Padded Convolution

| 1 | 7 | -1 | 2 | 3 |

0 0

Define:

$$h_i = h_0 \text{ for } i \leq 0$$

$$h_i = h_{r+1} \text{ for } i > r$$

| 0 | 0 |

Zero padding: $h_{r+1} = h_0 = 0$

Extension padding: $h_0 = h_1$ and $h_{r+1} = h_r$

33

1 1

Output defined for $1 \leq i \leq r$

| 3 | 2 | -1 |

-5

-5

18

| -5 | 18 |

17

| -5 | 18 | 17 |

-2

| -5 | 18 | 17 | -2 |

6

Padded Convolution

h

1	7	-1	2	3

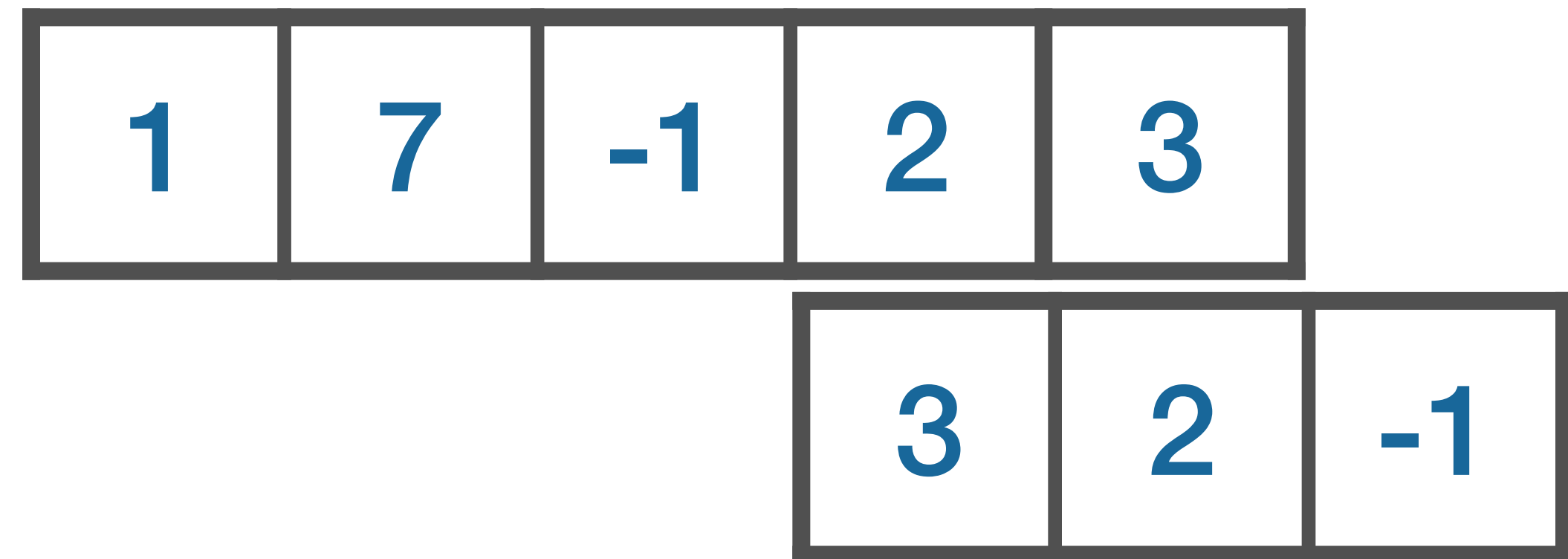|		3	2	-1

Define:

$$h_i = h_0 \text{ for } i \leq 0$$

$$h_i = h_{r+1} \text{ for } i > r$$

Output defined for $1 \leq i \leq r$

-5	18	17	-2	6

$$\mathbf{c} \circledast \mathbf{h}$$

Striding

$$\mathbf{c} \circledast \mathbf{h}$$

h

1	7	-1	2	3	-2	4
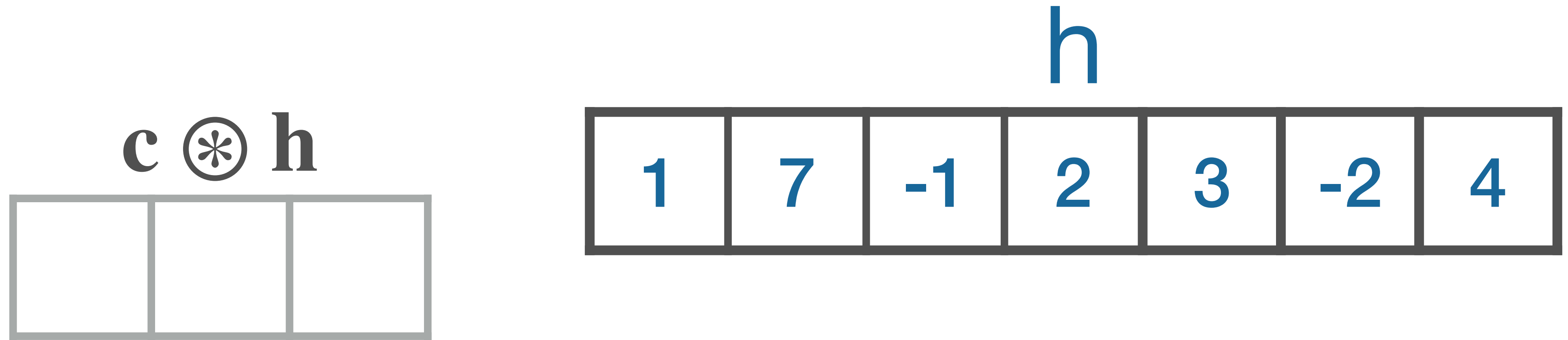
Reduce size of next layer through sub-sampling

$$h_i^{r+1} = \sigma\left(\sum_{j=-s}^{s} c_j\, h_{\mu(i)-j}^r\right) \text{ where } \mu(i) = b(i-1) + 1$$