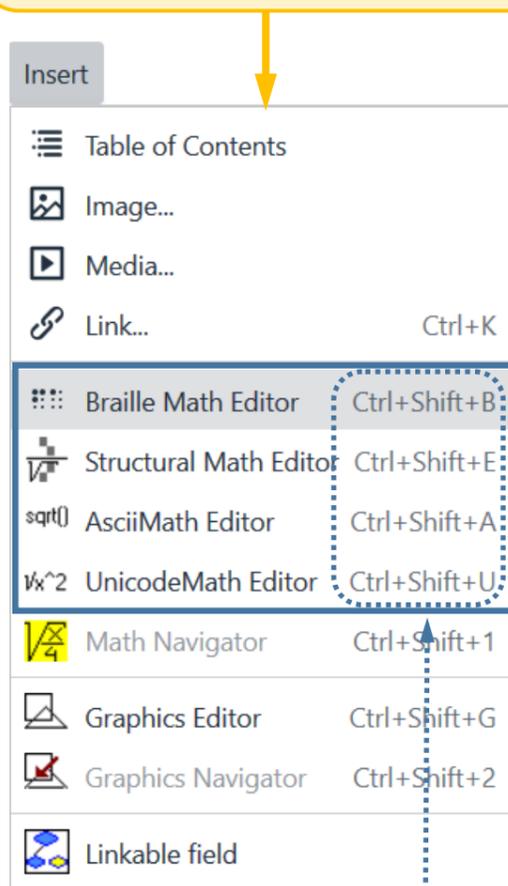


The EuroMath web application includes 4 math editors: **Braille Math Editor**, **Structural Math Editor**, **AsciiMath Editor** and **UnicodeMath Editor**. By using these you can write mathematical expressions in various notations. Choose the editor that fulfils your vision needs and suits your devices best (QWERTY keyboard, computer mouse, physical braille keyboard). Run the **Math Navigator** to navigate and read step by step parts of a complex math formula.

### 1. Run the editor

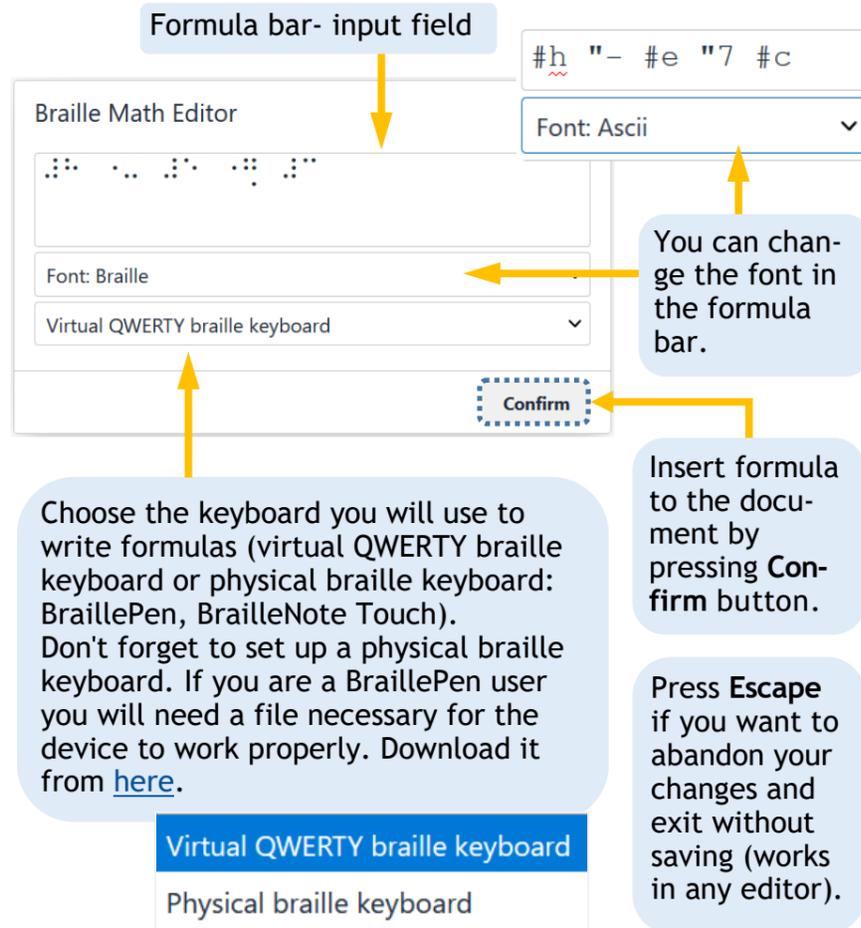
Position the cursor in the place of the document where you want to enter the formula, then go to the **Insert** menu and select your editor by pressing Enter key.



To work faster, use the keyboard shortcut assigned to each editor. Shortcuts work when the focus is in the document area and the screen reader edit mode is on.

### 2. Braille Math Editor

In this editor you can write formulas in BNM or UEB braille mathematical notation, depending on the language of the application (**Settings-> Language**). UEB notation is active for the selected English language.

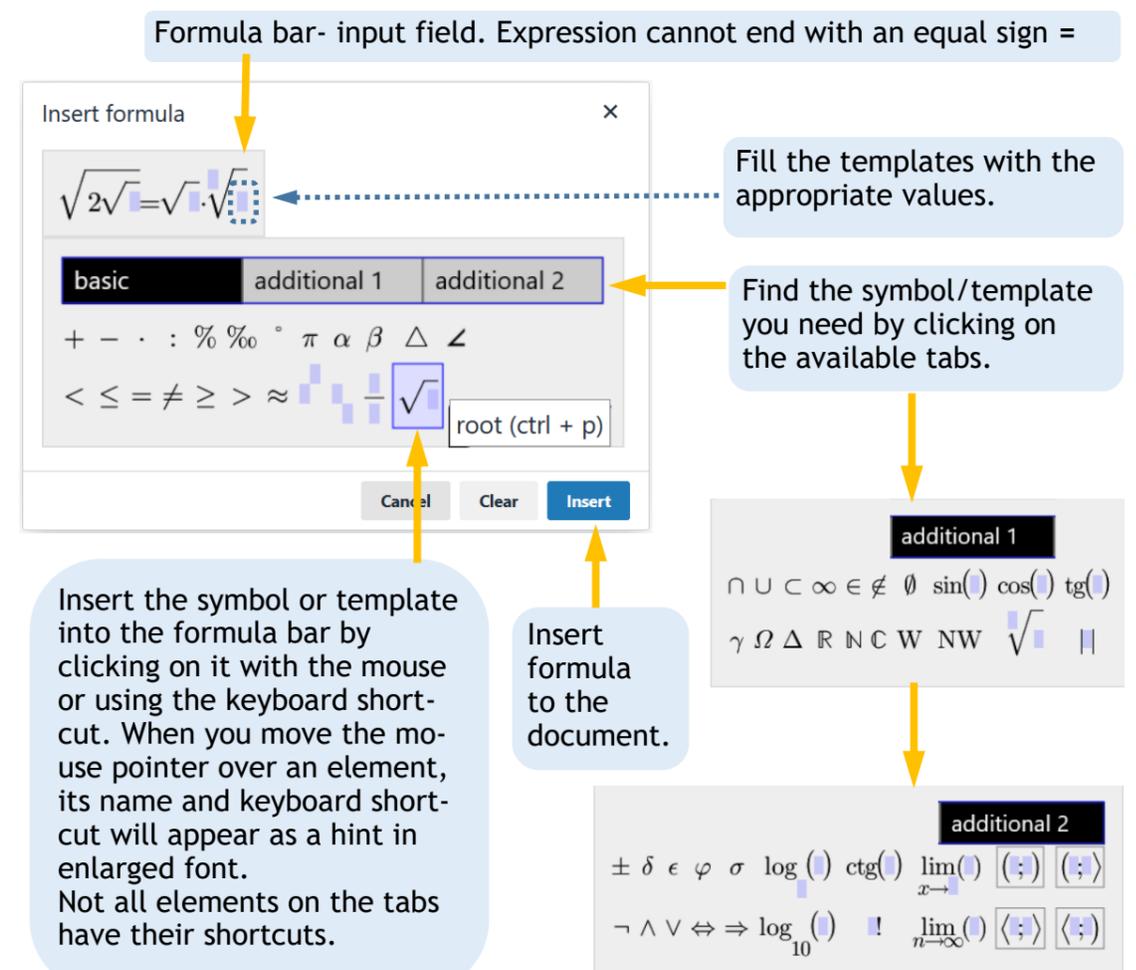


[How to start working with EuroMath?](#)  
[How does a blind reader use the Braille Math Editor?](#)

Read more about braille keyboard support in the EuroMath, p. 22

### 3. Structural Math Editor

You can write formulas just like in MS Word, using the characters available on the QWERTY keyboard as well as symbols and structure templates located on 3 tabs, which you fill with appropriate values after inserting into the formula bar. Build expressions top-down.



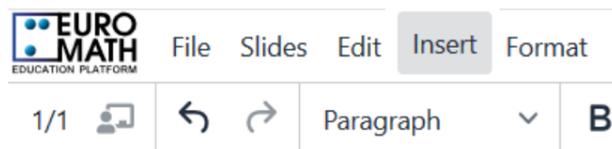
[Writing formula using the Structural Math Editor](#)

Read more about formula editing, p. 28

CTRL+SHIFT+A

#### 4. AsciiMath Editor

In this editor you can write formulas in linear [AsciiMath](#) notation by using symbols available on the QWERTY keyboard. The editor window appears directly in the body of the document. As you write the formula, you have a graphical preview of your expression below, so you can easily correct its syntax.



c) 
$$\frac{(x-1)/5 = (-x+4)/(2.5)}{\frac{x-1}{5} = \frac{-x+4}{2.5}}$$

Formula bar (input field)

Simultaneous graphic preview of the math expression

$$2.5(x - 1) = 5(-x + 4)$$

$$2.5x - 2.5 = -5x + 20$$

$$2.5x + 5x = 20 + 2.5$$

$$7.5x = 22.5$$

AsciiMath examples:

$$\{(x+2y=7),(2x-y=1)\}$$

Equation system

$$E=mc^2$$

Exponentiation

$$\int_{-1}^1 -1^1 \sqrt{1-x^2} dx = \frac{\pi}{2}$$

Definite integral

$$x \in \mathbb{R}$$

Set of real numbers

$$\lim_{x \rightarrow +\infty} (x \rightarrow +\infty) = f(x)$$

Limit of a function

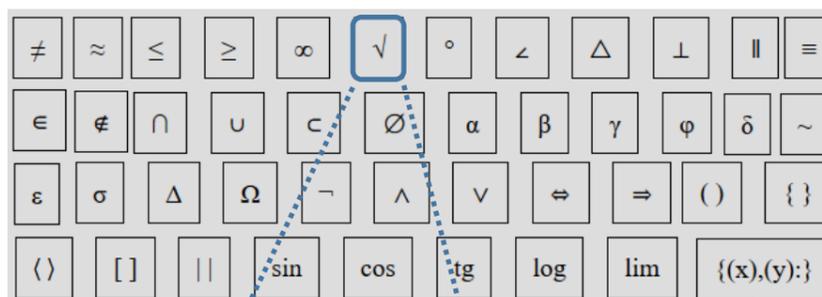
$$\sum_{i=1}^n i^3 = \left(\frac{n(n+1)}{2}\right)^2$$

Summation

CTRL+SHIFT+U

#### 5. UnicodeMath Editor

You can write formulas here in linear notation, which we call UnicodeMath. It is an extension of the AsciiMath notation by symbols not available on the QWERTY keyboard, such as the angle, triangle, root and others. They are located on the ribbon, from where they can be selected and inserted into the formula by clicking the mouse or using a finger and stylus on the touch screen.



$$\sqrt{a} * \text{sqrt } b = \sqrt{a*b}$$

$$\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$$

Ribbon with the symbols

The UnicodeMath editor allows you to enter symbols in AsciiMath notation. The example above uses both the square root symbol from the ribbon and the text "sqrt" as in AsciiMath. In both cases, the graphic visualization of the expression is correct.

$$\Delta = b^2 - 4ac$$

$$\Delta = (-8)^2 - 4 \cdot (-2) \cdot 10 = 64 + 80 = 144$$

$$\sqrt{\Delta} = \sqrt{144} = 12$$

You can also write multi-line expression transformations. **SHIFT+Enter** moves the cursor to a new line.

Finish editing by pressing the **Enter** key. The formula you wrote is inserted into the document. You will achieve the same effect when you click anywhere in the document outside the input field.

[How to use UnicodeMath Editor?](#)  
[How to use AsciiMath Editor?](#)

Keyboard navigation through the functions and math content, p. 16

CTRL+SHIFT+1

#### 6. Math Navigator

This tool will allow you to conveniently familiarize yourself with the elements of a complex formula and correct the selected part with any editor, without having to load the entire expression. If you are a blind student, you can navigate and explore formulas with the cursor arrows or touch gestures (a portable version of NVDA or an installed [add-on](#) is required).

Consider the function:

$$f(x) = \frac{16 - x^2}{4 + x}$$

Select the formula. The visible frame around the formula and its semantic reading indicate whether it is selected properly.

whose domain is the set of all real numbers except -4.

Start the **Math Navigator** using the **Insert** menu option, keyboard shortcut or pop-up menu (**SHIFT+F10**) and then explore the formula with the arrow keys. Parts of the formula will be highlighted sequentially and read by a screen reader.

**Math Navigator**

①  $f(x) = \frac{16 - x^2}{4 + x}$     ②  $f(x) = \frac{16 - x^2}{4 + x}$     ③  $f(x) = \frac{16 - x^2}{4 + x}$

④  $f(x) = \frac{16 - x^2}{4 + x}$     ⑤  $f(x) = \frac{16 - x^2}{4 + x}$     ⑥  $f(x) = \frac{16 - x^2}{4 + x}$

Insert    Edit selection in AsciiMath    Edit selection in Unicode    Edit selection in Braille    Cancel

Insert the corrected formula into the document

Edit selected part of the formula with your preferred editor. Press the appropriate button.

**Ascii Editor**

$x^2$

Insert to Math Navigator    Cancel

**Braille Math Editor**

Font: Braille

Keyboard shortcuts for navigating, p. 19

Using formula editors and formula navigator by the keyboard and gestures, p. 17

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