1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

The xlayouts package. [*]

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Abstract

Current layout packages, such as the layout and layouts packages do not easily permit, the drawing of grids. The package geometry shows a page layout, but does not make it clear what each line represents. The need for this package arose when I was developing different page layouts for chapter heads. It has a number of utilities, one of which is shown in this publication. An extensive list of styling options is provided via a key-value interface.

Contents

\textheight 598 pt

[*] This file (xlayouts.dtx) has version number v1.0, last revised 2012/05/26.

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

1 How to use the package

The package is used like any other LaTeX package, by including it in the preamble:

```
\usepackage{xlayouts}
```

It is recommended that options be loaded using the \cxset macro.

```
%         \cxset{geometry units=in}
```

2 Introduction

This package is a re-implementation of the Peter Wilson's layouts package. It follows the tradition originally implemented in the layout.sty of Kent McPherson. It defines the command xlayout that draws the page geometry on the current page. The package offers additional features, such as styling commands and diverges from tradition, in that it shows the dimension lines and value labels, making understanding of the arithmetic involved easier. It works in all the major classes.

This manual is typesets according to the conventions of the LaTeX docstrip utility which enables the automatic extraction of the LaTeX macro source files [GMS94].

3 Producing pages two-up

Sometimes it is instructive to view your own document in a two page view. This is probably easy with a viewer such as Acrobat Reader, but not so easy to save them on paper. We offer a facility to do this in the macros that follow:

\textheight 598 pt

4 Page Layouts

There are a number of ways you can include a page layout in your document.

5 Implementation

The implementation, uses PGF to set the key value parameters and TikZ to draw the layout. We try to avoid clashes with other packages by using the suffix @cx for all internal macros.

5.1 Dependencies

5.1.1 latex.ltx

5.1.2 xcolor.sty

xlayouts's colour handling depend on the xcolor package. The following internal macros are used directly: \@declaredcolor, \current@color, \set@color, \set@page@color

```
\IfFileExists{color.sty}{%
    \RequirePackage{color}%
    \let\needscolor@cx\@empty
```

\footskip 30 pt

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oddsidemargin 28 pt

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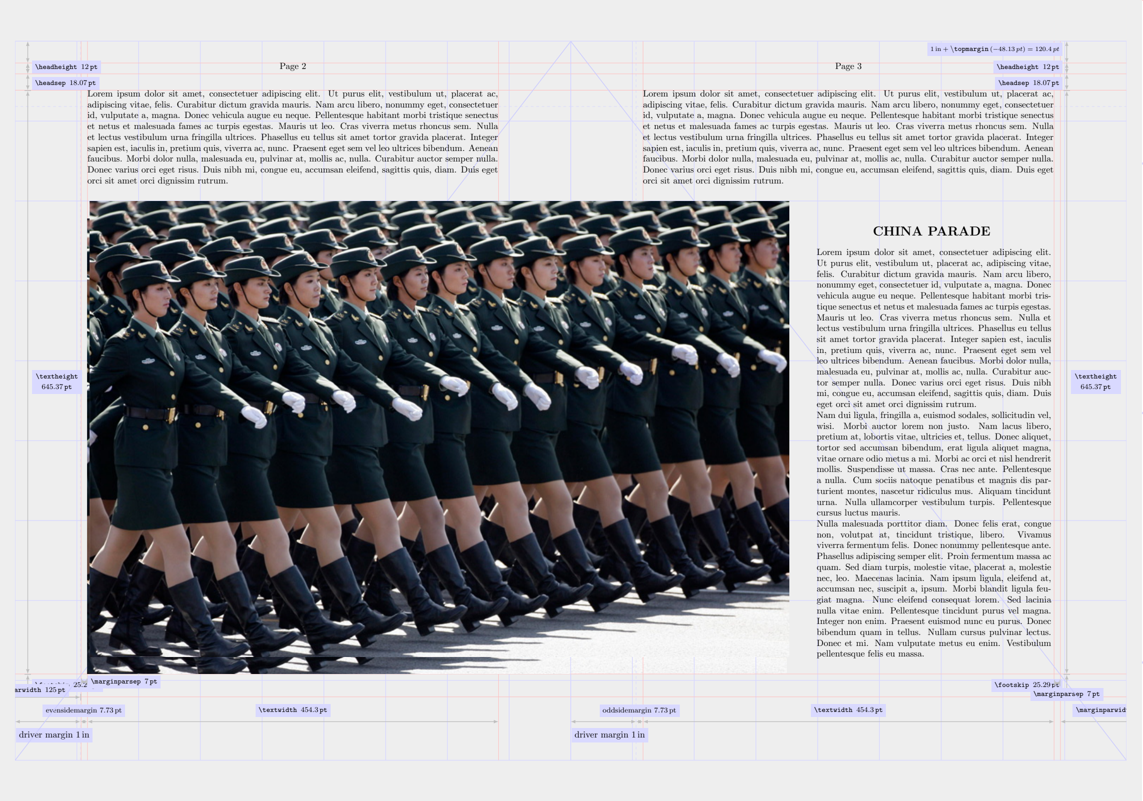
driver margin 1 in

1 in + \topmargin (17 *pt*) = 55.27 *pt*

\headheight 12 pt

\headsep 25 pt

\topfrac
.7



1 in + \topmargin (−48.13 *pt*) = 120.4 *pt*

Page 2

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Page 3

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Figure 1: Test

\textheight
598 pt

```
    }{}
    \RequirePackage{fp}
```

5.1.3 changepage.sty

We use the changepage to detect reliably if we are on an odd or even page.

```
    %\IfFileExists{changepage.sty}{%
        \RequirePackage{xcolor}
```

The package `translator` from Beamer's suite is used to internationalize some strings. This can make the diagrams more useful. Unsure at this stage how to pick it automatically from babel, if babel is used.

The loading of pgf can be problematic sometimes so we try and load it here.

```
    \RequirePackage{changepage}
    \RequirePackage{pgf}
    \RequirePackage{pgfpages}
    \RequirePackage{tikz}
    \RequirePackage{amsmath}
    \RequirePackage{fancyhdr}
```

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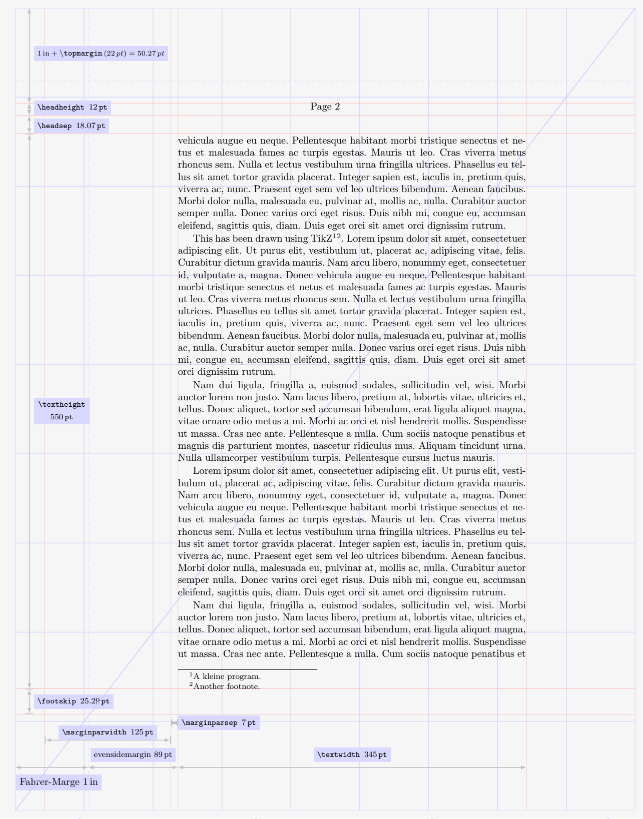

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This has been drawn using TikZ[1][2]. Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

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[1] A kleine program.
[2] Another footnote.

Figure 2: Test

\textheight 598 pt

5.2 Internationalization

Most of the package options, are set via keys before drawing the layouts. However we provide some keys to set languages, if the option is passed via babel or through the package options.

In the figures several words appear. They are stored in control sequences to be able to select a different language. Most of the languages I am unfamiliar with, so please if you can improve the spelling or find mistakes, let me know.

I have used for the first time in a larger Project the `translator` package.

If your language is not represented here, you can create a dictionary and perhaps send me a copy to include in the next release. First when we create a dictionary we give it a name. The name of the dictionary must start with its kind. The kind tells translator which kind of keys the dictionary contains. For example, the dictionaries of the kind translator-months-dictionary contain keys like January (note that this is a key, not a translation). Following the kind, the name of a dictionary must have a dash. Then comes the language for which the dictionary

le provides translations. Finally, the file name must end with `.dict`. Have a look at the one's provide with the package.

```
\@ifpackageloaded{babel}{%
\IfFileExists{translator.sty}
```

\footskip 30 pt

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oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

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```
      {\RequirePackage{translator}\typeout{Translator package loaded.}}{}
}%
{\RequirePackage[french,dutch,german,italian,english]{babel}
\IfFileExists{translator.sty}
      {\RequirePackage{translator}\typeout{Translator package loaded.}}{}}

\usedictionary{pages}
\DeclareOption{german}{\uselanguage{german}}
\DeclareOption{english}{\select@language{english}\uselanguage{english}}
\DeclareOption{italian}{\select@language{italian}\uselanguage{italian}}
\DeclareOption{dutch}{\select@language{dutch}\uselanguage{dutch}}
\DeclareOption{french}{\select@language{french}\uselanguage{french}}
\ProcessOptions*
```

5.3 New lengths and switches

We need a few new lengths for arranging the grid and the layout.

```
\newlength\shiftx@cx
\newlength\shifty@cx
\newlength\tol
\newlength\toly
\newlength\innermargin
\newlength\PH
\setlength\PH{\paperheight}
\newlength\PW
\setlength\PW{\paperwidth}
\newlength\INNER
\newlength\TOP
\newlength\alphlength
```

5.4 Colors

```
\definecolor{theblue} {rgb}{0.02,0.04,0.48}
\definecolor{thered}  {rgb}{0.65,0.04,0.07}
\definecolor{thegreen}{rgb}{0.06,0.44,0.08}
\definecolor{thelightgreen}{rgb}{0.06,0.44,0.06}
\definecolor{thegrey} {gray}{0.5}
\definecolor{thegray} {gray}{0.5}
\definecolor{thedarkgray} {gray}{0.95}
\definecolor{theshade}{gray}{0.94}
\definecolor{theframe}{gray}{0.75}
\definecolor{thecream}{rgb}{1,0.95,0.4}
\definecolor{spot}{rgb}{0,0.2,0.6}
\definecolor{boxframe}{gray}{0.8}
\definecolor{boxfill}{rgb}{0.95,0.95,0.99}
\definecolor{theoption}{rgb}{0.118,0.546,0.222}
\definecolor{themacro}{rgb}{0.784,0.06,0.176}
\definecolor{ExampleFrame}{rgb}{0.628,0.705,0.942}
\definecolor{ExampleBack}{rgb}{0.963,0.971,0.994}
\definecolor{Hyperlink}{rgb}{0.281,0.275,0.485}
\colorlet{thehyperlink}{theblue}
```

\textheight 598 pt

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

```
\newcommand*{\defaultcolor}{\color{black}}
\newcommand*{\spotcolor}{\color{spot}}
```

The @diagonal switch is used to let the user choose to draw the diagonal lines for classical layout checks we set it initially at false.

```
\newif\if@diagonal
\@diagonalfalse


\newif\ifdrawmarginpars
\drawmarginparstrue


```

\printunitsof@cx This macro has been adapted from the layouts package, it sets the units to be printed in the diagrams.

```
\newcommand{\printinunitsof@cx}[1]{%
  \def\l@yunitperpt{1.0}\def\l@yunits{pt}%
  \def\l@yta{#1}\def\l@ytb{pt}%
  \ifx \l@yta\l@ytb
    \def\l@yunitperpt{1.0}\def\l@yunits{pt}%
  \else
    \def\l@ytb{pc}%
    \ifx \l@yta\l@ytb
      \def\l@yunitperpt{0.083333}\def\l@yunits{pc}%
    \else
      \def\l@ytb{in}%
      \ifx \l@yta\l@ytb
        \def\l@yunitperpt{0.013837}\def\l@yunits{in}%
      \else
        \def\l@ytb{mm}%
        \ifx \l@yta\l@ytb
          \def\l@yunitperpt{0.351459}\def\l@yunits{mm}%
        \else
          \def\l@ytb{cm}%
          \ifx \l@yta\l@ytb
            \def\l@yunitperpt{0.0351459}\def\l@yunits{cm}%
          \else
            \def\l@ytb{bp}%
            \ifx \l@yta\l@ytb
              \def\l@yunitperpt{0.996264}\def\l@yunits{bp}%
            \else
              \def\l@ytb{dd}%
              \ifx \l@yta\l@ytb
                \def\l@yunitperpt{0.9345718}\def\l@yunits{dd}%
              \else
                \def\l@ytb{cc}%
                \ifx \l@yta\l@ytb
                  \def\l@yunitperpt{0.0778809}\def\l@yunits{cc}%
%                \else
%                  \def\l@ytb{PT}%
%                  \ifx \l@yta\l@ytb
%                    \def\l@yunitperpt{1.0}\def\l@yunits{PT}% gives problems with pgfmathpars
```

1 in + \topmargin (17 *pt*) = 55.27 *pt*

\headheight 12 pt

\headsep 25 pt

\textheight 598 pt

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\marginparsep 11 pt

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driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

```
%                  \fi
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
  \fi
}
```

\convert@cx The macro \convert@cx is used internally to convert dimensions from one set of units to another. Used in dimension lines.

```
\newcommand\convert@cx[1]{%
   \pgfmathparse{#1*\l@yunitperpt}
% use pgfmath for rounding to 2 decimals
   \pgfmathprintnumber{\pgfmathresult}\thinspace\l@yunits
}
```

\calcshift@cx Helper command to reposition the grid, note it needs to run twice to position the grid properly.

```
\newcommand\calcshift@cx{%
   \pgfsys@getposition{\pgfpictureid}\@basepoint
   \pgf@process{\pgfpointorigin\@basepoint}%
   \setlength\shiftx@cx\pgf@x
   \setlength\shifty@cx\pgf@y}
```

\textheight 598 pt

\CS

```
\newcommand\CS[1]{\footnotesize #1}
```

\labelit@cx The macro \labelit@cx, is the main styling command for labels on dimensions this is expected to get more intelligent in future versions.

```
\newcommand\labelit@cx[1]{\ttfamily\CS{\string#1} \convert@cx{#1}}
```

We define its own family of keys. !TODO A CHECK HERE

\cxset The macro \cxset is used to either define a new key or set an existing one.

```
\newcommand\cxset{\pgfqkeys{/xlayouts}} %Notice this is pgf q keys
```

We are now ready to start defining keys. We use PGF Keys to define the keys.

```
\cxset{geometry units/.code=\printinunitsof@cx{#1},
          geometry grid color/.store in=\geometrygridcolor@cx,
          geometry lines color/.store in=\geometrylinescolor@cx,
          geometry label color/.store in=\geometrylabelcolor@cx,
          geometry diagonal/.is choice,
          geometry diagonal/true/.code=\@diagonaltrue,
          geometry diagonal/false/.code=\@diagonalfalse,
          geometry diagonal/none/.code=\@diagonalfalse,
          geometry diagonal color/.store in=\diagonalcolor@cx,
          geometry dim arrow type/.store in=\geometryarrowtype@cx,
          geometry grid xsteps/.store in=\xsteps@cx,
          geometry grid ysteps/.store in=\ysteps@cx,
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

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\marginparwidth 101 pt

driver margin 1 in

```
          geometry grid line width/.store in=\geometrygridlinewidth@cx,
          geometry driver lines/.store in=\geometrydriverlines@cx,
          geometry driver lines color/.store in=\geometrydriverlinescolor@cx,
}
```

We set some defaults to intialize the keys and prevent errors, if the user doesn't specify any parameters.

```
\cxset{geometry diagonal=true,
          geometry diagonal color=blue!20,
          geometry lines color=pink,
          geometry label color=blue!15,
          geometry grid color=blue!15,
          geometry grid line width=0.8pt,
          geometry dim arrow type=latex,
          geometry units=pt,
          geometry grid xsteps=9,
          geometry grid ysteps=9,
          geometry driver lines=dashed,
          geometry driver lines color=blue!15}
```

\agrid The macro \agrid is the main drawing command. It draws the layout.

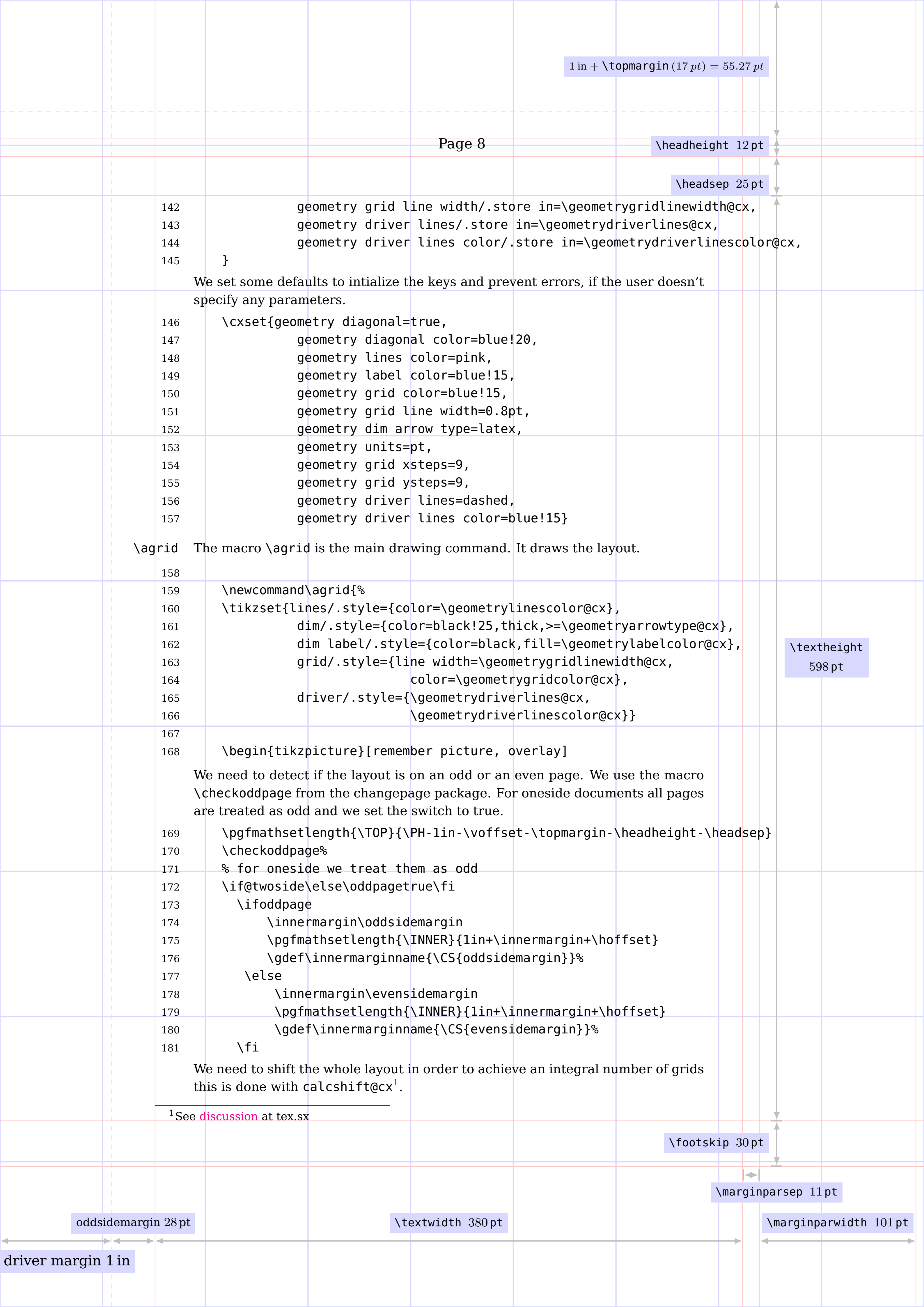
```

\newcommand\agrid{%
\tikzset{lines/.style={color=\geometrylinescolor@cx},
          dim/.style={color=black!25,thick,>=\geometryarrowtype@cx},
          dim label/.style={color=black,fill=\geometrylabelcolor@cx},
          grid/.style={line width=\geometrygridlinewidth@cx,
                         color=\geometrygridcolor@cx},
          driver/.style={\geometrydriverlines@cx,
                         \geometrydriverlinescolor@cx}}

\begin{tikzpicture}[remember picture, overlay]
```

We need to detect if the layout is on an odd or an even page. We use the macro \checkoddpage from the changepage package. For oneside documents all pages are treated as odd and we set the switch to true.

```
\pgfmathsetlength{\TOP}{\PH-1in-\voffset-\topmargin-\headheight-\headsep}
\checkoddpage%
% for oneside we treat them as odd
\if@twoside\else\oddpagetrue\fi
  \ifoddpage
      \innermargin\oddsidemargin
      \pgfmathsetlength{\INNER}{1in+\innermargin+\hoffset}
      \gdef\innermarginname{\CS{oddsidemargin}}%
   \else
       \innermargin\evensidemargin
       \pgfmathsetlength{\INNER}{1in+\innermargin+\hoffset}
       \gdef\innermarginname{\CS{evensidemargin}}%
  \fi
```

We need to shift the whole layout in order to achieve an integral number of grids this is done with calcshift@cx[1].

[1] See discussion at tex.sx



1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

```
\calcshift@cx
\begin{scope}[xshift=-\shiftx@cx, yshift=-\shifty@cx]
```

We will first draw the grid. This is one of the main features of the package. We do this using the grid shape. All \draw commands are detailed, rather than using coordinates. This was both for me as well as future maintainers that can follow easier the steps in drawing the layout.

```
%
  \draw [grid,xstep=\PW/\xsteps@cx,ystep=\PH/\ysteps@cx]
            (current page.south west) grid ++(\PW,\PH);
```

5.5 The driver margins

Printer's cannot always print up to the edges of the paper. Knuth allowed a one inch margin for this which later got adopted into LaTeX.

\hoffset
\voffset

Adjustment to the one inch margins can be made by using \hoffset and \voffset. All major classes set these offsets at zero. Some packages such as the crop may use these to center a logical page onto the stock paper.

```
\draw [driver] (1in,0) -- (1in,\PH);
\draw [driver] (0,\PH-1in)-- ++(\PW,0);
```

5.6 Crop marks

If the option crop is set, the package will print crop marks. These are printed at the four corners of the paper.

\textheight 598 pt

```
%\draw [line width=0.4pt,color= green]
%   (0+8mm,\stockheight-30mm) circle(2.5mm)++(-2.5mm,0)
%      -- ++(20mm,0)++(-17.5mm,-2.5mm)--++(0,5mm);
%
%\draw [line width=0.4pt,color=red,]
%   (8+25mm,\stockheight-30mm+2.5mm)-- ++(0,20mm)
%      ++ (0,-2.5mm)circle(2.5mm) ++(-2.5mm,0mm)--++(5mm,0);


```

5.7 Vertical lines

For no particular reason we first draw the vertical lines. We also define some co-ordinates to reduce the verbosity of the code.

```
\draw [lines] (\INNER,0) -- (\INNER,\PH);
\draw [lines] (\INNER+\textwidth,0) -- ++(0,\PH);
\ifoddpage
  \draw[lines] (\INNER+\textwidth+\marginparsep,0)
    -- (\INNER+\marginparsep+\textwidth,\PH);
  \draw[lines] (\INNER+\textwidth+\marginparsep+\marginparwidth,0)
     -- (\INNER+\marginparsep+\marginparwidth+\textwidth,\PH);
\else
  \draw [lines] (\INNER-\marginparsep,0) -- ++(0,\PH);
  \draw [lines] (\INNER-\marginparsep-\marginparwidth,0) -- ++(0,\PH);
\fi
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

5.8 Horizontal lines

Next we draw the horizontal lines.

```
 \draw [lines](0,\PH-1in-\topmargin)-- ++(\PW,0);
 \draw [lines](0,\PH-1in-\topmargin-\headheight)-- ++(\PW,0)
   node[black,above] at ++(-0.5\PW,0){Page \thepage};
 \draw [lines](0,\TOP) -- ++(\PW,0);
 \draw [lines](0,\TOP-\textheight) -- ++(\PW,0);
 \draw [lines](0,\TOP-\textheight-\footskip) -- ++(\PW,0);
```

5.9 Two column document

A two column document, just subdivides the text area into two equal parts with a gutter in between. Next we draw the vertical lines and the dimensions for two column layouts. We detect if it is a twocolumn layout using the switch \if@twocolumn defined by the standard classes.

\columnwidth
\columnsep

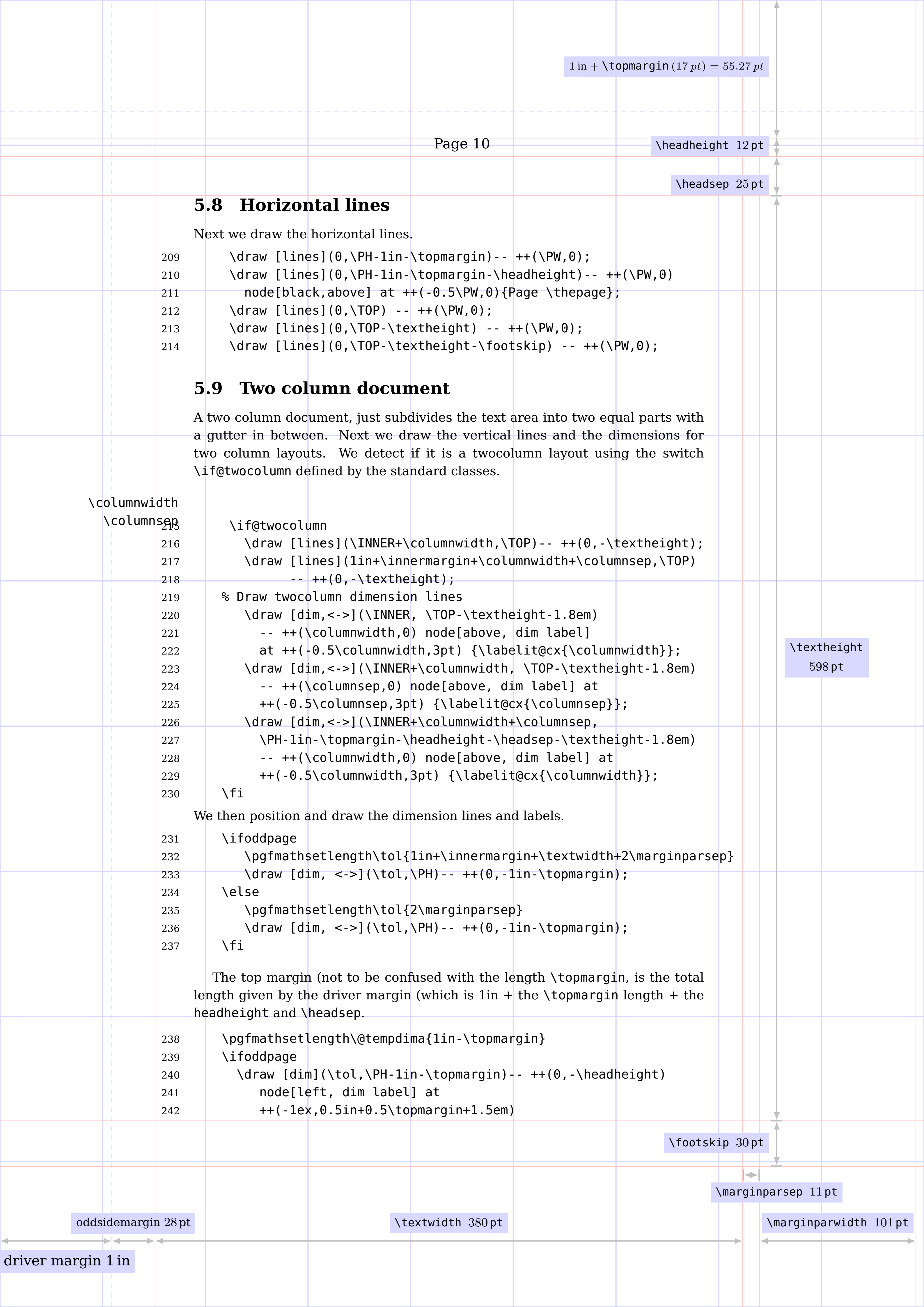
```
 \if@twocolumn
   \draw [lines](\INNER+\columnwidth,\TOP)-- ++(0,-\textheight);
   \draw [lines](1in+\innermargin+\columnwidth+\columnsep,\TOP)
         -- ++(0,-\textheight);
% Draw twocolumn dimension lines
   \draw [dim,<->](\INNER, \TOP-\textheight-1.8em)
     -- ++(\columnwidth,0) node[above, dim label]
     at ++(-0.5\columnwidth,3pt) {\labelit@cx{\columnwidth}};
   \draw [dim,<->](\INNER+\columnwidth, \TOP-\textheight-1.8em)
     -- ++(\columnsep,0) node[above, dim label] at
     ++(-0.5\columnsep,3pt) {\labelit@cx{\columnsep}};
   \draw [dim,<->](\INNER+\columnwidth+\columnsep,
     \PH-1in-\topmargin-\headheight-\headsep-\textheight-1.8em)
     -- ++(\columnwidth,0) node[above, dim label] at
     ++(-0.5\columnwidth,3pt) {\labelit@cx{\columnwidth}};
\fi
```

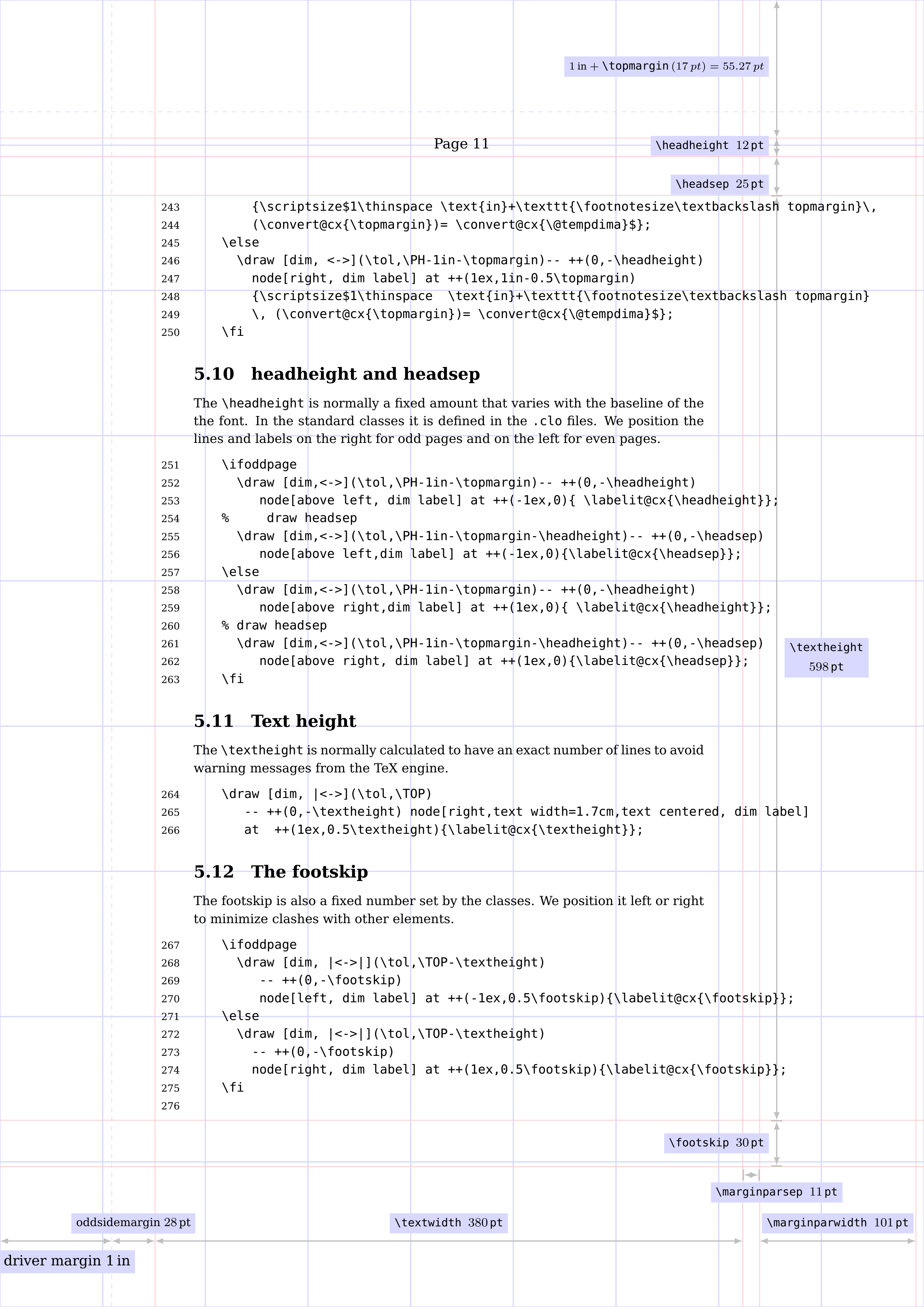
We then position and draw the dimension lines and labels.

```
\ifoddpage
   \pgfmathsetlength\tol{1in+\innermargin+\textwidth+2\marginparsep}
   \draw [dim, <->](\tol,\PH)-- ++(0,-1in-\topmargin);
\else
   \pgfmathsetlength\tol{2\marginparsep}
   \draw [dim, <->](\tol,\PH)-- ++(0,-1in-\topmargin);
\fi
```

The top margin (not to be confused with the length \topmargin, is the total length given by the driver margin (which is 1in + the \topmargin length + the headheight and \headsep.

```
\pgfmathsetlength\@tempdima{1in-\topmargin}
\ifoddpage
  \draw [dim](\tol,\PH-1in-\topmargin)-- ++(0,-\headheight)
     node[left, dim label] at
     ++(-1ex,0.5in+0.5\topmargin+1.5em)
```





```
    {\scriptsize$1\thinspace \text{in}+\texttt{\footnotesize\textbackslash topmargin}\,
    (\convert@cx{\topmargin})= \convert@cx{\@tempdima}$};
\else
  \draw [dim, <->](\tol,\PH-1in-\topmargin)-- ++(0,-\headheight)
    node[right, dim label] at ++(1ex,1in-0.5\topmargin)
    {\scriptsize$1\thinspace  \text{in}+\texttt{\footnotesize\textbackslash topmargin}
    \, (\convert@cx{\topmargin})= \convert@cx{\@tempdima}$};
\fi
```

5.10 headheight and headsep

The \headheight is normally a fixed amount that varies with the baseline of the the font. In the standard classes it is defined in the .clo files. We position the lines and labels on the right for odd pages and on the left for even pages.

```
\ifoddpage
  \draw [dim,<->](\tol,\PH-1in-\topmargin)-- ++(0,-\headheight)
     node[above left, dim label] at ++(-1ex,0){ \labelit@cx{\headheight}};
%     draw headsep
  \draw [dim,<->](\tol,\PH-1in-\topmargin-\headheight)-- ++(0,-\headsep)
     node[above left,dim label] at ++(-1ex,0){\labelit@cx{\headsep}};
\else
  \draw [dim,<->](\tol,\PH-1in-\topmargin)-- ++(0,-\headheight)
     node[above right,dim label] at ++(1ex,0){ \labelit@cx{\headheight}};
% draw headsep
  \draw [dim,<->](\tol,\PH-1in-\topmargin-\headheight)-- ++(0,-\headsep)
     node[above right, dim label] at ++(1ex,0){\labelit@cx{\headsep}};
\fi
```

5.11 Text height

The \textheight is normally calculated to have an exact number of lines to avoid warning messages from the TeX engine.

```
\draw [dim, |<->](\tol,\TOP)
   -- ++(0,-\textheight) node[right,text width=1.7cm,text centered, dim label]
   at  ++(1ex,0.5\textheight){\labelit@cx{\textheight}};
```

5.12 The footskip

The footskip is also a fixed number set by the classes. We position it left or right to minimize clashes with other elements.

```
\ifoddpage
  \draw [dim, |<->|](\tol,\TOP-\textheight)
     -- ++(0,-\footskip)
     node[left, dim label] at ++(-1ex,0.5\footskip){\labelit@cx{\footskip}};
\else
  \draw [dim, |<->|](\tol,\TOP-\textheight)
    -- ++(0,-\footskip)
    node[right, dim label] at ++(1ex,0.5\footskip){\labelit@cx{\footskip}};
\fi

```

```
% Float parameters
% topfraction on left margin

\iftopfloat{%
\draw [dim,|<->|] (\INNER-0.3cm, \TOP)-- ++(0,-\topfraction\textheight)
       node[left,text width=1.7cm,text centered, dim label]
       at ++ (0,0.4\textheight) {\textbackslash topfraction\\ \topfraction};
}{}
% bottom fraction
\ifbotfloat{%
\draw [dim,|<->|] (\INNER, \TOP) ++(0,-\textheight)
  -- ++(0,\bottomfraction\textheight)
  node[left, text width=1.2cm, dim label] at
  ++(-1ex,-\bottomfraction*0.5\textheight){\textbackslash bottom\\fraction\\
  \bottomfraction};
}{}
% HORIZONTAL DIMENSIONS
\setlength\toly{1.5cm}
\draw[dim,<->](0,\toly)--++(1in,0)node [dim label] at ++(-0.4in,-1.5em)
{\translate{drivermarginname} 1\thinspace in};

```

If innermargin 0pt we do not show the dimension line. Tufte-book has innermargin=0pt

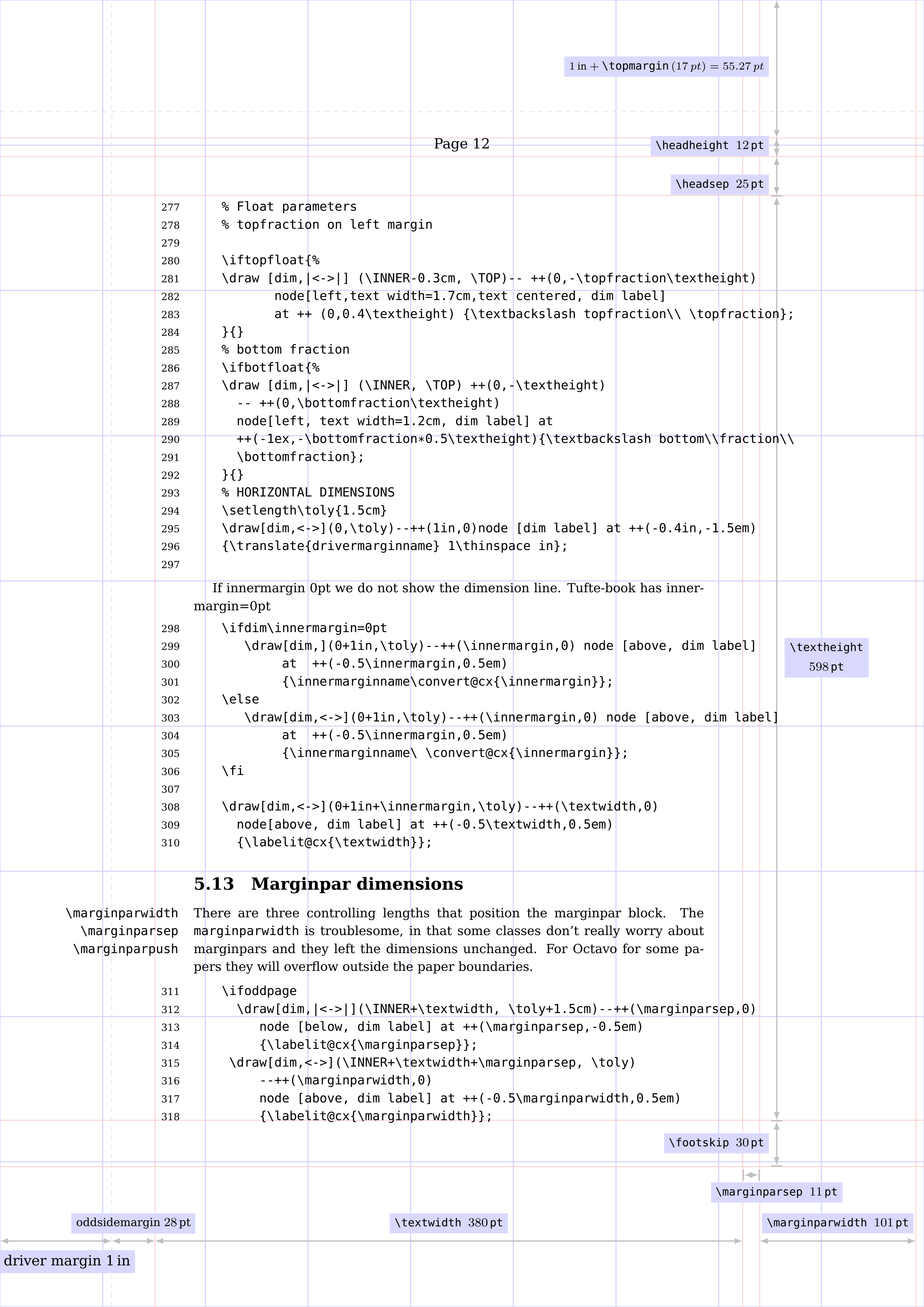
```
\ifdim\innermargin=0pt
   \draw[dim,](0+1in,\toly)--++(\innermargin,0) node [above, dim label]
        at  ++(-0.5\innermargin,0.5em)
        {\innermarginname\convert@cx{\innermargin}};
\else
   \draw[dim,<->](0+1in,\toly)--++(\innermargin,0) node [above, dim label]
        at  ++(-0.5\innermargin,0.5em)
        {\innermarginname\ \convert@cx{\innermargin}};
\fi

\draw[dim,<->](0+1in+\innermargin,\toly)--++(\textwidth,0)
  node[above, dim label] at ++(-0.5\textwidth,0.5em)
  {\labelit@cx{\textwidth}};
```

5.13 Marginpar dimensions

\marginparwidth
\marginparsep
\marginparpush

There are three controlling lengths that position the marginpar block. The marginparwidth is troublesome, in that some classes don't really worry about marginpars and they left the dimensions unchanged. For Octavo for some papers they will overflow outside the paper boundaries.

```
\ifoddpage
  \draw[dim,|<->|](\INNER+\textwidth, \toly+1.5cm)--++(\marginparsep,0)
     node [below, dim label] at ++(\marginparsep,-0.5em)
     {\labelit@cx{\marginparsep}};
 \draw[dim,<->](\INNER+\textwidth+\marginparsep, \toly)
     --++(\marginparwidth,0)
     node [above, dim label] at ++(-0.5\marginparwidth,0.5em)
     {\labelit@cx{\marginparwidth}};
```



1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

```
\else
    \draw[dim,|<->|](\INNER, \toly+1.55cm)--++(-\marginparsep,0)
       node [right, dim label] at ++(\marginparsep,0em)
       {\labelit@cx{\marginparsep}};
\ifdim\marginparwidth<3cm % try be a more intelligent for placement
   \draw[dim,|<->|](0+1in+\innermargin-\marginparsep-\marginparwidth,
   \toly+.95cm)--++(\marginparwidth,0)node [right, dim label]
    at ++(0,0em)
   {\labelit@cx{\marginparwidth}};
\else
   \draw[dim,|<->|](\INNER-\marginparsep-\marginparwidth, \toly+.95cm)
   --++(\marginparwidth,0)node [above, dim label] at
   ++(-0.5\marginparwidth,0em){\labelit@cx{\marginparwidth}};
\fi
\fi
```

5.14 Classic layout diagonal lines

We do not attempt to draw out a full classical layout, but only to draw the diagonal lines to check. This feature can be switched off. The direction of the line depends if we have an odd or even page.

```
\if@diagonal
  \ifoddpage
    \draw [\diagonalcolor@cx,thick] (\PW,0)--(0,\PH);
   \else
     \draw [\diagonalcolor@cx,thick] (0,0)--(\PW,\PH);
   \fi
\fi
\end{scope}
\end{tikzpicture}}
```

\textheight 598 pt

6 Running head definitions

We define a page layout, grid to position the grid. We use the same for both evenhead and oddhead.

\ps@grid In LaTeX a running header is defined using a \ps@<name> macro. We define a pagestyle that can be use to draw the layout.

```
\def\ps@grid{%
    \let\@oddfoot\@empty\let\@evenfoot\@empty
    \def\@evenhead{\agrid}%
    \let\@oddhead\@evenhead
    \let\@mkboth\@gobbletwo
    \let\chaptermark\@gobble
    \let\sectionmark\@gobble
 }
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

7 Float parameters

\figureparambot

The macros \figureparambot attempt to draw dimension lines in figures. This is very much work in progress, as to draw them properly will need to redefine some of the internals of the output routine.

```
\def\figureparamsbot{%
  \begin{tikzpicture}[remember picture, overlay]
      \pgfmathsetlength\@tempdima{-\textfloatsep}
      \draw[>=latex,|<->|] (0,0) --++(0,-\@tempdima)
       node [right]
       at ++ (1ex,-0.5\textfloatsep)
      {\CS{textfloasep} \convert@cx{\textfloatsep}};
  \end{tikzpicture}%
\par
}
\def\figureparamstop{%
  \par
  \begin{tikzpicture}%[remember picture, overlay]
    \pgfmathsetlength\@tempdima{-\textfloatsep}
    \draw[>=latex,|<->|] (0,0) --++(0,\@tempdima)
    node [right,fill=\geometrylabelcolor@cx]
    at ++ (1ex,0.5\textfloatsep)
    {\CS{textfloasep} \convert@cx{\textfloatsep}};
  \end{tikzpicture}%
}
```

\textheight 598 pt

8 Spread

The package provides a command to draw a two page spread as per the canons of page construction.

This is aimed at producing stand alone diagrams for inclusion into other packages or LaTeX notes, such a diagram is shown in Figure 3

```
\newlength\paperwidth@cx
\newlength\paperheight@cx
\newlength\lefttrim
\newlength\bottomtrim
\newlength\bindingcorrection
\setlength\paperwidth@cx{12in}
\setlength\paperheight@cx{18in}
\setlength\bindingcorrection{0.5in}

\cxset{spread xsteps/.store in=\spreadxsteps@cx,
       spread scale/.store in=\spreadscale@cx,
       spread width/.store in=\spreadwidth@cx}
%
%
\cxset{spread xsteps=9,
       spread scale=0.25,
       spread width=0.5\textwidth}% does not work

```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

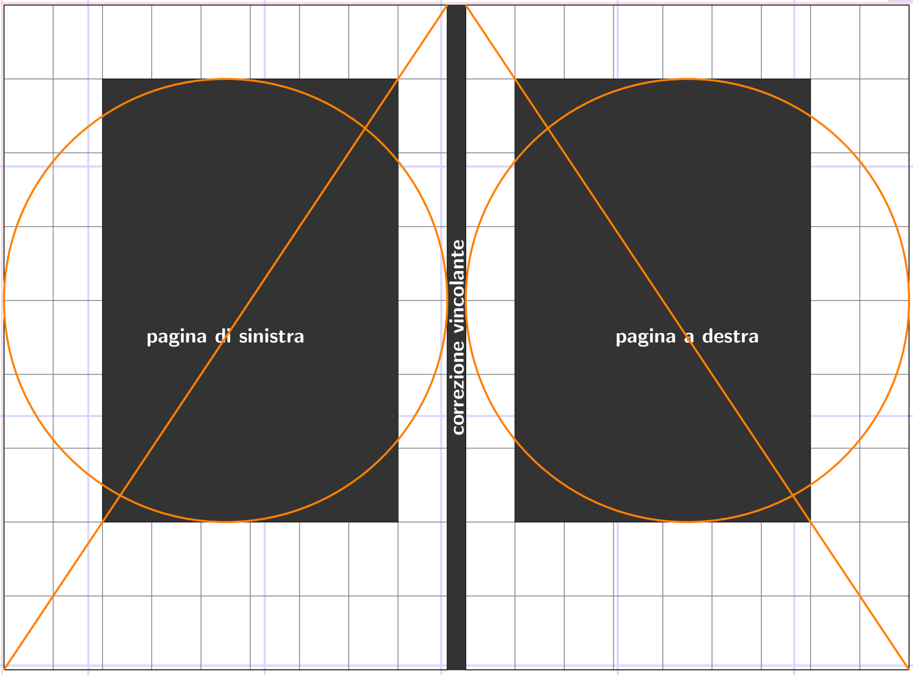


Figure 3: Diagram illustrating page geometry as per the Canons of Page Construction.

\topfraction .7

\textheight 598 pt

```
\tikzset{typearea/.style={color=black!85,fill=black!80,
        font={\sffamily\bfseries}}}
%
```

\drawspread The macro \drawspread draws a spread, showing all lines and divisions as per classical rules.

```
\def\drawspread{%
  \begin{tikzpicture}[scale=\spreadscale@cx]
   % draw the two pages
  \draw[xstep=(\paperwidth@cx)/\spreadxsteps@cx,
        ystep=(\paperheight@cx)/\spreadxsteps@cx,color=gray]  (0,0)
    grid (\paperwidth@cx,   \paperheight@cx);
  \draw (0,0) rectangle (\paperwidth@cx,\paperheight@cx);

  \begin{scope}[xshift=\paperwidth@cx+\bindingcorrection]
    \draw[xstep=(\paperwidth@cx)/9,
          ystep=(\paperheight@cx)/9,color=thegray] ++(0,0)
          grid (\paperwidth@cx, \paperheight@cx);
    \draw[color=black] (0,0) rectangle (\paperwidth@cx,\paperheight@cx);
  \end{scope}
```

Next we draw the binding correction. This is drawn as a rectangle. We fill it with the same style shading as the type area.

```
\draw[typearea, draw] (\paperwidth@cx,0)
      rectangle ++(\bindingcorrection, \paperheight@cx);
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

The typed area blocks are added next.

```
\draw[typearea] (2\paperwidth@cx/\spreadxsteps@cx,
                     2\paperheight@cx/\spreadxsteps@cx)
      rectangle  ++(6/9*\paperwidth@cx,6*\paperheight@cx/\spreadxsteps@cx);

\draw[typearea] (\paperwidth@cx+\paperwidth@cx/9+\bindingcorrection,
     2\paperheight@cx/9) rectangle ++(6\paperwidth@cx/9,6\paperheight@cx/9);

\ifdim\bindingcorrection>0pt
\begin{scope}[typearea,color=white]
\draw node at
      (\paperwidth@cx+0.5\bindingcorrection,
       0.5\paperheight@cx)[rotate=90,inner sep=0pt,outer sep=0pt]
       {\translate{bindingcorrectionname}};
\fi
\node  at
       (0.5\paperwidth@cx,0.5\paperheight@cx){\translate{leftpagename}};
\node  at
      (1.5\paperwidth@cx+\bindingcorrection,
       0.5\paperheight@cx){\translate{rightpagename}};
\end{scope}
```

Next we draw the diagonals and the circles. We draw them within a scope to separate the styling from the drafting.

```
\begin{scope}[color=orange, line width=1pt]
  \draw (0,0)-- (\paperwidth@cx,\paperheight@cx);
  \draw (2\paperwidth@cx+\bindingcorrection,0)--
    ++(-\paperwidth@cx,\paperheight@cx);
```

The circles are drawn in the same style as the diagonals. We do not provide an option to change this, as it will produce ugly diagrams.

```
\draw (0.5\paperwidth@cx,5\paperheight@cx/9)
       circle (0.5\paperwidth@cx);
\draw [xshift=\paperwidth@cx+\bindingcorrection]
      (0.5\paperwidth@cx,5\paperheight@cx/9)
       circle (0.5\paperwidth@cx);
\end{scope}
\end{tikzpicture}
}
```

\textheight 598 pt

9 Try Layouts

The try layouts code, are helper macros to draw dimension lines on a diagram to experiment with different dimensions and layouts. In addition to this some helper commands are incorporated for readabilty.

10 Readability

In general the width of the typed area should not exceed 45-65 characters. This is language and reader dependent.

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

\alphabet The macro \alphabet returns the twenty six letters of the English language. This is used later on to calculate the length of an alphabet and provide related metrics for the readability of the text.

```
\def\alphabet{%
  \normalfont\selectfont\raggedleft%
   abcdefghijklmnopqrstuvwxyz}
```

\charactersperline The macro charactersperline typesets the number of characters in a line of text. We use \pgfmathprintnumber to format and print the number.

```
\newcommand\charactersperline{%
  \settowidth{\@tempdima}{\alphabet}
  \pgfmathparse{\textwidth/\@tempdima*26}
  \pgfmathprintnumber{\pgfmathresult}
}
```

\alphabetsperline Some people are more familiar with the metric alphabets per line rather than characters per line. We provide the macro \alphabetsperline.

```
\newcommand\alphabetsperline{%
  \settowidth{\@tempdima}{\alphabet}
  \pgfmathparse{\textwidth/\@tempdima}
  \pgfmathresult
}
```

\alphabetlength The macro \alphabetlength prints the length of the alphabet.

```
\newcommand\alphabetlength{%
  \settowidth{\alphlength}{\alphabet}
  \pgfmathparse{\alphlength}
  \pgfmathprintnumber{\pgfmathresult}pt
}
```

\textheight
598 pt

We need to use the fp package to calculate the ratios, as PGF has problems with large dimensions or I am making an error

```
\newcommand\textarearatio{%
    \FPmul{\result}{\strip@pt\textwidth}{\strip@pt\textheight}
    \FPmul{\resulti}{\strip@pt\paperwidth}{\strip@pt\paperheight}
    \FPdiv{\resultii}{\result}{\resulti}
    \pgfmathprintnumber{\resultii}
}

% Calculate the ratio textheight/paperheight
\newcommand\textheightratio{%
    \FPdiv{\result}{\strip@pt\textheight}{\strip@pt\paperheight}
    \FPround{\result}{\result}{2}
    \result
}

% Calculate textheight/paperwidth

\newcommand\textheighttopaperwidth{%
    \pgfmathparse{\textheight/\paperwidth}
    \pgfkeys{/pgf/number format/.cd,fixed,precision=2}
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

```
    \pgfmathprintnumber{\pgfmathresult}
}
\newcommand\numbertextlines{%
% baselineskip to be corrected
   \pgfmathparse{(\textheight-\topskip)/(12)-1}\pgfmathresult
}
```

\printreadability

```
\def\printreadability{%
\begin{tabular}{lr}
  Characters per line &\charactersperline\\
  Alphabets per line &\alphabetsperline\\
  Alphabet length &\alphabetlength\\
  Baselineskip & \the\baselineskip\\
  Number of text lines &\numbertextlines\\
\end{tabular}}
```

11 Page Layout Diagrams

This is one of the most important features of the package. Drawing and annotating a page diagram, so that you can view new geometry or use them for notes.

11.1 New lengths

We need to isolate the current page dimensions from the new trial sizes for the diagram. We redefine new lengths for all parameters with the prefix try and the suffix @cx.

\textheight 598 pt

```
\newlength\trypaperwidth@cx
\newlength\trypaperheight@cx
\newlength\trytextheight@cx
\newlength\tryheadheight@cx
\newlength\tryheadsep@cx
\newlength\tryfootskip@cx
\newlength\trymargintop@cx
\newlength\trymarginbottom@cx
\newlength\trytopmargin@cx
\newlength\trimtop@cx
\setlength\trimtop@cx{0pt}
\newlength\trytextwidth@cx
\newlength\trymarginparwidth@cx
\newlength\trymarginparsep@cx
\newlength\tryleftmargin@cx
\newlength\tryinner@cx
```

The stockheight and stockwidth are used when the paper is to be trimmed they default to the dimensions for paper width and paper height, if not specified. The memoir class also defines them. If they are defined, we use the values from the class.

\stockheight
\stockwidth

```
\@ifundefined{stockheight}{\global\newlength\stockheight}{}
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

```
\@ifundefined{stockwidth}{\global\newlength\stockwidth}{}

\ifdim\stockheight=0pt\addtolength\stockheight{\paperheight}\fi
   \addtolength\stockheight{0mm}
\ifdim\stockwidth=0pt\addtolength\stockwidth{\paperwidth}\fi
   \addtolength\stockwidth{0mm}

\newlength\trystockheight@cx
\newlength\trystockwidth@cx
\cxset{try stockwidth/.code=\setlength\trystockwidth@cx{#1},
          try stockheight/.code=\setlength\trystockheight@cx{#1},
          try stock/.code=} % a4paper etc to be developed toninght
\cxset{try stockwidth=\paperwidth}
\cxset{try stockheight=\paperheight}
```

We set all the trims to zero to start with.

```
%
\newlength\trimtop
\newlength\trimedge
\setlength\lefttrim{5mm}
\setlength\bottomtrim{10pt}
\setlength\trimtop{0pt}
\setlength\trimedge{0pt}
%
%
% set defaults
\setlength\trymargintop@cx{0pt}
\setlength\trymarginparsep@cx{\marginparsep}
\setlength\trymarginparwidth@cx{\marginparwidth}
\setlength\trytextwidth@cx{0pt}
\newlength\trytrimedge@cx
\setlength\trytrimedge@cx{10pt}

\newlength\tryoddsidemargin@cx
\setlength\tryoddsidemargin@cx{\oddsidemargin}
\newlength\tryevensidemargin@cx
\setlength\tryevensidemargin@cx{\evensidemargin}
\newlength\tryinnermargin@cx
%   convenience lengths for drawing the layouts.
\newlength\tryINNER
\newlength\tryTOP

\newlength\margintop

\newcommand\thetop{%
   \pgfmathparse{1in+\topmargin+\headheight+\headsep}
   \pgfmathsetlength{\margintop}{\pgfmathresult}
}
%

\thetop
```

\textheight
598 pt

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

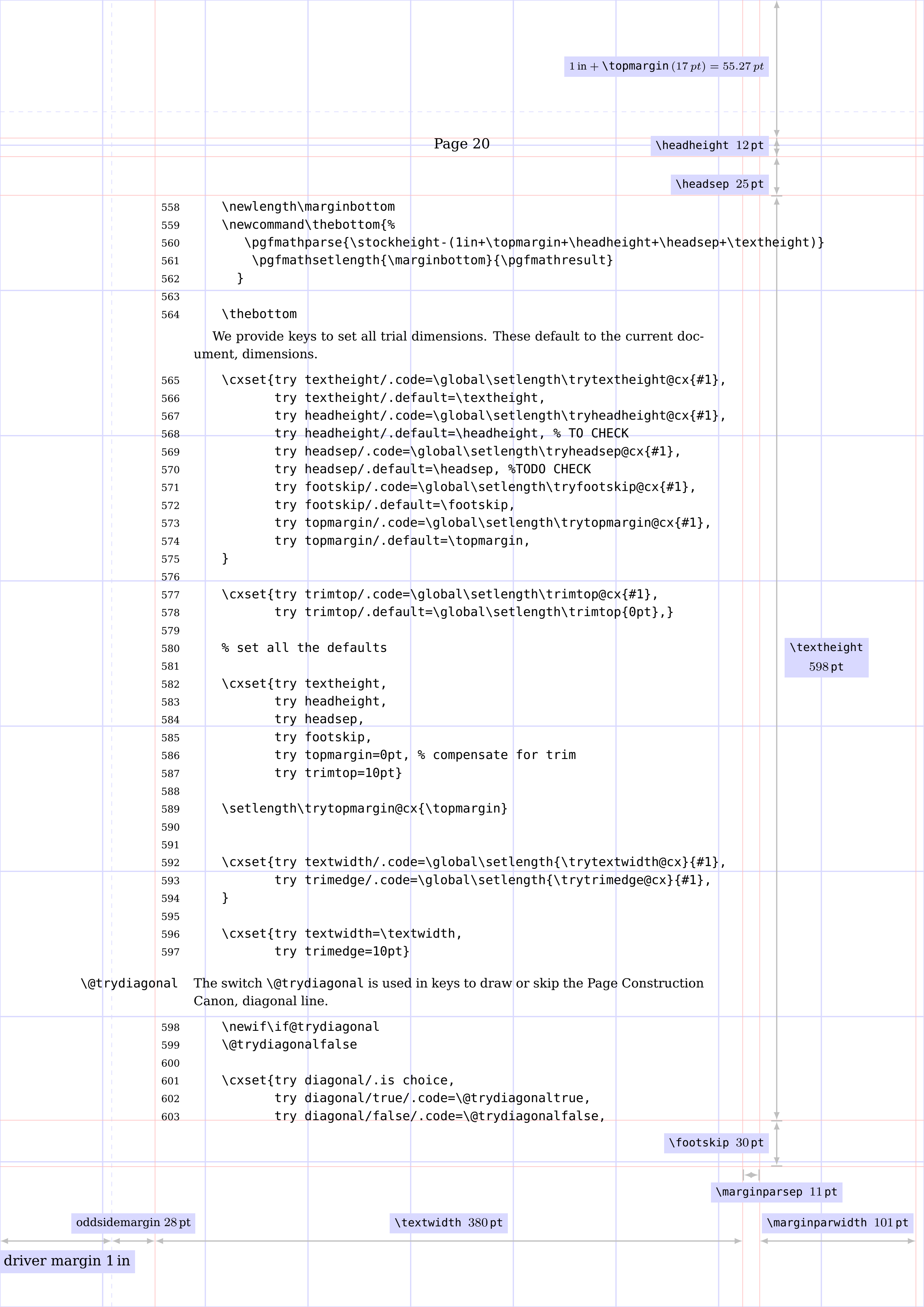
```
\newlength\marginbottom
\newcommand\thebottom{%
   \pgfmathparse{\stockheight-(1in+\topmargin+\headheight+\headsep+\textheight)}
    \pgfmathsetlength{\marginbottom}{\pgfmathresult}
  }

\thebottom
```

We provide keys to set all trial dimensions. These default to the current document, dimensions.

```
\cxset{try textheight/.code=\global\setlength\trytextheight@cx{#1},
       try textheight/.default=\textheight,
       try headheight/.code=\global\setlength\tryheadheight@cx{#1},
       try headheight/.default=\headheight, % TO CHECK
       try headsep/.code=\global\setlength\tryheadsep@cx{#1},
       try headsep/.default=\headsep, %TODO CHECK
       try footskip/.code=\global\setlength\tryfootskip@cx{#1},
       try footskip/.default=\footskip,
       try topmargin/.code=\global\setlength\trytopmargin@cx{#1},
       try topmargin/.default=\topmargin,
}

\cxset{try trimtop/.code=\global\setlength\trimtop@cx{#1},
       try trimtop/.default=\global\setlength\trimtop{0pt},}

% set all the defaults

\cxset{try textheight,
       try headheight,
       try headsep,
       try footskip,
       try topmargin=0pt, % compensate for trim
       try trimtop=10pt}

\setlength\trytopmargin@cx{\topmargin}


\cxset{try textwidth/.code=\global\setlength{\trytextwidth@cx}{#1},
       try trimedge/.code=\global\setlength{\trytrimedge@cx}{#1},
}

\cxset{try textwidth=\textwidth,
       try trimedge=10pt}
```

\@trydiagonal The switch \@trydiagonal is used in keys to draw or skip the Page Construction Canon, diagonal line.

```
\newif\if@trydiagonal
\@trydiagonalfalse

\cxset{try diagonal/.is choice,
       try diagonal/true/.code=\@trydiagonaltrue,
       try diagonal/false/.code=\@trydiagonalfalse,
```



$1\,\mathrm{in} + $ \topmargin $(17\,pt) = 55.27\,pt$

\headheight 12 pt

\headsep 25 pt

```
       try diagonal/none/.code=\trydiagonalfalse}

\cxset{try diagonal=false}
```

\trygrid The try grid conditional provides a switch to switch the grid on or off. We set it initially to true.

```
\newif\iftrygrid
\trygridfalse

\cxset{try grid/.is choice,
       try grid/true/.code=\trygridtrue,
       try grid/false/.code=\trygridfalse,
       try grid/none/.code=\trygridfalse}

\cxset{try grid=true}
```

11.2 Allowances for trims

Throughout we are focusing on the average LaTeX user than might want to for example use A4 paper and trim down to a different size. We start form the stockwidth and stockheight and we set the paperwidth and paperheight to a smaller size to cater for these trims.

I call this process trimming in, whereas other packages such as the crop increase the paper size to allow for the trims, thus displaying a larger page. The memoir class has something similar.

\textheight 598 pt

\trypaperwidth@cx
\trypaperheight@cx We set the length to stocksize-trimedge.

```
% set the trial paper sizes as per trim sizes
\addtolength\trypaperwidth@cx{\trystockwidth@cx}
\addtolength\trypaperwidth@cx{-\trytrimedge@cx}
\addtolength\trypaperheight@cx{\trystockheight@cx}
\addtolength\trypaperheight@cx{-\trimtop@cx}
\addtolength\trypaperheight@cx{-\bottomtrim}
```

11.2.1 Calculating the Top Margin and Bottom Margin

We calculate the top and bottom margins for convenience. Remember that so far we are only dealing with default settings. I the user changes the dimensions, these will have to be recalculated.

```
%\addtolength\trymargintop@cx{1in+\voffset+\trimtop@cx}
%\addtolength\trymargintop@cx{\dimexpr(\tryheadsep@cx+
%   \tryheadheight@cx+\trytopmargin@cx)}
```

11.2.2 Adjustments to text height

Since we are trimming-in, our paper height will end up being smaller than the stock paper height. One is thus faced with the decision to either make the top and bottom margins smaller to allow for the trimming or to reduce the text height accordingly.

Most people and publishers are fussy about margins, so perhaps it is better to reduce the text-height. We offer a method to the user to specify preferences later

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

on. In the meantime for the purpose of defaults, we will take all the adjustment at the bottom margin and leave the text-height untouched.

\trytextheight@cx Let trytextheight@cx equal to the current document \textheight value.

```
\setlength\trytextheight@cx{\textheight}

\setlength\trymarginbottom@cx{%
   \dimexpr(\trystockheight@cx-1in-\trimtop@cx-\trytopmargin@cx
     -\tryheadheight@cx-\tryheadsep@cx-\trytextheight@cx)\relax}


\newlength\stepx
```

11.3 Drawing the Trial Layout

The trial layout is drawn in a lengthy TikZ picture. If no new dimensions are provided by the user it will default to the values we have set it previously. That is the current layout values.

\drawtriallayout The macro \drawtriallayout draws the page diagram. It uses throughout trial dimensions.

```
\tikzset{dim/.style = {color=black,>=latex}}
\def\drawtriallayout{%
```

We first need to check if we are on an odd or even page and set the geometry accordingly. If the document is one-side we default to drawing everything as an odd-side page.

\textheight 598 pt

```
\checkoddpage%
\if@twoside\else\oddpagetrue\fi
\ifoddpage
  \global\setlength\tryinnermargin@cx{\tryoddsidemargin@cx}
  \setlength\tryINNER{\dimexpr(1in+\tryinnermargin@cx+\hoffset)}
 \else
   \global\setlength\tryinnermargin@cx{\tryevensidemargin@cx}
   \setlength\tryINNER{\dimexpr(1in+\tryinnermargin@cx+\hoffset)}
\fi

   \hspace*{-2cm}\begin{tikzpicture}[scale=0.42,font={\scriptsize\rmfamily},line width=.8pt,
       every node={color=black},
       book trim/.style={color=theblue,fill=white},
       dim text/.style={color=black},
       textblock/.style={fill=gray,opacity=0.3}]

\edef\tol{-2.5\baselineskip}

%
\def\drawpaperwidthdim{%
    \coordinate (A) at (0,\tol);
    \coordinate (B) at (\trystockwidth@cx -\trytrimedge@cx,\tol);
    \coordinate (C) at (0.5\trystockwidth@cx,\tol);
    \draw [dim, |<->|] (A) -- (B);
    \node at (C) [yshift=0.5\baselineskip)]
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin $(17\,pt) = 55.27\,pt$

\headheight 12 pt

\headsep 25 pt

```
    {paper width = \convert@cx{\trypaperwidth@cx} $(W_p)$};}

%  Draw paper width dimension
\def\drawpaperwidthevendim{%
    \coordinate (A) at (0+\trytrimedge@cx,\tol);
    \coordinate (B) at (\trystockwidth@cx,\tol);
    \coordinate (C) at (0.5\trystockwidth@cx,\tol);
    \draw[dim, |<->|] (A) -- (B);
    \node at (C) [yshift=0.5\baselineskip)]
    {paper width = \convert@cx{\trypaperwidth@cx} $(W_p)$};
}
```

11.3.1 Draw stock paper

First we draw the stockwidth and stockheight

```
\draw [color=thegray] (0,0) rectangle
           ++(\trystockwidth@cx,\trystockheight@cx);

% draw the paper if trims are defined and no book size given
% the paper width is then defined by the dashed blue line
\ifoddpage
  \draw [book trim]  (0+\lefttrim,\trystockheight@cx-\trimtop@cx)
        rectangle ++(\trystockwidth@cx-\lefttrim-\trytrimedge@cx,
        -\trystockheight@cx+\trimtop@cx+\bottomtrim);
        \drawpaperwidthdim
 \else
  \draw [book trim]  (0+\lefttrim+\trytrimedge@cx,\trystockheight@cx-\trimtop@cx)
        rectangle ++(\trystockwidth@cx-\lefttrim-\trytrimedge@cx,
        -\trystockheight@cx+\trimtop@cx+\bottomtrim);
       \drawpaperwidthevendim
\fi

```

\textheight 598 pt

11.3.2 Draw grid

Unlike the grid on page spreads we provide a conditional to switch it off if necessary. It set to true by default.

```
\pgfmathsetmacro{\gridx}{10}
\iftrygrid
  \ifoddpage
    \draw[xstep=(\trypaperwidth@cx-\lefttrim)/\gridx,
        ystep=\trypaperheight@cx/\gridx,color=thegreen!50,
        line  width=0.4pt,yshift=\bottomtrim,xshift=\lefttrim]
       (0,0) grid (\trypaperwidth@cx-\lefttrim,\trypaperheight@cx);
  \else
    \draw[xstep=(\trypaperwidth@cx)/\gridx,
        ystep=\trypaperheight@cx/\gridx,color=thegreen,
        line width=0.4pt,yshift=\bottomtrim,xshift=\trytrimedge@cx]
        (0,0) grid ++(\trypaperwidth@cx,\trypaperheight@cx);
  \fi
\fi
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

11.3.3 Drawing the binding correction

The binding correction is added to the stockheight. It will appear on the opposite site in the even page.

```
\ifoddpage
 \draw (0, \trystockheight@cx + 3mm) -- ++ (0,1cm)
        ++ (\lefttrim,-1cm) -- ++(0,1cm) ++(-1cm-\lefttrim,-0.5cm)[->,>=latex]
        -- ++(0.5cm+\lefttrim,0);
 \draw (0, \trystockheight@cx + 3mm)
        ++ (0,0.5cm) -- ++ (\lefttrim,0)
        ++(1cm,0cm)[|->,>=latex]-- ++(-1cm,0cm)
        node[right] at ++(1cm,0)
        {\translate{bindingcorrectionname}\ \convert@cx{\lefttrim} $(\delta_b)$ };
\fi

% stockwidth dimension lines
\edef\tol{-5\baselineskip}
\coordinate (BD) at (0,\tol);
\coordinate (BD2) at (\stockwidth,-5\baselineskip);
\draw[dim, |<->|] (BD) -- (BD2);
\draw (BD) ++ (0.5\stockwidth,0)
   node [yshift=0.5\baselineskip]
   {stockwidth=\convert@cx{\stockwidth} $(W_s)$} ;

% top dimension at left
\coordinate (H1) at (-5mm,\trystockheight@cx-\trimtop@cx);
\coordinate (H2) at (-5mm,
    \trystockheight@cx-1in-\trimtop@cx-\trytopmargin@cx-
    \tryheadheight@cx-\tryheadsep@cx);
\draw [dim,|<->|] (H1) -- (H2);
\node[left,text width=1.0cm, text centered,dim text] at
   (-5mm,\trystockheight@cx-0.5*\margintop)
   {top\\ \convert@cx{\the\margintop}\\$(h_{t})$};

% bottom dimension at left
\coordinate (H3) at (-5mm,0+\bottomtrim);
\coordinate (H4) at (-5mm,\trymarginbottom@cx);
\draw [dim,|<->|] (H3) -- (H4);
\node[left,text width=1.5cm,text ragged left]
   at (-5mm,0.5*\trymarginbottom@cx)
   {bottom\\ \convert@cx{ \the\trymarginbottom@cx}\\
    $(h_{b})$};

% textheight at left
\draw[dim,<->]  (-5mm, \trymarginbottom@cx)
   -- ++ (0,\trytextheight@cx);
\node[left,text width=1.6cm,text centered,dim text]
   at (-5mm,\trymarginbottom@cx+0.5\trytextheight@cx)
   {\CS{textheight} \convert@cx{\trytextheight@cx}\\
   $(h_x)$ };

```

\textheight 598 pt

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

11.3.4 Book height

Book sizes are specified by the size of the final trimmed sizes. for most users there is no need to worry about trims and binding corrections, however we provide these for consistency and for books that are perhaps to be sent to an on-line bureau for printing.

```
\draw [dim,|<->|] (-4.7cm,\bottomtrim) --
  (-4.7cm,0.5\trystockheight@cx-0.5\trimtop@cx)
  node[left,text width=1.2cm,text centered,dim text]
  {\translate{bookheightname}\\ \convert@cx{\trypaperheight@cx}} --
  (-4.7cm,\trystockheight@cx-0.5\trimtop@cx) ;
```

11.3.5 Draw the edge trim

The paper is always assumed to be trimmed at top bottom and the edge margin. We first draw the edge trim and its dimension.

```
\ifdim\trytrimedge@cx>0pt
 \ifoddpage
   \coordinate (D) at (\trystockwidth@cx-4\trytrimedge@cx,
                       0.10\trytextheight@cx);
   \coordinate (E) at (\trystockwidth@cx,0.10\trytextheight@cx);
   \draw [dim,->|] (D) -- ++(3\trytrimedge@cx,0);
   \draw [dim,|<-|] (E) -- ++(3\trytrimedge@cx,0)
     node at ++(0,0) [right,text width=2cm,dim text]
     {\translate{trimedgename}\
     \convert@cx{\the\trytrimedge@cx}
     $(\Delta_e)$};
 \else
  \coordinate (D1) at (0, \trystockheight@cx+ 5mm);
  \coordinate (E1) at ++ (\trytrimedge@cx,\stockheight+\trimtop@cx);
  \draw (D1) -- ++ (0, 10mm)  ++(\trytrimedge@cx,0) -- ++(0,-10mm) ;
 \fi
\fi
```

\textheight 598 pt

11.3.6 The top trim

The top trim is drawn next. As it is very small normally we try not to crowd the label and the dimension lines. We will only show it if it has a value.

```

%\ifdim\trimtop>0pt
  \coordinate (F) at (0.9\trystockwidth@cx,\trystockheight@cx-\trimtop@cx-8mm);
  \coordinate (G) at (0.9\trystockwidth@cx,\trystockheight@cx-\trimtop@cx);
  \coordinate (H) at (0.9\trystockwidth@cx,\trystockheight@cx);
  \draw (F)[dim,->|,>=latex] -- (G);
  \draw (H) -- ++ (0,8mm) -- ++ (5mm,0)[|<-|,>=latex]
          node [text width=2cm, right] at ++ (0,3pt) {\translate{trimtopname}\
          \\ \convert@cx{\the\trimtop@cx} $(\Delta_t)$};
%\fi
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin $(17\,pt) = 55.27\,pt$

\headheight 12 pt

\headsep 25 pt

11.3.7 Driver offsets

Next we draw the driver offsets. The lines are drawn at the left side of the paper both for even and for odd paper. Of course they are meaningless if the printer is going to print them on an A3 paper for example, and then the paper is trimmed.

```
   \draw[fill=olive] (1in,\trystockheight@cx-1in) circle (1.5mm);
   \draw[dashed,color=olive] (1in,0) -- (1in,\trystockheight@cx);
   \draw[dashed,color=olive] (0in,\trystockheight@cx-1in)-- ++ (\trystockwidth@cx,0);
   \draw [dim,|<->|](0,0.3cm)-- (1in,0.3cm) node at (0.5in,0.6)[dim text] {\translate{oneinch
```

Draw the inner margin. We use innermargin which has already been set to either oddsidemargin or evensidemargin

```

%  Draw left = 1in + innermargin
\setlength\tryleftmargin@cx{\dimexpr(1in+\innermargin)}
\draw [dim,|<->|] (0in,1.9cm) -- (1in+\innermargin,1.9cm)
node at (0.6in,3.2cm)[text width=1in,dim text,text centered]
{$(w_i)$\\ \convert@cx{\tryleftmargin@cx}\\inner margin};

 \draw (1in,1.2cm)[|<->|] -- ++(\innermargin,0) node[right,dim text]
 {\innermarginname\   \convert@cx{\the\innermargin} $(\Delta_i)$};


%   add topmargin dimension

\setlength{\@tempdimc}{\dimexpr(1in-\trimtop@cx+\trytopmargin@cx)\relax}
\coordinate (S1) at (\trystockwidth@cx+3ex,\trystockheight@cx-\trimtop@cx);
\draw [dim,|<->|] (S1)
      -- ++ (0,-\@tempdimc-\trimtop@cx)
      node [right, dim text, text width=3.5cm] at
      ++(2ex,0.5\@tempdimc) {\convert@cx{\@tempdimc} $(\delta_t)$
\\ \textbackslash topmargin \convert@cx{\trytopmargin@cx}};
```

\textheight 598 pt

11.3.8 Draw the running head

The running head is drawn measuring from the top of the page.

```
\pgfmathsetlength{\@tempdimb}{\trystockheight@cx-
                    \trimtop@cx-1in-\trytopmargin@cx}

 \draw[textblock] (\tryINNER, \@tempdimb)
         rectangle ++ (\trytextwidth@cx,-\tryheadheight@cx);

%  add headheight dimension
\draw [dim,-|,>=stealth] (\trystockwidth@cx+3ex, \@tempdimb)
        -- ++(0,-\tryheadheight@cx) node [right,dim text] at
        ++(2ex,0.3\tryheadheight@cx)
        {\CS{headheight} \convert@cx{\the\tryheadheight@cx} $(h_{h,h})$};
%
%%   add headsep dimension
\draw [dim,|-,] (\trystockwidth@cx+3ex,
      \@tempdimb-\tryheadheight@cx-\tryheadsep@cx)
       -- ++(0,\tryheadsep@cx) node [right, dim text] at
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

$1\,\text{in} +$ \topmargin $(17\,pt) = 55.27\,pt$

\headheight 12 pt

\headsep 25 pt

```
       ++(2ex,-0.8\tryheadsep@cx){\CS{headsep}
       \convert@cx{\the\tryheadsep@cx} $(h_{h,s})$};
```

11.3.9 Type area

Next we add the type area and its dimension.

```
\coordinate (J) at (\tryINNER,
     \@tempdimb-\tryheadsep@cx-\tryheadheight@cx);
\draw[textblock] (J) rectangle ++ (\trytextwidth@cx,-\trytextheight@cx);
\draw[dim,<->|,dim text] (\tryINNER,0.75\trytextheight@cx)
  -- ++(\trytextwidth@cx, 0)
  node at ++(-0.5\trytextwidth@cx,0.8\baselineskip){\labelit@cx{\textwidth}};

%   add textheight dimension
\draw [dim,<->] (\trystockwidth@cx+3ex,
       \@tempdimb-\tryheadsep@cx-\tryheadheight@cx) --
       ++(0,-\trytextheight@cx) node [right, dim text, text width=2.5cm]
       at ++(2ex,0.5\trytextheight@cx)
       {\CS{textheight}\\ \convert@cx{\the\trytextheight@cx}$(h_x)$};
```

11.3.10 Footer

Add the footer and its dimension.

```
\coordinate (I) at (\tryINNER,
          \@tempdimb-\tryheadsep@cx-
          \tryheadheight@cx-\trytextheight@cx-\tryfootskip@cx);
\draw[textblock] (I) rectangle ++ (\trytextwidth@cx,\tryheadheight@cx);
\draw [dim,|<->|,>=stealth] (\trystockwidth@cx+3ex,\@tempdimb-\tryheadsep@cx-
    \tryheadheight@cx-\trytextheight@cx) --
    ++(0,-\tryfootskip@cx) node [right, dim text] at
    ++(2ex,0.5\tryfootskip@cx){%
    \labelit@cx{\tryfootskip@cx}$(h_f)$};
%
%
% marginpar
\def\leftmarginpar{%
   \draw [textblock] (\tryINNER+\trytextwidth@cx+\trymarginparsep@cx,
         \@tempdimb-\tryheadsep@cx-\tryheadheight@cx) rectangle ++(\trymarginparwidth@cx,-\tr
 \draw [dim,|<->|] (\tryINNER+\trytextwidth@cx+\trymarginparsep@cx
   +\trymarginparwidth@cx,0.75\trytextheight@cx)
   -- ++ (-\trymarginparwidth@cx,0) node at
   ++(0.5\trymarginparwidth@cx,0.7\baselineskip)
   {marginparwidth} node at ++(0.5\trymarginparwidth@cx,-\baselineskip)
   {\convert@cx{\the\trymarginparwidth@cx} $(w_{m,w})$};

% Draw the marginsep dimension above
 \draw [dim,|-|] (\tryINNER+\trytextwidth@cx,0.85\trytextheight@cx)
          -- ++ (\trymarginparsep@cx,0)
         node[right,dim text,text width=2cm,text centered] at
         ++(-3ex,12pt) {marginparsep\\ \convert@cx{\trymarginparsep@cx} $(w_{m,s})$ };
}
```

\textheight 598 pt

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

```
%
\def\rightmarginpar{%
 \draw [textblock] (\tryINNER-\trymarginparsep@cx,
   \@tempdimb-\tryheadsep@cx-\tryheadheight@cx)
   rectangle ++(-\trymarginparwidth@cx,-\trytextheight@cx);
 \draw [dim,|<->|] (\tryINNER-\trymarginparsep@cx-\trymarginparwidth@cx,
     0.75\trytextheight@cx) -- ++ (\trymarginparwidth@cx,0) node at
     ++(-0.5\trymarginparwidth@cx,0.5\baselineskip) {marginparwidth.} node at
     ++(-0.5\marginparwidth,-\baselineskip){\convert@cx{\the\marginparwidth}};
 }
%
%
\drawmarginparstrue
\ifdrawmarginpars
  \ifoddpage
    \leftmarginpar
   \else
     \rightmarginpar
  \fi
\fi
```

11.3.11 Page Construction Canon Diagonal Lines

I the conditional @trydiagonal is set to true draw the diagonal lines. At false or none skip.

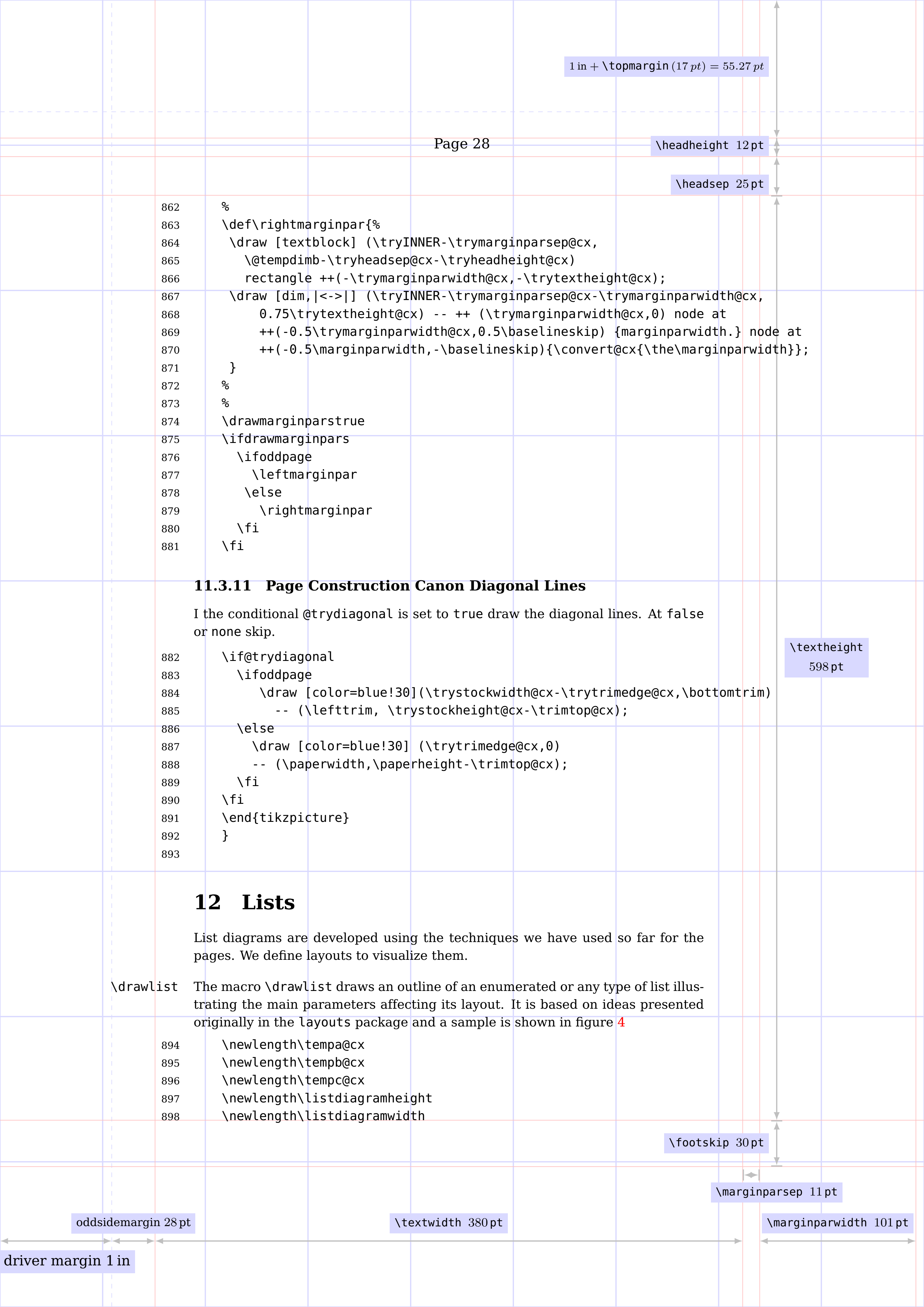
```
\if@trydiagonal
  \ifoddpage
     \draw [color=blue!30](\trystockwidth@cx-\trytrimedge@cx,\bottomtrim)
       -- (\lefttrim, \trystockheight@cx-\trimtop@cx);
  \else
    \draw [color=blue!30] (\trytrimedge@cx,0)
    -- (\paperwidth,\paperheight-\trimtop@cx);
  \fi
\fi
\end{tikzpicture}
}

```

12 Lists

List diagrams are developed using the techniques we have used so far for the pages. We define layouts to visualize them.

\drawlist The macro \drawlist draws an outline of an enumerated or any type of list illustrating the main parameters affecting its layout. It is based on ideas presented originally in the layouts package and a sample is shown in figure 4

```
\newlength\tempa@cx
\newlength\tempb@cx
\newlength\tempc@cx
\newlength\listdiagramheight
\newlength\listdiagramwidth
```



1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

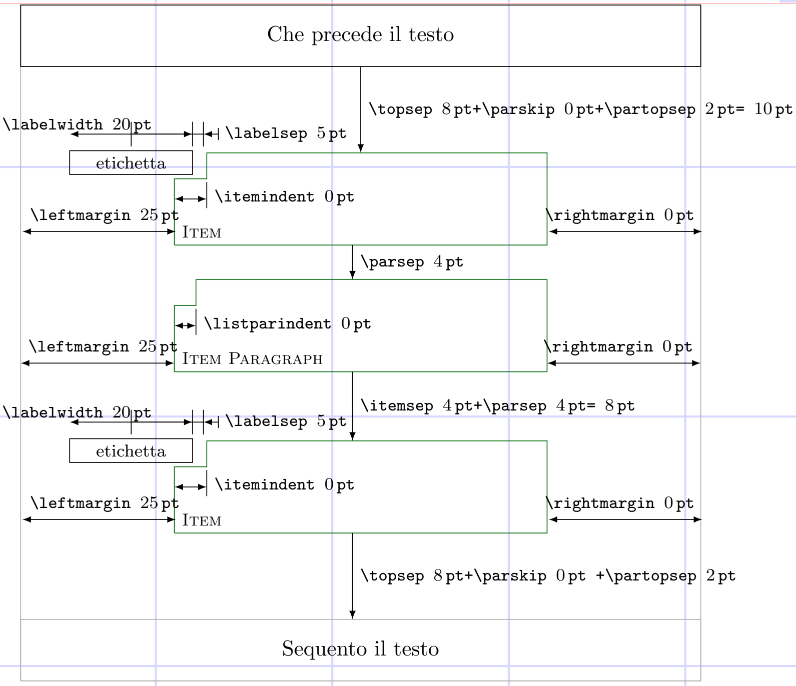


Figure 4: List diagram, showing LaTeX geometry definitions.

\topfraction .7

\textheight 598 pt

```

\def\drawlistdiagram{%
  \begin{tikzpicture}[scale=0.5,dim/.style={font={\footnotesize}},
                                           block/.style={color=thegreen}]
  \pgfmathsetmacro{\yscale}{8}
  \pgfmathsetlength{\tempa@cx}{\yscale*(\topsep+\parskip+\partopsep)}
  \pgfmathsetlength{\tempb@cx}{\yscale*(\itemsep+\parsep)}
  \pgfmathsetlength{\tempc@cx}{\yscale*(\parsep)}
  \pgfmathsetlength{\listdiagramheight}{13cm+2*\tempa@cx+\tempb@cx+\tempc@cx}
  \pgfmathsetlength{\listdiagramwidth}{\textwidth+10cm}
```

We first draw a block to reprsesent some text and the block on a page.

```
\draw[color=thegray!60] (0,0) rectangle (\listdiagramwidth,\listdiagramheight);
\draw[color=thegray!60] (0,0) rectangle (\listdiagramwidth, 2cm);
\draw (0,\listdiagramheight) rectangle (\listdiagramwidth,\listdiagramheight-2cm)
         node at ++ (-0.5\listdiagramwidth,1cm){\translate{precedingtextname}};
\node at (0.5\listdiagramwidth,1cm) {\translate{followingtextname}};
```

Next we are going to draw the item shape. First we draw the rectangle with the indentation.

\putlistblock@cx

```
\def\putlistblock@cx##1##2{%
  \coordinate (A) at (##1,##2);
  \coordinate (B) at (##1-40pt,##2-20pt);
  \draw[block]   (A) -- ++ (\textwidth,0pt)
                     -- ++ (0, 3cm)
```

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin (17 pt) = 55.27 pt

\headheight 12 pt

\headsep 25 pt

```
                     -- ++ (-\textwidth+ 30pt,0)
                     -- ++ (0, -24pt)
                     -- ++ (-30pt,0)
                     -- ++ (0,-3cm+24pt);
 % dra wthe label rectangle
  \draw[block,color=black]  (B) ++ (-2cm, 3cm) rectangle ++ (4cm, 22pt )
      node[dim] at ++(-2cm,-11pt) {\translate{labelname}};
  % draw dimension lines
  \draw  (B) ++ (0, 3cm+26pt) -- ++ (0,0.8cm) ++ (2cm,-0.8cm)--++(0,0.8cm) ++ (10pt,-0.8cm)
          --++ (0,0.8cm); %labelsep
% draw arrows
  \settowidth\@tempdima{labelwidth}
  \draw[dim] [<->,>=latex] (B) ++ (-2cm, 3cm+26pt)++(0,0.4cm)-- ++(4cm,0)
    node[dim] at ++ (- 2cm-\@tempdima-50pt,8pt)
    {\labelit@cx{\labelwidth}};

  \draw[dim] (B)  ++ (0, 3cm+26pt+0.4cm) -- ++ (2cm+10pt,0)
                   ++ (0.5cm,0)--++(-0.5cm,0)[|->,>=latex]
                   node[right] at ++(0.45cm,0) {\labelit@cx{\labelsep}};
% draw itemsep

  \draw[<->,>=latex] (A)++(0,1.5cm) -- ++(30pt,0) ;
  \draw (A)++(30pt,1.20cm )--++ (0pt,1.8cm-27pt) node at ++(0,0)[below right]
  {\labelit@cx{\itemindent}}; % draw dimline
    \node[dim] (A) at (##1,##2)[above right] {\textsc{Item}};

%    draw leftmargin and right margin

\draw[<->,>=latex] (A) ++ (-24pt,0pt) -- ++(-5cm,0pt)
         node at ++(0,0)[above right] {\labelit@cx{\leftmargin}};
\draw[<->,>=latex] (A) ++ (-24pt+\textwidth,0pt) -- ++(5cm,0pt)
        node at ++(0,0)[above left] {\labelit@cx{\rightmargin}};
}
%
%
\def\putlistparblock@cx##1##2{%
  \coordinate (A) at (##1,##2);
  \coordinate (B) at (##1-40pt,##2-20pt);
  \draw[block]   (A) -- ++ (\textwidth,0pt)
                     -- ++ (0, 3cm)
                     -- ++ (-\textwidth+ 20pt,0)
                     -- ++ (0, -24pt)
                     -- ++ (-20pt,0)
                     -- ++ (0,-3cm+24pt);

  \draw[<->,>=latex] (A)++(0,1.5cm) -- ++(20pt,0) ;
  \draw (A)++(20pt,1.20cm )--++ (0pt,1.8cm-27pt) node at ++(0,0)[below right]
        {\labelit@cx{\listparindent}};

   \draw[<->,>=latex] (A) ++ (-0pt,8pt) -- ++(-5cm,0pt)
         node at ++(0,0)[above right] {\labelit@cx{\leftmargin}};
```

\textheight 598 pt

\footskip 30 pt

\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in

1 in + \topmargin $(17\,pt) = 55.27\,pt$

\headheight 12 pt

\headsep 25 pt

```
   \draw[<->,>=latex] (A) ++ (0pt+\textwidth,8pt) -- ++(5cm,0pt)
        node at ++(0,0)[above left] { \labelit@cx{\rightmargin}};

   \node[dim] (A) at (##1,##2)[above right] {\textsc{Item Paragraph}};
}

%
% We start by drawing the blocks. We draw three blocks, the first and last show items, wherea
% the middle one shows a paragraph within an item.
% Since values for list parameters are small, we scale everything up.
%     |\tempa@cx = scaled topsep + parskskip + partopsep|
%     |\tempb@cx = scaled itemsep + parsep|
%
%  \end{macrocode}
%  \begin{macrocode}
\putlistblock@cx{5cm}{2cm+\tempa@cx} % 8cm
\draw [<-,>=latex] (0.5\paperwidth, 2cm)-
            -++(0,\tempa@cx) node at ++(0,-0.5\tempa@cx) [right]
            {\labelit@cx{\topsep}+\labelit@cx{\parskip} +\labelit@cx{\partopsep}};

% second block
\putlistparblock@cx{5cm}{2cm+\tempa@cx+3cm+\tempb@cx}
\draw [->,>=latex] (0.5\paperwidth, 2cm+\tempa@cx+3cm+\tempb@cx)--++(0,-\tempb@cx)
      node at ++(0,0.5\tempb@cx) [right]
      {\labelit@cx{\itemsep}+\labelit@cx{\parsep}=
          \pgfmathparse{\itemsep+\parsep}\convert@cx{\pgfmathresult}};

%% third block
\putlistblock@cx{5cm}{2cm+\tempa@cx+6cm+\tempb@cx +\tempc@cx}
\draw [->,>=latex] (0.5\paperwidth,2cm+\tempa@cx+6cm+\tempb@cx +\tempc@cx )
      --++(0,-\tempc@cx)
      node at ++(0,0.5\tempc@cx) [right] {\labelit@cx{\parsep}};

% add finally the top arrow
\draw [->,>=latex] (0.5\listdiagramwidth, \listdiagramheight-2cm)--++(0,-\tempa@cx)
     node at ++(0,0.5\tempa@cx) [right]
{\labelit@cx{\topsep}+\labelit@cx{\parskip}+\labelit@cx{\partopsep}=
     \pgfmathparse{\topsep+\parskip+\partopsep}\convert@cx{\pgfmathresult}};

%

\end{tikzpicture}
}
```

\textheight 598 pt

12.1 Tabulating List values

\printlistvalues The command \printlistvalues produces a short table showing the list parameters and their values (see Table 1 for an example).

```
\def\printlistvalues{%
  \begin{tabular}{lr}
    \toprule
    Parameter    & Value\\
```

\footskip 30 pt

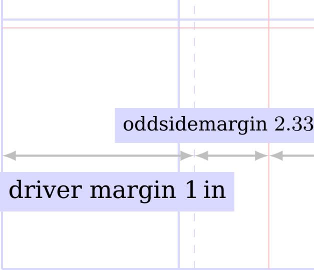
\marginparsep 11 pt

oddsidemargin 28 pt

\textwidth 380 pt

\marginparwidth 101 pt

driver margin 1 in



Parameter	Value
leftmargin	1.83 pc
rightmargin	1.83 pc
itemindent	0 pc
labelwidth	1.42 pc
labelsep	0.42 pc
listparindent	0 pc
topsep	0.33 pc
partopsep	0.17 pc
parsep	0.17 pc
itemsep	0.17 pc

Table 1: Tabulation of LaTeX list values, for the *quotation* environment.

```
        \midrule
        leftmargin   & \convert@cx{\the\leftmargin}\\
        rightmargin  & \convert@cx{\the\rightmargin}\\
        itemindent   & \convert@cx{\itemindent}\\
        labelwidth   & \convert@cx{\labelwidth}\\
        labelsep     & \convert@cx{\labelsep}\\
        listparindent& \convert@cx{\listparindent}\\
        topsep       & \convert@cx{\topsep}\\
        partopsep    & \convert@cx{\partopsep}\\
        parsep       & \convert@cx{\parsep}\\
        itemsep      & \convert@cx{\itemsep}\\
        \bottomrule
        \end{tabular}
    }
```

13 Draw a Font box

We provide a command that can draw a box and font dimensions. We will use TikZ for drafting and styling. We also provide the macro `\printfontparams` to print font parameters. This will produce a table as shown in Table 2 and Table 3.

Parameter	Value
Font encoding	T1
font family	fve
font series	m
font shape	n
font size	10
baselineskp	12.0pt

Table 2: Font details for the current document font.

1 in + \topmargin (1.42 pc) = 4.61 pc

\headheight 1 pc

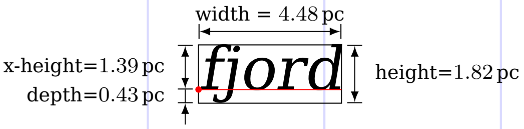
\headsep 2.08 pc

Parameter	Value
fontdimen1 (slant per point) is	0.0pt
fontdimen2 (interword space)	2.86197pt
fontdimen3 (interword stretch)	1.71898pt
fontdimen4 (interword shrink)	0.68399pt
fontdimen5 (x-height)	4.67096pt
fontdimen6 (quad width)	8.99994pt
fontdimen7 (extra space)	0.68399pt

Table 3: Font dimension details for the current document font.

\topfraction .7

To draw a fontbox, we use



This draws Q werty .

\printfontparams

```
\newcommand{\printfontparams}{%
  \begin{tabular}{lc}
     \toprule
     Parameter     & Value\\
     \midrule
     Font encoding & \f@encoding\\
     font family   & \f@family\\
     font series   & \f@series\\
     font shape    & \f@shape\\
     font size     & \f@size\\
     baselineskp   & \f@baselineskip\\
     \bottomrule
     \end{tabular}
 }
```

\textheight 49.83 pc

\printfontdimensions

```
\newcommand{\printfontdimensions}{%
  \begin{tabular}{lc}
  \toprule
  Parameter     & Value\\
  \midrule
    fontdimen1 (slant per point)  is & \the\fontdimen1\font\\
    fontdimen2 (interword space)     & \the\fontdimen2\font\\
    fontdimen3 (interword stretch)          & \the\fontdimen3\font\\
    fontdimen4 (interword shrink)          & \the\fontdimen4\font\\
    fontdimen5 (x-height)  & \the\fontdimen5\font\\
    fontdimen6 (quad width)& \the\fontdimen6\font\\
    fontdimen7 (extra space) & \the\fontdimen7\font\\
  \bottomrule
```

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

1 in + \topmargin (1.42 *pc*) = 4.61 *pc*

\headheight 1 pc

\headsep 2.08 pc

```
    \end{tabular}
   }
```

\drawfontframe
\drawfontbox

The macro \drawfontbox{⟨*text*⟩} draws text in a box and annotates it with dimensions. A very similar macro is defined in Peter Wilson's layouts. I thought with TikZ it can be drawn more easily than the tens of lines of put in the original macros.

We define some new length to hold temporary values for the fontbox dimensions, although PGF provides its own methods.

```
\newlength\xheight@cx
\newlength\xwidth@cx
\newlength\xdepth@cx
\newlength\xtotal@cx
\newsavebox{\fontbox}
```

We set a number of keys to enable styling the box.

```
\cxset{fontbox font/.store in=\fontboxfont@cx,
       fontbox line color/.store in=\fontboxlinecolor@cx,
       fontbox label font/.store in=\fontboxlabelfont@cx}

%   Set reasonable defaults
%
\cxset{fontbox font={\itshape\Huge},
       fontbox line color=thered,
       fontbox label font={\upshape\footnotesize}}
```

Define a macro to draw a tight frame around text. This can be used for inline text and hence we use \tikz to define it. We align it using baseline=(X.base). See (How to align a series of tikz pictures at the baseline.)

See also how to determine the vector between two co-ordinates.

\textheight
49.83 pc

```
\newcommand\drawfontframe[1]{%
  \tikz[baseline=(X.base), font=\fontboxlabelfont@cx]{%
    \node[rectangle,draw,inner sep=0pt,outer sep=0pt,
          color=\fontboxlinecolor@cx] (X)[black]{#1};
    \draw[\fontboxlinecolor@cx, line width=0.4pt] (X.text)
      circle(0.4pt)[fill=red] -- (X.base east);}
}
%
\def\drawfontbox#1{%
   {\itshape\fontboxfont@cx
   \savebox{\fontbox}{#1}
   \pgfmathsetlength{\xheight@cx}{\ht\fontbox}
   \pgfmathsetlength{\xwidth@cx}{\wd\fontbox}
   \pgfmathsetlength{\xdepth@cx}{\dp\fontbox}
   \pgfmathsetlength{\xtotal@cx}{\xdepth@cx+\xheight@cx}
  \begin{tikzpicture}[scale=1,label/.style={font={\fontboxlabelfont@cx}}]
    \node[rectangle,draw,inner sep=0pt,outer sep=0pt] (X){#1};
    \draw[red, line width=0.4pt,label] (X.text)  circle(1pt)[fill=red] -- (X.base east);
    \draw[|<->|,>=latex] ([yshift=5pt] X.north west)
       --([yshift=5pt] X.north east) node [label,above=-5pt,midway]{width = \convert@cx{\xwid
```

We next draw the x-height of the text

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

1 in + \topmargin (1.42 pc) = 4.61 pc

\headheight 1 pc

\headsep 2.08 pc

```
    % draw the xheight
    \draw[|<->|,>=latex,label]([xshift=-5pt]X.base west)
          --([xshift=-5pt] X.north west)
          node [left,midway,label] {x-height=\convert@cx{\xheight@cx}};
%   draw depth
    \draw[-|,>=latex,label]([xshift=-5pt]X.base west)
          --([xshift=-5pt] X.south west)
          node [left,midway,label] {depth=\convert@cx{\xdepth@cx}};
    \draw[<-,>=latex]([xshift=-5pt]X.south west)
          --++(0,-8pt);
%   draw total height
%
\draw[|<->|,>=latex,label]([xshift=5pt]X.north east)
          --([xshift=5pt] X.south east)
          node [right,midway] {height=\convert@cx{\xtotal@cx}};

  \end{tikzpicture}}
}
```

13.1 Sundry

Here are assorted macro definitions.

\lineloop
\linefoot

The (document-level) command \lineloop sets numbered lines until the specified count is reached. The command \linefoot sets a single, automatically numbered line, but with a footnote (with the specified label); it automatically increments the line counter. These commands are typically used to construct test documents.

Because the counter is globally advanced and never reset, successive calls to \lineloop should have an argument ever larger. The formatted output will have each line labeled with its ordinal number.

```
\newcounter{linecount}
\def\loop@line#1#2{%
 \par
 \hb@xt@\hsize{%
  \global\advance#1\@ne
  \edef\@tempa{\@ifnum{100>#1}{0}{}\@ifnum{10>#1}{0}{}\number#1}%
  \@tempa\edef\@tempa{\special{line:\@tempa}}\@tempa
  \vrule depth2.5\p@#2\leaders\hrule\hfil
 }%
}%
\def\lineloop#1{%
 \loopwhile{\loop@line\c@linecount{}\@ifnum{#1>\c@linecount}}%
}%
\def\linefoot#1{%
 \loop@line\c@linecount{%
  \footnote{%
   #1\special{foot:#1}\vrule depth2.5\p@\leaders\hrule\hfill
  }%
 }%
}%
```

\textheight 49.83 pc

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

1 in + \topmargin (1.42 pc) = 4.61 pc

\headheight 1 pc

\headsep 2.08 pc

14 Minimal Working Examples (MWE)

We generate a number of examples to illustrate usage and to test the code. The first example test-01.tex, uses the standard book class. It also uses a number of pictures to illustrate float parameter placement.

```
\documentclass[twoside,10pt]{book}
\usepackage{tikz,changepage,fancyhdr,amsmath}
\usepgflibrary{arrows}
\usepackage{lipsum}
\usepackage[german]{babel}
\usepackage[german]{xlayouts}
\renewcommand{\topfraction}{.6}
\renewcommand{\bottomfraction}{.8}
\renewcommand{\textfraction}{.04}
\renewcommand{\floatpagefraction}{.9} % have a high one don’t encourage it
\renewcommand{\dbltopfraction}{.5}
\renewcommand{\dblfloatpagefraction}{.8}
\setcounter{topnumber}{9}
\setcounter{bottomnumber}{9}
\setcounter{totalnumber}{2}
\setcounter{dbltopnumber}{1}
\pagestyle{grid}
\begin{document}
\section{Introduction}
\thispagestyle{grid}
\begin{figure}[b]
\ifbotfloat{\figureparamsbot}{%
 \iftopfloat{\figureparamstop}{}}

\centering
\includegraphics[height=0.9\columnwidth]{./images/hine04-x}
\caption{Example image to demonstrate top fraction.}
\end{figure}
\lipsum[1]

\lipsum[1]

This has been drawn using TikZ\footnote{A kleine program.}\footnote{Another footnote.}.
\lipsum[1-2]
\begin{figure}[t]
 \caption{Example image to demonstrate top.}
\includegraphics[width=\columnwidth]{./images/hine02}%
  \iftopfloat{\figureparamstop}{}
\end{figure}
\begin{figure}[tpb]
\centering
\includegraphics[height=\columnwidth]{./images/hine04-x}
\caption{Example image to demonstrate top fraction.}
\end{figure}

\begin{figure}[tpb]
```

\textheight
49.83 pc

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

$1\text{ in} + $\topmargin $(1.42\,pc) = 4.61\,pc$

\headheight 1 pc

\headsep 2.08 pc

```
\centering
\includegraphics[width=\columnwidth]{./images/hine04-xx}
\caption{Example image to demonstrate top fraction.}
\end{figure}
\lipsum
\clearpage
\onecolumn
%   draws the spread

\drawspread

\printreadability
\pagestyle{plain}
\newpage
% draws a trial layout
\drawtriallayout
\newpage
\drawtriallayout
\newpage
\drawlistdiagram
\printlistvalues
\end{document}
```

<*test-02>

```
%%
%% File: test-02.tex
%% Tests xlayout for scrbook class.
%% 26/05/2012
%%
%%
\documentclass[twoside,10pt]{scrbook}
\usepackage{tikz,changepage,fancyhdr,amsmath}
\usepgflibrary{arrows}
\usepackage{lipsum}
\uspackage[german]{babel}
\usepackage[german]{xlayouts}
\renewcommand{\topfraction}{.6}
\renewcommand{\bottomfraction}{.8}
\renewcommand{\textfraction}{.04}
\renewcommand{\floatpagefraction}{.9} % have a high one don’t encourage it
\renewcommand{\dbltopfraction}{.5}
\renewcommand{\dblfloatpagefraction}{.8}
\setcounter{topnumber}{9}
\setcounter{bottomnumber}{9}
\setcounter{totalnumber}{2}
\setcounter{dbltopnumber}{1}
\pagestyle{grid}
\begin{document}
\section{Introduction}
\thispagestyle{grid}
\begin{figure}[b]
\ifbotfloat{\figureparamsbot}{%
```

\textheight 49.83 pc

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

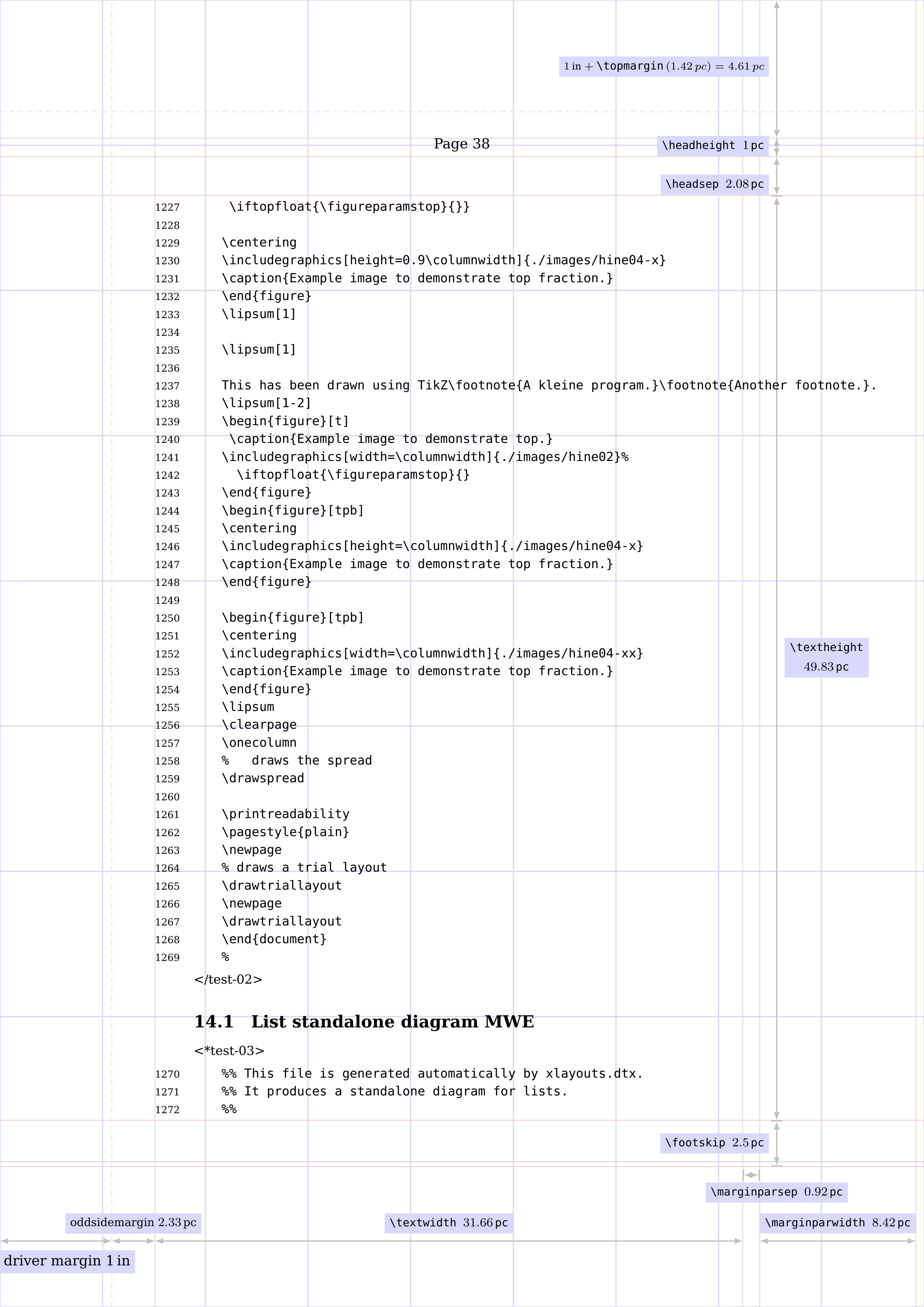
```
 \iftopfloat{\figureparamstop}{}}

\centering
\includegraphics[height=0.9\columnwidth]{./images/hine04-x}
\caption{Example image to demonstrate top fraction.}
\end{figure}
\lipsum[1]

\lipsum[1]

This has been drawn using TikZ\footnote{A kleine program.}\footnote{Another footnote.}.
\lipsum[1-2]
\begin{figure}[t]
 \caption{Example image to demonstrate top.}
\includegraphics[width=\columnwidth]{./images/hine02}%
  \iftopfloat{\figureparamstop}{}
\end{figure}
\begin{figure}[tpb]
\centering
\includegraphics[height=\columnwidth]{./images/hine04-x}
\caption{Example image to demonstrate top fraction.}
\end{figure}

\begin{figure}[tpb]
\centering
\includegraphics[width=\columnwidth]{./images/hine04-xx}
\caption{Example image to demonstrate top fraction.}
\end{figure}
\lipsum
\clearpage
\onecolumn
%   draws the spread
\drawspread

\printreadability
\pagestyle{plain}
\newpage
% draws a trial layout
\drawtriallayout
\newpage
\drawtriallayout
\end{document}
%
```

</test-02>

14.1 List standalone diagram MWE

<*test-03>

```
%% This file is generated automatically by xlayouts.dtx.
%% It produces a standalone diagram for lists.
%%
```



```
\documentclass{standalone}
\usepackage[italian]{babel}
\usepackage[italian]{xlayouts}
\begin{document}
\drawlistdiagram
\end{document}
```

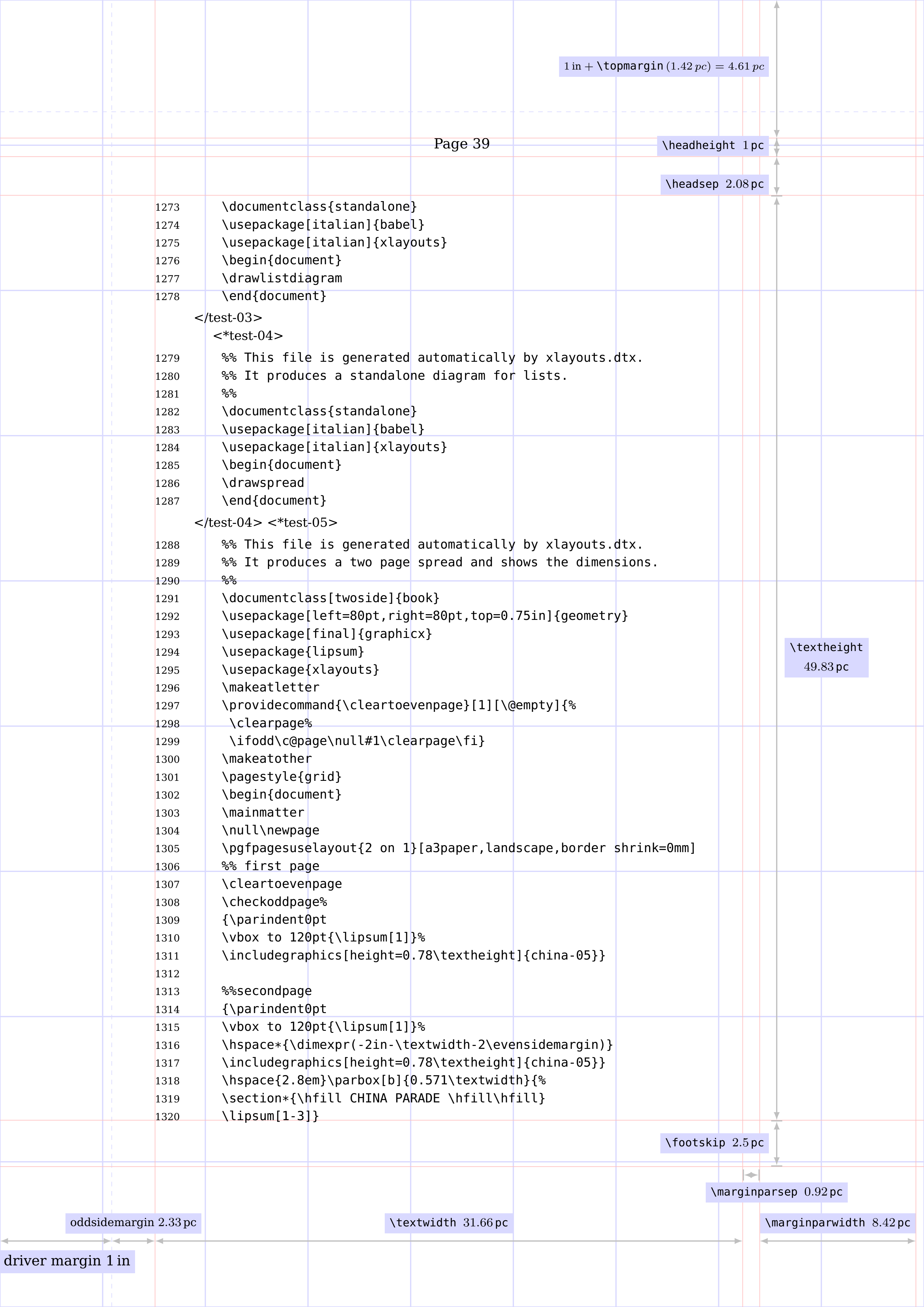
</test-03>

<*test-04>

```
%% This file is generated automatically by xlayouts.dtx.
%% It produces a standalone diagram for lists.
%%
\documentclass{standalone}
\usepackage[italian]{babel}
\usepackage[italian]{xlayouts}
\begin{document}
\drawspread
\end{document}
```

</test-04> <*test-05>

```
%% This file is generated automatically by xlayouts.dtx.
%% It produces a two page spread and shows the dimensions.
%%
\documentclass[twoside]{book}
\usepackage[left=80pt,right=80pt,top=0.75in]{geometry}
\usepackage[final]{graphicx}
\usepackage{lipsum}
\usepackage{xlayouts}
\makeatletter
\providecommand{\cleartoevenpage}[1][\@empty]{%
 \clearpage%
 \ifodd\c@page\null#1\clearpage\fi}
\makeatother
\pagestyle{grid}
\begin{document}
\mainmatter
\null\newpage
\pgfpagesuselayout{2 on 1}[a3paper,landscape,border shrink=0mm]
%% first page
\cleartoevenpage
\checkoddpage%
{\parindent0pt
\vbox to 120pt{\lipsum[1]}%
\includegraphics[height=0.78\textheight]{china-05}}

%%secondpage
{\parindent0pt
\vbox to 120pt{\lipsum[1]}%
\hspace*{\dimexpr(-2in-\textwidth-2\evensidemargin)}
\includegraphics[height=0.78\textheight]{china-05}}
\hspace{2.8em}\parbox[b]{0.571\textwidth}{%
\section*{\hfill CHINA PARADE \hfill\hfill}
\lipsum[1-3]}
```



1 in + \topmargin (1.42 pc) = 4.61 pc

\headheight 1 pc

\headsep 2.08 pc

```
\end{document}
```

</test-05>

15 Dictionaries

<*english> This file is generated automatically and it contains translation strings for the English language. it is saved in a file pages-German.dict according to the conventions of the translator package.

```
\ProvidesDictionary{pages-English}{English}
\providetranslation{headername}{header}
\providetranslation{bodyname}{body}
\providetranslation{footername}{footer}
\providetranslation{marginnotename}{margin note}
\providetranslation{oneinchname}{one inch}
\providetranslation{notshownname}{not shown}
\providetranslation{drivermarginname}{driver margin}
\providetranslation{leftpagename}{left page}
\providetranslation{rightpagename}{right page}
\providetranslation{bindingcorrectionname}{binding correction}
\providetranslation{bookheightname}{book height}
\providetranslation{trimedgename}{trim edge}
\providetranslation{trimtopname}{top trim}
\providetranslation{trimbottomname}{bottom trim}
\providetranslation{precedingtextname}{Preceding Text}
\providetranslation{followingtextname}{Following Text}
\providetranslation{labelname}{label}
```

\textheight 49.83 pc

</english>

<*german> This file is generated automatically and it contains translation strings for the German language. it is saved in a file pages-German.dict according to the conventions of the translator package.

```
\ProvidesDictionary{pages-German}{German}
\providetranslation{headername}{Kopfzeile}
\providetranslation{bodyname}{Haupttext}
\providetranslation{footername}{Fu{\ss}zeile}
\providetranslation{marginnotename}{Rand-\\ notizen}
\providetranslation{oneinchname}{ein Zoll}
\providetranslation{notshownname}{ohne Abbildung}
\providetranslation{drivermarginname}{Fahrer-Marge}
\providetranslation{leftpagename}{Linke Seite}
\providetranslation{rightpagename}{Rechte Seite}
\providetranslation{bindingcorrectionname}{Bindekorrektur}
\providetranslation{bookheightname}{Buch H\"ohe}
\providetranslation{trimedgename}{Schnittkante}
\providetranslation{trimtopname}{Trim-Top}
\providetranslation{trimbottomname}{trim Unten}
\providetranslation{precedingtextname}{Che precede il testo}
\providetranslation{followingtextname}{Sequento il testo}
\providetranslation{labelname}{label}
```

</german>

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

1 in + \topmargin (1.42 pc) = 4.61 pc

\headheight 1 pc

\headsep 2.08 pc

<*italian> This file is generated automatically and it contains translation strings for the German language. it is saved in a file pages-German.dict according to the conventions of the translator package.

```
\ProvidesDictionary{pages-Italian}{Italian}
\providetranslation{headername}{testatina}
\providetranslation{bodyname}{corpo}
\providetranslation{footername}{piedino}
\providetranslation{marginnotename}{note marginale}
\providetranslation{oneinchname}{un piedino}
\providetranslation{notshownname}{non mostrato}
\providetranslation{drivermarginname}{conducente del margine}
\providetranslation{leftpagename}{pagina di sinistra}
\providetranslation{rightpagename}{pagina a destra}
\providetranslation{bindingcorrectionname}{correzione vincolante}
\providetranslation{bookheightname}{libro di altezza}
\providetranslation{trimedgename}{cimosse}
\providetranslation{trimtopname}{top asseto}
\providetranslation{trimbottomname}{fondo assetto}
\providetranslation{precedingtextname}{Che precede il testo}
\providetranslation{followingtextname}{Sequento il testo}
\providetranslation{labelname}{etichetta}
```

</italian>

<*dutch> This file is generated automatically and it contains translation strings for the Dutch language. it is saved in a file pages-German.dict according to the conventions of the translator package.

\textheight 49.83 pc

```
\ProvidesDictionary{pages-Dutch}{Dutch}
\providetranslation{headername}{kopregel}
\providetranslation{bodyname}{broodtekst}
\providetranslation{footername}{voetregel}
\providetranslation{marginnotename}{marge notities}
\providetranslation{oneinchname}{een inch}
\providetranslation{notshownname}{niet getoond}
\providetranslation{drivermarginname}{bestuurder marge}
\providetranslation{leftpagename}{linkerpagina}
\providetranslation{rightpagename}{juiste pagina}
\providetranslation{bindingcorrectionname}{binding correctie}
\providetranslation{bookheightname}{book hoekte}
\providetranslation{trimedgename}{snijrand}
\providetranslation{trimtopname}{Trim top}
\providetranslation{trimbottomname}{Trim onderkant}
```

</dutch>

<*french> This file is generated automatically and it contains translation strings for the Dutch language. it is saved in a file pages-German.dict according to the conventions of the translator package.

```
\ProvidesDictionary{pages-French}{French}
\providetranslation{headername}{kopregel}
\providetranslation{bodyname}{broodtekst}
\providetranslation{footername}{voetregel}
\providetranslation{marginnotename}{marge notities}
\providetranslation{oneinchname}{een inch}
```

\footskip 2.5 pc

\marginparsep 0.92 pc

oddsidemargin 2.33 pc

\textwidth 31.66 pc

\marginparwidth 8.42 pc

driver margin 1 in

1 in + \topmargin (1.42 *pc*) = 4.61 *pc*

\headheight 1 pc

\headsep 2.08 pc

```
\providetranslation{notshownname}{niet getoond}
\providetranslation{drivermarginname}{bestuurder marge}
\providetranslation{leftpagename}{linkerpagina}
\providetranslation{rightpagename}{juiste pagina}
\providetranslation{bindingcorrectionname}{binding correctie}
\providetranslation{bookheightname}{book hoekte}
\providetranslation{trimedgename}{snijrand}
\providetranslation{trimtopname}{Trim top}
\providetranslation{trimbottomname}{Trim onderkant}
```

</french>

<*spanish> This file is generated automatically and it contains translation strings for the Dutch language. it is saved in a file pages-German.dict according to the conventions of the translator package.

```
\ProvidesDictionary{pages-French}{French}
\providetranslation{headername}{kopregel}
\providetranslation{bodyname}{broodtekst}
\providetranslation{footername}{voetregel}
\providetranslation{marginnotename}{marge notities}
\providetranslation{oneinchname}{een inch}
\providetranslation{notshownname}{niet getoond}
\providetranslation{drivermarginname}{bestuurder marge}
\providetranslation{leftpagename}{linkerpagina}
\providetranslation{rightpagename}{juiste pagina}
\providetranslation{bindingcorrectionname}{binding correctie}
\providetranslation{bookheightname}{book hoekte}
\providetranslation{trimedgename}{snijrand}
\providetranslation{trimtopname}{Trim top}
\providetranslation{trimbottomname}{Trim onderkant}
```

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</spanish>

The end of the configuration file code

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