

11 (number)

11 (**eleven**) is the natural number following 10 and preceding 12. In English, it is the smallest positive integer whose name has three syllables.

Name

"Eleven" derives from the Old English *endleofon*, which is first attested in Bede's late 9th-century *Ecclesiastical History of the English People*.^{[2][3]} It has cognates in every Germanic language (for example, German *elf*), whose Proto-Germanic ancestor has been reconstructed as **ainalifa-*,^[4] from the prefix **aina-* (adjectival "one") and suffix **-lifa-*, of uncertain meaning.^[3] It is sometimes compared with the Lithuanian *vienúolika*, though *-lika* is used as the suffix for all numbers from 11 to 19.^[3]

The Old English form has closer cognates in Old Frisian, Saxon, and Norse, whose ancestor has been reconstructed as **ainlifun*. This was formerly thought to be derived from Proto-Germanic **tehun* ("ten");^{[3][5]} it is now sometimes connected with **leikw-* or **leip-* ("left; remaining"), with the implicit meaning that "one is left" after counting to ten.^[3]

Mathematics

11 is a prime number, and a super-prime. 11 forms a twin prime with 13,^[6] and sexy pair with 5 and 17.

The first prime exponent that does not yield a Mersenne prime is 11.

11 is part of a pair of Brown numbers. Only three such pairs of numbers are known. Rows in Pascal's triangle can be seen as representation of powers of 11.^[7]

Geometry

An 11-sided polygon is called a hendecagon, or *undecagon*. A regular hendecagon is the polygon with the fewest number of sides that is not able to be constructed with a straightedge, compass, and angle trisector.^[8]

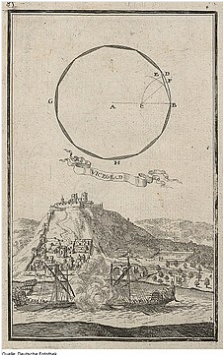
The Mathieu group **M**₁₁ is the smallest of twenty-six sporadic groups. It has order **7920** = **2**⁴ · **3**² · **5** · **11** = **8** · **9** · **10** · **11**, with 11 as its largest prime factor. **M**₁₁ is the maximal subgroup Mathieu group **M**₁₂, where 11 is also its largest prime factor.

List of basic calculations

| Multiplication | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 25 | 50 | 100 | 1000 |
|----------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|
| 11 × x | 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 121 | 132 | 143 | 154 | 165 | 176 | 187 | 198 | 209 | 220 | 275 | 550 | 1100 | 11000 |

| Division | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|----------|------|------|-------------------|------|------|--------------------|----------|-------|-------------------|------|----|---------------------|----------|-----------|--------------------|
| 11 ÷ x | 11 | 5.5 | 3. 6 | 2.75 | 2.2 | 1.8 3 | 1.571428 | 1.375 | 1. 2 | 1.1 | 1 | 0.91 6 | 0.846153 | 0.7857142 | 0.7 3 |
| x ÷ 11 | 0.09 | 0.18 | 0.27 | 0.36 | 0.45 | 0.54 | 0.63 | 0.72 | 0.81 | 0.90 | 1 | 1.09 | 1.18 | 1.27 | 1.36 |

| | | |
|-----------------------------------|-------------------|------|
| ← 10 | 11 | 12 → |
| ← 10 11 12 13 14 15 16 17 18 19 → | | |
| List of numbers · Integers | | |
| ← 0 10 20 30 40 50 60 70 80 90 → | | |
| Cardinal | eleven | |
| Ordinal | 11th (eleventh) | |
| Numeral system | undecimal | |
| Factorization | prime | |
| Prime | 5th | |
| Divisors | 1, 11 | |
| Greek numeral | ΙΑ´ | |
| Roman numeral | XI, xi | |
| Greek prefix | hendeca-/hendeka- | |
| Latin prefix | undeca- | |
| Binary | 1011 ₂ | |
| Ternary | 102 ₃ | |
| Senary | 15 ₆ | |
| Octal | 13 ₈ | |
| Duodecimal | B ₁₂ | |
| Hexadecimal | B ₁₆ | |
| Bangla | ۱۱ | |
| Hebrew numeral | כ"א | |
| Devanagari numerals | ११ | |
| Malayalam | ൧൧ | |
| Tamil numerals | ௧௧ | |
| Telugu | ౧౧ | |
| Babylonian numeral | 𐎠𐎫 | |



Copper engraving of a hendecagon, by Anton Ernst Burkhard von Birckenstein (1698)

| Exponentiation | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-----------------|----|------|--------|---------|----------|-----------|------------|------------|-------------|--------------|--------------|
| 11 ^x | 11 | 121 | 1331 | 14641 | 161051 | 1771561 | 19487171 | 214358881 | 2357947691 | 25937424601 | 285311670611 |
| x ¹¹ | 1 | 2048 | 177147 | 4194304 | 48828125 | 362797056 | 1977326743 | 8589934592 | 31381059609 | 100000000000 | 285311670611 |

Music

The interval of an octave plus a fourth is an 11th. A complete 11th chord has almost every note of a diatonic scale.

Cultural references

Film

In the mockumentary film *This Is Spinal Tap*, the idiomatic phrase up to eleven is coined to allude to going beyond the limitations of a system, in this case music amplifier volume levels.

"Eleventh hour"

Being one hour before 12:00, the *eleventh hour* means the last possible moment to take care of something, and often implies a situation of urgent danger or emergency (see Doomsday clock). "The eleventh hour" is a phrase in the Parable of the Workers in the Vineyard in the Bible.

Languages

While 11 has its own name in Germanic languages such as English, German, or Swedish, and some Latin-based languages such as Spanish, Portuguese, and French, it is the first compound number in many other languages: Chinese 十一 *shí yī*, Korean 열하나 *yeol hana* or 십일 *ship il*.

Mysticism

The number 11 (alongside its multiples 22 and 33) are master numbers in numerology, especially in New Age.^[9]

References

1. Bede, *Eccl. Hist.*, Bk. V, Ch. xviii.

2. Specifically, in the line *jjvȝv ðæt rice hæfde endleofan wintra*.^[1]

3. *Oxford English Dictionary*, 1st ed. "eleven, *adj.* and *n.*" Oxford University Press (Oxford), 1891.

4. Kroonen, Guus (2013). *Etymological Dictionary of Proto-Germanic*. Leiden: Brill. p. 11f. ISBN 978-90-04-18340-7.

5. Dantzig, Tobias (1930), *Number: The Language of Science*.

6. Sloane, N. J. A. (ed.). "Sequence A001359 (Lesser of twin primes.)" (<https://oeis.org/A001359>). *The On-Line Encyclopedia of Integer Sequences*. OEIS Foundation. Retrieved 2023-01-22.

7. Mueller, Francis J. (1965). "More on Pascal's Triangle and powers of 11". *The Mathematics Teacher*. **58** (5): 425–428. doi:10.5951/MT.58.5.0425 (<https://doi.org/10.5951%2FMT.58.5.0425>). JSTOR 27957164 (<https://www.jstor.org/stable/27957164>).

8. Gleason, Andrew M. (1988). "Angle trisection, the heptagon, and the triskaidecagon" (<https://www.tandfonline.com/doi/abs/10.1080/00029890.1988.11971989?journalCode=uamm20>). *American Mathematical Monthly*. **95** (3). Taylor & Francis, Ltd: 191–194. doi:10.2307/2323624 (<https://doi.org/10.2307%2F2323624>). JSTOR 2323624 (<https://www.jstor.org/stable/2323624>). MR 0935432 (<https://mathscinet.ams.org/mathscinet-getitem?mr=0935432>). S2CID 119831032 (<https://api.semanticscholar.org/CorpusID:119831032>).

9. Sharp, Damian (2001). *Simple Numerology: A Simple Wisdom book (A Simple Wisdom Book series)*. Red Wheel. p. 7. ISBN 978-1-57324-560-9.

External links

Grimes, James. "Eleven" (<https://web.archive.org/web/20171015073814/http://www.numberphile.com/videos/11.html>). *Numberphile*. Brady Haran. Archived from the original (<http://www.numberphile.com/videos/11.html>) on 2017-10-15. Retrieved 2016-01-03.

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