

# An overview of the package schl

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`schl` is a  $\text{\LaTeX}$  package that provides commands and environments suitable for document types that appear in a classroom environment. It's development is based on the Greek school educational practice, but it may be usefull in other contexts also. This document offers a quick view of working examples for `schl`'s macros.

We load the package with the option `english`:

```
\usepackage[english]{schl}
```

so that several macros be printed in English. These are defined in `languages/schl-english.def`. Currently, the package supports the options `english` and `greek`. Option `greek` is more complete.

To set the macros of the package in a different language, start by copying the file `languages/schl-template.def`. Rename it as `languages/schl-<other-language>.def`. Then, set the macros and modify accordingly the `schl.dtx` file.

The following list provides some basic example use cases.

1. Blank space is designated with the macros `\lowerdots` and `\blankspace`.

```
Fill the small spaces \lowerdots{3} and  
\blankspace{2em}.
```

Fill the small spaces ... and \_\_\_\_ .

```
Fill this bigger space\lowerdots{20}.\&  
And this one \blankspace{15em}.
```

Fill this bigger space.....  
And this one \_\_\_\_\_ .

```
Change the vertical position \lowerdots  
[0.5ex]{10} and \blankspace[-2.0ex]{5  
em}.
```

Change the vertical position ..... and \_\_\_\_\_ .

```
Also in mathematical expressions  
$\cos\frac{\pi}{4} = \lowerdots{4}$  
and $\cos\frac{\pi}{4} = \blankspace{2em}$.
```

Also in mathematical expressions  $\cos \frac{\pi}{4} = \dots$  and  
 $\cos \frac{\pi}{4} = \underline{\hspace{1cm}}$ .

2. Type a wish for good luck with the macro `\wish`:

```
\wish
```

**Good luck!**

We can change the text by redefining `\wish`. The macro `\letterspace` sets the space between adjacent letters.

```
\makeatletter  
\def\schl@wish{\letterspace{10} Let the  
power be with you!}  
\makeatother  
\wish
```

**Let the power be  
with you!**

3. With the macros `\fullname` and `\datefield` we write the name and date:

```
\fullname\\
\datefield
```

Fullname:  
Date:

Also, with dots or a line for blank space:

```
\fullname{\lowerdots{40}}\\
\datefield{\blankspace{10em}}
```

Fullname: .....  
Date: \_\_\_\_\_

We can pass a date using the macros `\setdate` and `\getdate`.

```
\setdate{May 12, 2525}
\datefield{\getdate}
```

Date: May 12, 2525

4. Write a deadline with the macro `\deadline`

```
\deadline{2/2/2058}
```

**Deadline:** 2/2/2058

5. Set the duration of a test with `\duration`

```
\duration{10'} or\\
\duration[\it]{10'} or\\
\duration[\rm]{10'}
```

**Duration:** 10' or  
*Duration:* 10' or  
**Duration:** 10'

6. Add a remark in a document with `\remark`

```
\remark{A remark starts here\ldots}\\
\remark[\rm]{Another one.}\\
\remark[\it]{And another one.}
```

**Remark:** A remark starts here...  
**Remark:** Another one.  
*Remark:* And another one.

7. Add a reminder with `\reminder`:

```
\reminder{Write a reminder\ldots}\\
\reminder[\mdseries]{Another one\ldots}
```

**Reminder:** Write a reminder..  
**Reminder:** Another one..

8. Add a header for the theory part of a document with `\theorypart`

```
\theorypart
```

**THEORY**

Add a header for the exercise part of a document with `\exercisepart`

```
\exercisepart
```

**EXERCISES**

9. The macro `\matchingque` can be used for matching questions. Note that items must be separated by a , character.

```
\setlist*[leftmatching]{label=}
\setlist*[rightmatching]{label=}
\matchingque[250pt]{number,shape,color}{
  blue,green,square,{3,\!14159265},
  circle,cube}
```

	blue
	green
number	square
shape	3,14159265
color	circle
	cube

10. The macro `\answer` is used to typeset the answer of an exercise.

```
\begin{exercise}
\item Find the sum  $1 + 1$ .\hfill\answer[
  footnotesize]{2}
\end{exercise}
```

**Exercise 1.** Find the sum  $1 + 1$ . (Ans.: 2)

11. With the macro `\solution`, we write the solution of an exercise.

```
\begin{exercise}
\item Prove that there are infinite prime
  numbers.
\solution{%
  Assume that there is a finite number
    of primes  $p_1, \ldots, p_n$ .
    Define the integer\ldots}
\end{exercise}
```

**Exercise 1.** Prove that there are infinite prime numbers.

#### Solution

Assume that there is a finite number of primes  $p_1, \dots, p_n$ . Define the integer...

12. Set points to exercises with the macro `\points`:

```
\begin{schltask}
\item \points{25}\par
  Prove the theorem of Bolzano.
\item \points{11}\par
  Let  $f: \mathbb{R} \rightarrow \mathbb{R}$ 
  be a function with  $f(x) = \frac{1}{x-1}$ .
  \begin{enumerate}
\item \points[\itshape]{10} Find its
    domain.
\item \points[\itshape]{1} Calculate the
    value  $f(3)$ .
  \end{enumerate}
\end{schltask}
```

**TASK 1** (points 25)

Prove the theorem of Bolzano.

**TASK 2** (points 11)

Let  $f: \mathbb{R} \rightarrow \mathbb{R}$  be a function with  $f(x) = \frac{1}{x-1}$ .

( $\alpha'$ ) (points 10) Find its domain.

( $\beta'$ ) (point 1) Calculate the value  $f(3)$ .

13. Write hints with the macro `\hint`:

```
\begin{exercise}
\item Prove that between two rational
      numbers, there is a rational.
      \hint[\par\noindent\scriptsize]{%
        Assume rationals  $\rho_1 < \rho_2$ . We
        define the real number  $\frac{\rho_1 + \rho_2}{2}$ . Then,  $x$  is\
        \ldots}
\item Prove that  $(\alpha + \beta)^2 = \alpha^2 + 2\alpha\beta + \beta^2$ .
      \hint[\par\noindent\scriptsize]{%
        We have  $(\alpha + \beta)^2 = (\alpha + \beta) \cdot (\alpha + \beta) = \ldots$ }
\end{exercise}
```

**Exercise 1.** Prove that between two rational numbers, there is a rational.

**Hint:** Assume rationals  $\rho_1 < \rho_2$ . We define the real number  $\frac{\rho_1 + \rho_2}{2}$ . Then,  $x$  is...

**Exercise 2.** Prove that  $(\alpha + \beta)^2 = \alpha^2 + 2\alpha\beta + \beta^2$ .

**Hint:** We have  $(\alpha + \beta)^2 = (\alpha + \beta) \cdot (\alpha + \beta) = \dots$

14. Set the title of a worksheet with `\worksheethd`

```
\worksheethd
or
\worksheethd{for \S A.2.3}
```

**Worksheet**

or

**Worksheet for §A.2.3**

15. Designate space for teacher(s)/headmaster signatures with the macro `\signatures`

```
\signatures{Georg Cantor}
\hfill
\signatures[Teachers]{First Teacher,Second
      Teacher}
```

Headmaster

Teachers

Georg Cantor

First Teacher

Second Teacher

16. Headers for tests can be set with the macro `\examhd`

```
\examhd{}
\examhd{on fractions}
\examhd[Summative Test]{on chapter 1}
```

**Test**

**Test on fractions**

**Summative Test on chapter 1**

17. With `\finalexamhd` we can set a header for end year summative tests.

```
\finalexamhd{WRITTEN}{MAY -- JUNE}
```

**WRITTEN EXAMS  
PERIOD MAY – JUNE**

18. A school logo can be set with `\schoollogo`.

```
\school{KRONOS HIGH SCHOOL}
\grade{7th Grade}
\subject{Mathematics}
\teacher{Georg Cantor}
\schoollogo{200pt}
```

KRONOS HIGH SCHOOL  
7th Grade  
Mathematics  
Georg Cantor

19. True-false type questions can be set with the environment `truefalse`

```
\begin{truefalse}
\item Every real number is an integer.
\item A local maximum of a continuous
      function  $f$  on  $\mathbb{R}$ , is
      always greater than a local minimum.
\item The number  $\pi$  is rational.
\end{truefalse}
```

- |   |   |   |
|---|---|---|
| 1. Every real number is an integer.   | T | F |
| 2. A local maximum of a continuous<br>function $f$ on $\mathbb{R}$ , is always greater than<br>a local minimum. | T | F |
| 3. The number $\pi$ is rational.  | T | F |

`truefalse*` is a variant of `truefalse`:

```
\begin{truefalse*}
\item Every real number is an integer.
\item A local maximum of a continuous
      function  $f$  on  $\mathbb{R}$ , is
      always greater than a local minimum.
\item The number  $\pi$  is rational.
\end{truefalse*}
```

- |   |                          |                          |
|---|--------------------------|--------------------------|
|   | T                        | F                        |
| 1. Every real number is an integer.   | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. A local maximum of a continuous<br>function $f$ on $\mathbb{R}$ , is always greater than<br>a local minimum. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The number $\pi$ is rational.  | <input type="checkbox"/> | <input type="checkbox"/> |

20. With the environment `exercise` you can typeset exercises.

```
\begin{exercise}
\item Write all prime integers that are
      less than $100$.
\item We 've bought $120$ watermelons from
      a local grocery shop. The total
      weight was $360$, kg and the
      watermelons were sold for $0.5$euro$
      per $kg$. The grocer was highly
      delighted from this and decided to
      dedicate himself to the black art of
      Mathematics. Furthermore, he offered
      as a $2.5\%$ discount. How much money
      did we gave for the watermelons?
\item Prove that the sum of the angles of
      a triangle equals $180^\circ$.
\end{exercise}
```

**Exercise 1.** Write all prime integers that are less than 100.

**Exercise 2.** We 've bought 120 watermelons from a local grocery shop. The total weight was 360 kg and the watermelons were sold for 0.5€ per kg. The grocer was highly delighted from this and decided to dedicate himself to the black art of Mathematics. Furthermore, he offered as a 2.5% discount. How much money did we gave for the watermelons?

**Exercise 3.** Prove that the sum of the angles of a triangle equals 180°.

21. The environment `schltask` can be used for summative tests.

```
\begin{schltask}
\item Solve the equation  $x^2 - 3x + 2 = 0$ .
\item Prove the Pythagorean theorem.
\item Prove that the medians of a triangle
      have a common point.
\end{schltask}
```

**TASK 1** Solve the equation  $x^2 - 3x + 2 = 0$ .

**TASK 2** Prove the Pythagorean theorem.

**TASK 3** Prove that the medians of a triangle have a common point.

22. The environment `question` can be used to typeset a list of questions.

```
\begin{question}
\item Is there a biggest real number?
\item Is there a smallest positive real
      number?
\end{question}
```

**Question 1.** Is there a biggest real number?

**Question 2.** Is there a smallest positive real number?

23. The environment `multichoice` is for multiple choice questions:

```
\noindent\begin{multichoice}[label=\textbf{
      {\Roman*}}]
\item Choice 1
\item Choice 2
\item Choice 3
\end{multichoice}
```

**I)** Choice 1      **II)** Choice 2      **III)** Choice 3

Another example

```
\noindent\begin{multichoice}[before=\
      hspace{2em},itemjoin=\hspace{3em},
      label=\bf\arabic*{}]]
\item A long choice
\item A longer choice\\\hspace*{3em}
\item An even longer choice
\end{multichoice}
```

**1)** A long choice      **2)** A longer choice  
**3)** An even longer choice

24. Environment `tickchoice`. Horizontal alignment

```
\noindent\begin{tickchoice*}
\item Choice A
\item Choice B
\item Choice C
\end{tickchoice*}
```

☐ Choice A      ☐ Choice B      ☐ Choice C

and vertical

```
\noindent\begin{tickchoice}
\item Choice A
\item Choice B
\item Choice C
\end{tickchoice}
```

☐ Choice A  
☐ Choice B  
☐ Choice C