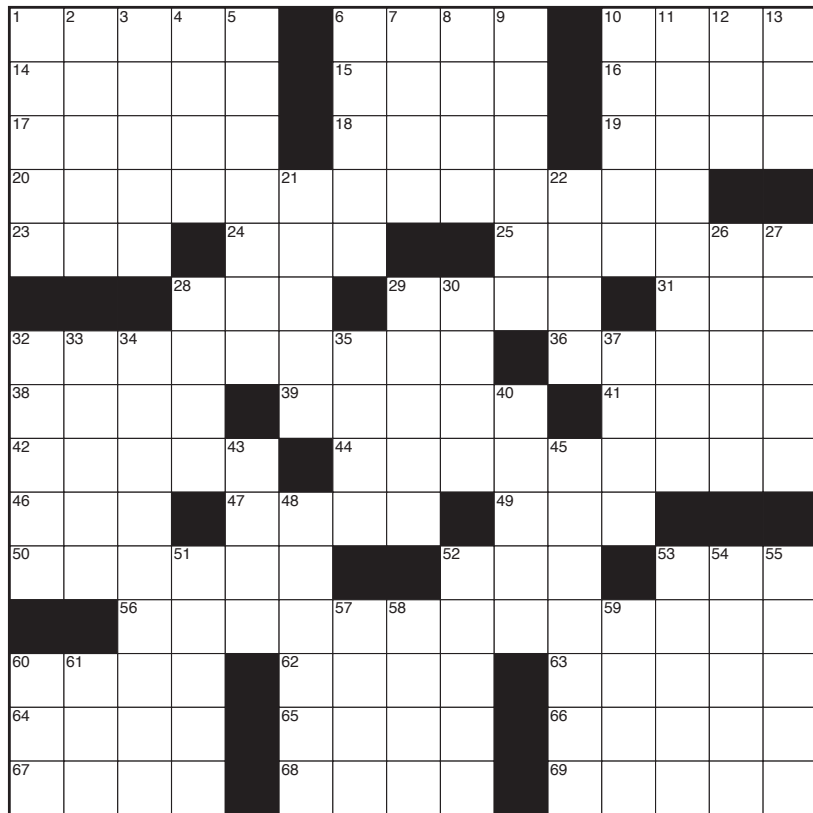


BY THE NUMBERS

DAVID RICHESON

Fill in the entries of this crossword puzzle with a decimal point “.” or a digit 0 through 9. All decimal values that are longer than the given number of blanks are truncated, not rounded.



28 Sum of the first four 4th powers

29 Young Gauss's sum

31 $\sqrt{2\pi}$

32 Look-and-say sequence

36 $1000(30 + \pi^2)$

38 10 times the Basel problem sum

39 2, 3, 5, _____

41 Smallest number whose square has eight digits

42 $\sqrt[5]{70}$

44 τ

46 Emergency number in the US

47 $100e^e$

49 Bronze ratio,

$$1 + \sqrt{3 + \sqrt{3 + \sqrt{3 + \dots}}}$$

50 In Egyptian hieroglyphics:



oooooooooooo

52 Every $3x + 1$ sequence ends this way?

53 Fourth Fermat prime

56 π

60 The 24th Mersenne prime has this many digits

62 10th Pell number

63 π^e

64 30° -____°-____° right triangle

65 Has digit sum 20 and digit product 336

66 a, b, c where $\frac{1449}{50} = a + \frac{1}{b + \frac{1}{c}}$

67 In Mayan numerals:



68 Fourth perfect number

69 Hypotenuse of a Pythagorean triple with sides 27, 560 and 64, 791

ACROSS

1 $5^6 + 189^2$

6 Sum and product of its digits are equal

10 Number of primes less than 10,000

14 Acceleration of gravity in m/s^2

15 $\ln(2)/\pi^2$

16 Speed of light _____ $\times 10^8$ m/s

17 $(12 + \sqrt{130})\pi$

18 Number of rook moves on a 16×16 board

19 Hardy's cab number

20 0, 1, 4, . . .

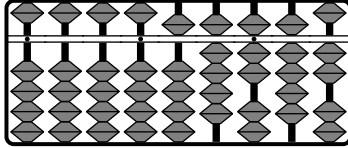
23 Water freezing temperature in Kelvin

24 A palindromic permutable prime

25 $2 + \frac{1}{1 + \frac{1}{56 + \frac{1}{7}}}$

DOWN

1



2 $\sqrt[9]{12}$

3 $3825/99 = \underline{\quad}.\underline{\quad}$

4 $\lceil \sinh(9) \rceil$

5 $11 \cdot 10^3(600 + \sqrt[3]{e})$

6 The Sophie Germain prime that generates the safe prime 81,527

7 $\sqrt{7}$

8 It is 1/9th its reverse

9 45th term in Padovan sequence, which starts 1, 1, 1 and $p_n = p_{n-2} + p_{n-3}$

10 $\overline{\text{XMMCLXXXIX}}$

11 e

12 Number of ways to make change for a dollar without the \$1 coin

13 Emergency number in the UK

21 In Morse code:
 -..... -..... -..... -.....

22 Circumference of a circle of radius 9/14

26 Gelfond–Schneider constant, $2^{\sqrt{2}}$

27 Zip code for Elkton, Minnesota (population 141)

28 It is CAB in hexadecimal

29 $2^9 - 2^{-1}$

30 Fibonacci sequence starting with no rabbits

32 1366th prime number

33 Diagonal of a regular pentagon with side-length 10

34 $1 + 1/\pi$

35 A prime factor of

111,111,111,111,111,111,111,111,111,111

37 Append any of its digits to the end and it is prime

40 In Chinese counting rods:



43 Fifth Mersenne prime

45 $\sqrt{10}$

48 2^{19}

51 i^i

52 In Babylonian cuneiform:



53 e^π

54 Number of 5-letter codes made from A through K with no repetition

55 It is 10011001100000111 in binary

57 Fourth row of Pascal's triangle

58 Euler–Mascheroni constant $\gamma = 0.\underline{\quad}$

59 Feet in a mile

60 Devil's number

61 James Bond's number