Rhythmic Grid

Micro-block formula

Given:

C_w – canvas width, px
R_w – vertical aspect ratio
R_h – horizontal aspect ratio
b – baseline height, px
c – number of columns
g – gutter width, px

(w_μ, h_μ) – width and height of a micro-block
G_w – grid width, $G_w \leq C_w$

Find: $\{(w_\mu, h_\mu) \mid h_\mu \equiv 0 \pmod{b} \ \wedge \ G_w + g \equiv 0 \pmod{w_\mu + g}\}$

The smallest and the largest micro-block fitting the grid:

$h_{\mu_{min}} = \text{lcm}(b, R_h)$

$w_{\mu_{min}} = h_{\mu_{min}} / R_h \cdot R_w$

$w_{\mu_{max}} = \left\lfloor \left\lfloor \frac{C_w + g}{c} - g \right\rfloor / w_{\mu_{min}} \right\rfloor \cdot w_{\mu_{min}}$

$h_{\mu_{max}} = w_{\mu_{max}} / R_w \cdot R_h$