Convolution identities
for periodic functions and sequences

from functions		to sequences
$f = f(t)$	$\rightarrow$	$\widehat{\mathbf{f}} = \left(\widehat{\mathbf{f}}[n]\right)_{n\in\mathbb{Z}}$
$f(t) = \sum_{n\in\mathbb{Z}} \widehat{\mathbf{f}}[n]\, e^{2\pi int}$	$\leftarrow$	$\widehat{\mathbf{f}}[n] = \int_0^1 f(t)\, e^{-2\pi int}\, dt$
$(f\cdot g)(t) = f(t)\cdot g(t)$	$\rightarrow$	$\widehat{(\mathbf{f}\cdot\mathbf{g})} = \widehat{\mathbf{f}}\star\widehat{\mathbf{g}}$
$(f\star g)(t) = \int_0^1 f(x)\, g(t-x)\, dx$	$\rightarrow$	$\widehat{(\mathbf{f}\star\mathbf{g})} = \widehat{\mathbf{f}}\cdot\widehat{\mathbf{g}}$
to functions		**from sequences**
$\widehat{a} = \widehat{a}(\omega)$	$\leftarrow$	$\mathbf{a} = (\mathbf{a}[n])_{n\in\mathbb{Z}}$
$\widehat{a}(\omega) = \sum_{n\in\mathbb{Z}} \mathbf{a}[n]\, e^{in\omega}$	$\rightarrow$	$\mathbf{a}[n] = \frac{1}{2\pi}\int_0^{2\pi} \widehat{a}(\omega)\, e^{-in\omega}\, d\omega$
$\widehat{(a\cdot b)} = \widehat{a}\star\widehat{b}$	$\leftarrow$	$(\mathbf{a}\cdot\mathbf{b})[n] = \mathbf{a}[n]\cdot\mathbf{b}[n]$
$\widehat{(a\star b)} = \widehat{a}\cdot\widehat{b}$	$\leftarrow$	$(\mathbf{a}\star\mathbf{b})[n] = \sum_{k\in\mathbb{Z}} \mathbf{a}[k]\cdot\mathbf{b}[n-k]$