

AMA Manual of Style

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Mathematical Composition

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Mathematical formulas and other expressions involving special symbols, character positions, and relationships may present difficulties in clarity in print and online publications. Careful markup (clarifying the symbols used and superior and inferior characters), avoidance of ambiguity through proper use of parentheses and brackets, and adherence to typographic conventions and capitalization rules in equations require special note (see also 8.5, Punctuation, Parentheses and Brackets, and 22.0, Typography).

Copy Marking

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It is essential to mark carefully each character, letter, and symbol that may be mistaken for another form (eg, x, X, #2, ×2, 2x, x2). The following examples show correct markup for complex relations between elements of equations: In expressions that involve both superscripts and subscripts, the subscript is usually aligned directly under the superscript. In online publication, this alignment can generally be created only by using an image. |

Displayed vs Run-In

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Simple formulas may remain within the text of the manuscript if they can be set on the line: The pulmonary vascular resistance index (PVRI) was calculated as follows: $PVRI = (MPAP - PCWP) / CI$, where MPAP indicates mean pulmonary artery pressure; PCWP, pulmonary capillary wedge pressure; and CI, cardiac index. Long or complicated formulas should be centered on a separate line. In either case, symbols and signs should be marked in detail. Such formulas may be handled either as copy or as prepared art, depending on the

availability of special characters and use of software for equation preparation. For online publications, formulas that require more

Stacked vs Unstacked

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Stacking of fractions (ie, separating numerator and denominator by a horizontal line) should be avoided in favor of “unstacking” (ie, using a slash in place of the horizontal line) unless this sacrifices clarity (see , Punctuation, Forward Slash [Virgule, Solidus], In Equations). $y = \frac{x_1 + x_2}{x_1 - x_2}$ instead of $y = x_1 + x_2 x_1 - x_2$ Whenever a fraction is unstacked, parentheses, brackets, and braces (collectively called “fences” in mathematical notation) should be used as appropriate to avoid ambiguity. For instance, the expression $a + b + cd + e$, if written as $a + b + c/d + e$, is ambiguous and could have several interpretations, such as $a + b + cd + e$ or $a + b + cd + e$. The expression’s meaning is unambiguous if set

Long Formulas

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Long formulas may be given in 2 or more lines by breaking them at operation signs outside brackets or parentheses and keeping the indentation the same whenever possible (some formulas may be too long to permit indentation). If lines begin with an operation sign, they should be lined up with the first character to the right of the relation sign in the line above. $Y = [(a_1 + b_1)/(a_2 - b_2)] + [(#1 + #2)/(#2 - #1)] + [(s_1 + s_2)/(t_1 + t_2)]$ However, if a formula loses comprehensibility by being unstacked and broken up, and/or if it fits the width of the column, it is preferable to leave it stacked. Percent Excess Weight Loss = $(\text{Baseline Weight} - \text{Ideal Weight}) - (\text{Follow-up} - \text{Ideal Weight}) / \text{Baseline Weight} - \text{Ideal Weight} \times 100$ |

Expressing Multiplication and Division

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The product of 2 or more terms, including units of measure, is conventionally indicated by a raised multiplication dot (\cdot) (eg, 7 kg \cdot m²) or by 2 or more characters closed up (eg, $y = mx + b$). However, in scientific notation the times sign (\times) is used (eg, 3 \times 10⁻¹⁰ cm) (see , Units of Measure, Use of Numerals With Units, Multiplication of Numbers). An asterisk should not be used to represent multiplication, despite its use in this role in computer

programs. Note: However, there may be occasions on which the asterisk may be used to provide the reader

Commonly Used Symbols

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Some commonly used symbols are as follows: The following symbols are usually reserved for specific values For a list of additional symbols that are used in statistics, see , Study Design and Statistics, Statistical Symbols and Abbreviations. The following are examples of these commonly used mathematical expressions: Online journals should ensure that any symbols rendered in HTML are compatible across most commonly used browser platforms. An image should be used if incompatibility is possible. The World Wide Web consortium (<http://www.w3.org>) provides updated information about browser compatibility issues. |

Typography and Capitalization

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In general, variables, unknown quantities, and constants (eg, x , y , z , A , B , C) are set in italics, while units of measure (eg, kg, mL, s, m), symbols (including Greek characters [see , Greek Letters]), and numbers are set roman. Also, subscripts or superscripts used as modifiers are set roman: C_{in} = clearance of inulin. Arrays (A) and vectors (V) should be set boldface. Mathematical functions, such as sin, cos, ln, and log, are set roman. $V = oai + bj + ckA = [a_1 \ a_2 \ a_3 \ a_4 \ a_5 \ a_6 \ a_7 \ a_8 \ a_9 \ a_{10}]$ For equations that are set off from the text, the words and letters should be set roman and the equation should be capitalized by

Punctuation

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Punctuation after a set-off equation is helpful and often clarifies the meaning. Display equations are often preceded by punctuation. In the linear quadratic equation model, the survival probability for cells receiving a j increment of radiation, D_j , is as follows: $S = \exp(-\alpha D_j - \beta D_j^2)$, where α and β are the parameters of the linear quadratic equation model. Do not use periods after a set-off equation if the equation is preceded by a period. |

Spacing With Mathematical Symbols

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Thin spaces should be used before and after the following mathematical symbols: \pm , $=$, $<$, $>$, $\#$, $\#$, $+$, $-$, \div , \times , \cdot , $\#$, $\#$, $\#$, $\#$, $\#$, $\#$, and $|$. $a \pm b$ $a = b$ $a + b$ $a - b$ $a \div b$ $a \times b$ $a \cdot b$ $a > b$ $a < b$ Symbols are set close to numbers, superscripts and subscripts, and parentheses, brackets, and braces. |