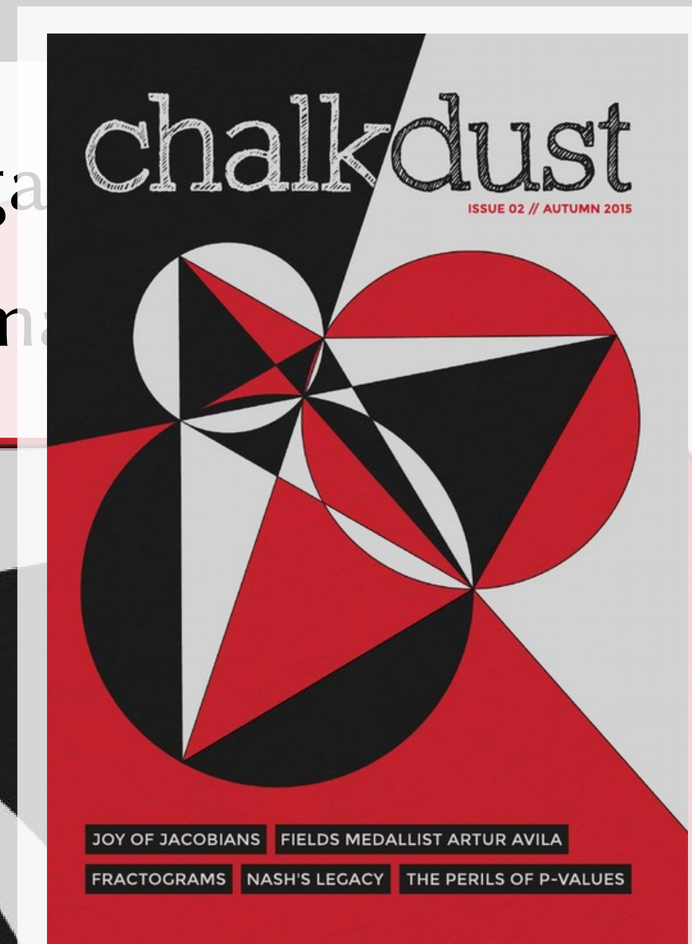

Prize Crossnumber

#2

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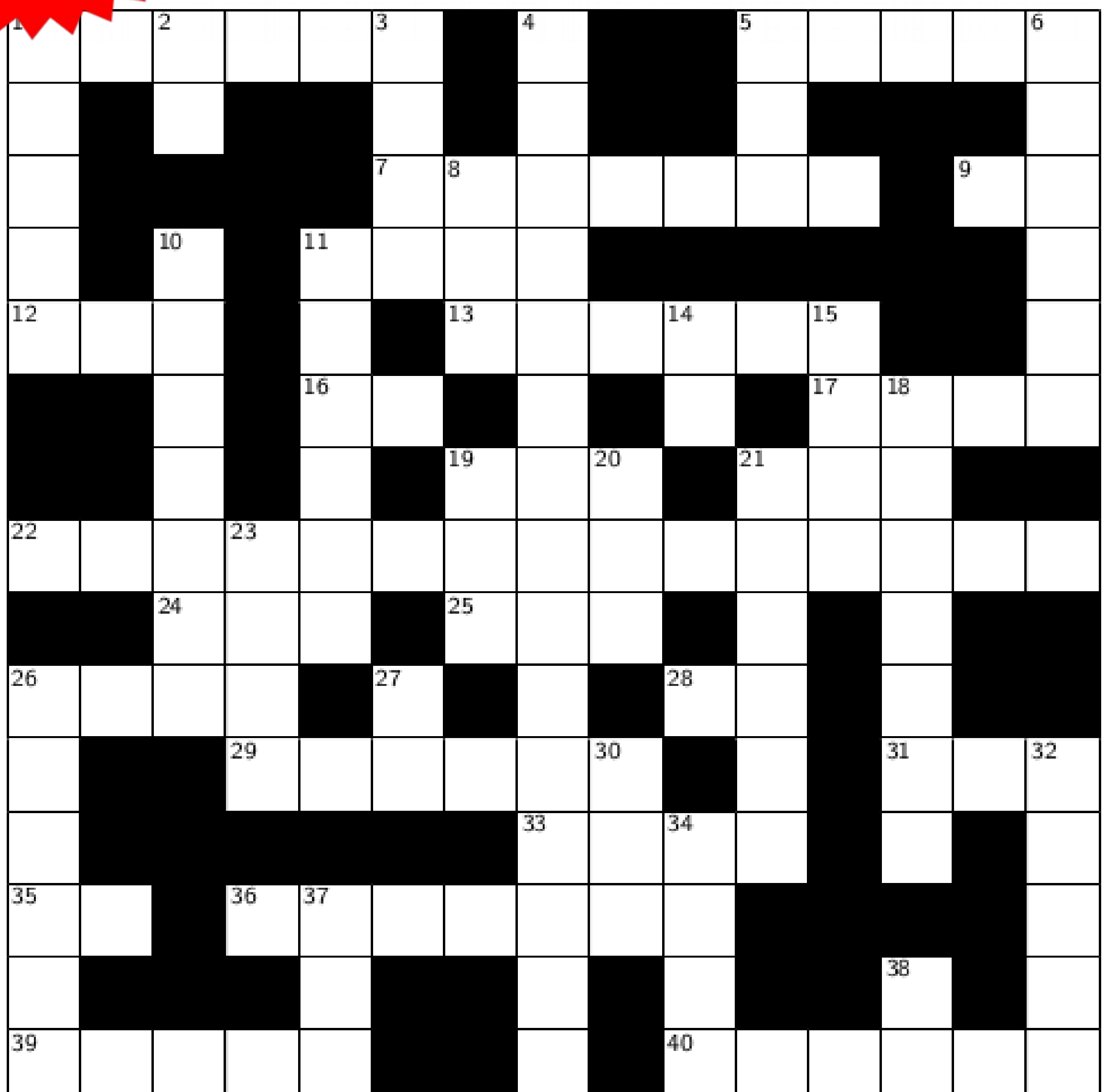

Rules

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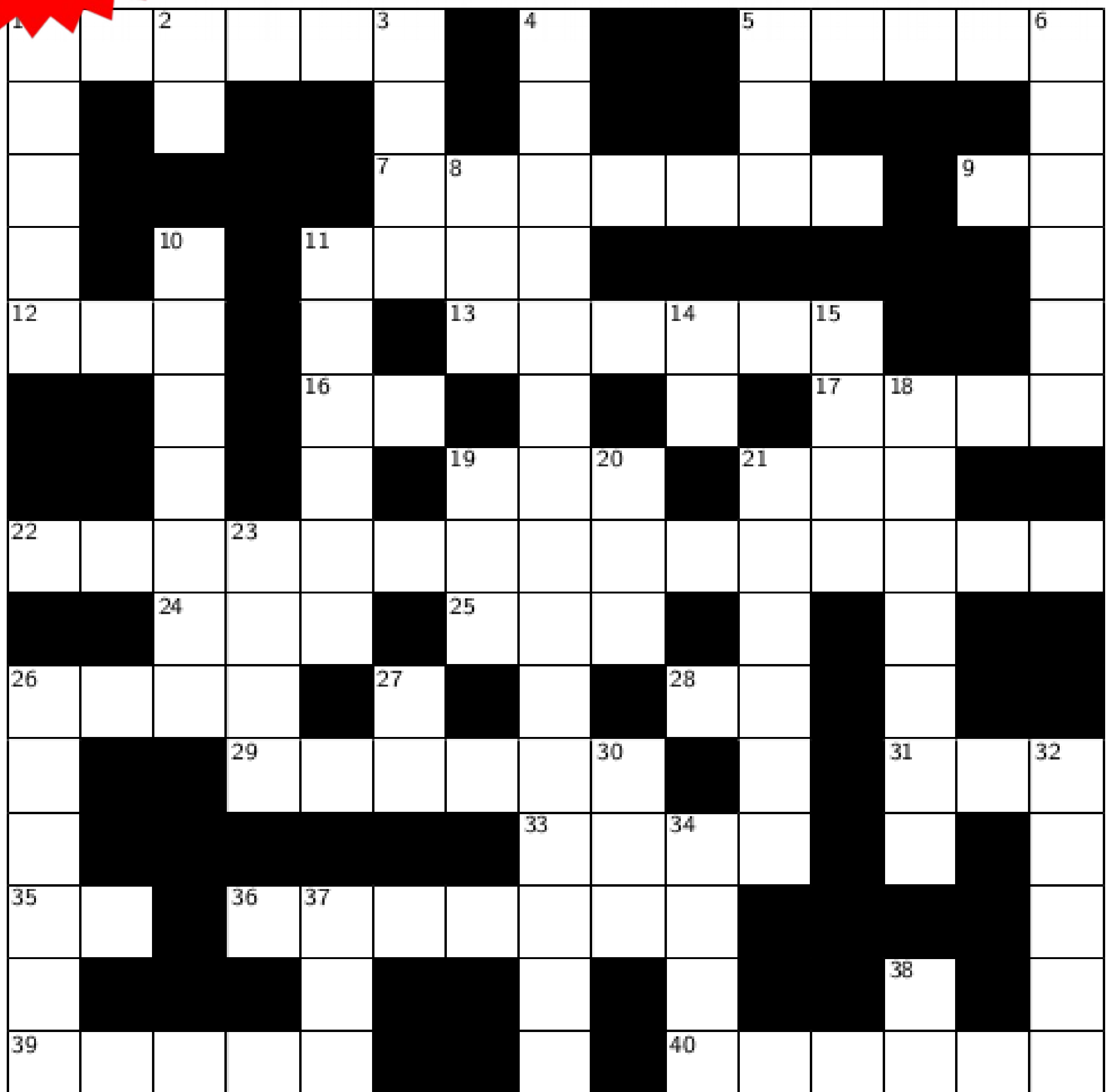

13A. 30D multiplied by 12A. (6)

Rules

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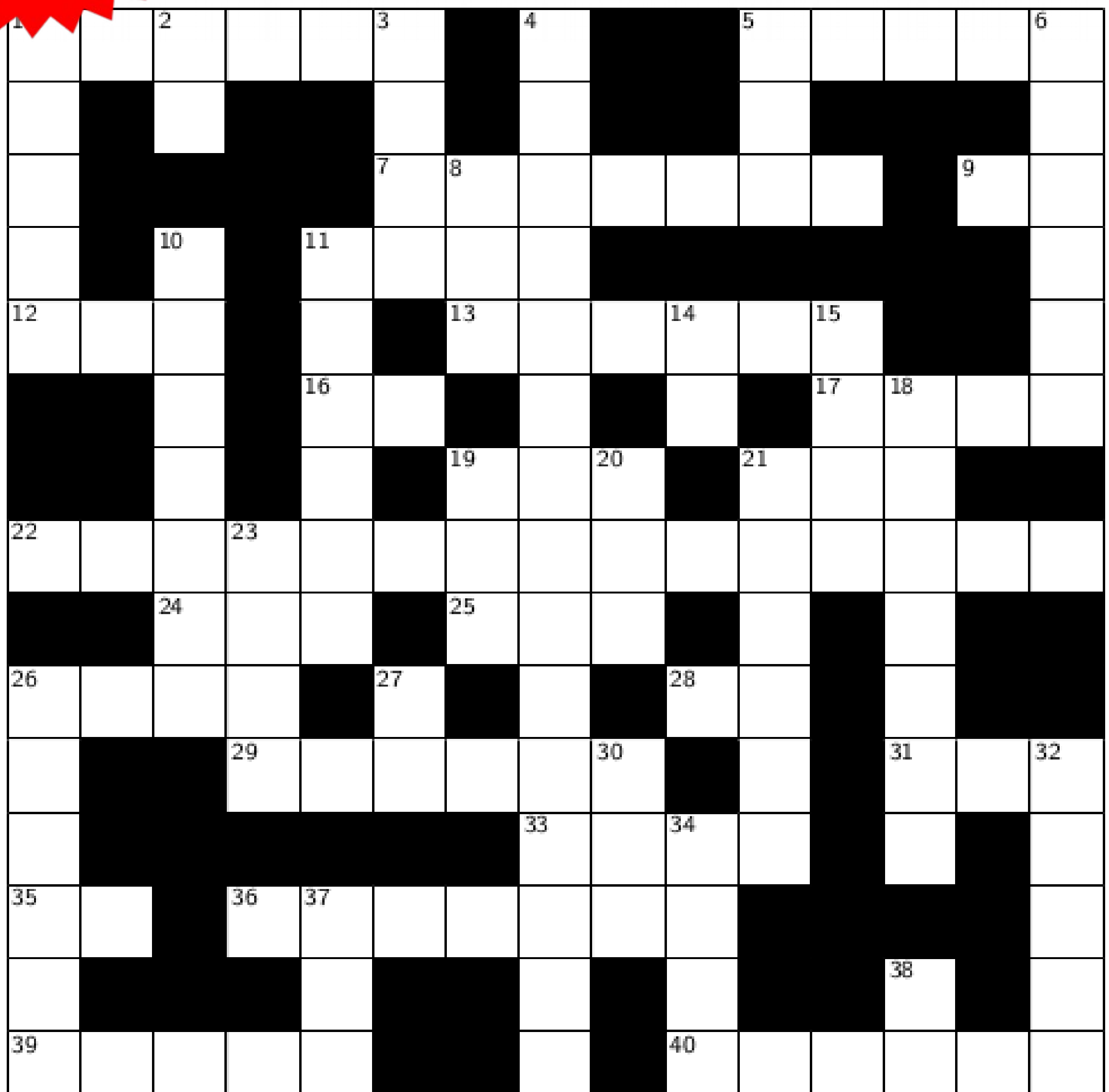

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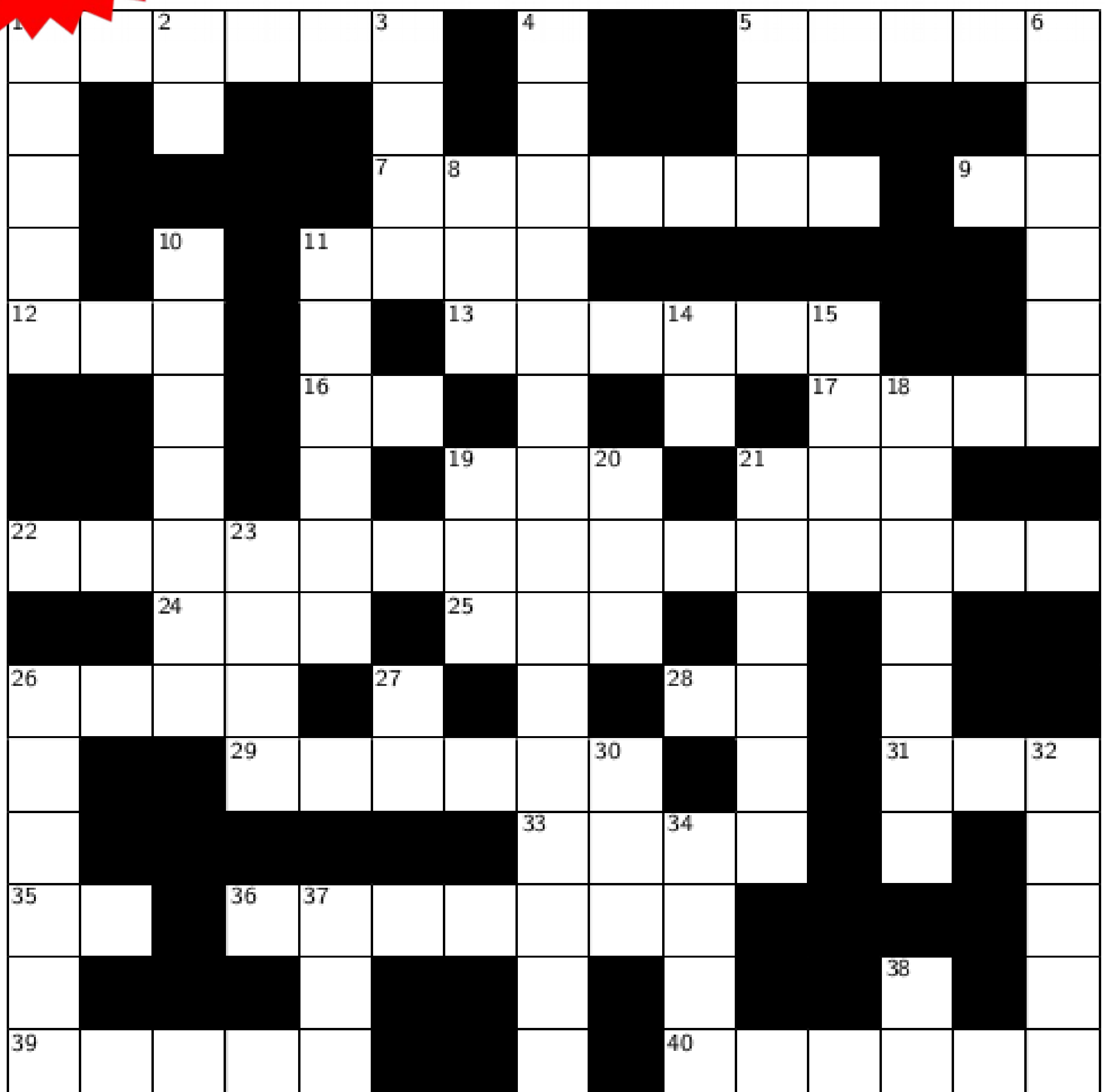

13A. 30D multiplied by 12A. (6)

12A. A prime number. (3)

30D. Not a palindrome. (3)

Rules

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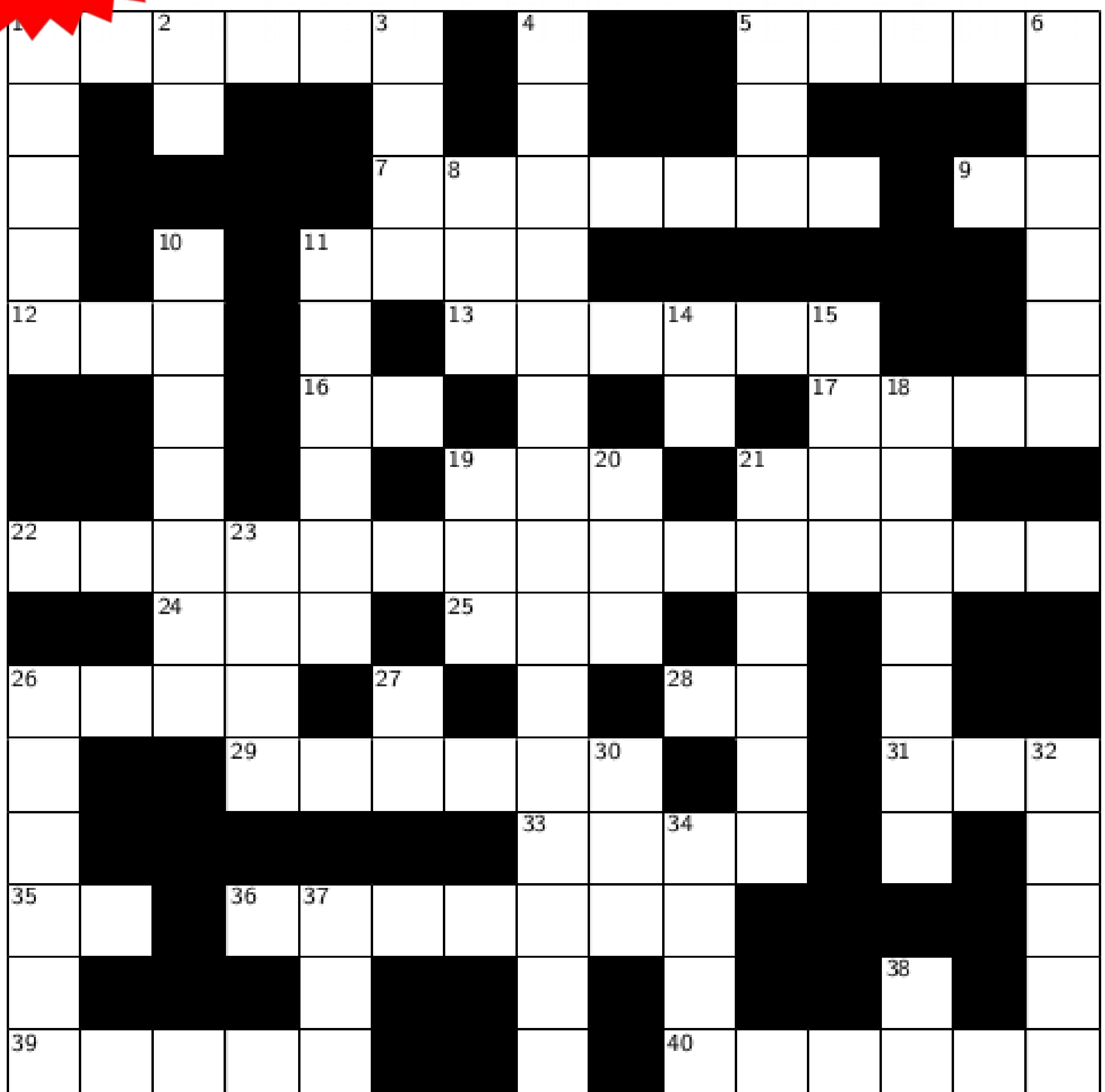

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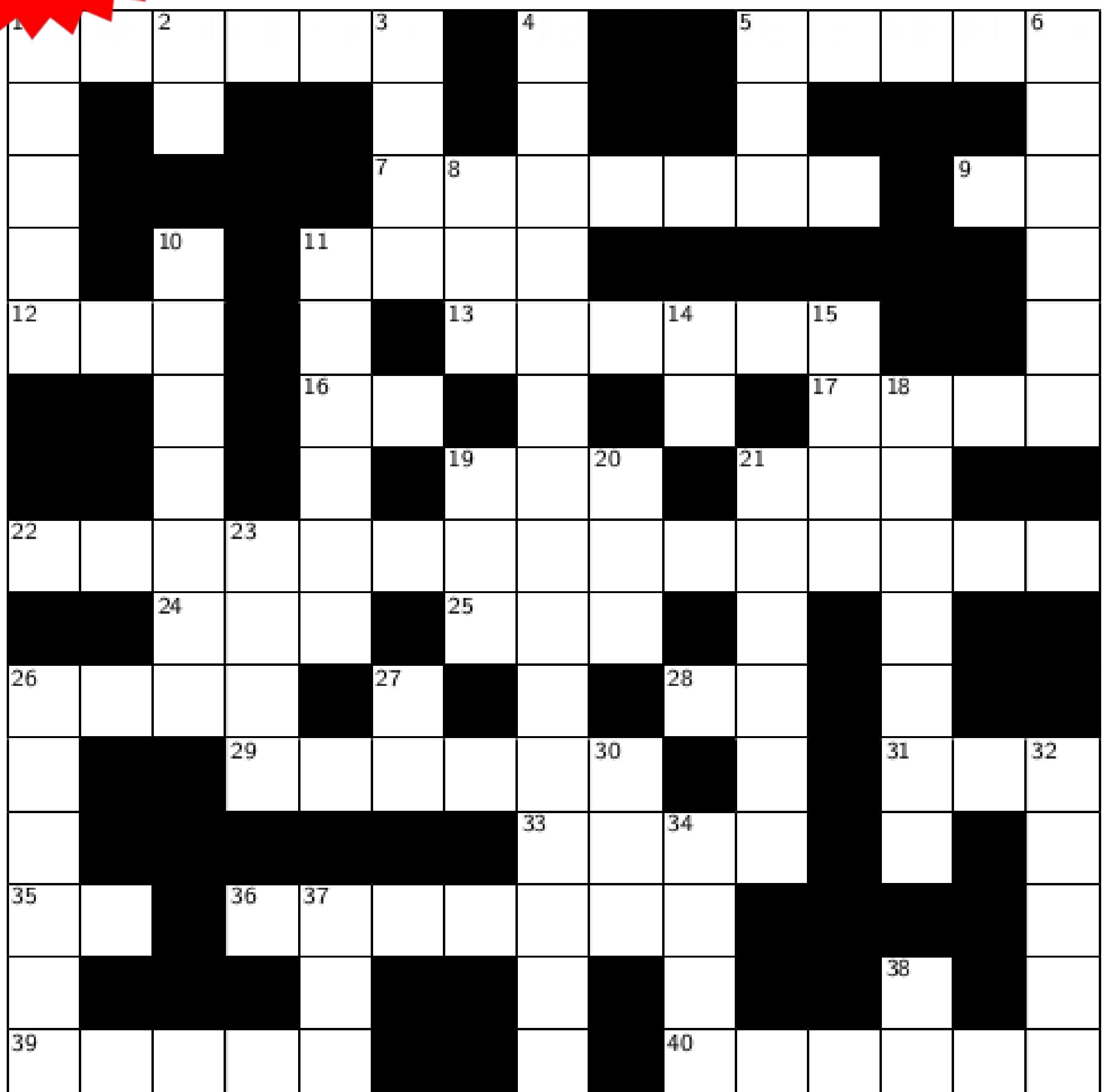

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32D. The sum of the proper divisors of 1D. (5)

Rules

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(Issue 2)

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16A. The least number of pence which cannot be made using less than 5 coins. (2)

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(Issue 1)

Prize Crossnumber

(Issue 2)

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(Issue 1)

6D. This number's first digit tells you how many 0s are in this number, the second digit how many 1s, the third digit how many 2s, and so on. (10)

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39A. Why is 6 afraid of 7? (3)

Prize Crossnumber

(Issue 1)

5D. A square number containing every digit from 0 to 9 exactly once. (10)

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A258103 Number of pandigital squares (containing each digit exactly once) in base n. 1

0, 0, 1, 0, 1, 3, 4, 26, 87, 47, 87, 0, 547, 1303, 3402, 0, 24192, 187562 (list; graph; refs; listen; history; edit; text; internal format)

OFFSET 2,6

COMMENTS For n = 18, the smallest and largest pandigital squares are 22006673206589518598 41 and 39207739576969100808801. For n = 19, they are 1047535582299869019661 29 and 1972312183619434816475625. For n = 20, they are 5272187100814113874556176 and 10456662618362131428628896 1. - Chai Wah Wu, May 20 2015

When n is even, (n-1) is a factor of the pandigital squares. When n is odd, (n-1)/2 is a factor with the remaining factors being odd. Therefore, when n is odd and (n-1)/2 has an odd number of 2s as prime factors there are no pandigital squares in base n (e.g. 5, 13, 17 and 21). - Adam J.T. Partridge, May 21 2015

LINKS Table of n, a(n) for n=2..19.

A. J. T. Partridge, Why there are no pandigital squares in base 13

EXAMPLE For n=4 there is one pandigital square, 3201_4 = 225 = 15^2.

For n=6 there is one pandigital square, 452013_6 = 38025 = 195^2.

For n=10 there are 87 pandigital squares (A036745).

There are no pandigital squares in bases 2, 3, 5 or 13.

Hexadecimal has 3402 pandigital squares, the largest is FED5B39A42706C81.

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COMMENTS	For n = 18, the smallest and largest pandigital squares are 2200667320658951859841 and 39207739576969100808801. For n = 19, they are 104753558229986901966129 and 1972312183619434816475625. For n = 20, they are 5272187100814113874556176 and 104566626183621314286288961. - Chai Wah Wu, May 20 2015 When n is even, (n-1) is a factor of the pandigital squares. When n is odd, (n-1)/2 is a factor with the remaining factors being odd. Therefore, when n is odd and (n-1)/2 has an odd number of 2s as prime factors there are no pandigital squares in base n (e.g. 5, 13, 17 and 21). - Adam J.T. Partridge, May 21 2015
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chalkdustmagazine.com/blog/pandigital-square-numbers/

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(Issue 3 Spoiler)

Prize Crossnumber

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(Issue 3 Spoiler)

This can be done with **every number larger than 77**.

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In conversation with... Artur Avila

Anna Lambert & Rafael Prieto Curiel

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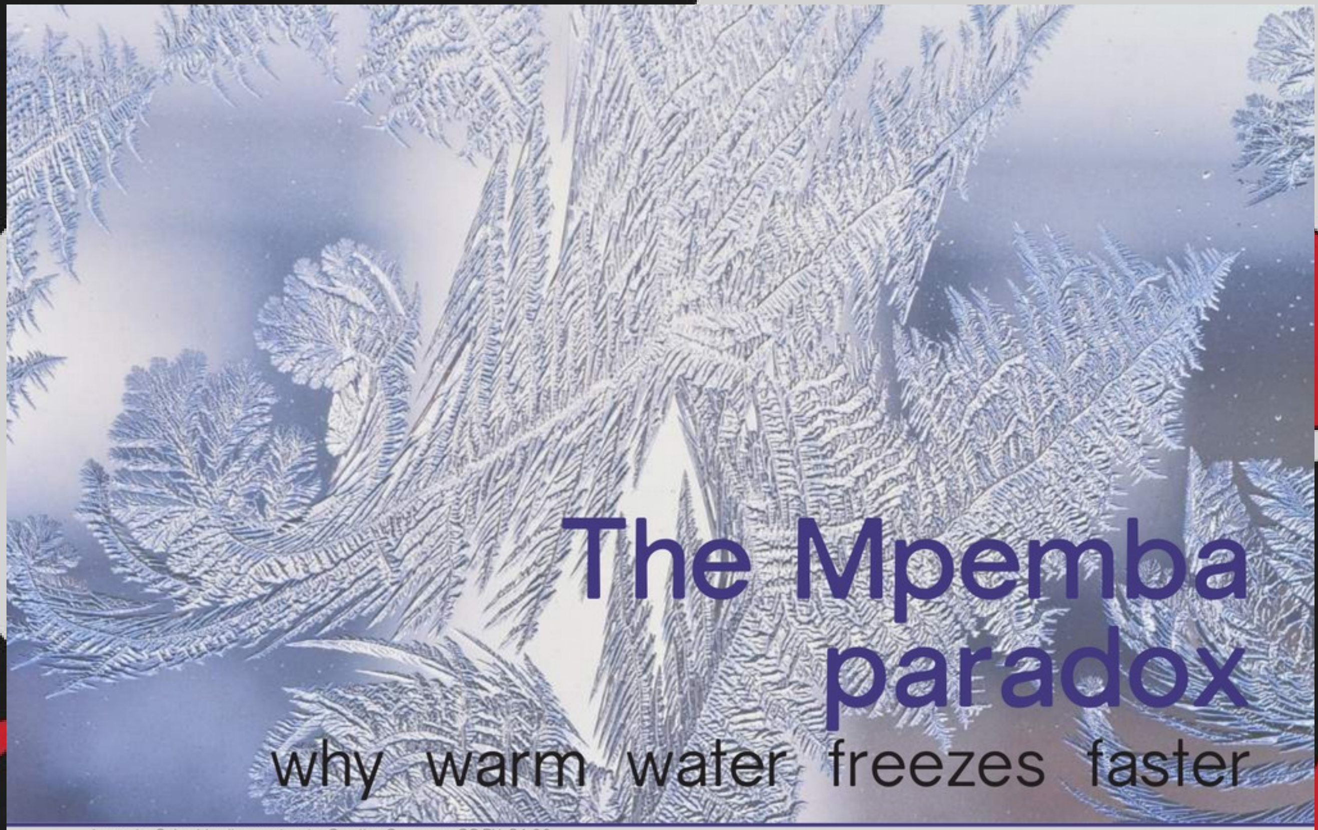

The Mpemba paradox

why warm water freezes faster

Oliver Southwick

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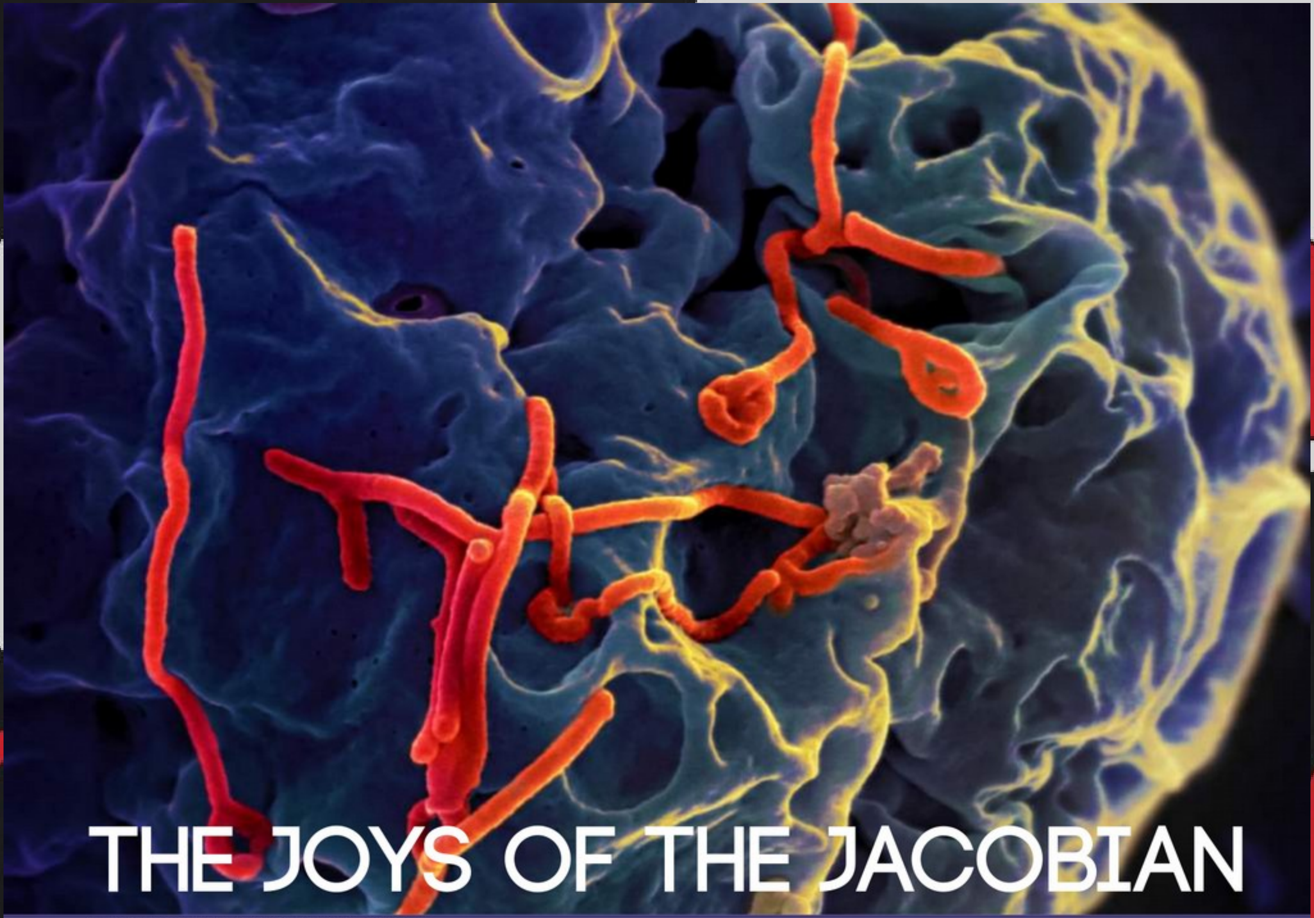

THE JOYS OF THE JACOBIAN

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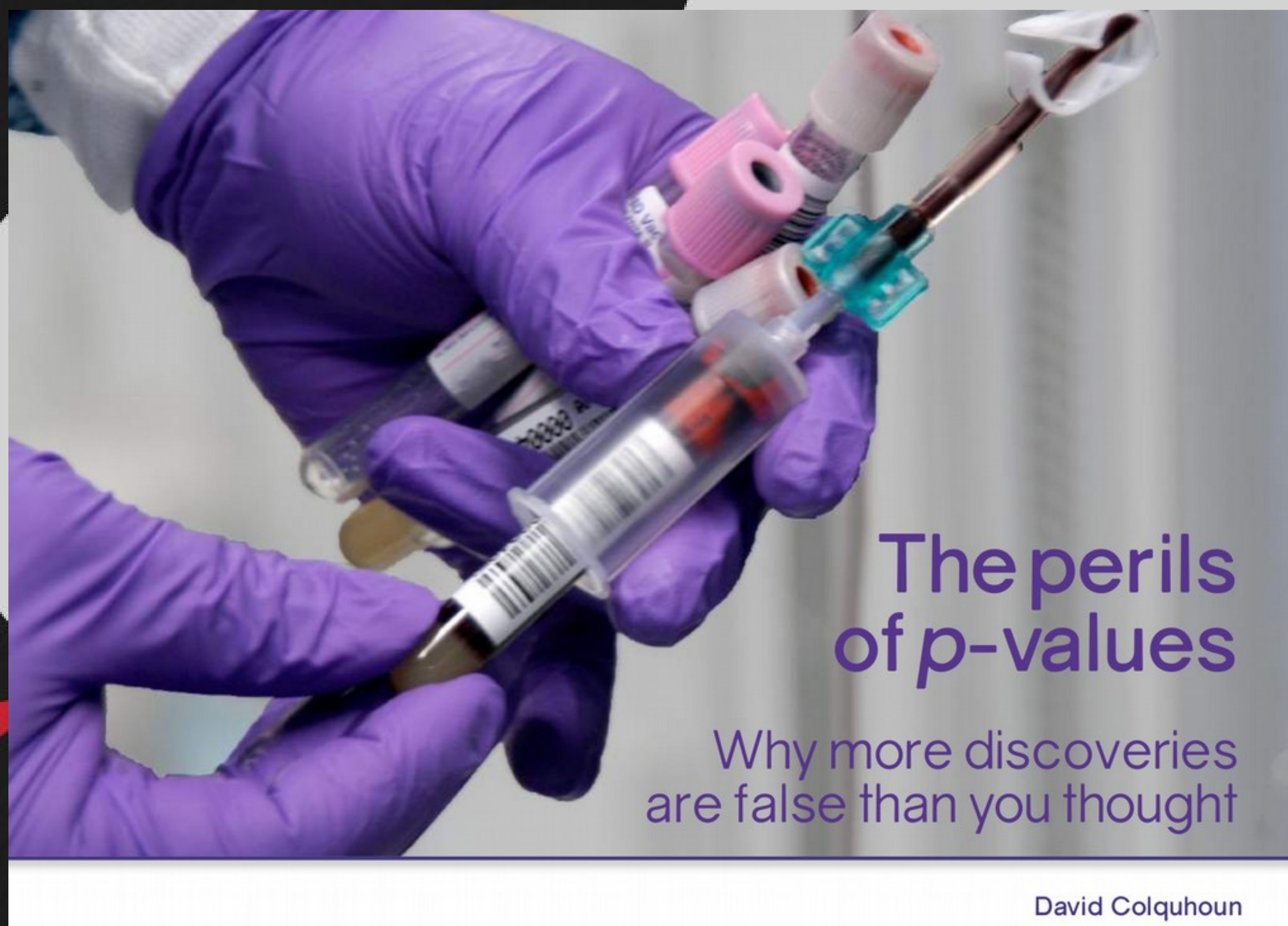
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of p-values
Why more discoveries
are false than you thought
David Colquhoun

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Breaking out of the prisoner's dilemma

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