The musikui package v1

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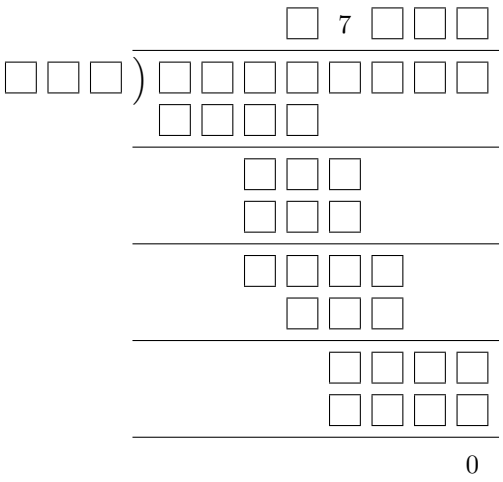
This package is for easy expression of arithmetical restorations with LaTeX.



The package is maintained on GitHub:

- `https://github.com/puripuri2100/musikui.sty`

1 Package read

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

```
\usepackage{musikui}
```

2 Dependent package

graphics package

3 License

The LaTeX Project Public 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:

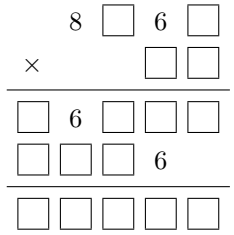
`\kake`	Outputs `<multiplicand>` `<multiplier>` `<product>` of multiplication arithmetical restorations calculation.
`\wari`	Outputs `<dividend>` `<divide>` `<quotient>` of division arithmetical restorations calculation.
`\musi`	Outputs `<holes>` `<distance from the right end>` .
`\sen`	line
`\bubunsen`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

6 Notation

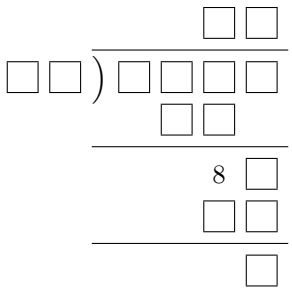
Use one musikui environment per an arithmetical restorations. For the representation part of the hole, a hole and a hole (or a number) are connected by "`&`". After using `\kake` or `\wari`, you just line `\musi` and `\sen` like the hole counting

you want to express. An example of division and multiplication is given below.

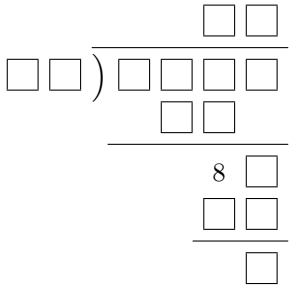
```
\begin{musikui}
\kake{8&\eaten{}&6&\eaten{}}
{\eaten{}&\eaten{}}
{\eaten{}&\eaten&\eaten{}&\eaten{}&\eaten{}}
\musi{\eaten{}&6&\eaten{}&\eaten{}&\eaten{}}{0}
\musi{\eaten{}&\eaten{}&\eaten{}&6}{1}
\sen
\end{musikui}
```



```
\begin{musikui}
\wari{\eaten{}&\eaten{}&\eaten{}&\eaten{}}
{\eaten{}&\eaten{}}
{\eaten{}&\eaten}
\musi{\eaten{}&\eaten{}}{1}
\sen
\musi{8&\eaten{}}{0}
\musi{\eaten{}&\eaten{}}{0}
\sen
\musi{\eaten{}}{0}
\end{musikui}
```



```
\begin{musikui}
\wari{\eaten{}&\eaten{}&\eaten{}&\eaten{}}
{\eaten{}&\eaten{}}
{\eaten{}&\eaten}
\musi{\eaten{}&\eaten{}}{1}
\bubunsen{4}{0}
\musi{8&\eaten{}}{0}
\musi{\eaten{}&\eaten{}}{0}
\bubunsen{2}{0}
\musi{\eaten{}}{0}
\end{musikui}
```



7 Customize

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

`\renewcommand*{\musiwidth}{2em}`

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

Table 3:

`\musiwidth`	hole width	1.2em
`\musiheight`	hole height	0.96em
`\musidepth`	hole depth	0.24em
`\musihgap`	distance between hole and hole	0.4em
`\musivgap`	distance between hole and line	0.4em
`\musirule`	line width	0.4pt
`\musiopsymbol`	multiplication sign	`$\times$`
`\musiwarikakko`	divide symbol	`\Big)`

8 Summary

If all of the above is taken into the drawing, it will be Figure 1 and Figure 2.

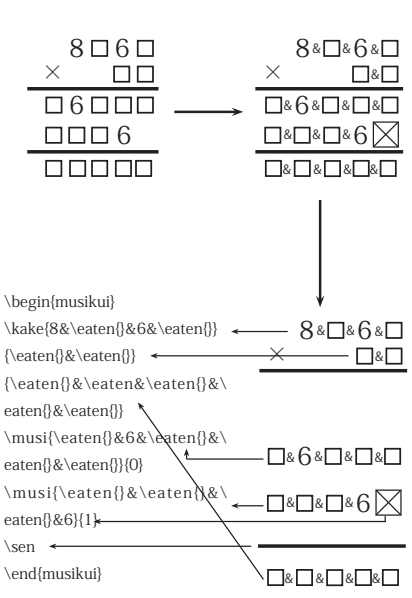


Figure 1: multiplication

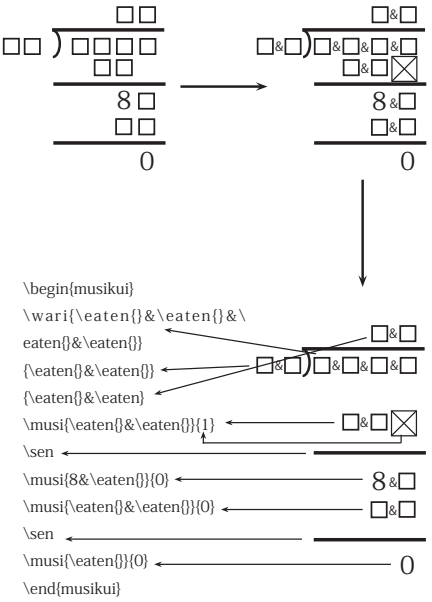


Figure 2: division