

# Additional Guidance on UEB Mathematics

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## 1. Introduction

The following guidelines intended for UK users, supplement the rules and guidance set out in the standard publications: *Rules of Unified English Braille* (2013), and *Unified English Braille Guidelines for Technical Material*, authorised by the International Council on English Braille (ICEB). The purpose is to provide some additional clarification and practical determination in certain areas, so as to achieve a reasonable level of common practice in UK transcriptions. In this document the ICEB titles are referred to as RUEB and GTM respectively.

The guidelines primarily apply to maths braille transcription work in the UK, such as for books, exam papers, etc. Different approaches may be needed in classroom practice, e.g. as regards the spacing of signs for beginning learners, as noted in GTM 1.1.2. Similarly, the guidelines stated here, such as the spacing of signs, or the choice of grade 1

indicators, would not necessarily be applied in non-mathematical contexts. (See for example RUEB 11.2.1.)

In this document the word “expression” signifies any group of mathematical symbols. It may be a single term or a longer group of mathematical symbols, such as an equation, which is not broken by ordinary text.

## 2. Spacing of signs (RUEB 11.2.2; GTM 1.1)

For all levels follow the general rule to leave a space on either side of comparison or relation signs, but leaving operation signs unspaced from their adjacent terms.

Example:

$$6 = 1 \times 2 \times 3 = 1 + 2 + 3$$

⠠⠶ ⠦⠠⠑ ⠦⠠⠭ ⠦⠠⠒ ⠦⠠⠓ ⠦⠠⠐ ⠦⠠⠑ ⠦⠠⠒ ⠦⠠⠓ ⠦⠠⠐ ⠦⠠⠑ ⠦⠠⠒ ⠦⠠⠓

## 3. General format (GTM 1.4.1)

The standard method used in the UK is for set out expressions or equations to start on a new line in cell 5, with any runovers starting in cell 7. (This continues the established UK standard practice as given in *Braille Mathematics Notation, BAUK, 2005.*)

## 4. Dividing mathematics expressions over braille lines (GTM 1.4.1-3)

Splitting an expression before a relation sign or comparison sign rather than before an operation sign is generally better for conveying the mathematical meaning. A judgement of the best splitting point in a particular case may also take into account considerations of saving space or avoiding an excess of short lines.

There is no strict requirement to start a new line in braille where print starts a new line in set out mathematics (though in some cases it is worthwhile).

The dot 5 continuation indicator mentioned in GTM 1.4 will not often be needed: if you make reasonable divisions following the above guidance, the meaning or format should make it clear enough that the expression on the new line is a continuation of that on the previous line, e.g. it will typically start with a relation or operation sign.

## **5. Choice of grade 1 indicators with mathematics expressions (RUEB 5.9; GTM 1.7)**

The UEB rules allow different approaches to the use of grade 1 indicators. As explained in the introduction, the purpose of the following is to set out a standardised method, though it does not invalidate other approaches:

There will often be cases where no grade 1 indicators are required in a maths expression, however if grade 1 indicators are required then the basic principle to follow is:

**Unless it is sufficient to just use one instance of a grade 1 symbol indicator**

- (a) within the first 3 cells of a maths expression, and/or**
- (b) before a single letter standing alone anywhere in the expression,**

**then use a word indicator for expressions without braille spaces, or passage indicators for expressions with braille spaces.**

Note that the end of a braille line counts as a braille space in the case of expressions divided over more than one line, unless the dot 5





If there is more than one separate maths expression (e.g. several equations), following one after the other, for which grade 1 passage indicators would be used, then the whole group can be enclosed in passage indicators rather than using separate indicators for each. Intervening punctuation would be included within the passage indicators, but in general not words. In the latter case you would normally close the passage before the words, and restart passage mode (if needed) at the beginning of the next maths expression.

Note that a grade 1 passage continues onto a new braille page until the passage terminator, so if an expression is split over braille pages you do not need to restart the passage on the new page.

## **7. Equation numbers**

Equation numbers should be placed before the equation in braille, and be separated from it by a single space, even if they appear on the right in print.

## **8. Ellipses**

Where print uses a large number of dots for an ellipsis without special reason, as in expressions for series or sets, for neatness only use 3 unspaced stops. This is despite RUEB 7.3.1.

[February 2015]

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