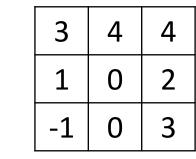


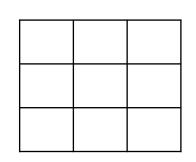
## Convolutional Neural Networks

# Strided convolutions

#### Strided convolution

2 3	3 4	7 3	4 4	6 <sup>3</sup>	2 4	9 4
6 <sup>1</sup>	6 º	9 1	8 0	7 2	4 0	3 <sup>2</sup>
3 -3	4 4	8-3	3 4	8-3	9 4	7 4
7 1	8 0	3 <b>1</b>	6 <sup>0</sup>	6 <b>1</b>	3 0	4 2
4 -3	2 4	1-3	8 4	3-3	4 4	6 4
3 1	2 0	4 1	1 0	9 1	8 0	3 <sup>2</sup>
0 -1	1 0	3-1	9 0	2-3	1 0	4 3





### Summary of convolutions

$$n \times n$$
 image  $f \times f$  filter padding  $p$  stride  $s$ 

$$\left\lfloor \frac{n+2p-f}{s} + 1 \right\rfloor \times \left\lfloor \frac{n+2p-f}{s} + 1 \right\rfloor$$

# Technical note on cross-correlation vs. convolution

Convolution in math textbook:

2	3	7	4	6	2
6	6	9	8	7	4
3	4	8	3	8	9
7	8	3	6	6	3
4	2	1	8	3	4
3	2	4	1	9	8

3	4	5
1	0	2
-1	9	7

