The layouts package: Code*

Author: Peter Wilson, Herries Press
Maintainer: Will Robertson
will dot robertson at latex-project dot org

2009/09/02

Abstract

The layouts package provides facilities for document designers to experiment with various aspects of the layout of LaTeXed documents. There is a separate user manual for the package.

Contents

*This file (layouts.dtx) has version number v2.6d, last revised 2009/09/02.

1 Introduction

This document provides the commented source for a LaTeX package file developed as part of a suite designed for the typesetting of documents according to the rules for ISO international standards [Wil96]. A separate document provides the user manual.

Section 2 describes a package to assist in the design of new LaTeX classes and packages by graphically depicting the layout[1] of various logical elements of a document. This package has general applicability and is not restricted to typesetting ISO documents.

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

2 The layouts package

Announce the name and version of the package which requires LaTeX 2_ε.

```
1 ⟨*lays⟩
2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{layouts}[2009/09/02 v2.6d graphical depiction of document elements]
4
```

The layouts package provides means of graphically displaying the layout of various logical elements of a document such as section headings, lists, floats, and others.

3 Counters and such

First we define some commands, counters, etc., that will be useful later on.

`\bs` We will be doing a lot of printing of LaTeX commands, so we need a short command to print a backslash.

```
5 \@ifundefined{bs}{\newcommand{\bs}{\texttt{\char‘\\}}}%
6   {\renewcommand{\bs}{\texttt{\char‘\\}}}
7
```

[1] With thanks to Frank Mittelbach for noticing some problems with version 2.4 and suggesting additional features.

\l@yoneinch
\l@yeighthalfinch
\l@yteninch
\l@yeleveninch
\l@yonepoint

Some generally useful values. `\l@yonepoint` is set to 65536 sp and all the others are set to a value in pts.

```
\newcommand{\l@yoneinch}{72}
\newcommand{\l@yeighthalfinch}{615}
\newcommand{\l@yteninch}{723}
\newcommand{\l@yeleveninch}{795}
\newcommand{\l@yonepoint}{65536}
```

\l@youtscale

Internal command that stores the drawing scale factor. Initialised to half scale.

```
\newcommand{\l@youtscale}{0.5}
```

\l@ylen

A length.

```
\newlength{\l@ylen}
```

\layoutsbox

A box for storing something. There seems to be no reason why the user should not be able to use this.

```
\newsavebox{\layoutsbox}
```

\l@youtunitlength

This will be used for setting the `\unitlength` for a `picture`.

```
\newlength{\l@youtunitlength}
```

\l@youtlinethick
\l@youtlinethickii

These will be used as parameters to a `\linethickness` command.

```
\newlength{\l@youtlinethick}
\newlength{\l@youtlinethickii}
```

\l@ysetupparskip
\l@ysetupbaselineskip

Used for storing the document's `\parskip` and `\baselineskip`.

```
\newlength{\l@ysetupparskip}
\newlength{\l@ysetupbaselineskip}
```

\l@yonem
\l@yonex

Used for storing the document's value for 1em and 1ex.

```
\newlength{\l@yonem}
\newlength{\l@yonex}
```

\l@ylmarg
\l@yrmarg
\l@yitmindent
\l@ylblwidth
\l@ylblsep
\l@ylparindent
\l@ytsep
\l@ypskip
\l@yptsep
\l@ypsep
\l@yitmsep

We need to store a list environment's values for use when tabulating the actual list values.

```
\newlength{\l@ylmarg}
\newlength{\l@yrmarg}
\newlength{\l@yitmindent}
\newlength{\l@ylblwidth}
\newlength{\l@ylblsep}
\newlength{\l@ylparindent}
\newlength{\l@ytsep}
\newlength{\l@ypskip}
\newlength{\l@yptsep}
```

```
\newlength{\l@ypsep}
\newlength{\l@yitmsep}
```

`\l@ytok` A useful token

```
\newtoks\l@ytok
```

`\l@youtpw` `\l@youtph` We use these for storing the page width and height.

```
\newcount\l@youtpw
\newcount\l@youtph
```

`\l@youthpi` `\l@youthpii` `\l@youthpiii` `\l@youthpiv` `\l@youthpv` `\l@youthpvi` `\l@youthpvii` Counters for horizontal drawing parameters.

```
\newcount\l@youthpi
\newcount\l@youthpii
\newcount\l@youthpiii
\newcount\l@youthpiv
\newcount\l@youthpv
\newcount\l@youthpvi
\newcount\l@youthpvii
```

`\l@youtparskip` `\l@youtvpi` `\l@youtvpii` `\l@youtvpiii` `\l@youtvpiv` `\l@youtvpv` `\l@youtvpvi` `\l@youtvpvii` Counters for vertical drawing parameters.

```
\newcount\l@youtparskip
\newcount\l@youtvpi
\newcount\l@youtvpii
\newcount\l@youtvpiii
\newcount\l@youtvpiv
\newcount\l@youtvpv
\newcount\l@youtvpvi
\newcount\l@youtvpvii
```

`\l@youthdo` `\l@youthdi` `\l@youthdii` `\l@youthdiii` `\l@youthdiv` `\l@youthdv` `\l@youthdvi` `\l@youthdvii` Horizontal dimensions.

```
\newcount\l@youthdo
\newcount\l@youthdi
\newcount\l@youthdii
\newcount\l@youthdiii
\newcount\l@youthdiv
\newcount\l@youthdv
\newcount\l@youthdvi
\newcount\l@youthdvii
```

`\l@youtvdo` `\l@youtvdi` `\l@youtvdii` `\l@youtvdiii` `\l@youtvdiv` `\l@youtvdv` `\l@youtvdvi` `\l@youtvdvii` `\l@youtvdviii` Vertical dimensions.

```
\newcount\l@youtvdo
\newcount\l@youtvdi
```

```
\newcount\l@youtvdii
\newcount\l@youtvdiii
\newcount\l@youtvdiv
\newcount\l@youtvdv
\newcount\l@youtvdvi
\newcount\l@youtvdvii
\newcount\l@youtvdviii
```

`\l@youtxci` `\l@youtxcii` `\l@youtxciii` `\l@youtxciv` `\l@youtxcv` `\l@youtxcvi` X coordinates.

```
\newcount\l@youtxci
\newcount\l@youtxcii
\newcount\l@youtxciii
\newcount\l@youtxciv
\newcount\l@youtxcv
\newcount\l@youtxcvi
```

`\l@youtyci` `\l@youtycii` `\l@youtyciii` `\l@youtyciv` `\l@youtycv` `\l@youtycvi` `\l@youtycvii` `\l@youtycviii` Y coordinates.

```
\newcount\l@youtyci
\newcount\l@youtycii
\newcount\l@youtyciii
\newcount\l@youtyciv
\newcount\l@youtycv
\newcount\l@youtycvi
\newcount\l@youtycvii
\newcount\l@youtycviii
```

`\l@youtxco` `\l@youtyco` For the (X,Y) coordinates of the bottom left hand corner of the page.

```
\newcount\l@youtxco
\newcount\l@youtyco
```

4 Initialisations

The following are used to set up default conditions.

`\ifoddpagelayout` Set TRUE to draw an oddside page.

```
\newif\ifoddpagelayout
  \oddpagelayouttrue
```

`\iftwocolumnlayout` Set TRUE to draw a two column page.

```
\newif\iftwocolumnlayout
  \twocolumnlayoutfalse
```

`\ifdrawmarginpars` Set TRUE to draw marginpars on a page.

```
\newif\ifdrawmarginpars
  \drawmarginparstrue
```

`\ifdrawparameters` Set TRUE to draw a layout with marked dimension lines.

```
\newif\ifdrawparameters
  \drawparameterstrue
```

`\iflistaspara` Set TRUE to draw lists as stand-alone paragraph.

```
\newif\iflistaspara
  \listasparatrue
```

`\ifruninhead` Set TRUE to draw a run-in heading.

```
\newif\ifruninhead
  \runinheadfalse
```

`\ifprintparameters` Set TRUE to print table of actual parameter values

```
\newif\ifprintparameters
  \printparameterstrue
```

`\ifdrawdimensions` Set TRUE to draw dimension lines

```
\newif\ifdrawdimensions
  \drawdimensionsfalse
```

`\ifprintheadings` Set TRUE to print text about dashed lines.

```
\newif\ifprintheadings
  \printheadingstrue
```

`\ifl@ytempif` A scratch `\if`.

```
\newif\ifl@ytempif
```

`\l@yor` `\l@yor{`⟨*ifA*⟩`}{`⟨*ifB*⟩`}` sets `\ifl@ytempif` to TRUE unless ⟨*ifA*⟩ is FALSE and ⟨*ifB*⟩ is FALSE (i.e., `\ifl@tempif` = ⟨*ifA*⟩ OR ⟨*ifB*⟩).

```
\newcommand{\l@yor}[2]{%
  \l@ytempiftrue
  #1
  \else
    #2
    \else
      \l@ytempiffalse
    \fi
  \fi}
```

`\l@ynnand` `\l@ynnand{`⟨*ifA*⟩`}{`⟨*ifB*⟩`}` sets `\ifl@ytempif` to FALSE unless ⟨*ifA*⟩ is FALSE and ⟨*ifB*⟩ is TRUE

```
\newcommand{\l@ynnand}[2]{%
  \l@ytempiffalse
  #1
  \else
    #2
     \l@ytempiftrue
    \fi
  \fi}
```

`\l@ynox` `\l@ynox{`⟨*ifA*⟩`}{`⟨*ifB*⟩`}` sets `\ifl@ytempif` to TRUE unless ⟨*ifA*⟩ is TRUE and ⟨*ifB*⟩ is FALSE.

```
\newcommand{\l@ynox}[2]{%
  \l@ytempiftrue
  #1
    #2
    \else
      \l@ytempiffalse
    \fi
  \fi}
```

`\testdrawdimensions`
`\testprintparameters`

```
\newcommand{\testdrawdimensions}{%
  \l@yor{\ifdrawparameters}{\ifdrawdimensions}}
\newcommand{\testprintparameters}{%
  \l@ynnand{\ifdrawparameters}{\ifprintparameters}}

```

`\setlabelfont` `\l@ylabelfont` The font for labels in the diagrams.

```
\newcommand{\setlabelfont}[1]{\renewcommand{\l@ylabelfont}{#1}}
  \newcommand{\l@ylabelfont}{\normalfont}
```

`\setparametertextfont` `\l@yparamfont` The font size for parameters.

```
\newcommand{\setparametertextfont}[1]{\renewcommand{\l@yparamfont}{#1}}
  \newcommand{\l@yparamfont}{\footnotesize}
```

`\setvaluestextsize` `\l@yvalsize` The font size for value tables.

```
\newcommand{\setvaluestextsize}[1]{\renewcommand{\l@yvalsize}{#1}}
  \newcommand{\l@yvalsize}{\normalsize}
```

`\setlayoutscale` A user command to set the drawing scale. The scale is initialised to half size.

```
\newcommand{\setlayoutscale}[1]{\setlength{\l@youtunitlength}{1pt}
  \l@youtunitlength = #1\l@youtunitlength
  \renewcommand{\l@youtscale}{#1}
  \PackageWarning{layouts}{Layout scale set to #1}}
%%%\setlayoutscale{0.5}
```

`\setuplayouts` The `\setuplayouts` command should be called immediately at the `\begin{document}`. It must be called before any command that changes font sizes or makes any change to the document layout. It stores relevant skips.

```
\newcommand{\setuplayouts}{%
  \setlength{\l@ysetupparskip}{\parskip}
  \setlength{\l@ysetupbaselineskip}{\baselineskip}
  \setlength{\l@yonem}{1em}
  \setlength{\l@yonex}{1ex}
  \setlayoutscale{0.5}
%%%  \PackageWarning{layouts}{Layout scale set to 0.5}
}
\AtBeginDocument{\setuplayouts}
```

5 Utility commands

A variety of utility commands.

`\l@yltoc` `\l@yltoc{`⟨*length*⟩`}{`⟨*counter*⟩`}` converts a length into a counter value. The counter value is to the nearest pt of the length.

```
\newcommand{\l@yltoc}[2]{\setlength{\l@ylen}{#1}%
                         \ifdim\l@ylen > \z@ \advance\l@ylen by 0.5\p@ \else
                           \ifdim\l@ylen < \z@ \advance\l@ylen by -0.5\p@
                           \fi
                         \fi
                         #2=\l@ylen
                         \divide #2 by \l@yonepoint\relax}
```

`\l@yvuda` `\l@yvuda{`⟨*x*⟩`}{`⟨*y*⟩`}{`⟨*distance*⟩`}` draws a line vertically upwards from (⟨*x*⟩,⟨*y*⟩) a ⟨*distance*⟩ with an outward pointing arrowhead at each end of the line. `\l@yhrda` is similar except that a horizontal line is drawn to the right. Simplistically, the commands produce something like `<---->`.

`\l@yhrda`

```
\newcommand{\l@yvuda}[3]{\put(#1,#2){\vector(0,1){#3}}
                         \put(#1,#2){\vector(0,-1){0}}}
\newcommand{\l@yhrda}[3]{\put(#1,#2){\vector(1,0){#3}}
                         \put(#1,#2){\vector(-1,0){0}}}
```

`\l@yvudia` `\l@yvudia{`⟨*x*⟩`}{`⟨*y*⟩`}{`⟨*distance*⟩`}` draws two vertical arrowheads pointing to each other. One is at (⟨*x*⟩,⟨*y*⟩) and the other is at (⟨*x*⟩,⟨*y* + *distance*⟩). `\l@yhrdia` is similar except that the arrowheads are horizontal. Simplistically, the commands produce something like `>  <`.

`\l@yhrdia`

```
\newcommand{\l@yvudia}[3]{\begingroup
                          \l@youthpvii=#1\relax
                          \l@youtvpvii=#2\relax
                          \l@youthdvii=#3\relax
                          \put(\l@youthpvii,\l@youtvpvii){\vector(0,1){0}}
                          \advance\l@youtvpvii by \l@youthdvii
                          \put(\l@youthpvii,\l@youtvpvii){\vector(0,-1){0}}
                          \endgroup}
\newcommand{\l@yhrdia}[3]{\begingroup
                          \l@youthpvii=#1\relax
                          \l@youtvpvii=#2\relax
                          \l@youthdvii=#3\relax
                          \put(\l@youthpvii,\l@youtvpvii){\vector(1,0){0}}
                          \advance\l@youthpvii by \l@youthdvii
                          \put(\l@youthpvii,\l@youtvpvii){\vector(-1,0){0}}
                          \endgroup}
```

`\l@ypcmd` `\l@ypcmd{`⟨*cmdname*⟩`}` typesets a command ⟨*cmdname*⟩ (which does not include the backslash) (in a picture). For example, `\l@ypcmd{fred}` prints `\fred`. The font size is given by `\l@yparamfont`. The `\l@ycmd` macro is similar but does not set the font size.

`\l@ycmd`

```
\newcommand{\l@ypcmd}[1]{{\l@yparamfont\texttt{\bs #1}}}
\newcommand{\l@ycmd}[1]{\texttt{\bs #1}}
```

`\printinunitsof` `\l@yunitperpt` `\l@yunits`

`\printinunitsof{`⟨*unit*⟩`}` sets `\l@yunits` to the value of ⟨*unit*⟩ and `\l@yunitperpt` to the number of ⟨*unit*⟩ in 1pt.

```
\newcommand{\printinunitsof}[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}%
                  \fi
                \fi
              \fi
            \fi
          \fi
        \fi
      \fi
    \fi
```

```
    \fi
  \fi
}
\printinunitsof{pt}

```

`\l@ytempdima` `\l@ytempdima` is a scratch length. `\prntlen{`⟨*length*⟩`}` prints the value of ⟨*length*⟩ `\prntlen` in the units set by `\printinunitsof`.

```
\newlength{\l@ytempdima}
\newcommand{\prntlen}[1]{%
  \def\l@yta{pt}\ifx\l@yta\l@yunits\the#1\else
    \def\l@yta{PT}%
    \l@ytempdima=\l@yunitperpt #1\relax\strip@pt\l@ytempdima
      \ifx\l@yta\l@yunits pt\else\l@yunits\fi\fi}

```

`\l@yval` `\l@yval{`⟨*lcmd*⟩`}` prints a value of the (length) command ⟨*lcmd*⟩ (which includes the backslash); for example `\l@yval{\mylength}`.

```
%%% \newcommand{\l@yval}[1]{\the#1}
\newcommand{\l@yval}[1]{\prntlen{#1}}

```

6 Drawing the layout of a page

A variety of commands are used to draw the layout of a page.

First some utility commands for setting the layout dimensions.

`\trypaperwidth` Sets the `paperwidth` and stores the result in `\l@youtpw`.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    PAGE LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\newcommand{\trypaperwidth}[1]{\l@yltoc{#1}{\l@youtpw}}

```

`\trypaperheight` Sets the `paperheight` and stores the result in `\l@youtph`.

```
\newcommand{\trypaperheight}[1]{\l@yltoc{#1}{\l@youtph}}

```

`\tryhoffset` Sets the `hoffset` and stores the result in `\l@youthpi`.

```
\newcommand{\tryhoffset}[1]{\l@yltoc{#1}{\l@youthpi}}

```

`\tryvoffset` Sets the `voffset` and stores the result in `\l@youtvpi`.

```
\newcommand{\tryvoffset}[1]{\l@yltoc{#1}{\l@youtvpi}}

```

`\trytopmargin` Sets the `topmargin` and stores the result in `\l@youtvpii`.

```
\newcommand{\trytopmargin}[1]{\l@yltoc{#1}{\l@youtvpii}}

```

`\tryheadheight` Sets the `headheight` and stores the result in `\l@youtvpiii`.

```
\newcommand{\tryheadheight}[1]{\l@yltoc{#1}{\l@youtvpiii}}
```

`\tryheadsep` Sets the `headsep` and stores the result in `\l@youtvpiv`.

```
\newcommand{\tryheadsep}[1]{\l@yltoc{#1}{\l@youtvpiv}}
```

`\trytextheight` Sets the `textheight` and stores the result in `\l@youtvpv`.

```
\newcommand{\trytextheight}[1]{\l@yltoc{#1}{\l@youtvpv}}
```

`\tryfootskip` Sets the `footskip` and stores the result in `\l@youtvpvi`.

```
\newcommand{\tryfootskip}[1]{\l@yltoc{#1}{\l@youtvpvi}}
```

`\tryoddsidemargin` Sets the `oddsidemargin` and stores the result in `\l@youthpv`.

```
\newcommand{\tryoddsidemargin}[1]{\l@yltoc{#1}{\l@youthpv}}
```

`\tryevensidemargin` Sets the `evensidemargin` and stores the result in `\l@youthpiv`.

```
\newcommand{\tryevensidemargin}[1]{\l@yltoc{#1}{\l@youthpiv}}
```

`\trytextwidth` Sets the `textwidth` and stores the result in `\l@youthpii`.

```
\newcommand{\trytextwidth}[1]{\l@yltoc{#1}{\l@youthpii}}
```

`\trymarginparsep` Sets the `marginparsep` and stores the result in `\l@youthpvi`.

```
\newcommand{\trymarginparsep}[1]{\l@yltoc{#1}{\l@youthpvi}}
```

`\trymarginparwidth` Sets the `marginparwidth` and stores the result in `\l@youthpvii`.

```
\newcommand{\trymarginparwidth}[1]{\l@yltoc{#1}{\l@youthpvii}}
```

`\trymarginparpush` Sets the `marginparpush` and stores the result in `\l@youtvpvii`.

```
\newcommand{\trymarginparpush}[1]{\l@yltoc{#1}{\l@youtvpvii}}
```

`\trycolumnsep` Sets the `columnsep` and stores the result in `\l@youthpiii`.

```
\newcommand{\trycolumnsep}[1]{\l@yltoc{#1}{\l@youthpiii}}
```

`\trycolumnseprule` Sets the `columnseprule` and stores the result in `\l@youtlinethick`.

```
\newcommand{\trycolumnseprule}[1]{\setlength{\l@youtlinethick}{#1}}
```

`\setfootbox` Sets the height and depth of the footer box and stores the results in `\l@youtvdv` and `\l@youtvdvi`.

```
\newcommand{\setfootbox}[2]{\l@yltoc{#1}{\l@youtvdv}\l@yltoc{#2}{\l@youtvdvi}}
```

`\ifreversemarginpar` `\ifmarginparswitch` Flags for where marginpars should go.

```
\newif\ifreversemarginpar
  \reversemarginparfalse
\newif\ifmarginparswitch
  \marginparswitchtrue

```

`\ifl@yrightmpars` Internal flag for marginpar location

```
\newif\ifl@yrightmpars
  \l@yrightmparstrue
```

\currentpage This routine sets the layout page parameters to those specified for the document, specifically as on the current page.

```
\newcommand{\currentpage}{%
  \@ifundefined{paperwidth}{\trypaperwidth{8.5in}}%
    {\trypaperwidth{\paperwidth}}%
  \@ifundefined{paperheight}{\trypaperheight{11in}}%
    {\trypaperheight{\paperheight}}%
  \tryhoffset{\hoffset}%               % typically 0pt
  \tryvoffset{\voffset}%               % typically 0pt
  \tryoddsidemargin{\oddsidemargin}%   % typically 21-63pt
  \tryevensidemargin{\evensidemargin}% % typically 39-82pt
  \trytopmargin{\topmargin}%           % typically 27pt
  \commonl@ypage%
}
```

\commonl@ypage This routine sets the layout page parameters common to both the standard and memoir classes, to those specified for the document, specifically as on the current page.

```
\newcommand{\commonl@ypage}{%
  \trymarginparwidth{\marginparwidth}% % typically 68-107pt
  \trymarginparsep{\marginparsep}%     % typically 10-11pt
  \trymarginparpush{\marginparpush}%   % typically 5-7pt
  \tryheadheight{\headheight}%         % typically 12pt
  \tryheadsep{\headsep}%               % typically 25pt
  \tryfootskip{\footskip}%             % typically 30pt
  \trytextheight{\textheight}%         % typically 36-43 times baselineskip
  \trytextwidth{\textwidth}%           % typically 345-390pt
  \trycolumnsep{\columnsep}%           % typically 10pt
  \trycolumnseprule{\columnseprule}%   % typically 0pt
  \setfootbox{\baselineskip}{0pt}%     % footheight = 1 line
  \reversemarginparfalse               % reversemargin
  \if@reversemargin \reversemarginpartrue \fi
  \marginparswitchfalse               % mparswitch
  \if@mparswitch \marginparswitchtrue \fi
  \twocolumnlayoutfalse
  \if@twocolumn \twocolumnlayouttrue \fi
  \oddpagelayouttrue
  \if@twoside
    \ifodd\count\z@
    \else
      \oddpagelayoutfalse
    \fi
  \fi
}
```

\drawpage This routine draws a page layout.

```
\newcommand{\drawpage}{%
```

First set some default vertical and horizontal dimension values.

```
\l@youtvdiii=\l@yteninch\relax
  \divide\l@youtvdiii by 24\relax
\l@youthdii=\l@youtvdiii
\ifdrawparameters
```

When `drawparameters` is TRUE, we draw a generic layout showing the controlling layout variables.

```
  \l@youtph=\l@yeleveninch\relax     % page height
  \l@youtpw=\l@yeighthalfinch\relax  % page width
  \l@youtvpi=\z@                  % voffset
  \l@youtvpii=\l@youtvdiii        % topmargin
  \l@youtvpiii=\l@youtvdiii       % headheight
  \l@youtvpiv=\l@youtvdiii        % headsep
  \l@youtvpv=\l@yoneinch\relax       % textheight
    \multiply\l@youtvpv by 6\relax
  \l@youtvpvi=\l@youtvdiii        % footskip
    \multiply\l@youtvpvi by \tw@
  \l@youtvdv=\l@youtvdiii         % default footboxheight
  \l@youtvdvi=\z@                 % default footboxdepth
  \l@youtvpvii=\l@youtvdiii       % marginparpush
  \l@youthpi=\z@            % hoffset
  \l@youthpii=\l@youthdii   % textwidth
    \multiply\l@youthpii by 13\relax
  \l@youthpiii=\l@youthdii  % columnsep
  \l@youthpiv=\l@youthdii   % evensidemargin
  \l@youthpv=\l@youthdii    % oddsidemargin
  \l@youthpvi=\l@youthdii   % marginparsep
  \l@youthpvii=\l@youthdii  % marginparwidth
    \multiply\l@youthpvii by \tw@
\fi
```

Calculate coordinates for use in the drawing.

```
\l@youtycvi=\l@youtph                 % one inch below top of page
  \advance\l@youtycvi by -\l@yoneinch\relax
\l@youtxci=\l@youthpi                 % hofref
  \advance\l@youtxci by \l@yoneinch\relax
\l@youtycv=\l@youtycvi                % vofref
  \advance\l@youtycv by -\l@youtvpi
\l@youtyciv=\l@youtycv                % headref
  \advance\l@youtyciv by -\l@youtvpii
  \advance\l@youtyciv by -\l@youtvpiii
\l@youtycii=\l@youtyciv               % bodyref
  \advance\l@youtycii by -\l@youtvpiv
  \advance\l@youtycii by -\l@youtvpv
\ifnum\l@youtvdv>\l@youtvpvi
  \PackageWarning{layouts}{The footbox is higher than the footskip}
  \l@youtvdv=\l@youtvpvi
\fi
\l@youtyci=\l@youtycii                % footref
  \advance\l@youtyci by -\l@youtvpvi
```

```
    \advance\l@youtyci by -\l@youtvdvi   % box depth
  \l@youtvdvii=\l@youtvdv                % box height
    \advance\l@youtvdvii by \l@youtvdvi  % plus depth
  \l@youtvdii=\l@youtvpv                 % noteheight
    \divide\l@youtvdii by 4\relax
  \l@youtyciii=\l@youtycii               % noteref
    \advance\l@youtyciii by \l@youtvdii
    \advance\l@youtyciii by \l@youtvpvii
  \l@youtxcii=\l@youtxci                 % marginref
  \ifoddpagelayout
```

Some values are different on odd and even pages

```
    \advance\l@youtxcii by \l@youthpv
  \else
    \advance\l@youtxcii by \l@youthpiv
  \fi
  \l@youtxciv=\l@youtxcii                % margnoteref
```

The next part of the code was supplied by Frank Mittelbach[2] to add facilities for reversed marginpars. Now find where the marginpars go. `\@tempcnta` = (1 — right, -1 — left) corresponds to the treatment in the kernel.

```
  \@tempcnta\@ne
  \ifmarginparswitch
    \ifoddpagelayout \else \@tempcnta\m@ne \fi
  \fi
  \ifreversemarginpar \@tempcnta -\@tempcnta \fi
```

Change layout values to suit.

```
  \ifnum\@tempcnta > \z@
    \l@yrightmparstrue
    \advance\l@youtxciv by \l@youthpii
    \advance\l@youtxciv by \l@youthpvi
  \else
    \l@yrightmparsfalse
    \advance\l@youtxciv by -\l@youthpvi
    \advance\l@youtxciv by -\l@youthpvii
  \fi
```

Back to my code. Do column dependent values.

```
  \l@youthdi=\l@youthpii                 % columnwidth
  \l@youtxciii=\l@youtxcii               % colref
  \iftwocolumnlayout
    \advance\l@youthdi by -\l@youthpiii
    \divide\l@youthdi by \tw@
    \advance\l@youtxciii by \l@youthdi
    \advance\l@youtxciii by \l@youthpiii
    \l@youtxcv=\l@youthpiii              % centre of gutter
      \divide\l@youtxcv by \tw@
      \advance\l@youtxcv by \l@youtxcii
      \advance\l@youtxcv by \l@youthdi
```

[2] Email dated 2002/05/18.

```
409   \fi
```

Print the caption for the top of the drawing.

```
410   \l@yor{\ifdrawparameters}{\ifprintheadings}
411   \begin{center}
412   \ifl@ytempif
413   \begin{small} The circle is at 1 inch from the top and left of the
414     page. Dashed lines represent (\texttt{\bs hoffset + 1 inch}) and
415     (\texttt{\bs voffset + 1 inch}) from the top and left of the
416     page.
417   \end{small} \\
418   \medskip
419   \fi
```

Draw the picture!

```
420   \setlength{\unitlength}{\l@youtunitlength}
421   \begin{picture}(\l@youtpw,\l@youtph)
422     \thicklines
```

Either reference lines for the page top and side, or the page.

```
423     \ifdrawparameters
424       \put(0,0){\line(0,1){\l@youtph}}
425       \put(0,\l@youtph){\line(1,0){\l@youtpw}}
426     \else
427       \put(0,0){\framebox(\l@youtpw,\l@youtph){}}
428     \fi
```

Draw the offset lines and a circle 1 inch from the top LH corner of the page.

```
429     \put(\l@yoneinch,\l@youtycvi){\circle{12}}
430     \put(0,\l@youtycv){\dashbox{10}(\l@youtpw,0){}}
431     \put(\l@youtxci,0){\dashbox{10}(0,\l@youtph){}}
```

Draw the header. `put(marginref,headref){framebox(textwidth,headheight)}`

```
432     \put(\l@youtxcii,\l@youtyciv){\framebox(\l@youthpii,\l@youtvpiii)%
433       {\l@ylabelfont Header}}
```

Draw the body.

```
434     \iftwocolumnlayout
```

`put(marginref,bodyref){framebox(columnwidth,textheight)}` and `put(colref,bodyref){framebox(columnwidth,textheight)}`.

```
435       \put(\l@youtxcii,\l@youtycii){\framebox(\l@youthdi,\l@youtvpv)%
436         {\l@ylabelfont Col. 1}}
437       \put(\l@youtxciii,\l@youtycii){\framebox(\l@youthdi,\l@youtvpv)%
438         {\l@ylabelfont Col. 2}}
439       \linethickness{\l@youtscale\l@youtlinethick}
440       \put(\l@youtxcv,\l@youtycii){\line(0,1){\l@youtvpv}}
441       \thicklines
442     \else
```

`put(marginref,bodyref){framebox(textwidth,textheight)}`.

```
443       \put(\l@youtxcii,\l@youtycii){\framebox(\l@youthpii,\l@youtvpv)%
```

```
444         {\l@ylabelfont Body}}
445     \fi
```

Draw the footer. `put(marginref,footref){framebox(textwidth,footheight)}` Draw this as an open box as there is no defined height for this.

```
446     \put(\l@youtxcii,\l@youtyci){\framebox(\l@youthpii,\l@youtvdvii)%
447         {\l@ylabelfont Footer}}
```

Marginal notes (two examples), if asked for.
`put(margnoteref,bodyref){framebox(marginparwidth,noteheight)}` and
`put(margnoteref,noteref){framebox(marginparwidth,noteheight)}`.

```
448     \ifdrawmarginpars
449       \ifdrawparameters
450         \put(\l@youtxciv,\l@youtycii){\framebox(\l@youthpvii,\l@youtvdii){}}
451         \put(\l@youtxciv,\l@youtyciii){\framebox(\l@youthpvii,\l@youtvdii)%
452           {\l@ylabelfont\shortstack{Margin\\Note}}}
453       \else
454         \put(\l@youtxciv,\l@youtycii){\framebox(\l@youthpvii,\l@youtvdii)%
455           {\l@ylabelfont Note}}
456         \put(\l@youtxciv,\l@youtyciii){\framebox(\l@youthpvii,\l@youtvdii)%
457           {\l@ylabelfont Margin}}
458       \fi
459     \fi
```

If the footbox has a depth, draw a dashed line to mark the footskip.

```
460     \ifnum\l@youtvdvi > \z@
461       \thinlines
462       \advance\l@youtyci by \l@youtvdvi
463       \put(\l@youtxcii,\l@youtyci){\dashbox{10}(\l@youthpii,0){}}
464     \fi
```

We now draw labelled vectors indicating the layout parameters. Life gets tedious as we have to calculate a few more coordinate and length values. The code below is fairly incomprehensible as we are trying to minimise the number of counters.

```
465     \testdrawdimensions
466     \ifl@ytempif
467       \thinlines
```

Calculate more coordinates

```
468       \l@youtxcv=\l@youtxcii                % X coord for vertical dimensions
469         \advance\l@youtxcv by \l@youthdii
470       \l@youtxcvi=\l@youthpvii              % X coord for marginparpush
471         \divide\l@youtxcvi by \tw@
472         \advance\l@youtxcvi by \l@youtxciv
473       \l@youtvdviii=\l@youtvdiii             % half l@youtvdiii
474         \divide\l@youtvdviii by \tw@
475       \l@youtycvii=\l@youtycii              % Y coord for low dimensions
476         \advance\l@youtycvii by \l@youtvdiii
477       \l@youtycviii=\l@youtycvii              % Y coord for mid dimensions
478         \advance\l@youtycviii by \l@youtvdiii
479       \l@youtvdi=\l@youtvpv                 % Y coord for top dimensions
```

```
480         \multiply\l@youtvdi by \tw@
481         \divide\l@youtvdi by 3\relax
482         \advance\l@youtvdi by \l@youtycii
```

Draw the vertical dimensional parameters.

Topmargin. `put(x,voffset){vector(0,-1){topmargin}}`

```
483       \put(\l@youtxcv,\l@youtycv){\vector(0,-1){\l@youtvpii}}
484       \put(\l@youtxcv,\l@youtycv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
485         \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{topmargin}}
486         \end{picture}}
```

Headheight. `put(x,voffset-topmargin){vector(0,-1){headheight}}`

```
487       \put(\l@youtxcv,\l@youtyciv){\line(0,1){\l@youtvpiii}}
488       \put(\l@youtxcv,\l@youtyciv){\vector(0,-1){0}}
489       \put(\l@youtxcv,\l@youtyciv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
490         \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{headheight}}
491         \end{picture}}
```

Headsep. `put(x,headref){vector(0,-1){headsep}}`

```
492       \put(\l@youtxcv,\l@youtyciv){\vector(0,-1){\l@youtvpiv}}
493       \put(\l@youtxcv,\l@youtyciv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
494         \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{headsep}}
495         \end{picture}}
```

Textheight. `put(x,top_of_text){vector(0,-1){textheight}}`

```
496       \put(\l@youtxcv,\l@youtycii){\line(0,1){\l@youtvpv}}
497       \put(\l@youtxcv,\l@youtycii){\vector(0,-1){0}}
498       \put(\l@youtxcv,\l@youtycii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
499         \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{textheight}}
500         \end{picture}}
```

Footskip. `put(x,bodyref){vector(0,-1){footskip}}`

```
501       \put(\l@youtxcv,\l@youtycii){\vector(0,-1){\l@youtvpvi}}
502       \put(\l@youtxcv,\l@youtycii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
503         \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{footskip}}
504         \end{picture}}
```

Marginparpush. `put(X,noteref){vector(0,-1){marginparpush}}` where `X = margnoteref + 1/2 notewidth`.

```
505       \ifdrawmarginpars
506         \put(\l@youtxcvi,\l@youtyciii){\vector(0,-1){\l@youtvpvii}}
507         \put(\l@youtxcvi,\l@youtyciii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
508           \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{marginparpush}}
509           \end{picture}}
510       \fi
```

Now for all the horizontal dimensions.

Marginparwidth. `put(margnoteref,low){vector(1,0){marginparwidth}`

```
511       \ifdrawmarginpars
512         \put(\l@youtxciv,\l@youtycvii){\vector(1,0){\l@youthpvii}}
513         \put(\l@youtxciv,\l@youtycvii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
514           \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{marginparwidth}}
```

```
515           \end{picture}}
516       \fi
```

Different placements for marginwidth depending on the oddness of the page.
Odd page — `put(hoffref,mid){\vector(1,0){oddsidemargin}`
Even page — `put(hoffref,mid){\vector(1,0){evensidemargin}`.

```
517       \ifoddpagelayout
518         \put(\l@youtxci,\l@youtvdi){\vector(1,0){\l@youthpv}}
519       \else
520         \put(\l@youtxci,\l@youtvdi){\vector(1,0){\l@youthpiv}}
521       \fi
522       \put(\l@youtxci,\l@youtvdi){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
523       \ifoddpagelayout
524         \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{oddsidemargin}}
525       \else
526         \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{evensidemargin}}
527       \fi
528         \end{picture}}
```

Different placements for marginparsep, depending on the particular margin.
Right margin — `put(margnoteref-marginparsep,mid){vector(1,0){marginparsep}`
Left margin — `put(marginref,top){vector(-1,0){marginparsep}`

```
529       \ifdrawmarginpars
530         \ifl@yrightmpars
531           \put(\l@youtxciv,\l@youtycviii){\line(-1,0){\l@youthpvi}}
532           \put(\l@youtxciv,\l@youtycviii){\vector(1,0){0}}
533           \put(\l@youtxciv,\l@youtycviii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
534             \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{marginparsep}}
535             \end{picture}}
536         \else
537           \put(\l@youtxcii,\l@youtycviii){\vector(-1,0){\l@youthpvi}}
538           \put(\l@youtxcii,\l@youtycviii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
539             \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{marginparsep}}
540             \end{picture}}
541         \fi
542       \fi
```

Textwidth. `put(marginref,noteref){vector(1,0){textwidth}}`

```
543       \put(\l@youtxcii,\l@youtyciii){\vector(1,0){\l@youthpii}}
544       \put(\l@youtxcv,\l@youtyciii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
545         \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{textwidth}}
546         \end{picture}}
```

Columnsep. `put(colref-colsep,mid){vector(1,0){colsep}}`

```
547       \iftwocolumnlayout
548         \put(\l@youtxciii,\l@youtvdi){\line(-1,0){\l@youthpiii}}
549         \put(\l@youtxciii,\l@youtvdi){\vector(1,0){0}}
550         \put(\l@youtxciii,\l@youtvdi){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
551           \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{columnsep}}
552           \end{picture}}
553       \fi
```

Have finished drawing the parameters.

```
    \fi
    \end{picture}
    \end{center}
    \setlength{\unitlength}{1pt}
```

Print the actual parameter values.

```
    \testprintparameters
    \ifl@ytempif
      \begin{center}
      \begin{footnotesize}
         Lengths are to the nearest pt. \\
      \begin{ttfamily}
      \begin{tabular}{l@{\hspace{20pt}}l}
      \textrm{page height}   = \number\l@youtph pt &
      \textrm{page width}    = \number\l@youtpw pt  \\
      \l@ycmd{hoffset}       = \number\l@youthpi pt         &
      \l@ycmd{voffset}       = \number\l@youtvpi pt         \\
      \ifoddpagelayout
        \l@ycmd{oddsidemargin} = \number\l@youthpv pt
      \else
        \l@ycmd{evensidemargin} = \number\l@youthpiv pt
      \fi
      & \l@ycmd{topmargin}   = \number\l@youtvpii pt    \\
      \l@ycmd{headheight}    = \number\l@youtvpiii pt    &
      \l@ycmd{headsep}       = \number\l@youtvpiv pt        \\
      \l@ycmd{textheight}    = \number\l@youtvpv pt      &
      \l@ycmd{textwidth}     = \number\l@youthpii pt      \\
      \l@ycmd{footskip}      = \number\l@youtvpvi pt       &
      \l@ycmd{marginparsep}  = \number\l@youthpvi pt   \\
      \l@ycmd{marginparpush} = \number\l@youtvpvii pt &
      \l@ycmd{columnsep}     = \number\l@youthpiii pt     \\
      \l@ycmd{columnseprule} = \the\l@youtlinethick & \\
      \end{tabular}
      \end{ttfamily}\end{footnotesize}
      \end{center}
    \fi
```

The end of the definition for `\drawpage`.

```
}
```

`\pagediagram` `\pagedesign` Shorthands.

```
\newcommand{\pagediagram}{\drawparameterstrue\drawpage}
\newcommand{\pagedesign}{\drawparametersfalse\drawpage}
```

`\pagevalues` This macro produces a table of the current page layout actual values.

```
\newcommand{\pagevalues}{%
%%  \begin{center}
```

```
\ifprintheadings
  Actual page layout values.\\[\baselineskip]
\fi
\begingroup\l@yvalsize
\begin{tabular}{l@{\hspace{20pt}}l}
\l@ycmd{paperheight} = \@ifundefined{paperheight}{??}{\l@yval{\paperheight}}  &
\l@ycmd{paperwidth}  = \@ifundefined{paperwidth}{??}{\l@yval{\paperwidth}}   \\
\l@ycmd{hoffset}        = \l@yval{\hoffset}        &
\l@ycmd{voffset}        = \l@yval{\voffset}        \\
\l@ycmd{evensidemargin} = \l@yval{\evensidemargin} &
\l@ycmd{oddsidemargin}  = \l@yval{\oddsidemargin}  \\
\l@ycmd{topmargin}      = \l@yval{\topmargin}      &
\l@ycmd{headheight}     = \l@yval{\headheight}     \\
\l@ycmd{headsep}        = \l@yval{\headsep}        &
\l@ycmd{textheight}     = \l@yval{\textheight}     \\
\l@ycmd{textwidth}      = \l@yval{\textwidth}      &
\l@ycmd{footskip}       = \l@yval{\footskip}       \\
\l@ycmd{marginparsep}   = \l@yval{\marginparsep}   &
\l@ycmd{marginparpush}  = \l@yval{\marginparpush}  \\
\l@ycmd{columnsep}      = \l@yval{\columnsep}      &
\l@ycmd{columnseprule}  = \l@yval{\columnseprule}  \\
1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
\end{tabular}
\endgroup
%%  \end{center}
}
```

7 Drawing the layout of a memoir page

A variety of commands are used to draw the layout of a page as defined in the memoir class. We can reuse quite a lot from the previous page layout code.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    STOCK LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

\stockwidth
\stockwidth
\trimedge
\trimtop
\uppermargin
\spinemargin

The memoir class has some page layout parameters that are not in the standard classes. Provide these so the package will at least compile with the standard classes but is highly likely to die at runtime if this part of the code is used in other than the memoir class.

```
\@ifundefined{stockwidth}{\newlength{\stockwidth}}{}
\@ifundefined{stockheight}{\newlength{\stockheight}}{}
\@ifundefined{trimedge}{\newlength{\trimedge}}{}
\@ifundefined{trimtop}{\newlength{\trimtop}}{}
\@ifundefined{uppermargin}{\newlength{\uppermargin}}{}
\@ifundefined{spinemargin}{\newlength{\spinemargin}}{}
```

```
633
```

Now some utility commands for setting the layout dimensions.

`\trystockwidth` Sets the `stockwidth` and stores the result in `\l@youthdo`.

```
634 \newcommand{\trystockwidth}[1]{\l@yltoc{#1}{\l@youthdo}}
```

`\trystockheight` Sets the `stockheight` and stores the result in `\l@youtvdo`.

```
635 \newcommand{\trystockheight}[1]{\l@yltoc{#1}{\l@youtvdo}}
```

`\trytrimedge` Sets the `trimedge` and stores the result in `\l@youthpi`.

```
636 \newcommand{\trytrimedge}[1]{\l@yltoc{#1}{\l@youthpi}}
```

`\trytrimtop` Sets the `trimtop` and stores the result in `\l@youtvpi`.

```
637 \newcommand{\trytrimtop}[1]{\l@yltoc{#1}{\l@youtvpi}}
```

`\tryuppermargin` Sets the `uppermargin` and stores the result in `\l@youtvpii`.

```
638 \newcommand{\tryuppermargin}[1]{\l@yltoc{#1}{\l@youtvpii}}
```

`\tryspinemargin` Sets the `spinemargin` and stores the result in `\l@youthpv`.

```
639 \newcommand{\tryspinemargin}[1]{\l@yltoc{#1}{\l@youthpv}}
640
```

`\currentstock` This routine sets the stock layout page parameters to those specified for the document.

```
641 \newcommand{\currentstock}{%
642   \trystockwidth{\stockwidth}%         % typically 8.5in
643   \trystockheight{\stockheight}%       % typically 11in
644   \trypaperwidth{\paperwidth}%         % typically 8.5in
645   \trypaperheight{\paperheight}%       % typically 11in
646   \trytrimedge{\trimedge}%             % typically 0pt
647   \trytrimtop{\trimtop}%               % typically 0pt
648   \tryspinemargin{\spinemargin}%       % typically 110pt
649   \tryuppermargin{\uppermargin}%       % typically 125pt
650   \commonl@ypage
651 }
652
```

`\drawstock` This routine draws a stock page layout.

```
653 \newcommand{\drawstock}{%
```

First set some default vertical and horizontal dimension values.

```
654   \l@youtvdiii=\l@yteninch\relax
655     \divide\l@youtvdiii by 24\relax
656   \l@youthdii=\l@youtvdiii
657
658   \ifdrawparameters
```

When `drawparameters` is TRUE, we draw a generic layout showing the controlling layout variables.

```
    \l@youtvdo=\l@yeleveninch\relax            % stock height
    \l@youthdo=\l@yeighthalfinch\relax         % stock width
    \l@youtvpi=\z@                          % trimtop
      \advance\l@youtvpi by \l@youtvdiii
    \l@youthpi=\z@                          % trimedge
      \advance\l@youthpi by \l@youtvdiii
    \l@youtph=\l@youtvdo                    % page height (= stock height)
      \advance\l@youtph by -\l@youtvpi         % minus trimtop
      \advance\l@youtph by -\l@youtvpi         % minus trimtop
      \advance\l@youtph by -\l@youtvpi         % minus trimtop
    \l@youtpw=\l@youthdo                    % page width (= stock width)
      \advance\l@youtpw by -\l@youthpi         % minus trimedge
      \advance\l@youtpw by -\l@youthpi         % minus trimedge
      \advance\l@youtpw by -\l@youthpi         % minus trimedge
    \l@youtvpiii=\l@youtvdiii               % headheight
    \l@youtvpiv=\l@youtvdiii                % headsep
    \l@youtvpii=\l@youtvdiii                % uppermargin
      \advance\l@youtvpii by \l@yoneinch          % plus 1in
      \advance\l@youtvpii by \l@youtvpiii      % plus headheight
      \advance\l@youtvpii by \l@youtvpiv       % plus headsep
    \l@youtvpv=\l@yoneinch\relax               % textheight
      \multiply\l@youtvpv by 6\relax
    \l@youtvpvi=\l@youtvdiii                % footskip
      \multiply\l@youtvpvi by \tw@
    \l@youtvdv=\l@youtvdiii                 % default footboxheight
    \l@youtvdvi=\z@                         % default footboxdepth
    \l@youtvpvii=\l@youtvdiii               % marginparpush
    \l@youthpii=\l@youthdii                 % textwidth
      \multiply\l@youthpii by 12\relax
    \l@youthpv=\l@youthdii                  % spine margin
      \advance\l@youthpv by \l@yoneinch           % plus 1in
      \multiply\l@youthpv by 7\relax           % and take 70%
      \divide\l@youthpv by 10\relax
    \l@youthpiii=\l@youthdii                % columnsep
    \l@youthpvi=\l@youthdii   % marginparsep
    \l@youthpvii=\l@youthdii  % marginparwidth
      \multiply\l@youthpvii by \tw@
  \fi
```

Calculate coordinates for use in the drawing. Some of these X coordinates depend on whether the page is odd or even.

```
  \ifoddpagelayout
    \l@youtxco=\l@youthdo               % X coord of page bottom left (= stockwidth)
      \advance\l@youtxco by -\l@youthpi    % minus trimedge
      \advance\l@youtxco by -\l@youtpw     % minus page width
  \else
    \l@youtxco=\l@youthpi               % X coord of page bottom left = trimedge
```

```
\fi
\l@youtyco=\l@youtvdo                  % Y coord of page bottom left (= stockheight)
  \advance\l@youtyco by -\l@youtvpi      % minus trimtop
  \advance\l@youtyco by -\l@youtph       % minus page height
\l@youtxcii=\l@youtxco                 % X coord of left of textblock (= left of page)
\ifoddpagelayout
    \advance\l@youtxcii by \l@youthpv    % plus spinemargin
\else
    \advance\l@youtxcii by \l@youtpw     % plus pagewidth
    \advance\l@youtxcii by -\l@youthpv   % minus spinemargin
    \advance\l@youtxcii by -\l@youthpii  % minus textwidth
\fi
  \l@youtxciv=\l@youtxcii              % X coord of left of marginnote (= left of textblock)
\l@youtxciv=\l@youtxcii
\@tempcnta\@ne
\ifmarginparswitch
  \ifoddpagelayout \else \@tempcnta\m@ne \fi
\fi
\ifreversemarginpar \@tempcnta -\@tempcnta \fi
\ifnum\@tempcnta >\z@
  \l@yrightmparstrue
  \advance\l@youtxciv by \l@youthpii   % plus textwidth
  \advance\l@youtxciv by \l@youthpvi   % plus marginnotesep
\else
  \l@yrightmparsfalse
  \advance\l@youtxciv by -\l@youthpvii % minus marginparwidth
  \advance\l@youtxciv by -\l@youthpvi  % minus marginnotesep
\fi
\l@youtycii=\l@youtvdo                 % Y coord of bottom of text (= stockheight)
  \advance\l@youtycii by -\l@youtvpi     % minus trimtop
  \advance\l@youtycii by -\l@youtvpii    % minus uppermargin
  \advance\l@youtycii by -\l@youtvpv     % minus textheight
\ifnum\l@youtvdv>\l@youtvpvi
  \PackageWarning{layouts}{The footbox is higher than the footskip}
  \l@youtvdv=\l@youtvpvi
\fi
\l@youtyci=\l@youtycii                 % Y coord of bottom of footer (= bottom of text)
  \advance\l@youtyci by -\l@youtvpvi     % minus footskip
  \advance\l@youtyci by -\l@youtvdvi     % minus box depth
\l@youtvdvii=\l@youtvdv                % box height
  \advance\l@youtvdvii by \l@youtvdvi    % plus depth
\l@youtyciv=\l@youtycii                % Y coord of bottom of header (= bottom of text)
  \advance\l@youtyciv by \l@youtvpv      % plus textheight
  \advance\l@youtyciv by \l@youtvpiv     % plus headsep

\l@youtvdii=\l@youtvpv                 % height of a marginal note
  \divide\l@youtvdii by 4\relax
\l@youtyciii=\l@youtycii               % Y coord of bottom of top note (= bottom of bottom note)
  \advance\l@youtyciii by \l@youtvdii    % plus note height
  \advance\l@youtyciii by \l@youtvpvii   % plus marginparpush
```

Now for column dependent values.

```
\l@youthdi=\l@youthpii                % columnwidth = textwidth
\l@youtxciii=\l@youtxcii              % X coord of right col
\iftwocolumnlayout
  \advance\l@youthdi by -\l@youthpiii  % colwidth = textwidth - colsep
  \divide\l@youthdi by \tw@              % divided in half
  \advance\l@youtxciii by \l@youthdi   % X coord of right col X coord of text + col
    \advance\l@youtxciii by \l@youthpiii % plus colsep
  \l@youtxcv=\l@youthpiii              % centre of gutter
    \divide\l@youtxcv by \tw@
    \advance\l@youtxcv by \l@youtxcii
    \advance\l@youtxcv by \l@youthdi
\fi
```

Print the caption for the top of the drawing.

```
\begin{center}
\l@yor{\ifdrawparameters}{\ifprintheadings}
\ifl@ytempif
  \begin{small} Dashed lines represent the actual page size after trimming
                the stock. \end{small} \\
  \medskip
\fi
```

Draw the picture!

```
\setlength{\unitlength}{\l@youtunitlength}
\begin{picture}(\l@youthdo,\l@youtvdo)
  \thicklines
```

Draw the stock, paper, etc.

```
  \put(0,0){\framebox(\l@youthdo,\l@youtvdo){}}                        % the stock
  \put(\l@youtxco,\l@youtyco){\dashbox{10}(\l@youtpw,\l@youtph){}}     % the page
  \put(\l@youtxcii,\l@youtyciv){\framebox(\l@youthpii,\l@youtvpiii)%   % the header
    {\l@ylabelfont Header}}
```

Draw the body, either one or two columns, then the footer.

```
  \iftwocolumnlayout
    \put(\l@youtxcii,\l@youtycii){\framebox(\l@youthdi,\l@youtvpv)%    % col 1
      {\l@ylabelfont Col. 1}}
    \put(\l@youtxciii,\l@youtycii){\framebox(\l@youthdi,\l@youtvpv)%   % col2
      {\l@ylabelfont Col. 2}}
    \linethickness{\l@youtscale\l@youtlinethick}
    \put(\l@youtxcv,\l@youtycii){\line(0,1){\l@youtvpv}}               % rule
    \linethickness{1pt}
  \else
    \put(\l@youtxcii,\l@youtycii){\framebox(\l@youthpii,\l@youtvpv)%   % one col
      {\l@ylabelfont Body}}
  \fi
  \put(\l@youtxcii,\l@youtyci){\framebox(\l@youthpii,\l@youtvdvii)%      % footer
     {\l@ylabelfont Footer}}
```

Marginal notes (two examples), if asked for

```
    \ifdrawmarginpars
      \ifdrawparameters
        \put(\l@youtxciv,\l@youtycii){\framebox(\l@youthpvii,\l@youtvdii){}}
        \put(\l@youtxciv,\l@youtyciii){\framebox(\l@youthpvii,\l@youtvdii)%
          {\l@ylabelfont\shortstack{Margin\\Note}}}
      \else
        \put(\l@youtxciv,\l@youtycii){\framebox(\l@youthpvii,\l@youtvdii)%
          {\l@ylabelfont Note}}
        \put(\l@youtxciv,\l@youtyciii){\framebox(\l@youthpvii,\l@youtvdii)%
          {\l@ylabelfont Margin}}
      \fi
    \fi

```

If the footbox has a depth, draw a dashed line to mark the footskip.

```
    \ifnum\l@youtvdvi > \z@
      \thinlines
      \advance\l@youtyci by \l@youtvdvi
      \put(\l@youtxcii,\l@youtyci){\dashbox{10}(\l@youthpii,0){}}
    \fi
```

That finishes the general drawing. We may have to now draw the parameters

```
    \testdrawdimensions
    \ifl@ytempif
      \thinlines
```

We now draw labelled vectors indicating the layout parameters. Life gets tedious as we have to calculate a few more coordinate and length values. The code below is fairly incomprehensible as we are trying to minimise the number of counters.

```
      \l@youtycv=\l@youtyco                % Y coord of top of page (= page bottom)
        \advance\l@youtycv by \l@youtph      % plus pageheight
      \l@youtvdviii=\l@youtvdiii            % half l@youtvdiii (a small distance)
        \divide\l@youtvdviii by \tw@
      \l@youtxcv=\l@youtxcii                % X coord for vertical dimensions
        \advance\l@youtxcv by \l@youthdii    % for 'standard' vertical vectors
%% do headheight
      \put(\l@youtxcv,\l@youtyciv){\vector(0,1){\l@youtvpiii}}
      \put(\l@youtxcv,\l@youtyciv){\vector(0,-1){0}}
      \put(\l@youtxcv,\l@youtyciv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{headheight}}
        \end{picture}}
%% do headsep
      \put(\l@youtxcv,\l@youtyciv){\vector(0,-1){\l@youtvpiv}}
      \put(\l@youtxcv,\l@youtyciv){\vector(0,1){0}}
      \put(\l@youtxcv,\l@youtyciv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{headsep}}
        \end{picture}}
%% do textheight
      \put(\l@youtxcv,\l@youtycii){\vector(0,1){\l@youtvpv}}
      \put(\l@youtxcv,\l@youtycii){\vector(0,-1){0}}
      \put(\l@youtxcv,\l@youtycii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
```

```
        \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{textheight}}
        \end{picture}}
%% do footskip
      \put(\l@youtxcv,\l@youtycii){\vector(0,-1){\l@youtvpvi}}
      \put(\l@youtxcv,\l@youtycii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{footskip}}
        \end{picture}}
      \ifdrawmarginpars
        \l@youtxcv=\l@youthpvii              % X coord for marginparpush
          \divide\l@youtxcv by \tw@
          \advance\l@youtxcv by \l@youtxciv
%% do marginparpush
        \put(\l@youtxcv,\l@youtyciii){\vector(0,-1){\l@youtvpvii}}
        \put(\l@youtxcv,\l@youtyciii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{marginparpush}}
          \end{picture}}
      \fi
%% calculate X coord for uppermargin/trimtop parameters
      \ifoddpagelayout
        \ifl@yrightmpars
          \l@youtxcv=\l@youtxciv              % X coord for uppermargin, etc (= edge o
        \else
          \l@youtxcv=\l@youtxciv
            \advance\l@youtxcv by \l@youthpvii  % plus marginparwidth
        \fi
      \else
        \ifl@yrightmpars
          \l@youtxcv=\l@youtxciv
        \else
          \l@youtxcv=\l@youtxciv
            \advance\l@youtxcv by \l@youthpvii  % plus marginparwidth
        \fi
      \fi
%% do uppermargin
      \put(\l@youtxcv,\l@youtycv){\vector(0,-1){\l@youtvpii}}
      \put(\l@youtxcv,\l@youtycv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{uppermargin}}
        \end{picture}}
%% do trimtop
      \put(\l@youtxcv,\l@youtvdo){\vector(0,-1){\l@youtvpi}}
      \put(\l@youtxcv,\l@youtvdo){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{trimtop}}
        \end{picture}}
%% X coord for stock height
      \ifoddpagelayout
        \ifl@yrightmpars
          \l@youtxcv=\l@youtxco               % X coord for stock height
            \divide\l@youtxcv by \tw@           % 1/2 stock/paper left edges
        \else
          \l@youtxcv=\l@youtxco               % X coord for stock height
```

```
            \advance\l@youtxcv by \l@youtpw     % plus page width
            \advance\l@youtxcv by \l@youthpi    % plus trimedge
        \fi
      \else
        \ifl@yrightmpars
          \l@youtxcv=\l@youtxco               % X coord for stock height
            \divide\l@youtxcv by \tw@           % 1/2 stock/paper left edges
        \else
          \l@youtxcv=\l@youtxco               % X coord for stock height
            \advance\l@youtxcv by \l@youtpw     % plus page width
            \advance\l@youtxcv by \l@youthpi    % plus trimedge
        \fi
      \fi
%% do stockheight
      \put(\l@youtxcv,0){\vector(0,1){\l@youtvdo}}
      \put(\l@youtxcv,0){\vector(0,-1){0}}
      \put(\l@youtxcv,\l@youtvdo){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{stockheight}}
        \end{picture}}
%% X coord for paper height
      \ifoddpagelayout
        \ifl@yrightmpars
          \l@youtxcv=\l@youtxco               % X coord for paper height
            \advance\l@youtxcv by \l@youtxcii   % plus left edge of text
            \divide\l@youtxcv by \tw@
        \else
          \l@youtxcv=\l@youtxco               % X coord for paper height
            \advance\l@youtxcv by \l@youtpw     % plus page width
            \advance\l@youtxcv by \l@youtxcii   % plus left edge of text
            \advance\l@youtxcv by \l@youthpii   % plus text width
            \divide\l@youtxcv by \tw@
        \fi
      \else
        \ifl@yrightmpars
          \l@youtxcv=\l@youtxco               % X coord for paper height
            \advance\l@youtxcv by \l@youtxcii   % plus left edge of text
            \divide\l@youtxcv by \tw@
        \else
          \l@youtxcv=\l@youtxco               % X coord for paper height
            \advance\l@youtxcv by \l@youtpw     % plus page width
            \advance\l@youtxcv by \l@youtxcii   % plus left edge of text
            \advance\l@youtxcv by \l@youthpii   % plus text width
            \divide\l@youtxcv by \tw@
        \fi
      \fi
%% do paperheight
      \put(\l@youtxcv,\l@youtyco){\vector(0,1){\l@youtph}}
      \put(\l@youtxcv,\l@youtyco){\vector(0,-1){0}}
      \put(\l@youtxcv,\l@youtycv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,-\l@youtvdviii){\l@ypcmd{paperheight}}
```

```
        \end{picture}}

      \l@youtvpiii=\l@youtycii              % Y coord for low dimensions
        \advance\l@youtvpiii by \l@youtvdiii
      \l@youtvpiv=\l@youtvpiii              % Y coord for mid dimensions
        \advance\l@youtvpiv by \l@youtvdiii
      \l@youtvdi=\l@youtvpv               % Y coord for top dimensions
        \multiply\l@youtvdi by \tw@       % 2/3 of text height
        \divide\l@youtvdi by 3\relax
        \advance\l@youtvdi by \l@youtycii
      \ifdrawmarginpars
%% do marginparwidth
        \put(\l@youtxciv,\l@youtvpiii){\vector(1,0){\l@youthpvii}}
        \put(\l@youtxciv,\l@youtvpiii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{marginparwidth}}
          \end{picture}}
      \fi
      \ifoddpagelayout
%% do spinemargin
        \put(\l@youtxco,\l@youtvdi){\vector(1,0){\l@youthpv}}
        \put(\l@youtxco,\l@youtvdi){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{spinemargin}}
          \end{picture}}
%% do trimedge
        \put(\l@youthdo,\l@youtyciv){\vector(-1,0){\l@youthpi}}
        \put(\l@youthdo,\l@youtyciv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{trimedge}}
          \end{picture}}
      \else
        \l@youtxcv=\l@youtxcii         % X coord of right edge of text
          \advance\l@youtxcv by \l@youthpii
%% do spinemargin
        \put(\l@youtxcv,\l@youtvdi){\line(1,0){\l@youthpv}}
        \put(\l@youtxcv,\l@youtvdi){\vector(-1,0){0}}
        \put(\l@youtxcv,\l@youtvdi){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{spinemargin}}
          \end{picture}}
%% do trimedge
        \put(0,\l@youtyciv){\vector(1,0){\l@youthpi}}
        \put(0,\l@youtyciv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{trimedge}}
          \end{picture}}
      \fi
 %% marginal elements
      \ifdrawmarginpars
%% do marginparsep
        \ifl@yrightmpars
          \put(\l@youtxciv,\l@youtvpiv){\line(-1,0){\l@youthpvi}}
          \put(\l@youtxciv,\l@youtvpiv){\vector(1,0){0}}
          \put(\l@youtxciv,\l@youtvpiv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
```

```
            \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{marginparsep}}
            \end{picture}}
        \else
          \put(\l@youtxcii,\l@youtvpiv){\vector(-1,0){\l@youthpvi}}
          \put(\l@youtxcii,\l@youtvpiv){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
            \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{marginparsep}}
            \end{picture}}
        \fi
      \fi

      \l@youtxcv=\l@youtxcii          % X coord for mid textwidth
        \multiply\l@youtxcv by \tw@
        \advance\l@youtxcv by \l@youthpii
        \divide\l@youtxcv by \tw@
%% do textwidth
      \put(\l@youtxcii,\l@youtyciii){\vector(1,0){\l@youthpii}}
      \put(\l@youtxcii,\l@youtyciii){\vector(-1,0){0}}
      \put(\l@youtxcv,\l@youtyciii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{textwidth}}
        \end{picture}}
      \iftwocolumnlayout
%% do columnsep
        \put(\l@youtxciii,\l@youtvdi){\vector(-1,0){\l@youthpiii}}
        \put(\l@youtxciii,\l@youtvdi){\vector(1,0){0}}
        \put(\l@youtxciii,\l@youtvdi){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
          \put(-\l@youtvdviii,\l@youtvdviii){\l@ypcmd{columnsep}}
          \end{picture}}
      \fi

      \l@youtxcv=\l@youthdo        % X coord of middle of picture
        \divide\l@youtxcv by \tw@
%% do stockwidth
      \l@youtvpiii=\l@youtyco      % Y coord for stockwidth
        \divide\l@youtvpiii by 3\relax
      \put(0,\l@youtvpiii){\vector(1,0){\l@youthdo}}
      \put(0,\l@youtvpiii){\vector(-1,0){0}}
      \put(\l@youtxcv,\l@youtvpiii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{stockwidth}}
        \end{picture}}
%% do paperwidth
      \l@youtvpiii=\l@youtyci      % Y coord for paperwidth
        \advance\l@youtvpiii by -\l@youtyco
        \multiply\l@youtvpiii by 3\relax
        \divide\l@youtvpiii by 10\relax
        \advance\l@youtvpiii by \l@youtyco
      \put(\l@youtxco,\l@youtvpiii){\vector(1,0){\l@youtpw}}
      \put(\l@youtxco,\l@youtvpiii){\vector(-1,0){0}}
      \put(\l@youtxcv,\l@youtvpiii){\begin{picture}(\l@youtvdviii,\l@youtvdviii)
        \put(\l@youtvdviii,\l@youtvdviii){\l@ypcmd{paperwidth}}
        \end{picture}}
```

```
      \fi
```

Have finished drawing the parameters.

```
    \end{picture}
    \end{center}
    \setlength{\unitlength}{1pt}

    \testprintparameters
    \ifl@ytempif
```

Print the actual parameter values.

```
      \begin{center}
      \begin{footnotesize}
         Lengths are to the nearest pt. \\
      \begin{ttfamily}
      \begin{tabular}{l@{\hspace{20pt}}l}
      \l@ycmd{stockheight}   = \number\l@youtvdo pt    &
      \l@ycmd{stockwidth}    = \number\l@youthdo pt     \\
      \l@ycmd{pageheight}    = \number\l@youtph pt      &
      \l@ycmd{pagewidth}     = \number\l@youtpw pt       \\
      \l@ycmd{textheight}    = \number\l@youtvpv pt      &
      \l@ycmd{textwidth}     = \number\l@youthpii pt      \\
      \l@ycmd{trimtop}       = \number\l@youtvpi pt         &
      \l@ycmd{trimedge}      = \number\l@youthpi pt        \\
      \l@ycmd{uppermargin}   = \number\l@youtvpii pt    &
      \l@ycmd{spinemargin}   = \number\l@youthpv pt     \\
      \l@ycmd{headheight}    = \number\l@youtvpiii pt    &
      \l@ycmd{headsep}       = \number\l@youtvpiv pt        \\
      \l@ycmd{footskip}      = \number\l@youtvpvi pt       &
      \l@ycmd{marginparsep}  = \number\l@youthpvi pt   \\
      \l@ycmd{marginparpush} = \number\l@youtvpvii pt &
      \l@ycmd{columnsep}     = \number\l@youthpiii pt     \\
      \l@ycmd{columnseprule} = \the\l@youtlinethick  &  \\
      \end{tabular}
      \end{ttfamily}\end{footnotesize}
      \end{center}
    \fi
```

The end of the definition for `\drawstock`.

```
}

```

`\stockdiagram` `\stockdesign` Shorthands.

```
\newcommand{\stockdiagram}{\drawparameterstrue\drawstock}
\newcommand{\stockdesign}{\drawparametersfalse\drawstock}

```

`\stockvalues` This macro produces a table of the current page layout actual values.

```
\newcommand{\stockvalues}{%
%%  \begin{center}
  \ifprintheadings
```

```
    Actual stock page layout values.\\[\baselineskip]
  \fi
  \begingroup
    \l@yvalsize
  \begin{tabular}{l@{\hspace{20pt}}l}
  \l@ycmd{stockheight}    = \l@yval{\stockheight}       &
  \l@ycmd{stockwidth}     = \l@yval{\stockwidth}        \\
  \l@ycmd{paperheight}    = \l@yval{\paperheight}       &
  \l@ycmd{paperwidth}     = \l@yval{\paperwidth}         \\
  \l@ycmd{textheight}     = \l@yval{\textheight}     &
  \l@ycmd{textwidth}      = \l@yval{\textwidth}      \\
  \l@ycmd{trimtop}        = \l@yval{\trimtop}        &
  \l@ycmd{trimedge}       = \l@yval{\trimedge}      \\
  \l@ycmd{uppermargin}    = \l@yval{\uppermargin}      &
  \l@ycmd{spinemargin}    = \l@yval{\spinemargin}       \\
  \l@ycmd{headheight}     = \l@yval{\headheight}     &
  \l@ycmd{headsep}        = \l@yval{\headsep}        \\
  \l@ycmd{footskip}       = \l@yval{\footskip}       &
  \l@ycmd{marginparsep}   = \l@yval{\marginparsep}   \\
  \l@ycmd{marginparpush}  = \l@yval{\marginparpush}  &
  \l@ycmd{columnsep}      = \l@yval{\columnsep}      \\
  \l@ycmd{columnseprule}  = \l@yval{\columnseprule}  & \\
  1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
  \end{tabular}
  \endgroup
}

```

8 Drawing the layout of a list

We provide a facility for drawing the layout of a LaTeX `list` environment. First the `\try...` commands for setting trial list parameters.

`\tryitemindent` Sets a trial value for `itemindent` and stores the result in `\l@youthpi`.

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    LIST LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\tryitemindent}[1]{\l@yltoc{#1}{\l@youthpi}}
```

`\trylabelwidth` Sets a trial value for `labelwidth` and stores the result in `\l@youthpii`.

```
\newcommand{\trylabelwidth}[1]{\l@yltoc{#1}{\l@youthpii}}
```

`\trylabelsep` Sets a trial value for `labelsep` and stores the result in `\l@youthpiii`.

```
\newcommand{\trylabelsep}[1]{\l@yltoc{#1}{\l@youthpiii}}
```

`\tryleftmargin` Sets a trial value for `leftmargin` and stores the result in `\l@youthpiv`.

```
\newcommand{\tryleftmargin}[1]{\l@yltoc{#1}{\l@youthpiv}
```

But the left margin must not be less than zero.

```
                    \ifnum\l@youthpiv < \z@
                      \l@youthpiv = \z@
                    \fi}
```

`\tryrightmargin` Sets a trial value for `rightmargin` and stores the result in `\l@youthpv`.

```
\newcommand{\tryrightmargin}[1]{\l@yltoc{#1}{\l@youthpv}}
```

`\trylistparindent` Sets a trial value for `listparindent` and stores the result in `\l@youthpvi`.

```
\newcommand{\trylistparindent}[1]{\l@yltoc{#1}{\l@youthpvi}}
```

`\trytopsep` Sets a trial value for `topsep` and stores the result in `\l@youtvpi`.

```
\newcommand{\trytopsep}[1]{\l@yltoc{#1}{\l@youtvpi}}
```

`\tryparskip` Sets a trial value for `parskip` and stores the result in `\l@youtparskip`.

```
\newcommand{\tryparskip}[1]{\l@yltoc{#1}{\l@youtparskip}}
```

`\trypartopsep` Sets a trial value for `partopsep` and stores the result in `\l@youtvpiii`.

```
\newcommand{\trypartopsep}[1]{\l@yltoc{#1}{\l@youtvpiii}}
```

`\tryparsep` Sets a trial value for `parsep` and stores the result in `\l@youtvpiv`.

```
\newcommand{\tryparsep}[1]{\l@yltoc{#1}{\l@youtvpiv}}
```

`\tryitemsep` Sets a trial value for `itemsep` and stores the result in `\l@youtvpv`.

```
\newcommand{\tryitemsep}[1]{\l@yltoc{#1}{\l@youtvpv}}

```

`\currentlist` This routine sets the trial list parameters to be those of the current list environment.

```
\newcommand{\currentlist}{%
  \tryitemindent{\itemindent}       % typically 0pt
  \trylabelwidth{\labelwidth}       % typically  pt
  \trylabelsep{\labelsep}           % typically 0.5em
  \tryleftmargin{\leftmargin}       % typically  pt
  \tryrightmargin{\rightmargin}     % typically  pt
  \trylistparindent{\listparindent} % typically 0pt
  \trytopsep{\topsep}               % typically  pt
  \tryparskip{\l@ysetupparskip}     % typically  pt
  \trypartopsep{\partopsep}         % typically  pt
  \tryparsep{\parsep}               % typically  pt
  \tryitemsep{\itemsep}             % typically  pt
}

```

`\drawlist` This routine draws the layout of a `list` environment.

```
\newcommand{\drawlist}{%
```

First set some some default vertical and horizontal dimensions.

```
\l@youthdo=\l@yoneinch\relax
\l@youtvdo=\l@yoneinch\relax
  \multiply\l@youtvdo by 12\relax
  \divide\l@youtvdo by 10\relax
\l@youthdi=\l@yeighthalfinch\relax  % major textwidth
\ifdrawparameters
```

When `drawparameters` is TRUE, we draw a generic layout showing the controlling layout variables.

```
  \l@youthpi=60\relax                    % itemindent
  \l@youthpii=80\relax                   % labelwidth
  \l@youthpiii=\l@youthpi                % labelsep
    \divide\l@youthpiii by \tw@
  \l@youthpiv=\l@youthpi                 % leftmargin
    \advance\l@youthpiv by \l@youthpii
    \advance\l@youthpiv by \l@youthpiii
  \l@youthpv=\l@youthpiv                 % rightmargin
    \multiply\l@youthpv by \tw@
    \divide\l@youthpv by \thr@@
  \l@youthpvi=\l@youthpi                 % listparindent
    \multiply\l@youthpvi by 4\relax
    \divide\l@youthpvi by \thr@@
  \l@youtvpi=40\relax                    % topsep
  \l@youtparskip=\l@youtvpi              % parskip
  \l@youtvpiii=\l@youtvpi                % partopsep
  \l@youtvpiv=\l@youtvpi                 % parsep
  \l@youtvpv=\l@youtvpi                  % itemsep
\fi
```

Finished with the set up for drawing parameters. Continue calculating other dimensions and coordinates.

```
\l@youtvdvii=\l@youtvpi                % topsep + parskip (+ partopsep)
  \advance\l@youtvdvii by \l@youtparskip
  \iflistaspara
    \advance\l@youtvdvii by \l@youtvpiii
  \fi
\l@youtvdvi=\l@youtvpv                 % itemsep + parsep
  \advance\l@youtvdvi by \l@youtvpiv
\l@youtyci=\l@yoneinch\relax             % Y coord of base of item 2
  \advance\l@youtyci by \l@youtvdvii
\l@youtxci=\z@                         % X coord of LH list text
  \advance\l@youtxci by \l@youthpiv
\l@youthdii=\l@youthdi                 % major width of item text
  \advance\l@youthdii by -\l@youthpiv
  \advance\l@youthdii by -\l@youthpv
\l@youthdiii=\l@youthpi                % inset of labelled list line
\l@youtvdii=\l@youtvdo                 % vertical dim of short inset line
  \divide\l@youtvdii by 4\relax
\l@youthdiv=\l@youthdii                % X dim of item 2 box top
```

```
    \advance\l@youthdiv by -\l@youthdiii
  \l@youtvdi=\l@youtvdo                    % Y dim of RH item box
    \advance\l@youtvdi by \l@youtvdii
  \l@youtvdiii=\l@youtvdii                 % height of label box
    \multiply\l@youtvdiii by \thr@@
    \divide\l@youtvdiii by 4\relax
  \l@youtxcii=\l@youthdiii                 % X coord of BL of label box
    \advance\l@youtxcii by -\l@youthpiii
    \advance\l@youtxcii by -\l@youthpii
  \l@youtycii=\l@youtvdi                   % Y coord of BL of label box
    \advance\l@youtycii by -\l@youtvdiii
  \l@youtyciii=\l@youtyci                  % Y coord of base of para
    \advance\l@youtyciii by \l@youtvdi
    \advance\l@youtyciii by \l@youtvdvi
  \l@youthdv=\l@youthdii                   % Hor. dim of top of para box
    \advance\l@youthdv by -\l@youthpvi
  \l@youtyciv=\l@youtyciii                 % Y coord of base of item 1
    \advance\l@youtyciv by \l@youtvdi
    \advance\l@youtyciv by \l@youtvpiv
  \l@youtycv=\l@youtyciv                   % Y coord of base of preceding text
    \advance\l@youtycv by \l@youtvdi
    \advance\l@youtycv by \l@youtvdvii
  \l@youtvdiv=\l@youtycv                   % Height of picture
    \advance\l@youtvdiv by \l@yoneinch\relax
  \l@youtxciii=\l@youtxci                  % X coord of vertical lines
    \advance\l@youtxciii by \l@youtxci
    \advance\l@youtxciii by \l@youthdii
    \divide\l@youtxciii by \tw@
  \l@youtycvi=\l@youtvdi                   % Y coord for margin lines
    \divide\l@youtycvi by \tw@
  \l@youtvdv=\l@youtvpiv                   % small dimension (1/2 parsep)
    \divide\l@youtvdv by \tw@
  \l@youtxciv=\l@youtycii                 % Y coord for labelwidth (note XCIV)
    \advance\l@youtxciv by \l@youtvdiii
    \advance\l@youtxciv by \l@youtvdv
```

Draw the picture!

```
  \begin{center}
  \setlength{\unitlength}{\l@youtunitlength}
  \begin{picture}(\l@yeighthalfinch,\l@youtvdiv)
    \thinlines
```

Draw a box (`textwidth,height`) representing the page.

```
    \put(0,0){\dashbox{10}(\l@youthdi,\l@youtvdiv){}}
    \thicklines
```

Draw successor text box 1 inch deep.

```
    \put(0,0){\framebox(\l@youthdi,\l@yoneinch){\l@ylabelfont Following Text}}
```

Draw item box 2

```
    \put(\l@youtxci,\l@youtyci){\begin{picture}(\l@youthdii,\l@youtvdi)
```

The LH horizontal and vertical lines.

```
      \put(0,0){\line(1,0){\l@youthdii}}
      \put(0,0){\line(0,1){\l@youtvdo}}
```

The lines for the inset (which may be positive or negative).

```
      \ifnum\l@youthdiii > \z@
        \put(\l@youthdiii,\l@youtvdo){\line(-1,0){\l@youthdiii}}
      \else
        \put(\l@youthdiii,\l@youtvdo){\line(1,0){-\l@youthdiii}}
      \fi
      \put(\l@youthdiii,\l@youtvdo){\line(0,1){\l@youtvdii}}
```

The top and RH sides. Also add the text.

```
      \put(\l@youthdii,\l@youtvdi){\line(0,-1){\l@youtvdi}}
      \put(\l@youthdii,\l@youtvdi){\line(-1,0){\l@youthdiv}}
      \put(0,0){\makebox(\l@youthdii,\l@youtvdi){\l@ylabelfont Item 2}}
```

Finish off with the label box.

```
      \put(\l@youtxcii,\l@youtycii){\framebox(\l@youthpii,\l@youtvdiii){}}
      \put(\l@youtxcii,\l@youtycii){\makebox(\l@youthpii,\l@youtvdiii)[r]%
          {\l@ylabelfont Label}}
      \end{picture}}
```

Draw the paragraph box.

```
    \put(\l@youtxci,\l@youtyciii){\begin{picture}(\l@youthdii,\l@youtvdi)
```

The LH horizontal and vertical lines.

```
      \put(0,0){\line(1,0){\l@youthdii}}
      \put(0,0){\line(0,1){\l@youtvdo}}
```

The inset lines.

```
      \ifnum\l@youthpvi < \z@
        \put(\l@youthpvi,\l@youtvdo){\line(1,0){-\l@youthpvi}}
      \else
        \put(\l@youthpvi,\l@youtvdo){\line(-1,0){\l@youthpvi}}
      \fi
      \put(\l@youthpvi,\l@youtvdo){\line(0,1){\l@youtvdii}}
```

The top and RH side lines. Also the text.

```
      \put(\l@youthdii,\l@youtvdi){\line(0,-1){\l@youtvdi}}
      \put(\l@youthdii,\l@youtvdi){\line(-1,0){\l@youthdv}}
      \put(0,0){\makebox(\l@youthdii,\l@youtvdi){\l@ylabelfont Item 1, Paragraph 2}}
      \testdrawdimensions
      \ifl@ytempif
```

Add in the dimensions if asked for. First the `listparindent`.

```
        \put(0,\l@youtvdi){\vector(1,0){\l@youthpvi}}
        \put(0,\l@youtvdi){\begin{picture}(\l@youtvdv,\l@youtvdv)
          \put(0,\l@youtvdv){\l@ypcmd{listparindent}}
          \end{picture}}
```

Then the `leftmargin`.

```
        \put(-\l@youthpiv,\l@youtycvi){\vector(1,0){\l@youthpiv}}
```

```
1260        \put(-\l@youthpiv,\l@youtycvi){\begin{picture}(\l@youtvdv,\l@youtvdv)
1261          \put(\l@youtvdv,\l@youtvdv){\l@ypcmd{leftmargin}}
1262          \end{picture}}
```

And finally the `rightmargin`.

```
1263        \ifnum\l@youthpv < \z@
1264          \put(\l@youthdii,\l@youtycvi){\line(-1,0){-\l@youthpv}}
1265        \else
1266          \put(\l@youthdii,\l@youtycvi){\line(1,0){\l@youthpv}}
1267        \fi
1268        \put(\l@youthdii,\l@youtycvi){\vector(-1,0){0}}
1269        \put(\l@youthdii,\l@youtycvi){\begin{picture}(\l@youtvdv,\l@youtvdv)
1270          \put(\l@youtvdv,\l@youtvdv){\l@ypcmd{rightmargin}}
1271          \end{picture}}
1272      \fi
1273      \end{picture}}
```

Draw item box 1. This is very similar to drawing item box 2.

```
1274    \put(\l@youtxci,\l@youtyciv){\begin{picture}(\l@youthdii,\l@youtvdi)
1275      \put(0,0){\line(1,0){\l@youthdii}}
1276      \put(0,0){\line(0,1){\l@youtvdo}}
1277      \ifnum\l@youthdiii > \z@
1278        \put(\l@youthdiii,\l@youtvdo){\line(-1,0){\l@youthdiii}}
1279      \else
1280        \put(\l@youthdiii,\l@youtvdo){\line(1,0){-\l@youthdiii}}
1281      \fi
1282      \put(\l@youthdiii,\l@youtvdo){\line(0,1){\l@youtvdii}}
1283      \put(\l@youthdii,\l@youtvdi){\line(0,-1){\l@youtvdi}}
1284      \put(\l@youthdii,\l@youtvdi){\line(-1,0){\l@youthdiv}}
1285      \put(0,0){\makebox(\l@youthdii,\l@youtvdi){\l@ylabelfont Item 1}}
1286      \put(\l@youtxcii,\l@youtycii){\framebox(\l@youthpii,\l@youtvdiii){}}
1287      \put(\l@youtxcii,\l@youtycii){\makebox(\l@youthpii,\l@youtvdiii)[r]%
1288          {\l@ylabelfont Label}}
1289 %%     \ifdrawparameters
1290      \testdrawdimensions
1291      \ifl@ytempif
```

Howevever, if requested, dimensions are drawn for item box 1. First, for `itemindent`.

```
1292        \ifnum\l@youthpi > \z@
1293          \put(0,\l@youtycvi){\vector(1,0){\l@youthpi}}
1294        \else
1295          \put(0,\l@youtycvi){\vector(-1,0){-\l@youthpi}}
1296        \fi
1297        \put(0,\l@youtycvi){\begin{picture}(\l@youtvdv,\l@youtvdv)
1298          \put(0,-\l@youtvdv){\l@ypcmd{itemindent}}
1299          \end{picture}}
```

Then for `labelsep`.

```
1300        \put(\l@youthdiii,\l@youtvdi){\vector(-1,0){\l@youthpiii}}
1301        \put(\l@youthdiii,\l@youtvdi){\begin{picture}(\l@youtvdv,\l@youtvdv)
```

```
1302          \put(0,\l@youtvdv){\l@ypcmd{labelsep}}
1303          \end{picture}}
```

And finish up with `labelwidth`.

```
1304        \put(\l@youtxcii,\l@youtxciv){\line(1,0){\l@youthpii}}
1305        \put(\l@youtxcii,\l@youtxciv){\vector(-1,0){0}}
1306        \put(\l@youtxcii,\l@youtxciv){\begin{picture}(\l@youtvdv,\l@youtvdv)
1307          \put(0,\l@youtvdv){\l@ypcmd{labelwidth}}
1308          \end{picture}}
1309      \fi
1310      \end{picture}}
```

Draw the predeccessor text box 1 inch deep.

```
1311    \put(0,\l@youtycv){\framebox(\l@youthdi,\l@yoneinch){\l@ylabelfont Preceding Text}}
1312 %%   \ifdrawparameters
1313    \testdrawdimensions
1314    \ifl@ytempif
```

We finish off the drawing with any requested vertical spacing parameters. First between item2 and the suceeding text.

```
1315      \put(\l@youtxciii,\l@youtyci){\vector(0,-1){\l@youtvdvii}}
1316      \put(\l@youtxciii,\l@youtyci){\begin{picture}(\l@youtvdv,\l@youtvdv)
1317        \put(\l@youtvdv,-\l@youtvdv){%
1318          \l@yparamfont\texttt{\bs topsep + \bs parskip [+ \bs partopsep]}}
1319        \end{picture}}
```

Between item1, paragraph 2 and item 2.

```
1320      \put(\l@youtxciii,\l@youtyciii){\vector(0,-1){\l@youtvdvi}}
1321      \put(\l@youtxciii,\l@youtyciii){\begin{picture}(\l@youtvdv,\l@youtvdv)
1322        \put(\l@youtvdv,-\l@youtvdv){%
1323          \l@yparamfont\texttt{\bs itemsep + \bs parsep}}
1324        \end{picture}}
```

Between the two paragraphs of item 1.

```
1325      \put(\l@youtxciii,\l@youtyciv){\vector(0,-1){\l@youtvpiv}}
1326      \put(\l@youtxciii,\l@youtyciv){\begin{picture}(\l@youtvdv,\l@youtvdv)
1327        \put(\l@youtvdv,-\l@youtvdv){\l@ypcmd{parsep}}
1328        \end{picture}}
```

And finally between the preceding text and item 1.

```
1329      \put(\l@youtxciii,\l@youtycv){\vector(0,-1){\l@youtvdvii}}
1330      \put(\l@youtxciii,\l@youtycv){\begin{picture}(\l@youtvdv,\l@youtvdv)
1331        \put(\l@youtvdv,-\l@youtvdv){%
1332          \l@yparamfont\texttt{\bs topsep + \bs parskip [+ \bs partopsep]}}
1333        \end{picture}}
1334    \fi
1335    \end{picture}
1336    \end{center}
1337    \setlength{\unitlength}{1pt}
```

Last of all, we list the values of the parameters if requested.

```
1338   \testprintparameters
```

```
  \ifl@ytempif
   \begin{center}
   \begin{footnotesize}
     Lengths are to the nearest pt. \\
   \begin{ttfamily}
   \begin{tabular}{l@{\hspace{20pt}}l}
   \l@ycmd{leftmargin}    = \number\l@youthpiv pt    &
   \l@ycmd{rightmargin}   = \number\l@youthpv pt    \\
   \l@ycmd{itemindent}    = \number\l@youthpi pt     &
   \l@ycmd{labelwidth}    = \number\l@youthpii pt    \\
   \l@ycmd{labelsep}      = \number\l@youthpiii pt     &
   \l@ycmd{listparindent} = \number\l@youthpvi pt \\
   \l@ycmd{topsep}        = \number\l@youtvpi pt         &
   \l@ycmd{parskip}       = \number\l@youtparskip pt    \\
   \l@ycmd{partopsep}     = \number\l@youtvpiii pt    &
   \l@ycmd{parsep}        = \number\l@youtvpiv pt        \\
   \l@ycmd{itemsep}       = \number\l@youtvpv pt  &     \\
   \end{tabular}
   \end{ttfamily}\end{footnotesize}
   \end{center}
  \fi
```

The end of the definition for `\drawlist`.

```
}
```

`\listdiagram` `\listdesign` Shorthands.

```
\newcommand{\listdiagram}{\drawparameterstrue\drawlist}
\newcommand{\listdesign}{\drawparametersfalse\drawlist}
```

`\listvalues` This macro produces a table of the current list layout actual values. Be careful to get the external environment's values, not those of the centered tabular.

```
\newcommand{\listvalues}{%
  \setlength{\l@ylmarg}{\leftmargin}
  \setlength{\l@yrmarg}{\rightmargin}
  \setlength{\l@yitmindent}{\itemindent}
  \setlength{\l@ylblwidth}{\labelwidth}
  \setlength{\l@ylblsep}{\labelsep}
  \setlength{\l@ylparindent}{\listparindent}
  \setlength{\l@ytsep}{\topsep}
  \setlength{\l@ypskip}{\parskip}
  \setlength{\l@yptsep}{\partopsep}
  \setlength{\l@ypsep}{\parsep}
  \setlength{\l@yitmsep}{\itemsep}
  \ifprintheadings
    Actual list layout values.\\[\baselineskip]
  \fi
  \begingroup\l@yvalsize
  \begin{tabular}{l@{\hspace{20pt}}l}
```

```
 \l@ycmd{leftmargin}    = \l@yval{\l@ylmarg}      &
 \l@ycmd{rightmargin}   = \l@yval{\l@yrmarg}      \\
 \l@ycmd{itemindent}    = \l@yval{\l@yitmindent}  &
 \l@ycmd{labelwidth}    = \l@yval{\l@ylblwidth}   \\
 \l@ycmd{labelsep}      = \l@yval{\l@ylblsep}     &
 \l@ycmd{listparindent} = \l@yval{\l@ylparindent} \\
 \l@ycmd{topsep}        = \l@yval{\l@ytsep}       &
 \l@ycmd{parskip}       = \l@yval{\l@ypskip}      \\
 \l@ycmd{partopsep}     = \l@yval{\l@yptsep}      &
 \l@ycmd{parsep}        = \l@yval{\l@ypsep}       \\
 \l@ycmd{itemsep}       = \l@yval{\l@yitmsep}     &  \\
 1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
 \end{tabular}
 \endgroup
}

```

9 Drawing the layout of footnotes

We provide a facility for drawing the layout of footnotes.

First the `\try...` commands for setting trial values of the footnote parameters.

`\tryfootins` Sets the trial value for `footins` and stores the result in `\l@youtvpi`.

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    FOOTNOTE LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\tryfootins}[1]{\l@yltoc{#1}{\l@youtvpi}}
```

`\tryfootnotesep` Sets the trial value for `footnotesep` and stores the result in `\l@youtvpii`.

```
\newcommand{\tryfootnotesep}[1]{\l@yltoc{#1}{\l@youtvpii}}
```

`\tryfootnotebaseline` Sets the trial value for `footnotebaseline` and stores the result in `\l@youtvpiii`.

```
\newcommand{\tryfootnotebaseline}[1]{\l@yltoc{#1}{\l@youtvpiii}}
```

`\tryfootruleheight` Sets the trial value for `footruleheight` and stores the result in `\l@youtlinethick`.

```
\newcommand{\tryfootruleheight}[1]{\setlength{\l@youtlinethick}{#1}}
```

`\tryfootrulefrac` Sets the trial value for `footrulefrac` and stores the result in `\l@youthdvii`.

```
\newcommand{\tryfootrulefrac}[1]{\setlength{\l@ylen}{8.5in}
           \l@ytok={#1}
           \l@ylen = #1\l@ylen
           \l@youthdvii=\l@ylen
     \divide\l@youthdvii by \l@yonepoint}

```

\currentfootnote This routine sets the trial footnote parameters to be those specified for the current document. Some parameters have the values embedded as numbers in the class/options files; for these we make an educated guess at a typical value.

```
\newcommand{\currentfootnote}{%
  \tryfootins{\skip\footins}
  \tryfootnotesep{\footnotesep}
  \tryfootnotebaseline{10pt}
  \tryfootruleheight{0.4pt}
  \tryfootrulefrac{0.25}
}
```

\drawfootnote This routine draws the layout of a footnote.

```
\newcommand{\drawfootnote}{%
```

Set some default values.

```
  \l@youtvdo=4\relax                % vertical scale factor
  \l@youthdi=\l@yeighthalfinch\relax   % textwidth
  \l@youtvdi=\l@yoneinch\relax         % small height of note box
  \ifdrawparameters
```

When drawparameters is TRUE we use a generic layout. Set the dimensions and coordinates.

```
    \l@youtvpi=20\relax                    %  \skip\footins
    \l@youtvpii=30\relax                   %  footenotesep
    \l@youtvpiii=10\relax                  %  footnote baseline
    \setlength{\l@youtlinethick}{0.4pt}    % rule thickness
    \l@youthdvii=\l@yeighthalfinch\relax      % rule length
      \multiply\l@youthdvii by 4\relax
      \divide\l@youthdvii by 10\relax
    \l@youtvdii=\l@youtvpiii                % vertical box inset
      \multiply\l@youtvdii by \l@youtvdo
  \else
```

Continue calculating the drawing parameters.

```
    \l@youtvdii=\l@youtvpiii               % vertical box inset
      \multiply\l@youtvdii by \l@youtvdo
      \multiply\l@youtvdii by 8\relax
      \divide\l@youtvdii by 10\relax
  \fi
  \multiply\l@youtvdii by 3\relax
  \divide\l@youtvdii by 4\relax
  \l@youtvdv=\l@youtvpi                  % Y dim of footins
    \multiply\l@youtvdv by \l@youtvdo
  \l@youthdii=\l@youtvdii                % horizontal box inset
  \l@youtvdiii=\l@youtvdi                % box height
    \advance\l@youtvdiii by \l@youthdii
  \l@youthdiii=\l@youthdi                % box top length
    \advance\l@youthdiii by -\l@youthdii
  \l@youtvdiv=\l@youtvpii                % vertical note spacing
```

```
    \ifnum\l@youtvdiv < \l@youtvpiii
      \l@youtvdiv=\l@youtvpiii
    \fi
    \multiply\l@youtvdiv by \l@youtvdo
  \l@youtyci=\l@youtvdi                  % Y coord of 1st box base
    \advance\l@youtyci by \l@youtvdiv
  \l@youtycii=\l@youtyci                 % Y coord of rule
    \advance\l@youtycii by \l@youtyci
  \l@youtyciii=\l@youtycii               %  Y coord of text base
    \advance\l@youtyciii by \l@youtvdv
  \l@youtyciv=\l@youtyciii               % top of main text box
    \advance\l@youtyciv by \l@yoneinch\relax
  \l@youthdiv=\l@youthdvii               % length of rule
  \l@youtvdvi=\l@youtvpiv                % height of rule
    \multiply\l@youtvdvi by \l@youtvdo
  \l@youthdv=\l@youthdii                 % small value (1/2 box inset)
    \divide\l@youthdv by \tw@
  \l@youthdvi=\l@youthdv                 % 1/2 l@youthdv
    \divide\l@youthdvi by \tw@
```

Draw the picture!

```
  \begin{center}
  \setlength{\unitlength}{\l@youtunitlength}
  \begin{picture}(\l@youthdi,\l@youtyciv)
    \thicklines
```

Draw box 2. First the major bottom and LH side lines.

```
    \put(0,0){\begin{picture}(\l@youthdi,\l@youtvdiii)
      \put(0,0){\line(1,0){\l@youthdi}}
      \put(0,0){\line(0,1){\l@youtvdi}}
```

The inset lines

```
      \put(\l@youthdii,\l@youtvdi){\line(-1,0){\l@youthdii}}
      \put(\l@youthdii,\l@youtvdi){\line(0,1){\l@youtvdii}}
```

The top and RH side lines.

```
      \put(\l@youthdi,\l@youtvdiii){\line(-1,0){\l@youthdiii}}
      \put(\l@youthdi,\l@youtvdiii){\line(0,-1){\l@youtvdiii}}
```

Finish with the marker.

```
      \put(\l@youthdv,\l@youtvdiii){\makebox(0,0)[t]{2}}
      \end{picture}}
```

The drawing of box 1 is similar.

```
    \put(0,\l@youtyci){\begin{picture}(\l@youthdi,\l@youtvdiii)
      \put(0,0){\line(1,0){\l@youthdi}}
      \put(0,0){\line(0,1){\l@youtvdi}}
      \put(\l@youthdii,\l@youtvdi){\line(-1,0){\l@youthdii}}
      \put(\l@youthdii,\l@youtvdi){\line(0,1){\l@youtvdii}}
      \put(\l@youthdi,\l@youtvdiii){\line(-1,0){\l@youthdiii}}
      \put(\l@youthdi,\l@youtvdiii){\line(0,-1){\l@youtvdiii}}
      \put(\l@youthdv,\l@youtvdiii){\makebox(0,0)[t]{1}}
      \end{picture}}
```

Draw the rule.

```
    \multiply\l@youtlinethick by \l@youtvdo
    \linethickness{\l@youtlinethick}
    \put(0,\l@youtycii){\line(1,0){\l@youthdvii}}
    \thicklines
```

Draw the main text box

```
    \put(0,\l@youtyciii){\framebox(\l@youthdi,\l@yoneinch){\l@ylabelfont MAIN TEXT}}
    \testdrawdimensions
    \ifl@ytempif
      \thinlines
```

We finish off the drawing with spacing parameters, if requested.
Bottom `footnotesep`.

```
    \put(\l@youthdvi,\l@youtyci){\vector(0,-1){\l@youtvdiv}}
    \put(\l@youthdvi,\l@youtyci){\begin{picture}(\l@youthdv,\l@youthdv)
      \put(\l@youthdvi,-\l@youthdv){\l@ypcmd{footnotesep}}
      \end{picture}}
```

Top `footnotesep`.

```
    \put(\l@youthdvi,\l@youtycii){\vector(0,-1){\l@youtvdiv}}
    \put(\l@youthdvi,\l@youtycii){\begin{picture}(\l@youthdv,\l@youthdv)
      \put(\l@youthdvi,-\l@youthdv){\l@ypcmd{footnotesep}}
      \end{picture}}
```

The `\skip\footins`.

```
    \put(\l@youthdii,\l@youtyciii){\vector(0,-1){\l@youtvdv}}
    \put(\l@youthdii,\l@youtyciii){\begin{picture}(\l@youthdv,\l@youthdv)
      \put(\l@youthdvi,-\l@youthdv){\l@ypcmd{skip}\l@ypcmd{footins}}
      \end{picture}}
```

The rule.

```
    \put(\l@youthdiv,\l@youtycii){\begin{picture}(\l@youthdv,\l@youthdv)
      \put(\l@youthdv,0){\l@ypcmd{footnoterule}}
      \end{picture}}
    \fi
```

Finish off the picture.

```
    \end{picture}
  \end{center}
  \setlength{\unitlength}{1pt}
```

Print the value table if appropriate.

```
   \testprintparameters
   \ifl@ytempif
    \begin{center}
    \begin{footnotesize}
      Lengths are to the nearest pt. \\
    \begin{ttfamily}
    \begin{tabular}{l@{\hspace{20pt}}l}
    \l@ycmd{footins}         = \number\l@youtvpi pt &
    \l@ycmd{footnotesep}     = \number\l@youtvpii pt \\
```

```
    \l@ycmd{baselineskip}    = \number\l@youtvpiii pt &
    \textrm{note separation} = \number\l@youtvdiv pt \\
    \textrm{rule thickness}  = \the\l@youtlinethick & \\
    \multicolumn{2}{c}{\textrm{rule length} = \the\l@ytok{} times the \bs textwidth} \\
    \end{tabular}
    \end{ttfamily}\end{footnotesize}
    \end{center}
  \fi
```

The end of the definition of `\drawfootnote`.

```
}
```

`\footnotediagram` `\footnotedesign` Shorthands.

```
\newcommand{\footnotediagram}{\drawparameterstrue\drawfootnote}
\newcommand{\footnotedesign}{\drawparametersfalse\drawfootnote}
```

`\footnotevalues` This macro produces a table of the current footnote layout actual values.

```
\newcommand{\footnotevalues}{%
  \setlength{\l@ylen}{\columnwidth}
    \l@ylen = .4\l@ylen
  \ifprintheadings
    Actual footnote layout values.\\[\baselineskip]
  \fi
  \begingroup\l@yvalsize
  \begin{tabular}{l@{\hspace{20pt}}l}
  \l@ycmd{footins}     = \l@yval{\skip\footins} &
  \l@ycmd{footnotesep} = \l@yval{\footnotesep}  \\
  rule thickness      = ??               &
  rule length         = ??    \\
  1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
  \end{tabular}
  \endgroup
}
```

10 Drawing the layout of paragraphs

We provide a facility for drawing the layout of paragraphs.

First the `\try...` commands for setting trial values of the paragraph parameters.

`\tryparindent` Sets the trial value for `\parindent` and stores the result in `\l@youthdii`.

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    PARAGRAPH LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

```

```
\newcommand{\tryparindent}[1]{\l@yltoc{#1}{\l@youthdii}}
```

`\tryparlinewidth` Sets the trial value for `\linewidth` and stores the result in `\l@youthdi`.

```
\newcommand{\tryparlinewidth}[1]{\l@yltoc{#1}{\l@youthdi}}
```

`\tryparbaselineskip` Sets the trial value for `\baselineskip` and stores the result in `\l@youtvdii`.

```
\newcommand{\tryparbaselineskip}[1]{\l@yltoc{#1}{\l@youtvdii}}

```

`\currentparagraph` This routine sets the trial paragraph parameters to be those specified for the current document.

```
\newcommand{\currentparagraph}{%
  \tryparindent{\parindent}
  \tryparskip{\parskip}
  \tryparlinewidth{\linewidth}
  \tryparbaselineskip{\baselineskip}
}

```

`\drawparagraph` This routine draws the layout of a paragraph.

```
\newcommand{\drawparagraph}{%
```

Set some default values.

```
  \l@youtvdi=\l@yoneinch\relax            % height of bottom of inset box
  \ifdrawparameters
```

When `drawparameters` is TRUE we use a generic layout. Set the dimensions and coordinates.

```
    \l@youtvdii=15\relax               %  \baselineskip
    \l@youthdii=40\relax                %  \parindent
    \l@youtparskip=30\relax             %  \parskip
    \l@youthdi=\l@yeighthalfinch\relax      % linewidth
  \fi
```

Continue calculating the drawing parameters.

```
    \l@youtvdiii=\l@youtvdi             % total height of para box
      \advance\l@youtvdiii by \l@youtvdii
    \l@youtvdiv=\l@youtvdiii            % bottom of Preceding box
      \advance\l@youtvdiv by \l@youtparskip
    \l@youtvdv=\l@youtvdiv              % total picture height
      \advance\l@youtvdv by \l@yoneinch\relax
    \l@youthdiii=\l@youthdi              % length of top of para box
      \advance\l@youthdiii by -\l@youthdii
    \l@youtxci=\l@youthdi               % x coord of middle of picture
      \divide\l@youtxci by \tw@
  \l@youthdv=10\relax                   % small value
  \l@youthdvi=5\relax                   % 1/2 l@youthdv
```

Draw the picture!

```
  \begin{center}
  \setlength{\unitlength}{\l@youtunitlength}
```

```
\begin{picture}(\l@youthdi,\l@youtvdv)
  \thicklines
```

Draw paragraph box. First the major bottom and LH side lines.

```
  \put(0,0){\begin{picture}(\l@youthdi,\l@youtvdiii)
    \put(0,0){\line(1,0){\l@youthdi}}
    \put(0,0){\line(0,1){\l@youtvdi}}
```

The inset lines

```
    \ifnum\l@youthdii < \z@
      \l@youthdv=-\l@youthdii
      \put(\l@youthdii,\l@youtvdi){\line(1,0){\l@youthdv}}
    \else
      \put(\l@youthdii,\l@youtvdi){\line(-1,0){\l@youthdii}}
    \fi
    \put(\l@youthdii,\l@youtvdi){\line(0,1){\l@youtvdii}}
```

The top and RH side lines.

```
    \put(\l@youthdi,\l@youtvdiii){\line(-1,0){\l@youthdiii}}
    \put(\l@youthdi,\l@youtvdiii){\line(0,-1){\l@youtvdiii}}
    \end{picture}}
```

Now for the top box.

```
    \put(0,\l@youtvdiv){\framebox(\l@youthdi,\l@yoneinch){\l@ylabelfont Preceding Text}}
```

Finished the main drawing.

```
  \testdrawdimensions
  \ifl@ytempif
    \thinlines
```

We finish off the drawing with spacing parameters, if requested. The `\parskip`.

```
  \put(\l@youtxci,\l@youtvdiv){\begin{picture}(\l@youthdv,\l@youthdv)
    \put(0,0){\vector(0,-1){\l@youtparskip}}
    \put(\l@youthdvi,-\l@youthdv){\l@ypcmd{parskip}}
    \end{picture}}
```

The `\parindent`.

```
  \put(0,\l@youtvdiii){\begin{picture}(\l@youthdv,\l@youthdv)
    \ifnum\l@youthdii < \z@
      \put(0,0){\vector(-1,0){-\l@youthdii}}
      \put(0,0){\vector(1,0){0}}
    \else
      \put(0,0){\vector(1,0){\l@youthdii}}
    \fi
    \put(0,\l@youthdv){\l@ypcmd{parindent}}
    \end{picture}}
  \fi
```

Finish off the picture.

```
  \end{picture}
\end{center}
\setlength{\unitlength}{1pt}
```

Print the value table if appropriate.

```
  \testprintparameters
  \ifl@ytempif
    \begin{center}
    \begin{footnotesize}
      Lengths are to the nearest pt. \\
    \begin{ttfamily}
    \begin{tabular}{l@{\hspace{20pt}}l}
    \l@ycmd{parindent}    = \number\l@youthdii pt &
    \l@ycmd{parskip}      = \number\l@youtparskip pt \\
    \l@ycmd{baselineskip} = \number\l@youtvdii pt &
    \l@ycmd{linewidth}    = \number\l@youthdi pt \\
    \end{tabular}
    \end{ttfamily}\end{footnotesize}
    \end{center}
  \fi
```

The end of the definition of `\drawparagraph`.

```
}
```

`\paragraphdiagram` `\paragraphdesign` Shorthands.

```
\newcommand{\paragraphdiagram}{\drawparameterstrue\drawparagraph}
\newcommand{\paragraphdesign}{\drawparametersfalse\drawparagraph}
```

`\paragraphvalues` This macro produces a table of the current paragraph layout actual values. Be careful to get the global, not local, values.

```
\newcommand{\paragraphvalues}{%
  \setlength{\l@ylen}{\parindent}
  \ifprintheadings
    Actual paragraph layout values.\\[\baselineskip]
  \fi
  \begingroup\l@yvalsize
  \begin{tabular}{l@{\hspace{20pt}}l}
  \l@ycmd{parindent}    = \l@yval{\l@ylen}                &
  \l@ycmd{parskip}      = \l@yval{\l@ysetupparskip}       \\
  \l@ycmd{baselineskip} = \l@yval{\l@ysetupbaselineskip} &
  \l@ycmd{linewidth}    = \l@yval{\linewidth}             \\
  1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
  \end{tabular}
  \endgroup
}
```

11 Drawing the layout of section headings

We provide a facility for illustrating the layout of sectional headings.

First the `\try...` commands for setting trial values for the heading parameters.

`\trybeforeskip` Sets the trial value for `beforeskip` and stores the result in `\l@youtvpi`.

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    SECTION HEADING LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\trybeforeskip}[1]{\l@yltoc{#1}{\l@youtvpi}}
```

`\tryafterskip` Sets the trial value for `afterskip` and stores the result in `\l@youtvpii`.

```
\newcommand{\tryafterskip}[1]{\l@yltoc{#1}{\l@youtvpii}}
```

`\tryindent` Sets the trial value for `indent` and stores the result in `\l@youthpi`.

```
\newcommand{\tryindent}[1]{\l@yltoc{#1}{\l@youthpi}}

```

`\currentheading` This routine sets the trial heading parameters to some predefined values that, hopefully, are reasonably representative.

```
\newcommand{\currentheading}{%
  \trybeforeskip{2\l@ysetupbaselineskip}
  \tryafterskip{\l@ysetupbaselineskip}
  \tryindent{2\l@ysetupbaselineskip}
  \tryparskip{\l@ysetupparskip}
}

```

`\drawheading` This routine draws the layout of a sectional heading. The command takes a single parameter, `\drawheading{`⟨*font style*⟩`}`, which specifies the size and style of the heading font. For example,
`\drawheading{\Large\sffamily}`

```
\newcommand{\drawheading}[1]{%
```

Some default values first.

```
  \l@yltoc{\textwidth}{\l@youthdi}                 % textwidth
  \l@yltoc{\baselineskip}{\l@youtvdi}              % baselineskip
  \ifdrawparameters
```

When `drawparameters` is TRUE we use a generic layout. Set the dimensions and coordinates.

```
    \Huge \l@youtvdii=\baselineskip \normalsize  % Heading baselineskip
      \divide\l@youtvdii by \l@yonepoint
    \l@yltoc{40pt}{\l@youtvpi}                    % beforeskip
    \ifruninhead
```

We need different values for the afterskip and indent depending on whether we are drawing a run-in heading or an ordinary one.

```
      \l@yltoc{-72pt}{\l@youtvpii}                 % afterskip
      \l@yltoc{50pt}{\l@youthpi}                   % indent
    \else
      \l@yltoc{45pt}{\l@youtvpii}                  % afterskip
      \l@yltoc{72pt}{\l@youthpi}                   % indent
    \fi
```

Calculate the width of a sample heading title text.

```
    \setbox0 = \hbox{{\Huge 3.5 Heading Title }}
    \l@yltoc{\wd0}{\l@youthdv}  % width of heading text
  \else
```

When `drawparameters` is FALSE, we calculate the heading `baselineskip` and width of the text in the trial font.

```
    {#1 \l@youtvdii=\baselineskip\normalfont\normalsize} % heading baselineskip
      \divide\l@youtvdii by \l@yonepoint
    \setbox0 = \hbox{{#1 3.5 Heading Title }}
    \l@yltoc{\wd0}{\l@youthdv}  % width of heading text
  \fi
```

Now continue setting all the other drawing lengths and coordinates.

```
  \l@youtvdiii=\l@youtvpii            % afterskip + parskip + textbaselineskip
    \advance\l@youtvdiii by \l@youtparskip
    \advance\l@youtvdiii by \l@youtvdi
  \l@youtvdiv=\l@youtvpi              % beforeskip + parskip + headbaselineskip
    \ifnum\l@youtvdiv < \z@
```

A negative value for the `indent` signals no indentation of the first line of text after the heading.

```
      \l@youtvdiv = -\l@youtvdiv
    \fi
    \advance\l@youtvdiv by \l@youtparskip
    \advance\l@youtvdiv by \l@youtvdii
  \l@youtyci=\l@youtvdi                 % Y coord of base of after text
  \l@youtycii=\l@youtyci                % Y coord of base of heading text
    \advance\l@youtycii by \l@youtvdiii
```

We have to handle the case of a negative `afterskip` indicating a run-in heading. `l@youthdiv` is set to either zero of the absolute value of the negative `afterskip`.

```
  \l@youthdiv=\z@                       % 0 or abs(-afterskip)
  \ifnum\l@youtvpii < \z@
    \l@youthdiv = -\l@youtvpii
    \l@youtvdiii=\l@youtvdi             %  textbaselineskip
    \l@youtxci=\l@youthpi               % X coord of end of heading text
      \advance\l@youtxci by \l@youthdv
    \l@youtxcii=\l@youtxci              % X coord of start of after text
      \advance\l@youtxcii by \l@youthdiv
    \l@youtycii=\l@youtvdi              % Y coord of base of heading text
  \fi
```

Continue.

```
  \l@youtyciii=\l@youtycii              % Y coord of base of prior text
    \advance\l@youtyciii by \l@youtvdiv
  \l@youtyciv=\l@youtyciii              % Y coord of top of prior text
    \advance\l@youtyciv by \l@youtvdi
  \l@youtycv=\l@youtyciv                % 2*l@youtvdi + l@youtyciv
    \advance\l@youtycv by \l@youtvdi
    \advance\l@youtycv by \l@youtvdi
```

```
\l@youthdii=\l@youtvdi                  % a small amount
\l@youthdiii=\l@youthdii                % half a small amount
  \divide\l@youthdiii by \tw@
```

Draw the picture!

```
\begin{center}
\setlength{\unitlength}{\l@youtunitlength}
\begin{picture}(\l@youthdi,\l@youtycv)
  \ifnum\l@youtvpii < \z@
    \put(0,\l@youtyci){\begin{picture}(\l@youthdi,\l@youtyciv)
```

When the `afterskip` is negative we have a run-in heading.
Draw the bottom text line

```
      \put(0,0){\l@ylabelfont second line of text following the heading \ldots}
```

Draw the heading

```
      \ifdrawparameters
        \put(\l@youthpi,\l@youtycii){{\Huge 3.5 Heading Title}}
      \else
        \put(\l@youthpi,\l@youtycii){{#1 3.5 Heading Title}}
      \fi
```

Draw the first line of text after the heading, and the preceding text line.

```
      \put(\l@youtxcii,\l@youtycii){\l@ylabelfont Start of text \ldots}
      \put(0,\l@youtyciii){\l@ylabelfont \ldots end of last line of preceding text.}
%%      \ifdrawparameters
      \testdrawdimensions
      \ifl@ytempif
```

Draw the dimensions if required. First the before skips.

```
        \put(0,\l@youtyciii){\vector(0,-1){\l@youtvdiv}}
        \put(0,\l@youtyciii){\begin{picture}(\l@youthdii,\l@youthdii)
          \put(\l@youthdiii,-\l@youthdii){\makebox(0,0)[tl]%
            {\l@yparamfont \textit{$\|$beforeskip$\|$} +
             \l@ypcmd{parskip} (of text font) + \l@ypcmd{baselineskip}
              (of heading font)}}
          \end{picture}}
```

The indent.

```
        \put(0,\l@youtycii){\vector(1,0){\l@youthpi}}
        \put(0,\l@youtycii){\begin{picture}(\l@youthdii,\l@youthdii)
          \put(\l@youthdii,\l@youthdiii){\l@yparamfont \textit{indent}}
          \end{picture}}
```

And finish with the negative afterskip

```
        \put(\l@youtxci,\l@youtycii){\vector(1,0){\l@youthdiv}}
        \put(\l@youtxci,\l@youtycii){\begin{picture}(\l@youthdii,\l@youthdii)
          \put(\l@youthdiii,\l@youthdii){\l@yparamfont \textit{afterskip} ($< 0$)}
          \end{picture}}
      \fi
      \end{picture}}
  \else
    \put(0,\l@youtyci){\begin{picture}(\l@youthdi,\l@youtyciv)
```

The aftterskip is positive, so we draw a normal heading.

Draw the two after heading text lines

```
\put(0,0){\l@ylabelfont second line of text following the heading \ldots}
\put(0,\l@youtyci){\l@ylabelfont This is the start of the after-heading text,
                    which continues on \ldots}
```

Draw the heading

```
\ifdrawparameters
  \put(\l@youthpi,\l@youtycii){{\Huge 3.5 Heading Title}}
\else
  \put(\l@youthpi,\l@youtycii){{#1 3.5 Heading Title}}
\fi
```

Draw the text line preceding the heading.

```
\put(0,\l@youtyciii){\l@ylabelfont \ldots end of last line of preceding text.}
%%  \ifdrawparameters
\testdrawdimensions
\ifl@ytempif
```

Draw the dimensions if required. First the before skips.

```
  \put(0,\l@youtyciii){\vector(0,-1){\l@youtvdiv}}
  \put(0,\l@youtyciii){\begin{picture}(\l@youthdii,\l@youthdii)
    \put(\l@youthdiii,-\l@youthdii){\makebox(0,0)[tl]%
      {\l@yparamfont \textit{$\|$beforeskip$\|$} +
       \l@ypcmd{parskip} (of text font) + \l@ypcmd{baselineskip}
        (of heading font)}}
    \end{picture}}
```

The indent.

```
  \put(0,\l@youtycii){\vector(1,0){\l@youthpi}}
  \put(0,\l@youtycii){\begin{picture}(\l@youthdii,\l@youthdii)
    \put(\l@youthdii,\l@youthdiii){\l@yparamfont \textit{indent}}
    \end{picture}}
```

And finish with the afterskips

```
  \put(0,\l@youtycii){\vector(0,-1){\l@youtvdiii}}
  \put(0,\l@youtycii){\begin{picture}(\l@youthdii,\l@youthdii)
    \put(\l@youthdiii,-\l@youthdii){\makebox(0,0)[tl]%
      {\l@yparamfont \textit{afterskip} +
       \l@ypcmd{parskip} (of heading font) + \l@ypcmd{baselineskip}
        (of text font)}}
    \end{picture}}
\fi
\end{picture}}
\fi
```

Draw rules.

```
\put(0,0){\line(1,0){\l@youthdi}}
\put(0,\l@youtycv){\line(1,0){\l@youthdi}}
\end{picture}
\end{center}
\setlength{\unitlength}{1pt}
```

```
%%    \ifdrawparameters\else
    \testprintparameters
    \ifl@ytempif
```

Write out the table of values if required.

```
      \begin{center}
      \begin{footnotesize}
        Lengths are to the nearest pt. \\
      \begin{ttfamily}
      \begin{tabular}{l@{\hspace{20pt}}l}
      \textit{beforeskip}      = \number\l@youtvpi pt &
      \textit{afterskip}       = \number\l@youtvpii pt \\
      \textit{indent}          = \number\l@youthpi pt &
      \textrm{(heading font)}
         \l@ycmd{baselineskip} = \number\l@youtvdii pt \\
      \l@ycmd{parskip}         = \number\l@youtparskip pt &
      \textrm{heading font}    = \string#1 \\
      \end{tabular}
      \end{ttfamily}\end{footnotesize}
      \end{center}
    \fi
```

The end of the definition of `\drawheading`.

```
}
```

`\headingdiagram` `\headingdesign` Shorthands.

```
\newcommand{\headingdiagram}[1]{\drawparameterstrue\drawheading{#1}}
\newcommand{\headingdesign}[1]{\drawparametersfalse\drawheading{#1}}
```

`\headingvalues` This doesn't do anything — it's just provided for symmetry.

```
\newcommand{\headingvalues}{%
  \PackageWarning{layouts}{The \protect\headingvalues\space command does nothing}}
```

12 Drawing the layouts of floats

We provide facilities for illustrating the parameters controlling the layout of floats. Respectively these show the layout of an individual float, and the page layout for floats.

12.0.1 Individual float layout

The code in this section enables the illustration of the parameters of a single float environment.

Start off with the `\try...` commands for setting trial parameter values.

\trytextfloatsep Sets the trial value for textfloatsep and stores the result in \l@youtvpi.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    INDIVIDUAL FLOAT LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\trytextfloatsep}[1]{\l@yltoc{#1}{\l@youtvpi}}
```

\tryfloatsep Sets the trial value for floatsep and stores the result in \l@youtvpii.

```
\newcommand{\tryfloatsep}[1]{\l@yltoc{#1}{\l@youtvpii}}
```

\tryintextsep Sets the trial value for intextsep and stores the result in \l@youtvpiii.

```
\newcommand{\tryintextsep}[1]{\l@yltoc{#1}{\l@youtvpiii}}
```

\trytopfigrule Sets the trial value for topfigrule and stores the result in \l@youtlinethick.

```
\newcommand{\trytopfigrule}[1]{\setlength{\l@youtlinethick}{#1}}
```

\trybotfigrule Sets the trial value for botfigrule and stores the result in \l@youtlinethickii.

```
\newcommand{\trybotfigrule}[1]{\setlength{\l@youtlinethickii}{#1}}

```

\currentfloat This sets the trial float parameter values to those currently set in the document, or makes a guesstimate where the value is hard-coded.

```
\newcommand{\currentfloat}{%
  \trytextfloatsep{\textfloatsep}
  \tryfloatsep{\floatsep}
  \tryintextsep{\intextsep}
  \trytopfigrule{0pt}        % guesstimate
  \trybotfigrule{0pt}        % guesstimate
}

```

\drawfloat The command to draw the picture of float parameters.

```
\newcommand{\drawfloat}{%
  \ifdrawparameters
```

Set up the lengths and coordinates for drawing the parameters.

```
    \l@yltoc{40pt}{\l@youtvpi}             % textfloatsep
    \l@yltoc{40pt}{\l@youtvpii}            % floatsep
    \l@yltoc{40pt}{\l@youtvpiii}           % intextsep
    \setlength{\l@youtlinethick}{1pt}     % toprule height
    \setlength{\l@youtlinethickii}{2pt}   % botrule height
  \fi
```

And the general drawing coodinates and lengths.

```
%  \l@youthdo=\textwidth                  % textwidth
%    \divide\l@youthdo by \l@yonepoint
  \l@yltoc{\textwidth}{\l@youthdo}
    \multiply\l@youthdo by 8\relax
```

```
    \divide\l@youthdo by 10\relax
  \l@yltoc{\baselineskip}{\l@youtvdvii}  % baselineskip
  \l@youthdi=\l@youthdo                  % width of floats
    \divide\l@youthdi by \tw@
  \l@youtvdi=\l@youthdi                  % float box height
    \divide\l@youtvdi by 4\relax
  \l@youtvdii=\l@youtvdvii               % text box height
    \multiply\l@youtvdii by \thr@@
  \l@youtvdvi=\l@youtvdvii               % height of top text line
    \multiply\l@youtvdvi by \tw@
  \l@youtxci=\l@youthdo                  % X coord of LH of float
    \advance\l@youtxci by -\l@youthdi
    \divide\l@youtxci by \tw@
  \l@youtxcii=\l@youthdo                 % X coord of vertical dims.
    \divide\l@youtxcii by \tw@
  \l@youtyci=\l@youtvdi                  % Y coord of top of BFl-n
  \l@youtycii=\l@youtyci                 % Y coord of bottom of text
    \advance\l@youtycii by \l@youtvpi
  \l@youtyciii=\l@youtycii               % Y coord of bottom of HF box
    \advance\l@youtyciii by \l@youtvdii
    \advance\l@youtyciii by \l@youtvpiii
  \l@youtyciv=\l@youtyciii               % Y coord of bottom top text box
    \advance\l@youtyciv by \l@youtvdi
    \advance\l@youtyciv by \l@youtvpiii
  \l@youtycv=\l@youtyciv                 % Y coord of bottom of TFl-2 box
    \advance\l@youtycv by \l@youtvdii
    \advance\l@youtycv by \l@youtvpi
  \l@youtycvi=\l@youtycv                 % Y coord of bottom of TFl-1 box
    \advance\l@youtycvi by \l@youtvdi
    \advance\l@youtycvi by \l@youtvpii
  \l@youtvdo=\l@youtycvi                 % Y dim of text on page
    \advance\l@youtvdo by \l@youtvdi
  \l@youthdii=\l@youtvpi                 % a small amount
    \divide\l@youthdii by \tw@
  \l@youthdiii=\l@youthdii               % half a small amount
    \divide\l@youthdiii by \tw@
```

Draw the picture!

```
  \begin{center}
%%%  \setlayoutscale{1}
  \setlength{\unitlength}{\l@youtunitlength}
  \begin{picture}(\l@youthdo,\l@youtvdo)
    \thicklines
```

A bottom float.

```
    \put(\l@youtxci,0){\framebox(\l@youthdi,\l@youtvdi){\l@ylabelfont A BOTTOM FLOAT}}
```

Bottom text.

```
    \put(0,\l@youtycii){\begin{picture}(\l@youthdo,\l@youtvdii)
      \put(0,0){\makebox(\l@youthdo,0)[br]{\l@ylabelfont \ldots last text line before bottom float
      \put(0,\l@youtvdvi){\l@ylabelfont First text line after `here' float \ldots}
```

```
1914      \end{picture}}
```

Draw a ‘here’ float.

```
1915    \put(\l@youtxci,\l@youtyciii){\framebox(\l@youthdi,\l@youtvdi){\l@ylabelfont A ‘HE
```

Top text.

```
1916    \put(0,\l@youtyciv){\begin{picture}(\l@youthdo,\l@youtvdii)
1917      \put(0,0){\makebox(\l@youthdo,0)[br]{\l@ylabelfont \ldots last text line before
1918      \put(0,\l@youtvdvi){\l@ylabelfont First text line after top float \ldots}
1919      \end{picture}}
```

The lowest top float (TFl-2).

```
1920    \put(\l@youtxci,\l@youtycv){\framebox(\l@youthdi,\l@youtvdi){\l@ylabelfont A TOP F
```

The highest top float (TFl-1).

```
1921    \put(\l@youtxci,\l@youtycvi){\framebox(\l@youthdi,\l@youtvdi){\l@ylabelfont A TOP
```

Whole page text.

```
1922    \thinlines
1923    \put(0,0){\dashbox{10}(\l@youthdo,\l@youtvdo){}}
```

The top and bottom rules

```
1924    \linethickness{\l@youtlinethick}
1925    \put(0,\l@youtycv){\line(1,0){\l@youthdo}}
1926    \linethickness{\l@youtlinethickii}
1927    \put(0,\l@youtyci){\line(1,0){\l@youthdo}}
1928    \thinlines
1929    \testdrawdimensions
1930    \ifl@ytempif
```

Draw the parameter lines if required. Start with the bottom `textfloatsep`.

```
1931      \put(\l@youtxcii,\l@youtycii){\vector(0,-1){\l@youtvpi}}
1932      \put(\l@youtxcii,\l@youtycii){\begin{picture}(\l@youthdii,\l@youthdii)
1933        \put(\l@youthdiii,-\l@youthdii){\l@ypcmd{textfloatsep}}
1934        \end{picture}}
```

Lower `intextsep`.

```
1935      \put(\l@youtxcii,\l@youtyciii){\vector(0,-1){\l@youtvpiii}}
1936      \put(\l@youtxcii,\l@youtyciii){\begin{picture}(\l@youthdii,\l@youthdii)
1937        \put(\l@youthdiii,-\l@youthdii){\l@ypcmd{intextsep}}
1938        \end{picture}}
```

Upper `intextsep`.

```
1939      \put(\l@youtxcii,\l@youtyciv){\vector(0,-1){\l@youtvpiii}}
1940      \put(\l@youtxcii,\l@youtyciv){\begin{picture}(\l@youthdii,\l@youthdii)
1941        \put(\l@youthdiii,-\l@youthdii){\l@ypcmd{intextsep}}
1942        \end{picture}}
```

Top `textfloatsep`.

```
1943      \put(\l@youtxcii,\l@youtycv){\vector(0,-1){\l@youtvpi}}
1944      \put(\l@youtxcii,\l@youtycv){\begin{picture}(\l@youthdii,\l@youthdii)
1945        \put(\l@youthdiii,-\l@youthdii){\l@ypcmd{textfloatsep}}
1946        \end{picture}}
```

Top `floatsep`.

```
      \put(\l@youtxcii,\l@youtycvi){\vector(0,-1){\l@youtvpii}}
      \put(\l@youtxcii,\l@youtycvi){\begin{picture}(\l@youthdii,\l@youthdii)
        \put(\l@youthdiii,-\l@youthdii){\l@ypcmd{floatsep}}
        \end{picture}}
```

Top rule.

```
      \put(\l@youthdo,\l@youtycv){\begin{picture}(\l@youthdii,\l@youthdii)
        \put(-\l@youthdiii,\l@youthdii){\vector(0,-1){\l@youthdii}}
        \put(-\l@youthdii,\l@youthdii){\makebox(0,0)[tr]{\l@ypcmd{topfigrule}}}
        \end{picture}}
```

And finally the bottom rule.

```
      \put(\l@youthdo,\l@youtyci){\begin{picture}(\l@youthdii,\l@youthdii)
        \put(-\l@youthdiii,-\l@youthdii){\vector(0,1){\l@youthdii}}
        \put(-\l@youthdii,-\l@youthdii){\makebox(0,0)[br]{\l@ypcmd{botfigrule}}}
        \end{picture}}
    \fi
    \end{picture}
  \end{center}
  \setlength{\unitlength}{1pt}
  \testprintparameters
  \ifl@ytempif
```

Print the table of values.

```
    \begin{center}
    \begin{footnotesize}
      Lengths are to the nearest pt. \\
    \begin{ttfamily}
    \begin{tabular}{l@{\hspace{20pt}}l}
    \l@ycmd{floatsep}     = \number\l@youtvpii pt    &
    \l@ycmd{textfloatsep} = \number\l@youtvpi pt \\
    \l@ycmd{intextsep}    = \number\l@youtvpiii pt  &
    \textrm{topfigrule thickness} = \the\l@youtlinethick \\
    \textrm{botfigrule thickness} = \the\l@youtlinethickii &  \\
    \end{tabular}
    \end{ttfamily}\end{footnotesize}
    \end{center}
  \fi
```

End of the definition of `\drawfloat`.

```
}
```

`\floatdiagram` `\floatdesign` Shorthands.

```
\newcommand{\floatdiagram}{\drawparameterstrue\drawfloat}
\newcommand{\floatdesign}{\drawparametersfalse\drawfloat}
```

`\floatvalues` This macro produces a table of the current float layout actual values.

```
\newcommand{\floatvalues}{%
```

```
\ifprintheadings
  Actual float layout values.\\[\baselineskip]
\fi
\begingroup\l@yvalsize
\begin{tabular}{l@{\hspace{20pt}}l}
\l@ycmd{floatsep}             = \l@yval{\floatsep}       &
\l@ycmd{textfloatsep}         = \l@yval{\textfloatsep}   \\
\l@ycmd{intextsep}            = \l@yval{\intextsep}      &  \\
topfig rule thickness        = ??                    &
botfig rule thickness        = ??                    \\
\l@ycmd{topnumber}            = \the\c@topnumber & % \l@yval{\c@topnumber}    &
\l@ycmd{topfraction}          = \topfraction             \\
\l@ycmd{bottomnumber}         = \the\c@bottomnumber & % \l@yval{\c@bottomnumber} &
\l@ycmd{bottomfraction}       = \bottomfraction          \\
\l@ycmd{totalnumber}          = \the\c@totalnumber & % \l@yval{\c@totalnumber}  &
\l@ycmd{textfraction}         = \textfraction            \\
\l@ycmd{dblfloatsep}          = \l@yval{\dblfloatsep}    &
\l@ycmd{dbltextfloatsep}      = \l@yval{\dbltextfloatsep} \\
\l@ycmd{dbltopnumber}         = \the\c@dbltopnumber & % \l@yval{\c@dbltopnumber} &
\l@ycmd{dbltopfraction}       = \dbltopfraction          \\
\l@ycmd{dblfloatpagefraction} = \dblfloatpagefraction    &
\l@ycmd{floatpagefraction}    = \floatpagefraction       \\
1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
\end{tabular}
\endgroup
}
```

12.0.2 Floats on a page

The code in this section illustrates the parameters controlling how one or more floats may be apportioned on a page.

Start off with the `\try...` commands for setting trial parameter values.

`\trytotalnumber` Sets the trial value for `totalnumber` and stores the result in `\l@youtvpvi`.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    FLOAT PAGE LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\trytotalnumber}[1]{\l@youtvpvi = #1}
```

`\trytopnumber` Sets the trial value for `topnumber` and stores the result in `\l@youtvpv`.

```
\newcommand{\trytopnumber}[1]{\l@youtvpv = #1}
```

`\trybottomnumber` Sets the trial value for `bottomnumber` and stores the result in `\l@youtvpi`.

```
\newcommand{\trybottomnumber}[1]{\l@youtvpi = #1}
```

`\trytopfraction` Sets the trial value for `topfraction` and stores the results in `\l@youtvpiv` and `\l@youthdiv`.

```
\newcommand{\trytopfraction}[1]{\setlength{\l@ylen}{10in}
          \l@ylen = #1\l@ylen
          \l@youtvpiv=\l@ylen
          \divide\l@youtvpiv by \l@yonepoint
          \setlength{\l@ylen}{1000sp}
          \l@ylen=#1\l@ylen
          \l@youthdiv=\l@ylen}
```

`\trytextfraction` Sets the trial value for `textfraction` and stores the results in `\l@youtvpiii` and `\l@youthdv`.

```
\newcommand{\trytextfraction}[1]{\setlength{\l@ylen}{10in}
          \l@ylen = #1\l@ylen
          \l@youtvpiii=\l@ylen
          \divide\l@youtvpiii by \l@yonepoint
          \setlength{\l@ylen}{1000sp}
          \l@ylen=#1\l@ylen
          \l@youthdv=\l@ylen}
```

`\trybottomfraction` Sets the trial value for `bottomfraction` and stores the results in `\l@youtvpii` and `\l@youthdvi`.

```
\newcommand{\trybottomfraction}[1]{\setlength{\l@ylen}{10in}
          \l@ylen = #1\l@ylen
          \l@youtvpii=\l@ylen
          \divide\l@youtvpii by \l@yonepoint
          \setlength{\l@ylen}{1000sp}
          \l@ylen=#1\l@ylen
          \l@youthdvi=\l@ylen}

```

`\currentfloatpage` Sets the floatpage parameter trial values to those in the current document, or makes a guesstimate when these are hard-coded.

```
\newcommand{\currentfloatpage}{%
  \trytotalnumber{\value{totalnumber}}   % typically 3
  \trytopnumber{\value{topnumber}}       % typically 2
  \trytopfraction{0.7}                   % typically 0.7
  \trytextfraction{0.2}                  % typically 0.2
  \trybottomfraction{0.3}                % typically 0.3
  \trybottomnumber{\value{bottomnumber}} % typically 1
}

```

`\drawfloatpage` The command to draw a picture of the float page layout and parameters.

```
\newcommand{\drawfloatpage}{%
  \ifdrawparameters
```

Calculate values for parameter drawing.

```
    \l@youtvpvi=\thr@@          % total number
```

```
    \l@youtvpv=\tw@             % topnumber
    \l@youthdiv=300\relax       % 1000 times topfraction
    \setlength{\l@ylen}{10in}
    \l@ylen=0.3\l@ylen
    \l@yltoc{\l@ylen}{\l@youtvpiv}  % topfraction
    \l@youthdv=200\relax        % 1000 times textfraction
    \setlength{\l@ylen}{10in}
    \l@ylen=0.2\l@ylen
    \l@yltoc{\l@ylen}{\l@youtvpiii}  % textfraction
    \l@youthdvi=300\relax       % 1000 times botfraction
    \setlength{\l@ylen}{10in}
    \l@ylen=0.3\l@ylen
    \l@yltoc{\l@ylen}{\l@youtvpii}  % bottomfraction
    \l@youtvpi=\@ne             % bottomnumber
  \fi
```

Continue with the general picture coordinates and lengths.

```
  \l@youtvdo=\l@yteninch\relax                    % textheight
  \l@youthdo=\l@yeighthalfinch\relax              % textwidth
  \l@youthdi=\l@youthdo                  % width of text box
    \multiply\l@youthdi by 8\relax
    \divide\l@youthdi by 10\relax
  \l@youtyci=\l@youtvdo                  % Y coord of base of textfraction
    \advance\l@youtyci by -\l@youtvpiii
    \divide\l@youtyci by \tw@
  \l@youtycii=\l@youtvpii                % Y coord of top of bottomfraction
  \l@youtyciii=\l@youtvdo                % Y coord of base of topfraction
    \advance\l@youtyciii by -\l@youtvpiv
  \l@youtyciv=\l@youtyci                 % Y coord of top of textfraction
    \advance\l@youtyciv by \l@youtvpiii
  \l@youtycv=\l@youtyci                  % Y coord of centre of text box
    \advance\l@youtycv by \l@youtyciv
    \divide\l@youtycv by \tw@
  \l@youtxcii=\l@youthdo                 % X coord of centre dims
    \divide\l@youtxcii by \tw@
  \l@youtxci=\l@youtxcii                 % X coord of LH dims
    \divide\l@youtxci by \tw@
  \l@youtxciii=\l@youtxcii               % X coord of RH dims
    \advance\l@youtxciii by \l@youtxci
  \l@youtxciv=\l@youthdo                 % X coord of LH of text box
    \advance\l@youtxciv by -\l@youthdi
    \divide\l@youtxciv by \tw@
  \l@youthdii=\l@youtxciv                % a small dimension
  \l@youthdiii=\l@youthdii               % half a small dimension
    \divide\l@youthdiii by \tw@
```

Draw the picture!

```
  \begin{center}
  \setlength{\unitlength}{\l@youtunitlength}
  \begin{picture}(\l@youthdo,\l@youtvdo)
    \thicklines
```

Draw the page boundaries.

```
    \put(0,0){\framebox(\l@youthdo,\l@youtvdo){}}
```

The bottom fraction.

```
    \put(0,\l@youtycii){\dashbox{10}(\l@youthdo,0){}}
%%    \ifdrawparameters
      \put(0,0){\makebox(\l@youthdo,\l@youtvpii){\l@ypcmd{bottomnumber}}}
      \thinlines
      \put(\l@youtxciii,0){\vector(0,1){\l@youtvpii}}
      \thicklines
%%    \fi
```

The text fraction.

```
    \put(\l@youtxciv,\l@youtyci){\framebox(\l@youthdi,\l@youtvpiii){}}
```

The top fraction.

```
    \put(0,\l@youtyciii){\dashbox{10}(\l@youthdo,0){}}
%%    \ifdrawparameters
      \put(0,\l@youtyciii){\makebox(\l@youthdo,\l@youtvpiv){\l@ypcmd{topnumber}}}
      \thinlines
      \put(\l@youtxci,\l@youtvdo){\vector(0,-1){\l@youtvpiv}}
      \thicklines
%%    \fi
    \thinlines
    \testdrawdimensions
    \ifl@ytempif
```

Draw the dimensions. First the bottom fraction.

```
      \put(\l@youtxciii,0){\begin{picture}(\l@youthdii,\l@youthdii)
        \put(-\l@youthdiii,\l@youthdiii){%
          \makebox(0,0)[br]{\l@ypcmd{bottomfraction}}}
        \end{picture}}
```

The text fraction.

```
      \put(\l@youtxcii,\l@youtyci){\vector(0,1){\l@youtvpiii}}
      \put(\l@youtxcii,\l@youtyci){\vector(0,-1){0}}
      \put(\l@youtxcii,\l@youtycv){\begin{picture}(\l@youthdii,\l@youthdii)
        \put(\l@youthdiii,0){%
          \makebox(0,0)[l]{\l@ypcmd{textfraction}}}
        \end{picture}}
```

Finally the top fraction.

```
      \put(\l@youtxci,\l@youtvdo){\begin{picture}(\l@youthdii,\l@youthdii)
        \put(\l@youthdiii,-\l@youthdiii){%
          \makebox(0,0)[tl]{\l@ypcmd{topfraction}}}
        \end{picture}}
    \fi
    \end{picture}
  \end{center}
  \setlength{\unitlength}{1pt}
  \testprintparameters
  \ifl@ytempif
```

Print the parameter value table.

```
    \begin{center}
    \begin{footnotesize}\begin{ttfamily}
    \begin{tabular}{l@{\hspace{20pt}}l}
    \l@ycmd{topnumber}      = \number\l@youtvpv &
    \l@ycmd{topfraction}    = 0.\number\l@youthdiv \\
    \l@ycmd{bottomnumber}   = \number\l@youtvpi &
    \l@ycmd{bottomfraction} = 0.\number\l@youthdvi \\
    \l@ycmd{totalnumber}    = \number\l@youtvpvi &
    \l@ycmd{textfraction}   = 0.\number\l@youthdv \\
    \end{tabular}
    \end{ttfamily}\end{footnotesize}
    \end{center}
  \fi
```

End of the definition of `\drawfloatpage`.

```
}
```

`\floatpagediagram` `\floatpagedesign` Shorthands.

```
\newcommand{\floatpagediagram}{\drawparameterstrue\drawfloatpage}
\newcommand{\floatpagedesign}{\drawparametersfalse\drawfloatpage}
```

`\floatpagevalues` The same as the `\floatvalues` command.

```
\newcommand{\floatpagevalues}{\floatvalues}
```

13 Drawing the layout of a Table of Contents entry

We provide means of illustrating the layout of a sectional title in a Table of Contents.

As usual, start off with the `\try...` commands for setting trial values of the parameters.

`\trytocindent` Sets the trial value for `tocindent` and stores the result in `\l@youthpi`.

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    TOC LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\trytocindent}[1]{\l@yltoc{#1}{\l@youthpi}}
```

`\trytocnumwidth` Sets the trial value for `tocnumwidth` and stores the result in `\l@youthpii`.

```
\newcommand{\trytocnumwidth}[1]{\l@yltoc{#1}{\l@youthpii}}
```

`\trytoclinewidth` Sets the trial value for `toclinewidth` and stores the result in `\l@youthdo`.

```
\newcommand{\trytoclinewidth}[1]{\l@yltoc{#1}{\l@youthdo}}
```

`\trytocrmarg` Sets the trial value for `tocrmarg` and stores the result in `\l@youthpiii`.

```
\newcommand{\trytocrmarg}[1]{\l@yltoc{#1}{\l@youthpiii}}
```

`\trytocpnumwidth` Sets the trial value for `tocpnumwidth` and stores the result in `\l@youthpiv`.

```
\newcommand{\trytocpnumwidth}[1]{\l@yltoc{#1}{\l@youthpiv}}
```

`\l@ydotsep` Stores the actual value for the ToC dotsep.

```
\newcommand{\l@ydotsep}{\@dotsep}
```

`\trytocdotsep` Sets the trial value for `tocdotsep` and stores the result in `\l@youthpv`.

```
\newcommand{\trytocdotsep}[1]{\renewcommand{\l@ydotsep}{#1}
            \setlength{\l@ylen}{1em}
            \l@ylen = #1\l@ylen
            \divide\l@ylen by 18\relax    % 18mu = 1em
            \addtolength{\l@ylen}{0.4pt}  % small addition for the dot width
            \l@yltoc{\l@ylen}{\l@youthpv}}

```

`\currenttoc` This routine sets the trial ToC parameters to those specified for the current document. For those values that are hard-coded it guesstimates typical values (actually I use the values for `\subsection` entries in the article class).

```
\newcommand{\currenttoc}{%
  \trytocindent{1.5em}                % guesstimate
  \trytocnumwidth{2.3em}              % guesstimate
  \trytoclinewidth{\textwidth}
  \trytocrmarg{\@tocrmarg}
  \trytocpnumwidth{\@pnumwidth}
  \trytocdotsep{\@dotsep}
}

```

`\drawtoc` The command to draw the layout of a ToC entry.

```
\newcommand{\drawtoc}{%
  \ifdrawparameters
```

Calculate drawing lengths and coordinates for picturing the parameters.

```
    \l@yltoc{100pt}{\l@youthpi}           % indent
    \l@yltoc{50pt}{\l@youthpii}           % numwidth
    \l@yltoc{100pt}{\l@youthpiii}         % tocrmarg
    \l@yltoc{60pt}{\l@youthpiv}           % pnumwidth
    \l@yltoc{20pt}{\l@youthpv}            % dotsep
    \l@yltoc{6.5in}{\l@youthdo}           % linewidth
  \fi
```

Continue with the general lengths and coordinate values.

```
\l@yltoc{20pt}{\l@youtvdi}          % baselineskip
\l@youtvdii=\l@youtvdi                    % twice baselineskip
  \multiply\l@youtvdii by \tw@
\l@youtvdiii=\l@youtvdi                    % three times baselineskip
  \multiply\l@youtvdiii by \thr@@
\l@youtvdiv=\l@youtvdi                    % four times baselineskip
  \multiply\l@youtvdiv by 4\relax
\l@youtxci=\l@youthpi                    % X coord of start of numwidth
\l@youtxcii=\l@youtxci                    % X coord of start of text
  \advance\l@youtxcii by \l@youthpii
\l@youtxciii=\l@youthdo                    % X coord of start of pnumwidth
  \advance\l@youtxciii by -\l@youthpiv
\l@youtxciv=\l@youthdo                    % X coord of start of tocrmarg
  \advance\l@youtxciv by -\l@youthpiii
\l@youtxcv=\l@youtxciv                    % X coord of penultimate dot
  \advance\l@youtxcv by -\l@youthpv
\l@youtyci=\z@                    % Y coord of base of dotsep text
\l@youtycii=\l@youtyci                    % dotsep vector
  \advance\l@youtycii by \l@youtvdii
\l@youtyciii=\l@youtycii                    % Y coord of base of bottom text
  \advance\l@youtyciii by \l@youtvdii
\l@youtyciv=\l@youtyciii                    % Y coord of base of middle text
  \advance\l@youtyciv by \l@youtvdi
\l@youtycv=\l@youtyciv                    % Y coord of base of top text
  \advance\l@youtycv by \l@youtvdi
\l@youtycvi=\l@youtycv                    % Y coord of top vectors
  \advance\l@youtycvi by \l@youtvdi
  \advance\l@youtycvi by \l@youtvdi
\l@youtvdo=\l@youtycvi                    % picture height
  \advance\l@youtvdo by \l@youtvdii
\l@youthdii=\l@youtxciv                    % width of title text
  \advance\l@youthdii by -\l@youtxcii
\l@youthdiii=\l@youtvdi                    % a small amount
\l@youthdiv=\l@youthdiii                    % half a small amount
  \divide\l@youthdiv by \tw@
```

Draw the picture!

```
\begin{center}
\setlength{\unitlength}{\l@youtunitlength}
\begin{picture}(\l@youthdo,\l@youtvdo)
  \thinlines
  \put(0,0){\framebox(\l@youthdo,\l@youtvdo){}}
```

The top text line.

```
  \put(\l@youtxci,\l@youtycv){\l@ylabelfont \textbf{3.5}}
  \put(\l@youtxcii,\l@youtycv){\l@ylabelfont Heading \ldots}
  \put(\l@youtxciv,\l@youtycv){\makebox(0,0)[br]{\l@ylabelfont \ldots title}}
```

The middle text line.

```
    \put(\l@youtxcii,\l@youtyciv){\l@ylabelfont continue \ldots}
    \put(\l@youtxciv,\l@youtyciv){\makebox(0,0)[br]{\l@ylabelfont \ldots title}}
```

The bottom text line.

```
    \put(\l@youtxcii,\l@youtyciii){\l@ylabelfont title end}     % end of title heading
    \put(\l@youthdo,\l@youtyciii){\makebox(0,0)[br]{\l@ylabelfont 487}} % page number
```

Calculate the number of dots required for the dotted leader, then draw the leader. The length of the 'title end' text is a true length so we have to divide it by the drawing scale factor to convert it to the picture length.

```
%    \settowidth{\l@ylen}{title end\quad}
    \settowidth{\l@ylen}{\l@ylabelfont title end\space}
    \l@yltoc{\l@ylen}{\l@youthdv}              % width of 'title end' text
      \l@youthpvi=\l@youtunitlength
      \multiply\l@youthdv by \l@yonepoint\relax
      \divide\l@youthdv by \l@youthpvi\relax
    \l@youthdvi=\l@youtxciv                    % space for dots
      \advance\l@youthdvi by -\l@youtxcii
      \advance\l@youthdvi by -\l@youthdv
    \l@youthdvii=\l@youthdvi                   % number of dots
      \divide\l@youthdvii by \l@youthpv
```

Use `\multiput` for dot drawing if we are drawing the parameters and the values calculated above. Otherwise multiply the dotsep by 4 to give a more realistic rendition; also make sure that we don't print just one dot.

```
    \ifdrawparameters
      \multiput(\l@youtxciv,\l@youtyciii)(-\l@youthpv,0){\l@youthdvii}%
          {\makebox(0,0)[r]{.}}                  % draw the dots
    \else
      \multiply\l@youthpv by 4\relax
      \l@youthdvii=\l@youthdvi
        \divide\l@youthdvii by \l@youthpv
        \advance\l@youthdvii by \@ne
      \ifnum\l@youthdvii >\@ne
        \multiput(\l@youtxciv,\l@youtyciii)(-\l@youthpv,0){\l@youthdvii}%
            {\makebox(0,0)[r]{.}}                % draw the dots
      \fi
    \fi
%%    \ifdrawparameters
    \testdrawdimensions
    \ifl@ytempif
```

Draw the parameters if requested.

The top vectors (which we put into their own picture).

```
      \put(0,\l@youtycvi){\begin{picture}(\l@youthdo,\l@yoneinch)
```

The indent.

```
        \put(0,0){\vector(1,0){\l@youthpi}}
        \put(\l@youtxci,0){\line(0,-1){\l@youthdiii}}
        \put(0,0){\begin{picture}(\l@youthdiii,\l@youthdiii)
          \put(\l@youthdiv,\l@youthdiv){\l@yparamfont\textit{indent}}
          \end{picture}}
```

The numwidth.

```
        \put(\l@youtxci,0){\vector(1,0){\l@youthpii}}
        \put(\l@youtxcii,0){\line(0,-1){\l@youthdiii}}
        \put(\l@youtxci,0){\begin{picture}(\l@youthdiii,\l@youthdiii)
          \put(\l@youthdiv,\l@youthdiv){\l@yparamfont\textit{numwidth}}
          \end{picture}}
```

Lastly, the pnumwidth.

```
        \put(\l@youthdo,0){\vector(-1,0){\l@youthpiv}}
        \put(\l@youtxciii,0){\line(0,-1){\l@youthdiii}}
        \put(\l@youthdo,0){\begin{picture}(\l@youthdiii,\l@youthdiii)
          \put(-\l@youthdiv,\l@youthdiv){\makebox(0,0)[br]%
            {\l@ypcmd{@pnumwidth}}}
          \end{picture}}
        \end{picture}}
```

Now do the linewidth.

```
      \thicklines
      \put(0,\l@youtvdo){\vector(1,0){\l@youthdo}}
      \thinlines
      \put(0,\l@youtvdo){\begin{picture}(\l@youthdiii,\l@youthdiii)
        \put(\l@youtxcii,-\l@youthdiv){\makebox(0,0)[tl]%
          { \quad  \l@ypcmd{linewidth}}}
        \end{picture}}
```

The bottom vectors (which we put into their own picture).

```
      \put(0,\l@youtycii){\begin{picture}(\l@youthdo,\l@yoneinch)
```

The tocrmarg.

```
        \put(\l@youthdo,0){\vector(-1,0){\l@youthpiii}}
        \put(\l@youtxciv,0){\line(0,1){\l@youthdiii}}
        \put(\l@youthdo,0){\begin{picture}(\l@youthdiii,\l@youthdiii)
          \put(-\l@youthdiv,-\l@youthdiv){\makebox(0,0)[tr]%
            {\l@ypcmd{@tocrmarg}}}
          \end{picture}}
```

Finish with the dotsep.

```
        \put(\l@youtxciv,0){\vector(-1,0){\l@youthpv}}
        \put(\l@youtxciv,0){\vector(1,0){0}}
        \put(\l@youtxcv,0){\line(0,1){\l@youthdiii}}
        \put(\l@youtxciv,0){\begin{picture}(\l@youthdiii,\l@youthdiii)
          \put(0,-\l@youthdiv){\makebox(0,0)[tr]%
            {\l@ypcmd{@dotsep}}}
          \end{picture}}
        \end{picture}}
    \fi
    \end{picture}
  \end{center}
  \setlength{\unitlength}{1pt}
%%  \ifdrawparameters\else
  \testprintparameters
  \ifl@ytempif
```

Print the table of parameter values.

```
    \begin{center}
    \begin{footnotesize}
      Lengths are to the nearest pt. \\
    \begin{ttfamily}
    \begin{tabular}{l@{\hspace{20pt}}l}
    \textit{indent}     = \number\l@youthpi pt &
    \textit{numwidth}   = \number\l@youthpii pt \\
    \l@ycmd{@tocrmarg}  = \number\l@youthpiii pt &
    \l@ycmd{@pnumwidth} = \number\l@youthpiv pt \\
    \l@ycmd{@dotsep}    = \l@ydotsep &   \\
    \end{tabular}
    \end{ttfamily}\end{footnotesize}
    \end{center}
  \fi
```

The end of the definition of `\drawtoc`.

```
}
```

`\tocdiagram` `\tocdesign` Shorthands.

```
\newcommand{\tocdiagram}{\drawparameterstrue\drawtoc}
\newcommand{\tocdesign}{\drawparametersfalse\drawtoc}
```

`\tocvalues` This macro produces a table of the current ToC layout actual values.

```
\newcommand{\tocvalues}{%
  \ifprintheadings
    Actual ToC layout values.\\[\baselineskip]
  \fi
  \begingroup\l@yvalsize
  \begin{tabular}{l@{\hspace{20pt}}l}
  \l@ycmd{@tocrmarg}  = \@tocrmarg  &
  \l@ycmd{@pnumwidth} = \@pnumwidth \\
  \l@ycmd{@dotsep}    = \@dotsep    &
  \textit{indent}     = ??    \\
  \textit{numwidth}   = ??    &  \\
  1em = \l@yval{\l@yonem}  & 1ex = \l@yval{\l@yonex} \\
  \end{tabular}
  \endgroup
}
```

14 Drawing a spread

We provide a facility for drawing a simple double page spread.

`\drawaspread` This command takes eight (8) parameters. These are:

1. The ratio of the height of the foot to the width of the spine. If this is zero then the foot height is calculated from the other vertical spacings.
2. The width of a page (as a length).
3. The ratio of the height of the page to its width.
4. The ratio of the height of the text to the width of the text.
5. The ratio of the width of the spine to the width of the page.
6. The ratio of the height of the top to the width of the spine.
7. The ratio of the width of the fore edge to the width of the spine.
8. The ratio of the width of the gutter to the spine (for a two column layout). If this is zero, then a single column layout is drawn.

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    SPREAD PAGE LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\newcommand{\drawaspread}[8][0]{%
  \begingroup
  \setlength{\unitlength}{1pt}
```

Get the pagewidth as all values depend on this. Store it in `\l@youthdo`. Also use `\l@youtunitlength` to hold it temporarily.

```
  \setlength{\l@youtunitlength}{#2}
  \l@yltoc{\l@youtunitlength}{\l@youthdo}  % page width
  \l@youthdiv=\l@youthdo                   % total width of double spread
    \advance\l@youthdiv by \l@youthdo
```

The height of a page is kept in `\l@youtvdo`.

```
  \setlength{\l@ylen}{#3\l@youtunitlength}
  \l@yltoc{\l@ylen}{\l@youtvdo}           % page height
```

The width of the spine is kept in `\l@youthdiii`. We also use `\l@youtunitlength` as a temporary store for the spine width.

```
  \setlength{\l@ylen}{#5\l@youtunitlength}
  \l@yltoc{\l@ylen}{\l@youthdiii}           % spine width
  \setlength{\l@youtunitlength}{\l@ylen}
```

The width of the fore edge is kept in `\l@youthdi`.

```
  \setlength{\l@ylen}{#7\l@youtunitlength}
  \l@yltoc{\l@ylen}{\l@youthdi}             % fore edge width
```

Calculate the text width and store it in `\l@youthdii`.

```
  \l@youthdii=\l@youthdo                  % text width
    \advance\l@youthdii by -\l@youthdi
    \advance\l@youthdii by -\l@youthdiii
```

The X coordinate of the left-hand side of the text box on the right-hand page is stored in \l@youtxci.

```
\l@youtxci=\l@youthdo
  \advance\l@youtxci by \l@youthdiii
```

The height of the top margin is stored in \l@youtvdiii

```
\setlength{\l@ylen}{#6\l@youtunitlength}
\l@yltoc{\l@ylen}{\l@youtvdiii}         % top margin
```

The height of the bottom margin is stored in \l@youtvdi.

```
\setlength{\l@ylen}{#1\l@youtunitlength}
\l@yltoc{\l@ylen}{\l@youtvdi}           % bottom margin
```

The text height is stored in \l@youtvdii.

```
\setlength{\l@ylen}{\l@youthdii pt}
\setlength{\l@ylen}{#4\l@ylen}
\l@yltoc{\l@ylen}{\l@youtvdii}          % text height
```

The height of the bottom margin was stored in \l@youtvdi. If the value is zero then we calculate the height from the page, text and top margin height values already obtained.

```
\ifnum\l@youtvdi=\z@
  \l@youtvdi=\l@youtvdo
  \advance\l@youtvdi by -\l@youtvdiii
  \advance\l@youtvdi by -\l@youtvdii
\fi
```

We store the gutter width in \l@youthdv.

```
\setlength{\l@ylen}{#8\l@youtunitlength}
\l@yltoc{\l@ylen}{\l@youthdv}           % gutter width
```

Now we can draw a single column spread.

```
\ifnum\l@youthdv=\z@
  \begin{picture}(\l@youthdiv,\l@youtvdo)
    \thicklines
    \put(0,0){\framebox(\l@youthdiv,\l@youtvdo){}} % spread pages
    \put(\l@youthdo,0){\line(0,1){\l@youtvdo}}     % the spine
    \thinlines
    \put(\l@youthdi,\l@youtvdi){\framebox(\l@youthdii,\l@youtvdii){}} % LH text
    \put(\l@youtxci,\l@youtvdi){\framebox(\l@youthdii,\l@youtvdii){}} % RH text
    \end{picture}
\else
```

We have two columns. Calculate some additional lengths and coordinates.

Store the column width in \l@youthdvi.

```
  \l@youthdvi=\l@youthdii      % column width
    \advance\l@youthdvi by -\l@youthdv
    \divide\l@youthdvi by \tw@
```

We also need the positions of the x coordinate of the LH inner column (store in \l@youtxcii) and of the RH outer column (store in \l@youtxciii).

```
  \l@youtxcii=\l@youthdi          % X coord of LH inner column
```

```
      \advance\l@youtxcii by \l@youthdvi
      \advance\l@youtxcii by \l@youthdv
    \l@youtxciii=\l@youtxci          % X coord of RH outer column
      \advance\l@youtxciii by \l@youthdvi
      \advance\l@youtxciii by \l@youthdv
```

Now draw the two column spread.

```
    \begin{picture}(\l@youthdiv,\l@youtvdo)
      \thicklines
      \put(0,0){\framebox(\l@youthdiv,\l@youtvdo){}} % spread pages
      \put(\l@youthdo,0){\line(0,1){\l@youtvdo}}     % the spine
      \thinlines
      \put(\l@youthdi,\l@youtvdi){\framebox(\l@youthdvi,\l@youtvdii){}} % LH LH col
      \put(\l@youtxcii,\l@youtvdi){\framebox(\l@youthdvi,\l@youtvdii){}} % LH RH col
      \put(\l@youtxci,\l@youtvdi){\framebox(\l@youthdvi,\l@youtvdii){}} % RH LH col
      \put(\l@youtxciii,\l@youtvdi){\framebox(\l@youthdvi,\l@youtvdii){}} % RH RH col
      \end{picture}
  \fi
```

End of the definition of `\drawaspread`.

```
\endgroup
}

```

15 Drawing a font box

We provide a facility for drawing a box around some text. This can also be used in a picture environment as `\put(x,y){\frametext{text}}`. The `\unitlength` *must* be 1pt!

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%    FONT LAYOUT
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

```

`\drawfontframe` Draws a tightly fitting box with the text reference point marked and a dotted line along the baseline.

```
\newcommand{\drawfontframe}[1]{%
```

Save the (text) argument.

```
  \savebox{\layoutsbox}{#1}%
```

Save the width in `\l@youthdo`, height in `\l@youtvdii` and depth in `\l@youtvdi`.

```
  \l@yltoc{\wd\layoutsbox}{\l@youthdo}%
  \l@yltoc{\ht\layoutsbox}{\l@youtvdii}%
  \l@yltoc{\dp\layoutsbox}{\l@youtvdi}%
```

Save the total height in `\l@youtvdo`.

```
  \l@youtvdo=\l@youtvdi
  \advance\l@youtvdo by \l@youtvdii
```

Save half the width in \l@youtxci.

```
\l@youtxci=\l@youthdo
\divide\l@youtxci by \tw@
```

Draw a picture, with origin at the box's baseline. Use \qbezier to draw a dotted line with a dot at intervals of 2pt.

```
\begin{picture}(\l@youthdo,\l@youtvdii)
  \thinlines
  \put(0,0){\usebox{\layoutsbox}}
  \put(0,0){\circle*{2}}
  \qbezier[\l@youtxci](0,0)(\l@youtxci,0)(\l@youthdo,0)
  \put(0,-\l@youtvdi){\framebox(\l@youthdo,\l@youtvdo){}}
\end{picture}%
}
```

\drawfontframelabel Draws a tightly fitting box with the text reference point marked and a dotted line along the baseline and marks the width, height and depth.

```
\newcommand{\drawfontframelabel}[1]{%
```

Save the (text) argument.

```
\savebox{\layoutsbox}{#1}%
```

Save the width in \l@youthdo, height in \l@youtvdii and depth in \l@youtvdi.

```
\l@yltoc{\wd\layoutsbox}{\l@youthdo}%
\l@yltoc{\ht\layoutsbox}{\l@youtvdii}%
\l@yltoc{\dp\layoutsbox}{\l@youtvdi}%
```

Save the total height in \l@youtvdo.

```
\l@youtvdo=\l@youtvdi
\advance\l@youtvdo by \l@youtvdii
```

Save half the width in \l@youtxci.

```
\l@youtxci=\l@youthdo
\divide\l@youtxci by \tw@
```

Set \l@youtdvi to be space between dimensions and labels.

```
\l@youthdvi=5\relax
```

Add 2\l@youthdvi plus 7pt (i.e. 17pt) to the box height to allow for width label, and add 2\l@youthdvi plus 25pt (i.e 35pt) to the box width to allow for height label.

```
\l@youtycv=\l@youtvdii
\advance\l@youtycv by 17\relax
\l@youtxcii=\l@youthdo
\advance\l@youtxcii by 35\relax
```

Draw a picture, with origin at the box's baseline. Use \qbezier to draw a dotted line with a dot at intervals of 2pt.

```
\begin{picture}(\l@youtxcii,\l@youtycv)
  \thinlines
  \put(0,0){\usebox{\layoutsbox}}
```

```
    \put(0,0){\circle*{2}}
    \qbezier[\l@youtxci](0,0)(\l@youtxci,0)(\l@youthdo,0)
    \put(0,-\l@youtvdi){\framebox(\l@youthdo,\l@youtvdo){}}
```

Add the dimension lines and labels (in tiny print). Mark the reference point on the left of the box.

```
    \begin{tiny}
    \put(-\l@youthdvi,0){\makebox(0,0)[r]{reference}}
```

Draw the width dimension above the box and the label above the dimension.

```
    \l@youtycv=\l@youtvdii
    \advance\l@youtycv by \l@youthdvi
    \ifnum\l@youthdo > 6\relax
      \l@yhrda{0}{\l@youtycv}{\l@youthdo}
    \else
      \l@yhrdia{0}{\l@youtycv}{\l@youthdo}
    \fi
    \advance\l@youtycv by \l@youthdvi
    \put(\l@youtxci,\l@youtycv){\makebox(0,0)[b]{width}}
```

Draw the height dimension and label on the right of the box. `\l@youtxcii` is the x coordinate of the dimension line(s) and `\l@youtxciii` is the x coordinate of the right side label(s).

```
    \l@youtxcii=\l@youthdo
    \advance\l@youtxcii by \l@youthdvi
    \l@youtxciii=\l@youtxcii
    \advance\l@youtxciii by \l@youthdvi
    \ifnum\l@youtvdii > \z@
```

The height is positive, so draw it, putting the label at the center of the dimension line.

```
      \ifnum\l@youtvdii > 6\relax
        \l@yvuda{\l@youtxcii}{0}{\l@youtvdii}
      \else
        \l@yvudia{\l@youtxcii}{0}{\l@youtvdii}
      \fi
      \divide\l@youtvdii by \tw@
      \put(\l@youtxciii,\l@youtvdii){\makebox(0,0)[l]{height}}
    \fi
    \ifnum\l@youtvdi > \z@
```

The depth is positive, so draw it putting the label at the center of the dimension line.

```
      \ifnum\l@youtvdi > 6\relax
        \l@yvuda{\l@youtxcii}{-\l@youtvdi}{\l@youtvdi}
      \else
        \l@yvudia{\l@youtxcii}{-\l@youtvdi}{\l@youtvdi}
      \fi
      \divide\l@youtvdi by \tw@
      \put(\l@youtxciii,-\l@youtvdi){\makebox(0,0)[l]{depth}}
    \fi
```

This finishes the picture. Print the values if asked for.

```
    \end{tiny}
  \end{picture}
  \ifprintparameters
    \begin{center}\begin{footnotesize}\begin{ttfamily}
      \begin{tabular}{lll}
        \textrm{width} = \the\wd\layoutsbox &
        \textrm{height} = \the\ht\layoutsbox &
        \textrm{depth} = \the\dp\layoutsbox \\
      \end{tabular}
    \end{ttfamily}\end{footnotesize}\end{center}
  \fi
```

All done.

```
}
```

The end of this package.

```
⟨/lays⟩
```

References

[GMS94] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The LaTeX Companion*. Addison-Wesley Publishing Company, 1994.

[Wil96] Peter R. Wilson. *LaTeX for standards: The LaTeX package files user manual*. NIST Report NISTIR, June 1996.

Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.