

The musikui package v1

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This package is for easy expression of arithmetical restorations with L^AT_EX.

$$\begin{array}{r} \square 7 \square \square \square \\ \square \square \square \overline{) \square \square \square \square \square \square \square \square} \\ \square \square \square \square \\ \hline \square \square \square \\ \square \square \square \\ \hline \square \square \square \square \\ \square \square \square \\ \hline \square \square \square \square \\ \square \square \square \square \\ \hline \square \square \square \square \\ \square \square \square \square \\ \hline 0 \end{array}$$

The package is maintained on GitHub:

- <https://github.com/puripuri2100/musikui>

1 Package read

Read using `\usepackage` command. There is no option.

```
\usepackage{musikui}
```

2 Dependent package

graphics package

3 License

The MIT License

4 Provide command

4.1 Commands related to composition

```
\kake{<multiplicand>}{<multiplier>}{<product>}
\wari{<dividend>}{<divide>}{<quotient>}
\musi{<holes>}{<distance from the right end>}
\sen
\bubunsen{<length>}{<distance from the right end>}
```

4.2 Commands related to holes

```
\eaten{<numbers etc.>}
\noneaten{<numbers etc.>}
\halfeaten{<numbers etc.>}
\halfnoneaten{<numbers etc.>}
\hhalfeaten{<numbers etc.>}
\hhalfnoneaten{<numbers etc.>}
```

5 The role of each command

The role of each command is shown in Table 1.

Table 1:

<code>\kake</code>	Outputs <multiplicand>,<multiplier> and <product> of multiplication arithmetical restorations calculation.
<code>\wari</code>	Outputs <dividend>,<divide> and <quotient> of division arithmetical restorations calculation.
<code>\musi</code>	Outputs <holes>,<distance from the right end>.
<code>\sen</code>	line
<code>\bubunsen</code>	Line of the specified length
<code>\eaten</code>	normal hole
<code>\noneaten</code>	hole without a line
<code>\halfeaten</code>	Half the width hole of <code>\eaten</code> .
<code>\halfnoneaten</code>	Hole without a line with half width of <code>\eaten</code> .
<code>\hhalfeaten</code>	Two holes with <code>\harleaten</code> side by side.
<code>\hhalfnoneaten</code>	<code>\hhalfeaten</code> line without a hole

6 Notation

Use one musikui environment per an arithmetical restorations. For the representation part of the hole, a hole and a hole (or a number) are connected by “&”. After using `\kake` or `\wari`, you just line `\musi` and `\sen` like the hole counting you want to express. An example of division and multiplication is given below.

```

\begin{musikui}
\kake{8&\eaten&6&\eaten}
{\eaten&\eaten}
{\eaten&\eaten&\eaten&\eaten&\eaten}
\musi{\eaten&6&\eaten&\eaten&\eaten}{0}
\musi{\eaten&\eaten&\eaten&6}{1}
\sen
\end{musikui}

```

$$\begin{array}{r}
 8 \square 6 \square \\
 \times \quad \square \square \\
 \hline
 \square 6 \square \square \square \\
 \square \square \square 6 \\
 \hline
 \square \square \square \square \square
 \end{array}$$

```

\begin{musikui}
\wari{\eaten&\eaten&\eaten&\eaten}
{\eaten&\eaten}
{\eaten&\eaten}
\musi{\eaten&\eaten}{1}
\sen
\musi{1&\eaten}{0}
\musi{\eaten&\eaten}{0}
\sen
\musi{1}{0}
\end{musikui}

```

$$\begin{array}{r}
 \square \square \\
 \square \square \overline{) \square \square \square \square} \\
 \square \square \\
 \hline
 1 \square \\
 \square \square \\
 \hline
 1
 \end{array}$$

```

\begin{musikui}
\wari{\eaten{1}&\eaten{0}&\eaten{0}&\eaten{2}}
{\eaten{1}&\eaten{1}}
{\eaten{9}&\eaten{1}}
\musi{\eaten{9}&\eaten{9}}{1}
\bubunsen{4}{0}
\musi{1&\eaten{2}}{0}
\musi{\eaten{1}&\eaten{1}}{0}
\bubunsen{2}{0}
\musi{1}{0}
\end{musikui}

```

$$\begin{array}{r}
 \square 9 \square 1 \\
 \square 1 \square 1 \overline{) \square 1 \square 0 \square 0 \square 2} \\
 \square 9 \square 9 \\
 \hline
 1 \square 2 \\
 \square 1 \square 1 \\
 \hline
 1
 \end{array}$$

7 Customize

You can change the value of arithmetical restorations using `\renewcommand*`.

`\renewcommand*{<command name>}{<value>}`

The values whose roles and default values can be changed are shown in Table 3.

Table 3:

Command name	Role	Default value
<code>\musiwidth</code>	hole width	1.2em
<code>\musiheight</code>	hole height	0.96em
<code>\musidepth</code>	hole depth	0.24em
<code>\musihgap</code>	distance between hole and hole	0.4em
<code>\musivgap</code>	distance between hole and line	0.4em
<code>\musirule</code>	line width	0.4pt

<code>\musiopsymbol</code>	multiplication sign	<code>\$\times\$</code>
<code>\musiwarikakko</code>	divide symbol	<code>\Big)</code>