LaTeX Style Guide for the *Journal of Integer Sequences*

Version 1.88

Authors of papers in the *Journal of Integer Sequences* should write their papers in English. If English is not your native language, please ask a native-speaking colleague or local native speaker to help proofread your paper. This will greatly improve your chances for acceptance. Probably you can find a native speaker at your university, or an English language school in your town or city. If not, you might try contacting your local US, Canadian, or British Embassy.

If you have no local access to a native speaker, you can (for a fee) have people read and edit your paper online. For example, visit
http://webshop.elsevier.com/languageservices/languageediting/ or
http://www.edanzediting.com/.

Again, if English is not your first language, you may want to consult the book *Writing Mathematical Papers in English* by Jerzy Trzeciak, which can be ordered (for 8 Euros) from http://www.ems-ph.org . Another good resource is Trzeciak's Dictionary of Mathematical English, available for free at

https://www.impan.pl/en/publishing-house/for-authors/dictionary .

If this is your first paper, or if you have simply not written many mathematical papers before, please read a guide on how to prepare mathematical papers *before* sending us your submission. One of the best is Steven G. Krantz, *A Primer of Mathematical Writing*, 2nd edition, 2017. It can be ordered from the American Mathematical Society website. If you do not wish to have the printed copy, an electronic copy is available at https://arxiv.org/abs/1612.04888. Other good resources include

- a booklet written by Donald Knuth et al., and available at
  http://jmlr.csail.mit.edu/reviewing-papers/knuth_mathematical_writing.pdf
- an article of Halmos, available at
  http://www.domagoj-babic.com/uploads/ScholarlyStuff/Books/halmos.pdf
- an article by Jerzy Trzeciak, available at
  https://www.impan.pl/wydawnictwa/dla-autorow/writing.pdf .

Finally, we also recommend this (unfinished) advice of John Baez, available here:
https://math.ucr.edu/home/baez/boring.pdf .

Authors of papers in the *Journal of Integer Sequences* should prepare their papers in LaTeX. We do *not* recommend use of add-on packages such as Scientific Workplace. We do not accept submissions prepared with conversion tools, such as `docx2latex`, as they do not provide high-quality output. Output prepared with packages like `lyx` is also likely to be of poor quality.

Please observe the following guidelines. The guidelines most frequently violated appear in red. Please pay special attention to these.

1 LaTeX advice

Please prepare your paper using the "12pt" option of latex, since this is what we will use when we publish your paper. Do not use "11pt" or "10pt", as this can cause problems formatting large equations when we switch to "12pt".

Use a single file for your latex source. Do not spread your paper over multiple latex files or multiple directories.

Please do not submit papers that are based on the proprietary style files (e.g., `mdpi.cls`) of other journals.

Please avoid the use of special-purpose packages or macros whenever possible. Strip your paper of references to all packages and definitions that you do not actually use. (Do *not* just comment them out.) Remove all comments and commented-out lines (those with the symbol %). There should be no occurrences of the symbol % in your latex source file.

Do *not* use the `MnSymbol` package, as it redefines basic signs like equality, sum, inequality in unattractive ways.

It is probably worthwhile to download the latex file for a paper recently published in the journal and model your paper on it. (However, do *not* use the latex file for the instructions you are now reading as a model!) If you experience problems with the packages we use (such as psfig), you can delete the corresponding line or just comment it out.

Do *not* include a date in the title page of your paper.

Use the default (Computer Modern) font. Do not use Times Roman or other fonts.

Acknowledgments should be in a *separate, numbered section* at the end of the paper.

Avoid the use of PicTeX; it uses too many registers and is often not compatible with packages we use to publish your paper. If you absolutely have to use it, consider the use of `pictexwd` instead.

Avoid the use of pstricks; it often does not work correctly on our system.

Please do not use `tcilatex` or the `amsart` article style when you prepare your article.

Please examine the `.log` file before you send anything to us. Similarly, if you use BibTeX, examine the `.blg` file. This is where errors and warnings are listed. Make sure you fix all significant errors, such as duplicate labels or right braces without matching left braces, etc. If you use TeXworks you will need to remove the `--clean` option in the preferences in order to see the `.log` file.

2 General advice

Define notation before you use it. Using a LaTeX `definition` environment may be helpful in some situations.

State your results as theorems, lemmas, propositions, corollaries, and so forth, using the provided LaTeX environments.

For claims consisting of a number of parts, use an `itemize` or `enumerate` environment. Since theorems are numbered, using (a), (b), (c), etc., for multiple parts is suggested.

Break your paper up into logical sections, using commands like `\section`, `\subsection`, and so forth.

Use the present tense for what is true and what you accomplish in the paper. Use the past tense for what was done in the past. As a general rule, avoid the future tense, although there may be situations where it is needed. For example, instead of "We will prove that ...", often the simpler "We prove that..." suffices.

3 Common grammatical errors

Please **be sure to run your paper through a spell-checker before submission!** Our Journal uses American spellings, so write "recognize" (not "recognise"); "generalize" (not "generalise"); "color" (not "colour"); "acknowledgment" (not "acknowledgement"), etc.

1. Avoid the passive voice. Instead of saying "In [1] it is shown that all primes > 2 are odd", say "Smith [1] showed that all primes > 2 are odd".

2. Avoid use of weak constructions such as "this number" or "it". For example,

   Wrong: Let x be a prime. We now square this number.

   Wrong: Let x be a prime. We now square it.

   Right: Let x be a prime. We now square x.

3. Avoid the use of contractions, such as "don't", "can't", "isn't", etc.

   Wrong: The number 7 is prime, since it isn't divisible by $2, 3, 4, 5$, or 6.

   Right: The number 7 is prime, since it is not divisible by $2, 3, 4, 5$, or 6.

4. The word "precise" is not a verb in English.

   Wrong: We now precise the connection between α and β.

   Right: We now make the connection between α and β more precise.

5. Use the word "expansion", not "development".

   Wrong: Let $[a_0, a_1, \ldots]$ be the continued fraction development of x.

   Right: Let $[a_0, a_1, \ldots]$ be the continued fraction expansion of x.

6. Use "associate with", not "associate to".

   Wrong: We now associate x to y.

   Right: We now associate x with y.

   Wrong: To each real number x we associate a set S_x.

   Right: We associate a set S_x with each real number x.

7. Use "root" for equations, and "zero" for polynomials.

   Wrong: Let α be the positive root of $x^2 - x - 1$.

   Right: Let α be the positive zero of $x^2 - x - 1$.

   Right: Let α be the positive root of $x^2 - x - 1 = 0$.

8. Use the term "pair", not "couple", to denote two objects.

   Wrong: Let (α, β) be a couple of real numbers.

   Right: Let (α, β) be a pair of real numbers.

9. Use the construction "We let x denote y" and not "Denote by x y".

   Wrong: Denote by $\mathbb{N}$ the set of positive integers.

   Right: We let $\mathbb{N}$ denote the set of positive integers.

   Right: Let $\mathbb{N}$ denote the set of positive integers.

   Right: The set of positive integers is denoted by $\mathbb{N}$.

10. Do not start sentences or clauses with notation.

    Wrong: Since $x > 0$, $x^2 > 0$ and the result follows.

    Right: Since $x > 0$, we have $x^2 > 0$, and the result follows.

    Wrong: p denotes a prime number.

    Right: The variable p denotes a prime number.

    It's fine to write things like "The solutions are a, b, and c", since here the commas do not introduce new clauses.

11. Avoid run-on sentences. A run-on sentence (also called a "comma splice") is one that expresses two thoughts in a single phrase, separated by a comma. Fix these by separating into two or more sentences, or by connecting with a semi-colon or a conjunction such as "and". More information can be found in the Wikipedia article on run-on sentences. If you are not a native speaker, or even if you are, you should learn to recognize and avoid this common stylistic error.

    Wrong: Let Σ be a finite alphabet, Σ^* denote the set of all finite words over Σ.

    Right: Let Σ be a finite alphabet, and let Σ^* denote the set of all finite words over Σ.

Wrong: Let p be a prime number ≥ 3, then $2^p \equiv 2 \pmod{p}$.

Right: Let p be a prime number ≥ 3. Then $2^p \equiv 2 \pmod{p}$.

12. Avoid treating citation numbers as objects of prepositions, or subjects of sentences. Treat them syntactically like footnotes.

    Wrong: [1] proves that e is irrational.

    Wrong: In [1] it is proved that e is irrational.

    Wrong: The article [1] proves that e is irrational.

    Right: Euler [1] proved that e is irrational.

13. Words like "notation", "work", "progress", and "information" are mass nouns in English, and as such, rarely appear in the plural.

    Wrong: We now introduce some definitions and notations.

    Right: We now introduce some definitions and notation.

    Wrong: You can find many works on continued fractions in the literature.

    Right: You can find many papers on continued fractions in the literature.

    The Wikipedia article on mass nouns contains more information.

14. "Any" is a weak and sometimes ambiguous word in English. For example, if you say "Condition (a) holds if $f(x) = 0$ for any x", does it mean that the condition holds if $f(x) = 0$ for *all* x, or *at least one* x? Nearly always you can replace "any" with either "every", "all", "at least one", or nothing at all, depending on context. Some examples follow:

    Questionable: Conjecture A holds for any prime p.

    Can be replaced by: Conjecture A holds for every prime p.

    Questionable: A solution exists for any x.

    Can be replaced by: A solution exists for all x.

    Questionable: For any prime number p let Z_p be the multiplicative group of invertible elements mod p.

    Can be replaced by: For prime numbers p let Z_p be the multiplicative group of invertible elements mod p.

4 Common punctuation errors

- Use colons properly. In general, colons should not immediately follow verbs.

  Wrong: The resulting equation is:

$$x = y^2.$$

Right: The resulting equation is

$$x = y^2.$$

Right: The resulting equation is as follows:

$$x = y^2.$$

- Always put a comma after "i.e." and "e.g." and "resp.". Do *not* put these abbreviations in the italic font.

  Wrong: Let x be a minimal element i.e. an element such that if $y \leq x$ then $y = x$.

  Wrong: Let x be a prime e.g. 2.

  Right: Let x be a minimal element, i.e., an element such that if $y \leq x$ then $y = x$.

  Right: Let x be a prime, e.g., 2.

- Don't be stingy with commas. Commas should set off parenthetical phrases such as "for example", "in particular", and so forth.

  Wrong: Then x for example is a real number.

  Right: Then x, for example, is a real number.

- Avoid excessive and inappropriate capitalization.

  Wrong: We let $H(x)$ denote the Hankel Transform of x.

  Right: We let $H(x)$ denote the Hankel transform of x.

  Wrong: Tamigawa's Theorem states that $e^x = y$.

  Right: Tamigawa's theorem states that $e^x = y$.

  Wrong: Now we use the Cayley-Hamilton Theorem.

  Right: Now we use the Cayley-Hamilton theorem.

  Wrong: The result follows by the Prime Number Theorem.

  Right: The result follows by the prime number theorem.

  Wrong: The Fibonacci Numbers are numbers satisfying the recurrence...

  Right: The Fibonacci numbers are numbers satisfying the recurrence...

  Wrong: We use the Euclidean Algorithm to compute $\gcd(m, n)$.

  Right: We use the Euclidean algorithm to compute $\gcd(m, n)$.

  Wrong: This is an entry in Pascal's Triangle.

  Right: This is an entry in Pascal's triangle.

- Lists of three or more things always need the "Oxford comma".

  Wrong: Smith, Jones and Wu solved the problem.

  Right: Smith, Jones, and Wu solved the problem.

5 Common LaTeX errors

This section lists a few of the common errors made when preparing papers in LaTeX.

5.1 Blackboard bold

For blackboard bold symbols such as $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$, $\mathbb{C}$, use `\mathbb{Z}`, for example. You may need to include the command `\usepackage{amssymb}`.

5.2 Variables and expressions

One of the single most basic rules of LaTeX is All mathematics must appear in mathematics mode.

Almost always, variables such as x, y, n, etc., should appear in the italic font. This will occur automatically if you remember to enclose your equations (even references to a single variable) in dollar signs or double-dollar signs, or use a latex equation environment.

Remember to apply this rule to table entries, too. For example, if you have a negative number in a table, say -1, you must write `$-1$` with dollar signs. Otherwise you get the wrong minus sign.

Remember to apply this rule to all references in your bibliography, too. If variables like n or x appear in an article title, use latex mathematics mode.

Wrong: `On prime numbers p divisible by 2`
Right: `On prime numbers $p$ divisible by $2$`

If a variable or expression ends a sentence or phrase written in a *non-displayed* environment, do *not* include the punctuation inside the `$equation $`; doing so messes up the spacing. By contrast, in a displayed environment, you must put the punctuation inside the environment.

Right: `And so the number of terms is $n$.`
Wrong: `And so the number of terms is $n.$`

Do not use mathematics mode for anything that is not a mathematical expression! Do not use it for accented letters, section numbers, numbers in itemized lists, etc.

5.3 Spacing

Please try not to include commands that tweak the spacing (such as `\\`, `\noindent`, `\newpage`, `\bigskip`, `\pagebreak`, `\linebreak`, etc.) since when your paper is formatted for final publication, the page breaks and spacing will probably be quite different from what you currently see. The proper way to separate paragraphs is with a single blank line, and *not* with `\\` at the end of the line. However, do not put a blank line between lines of your main text and any environment that follows, such as "align".

Don't forget that **if a period follows a lower-case letter and is followed by a space, but does not end a sentence**, then you must put a \ and then a space immediately after the period. For example:

Wrong: `We use a flern (cf. the previous theorem) in the proof.`
Right: `We use a flern (cf.\ the previous theorem) in the proof.`

Wrong: `We thank Dr. Smith for her assistance.`
Right: `We thank Dr.\ Smith for her assistance.`

Wrong: `See Chan et al. \cite{smith} for more information.`
Right: `See Chan et al.\ \cite{smith} for more information.`

If you don't do this, there will be too much space after the period, because LaTeX thinks it is the end of a sentence.

Again, just to be clear, it must be a period, then a backslash, then a space. **Do not put spaces between the period and the backslash!**

By the way, there is no need to do this in the bibliography, because LaTeX automatically turns off the "extra space at the end of a sentence" rule there.

5.4 Accents

Be careful to use the proper accents. The name Erdős, for example, uses a Hungarian accent, and should be formatted with `\H`. The name Sierpiński needs an accent on the "n". Create accents using the standard LaTeX abbreviations; do *not* use special non-ASCII characters, keyboard shortcuts, or other exotic character sets to make them. Warning: cutting and pasting from web pages often results in non-ASCII characters being inserted into your file, so avoid this practice. The kinds of non-ASCII characters that often create problems are alternate forms of quotation marks, long dashes (which look like ordinary minus signs, but aren't), and accented letters.

Never use LaTeX math mode to create your accents.

Here is how to do various accented letters:
`T\'oth` gives Tóth
`Ha\v{c}ek` gives Haček
`mis\‘ere` gives misère
`Schr\"oder` gives Schröder
`N{\o}rg{\aa}rd` gives Nørgård

5.5 Floor and ceiling

Be sure to use the built-in TEX commands `\lfloor`, `\rfloor` and `\lceil`, `\rceil`, not square brackets, when using these integer functions.

5.6 Min and max

Be sure to use the built-in TEX commands `\min` and `\max` when using these functions. Do not use braces with `\min` and `\max`; just use parentheses.

5.7 Gcd and lcm

Be sure to use the built-in TEX command `\gcd` for greatest common divisor. Don't write (a, b) for the gcd of a and b; write $\gcd(a, b)$ instead. For lcm, you will have to define your own command so that it appears in the roman font. The best way to do this is to use the command

```
\DeclareMathOperator{\lcm}{lcm}
```

Do *not* use square brackets for lcm!

5.8 Binomial coefficients

Use `\choose` or `\binom` for binomial coefficients. Do not use the latex array environment.

5.9 Multi-letter functions

As a general rule, all multi-letter functions such as $\sin, \cos, \tan$, etc., should appear in the roman font. For these functions you can use the built-in TEX commands `\sin, \cos, \tan`, etc., but for others (e.g., Li for the logarithmic integral) you may have to define your own commands. Again, the best way to do this is, e.g.,

```
\DeclareMathOperator{\Li}{Li}
```

5.10 Parentheses

Use parentheses for grouping, not square brackets or braces. You can get different sizes of parentheses using, for example, `\bigl(` and `\bigr)`.

Do not use `\left(` and `\right)` unless LaTeX gives you the wrong size parentheses (too small).

5.11 Superscripts and subscripts

Never put an object you are raising to a power inside braces (parens are OK, of course). To combine powers and indices, write `x_{ij}^k` and not `{x_{ij}}^k`. If you do the latter, then the spacing is messed up, and it will appear like ${x_{ij}}^k$, which is quite undesirable.

In general, try to avoid subscripts of superscripts and superscripts of subscripts; they make expressions hard to read. Often this can be done by adjusting the notation. For example, instead of e^{x_n}, you could write $\exp(x(n))$. Instead of a_{2^n}, you could write $a(2^n)$.

5.12 Mod

Observe the distinction between the use of "mod" as a function of two arguments, mapping $a \bmod b$ to the least non-negative residue of a modulo b, and "mod" as an equivalence relation. For the first, use the TEX command `\bmod`. For the second, use the TEX command `\pmod` for centered, displayed equations *only*; for in-line equations and subscripts write something like

```
$x \equiv a$ (mod $b$),
```

which typesets as follows: $x \equiv a \pmod{b}$. Do not use notation like $x \equiv y\ [p]$.

You can also define the following macro:

```
\def\modd#1 #2{#1\ \mbox{\rm (mod}\ #2\mbox{\rm )}}
```

which then can be used as follows:

```
$x \equiv \modd{a} {b}$.
```

The general rule to observe is that "mod" should *never* appear in the italic font, even in theorem statements.

For chains of congruences, write $x \equiv y \equiv z \pmod{w}$.

5.13 Quote marks

Do not enclose words in ordinary quotation marks `"like this"`. This results in the following ugly output:

"like this"

Instead, use the left-quote and right-quote symbols, ```like this''`, which gives the correct

"like this" .

5.14 Sequences

Use parentheses, not braces, to denote sequences. For example, $(F_n)_{n\geq 0}$ is the correct way to write the Fibonacci sequence.

5.15 Proper use of `\ldots` and `\cdots`

Be sure to use `\ldots` and `\cdots` properly. The general rule is as follows: you should use `\ldots` if the center of mass of the items on either side is below the middle of the line—for example, if the items on either side are commas. You should use `\cdots` if the center of mass of the items on either side is in the middle of the line—for example, if the items on either side are alphabet symbols. In particular, `\cdots` must be used for sums, products, concatenations, and chains of equalities or inequalities.

For example:

Wrong: Consider the product $a_1 a_2 \ldots a_n$. (Here we used `\ldots`.)
Right: Consider the product $a_1 a_2 \cdots a_n$. (Here we used `\cdots`.)

Wrong: Consider the sequence $a_1, a_2, \cdots, a_n$. (Here we used `\cdots`.)
Right: Consider the sequence $a_1, a_2, \ldots, a_n$. (Here we used `\ldots`.)

Under *no* circumstances should you ever write "...". Use the appropriate dots command instead.

5.16 Proper punctuation of case statements

Do *not* use the `array` environment to do case statements. Please prepare case statements *exactly* as follows:

```
\begin{displaymath}
f(x) = \begin{cases}
    1, & \text{if $x$ is a rational number;}\\
    2, & \text{if $x$ is a quadratic irrational;}\\
    0, & \text{otherwise.}
\end{cases}
\end{displaymath}
```

Note, in particular, the positions of the ampersand and semicolon, and the use of `\text`. This gives the following output.

$$f(x) = \begin{cases} 1, & \text{if } x \text{ is a rational number;} \\ 2, & \text{if } x \text{ is a quadratic irrational;} \\ 0, & \text{otherwise.} \end{cases}$$

5.17 Words in set notation

When using set notation, English words *must* appear in the Roman font. The easiest way to use this is to use the `\text` command.

5.18 Inequalities

Please use `\geq`, not `\geqslant`. Similarly, please use `\leq`, not `\leqslant`.

5.19 Emphasis

Use italics for emphasis; for example, when introducing a new term. In other circumstances bold might be appropriate. However, do not use underlining to emphasize text.

6 Title page

The title page should include the title of your article (capitalized), and the complete postal mailing address and affiliations, including academic department, e-mail address, postal code,

and country, for all authors. (By "capitalized" we do *not* mean you should capitalize every letter of every word; just the first letter of all nontrivial words.) Each item (name, department, city, country, etc.) should be on a separate line and lines should not end in commas. Write your name with the surname *last*; if it is unclear which is your first name and which is your surname, please indicate this in a comment.

Do not include footnotes to the title. Sponsoring information can be placed in a footnote attached to the individual author's name.

Lines of your address should not end in commas.

7 Sections

Break your paper up into logical sections, using the commands `\section`, `\subsection`, and so forth. Section titles should be capitalized like an ordinary English sentence; do not add extra capitalization.

8 Footnotes

We strongly discourage the use of footnotes in the main text. Incorporate the text of footnotes, to the extent possible, in the main text.

9 Definitions

Terms that are being defined should be in a special font, such as italic or slant.

For example,

A *flern* is a 3-dimensional hypersquare.

Avoid introducing new terms and notation when there are already accepted equivalents widely in use in the mathematical community. For example, for the Fibonacci numbers, you should use the notation F_n, and the numbers defined by $F_0 = 0$, $F_1 = 1$, $F_n = F_{n-1} + F_{n-2}$ for $n \geq 2$.

10 People

When referring to people, **use their last name only**, unless additional information is required to disambiguate. If you *do* include initials, make sure there is a space between each initial and between the initials and the name.

Right: Euler proved that e is irrational.
Wrong: L. Euler proved that e is irrational.

Right: J. R. Smith
Wrong: J.R. Smith

Wrong: J R Smith
Wrong: John R Smith

11 Theorems

Use the `\begin{theorem}` ... and `\end{theorem}` environments for theorems, lemmas, propositions, remarks, etc. Theorems should be numbered. Refer to theorems, lemmas, propositions, remarks, sections, equations, figures, tables, etc. using labels; do *not* hard-code references to them. When you refer to theorems, definitions, propositions, and so forth, be sure to capitalize the word Theorem (resp., Definition, Proposition, etc.) if it is attached to a reference label (number), and not otherwise.

Do not put space characters or special characters, such as minus signs, in labels!
Right: We now use Theorem 4.
Wrong: We now use theorem 4.
Right: We now use a previous theorem.
Wrong: We now use a previous Theorem.

To get proper definitions, use the `\usepackage{amsthm}` command.

Do not redefine equation numbers or appearance.

Here is the code we use for declaring theorem environments:

```
\theoremstyle{plain}
\newtheorem{theorem}{Theorem}
\newtheorem{corollary}[theorem]{Corollary}
\newtheorem{lemma}[theorem]{Lemma}
\newtheorem{proposition}[theorem]{Proposition}

\theoremstyle{definition}
\newtheorem{definition}[theorem]{Definition}
\newtheorem{example}[theorem]{Example}
\newtheorem{conjecture}[theorem]{Conjecture}

\theoremstyle{remark}
\newtheorem{remark}[theorem]{Remark}
```

You can just cut and paste this into your file, right after the begin document command.

12 Equations

Not all equations need to be numbered. If you number an equation, use a label and then refer to the label using `\eqref{eq1}` or `Eq.~(\ref{eq1})` something similar. Do not use things like (*), with a star or asterisk, to number equations.

For multiple related equations on consecutive lines, please use the `align` environment. When you do so, remember that the `&` symbol should *precede* the relational symbol (`=` or `>` or ...). Do not use `eqnarray`, as it produces bad spacing.

13 Definitions, examples, and remarks

All definitions, examples, and remarks should be stated in the roman font, except (of course) for mathematical symbols. You can use the following code as an example.

```
\theoremstyle{definition}
\newtheorem{defn}{Definition}
```

14 Proofs

Use the commands `\begin{proof}` and `\end{proof}` to delimit proofs. These are available in the `amsthm` package mentioned above. Do not change the appearance of the proof environment.

15 Tables and figures

Tables and figures should be **centered** on the page, using the `center` environment. Each table and each figure should have a number. Captions should appear *underneath* the table or figure, and end in a period. Use `rescalebox`, if necessary, to make sure your table fits properly on the page.

Note that the position of tables and figures could change as your paper is reformatted for final publication. If the positioning is crucial, then please use the `float` latex package in your preamble, and use the `H` option to force the table/figure to appear in the place you need it.

16 Introduction

Papers should have a numbered introductory section that provides motivation and history of the problems discussed. This is the place to put your results in context, and summarize your main contributions.

17 Abstract

Every paper should have a short abstract of 50 to 200 words, written in the present tense. The purpose of an abstract is to summarize what you did *in general terms only*. The abstract should be free of symbols and equations to the extent it is possible.

When referring to results you prove in the paper, use the present tense. **Avoid the passive voice in abstracts, wherever reasonable.**

The abstract should be an independent entity and should stand on its own. For example, it *should not* contain citations to the bibliography, or references to the numbers of equations, theorems, or sections of the paper. It should not contain numbered equations itself.

When referring to other work in the abstract, you can refer to author's last names, but avoid mentioning years, journal names, or other information.

Similarly, the paper text itself should not rely in any way on definitions or notation introduced only in the abstract.

18 Sequence numbers

Be sure to include sequence numbers from Sloane's *On-Line Encyclopedia of Integer Sequences* for all sequences you discuss in your paper. The list of all such sequences should be summarized at the end of your paper, sorted in ascending order. If the sequences do not exist in the *Encyclopedia*, please submit them to `www.oeis.org` and record the A-numbers assigned, and add those to your paper.

When you refer to a sequence inside your paper, use the "seqnum" macro:

```
\newcommand{\seqnum}[1]{\href{https://oeis.org/#1}{\rm \underline{#1}}}
```

19 Citations and Bibliography

The easiest way to get the correct format for the bibliography is to use our `jis.bst` file and BibTeX. You can find it at `https://cs.uwaterloo.ca/journals/JIS/jis.bst`.

Use citations syntactically like footnotes, not as objects of prepositions. Avoid saying things like "In [1] we find the following result." Instead, say "Jones [1] proved the following result." Use the LaTeX command `\cite`; do *not* hard-code references to the bibliography.

Avoiding enclosing citations in an extra pair of parentheses. In other words, citations should appear like "[13]" and not "([13])" or "(see [13])".

If you cite a paper with many authors inside the text, you can use "et al.", but do not put it in italics and use the first author's name. (**However, be sure to give the complete author list in the bibliography.**)

In the bibliography, if the author has two initials, be sure to place a space between the two initials.

Wrong: N.J.A. Sloane
Right: N. J. A. Sloane

Two authors should be separated with "and":
Wrong: J. Smith, D. Jones
Right: J. Smith and D. Jones

Three or more authors should be separated with the "Oxford comma".

Right: J. Smith, D. Jones, and Z. Xu
Wrong: J. Smith, D. Jones and Z. Xu

When simultaneously citing multiple references, use syntax similar to `\cite{ref1,ref2,ref3}` to combine all references in a single pair of brackets; do *not* write `\cite{ref1}, \cite{ref2}, \cite{ref3}`.

When citing a theorem or page number in another work, say `\cite[p.\ 123]{ref1}` or something similar. Note in particular the backslash and space after the dot. This is needed because LaTeX assumes that a dot following a lowercase letter indicates the end of a sentence, and hence inserts extra space.

Please use the following examples when preparing citations. Pay careful attention to punctuation and the use of roman, italic, and bold fonts. In particular, notice that page ranges should be separated by two hyphens in LaTeX: write `123--145`, not `123-145`.

Please use the standard *Mathematical Reviews* abbreviations for journal names, with the exception that for particularly obscure journals you may provide the entire name.

The *Mathematical Reviews* journal abbreviation list can be found here:

http://www.ams.org/msnhtml/serials.pdf

Do not include citations to reviews of the articles, such as those appearing in *Zentralblatt* or *Math. Reviews*.

Avoid references to secondary sources, such as Wikipedia or MathWorld, unless there is really no alternative at all.

Always give a complete author list in the bibliography. Be sure that all mathematics in bibliography items appears in mathematics mode, just as in the main text.

19.1 Article citation

1. J. Chan and F. E. Smith, An article about Chan-Smith numbers, *J. of Chan-Smith Numbers* **13** (1998), 123–124.

Provide the volume, but **not** the issue number, unless the issue number is required to uniquely specify the paper. Note that words in article titles should *not* be capitalized, with the following exceptions: the first word, proper nouns, and German nouns. The journal name should be in italics; the volume number should be in bold. Do not use "pp." to provide page numbers for articles. Use `--` for page ranges. Do not use "in" to specify the article is in a journal.

Please use the standard *Mathematical Reviews* abbreviations for journal names, with the exception that for particularly obscure journals you may provide the entire name.

19.2 Book citation

2. A. Alces, *Introduction to Moose Theory*, Springer, 1995.

Book titles should be in italics. Note that words in book titles should be *capitalized*, with the exception of very short unimportant words, such as "to", "of", "and", etc.

Do not include the ISBN number. Do not give the place of publication, unless it is a very rare or hard-to-find book.

If you cite a particular theorem or page or section inside a book, then use the bibliography to list the book information *only*. When you cite it, however, you should use syntax like `\cite[Thm.\ 2.3, p.\ 45]{Alces}` to get something like [17, Thm. 2.3, p. 45]. Avoid citing a book without specifying the location of the exact result you are using.

19.3 Article in conference proceedings or book

3. B. Franklin, The public library as an aid to research, in G. Washington and T. Jefferson, eds., *Public Libraries in the United States*, Addison-Wesley, 2001, pp. 16–32.

4. P. Flajolet, How to count, in *Automata, Languages, and Programming: Proc. ICALP 1990*, Lect. Notes in Comp. Sci., Vol. 443, Springer, 1991, pp. 220–234.

Capitalize the name of the book, but *not* the paper you are referring to in the book or the series. Note that here, unlike the case of a journal article, the abbreviation "pp." is used.

19.4 Unpublished material or material on the web

5. B. Obama, G. Bush, and W. J. Clinton, Combinatorial reasoning in American elections, preprint, 2005, http://www.barackobama.com/combin.pdf.

6. J. Schmoe, Pattern avoidance, arxiv preprint arXiv:1111.2222 [math.NT], 2010. Available at http://arxiv.org/abs/1111.2222.

You should use the command `\url` to specify the URL of electronic manuscripts. (This command is available in the `hyperref` package.) When referring to an arxiv paper please cite the landing page (abs) of the paper, not the pdf directly.

Note that the correct URL for the On-Line Encyclopedia of Integer Sequences is https://oeis.org.

20 Other issues

All sections of your paper should be numbered. Do *not* hard-code references to section numbers; give each section a label and refer to it.

Please be sure that your paper contains a list of *key words and phrases* and the appropriate *AMS 2020 Mathematics Subject Classifications*. The key words should be in the singular (e.g., write "Fibonacci number" and not "Fibonacci numbers"), should be separated by commas, and should not be capitalized. A list of all the subject classifications can be found at

https://mathscinet.ams.org/msnhtml/msc2020.pdf .

Provide only one classification as primary and any additional ones as secondary.

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Do not include non-ASCII special characters in your file. These can arise, for example, from cutting and pasting references from the web. They create incorrect output. The most common mistakes are the following: wrong quotes or apostrophes, dashes not represented by `--` or `---` but by other characters, and accented special characters.

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