MeasureBox

Version 1.0

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MeasureBox is a package designed for measuring material. Its only dependency is the PDFTOOLBOX toolkit.

It provides four main macros:

- `\mbscalebox`;
- `\measurebox`;
- `\measureh`;
- `\measurew`.

`\mbscalebox` is the simplest. It takes two inputs: a scale factor and material to scale, and then scales the material by the given factor. For example

```
1 \mbscalebox{5}{Hello!}
```

Will produce

`\measurebox` is the main player. It takes two arguments: the first is the material to measure, and the second is a list of `\measureh` and `\measurew` commands to add measurements. `\measurebox` will draw a box around the material with a stroke width governed by `\mbstrokewd` (non-dimension), with a dash pattern of `\mbdashwd` (dimension), and a color determined by the color `mbcolor`. It will then scale this box by a factor of `\mbscale`.

After boxing the material, `\measurebox` sets `\mbwd`, `\mbht`, and `\mbdp` to the width, height, and depth of the box respectively. These can then be used by the measurement commands.

`\measureh` measures vertical dimensions. It accepts a single input, which is a list of key-value pairs. These keys are:

- `b` (default: `-\the\mbdp`): the height at which to begin the measurement;
- `e` (required): the height at which to end the measurement;
- `x` (default: `.5\mbwd`): the x-position to place the line connecting the beginning and end measurement;
- `stroke` (default: .01): the stroke weight of the measurement;
- `label`: the label of the measurement;
- `color` (default: `black`): the color to draw the measurement;
- `dash`: the dash length to stroke the measurement with, if provided;
- `legend` (valueless): add to add this measurement to the legend;
- `noprint` (valueless): add to not print the label on the measurement.

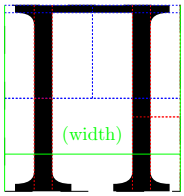
`\measurew` measures horizontal dimensions. It accepts a single input, which is a list of key-value pairs. These keys are the same as `\measureh`, except `x` is swapped with `y`, and the meanings of `b`, `e`, `x` are the dual of their meanings for `\measureh` (i.e. `b` is the *width* at which to begin the measurement).

The font scale at which the labels are printed (before magnification) is determined by `\mblblscale`.

For example

```
\def\mbscale{7}
\def\mbstrokewd{.01}
\def\mblblscale{1pt}
\measurebox{\mbnodp{$\prod$}}{%
    \measureh{b=.5\mbht, e=10pt, stroke=.01, color=blue, dash=.1, label=(top stroke top), noprint, legend}%
    \measureh{b=.5\mbht, e=9.6pt, stroke=.01, color=blue, dash=.1, label=(top stroke bot), noprint, legend}%
    \measurew{b=1.59pt, e=2.56pt, stroke=.01, color=red, dash=.1, label=(left stroke), noprint, legend}%
    \measurew{b=\mbwd-2.574pt, e=\mbwd, stroke=.01, color=red, dash=.1, label=(right stroke left),
    noprint, legend, y=.5\mbht-1pt}%
    \measurew{e=\mbwd, b=\mbwd-1.604pt, stroke=.01, color=red, dash=.1, label=(right stroke right),
    noprint, legend, y=.5\mbht-1pt}%
    \measurew{e=\mbwd, stroke=.01, color=green, y=2pt, label=(width), legend}%
}
```

will produce



Name	Start	End	Difference
(top stroke top)	5.00006pt	10.0pt	4.99994pt
(top stroke bot)	5.00006pt	9.6pt	4.59995pt

Name	Start	End	Difference
(left stroke)	1.59pt	2.56pt	0.97pt
(right stroke left)	6.87047pt	9.44447pt	2.574pt
(right stroke right)	7.84047pt	9.44447pt	1.604pt
(width)	0.0pt	9.44447pt	9.44447pt