



# Key differences of CSS line layout discovered while developing an EPUB renderer for Japanese

Nat McCully | Senior Engineering Manager, Adobe Systems Japan



# Who is this guy?

1998 to 2008

InDesign Japanese

Engineering Lead

2008 to present

Flash Text Engine

Inline input support

Text Layout Framework

Layout engine, IME

Adobe Digital Publishing Suite for Japan

EPUB Japanese layout engine

# Differences between CSS and InDesign:

- 1) Line Height calculation method
- 2) Run placement within the line
- 3) Line Leading calculation method

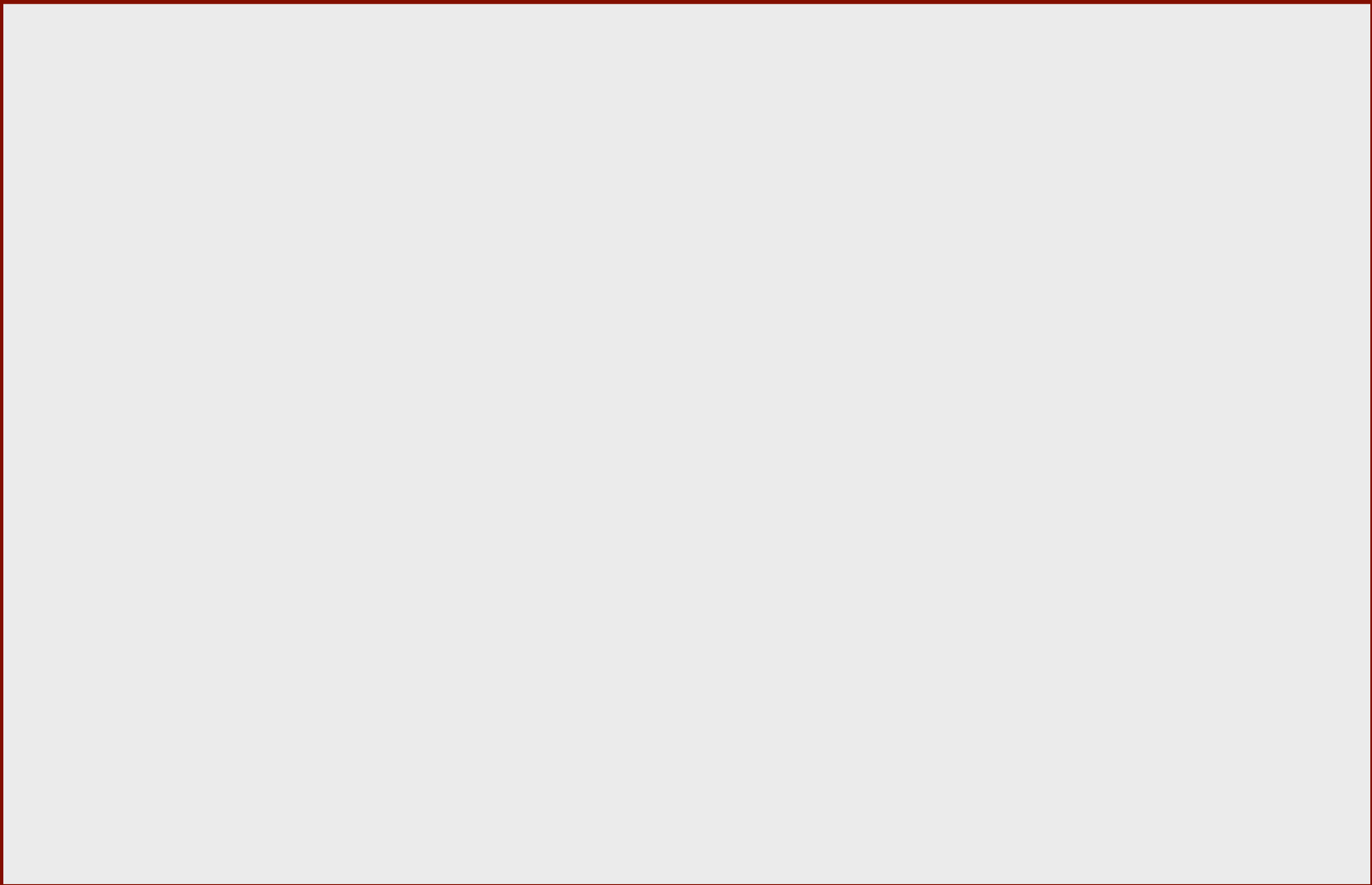
## Core Concepts of CJK line layout:

- 1) Ideographic embox
- 2) Leading direction
- 3) Leading measurement points (baselines)
- 4) Mojikumi spacing

It needs to be easy to control and access these things in CSS.

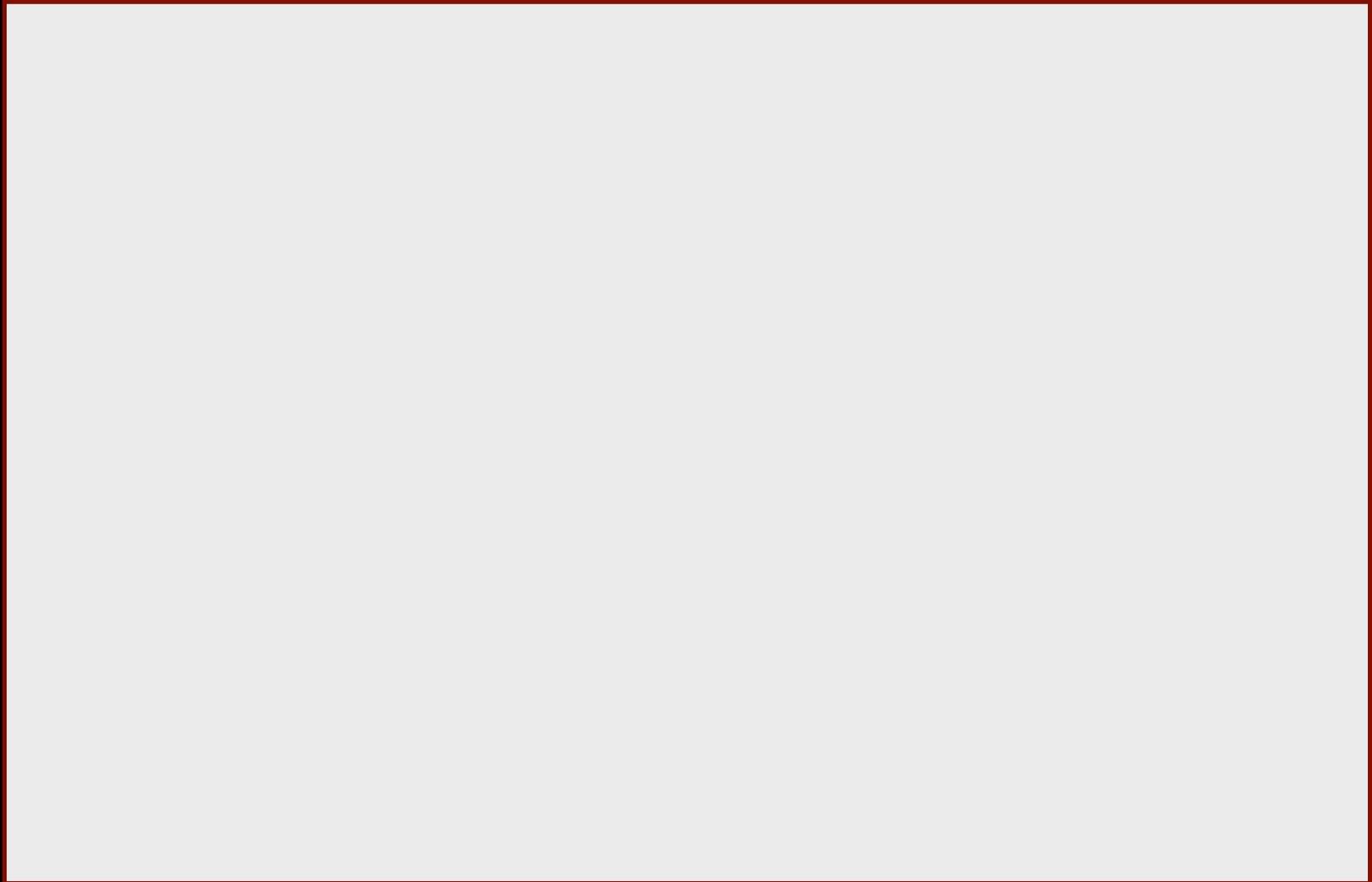
# CSS Layout vs. Japanese line layout conventions

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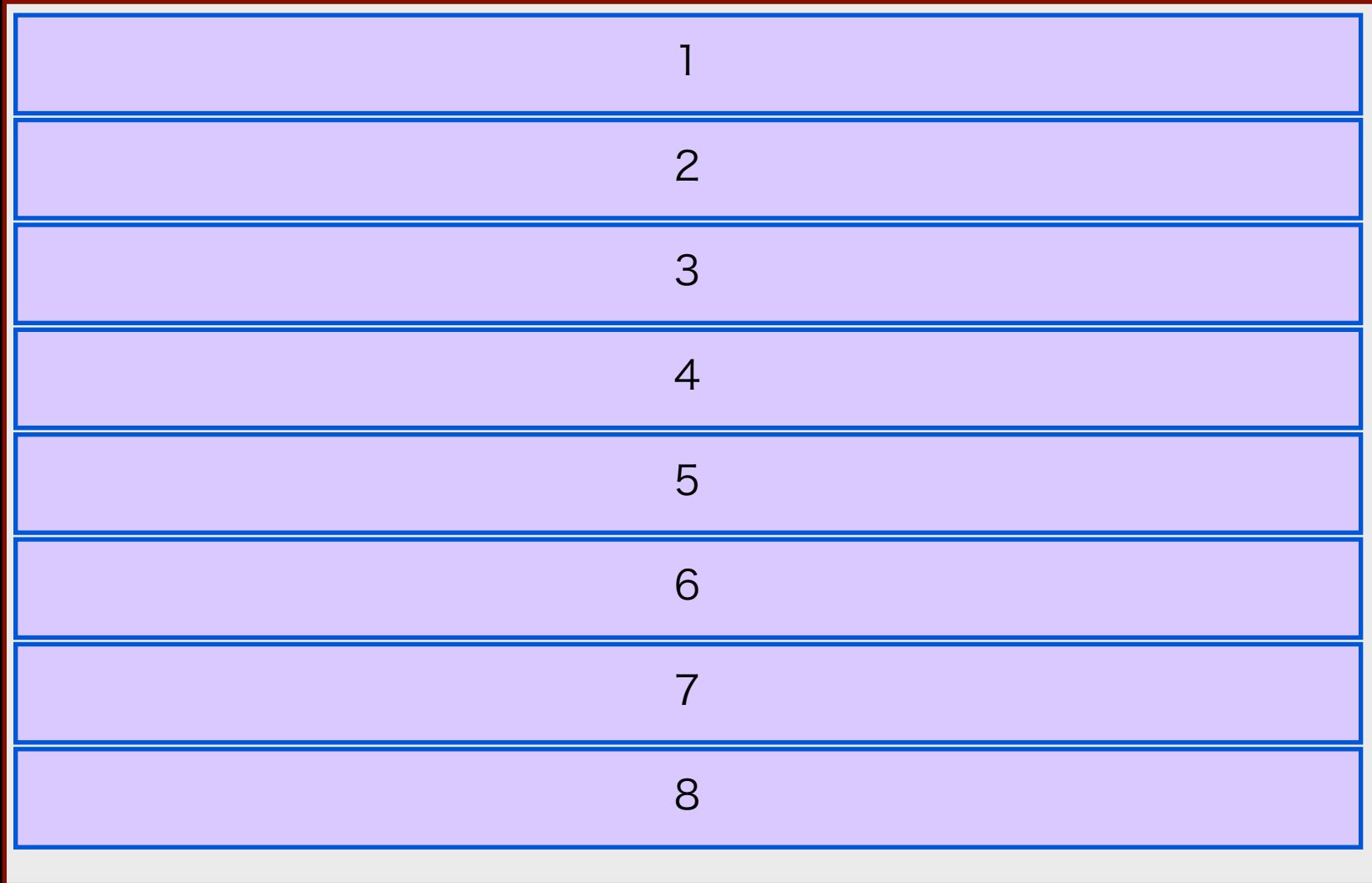
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↕ LTRB margins



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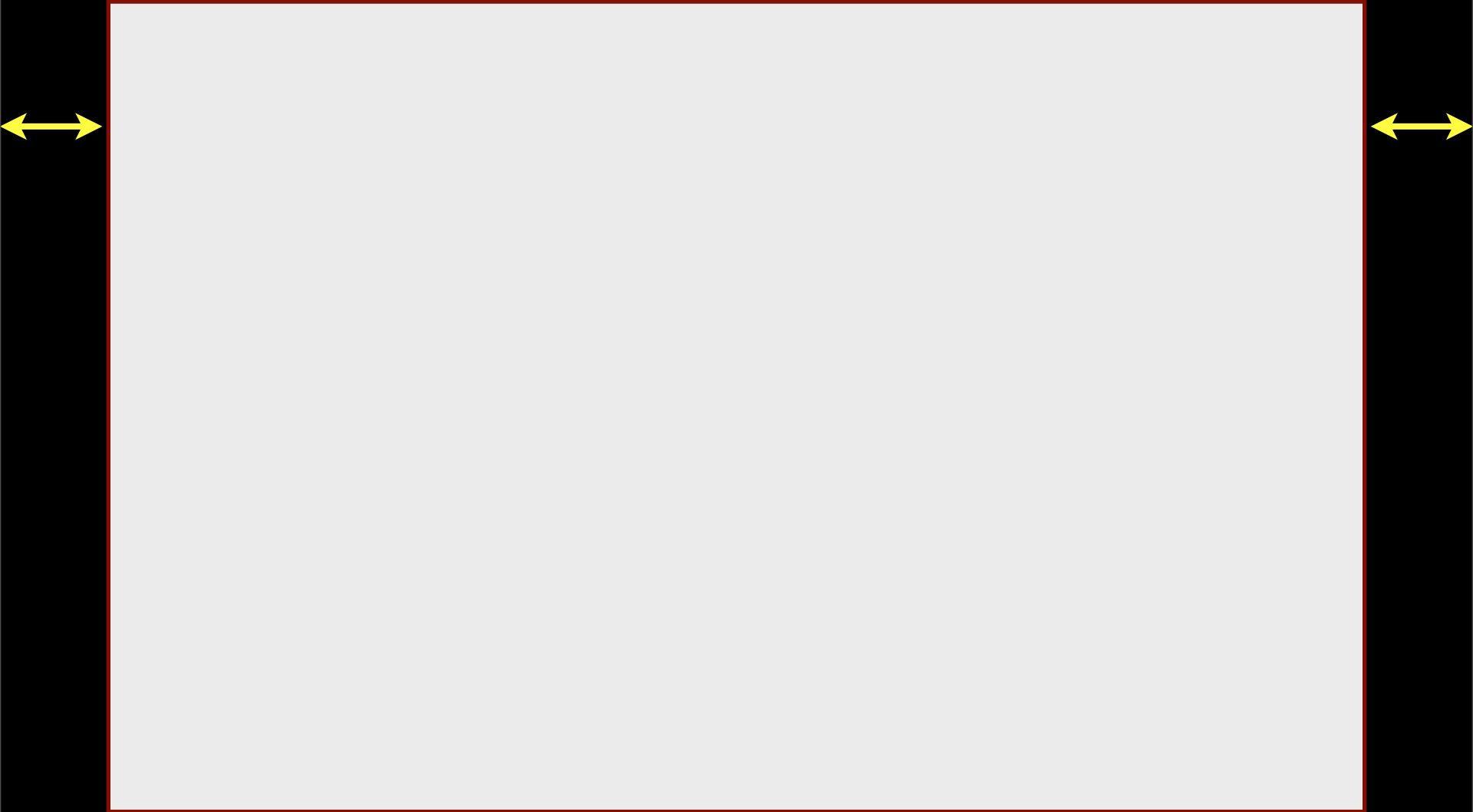
↑↓ LTRB margins



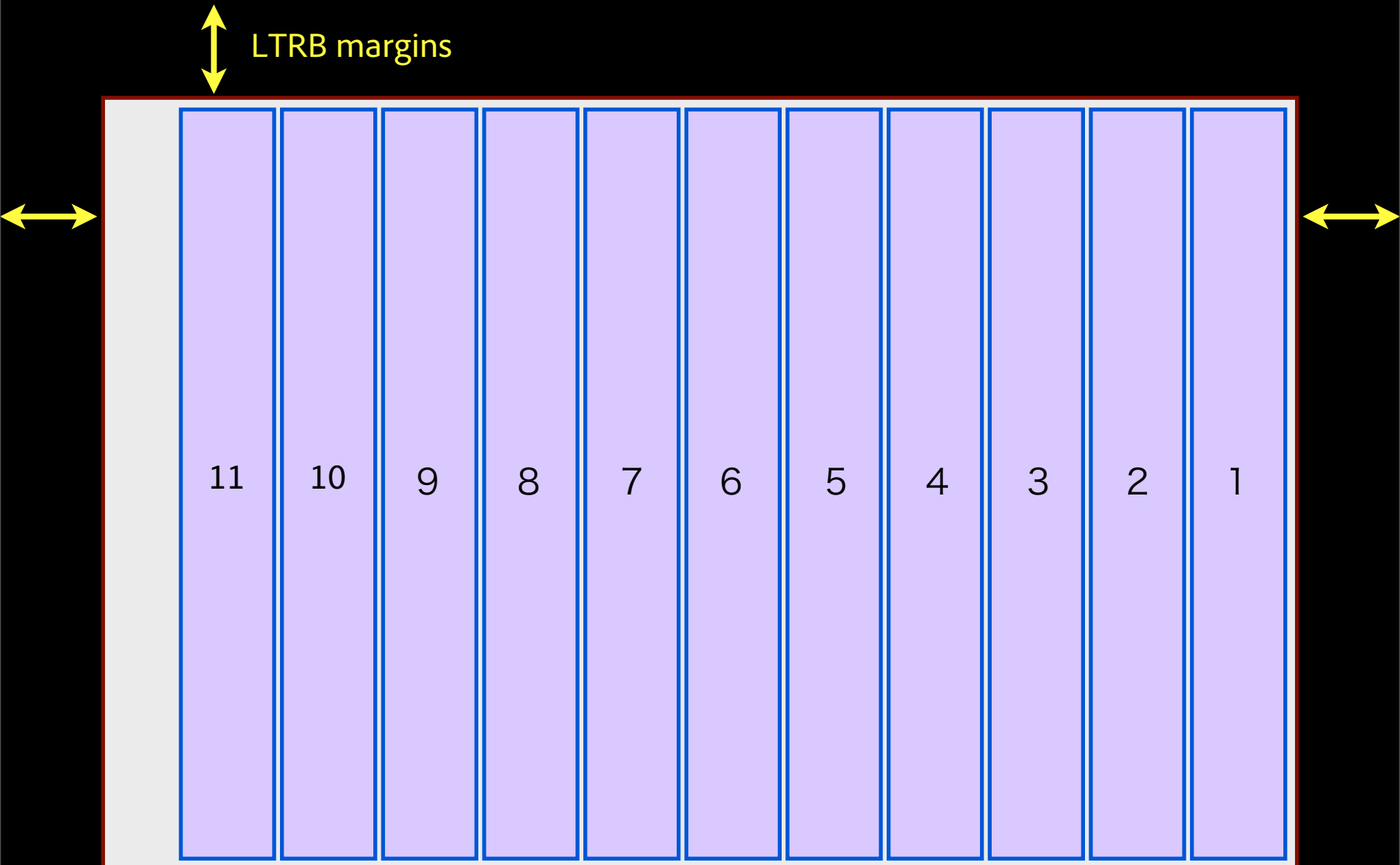


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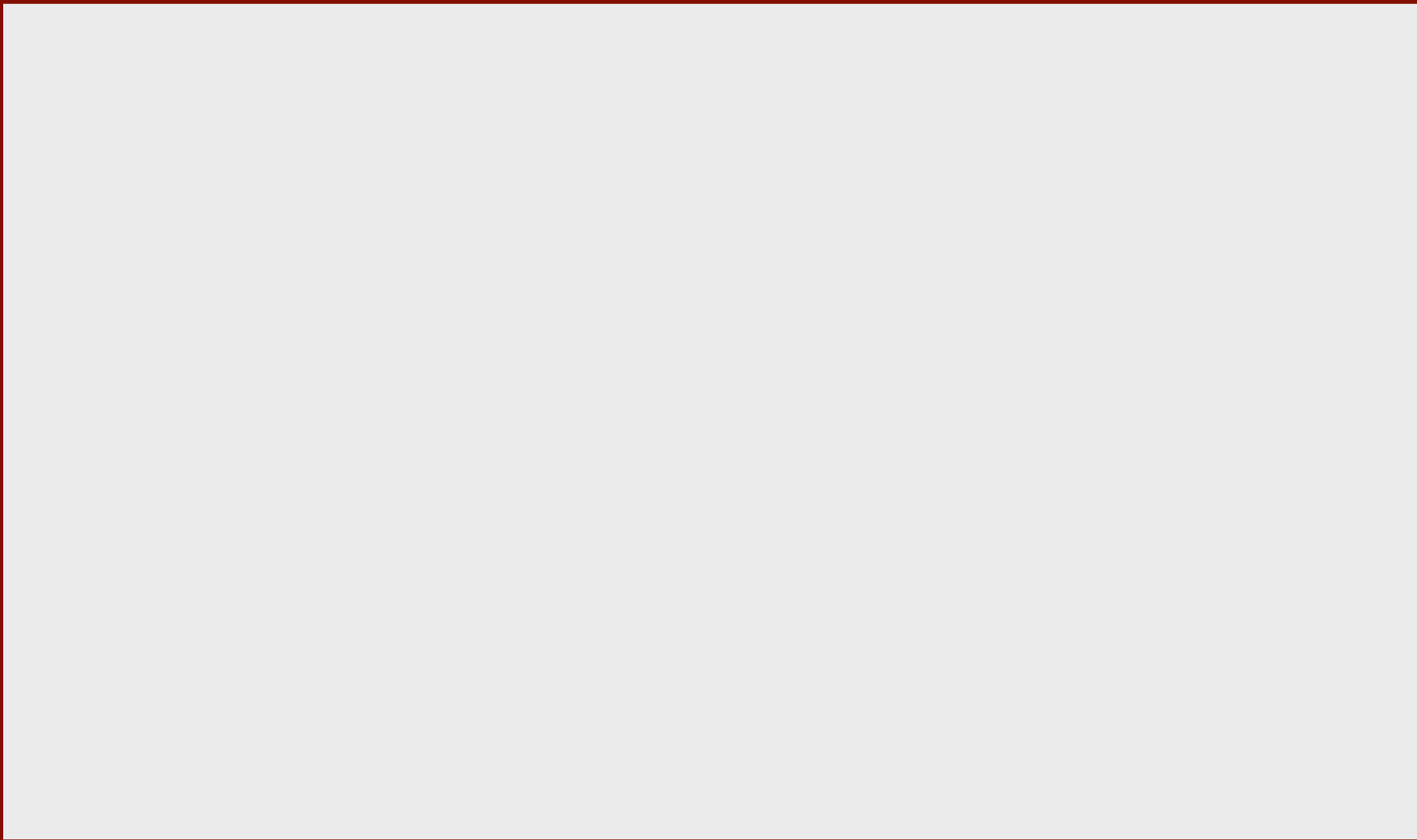


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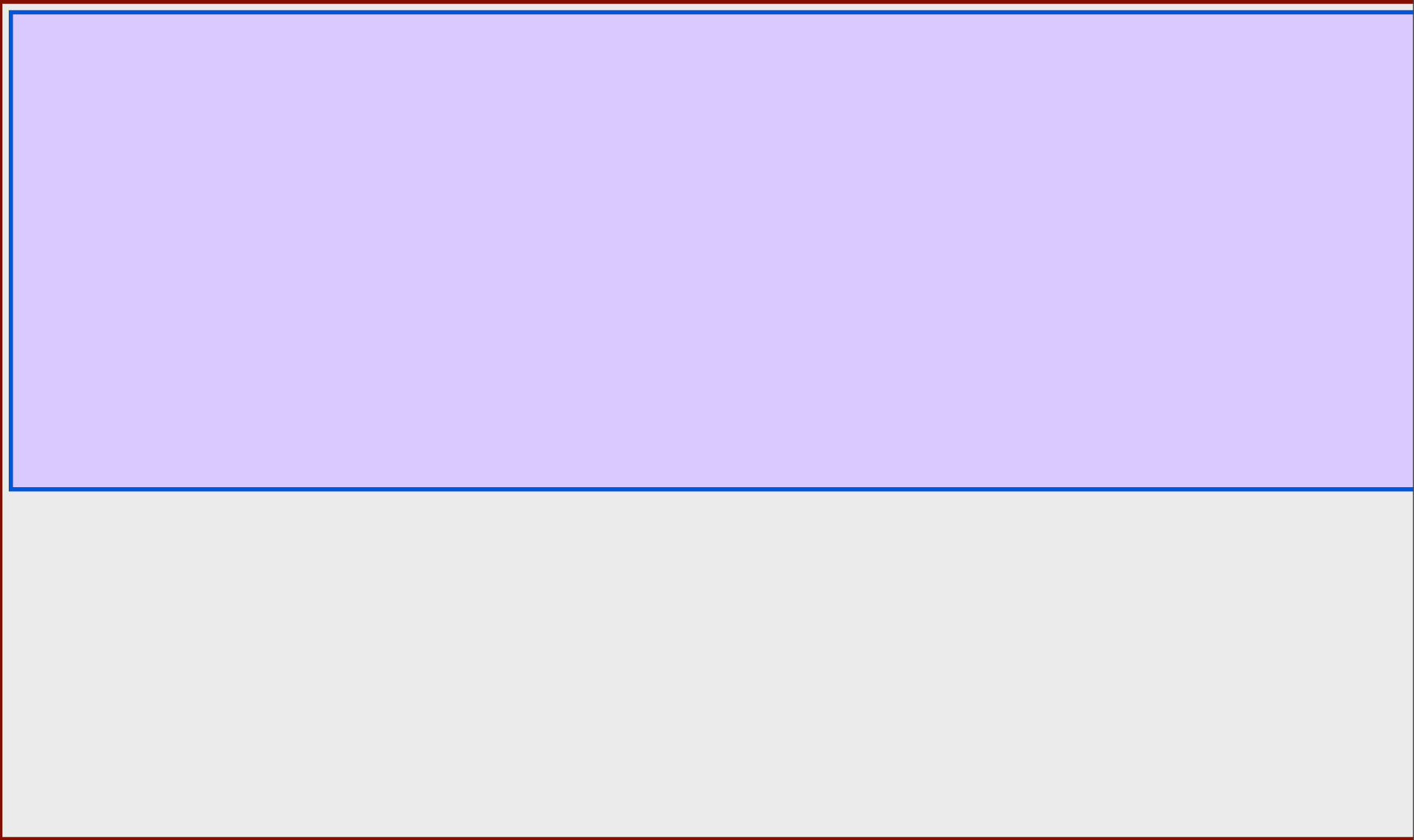


So, how is line layout done in CSS?

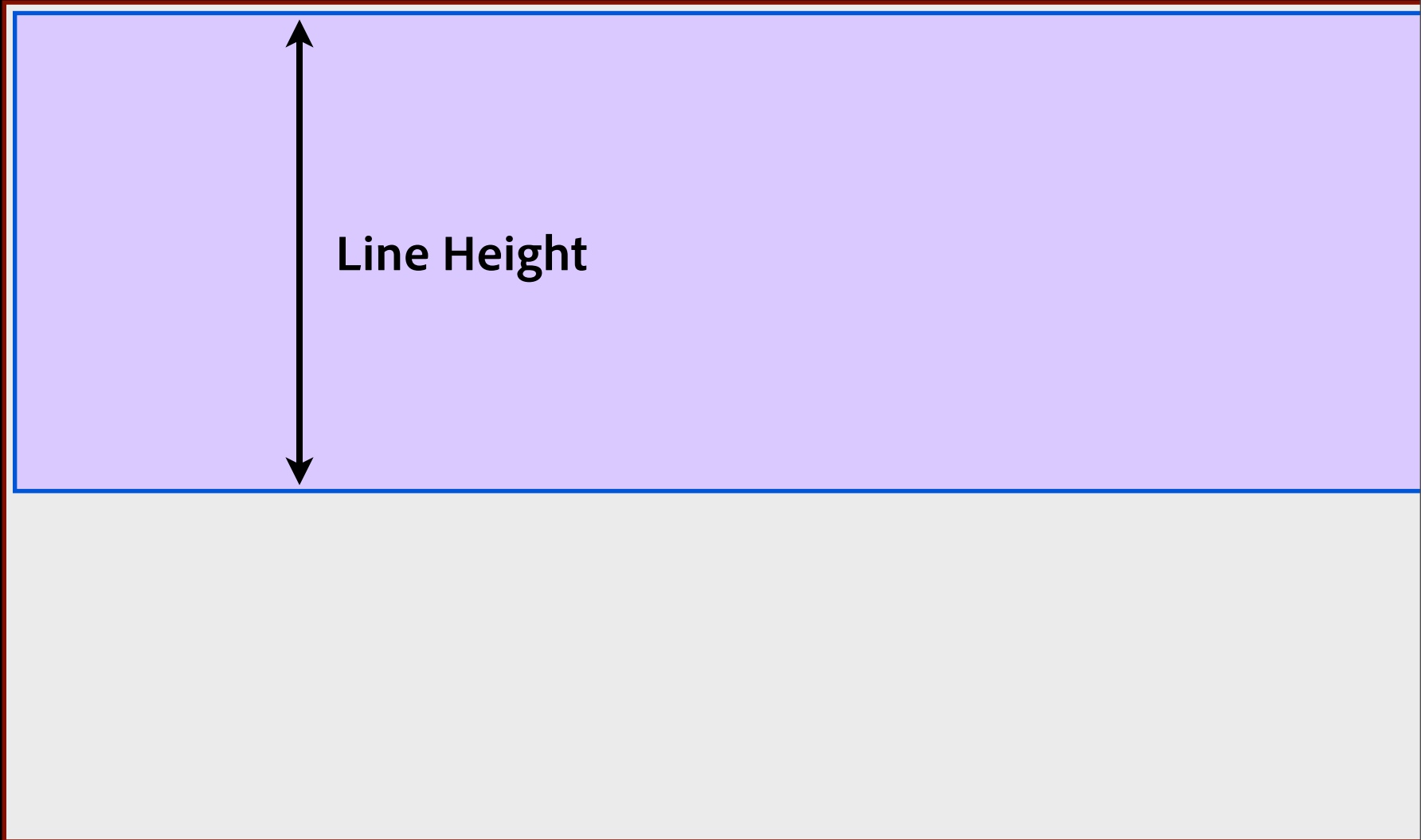
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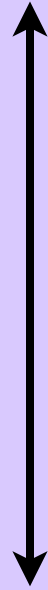
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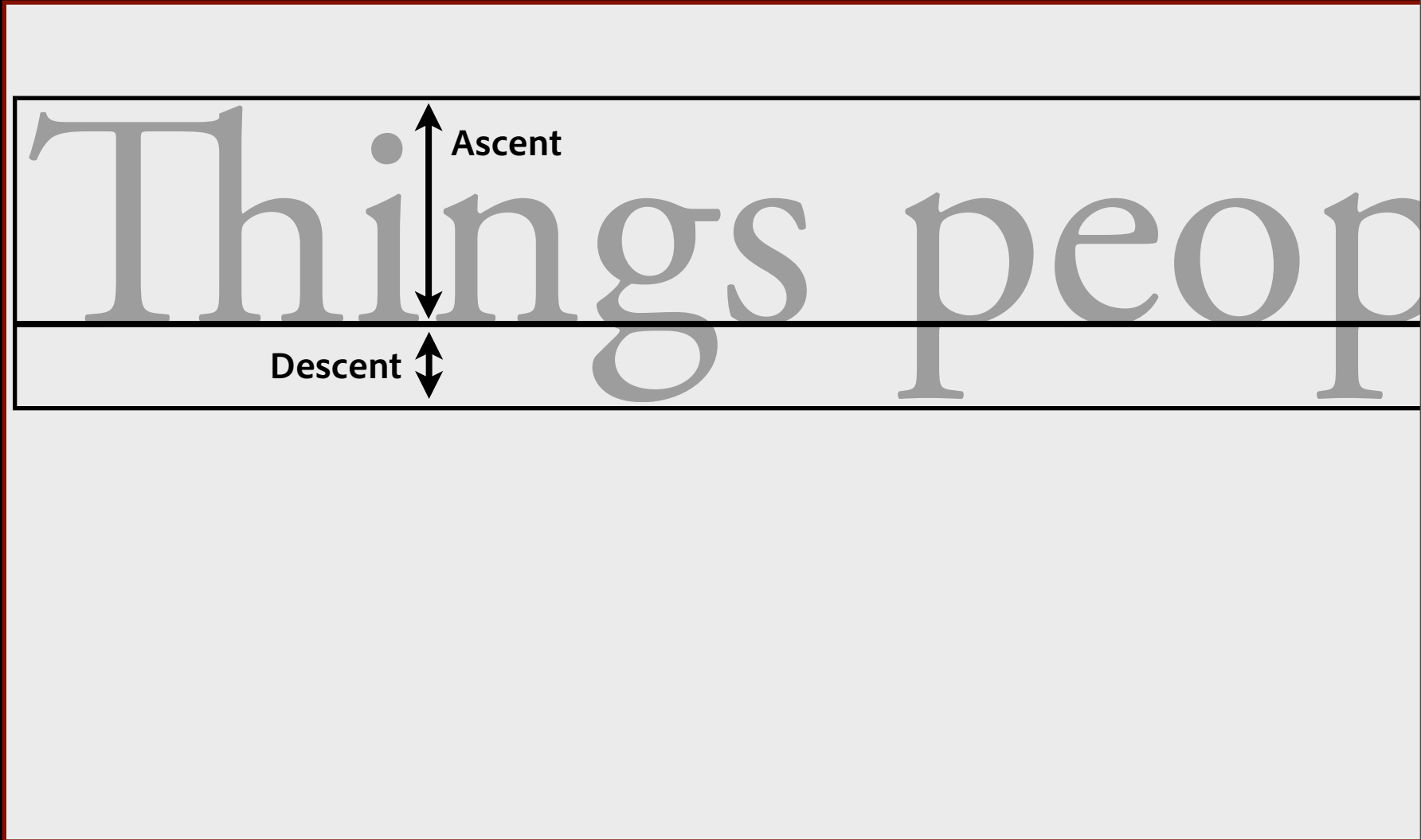


**Line Height = Leading!**

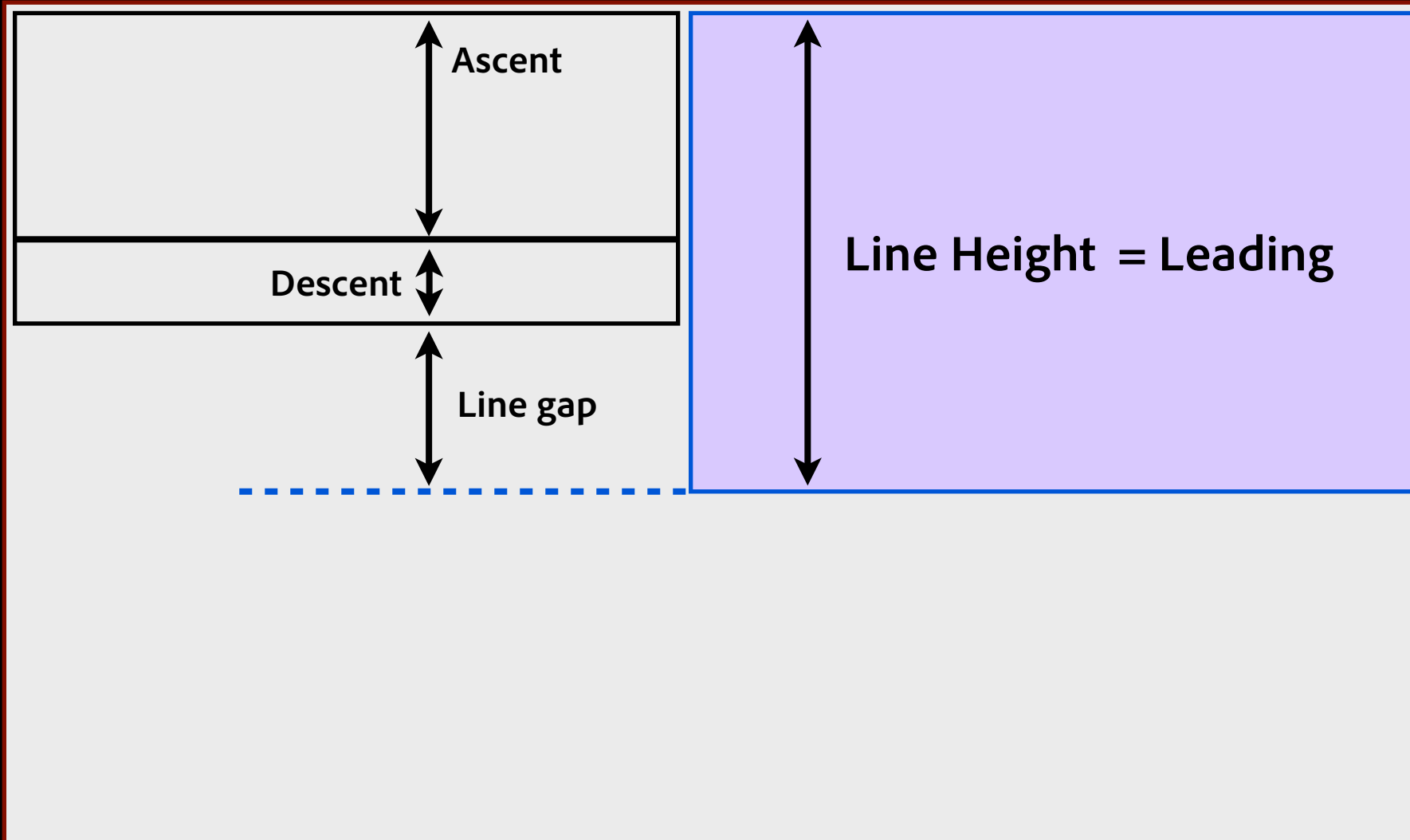
Things peop



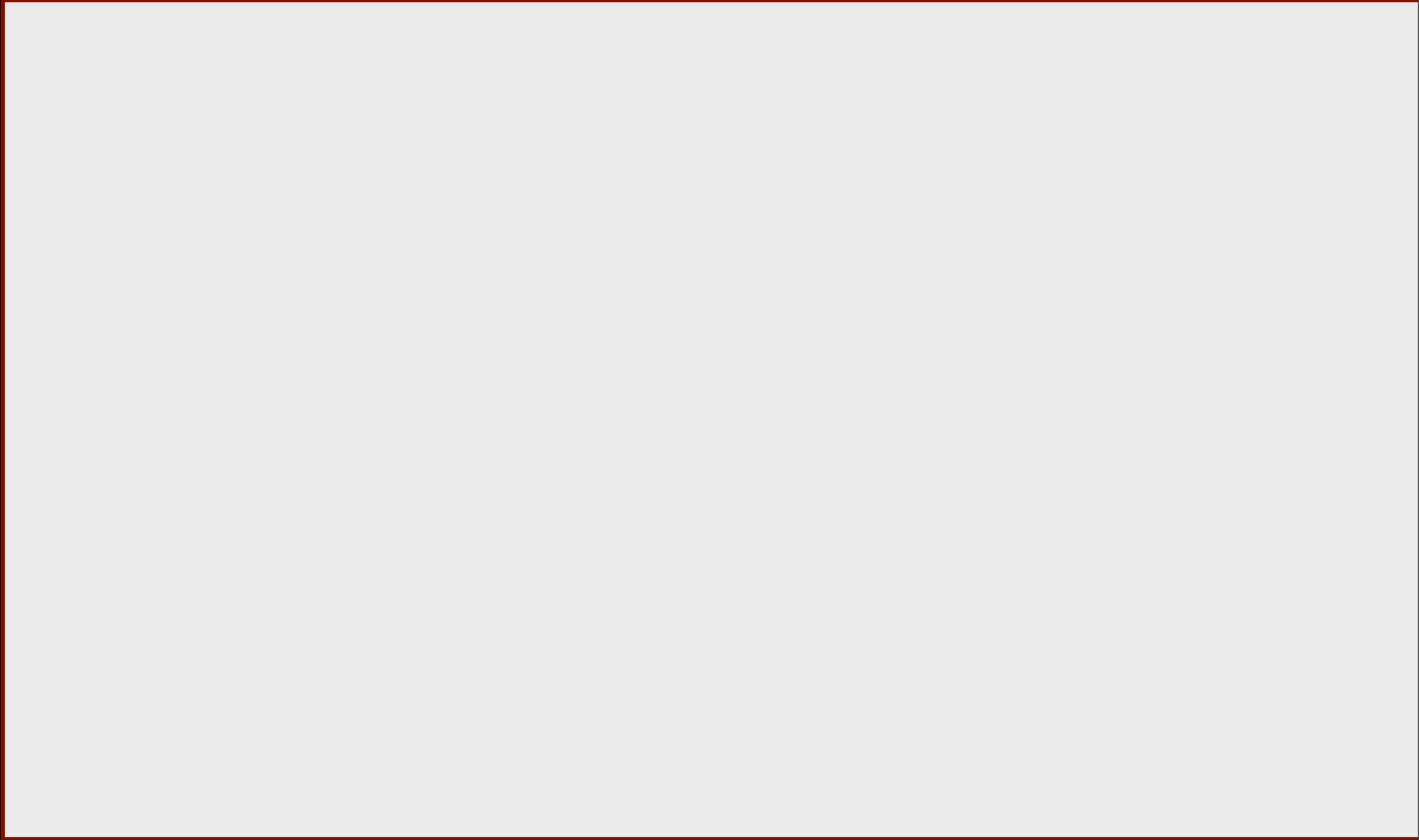
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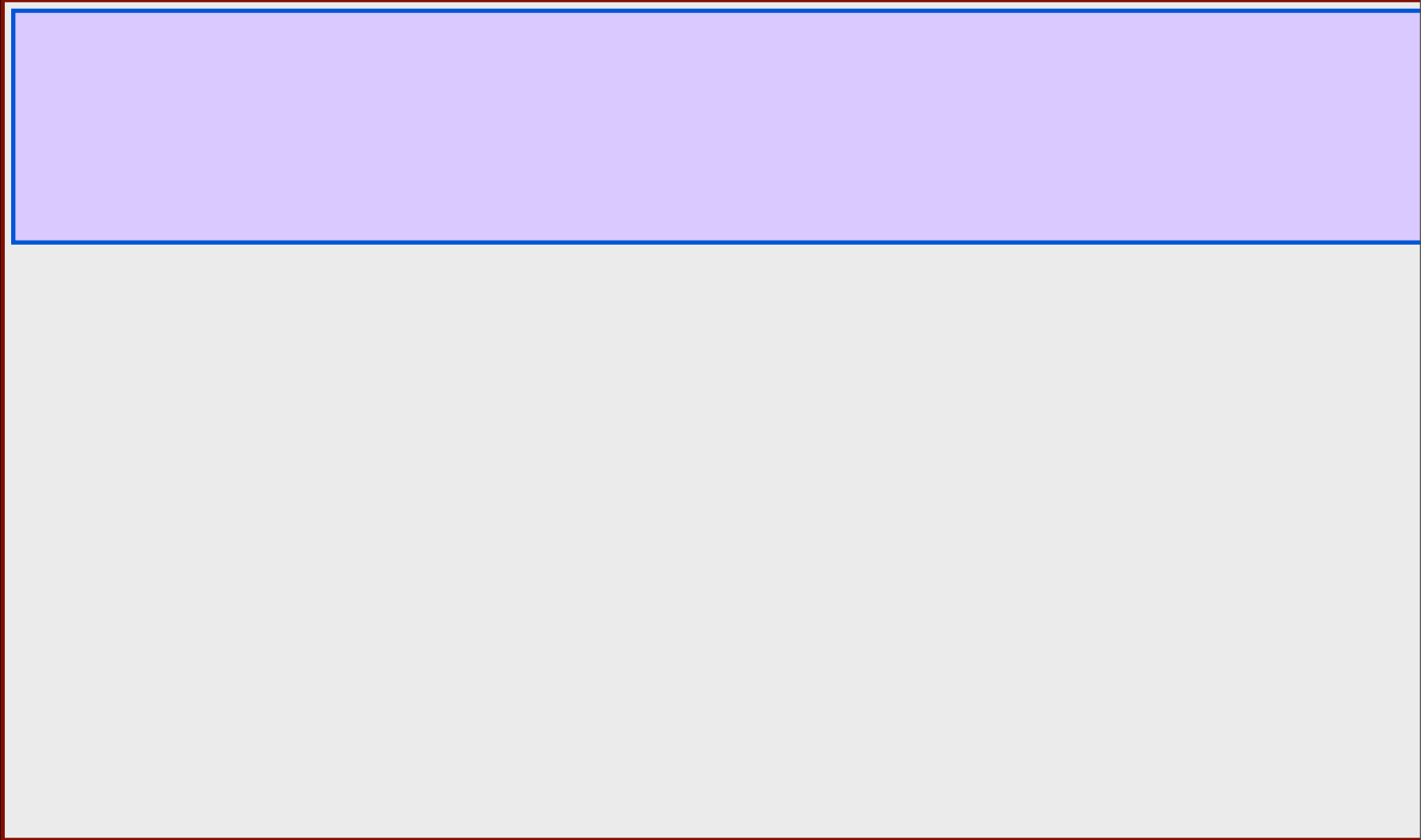
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## InDesign Roman Composition



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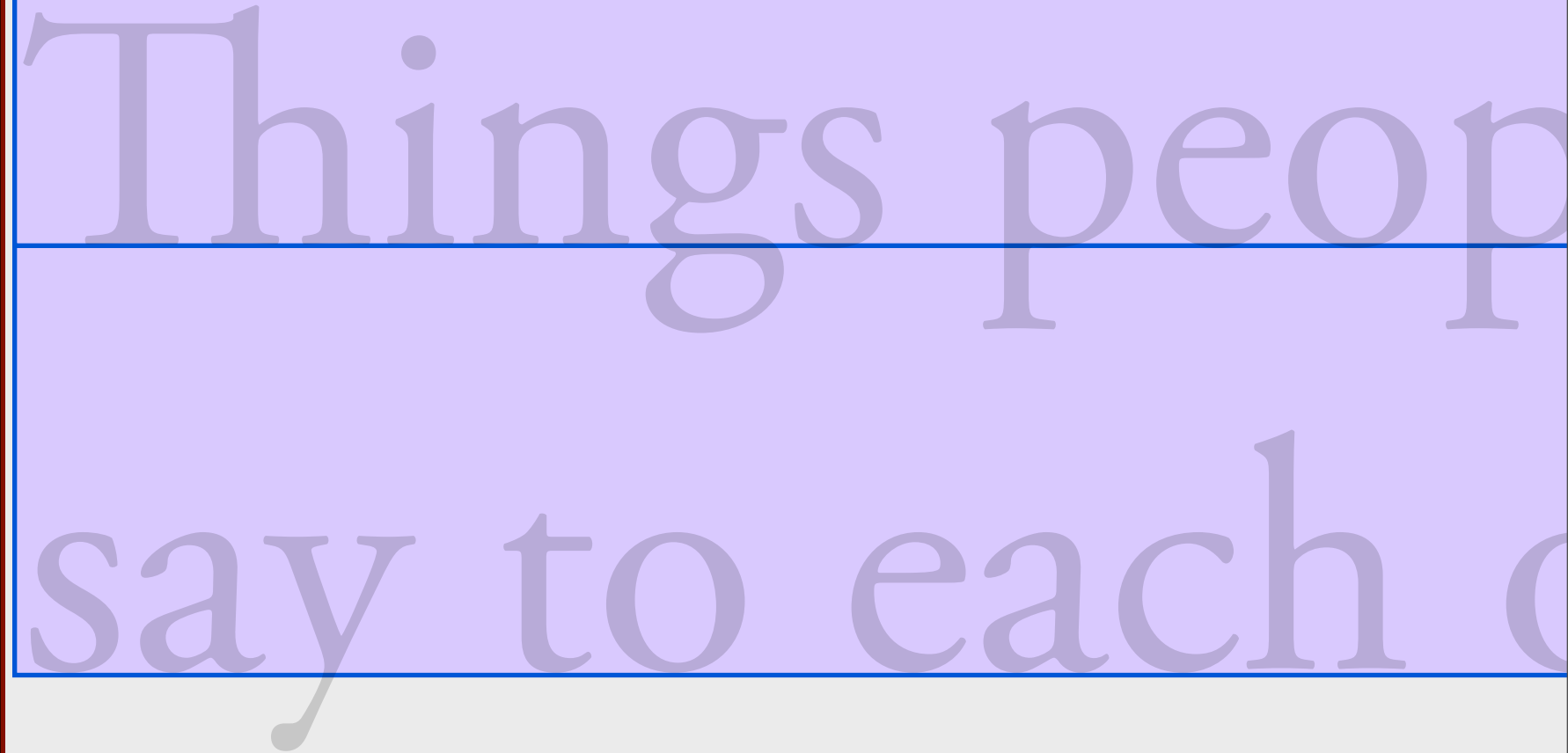
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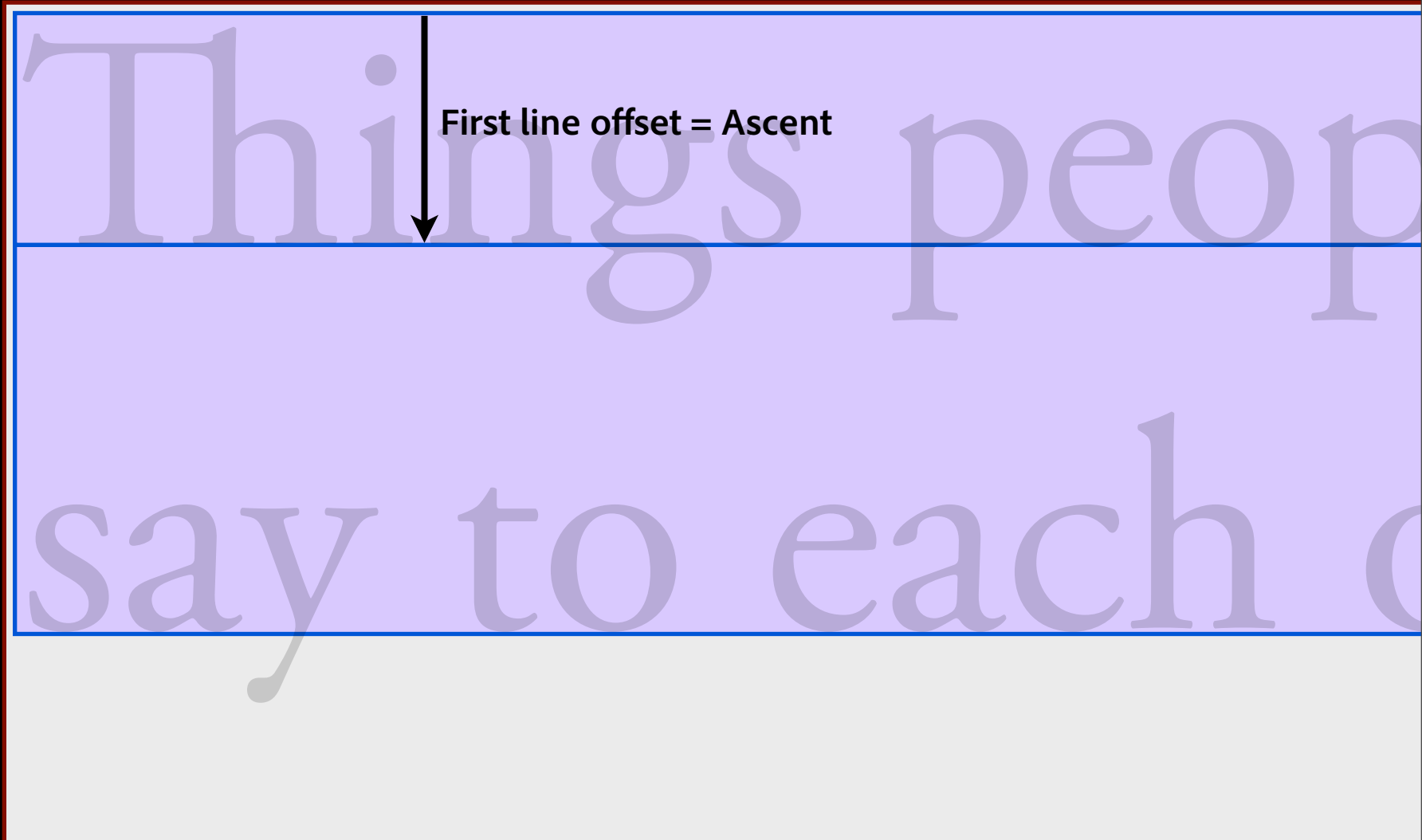
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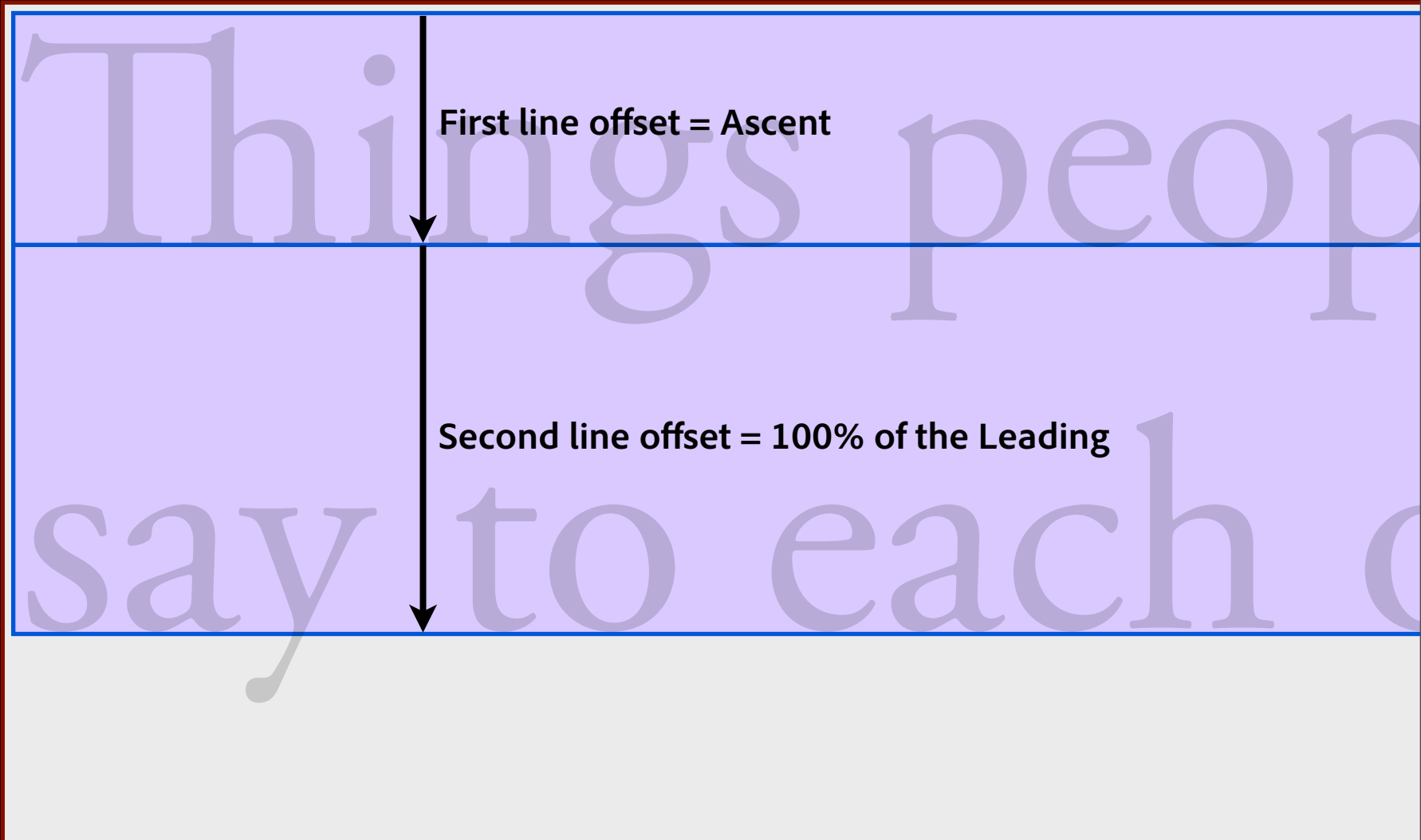
Things people  
say to each other

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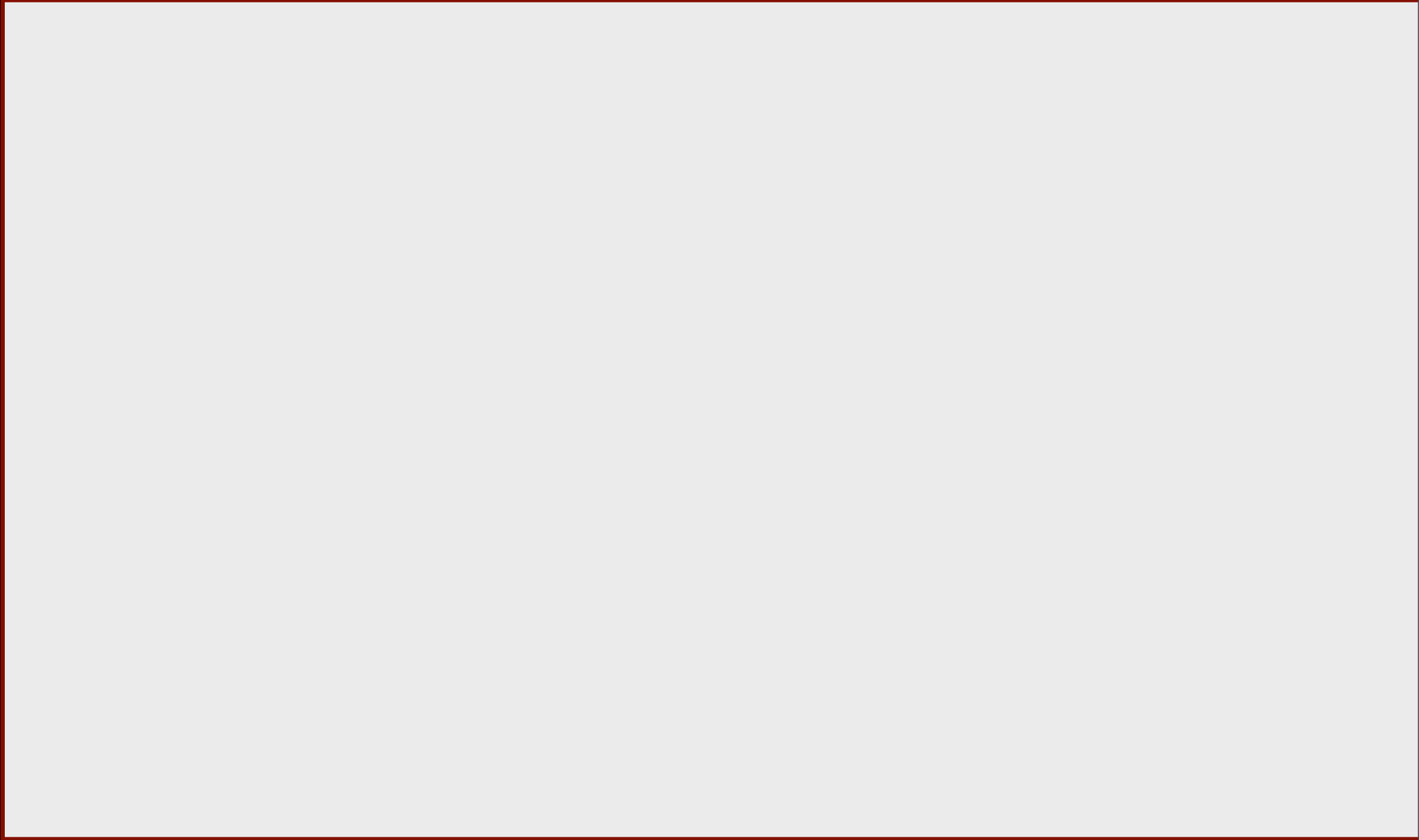




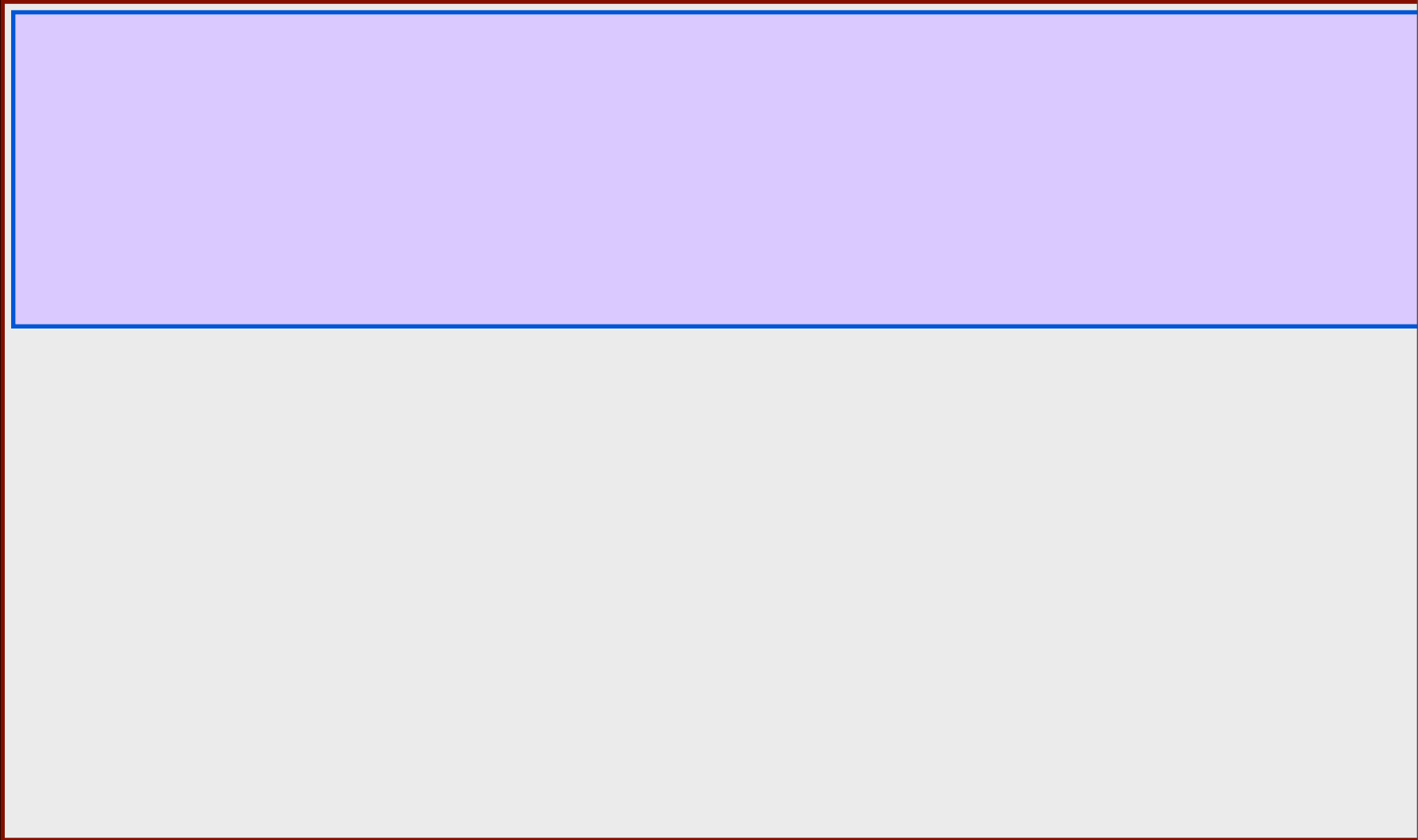
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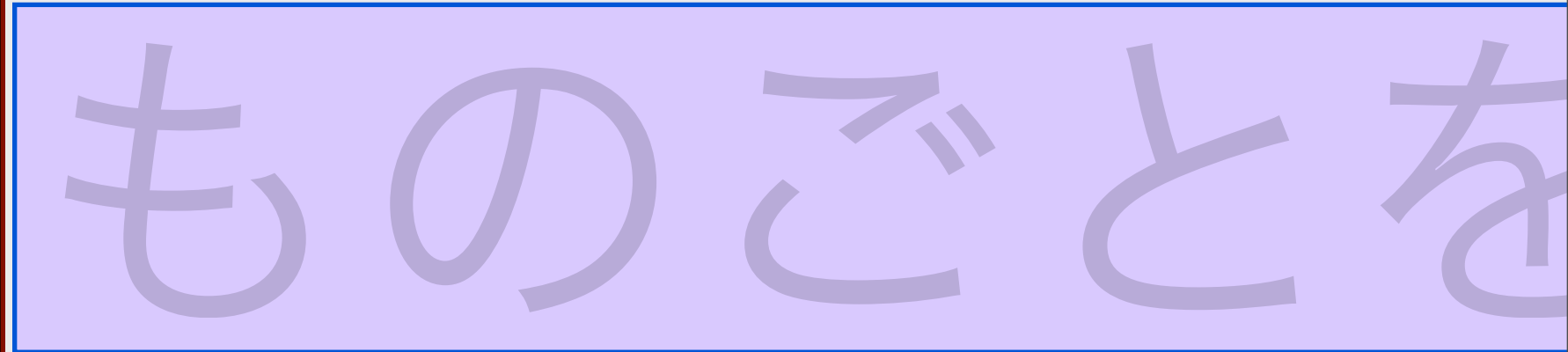
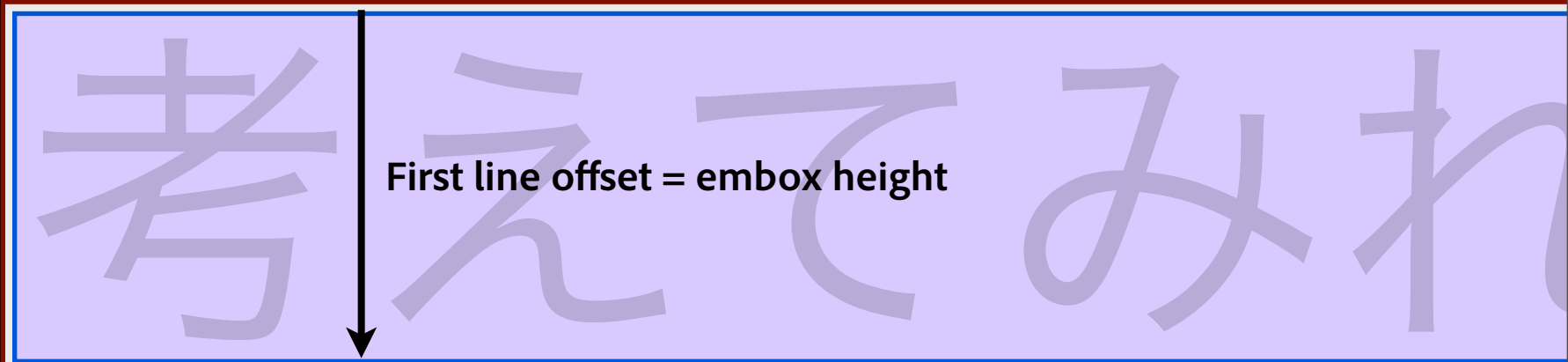
考えてみれば

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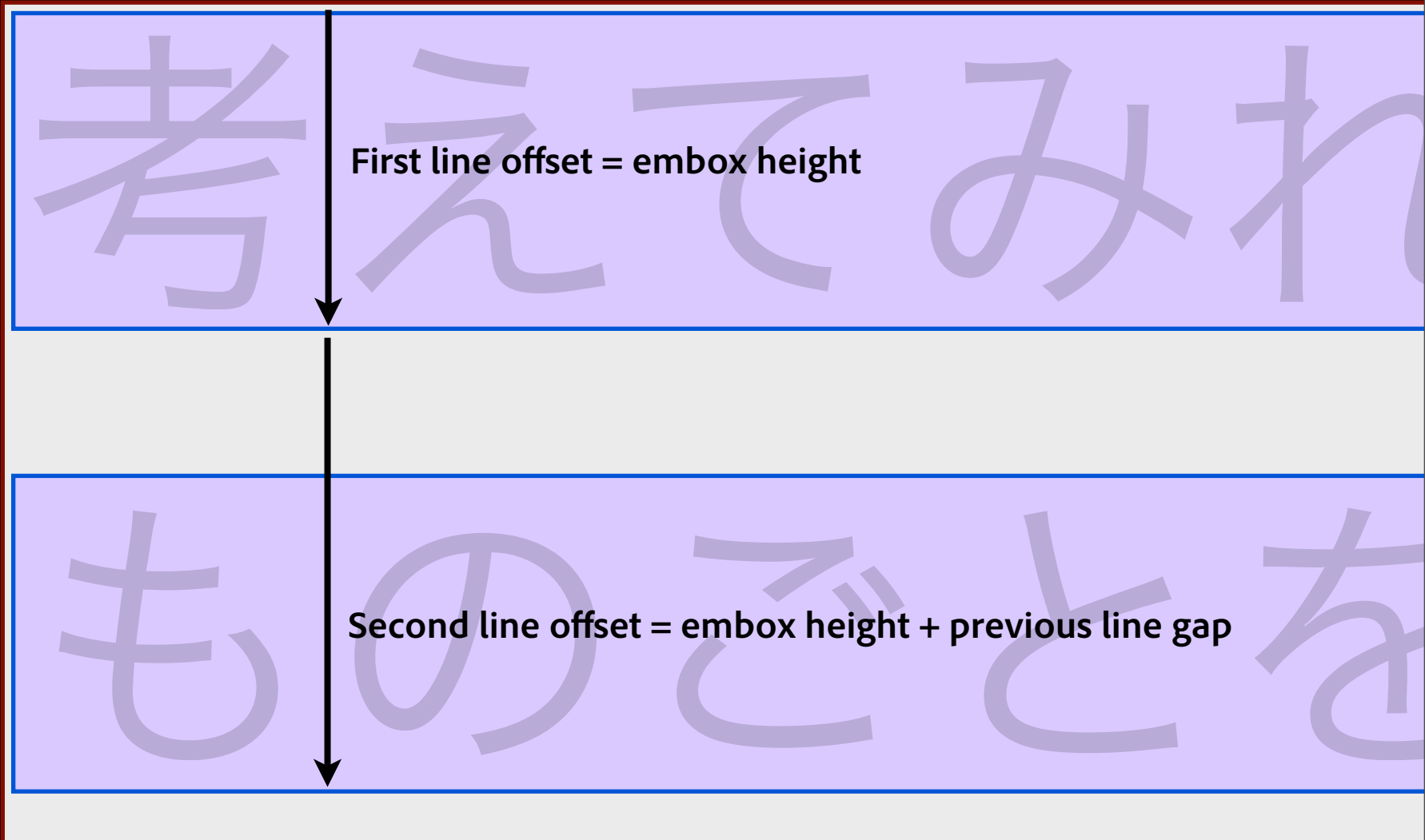
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ものごとを

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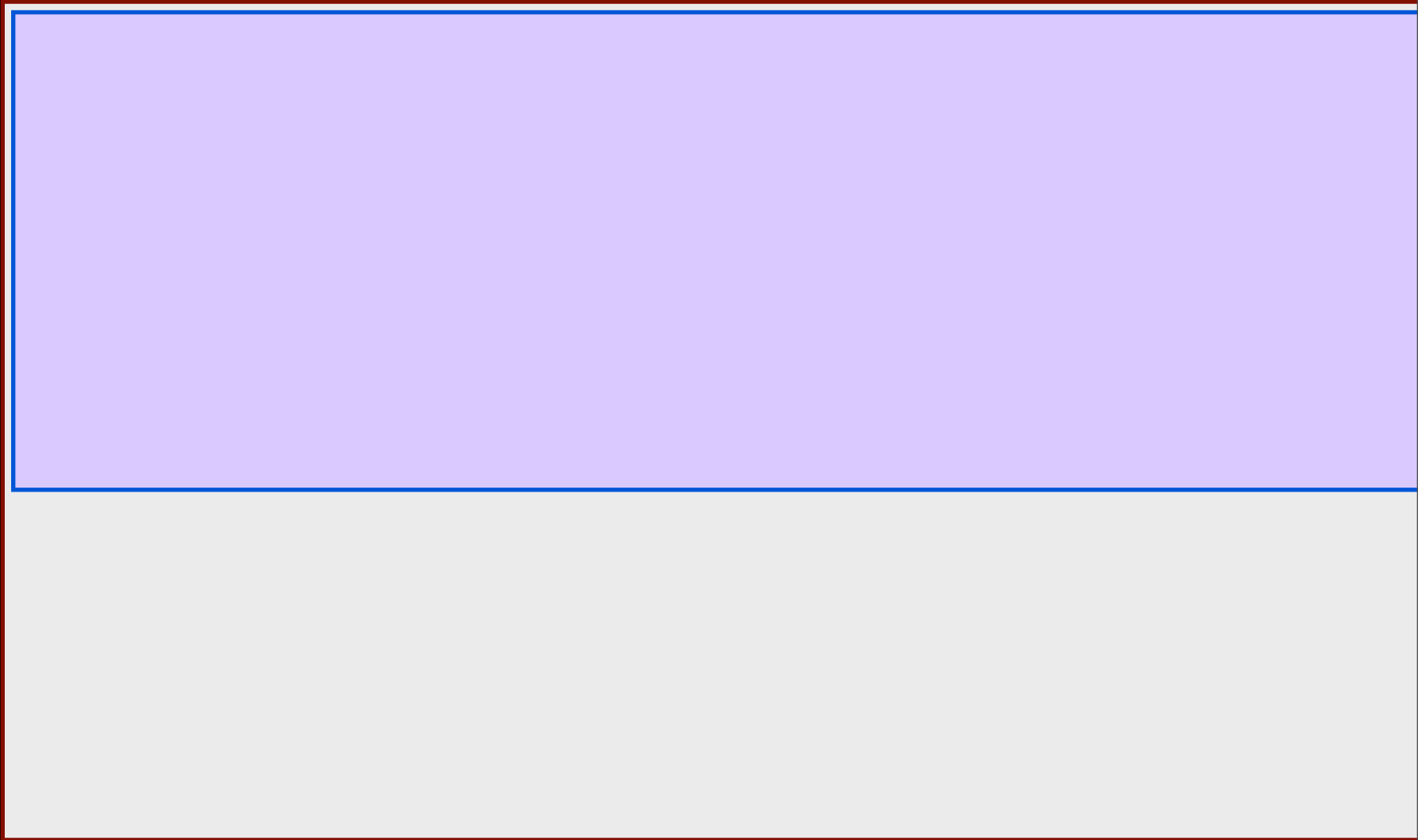


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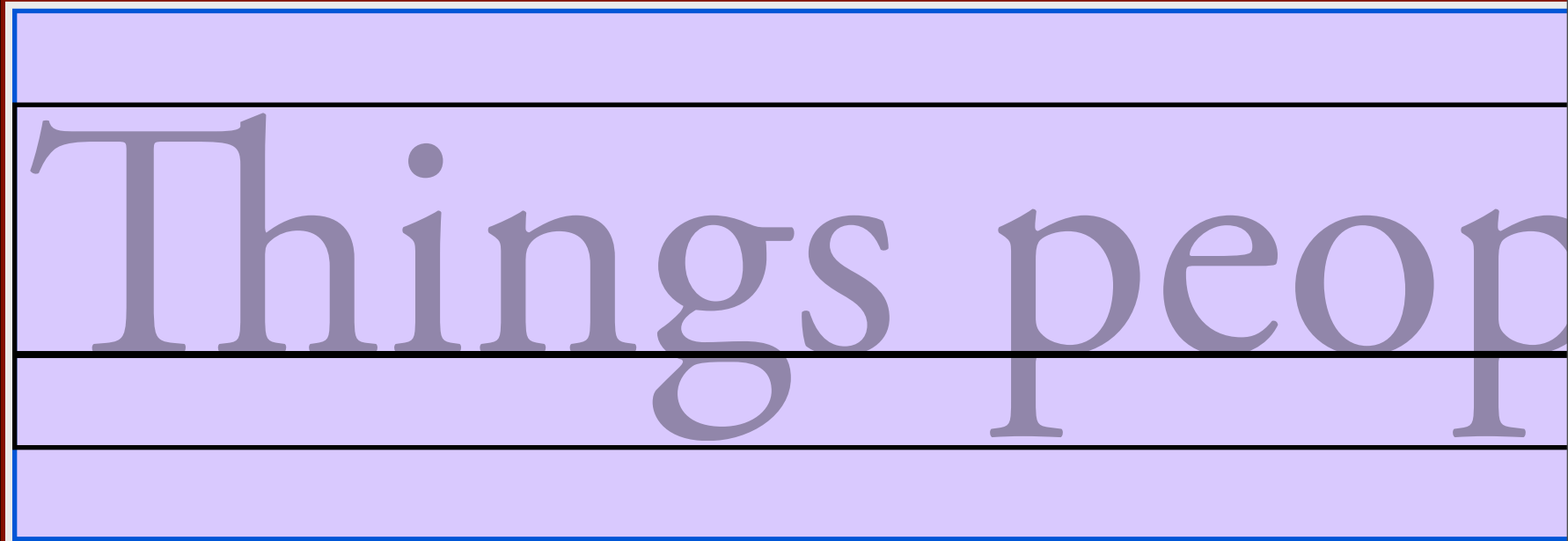
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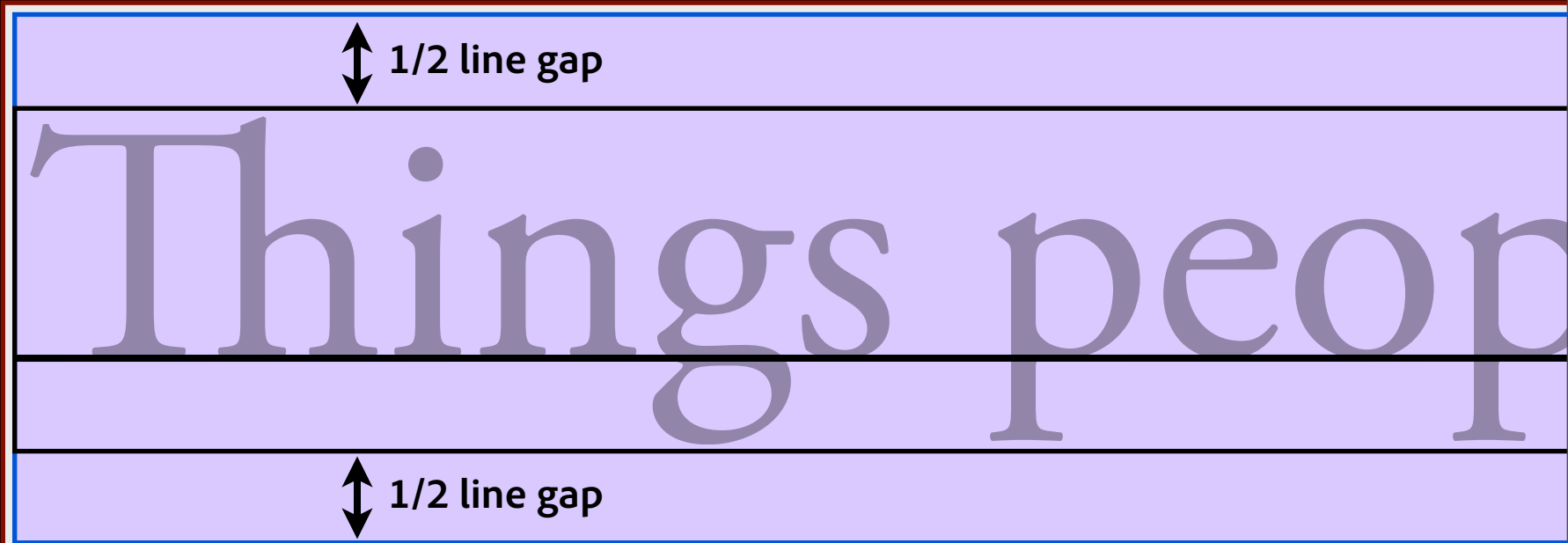
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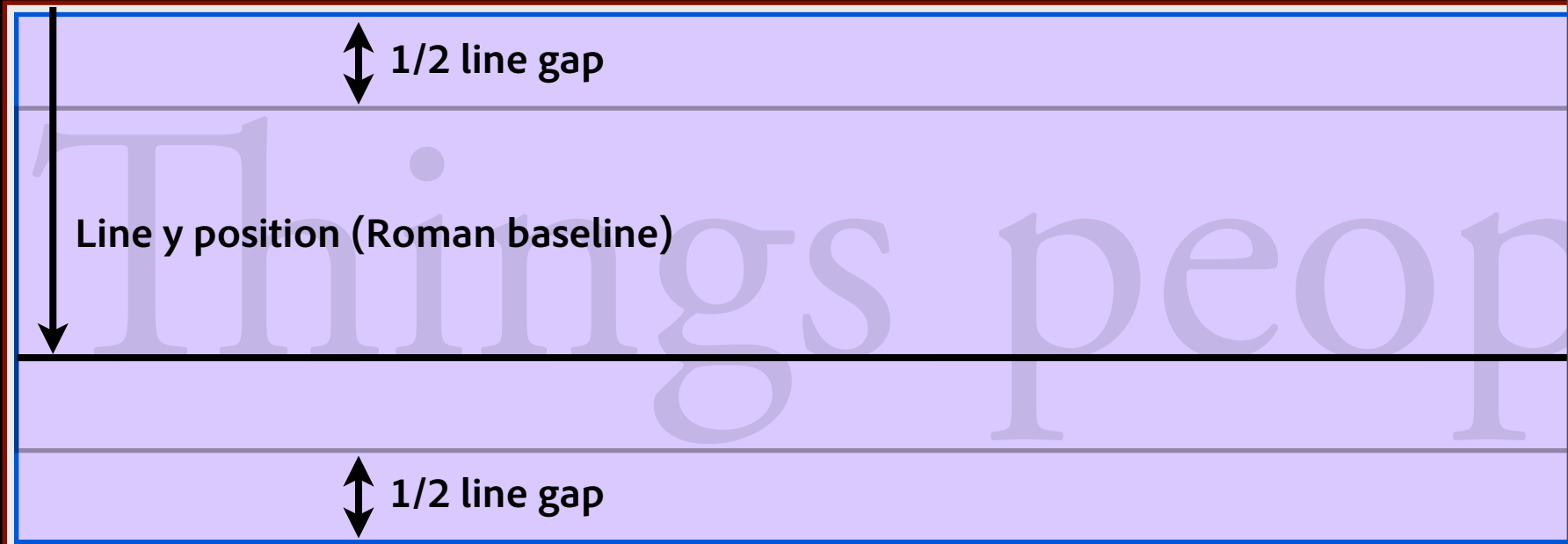
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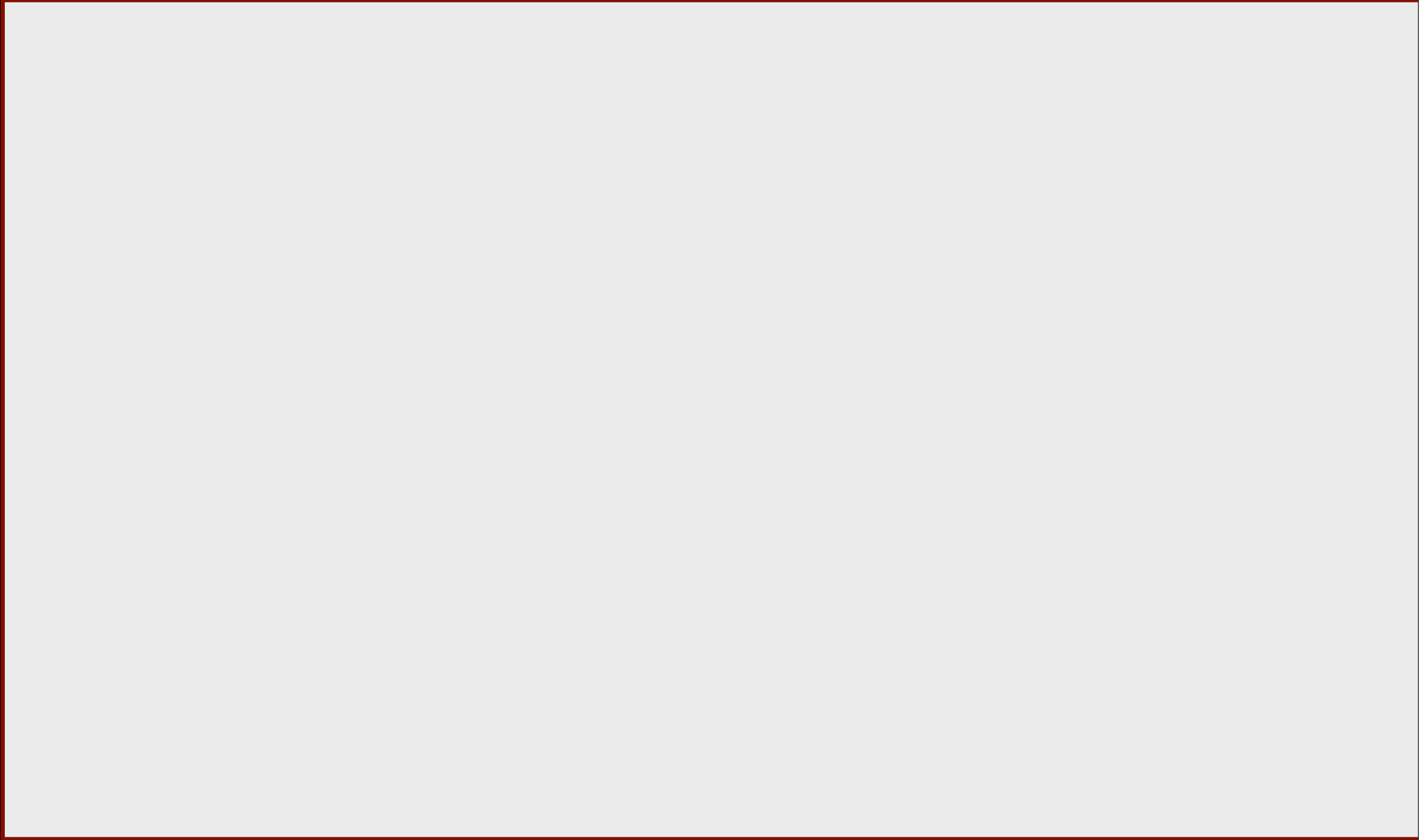


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**What happens when the text size increases?**



What happens when the text size increases?

The yearly.

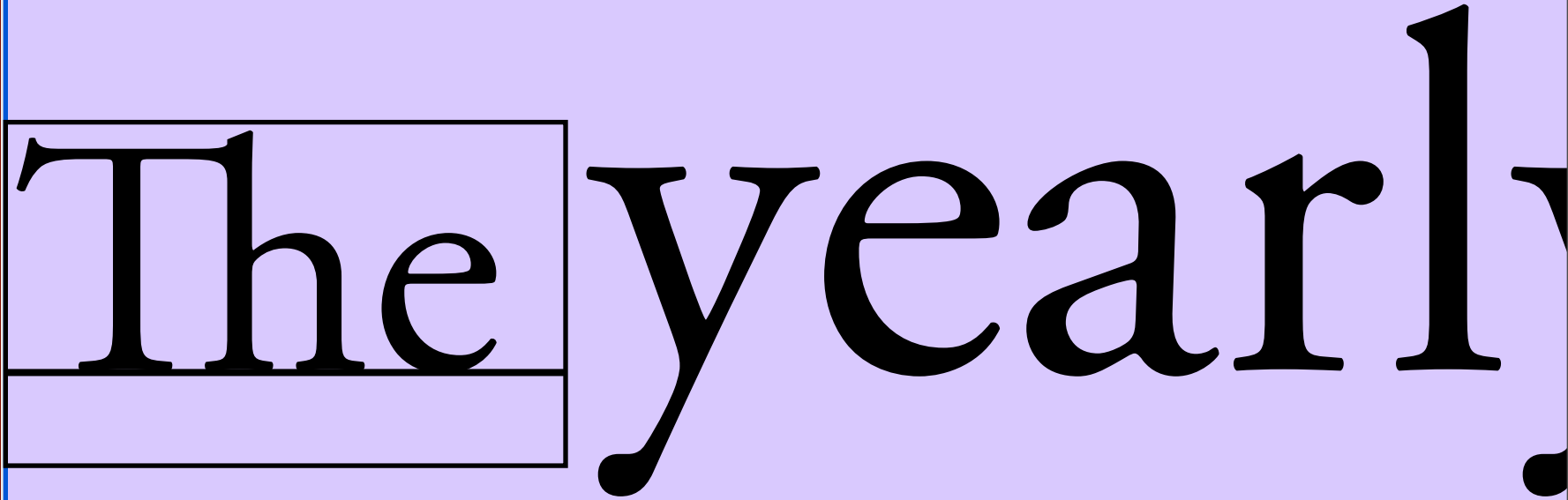
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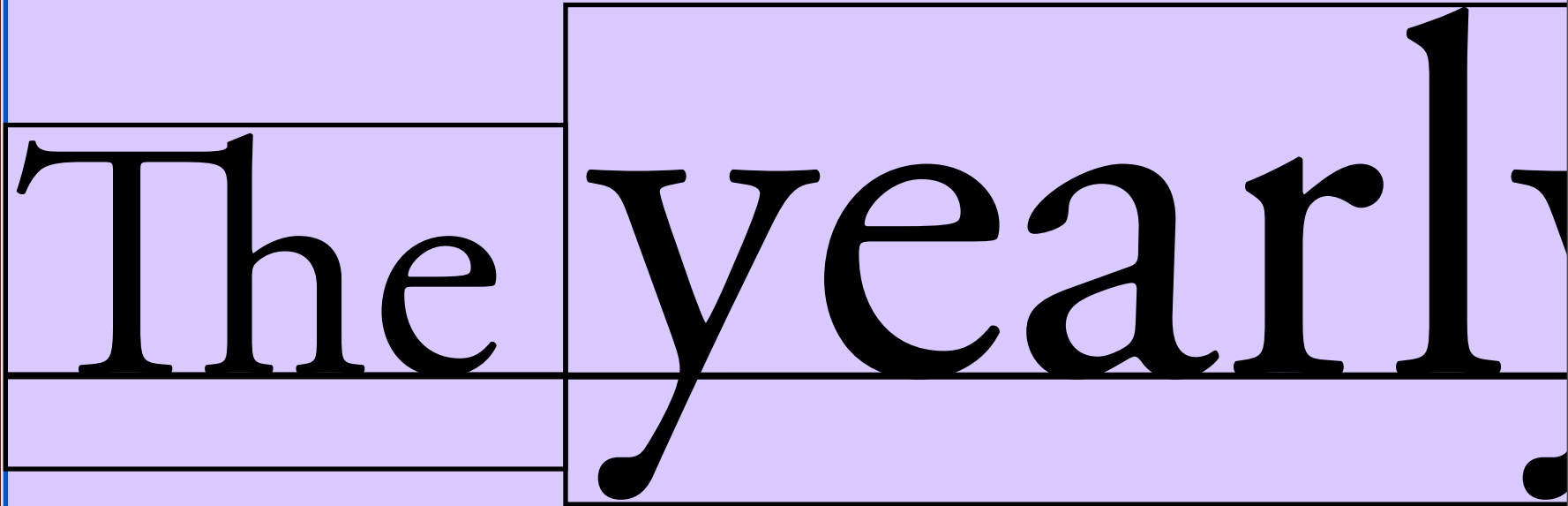
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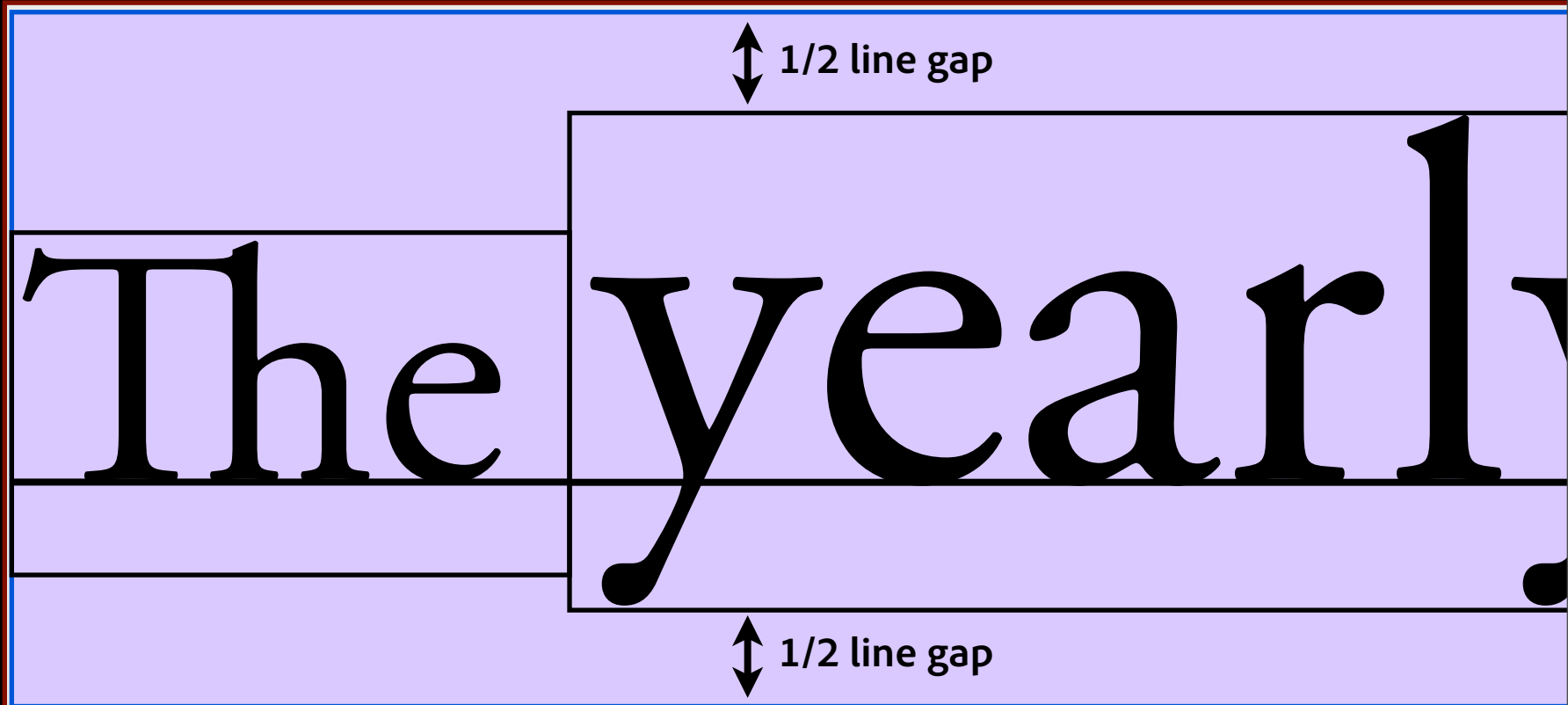


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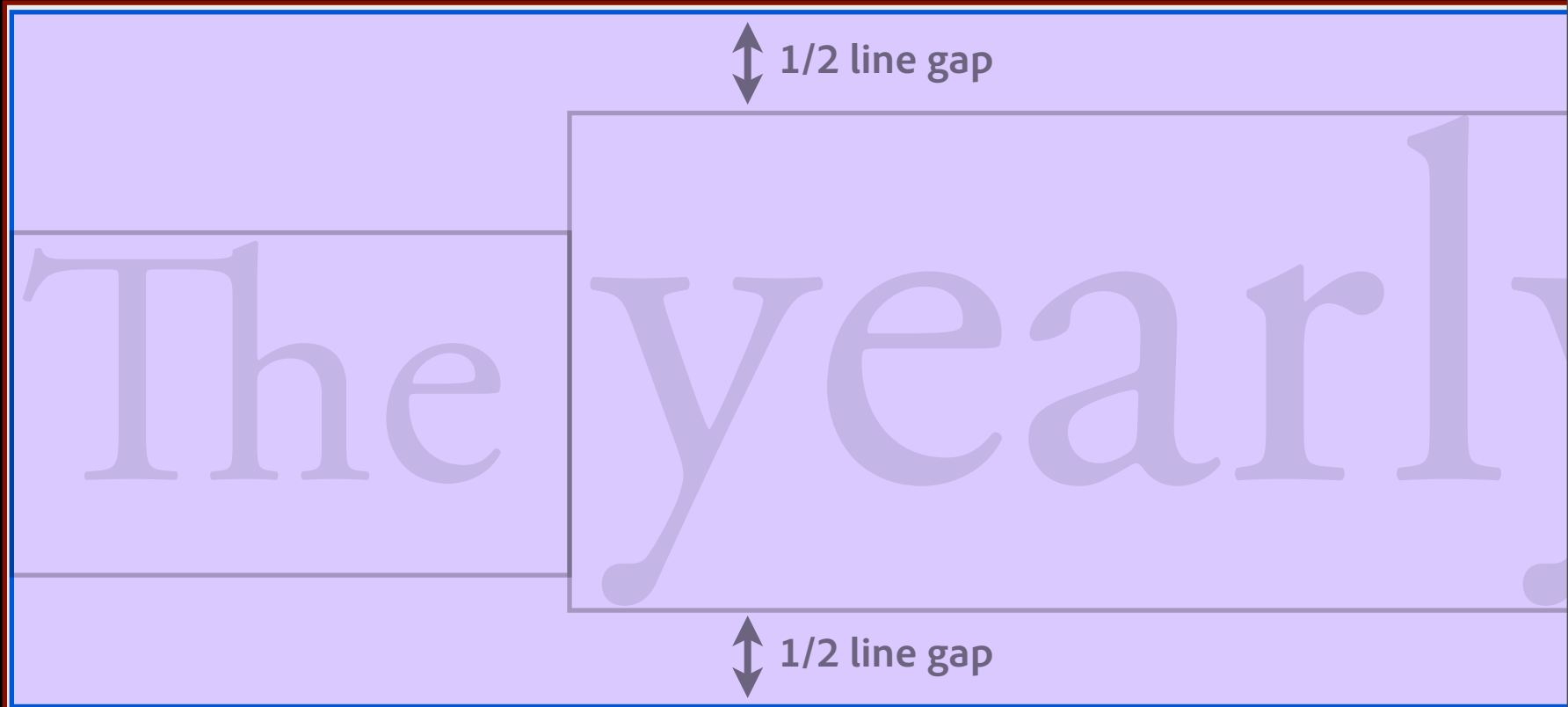
The diagram shows the text "The yearly." on a light purple background. A black box highlights the word "yearly". A horizontal line is drawn across the text at the baseline. A vertical line is drawn at the start of the word "yearly". A horizontal line is drawn at the top of the letter 'y' in "yearly". This illustrates how the height of the 'y' character affects the vertical alignment of the text line.

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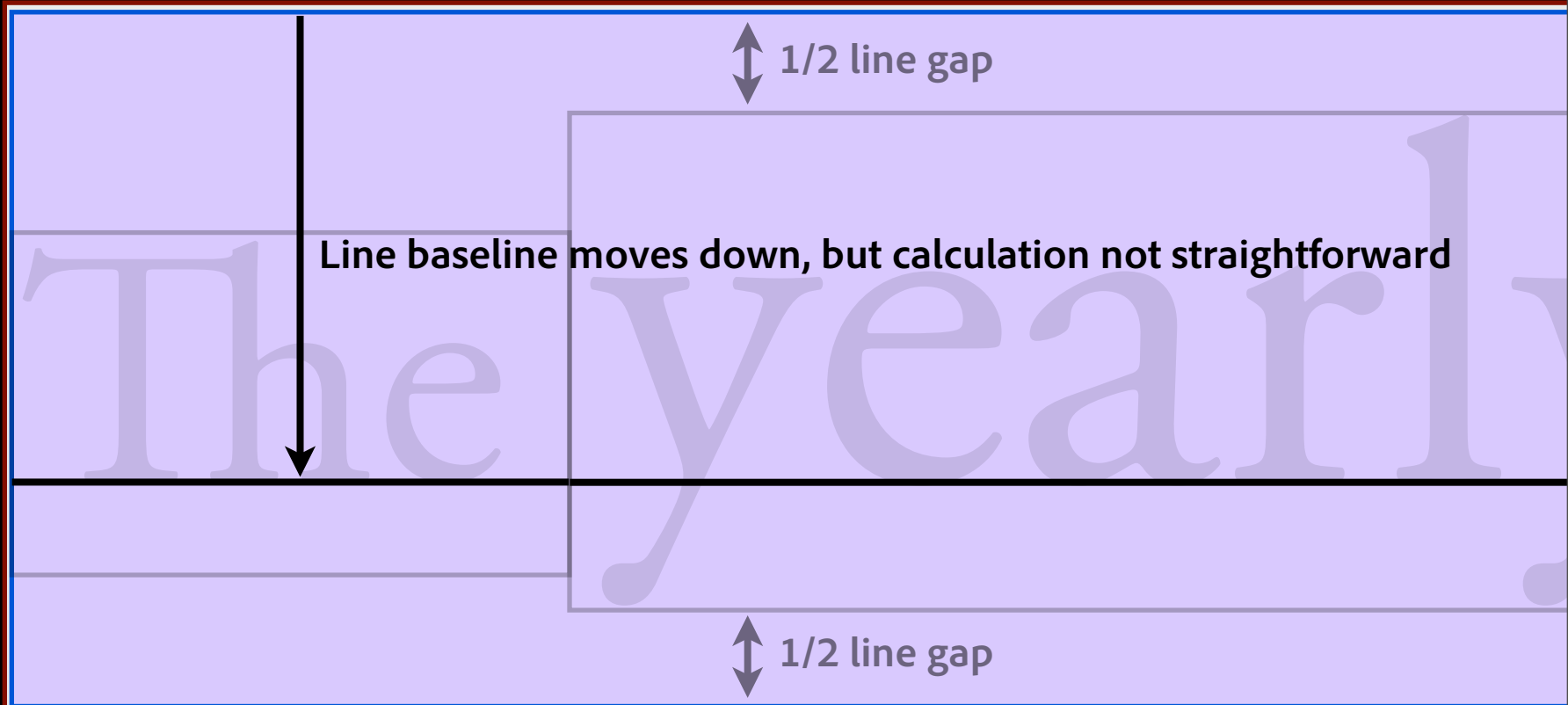
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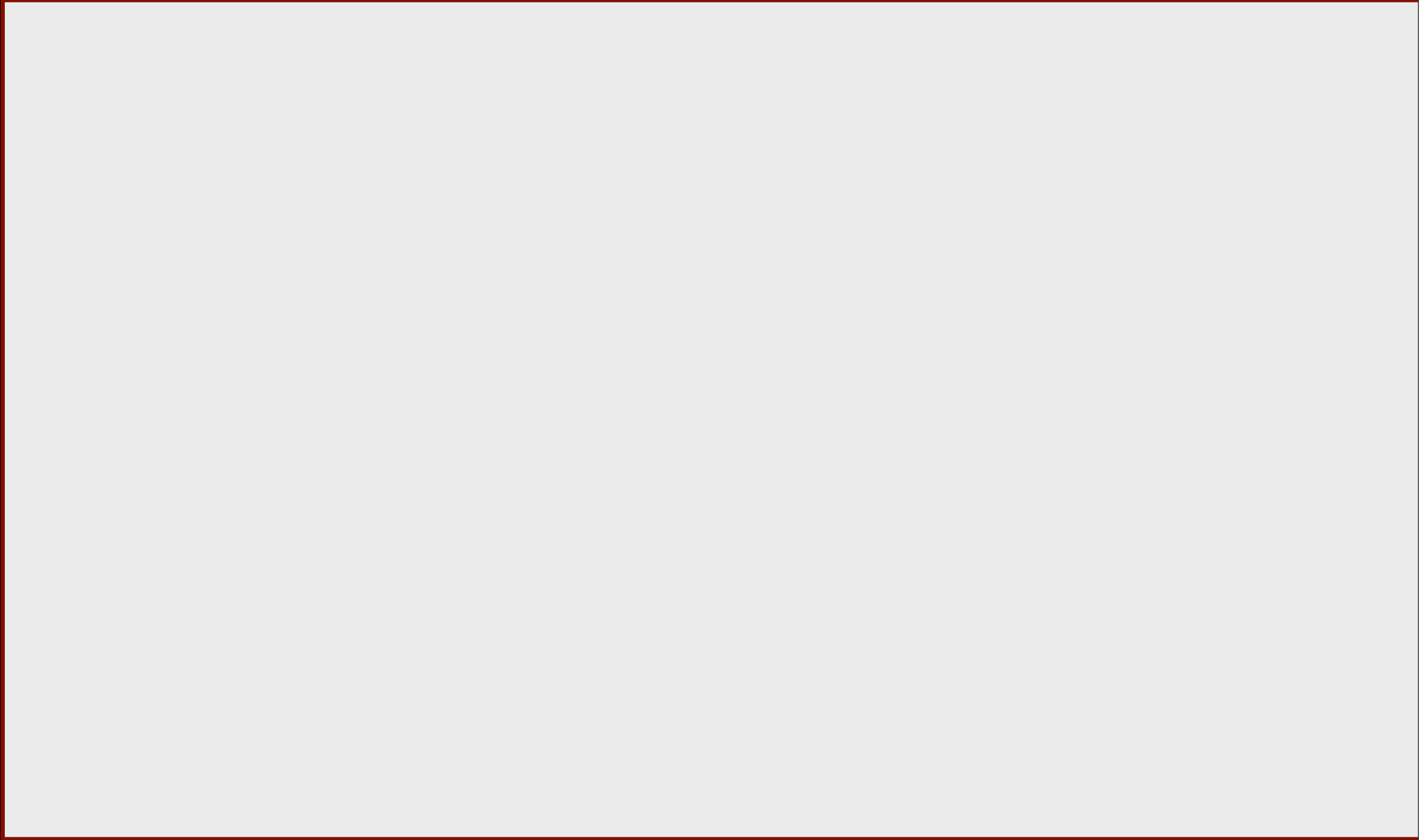
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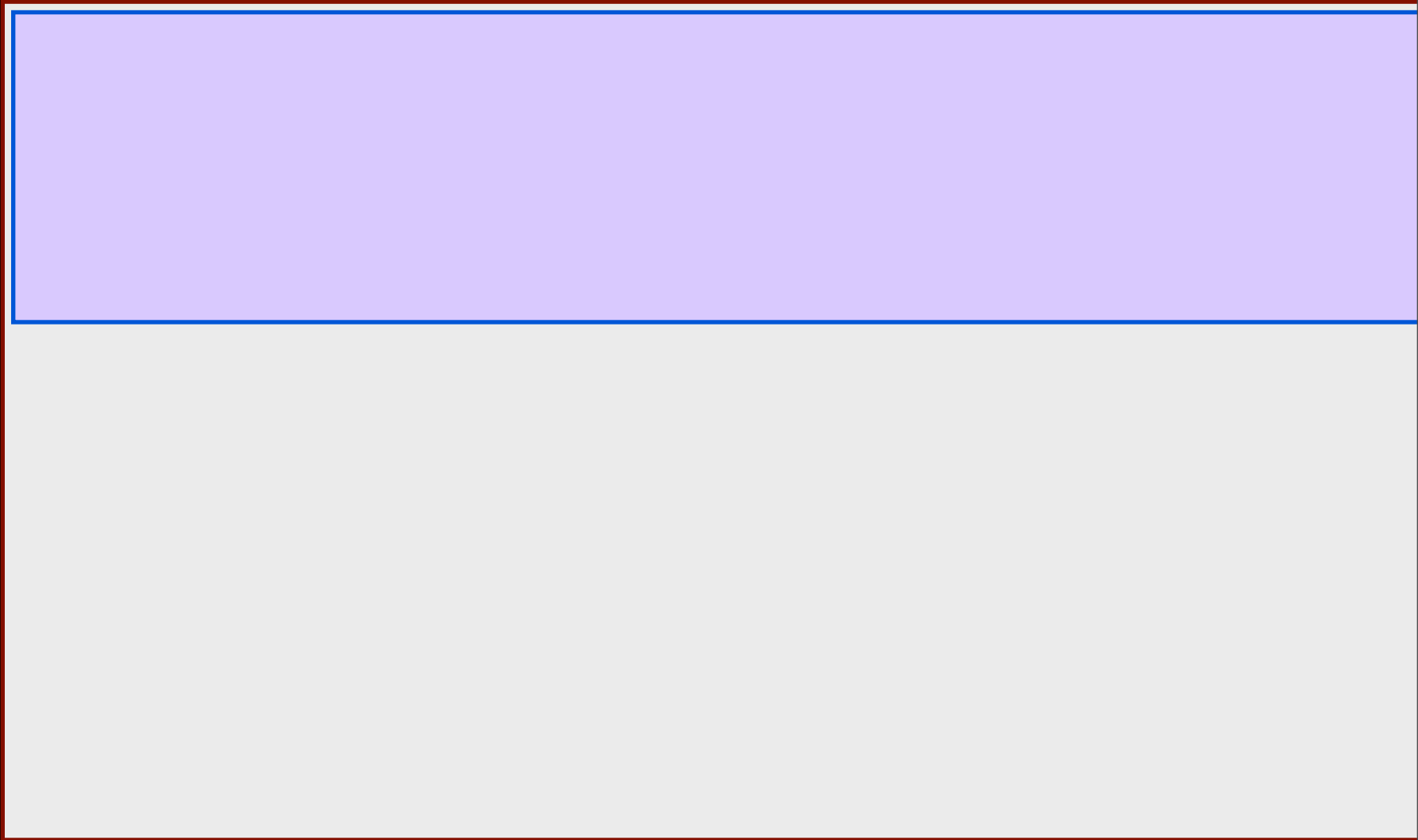
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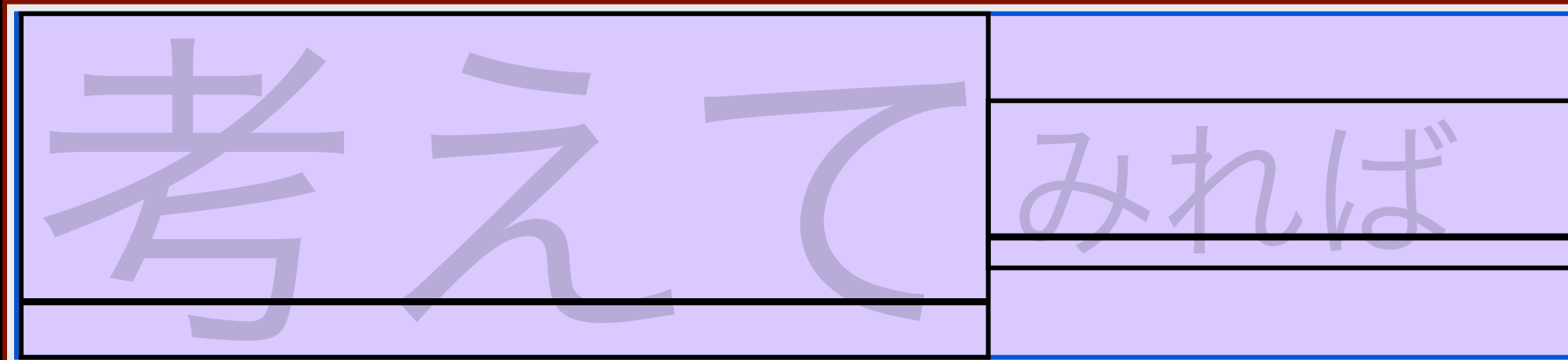


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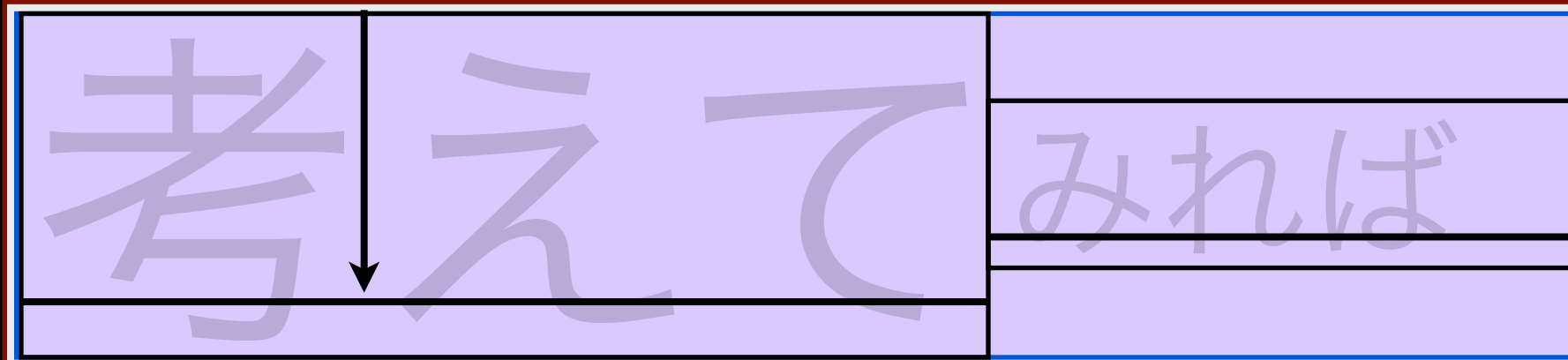




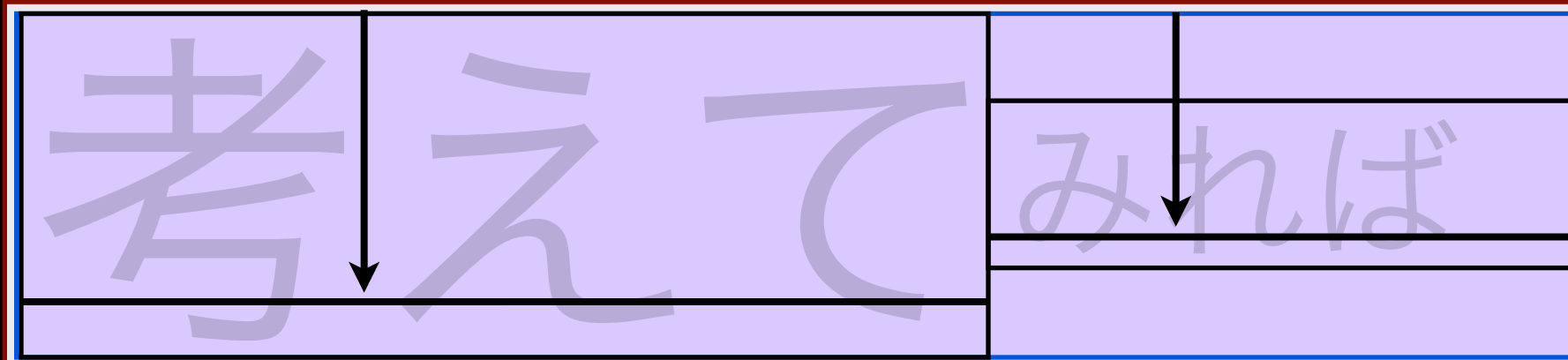
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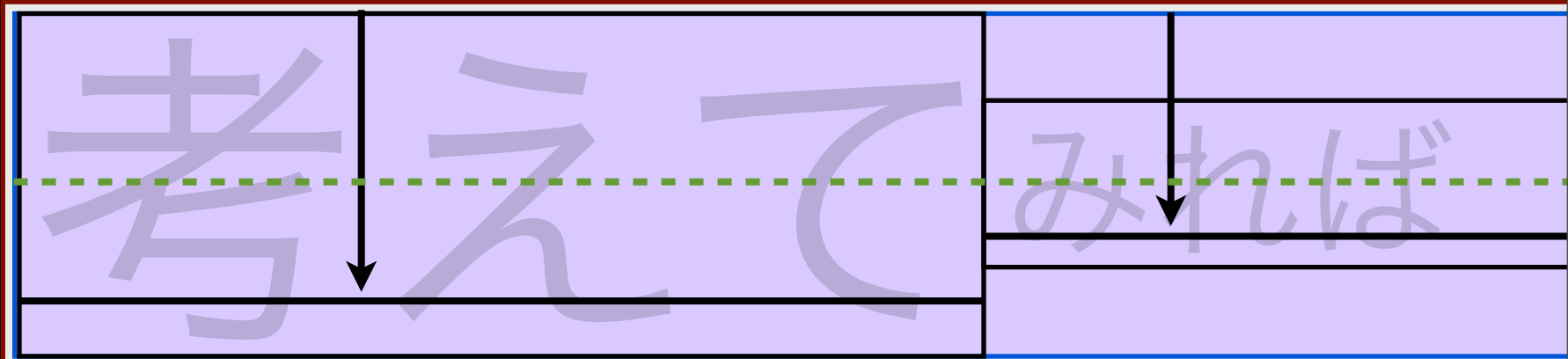
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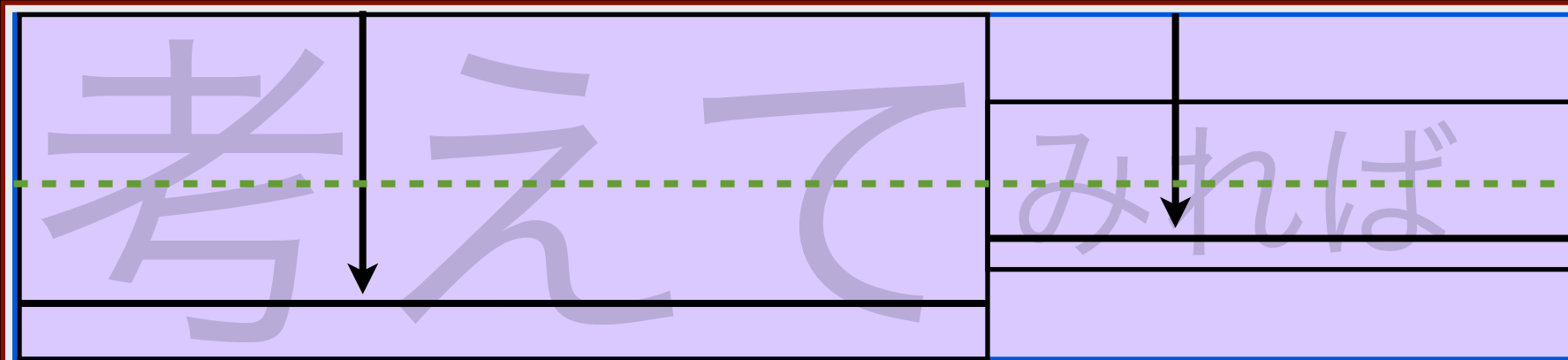
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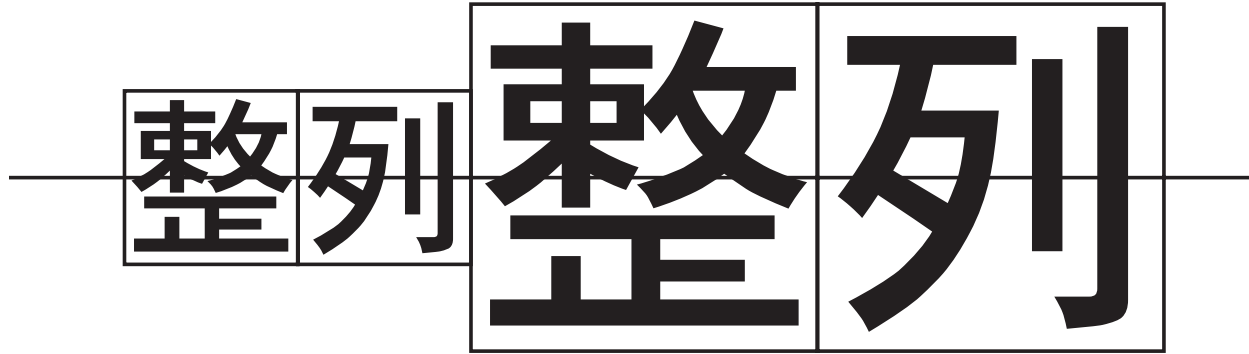
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If the first line's origin is related to the **embox**, and if you understand the **relative position of the Roman baseline to the embox**, you can place the runs within the line, and the lines within the frame, correctly.

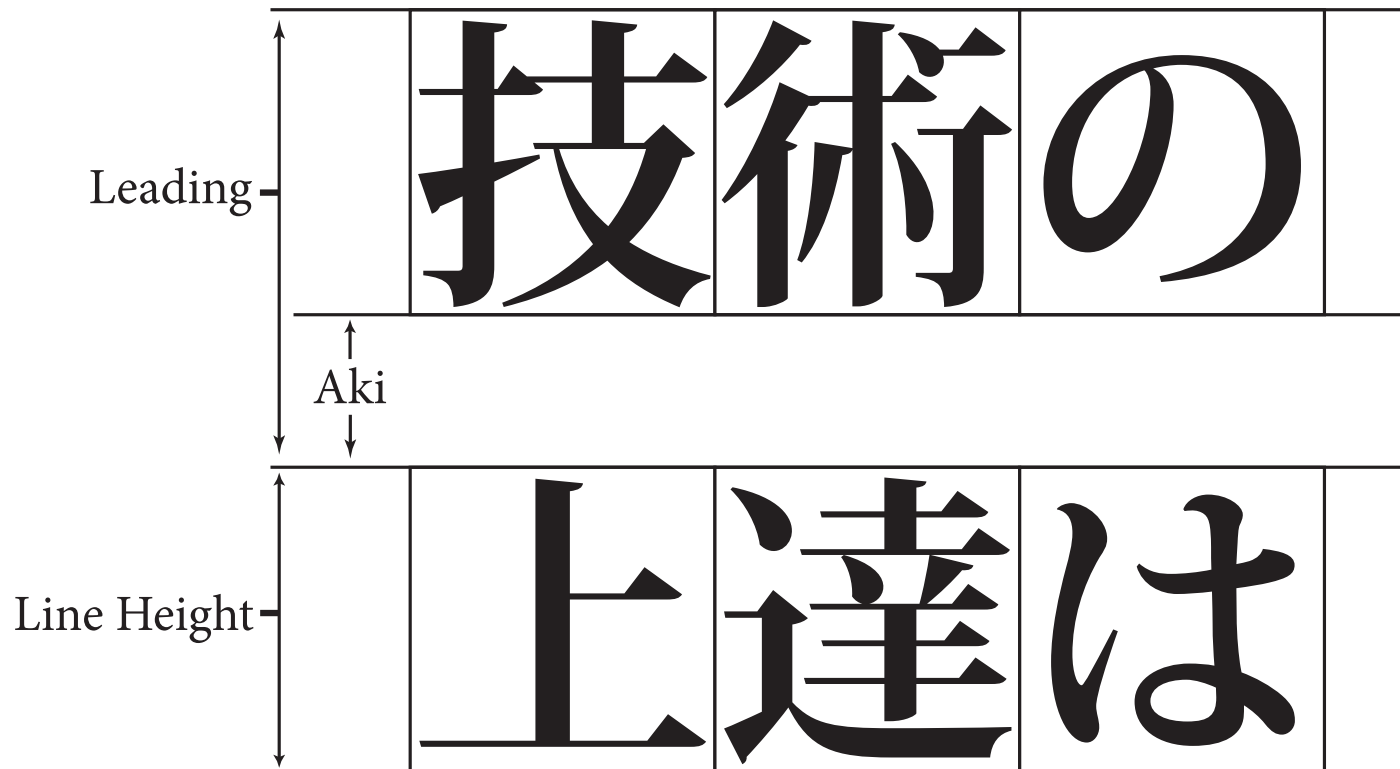


Em-box Center Baseline



Em-box Bottom Baseline

# Japanese leading model



# Japanese grid

Grid is 14 pt. text, 21 pt. leading.  
Large text is 18 pt., 21.5 pt. leading,  
paragraph centered in 4 grid lines (4 gyou-dori)

これはボディーテキスト

これもボディーテキスト

さらにこの行にも。

Equal space  
before and  
after to make  
4 gyou-dori

で、これは4行取り  
の paragraph であ  
り、実は3行である。

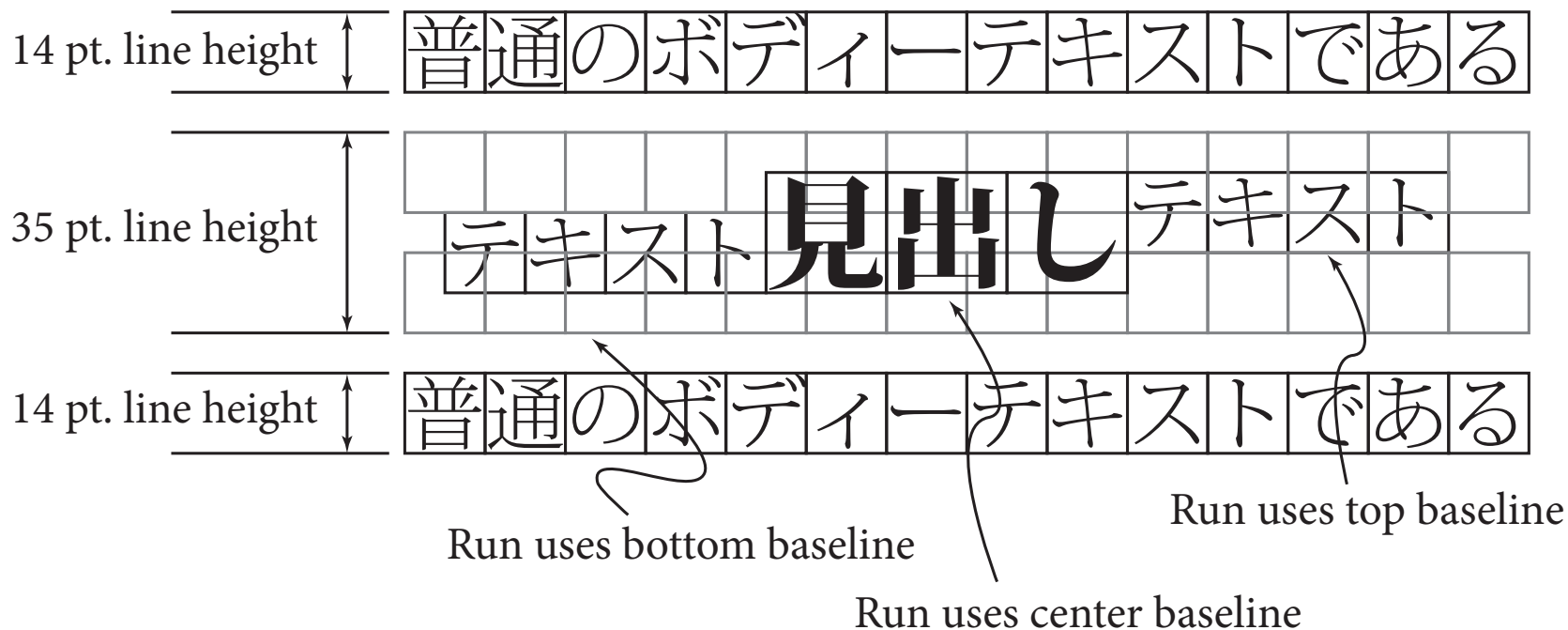
続けて、これはボディー

テキストである。



# Japanese grid

Grid is 14 pt. text with 21 pt. leading (7 pt. aki)  
Large text is 21 pt., which causes line height  
to increase to 35 pt. (14 x 2 + 7) for that line.



### The Japanese grid:

- 1) Sets the frame size to fit the grid
- 2) Positions lines in the frame regardless of font size to fit to the grid (snaps like baselines, e.g. embox centers)

### The baseline grid:

- 1) Allows lines in the paragraph to “snap” to the grid, aligning to “snapped” lines in any other frame on the page
- 2) Supports any single baseline (embox or Roman) per paragraph

