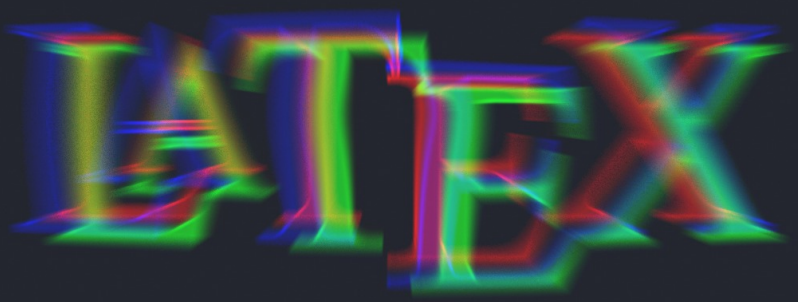
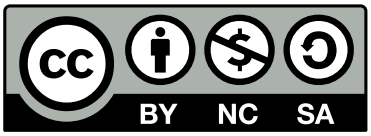
Latex in Examples

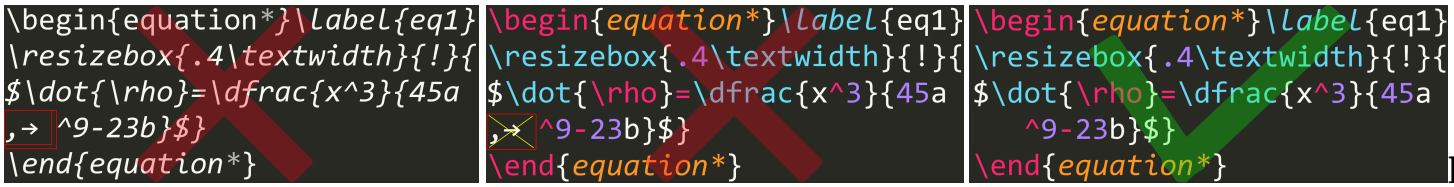


Thanks to me

Examples in this book is updated every week.



Contents



how

CORRECT paste code from examples

Chapter 1

Math Tips

1.1 Auto-resizing equation

$$\dot{\rho} = \frac{x^3}{45a^9 - 23b}$$

```
\begin{equation*}\label{eq1}
\resizebox{.4\textwidth}{!}{ % change .4 to 0.5...
$\dot{\rho}=\dfrac{x^3}{45a^9-23b}$}
\end{equation*}
```

1.2 Form for simplest calculation

Fill with number
if it does't work try another PDF viewer

a:

b:

c:

$\sum =$ 0

```
\documentclass{article}
\usepackage{hyperref}
\begin{document}
\newcommand{\sss}[1]{this.getField("#1").value}
\begin{Form}
\noindent%
Fill with number\\

\TextField[name=a]{a:} \\

\TextField[name=b]{b:} \\

\TextField[name=c]{c:} \\
\noindent%
$\sum = $ \TextField[name=AvgStat, calculate={
  event.value = (
     \sss{a} +
     \sss{b} +
     \sss{c}) ;
}, readonly, value=0]{}
\end{Form}
\end{document}
```

1.3 Equation in the form of steps

$$\frac{n_0}{n_1} = q_1 + \cfrac{1}{q_2 + \cfrac{1}{q_3 + \cfrac{1}{q_4 + \ddots + \cfrac{1}{q_{k-1} + \cfrac{1}{q_k}}}}}$$

```
\documentclass{article}
\usepackage{amsmath}
\def\mywd{35pt}
\begin{document}
\[
  \frac{n_0}{n_1} = q_1 + \dfrac{\makebox[\mywd][l]{
      ↪ $1$}}
  {\makebox[\mywd][l]{$q_2 + \dfrac{\makebox[\mywd][l]{
      ↪ $1$}}
  {\makebox[\mywd][l]{$q_3 + \dfrac{\makebox[\mywd][l]{
      ↪ $1$}}
  {\makebox[\mywd][l]{$q_4 +
   \raisebox{-6pt}{$\ddots$}
   \raisebox{-12pt}{+$\dfrac{\makebox[\mywd][l]{$1\
       ↪ kern30pt$}}
  {q_{k-1} + \dfrac{1}
  {q_k}}$}$}}$}}$}}$}}
\]
\end{document}
```

1.4 One number for multiline equation

$$\begin{aligned}
x_{ij} &= d_{ijk}E_k, \\
x_{ij} &= \varsigma_{ijk}H_k, \\
x_{ij} &= s_{ijkl}X_{kl}, \\
x_{ij} &= \xi_{ij}\delta p, \\
x_{ij} &= \alpha_{ij}\delta T
\end{aligned} \tag{1.1}$$

```
\documentclass{article}
\usepackage{amsmath}
\begin{document}
\begin{equation}
\begin{aligned}
x_{ij} &= d_{ijk}E_k, \\
x_{ij} &= \varsigma_{ijk}H_k,\\
x_{ij} &= s_{ijkl}X_{kl},\\
x_{ij} &= \xi_{ij}\delta p,\\
x_{ij} &= \alpha_{ij}\delta T
\end{aligned}
\end{equation}
\end{document}
```

1.5 Matrix in standalone documentclass

$$\begin{matrix}
a_{11} & a_{12} & a_{13} \\
a_{21} & a_{22} & a_{23} \\
a_{31} & a_{32} & a_{33}
\end{matrix}$$

```
\documentclass[preview,border={-5cm 0cm -5cm -0.1cm}]{
    ↪ standalone}
\usepackage{amsmath}
\begin{document}
\begin{equation*}
\begin{matrix}
a_{11} & a_{12} & a_{13} \\
a_{21} & a_{22} & a_{23} \\
a_{31} & a_{32} & a_{33} \\
\end{matrix}
\end{equation*}
\end{document}
```

1.6 Multiple lines, one centered label

$$\begin{aligned} A &= \frac{\pi r^2}{2} \\ &= \frac{1}{2}\pi r^2 \end{aligned} \tag{1.2}$$

```
\begin{equation} \label{eq1}
\begin{split}
A &= \frac{\pi r^2}{2} \\
 &= \frac{1}{2} \pi r^2
\end{split}
\end{equation}
```

1.7 Array as a fraction

$$I - IV - V \overset{\substack{6-4\\4-3}}{\substack{6-4\\4-3}} - I - cadence$$

$$I - IV - V \overset{\genfrac{}{}{0pt}{}{6-4}{4-3}}{} - I - cadence$$

$$I - IV - V \overset{\begin{array}{c}6-4\\4-3\end{array}}{} - I - cadence$$

```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
$I-IV-V^{\substack{6-4\\4-3\\6-4\\4-3}}-I-cadence$ \\

$I-IV-V^{\genfrac{}{}{0pt}{}{6-4}{4-3}}-I-cadence$ \\

$I-IV-V^{\begin{array}{c}6-4\\4-3\end{array}}-I-
    ↪ cadence$
\end{document}
```

1.8 Aligning equations inbetween text

Photochemical:

$$K_{UV} : M[1] \longrightarrow M^{\bullet}[1]$$

Catalyzed:

$$\begin{aligned} K_I &: I &&\longrightarrow 2R \\ K_S &: R + M[1] &&\longrightarrow RM^{\bullet}[1] \end{aligned}$$

```
\documentclass{article}
\usepackage{amsmath}

\begin{document}
\begin{alignat*}{2}
\intertext{Photochemical:}
K_{UV} &: M[1] &&\ch{-> M^{*}}[1]
\intertext{Catalyzed:}
K_I &: I &&\ch{->} 2R \\
K_S &: R + M [1] &&\ch{-> RM^{*}}[1]
\end{alignat*}
\end{document}
```

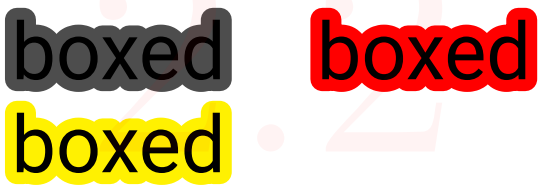
Chapter 2

Text, Symbols

2.1 New section symbol

```
\usepackage[object=vectorian]{pgfornament}
\usepackage{lipsum,tikz}
\newcommand{\sectionlinetwo}[2]{%
\nointerlineskip \vspace{.5\baselineskip}\hspace{\fill}
{\color{#1}\resizebox{0.5\linewidth}{2ex}
{{{\begin{tikzpicture}
\node (C) at (0,0) {};\node (D) at (9,0) {};
\path (C) to [ornament=#2] (D);
\end{tikzpicture}}}}}%
\hspace{\fill}\par\nointerlineskip
\vspace{.5\baselineskip}}
%usage---> \sectionlinetwo{orange}{88}
```

2.2 Wireframe rendering




```
\documentclass{article}
\usepackage{xcolor}
\usepackage{roboto}
\usepackage[outline]{contour}
\begin{document}
\roboto\huge\contourlength{.15em}
\contour{gray}{boxed}
\end{document}
```

2.3 Justifyed text

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list
6. Sixth item in a list
7. Seventh item in a list
8. Eighth item in a list
9. Ninth item in a list
10. Tenth item in a list

```
\documentclass{article}
\usepackage{blindtext}
\newcommand*\justify{%
  \fontdimen2\font=0.4em% interword space
  \fontdimen3\font=0.2em% interword stretch
  \fontdimen4\font=0.1em% interword shrink
  \fontdimen7\font=0.1em% extra space
  \hyphenchar\font=`\-% allowing hyphenation
}

\begin{document}
\texttt{\justify\blindenumerate[10]}
\end{document}
```

2.4 Text under an underline

$$\underset{\text{(some text)}}{\underline{\text{This is short text}}}$$

```
\documentclass[12pt]{article}
\usepackage{amsmath,soul}
\usepackage{soulpos}
\ulposdef{\ulnumaux}{%
$\underset{\saveulnum}{\rule[-.7ex]{\ulwidth}{.4pt}}$}
\newcommand{\ulnum}[2]{%
\def\saveulnum{#1}%
\ulnumaux{#2}}

\begin{document}
\ulnum{\text{(some text)}}{This is short text}
\end{document}
```

Chapter 3

Code, listings, minted ...

3.1 Code listing using *minted* in beamer

Python Code Example

```
1  import glob
2
```

```
\documentclass{beamer}
\usepackage{tcolorbox}
\tcbuselibrary{minted,skins,breakable}
\newtcblisting{pythoncode}[2][]{
  listing engine=minted, breakable, colback=bg,
  colframe=black!70, listing only,
  minted style=colorful, minted language=python,
  minted options={numbersep=3mm,texcl=true,#1},
  left=5mm,enhanced,
  overlay={\begin{tcbclipinterior}\fill[black!25] (frame.south west)
rectangle ([xshift=5mm]frame.north west);\end{tcbclipinterior}},
#2,}
\begin{document}
\begin{frame}[fragile]
    \frametitle{Premature Optimization}
    \begin{pythoncode}[linenos=true,]{title=Python Code
        ↪ Example}
    import glob
    \end{pythoncode}
\end{frame}
\end{document}
```

3.2 "Zebra" style listing

```
/**
* Prints Hello World.
**/
#include <stdio.h>

int main(void) {
    printf("Hello World!");
    return 0;
}
```

```
\documentclass{article}
\usepackage[T1]{fontenc}
\usepackage{beramono}
\usepackage{listings}
\usepackage{xcolor}
\newcommand\realnumberstyle[1]{}
\makeatletter
\newcommand{\zebra}[3]{%
    {\realnumberstyle{#3}}%
    \begingroup
    \lst@basicstyle
    \ifodd\value{lstnumber}%
        \color{#1}%
    \else
        \color{#2}%
    \fi
        \rlap{\hspace*{\lst@numbersep}%
        \color@block{\linewidth}{\ht\strutbox}{\dp\strutbox}%
        }%
    \endgroup}
\makeatother
\begin{document}
\begin{lstlisting}[language=C,basicstyle=\ttfamily,
numberstyle=\zebra{green!35}{yellow!35},numbers=left]
/**
* Prints Hello World.
**/
#include <stdio.h>
int main(void) {
   printf("Hello World!");
   return 0;
}
\end{lstlisting}
\end{document}
```

3.3 Listing with russian language

```
print("English comment"); // English comment
print("Russian comment"); // Русский комментарий
```

```
\documentclass{article}
\usepackage[T2A]{fontenc}
\usepackage[utf8]{inputenc}
\usepackage[russian]{babel}
\usepackage{listings}
\usepackage{xcolor}

\begin{document}
\lstset{ keepspaces=true,
backgroundcolor=\color{blue},
showstringspaces=false,
language=C,
extendedchars=\true,
framexrightmargin=0pt,
framexleftmargin=0pt,
framextopmargin=15pt,
framexbottommargin=15pt,
frame=tb, framerule=0pt,
basicstyle=\color{yellow}\ttfamily\small}

begin{lstlisting}% <<<<<<<<<< add "/"
print("English comment"); // English comment
print("Russian comment"); // %here can be russian words
end{lstlisting}% <<<<<<<<<< add "/"

\end{document}
```

3.4 Listing with `minted`

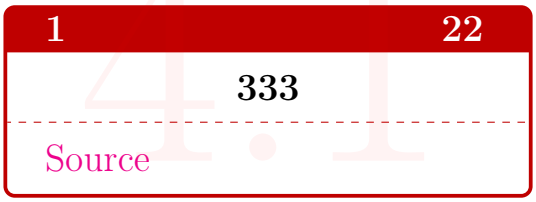
```cpp
int main(int ac, char *av[])
{
  printf("Hello, World");
  return 0;
}
```

```
\documentclass{article}
\usepackage[many]{tcolorbox}
\tcbuselibrary{minted}
\newtcblisting{mylisting}{
  colframe=cyan,
  colback=cyan!10,
  listing only,
  listing engine=minted,
  minted language=cpp,
  minted options={fontsize=\small,linenos,numbersep=3mm},
}

\begin{document}
\begin{mylisting}
some code
\end{mylisting}
\end{document}
```

Chapter 4

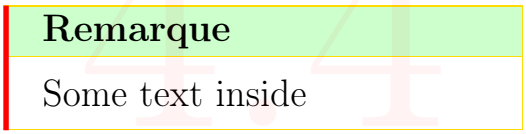
Tables, boxes and so on

4.1 Nice tcolorbox




```
\PassOptionsToPackage{svgnames}{xcolor}
\documentclass[twocolumn,a4paper]{article}
\usepackage{tcolorbox}
\tcbuselibrary{skins,breakable}
\usetikzlibrary{shadings,shadows}%preambule
\begin{tcolorbox}[colback=white!100,colframe=red!75!black,width=7cm,
    ↪ righttitle=0.5cm, subtitle style={boxrule=0.4pt,colback=yellow!50!red
    ↪ !25!white},title= \bf{1}\hfill \bf{22}]
      \begin{center}\bf{333}\end{center}
      \tcblower
      \href{https://tools.ietf.org/doc/texlive-doc/latex/tcolorbox/tcolorbox.
          ↪ pdf}{URL}
\end{tcolorbox}
```

4.2 Color box with yellow border




```
\documentclass[border=2mm]{standalone}
\usepackage[most]{tcolorbox}
\usepackage{lipsum}

\newtcolorbox{mycolorbox}[1]{
    enhanced, breakable,
    title=#1, colback=white,
    colbacktitle=green!20!white,
    coltitle=black,
    fonttitle=\bfseries,
    boxrule=.5pt, arc=0pt,
    outer arc=0pt,
    colframe=yellow!80!orange,
    borderline west={2pt}{0pt}{red} }

\begin{document}
\begin{mycolorbox}{Remarque}
\lipsum[1]
\end{mycolorbox}
\end{document}
```

4.3 A drop capital in a tcolorbox

SOME text. Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

```
\documentclass{article}
\usepackage{lettrine}
\usepackage{tcolorbox}
\usepackage{lipsum}

\begin{document}
\begin{tcolorbox}
\lettrine{S}{ome} text. \lipsum[1]
\end{tcolorbox}
\end{document}
```

4.4 *Table with the desired length.*

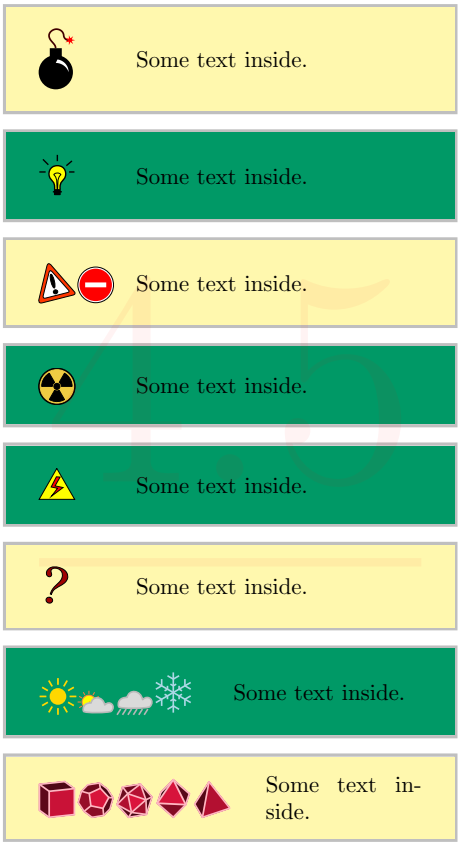
Table 1: **Caption**

Variant	res	Veriaty of waters f_0, res	C, res	L, res
5	1	2	1.26	5

a command was also created to make a new cell view in the table

```
\usepackage{graphicx}
\usepackage{tabularx}
\newcolumntype{Y}{>{\centering\arraybackslash}X}
\begin{document}
\begin{table}[h!]
\begin{center}
\caption{\textbf{Caption}}
  \begin{tabularx}{14cm}{|Y|Y|c|Y|Y|}
  \hline
  Variant & res & Veriaty of waters $f_0$, res & C, res & L, res\\
  \hline
  5 & 1 & 2 & 1.26 & 5\\
  \hline
  \end{tabularx}
\end{center}
\end{table}
```

4.5 bclogo – Creating colourful boxes with logos




```
\documentclass{article}
\usepackage{geometry}
\geometry{
paperwidth=8cm,
paperheight=14cm,
margin=0.5cm
}
\usepackage{xcolor}
\usepackage[most]{tcolorbox}
\usepackage[tikz]{bclogo}

\newtcolorbox{framedd}[1][]{
  colframe=lightgray,
  colback=yellow!40!white,
  enhanced jigsaw,
  sharp corners,
  lower separated=false,
  lefthand width=1cm,
  sidebyside gap=0.5cm,
  sidebyside,#1}

\begin{document}
\begin{framedd}
  \bcbombe \tcblower Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green]
  \bclampe \tcblower Some text inside.
\end{framedd}

\begin{framedd}
  \bcattention \bcinterdit \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green]
    \bcnucleaire \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green]
 \bcdanger \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}
  \bcquestion \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}[colback=blue!40!green, lefthand width=2.5cm]
  \bcsoleil \bceclaircie \bcpluie \bcneige \tcblower
  Some text inside.
\end{framedd}

\begin{framedd}[lefthand width=3cm]
  \bccube \bcdodecaedre \bcicosaedre \bcoctaedre \bctetraedre \tcblower
  Some text inside.
\end{framedd}
\end{document}
```

4.6 Warning banner

warning

Here is some text

```
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}
\usepackage[most]{tcolorbox}
\definecolor{orang}{RGB}{255,155,0}
\newtcolorbox[auto counter,number within=section]{caja}[1][]{
enhanced jigsaw,colback=white,colframe=orang,coltitle=orang,
fonttitle=\bfseries\sffamily,
sharp corners,
detach title,
leftrule=10mm,
% What you need %%%%%%%%%%%
underlay unbroken and first={\node[below,text=black,anchor=east]
at ([xshift=-5.5pt]interior.base west) {\Huge \textbf{!}};},
%%%%%%%%%%%%%%%%%%%%%%%%
breakable,pad at break=1mm,
#1,
code={\ifdefempty{\tcbtitletext}{}{\tcbset{before upper={\
    ↪ tcbtitle\par\medskip}}}},}
\begin{document}
\begin{caja}[title=warning]
The vertical alignment settings
\end{caja}
\end{document}
```

4.7 Photo positioning

Sample text here.


```
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{graphicx}
\begin{document}
\begin{tcolorbox}[enhanced,sharp corners,
width={5cm},
colback=white,
overlay={\node at (frame.south east) {\includegraphics[scale=0.1]{
    ↪ example-image-a}};} ]
Sample text here.
\end{tcolorbox}
\end{document}
```

4.8 Absolutely centered cells (vertically and horisontally)

all	in	cells
are	centered	vertically
and	horisontally	$\sum$

```
\documentclass{article}
\usepackage{float}
\usepackage{array, makecell}
\setcellgapes{5pt}

\begin{document}
\begin{table}[H]
\center
\makegapedcells
    \begin{tabular}{|c|c|c|c|}
    \hline
1&1&1&1\\ \hline
1&1&1&1\\ \hline
1&1&1&1\\ \hline

\end{tabular}
\end{table}

\end{document}
```

4.9 Martix made of table

$$d_{n+1}\begin{vmatrix} a_{1,1} & \dots, a_{1,n} & 0 \\ a_{1,1} & \dots, a_{1,n} & 0 \\ \dots\dots\dots & & \\ a_{1,1} & \dots, a_{1,n} & 0 \\ & & \\ a_{1,1} & \dots, a_{1,n} & 0 \\ a_{1,1} & \dots, a_{1,n} & 0 \\ \dots\dots\dots & & \\ a_{1,1} & \dots, a_{1,n} & 0 \end{vmatrix} = 0$$

```
\documentclass[a4paper,14pt]{extreport}
\begin{document}
\begin{table}[]
\begin{tabular}{l|l c r|l}
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& \multicolumn{3}{l|}{\dotfill} & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
$d_{n+1}$ & & & = $\pm 2ad_n$ = 0 \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
& \multicolumn{3}{l|}{\dotfill} & \\
& $a_{1,1}$ & $\dots, a_{1,n}$ & 0 & \\
\end{tabular}
\end{table}
\end{document}
```

4.10 Centering cells with NiceTabular

1	1	EVERY
1	1	CELL
1	1	CENTERED

```
\documentclass{article}
\usepackage[table]{xcolor}
\usepackage{nicematrix}
\NiceMatrixOptions{cell-space-top-limit=5pt,cell-space-bottom-
    ↪ limit=5pt}

\begin{document}
\begin{table}[htbp]
\centering
\begin{NiceTabular}{|c|c|c|}
\hline
\cellcolor{red}1& \cellcolor{green}1 & 1 \\ \hline
\cellcolor{orange}1 & \cellcolor{red!35}1 & 1 \\ \hline
\cellcolor{green!35}1 & \cellcolor{blue!45}1 & 1 \\ \hline
\end{NiceTabular}
\end{table}
\end{document}
```

4.11 Centered cells in longtable

Enum	Example	Description
1	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.
2a	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.
2b	test	Quisque facilisis auctor sapien. Pellentesque gravida hendrerit lectus. Mauris rutrum sodales sapien. Fusce hendrerit sem vel lorem. Integer pellentesque massa vel augue. Integer elit tortor, feugiat quis, sagittis et, ornare non, lacus. Vestibulum posuere pellentesque eros. Quisque venenatis ipsum dictum nulla. Aliquam quis quam non metus eleifend interdum. Nam eget sapien ac mauris malesuada adipiscing. Etiam eleifend neque sed quam. Nulla facilisi. Proin a ligula. Sed id dui eu nibh egestas tincidunt. Suspendisse arcu.

```
\documentclass{article}
\usepackage[left=1.5cm,right=1.5cm,
top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{float}
\usepackage{array, makecell}
\usepackage[utf8]{inputenc}
\usepackage{lipsum}
\usepackage{booktabs}
\usepackage{multirow}
\usepackage{pdflscape}
\usepackage{longtable, array}

\begin{document}
\begin{landscape}
\begin{longtable}{@{} *{2}{m{.15\paperwidth}} *{1}{m{.40\
    ↪ paperwidth}} @{}}
\endfirsthead
\endhead
\toprule
\textbf{Enum} & \textbf{Example} & \textbf{Description} \\
\midrule
1 & test & \lipsum[50]\\
\midrule
2a & test & \lipsum[50]\\
2b & test & \lipsum[50]\\
\bottomrule
\end{longtable}
\end{landscape}
\end{document}
```

4.12 If table is not wide enough

	Item1	Item2	Item3
Group1	0.8	0.1	0.1
Group2	0.1	0.8	0.1
Group3	0.1	0.1	0.8
Group4	0.34	0.33	0.33

```
\documentclass{article}
\usepackage[left=1.5cm,right=1.5cm,
top=1.5cm,bottom=2cm,bindingoffset=0cm]{geometry}
\usepackage{graphicx}
\usepackage{booktabs}
\usepackage{tabularx}

\begin{document}

\begin{table}[!ht]
\caption{Vertical and lateral stresses of mortar.}
\vspace{0.5cm}
\begin{tabularx}{\textwidth}{X X X X}
        & Item1 & Item2 & Item3 \\ \midrule
Group1 & 0.8 & 0.1 & 0.1 \\
Group2 & 0.1 & 0.8 & 0.1 \\
Group3 & 0.1 & 0.1 & 0.8 \\
Group4 & 0.34 & 0.33 & 0.33 \\ \bottomrule
\end{tabularx}
\label{c}
\end{table}

\end{document}
```

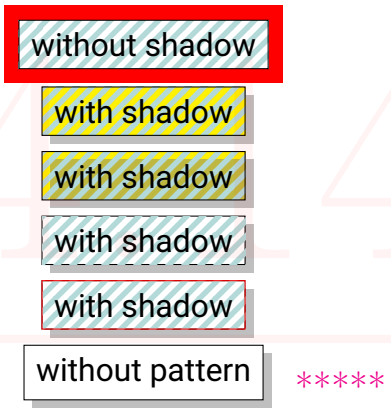
4.13 Text next to a table

text text text

1	22	333

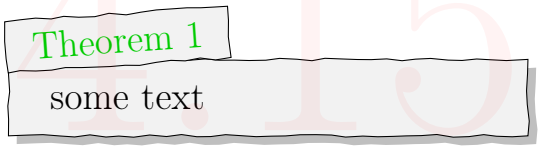
```
\documentclass[a4paper,14pt]{extreport}
\usepackage[left=1.5cm,right=1.5cm,top=1.5cm,bottom=2cm,
    ↪ bindingoffset=0cm]{geometry}
\usepackage{lipsum}

\begin{document}
\begin{minipage}[m]{0.58\textwidth}
text text text
\end{minipage}
\hspace{0.2cm}
\begin{minipage}[m]{0.40\textwidth}
\begin{tabular}{|c|c|c|}
\hline
1 & 22 & 333 & \\ \hline
  & & & \\ \hline
  & & & \\ \hline
  & & & \\ \hline
\end{tabular}
\end{minipage}
\end{document}
```

4.14 Text next to a table




```
\documentclass[tikz,border=5mm]{standalone}
\usetikzlibrary{chains,patterns,shadows,fit,backgrounds}

\makeatletter
\tikzset{% customization of pattern
          % based on <m.wibrow@gm...> - 2013-03-24 07:20:
        hatch distance/.store in=\hatchdistance,
        hatch distance=5pt,
        hatch thickness/.store in=\hatchthickness,
        hatch thickness=5pt
        }
\pgfdeclarepatternformonly[\hatchdistance,\hatchthickness]{north east hatch
    ↪ }% name
    {\pgfqpoint{-1pt}{-1pt}}% below left
    {\pgfqpoint{\hatchdistance}{\hatchdistance}}% above right
    {\pgfpoint{\hatchdistance-1pt}{\hatchdistance-1pt}}%
    {
        \pgfsetcolor{\tikz@pattern@color}
        \pgfsetlinewidth{\hatchthickness}
        \pgfpathmoveto{\pgfqpoint{0pt}{0pt}}
        \pgfpathlineto{\pgfqpoint{\hatchdistance}{\hatchdistance}}
        \pgfusepath{stroke}
    }
\makeatother

\begin{document}
 \begin{tikzpicture}[
    start chain=going below,
    node distance=2mm,
    Node/.style = {minimum width=#1,
                   shape=rectangle,
                   draw, fill=white,
                   on chain},
    Pattern/.style = {pattern=north east hatch,
                      pattern color=teal!30,
                      hatch distance=7pt,
                      hatch thickness=2pt},
    font=\small\sffamily]
%----------------
    \node[Node=24mm, Pattern,
            preaction={fill=white}] (a) {without shadow};
    \begin{scope}[on background layer]
        \node[fit=(a),fill=red] {};
    \end{scope}

    \node[Node=24mm, drop shadow,
            preaction={fill=yellow}, Pattern] (b) {with shadow};

    \node[Node=24mm, preaction={fill=yellow},
            drop shadow, Pattern] (b) {with shadow};

    \node[Node=24mm, postaction={Pattern},
            drop shadow] (b) {with shadow};

    \node[Node=24mm, postaction={draw=red, Pattern},
            drop shadow] (b) {with shadow};

    \node[Node=24mm, drop shadow] (c) {without pattern};
%---
 \end{tikzpicture}
\end{document}
```

4.15 Hand Drawn tcolorbox

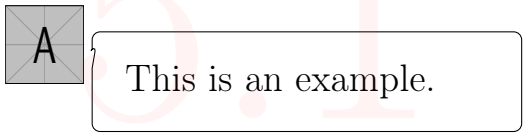



```
\documentclass{article}
\usepackage[most]{tcolorbox}
\usepackage{emerald}
\usetikzlibrary{decorations.pathmorphing}
\usetikzlibrary{shadows}
\tikzset{decoration={random steps,segment length=2mm,
    ↪ amplitude=0.6pt}}
\newtcbtheorem{mytheo}{Theorem}{
  coltitle=green!80!black,
  colback=lightgray!20,
  colbacktitle=lightgray!20,
  fonttitle=\bfseries\ECFAugie,
  enhanced,
  attach boxed title to top left={yshift=-0.18cm,xshift=-0.5mm},
  boxed title style={
    tikz={rotate=4,transform shape},
    frame code={
      \draw[decorate,fill=lightgray!20] (frame.south west) rectangle
          ↪ (frame.north east);
    } },
  frame code={
    \draw[decorate,fill=lightgray!20,drop shadow] (frame.north east
        ↪ ) rectangle (frame.south west);
  },}{th}

\begin{document}
\begin{mytheo}{}{theoexample}
content...
\end{mytheo}
\end{document}
```

Chapter 5

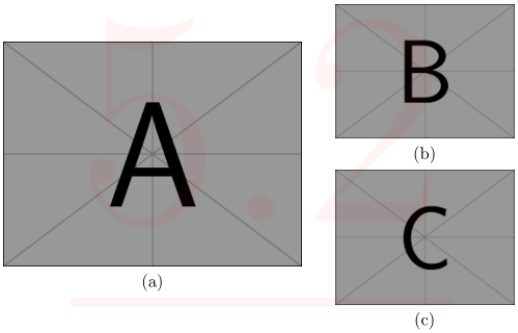
Figures

5.1 Comment to figure



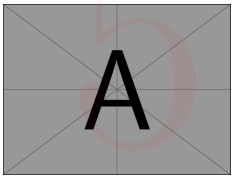

```
\documentclass{article}
\usepackage{tikz}
\usetikzlibrary{shapes.callouts}

\begin{document}
\begin{tikzpicture}
    \node [anchor=south west] at (0, 0) (cartoon) {\includegraphics[width
        ↪ =.15\textwidth,height=.15\textwidth]{example-image-a}};
    \node [anchor=north west,rectangle callout,draw=black,
    callout absolute pointer=(cartoon.east),
    rounded corners=3pt,text width=0.7\textwidth, inner sep=2ex] at (.19\
        ↪ textwidth,.125\textwidth) {This is an example.};
\end{tikzpicture}
\end{document}
```

5.2 Positioning 1 | 2



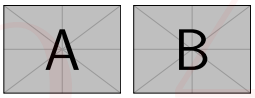

```
\documentclass{article}
\usepackage{graphicx}
\usepackage{subfig}
\begin{document}
\begin{figure}[htp]
\centering
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.5\linewidth]{example-image-a.png}}\\ (a)
\end{tabular}\qquad % some space
\begin{tabular}{@{}c@{}}
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-b.png}}\\ (b)
\\[0.1cm]
\subfloat{\includegraphics[width=0.3\linewidth]{example-image-c.png}}\\ (c)
\end{tabular}
\caption{Caption.}
\end{figure}
\end{document}
```

5.3 Placing image anywhere You want




```
\usepackage{graphicx}
\usepackage{tikz}
\begin{document}
\begin{tikzpicture}[overlay, remember picture]
\node[anchor=north west,xshift=4cm,yshift=-11cm]
at (current page.north west)
{\includegraphics[width=5.5cm]{example-image-a.png}};
\end{tikzpicture}
\end{document}
```

5.4 Italic sabfigure references



(a) *a* (b) *b*

Fig. 1*a* ← a in ***italic*** style

```
\documentclass{article}
\usepackage{graphicx}
\usepackage{subcaption}
\renewcommand\thesubfigure{{\itshape\alph{subfigure}}} %<--- added

\begin{document}
\begin{figure}
\centering
\begin{subfigure}{.25\textwidth}
\centering
\includegraphics[width=.6\linewidth]{example-image-a}
\caption{ \textit{a} }
\label{1a}
\end{subfigure}%
\begin{subfigure}{.25\textwidth}
\centering
\includegraphics[width=.715\linewidth]{example-image-b}
\caption{ \textit{b} }
\label{1b}
\end{subfigure}
\caption{ }
\label{fig1}
\end{figure}
 Fig. \ref{1a} $\leftarrow$ a in \textbf{\textit{italic}} style
\end{document}
```

5.5 Wrapfigure

5.6 Figures in landscape mode

Figure 1: FIG 1

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Figure 2: FIG 2

Figure 3: FIG 3

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language. Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

1

```
\documentclass[11pt]{scrartcl}
\usepackage[english]{babel}
\usepackage[utf8]{inputenc}
\usepackage{blindtext}
\usepackage[demo]{graphicx}
\usepackage{wrapfig}
\setlength{\parindent}{0pt}

\begin{document}
\begin{wrapfigure}[11]{l}{0.4\textwidth}
  \centering
  \includegraphics[scale=0.1]{Bild}
  \caption{FIG 1}
\end{wrapfigure}
\blindtext

\begin{wrapfigure}[11]{r}{0.4\textwidth}
  \centering
  \includegraphics[scale=0.1]{Bild}
  \caption{FIG 2}
\end{wrapfigure}
\blindtext

\begin{wrapfigure}[11]{l}{0.4\textwidth}
  \centering
  \includegraphics[scale=0.1]{Bild}
  \caption{FIG 3}
\end{wrapfigure}
\blindtext
\blindtext
\end{document}
```

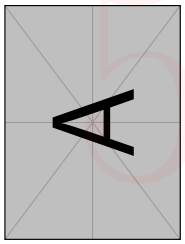


Table 5.2

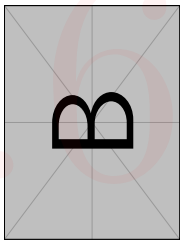


Table 5.3

```
\documentclass[12pt]{report}
\usepackage{graphicx}
\usepackage{lipsum}
\begin{document}
qqqqqqq
\begin{figure}[htb]
  \hfill
  \rotatebox{90}{%
    \begin{minipage}{0.45\linewidth}
      \includegraphics[width=\linewidth]{example-image-a}
      \caption{Caption1}
      \label{fig:First}
    \end{minipage}
  }\hfill
  \rotatebox{90}{%
    \begin{minipage}{0.45\linewidth}
      \includegraphics[width=\linewidth]{example-image-b}
      \caption{Caption2}
      \label{fig:First}
    \end{minipage}
  }\hfill\strut
\end{figure}

\end{document}
```

Chapter 6

Numbering, enumeration, itemizing

6.1 Numbering in few columns

1. c
2. g
3. d
4. f

```
\documentclass{article}
\usepackage{multicol}

\begin{document}
\begin{multicols}{2}%change to have more columns
\begin{enumerate}
\item c
\item g
\item d
\item f
\end{enumerate}
\end{multicols}
\end{document}
```

6.2 Enumeration environment with position number in the format (i, j)

(1) First level-one item

(1,1) First level-two item

(1,2) Second level-two item

(2) Second level-one item

(2,1) Still another level-two item

```
\documentclass{article}
\renewcommand{\theenumi}{(\arabic{enumi})}
\renewcommand{\theenumii}{(\arabic{enumi},\arabic{enumii})}
\renewcommand{\labelenumi}{\theenumi}
\renewcommand{\labelenumii}{\theenumii}
\makeatletter \renewcommand{\p@enumii}{} \makeatother

\begin{document}
\begin{enumerate}
\item First level-one item
  \begin{enumerate}
  \item First level-two item
  \item Second level-two item
  \end{enumerate}
\item Second level-one item
  \begin{enumerate}
  \item Still another level-two item
  \end{enumerate}
\end{enumerate}
\end{document}
```

6.3 Colored enumeration

1) item

2)

3) item

4)

5) special item

6)

7) item

```
\documentclass{article}
\usepackage{tikz}
\definecolor{amethyst}{rgb}{0.6, 0.4, 0.8}
\definecolor{applegreen}{rgb}{0.55, 0.71, 0.0}
\definecolor{arylideyellow}{rgb}{0.91, 0.84, 0.42}
\definecolor{asparagus}{rgb}{0.53, 0.66, 0.42}
\definecolor{atomictangerine}{rgb}{1.0, 0.6, 0.4}
\definecolor{bananayellow}{rgb}{1.0, 0.88, 0.21}
\definecolor{brightgreen}{rgb}{0.4, 1.0, 0.0}
\definecolor{cambridgeblue}{rgb}{0.64, 0.76, 0.68}
\definecolor{capri}{rgb}{0.0, 0.75, 1.0}
\definecolor{carnationpink}{rgb}{1.0, 0.65, 0.79}
\newcommand{\ClaudioList}{red,applegreen,amethyst,carnationpink,blue!50!
    ↪ cyan,arylideyellow,asparagus,atomictangerine,bananayellow,brightgreen
    ↪ ,cambridgeblue,capri}
\newcommand{\SebastianoItem}[1]{\foreach \X[count=\Y] in \ClaudioList
{\ifnum\Y=#1\relax
\xdef\SebastianoColor{\X}
\fi}
\tikz[baseline=(SebastianoItem.base),remember
picture]{%
\node[fill=\SebastianoColor,inner sep=4pt,font=\sffamily,fill opacity=0.5] (
    ↪ SebastianoItem){#1)};}}
\newcommand{\SebastianoHighlight}{\tikz[overlay,remember picture]{%
\fill[\SebastianoColor,fill opacity=0.5] ([yshift=4pt,xshift=-\pgflinewidth]
    ↪ SebastianoItem.east) -- ++(4pt,-4pt)
-- ++(-4pt,-4pt) -- cycle;}}

\begin{document}
\renewcommand{\labelenumi}{\SebastianoItem{\arabic{enumi}}}
  \begin{enumerate}
    \item item
    \item special item \SebastianoHighlight
    \item item
  \end{enumerate}
\end{document}
```

6.4 Leveled arabic enumeration

(1) First level-one item

(1,1) First level-two item

(1,2) Second level-two item

(2) Second level-one item

(2,1) Still another level-two item

```
\documentclass{article}
\renewcommand{\theenumi}{(\arabic{enumi})}
\renewcommand{\theenumii}{(\arabic{enumi},\arabic{enumii})}
\renewcommand{\labelenumi}{\theenumi}
\renewcommand{\labelenumii}{\theenumii}
\makeatletter
\renewcommand{\p@enumii}{}
\makeatother
\begin{document}
\begin{enumerate}
\item First level-one item
  \begin{enumerate}
  \item First level-two item
  \item Second level-two item
  \end{enumerate}
\item Second level-one item
  \begin{enumerate}
  \item Still another level-two item
  \end{enumerate}
\end{enumerate}
\end{document}
```

6.5 Change footnote symbol

Sample frame title

(*)

Just by changing the value of the number you can insert the symbol of your choice.

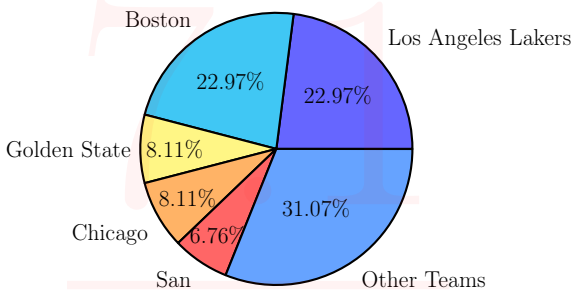
1. asterisk *
2. dagger †
3. double dagger ‡
4. section symbol §
5. paragraph ¶
6. parallel lines ‖
7. two asterisks **

```
\documentclass{beamer}
\renewcommand{\thefootnote}{ (\fnsymbol{footnote})}

\begin{document}
\begin{frame}
\frametitle{Sample frame title}
\begin{figure}
\includegraphics[width=0.5\linewidth]{example-image}\footnote[1]{image
    ↪ description}
\end{figure}
\end{frame}
\end{document}
```

Chapter 7

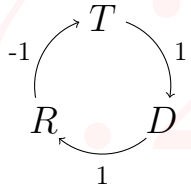
Plots, tikz, pie charts ...

7.1 Simple pie chart



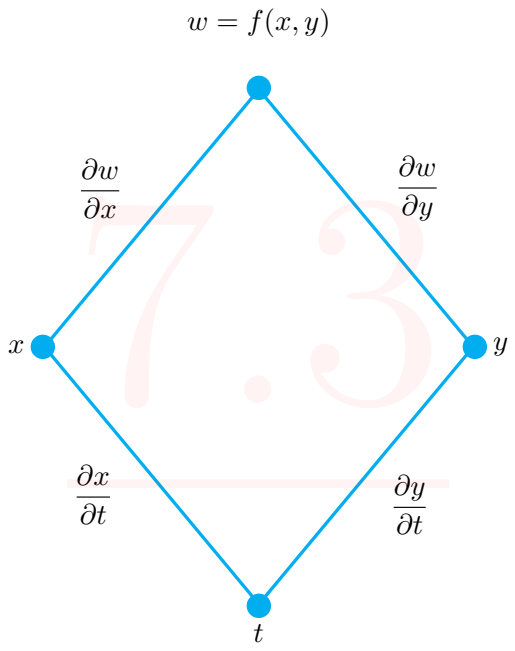

```
\documentclass[border=0.2cm]{standalone}
\usepackage{pgf-pie}

\begin{document}
\begin{tikzpicture}
\pie{22.97/Los Angeles Lakers,
22.97/Boston Celtics,
8.11/Golden State Warriors,
8.11/Chicago Bulls,
6.76/San Antonio Spurs,
31.07/Other Teams}
\end{tikzpicture}
\end{document}
```

7.2 Circled arrows with text



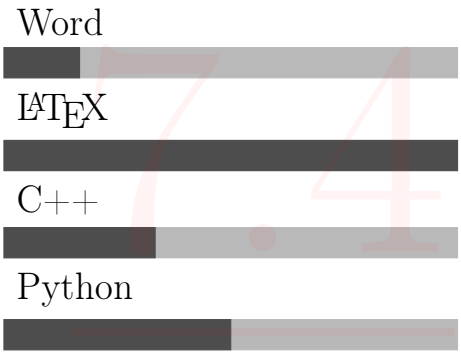

```
\documentclass{article}
\usepackage{tikz}

\begin{document}
\begin{tikzpicture}[->,scale=.7]
\node (i) at (90:1cm) {$T$};
\node (j) at (-30:1cm) {$D$};
\node (k) at (210:1cm) {$R$};
\draw (70:1cm) arc (70:-10:1cm) node[midway, right] {{\footnotesize 1}};
\draw (-50:1cm) arc (-50:-130:1cm) node[midway, below] {{\footnotesize 1}};
\draw (190:1cm) arc (190:110:1cm) node[midway, left] {{\footnotesize -1}};
\end{tikzpicture}
\end{document}
```

7.3 Diamond with text



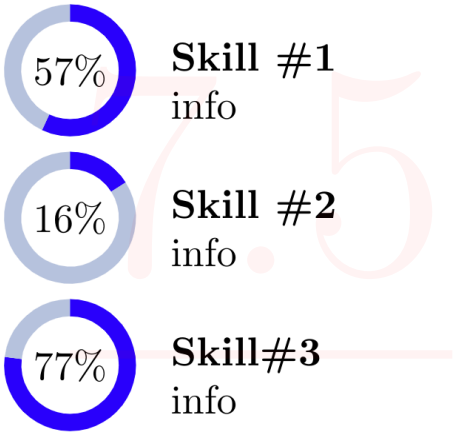

```
\documentclass[a4paper,14pt]{extreport}
\usepackage[left=1.5cm,right=1.5cm,top=1.5cm,bottom=2cm,bindingoffset=0
    ↪ cm]{geometry}
\usepackage{amsmath}
\usepackage{tikz}
\usetikzlibrary{shapes.geometric}

\begin{document}
\begin{tikzpicture}
\node[diamond,font=\small,
line width=0.4mm,scale=0.7,
    draw = cyan, minimum width = 7.5cm, %text = red,
    minimum height = 9cm] (d) at (0,0) { };
      \node [above=0.5cm] (a) at (d.90) {$w = f(x,y)$};
      \node [above=0.5cm,right=0.1cm] (b) at (d.45) {$\dfrac{\partial w}{\
          ↪ partial y}$};
      \node [above=0.5cm,left=0.1cm] (c) at (d.135) {$\dfrac{\partial w}{\
          ↪ partial x}$};
      \node [left=0.1cm] (dd) at (d.180) {$x$};
      \node [right=0.1cm] (e) at (d.0) {$y$};
      \node [below=0.1cm] (f) at (d.270) {$t$};
      \node [below=0.9cm,right=-0.3cm] (g) at (d.-30) {$\dfrac{\partial y}{\
          ↪ partial t}$};
      \node [below=0.5cm,left=0.1cm] (h) at (d.220) {$\dfrac{\partial x}{\
          ↪ partial t}$};
      \node at (d.90) [cyan,circle,fill,inner sep=3pt]{};
      \node at (d.180) [cyan,circle,fill,inner sep=3pt]{};
      \node at (d.0) [cyan,circle,fill,inner sep=3pt]{};
      \node at (d.270) [cyan,circle,fill,inner sep=3pt]{};
\end{tikzpicture}
\end{document}
```

7.4 Levels of skills




```
\documentclass{report}
\usepackage[T1]{fontenc}
\usepackage{tikz}
\usepackage{xcolor}

\definecolor{white}{RGB}{255,255,255}
\definecolor{gray}{HTML}{4D4D4D}
\definecolor{maingray}{HTML}{B9B9B9}

\newcommand\skills[1]{
    \begin{tikzpicture}
        \foreach [count=\i] \x/\y in {#1}{
            \draw[fill=maingray,maingray] (0,\i) rectangle (6,\i+0.4);
            \draw[fill=white,gray](0,\i) rectangle (\y,\i+0.4);
            \node[above right] at (0,\i+0.4) {\x};
        }
    \end{tikzpicture}
}

\begin{document}
\skills{{b/2}}
\skills{{a/1}}
\end{document}
```

7.5 Levels of skills




```
\documentclass[svgnames]{article}
\usepackage{tikz}
\usetikzlibrary{calc}
\usepackage{siunitx}% only to force percentages to be integers
\usepackage{enumitem}

\let\realItem\item% save for later use
\newcommand\percentageItem[1][10]{%
  \realItem[\smash{\tikz[baseline]{%
    \node[minimum width=4em] at (0,0) {\num[round-mode=places,round-
        ↪ precision=0]{#1}\%};
    \draw[thick,line width=1.5mm,Blue](90:5mm)
        arc [radius=5mm, start angle=90, delta angle=-#1*3.6];
    \draw[thick,line width=1.5mm,LightSteelBlue](90-#1*3.6:5mm)
        arc [radius=5mm, start angle=90-#1*3.6, end angle=-270];
    }}]%
}
\newlist{achievements}{itemize}{1}
\setlist[achievements]{
  before=\let\item\percentageItem,%make \item = \percentageItem
  leftmargin=*,
  label={},
  itemsep=3mm,
}

\begin{document}

\begin{achievements}
  \item[57]\textbf{Skill \#1}\\info
  \item[16]\textbf{Skill \#2}\\info
  \item[77]\textbf{Skill \#3}\\info
\end{achievements}

\end{document}
```

Chapter 8

Highlighting

8.1 Words highlighting 1

The quick brown fox jumps over the lazy dog.
The quick brown fox jumps over the lazy dog.

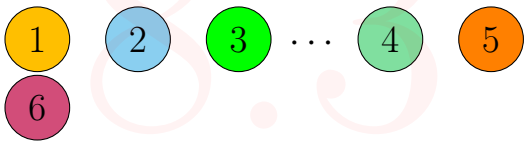
```
\documentclass{article}
\usepackage{tcolorbox}
\newtcbox{\mybox}[1][red]{on line,
arc=0pt,outer arc=0pt,colback=#1!10!white,colframe=#1!50!black,
boxsep=0pt,left=1pt,right=1pt,top=2pt,bottom=2pt,
boxrule=0pt,bottomrule=1pt,toprule=1pt}
\newtcbox{\xmybox}[1][red]{on line,
arc=7pt,colback=#1!10!white,colframe=#1!50!black,
before upper={\rule[-3pt]{0pt}{10pt}},boxrule=1pt,
boxsep=0pt,left=6pt,right=6pt,top=2pt,bottom=2pt}
\begin{document}
The \mybox[green]{quick} brown \mybox{fox}...\par
The \xmybox[green]{quick} brown \xmybox{fox} ...
\end{document}
```

8.2 Unusual words highlighting

Here You can see TYP more examples and learn something new.

```
\usepackage[many]{tcolorbox}
\newtcbox{\mylib}{enhanced,nobeforeafter, tcbox raise base, boxrule=0.4pt,
    ↪ top=0mm, bottom=0mm,
  right=0mm, left=4mm, arc=1pt, boxsep=2pt, before upper={\vphantom{dlg
    ↪ }}, colframe=green!50!black, coltext=green!25!black, colback=green
    ↪ !10!white, overlay={\begin{tcbclipinterior} \fill[green!75!blue!50!
    ↪ white] (frame.south west) rectangle node[text=white,font=\sffamily\
    ↪ bfseries\tiny,rotate=90] {TYP} ([xshift=4mm]frame.north west);\
    ↪ end{tcbclipinterior}}}
\begin{document}
\mylib{recieve}
\end{document}
```

8.3 Colored circles




```
\usepackage{tikz}
\usepackage[framemethod=TikZ]{mdframed}
\usepackage{xcolor}
\usetikzlibrary{calc}
\makeatletter
\newlength{\mylength}
\xdef\CircleFactor{1.1}
\setlength\mylength{\dimexpr\f@size pt}
\newsavebox{\mybox}
\newcommand*\circled[2][draw=blue]{\savebox\mybox{\vbox{\vphantom{
    ↪ WL1/}#1}}\setlength\mylength{\dimexpr\CircleFactor\dimexpr\ht\
    ↪ mybox+\dp\mybox\relax\relax}\tikzset{mystyle/.style={circle,#1,
    ↪ minimum height={\mylength}}} \tikz[baseline=(char.base)]
\node[mystyle] (char) {#2};}
\makeatother
\definecolor{amber}{rgb}{1.0, 0.75, 0.0}
\definecolor{babyblue}{rgb}{0.54, 0.81, 0.94}
usage --> \circled[fill=amber,draw=black]{1}
```

8.4 Whole line colored

some text
some text
some text

```
\documentclass{article}
\usepackage{xcolor}
\newcommand{\hly}[2]{\colorbox{#1!80}{\parbox{\textwidth}{#2}}}

\begin{document}
%\hly{YOURcolor}{some text}
\hly{green}{some text}
\hly{yellow}{some text}
\hly{red}{some text}
\end{document}
```

Chapter 9

For Fun