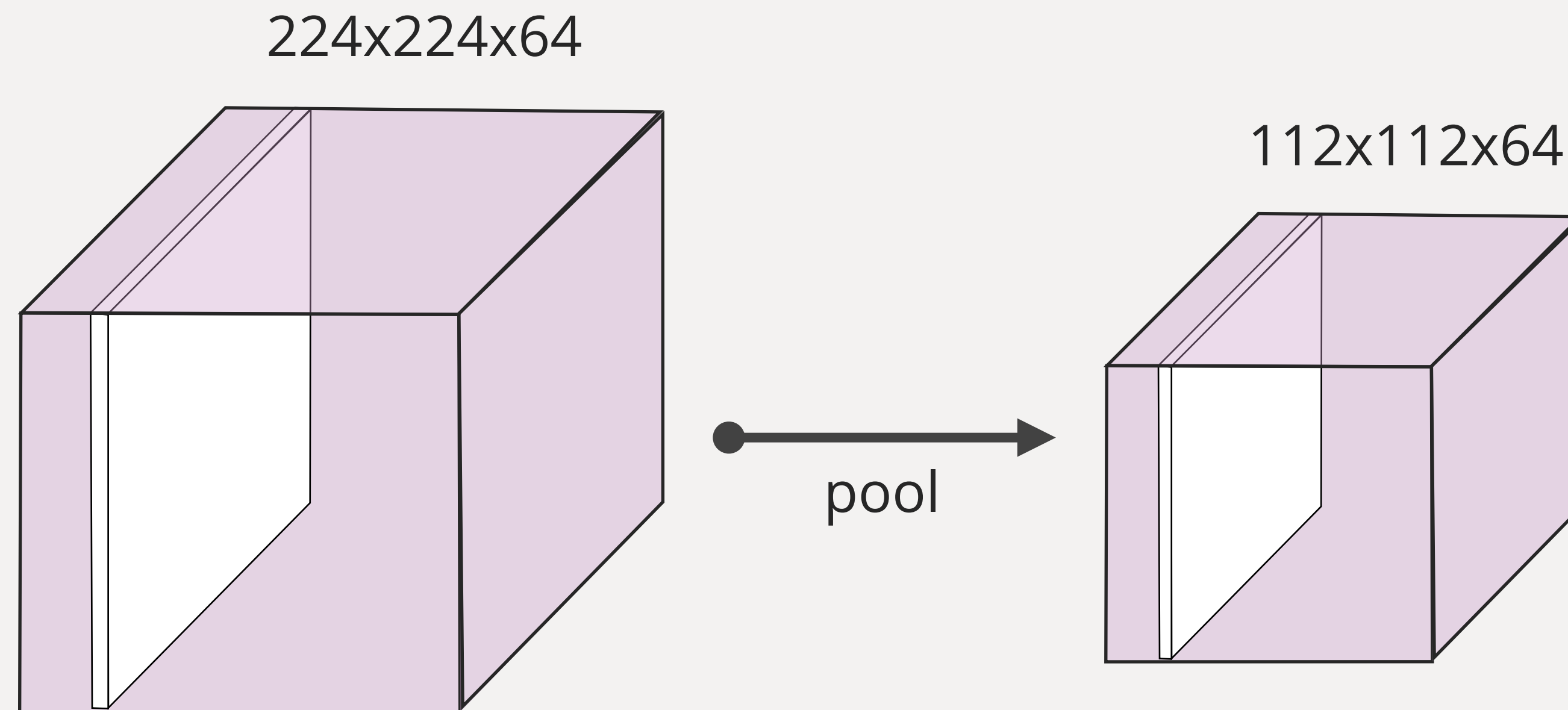


Pooling and Fully Connected Layers



Pooling Layer

- Reduces computational complexity
- Combats overfitting
- Encourages translational invariance

single depth slice

1	1	2	8
5	6	7	4
3	2	1	0
1	2	3	4

max pool 2x2 filter
and stride 2



Pooling Layer

- Pooling layers also have filters with width and stride

single depth slice

1	1	2	8
5	6	7	4
3	2	1	0
1	2	3	4

max pool 2x2 filter
and stride 2



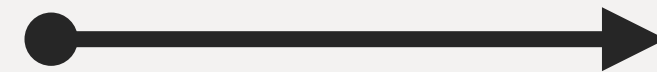
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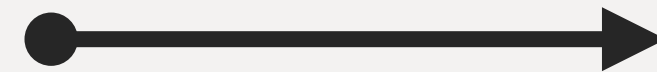
Pooling Layer

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single depth slice

1	1	2	8
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3	2	1	0
1	2	3	4

max pool 2x2 filter
and stride 2



6	

Pooling Layer

- Pooling layers also have filters with width and stride

single depth slice

1	1	2	8
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1	2	3	4

max pool 2x2 filter
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6	

Pooling Layer

- Pooling layers also have filters with width and stride

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1	2	3	4

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6	8

Pooling Layer

- Pooling layers also have filters with width and stride

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max pool 2x2 filter
and stride 2



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3	4

Pooling Layer

- Pooling layers also have filters with width and stride

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5	6	7	4
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1	2	3	4

max pool 2x2 filter
and stride 2



6	8
3	4

Pooling Layer

- Pooling layers also have filters with width and stride
- Pooling typically uses the max; could also use the mean

single depth slice

6	1	2	8
5	6	7	4
3	2	1	0
1	2	3	4

max pool 2x2 filter
and stride 2



6	8
3	4

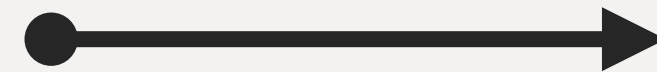
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single depth slice

6	1	2	8
5	6	7	4
3	2	1	0
1	2	3	4

max pool 2x2 filter
and stride 2

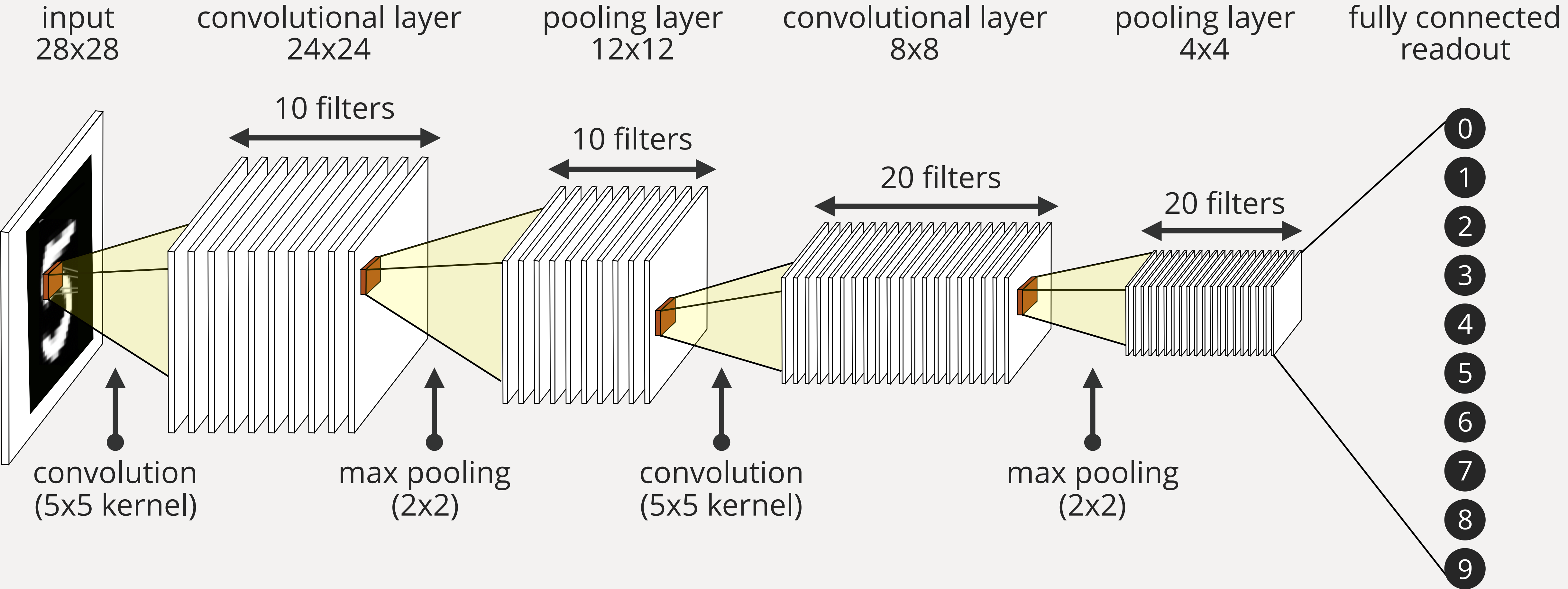


6	8
3	4

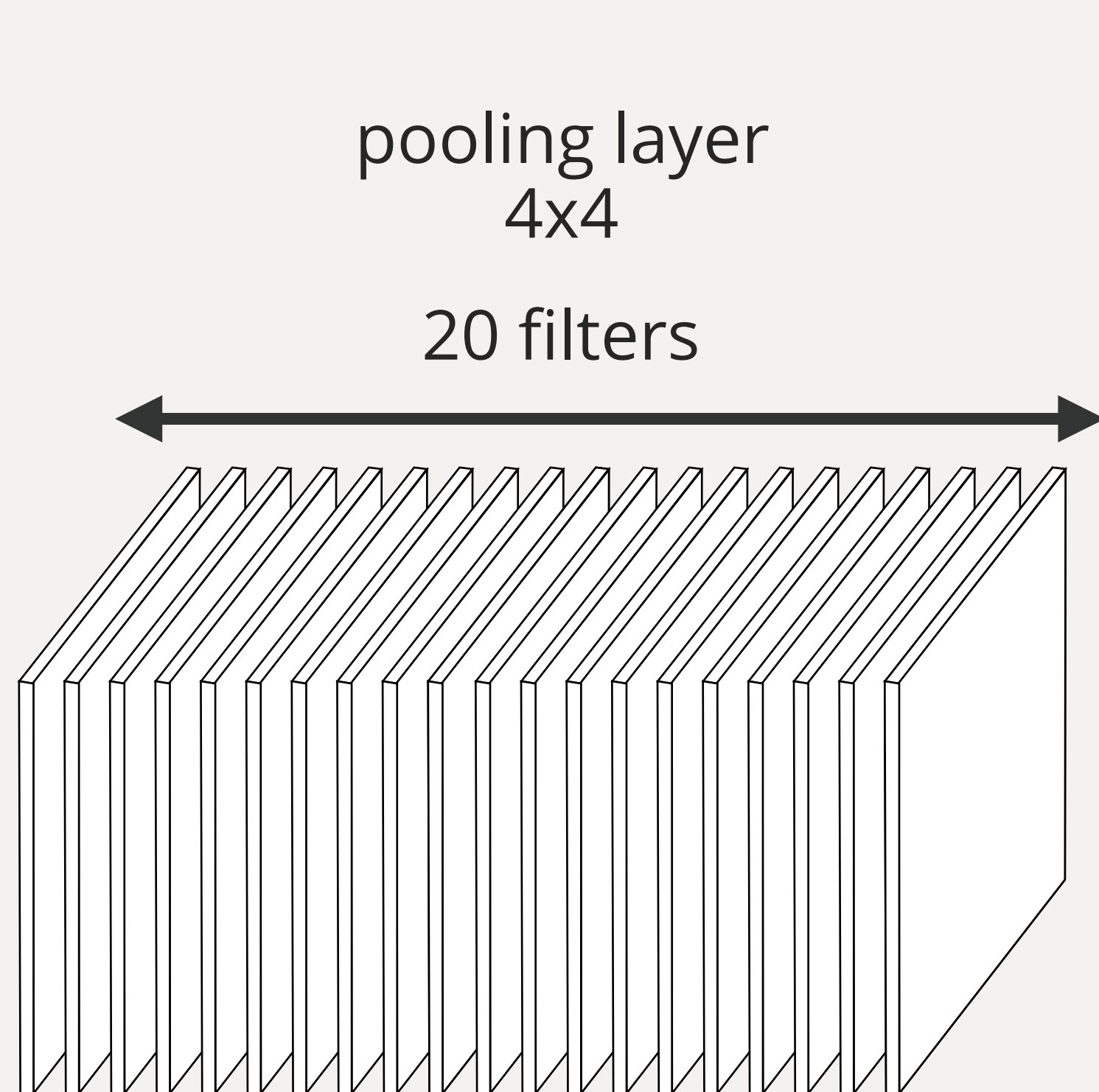
Pooling Layer

- Pooling layers also have filters with width and stride
- Pooling typically uses the max; could also use the mean
- Max pooling picks out strong activation with some position independence

Fully Connected Layer



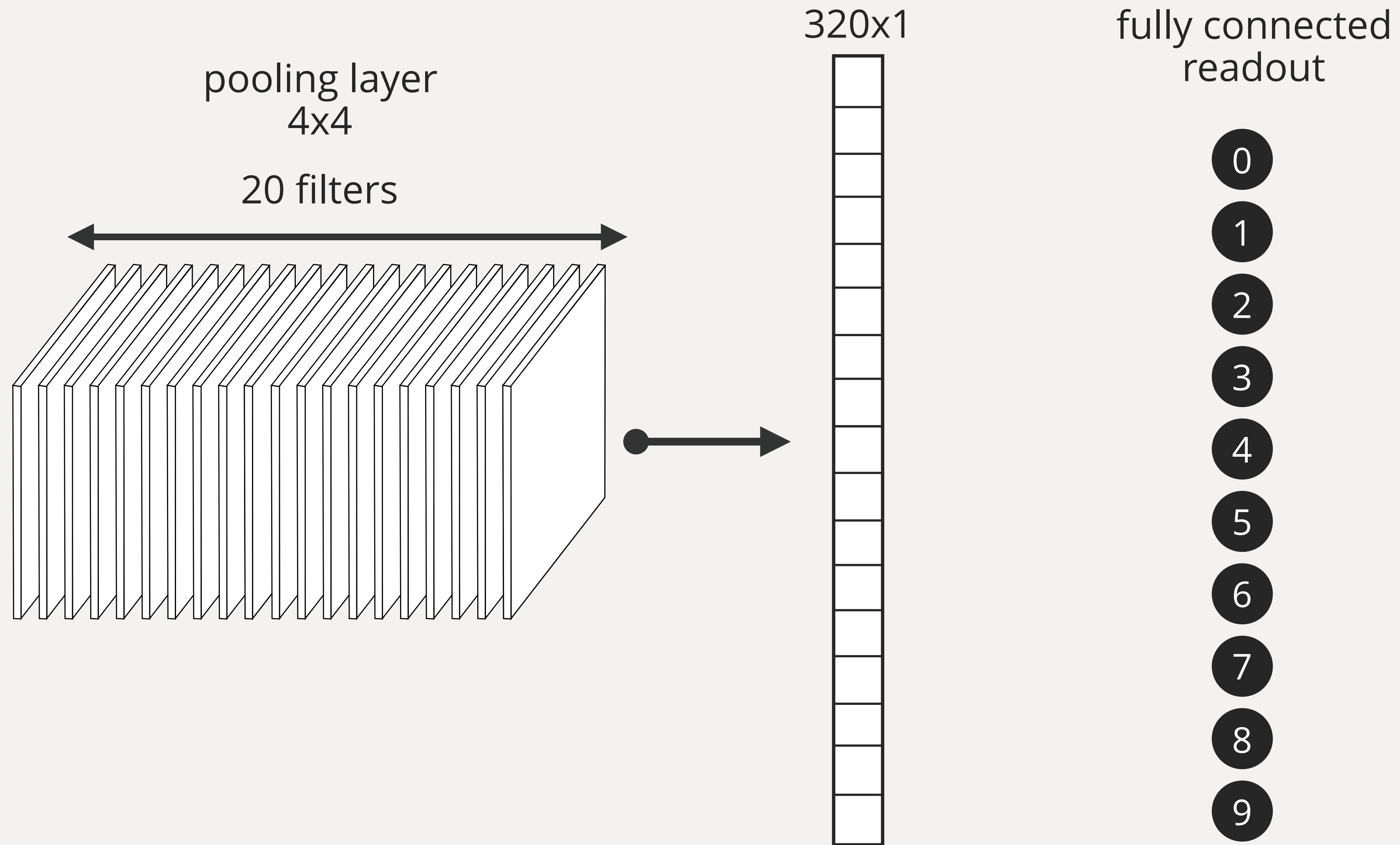
Fully Connected Layer



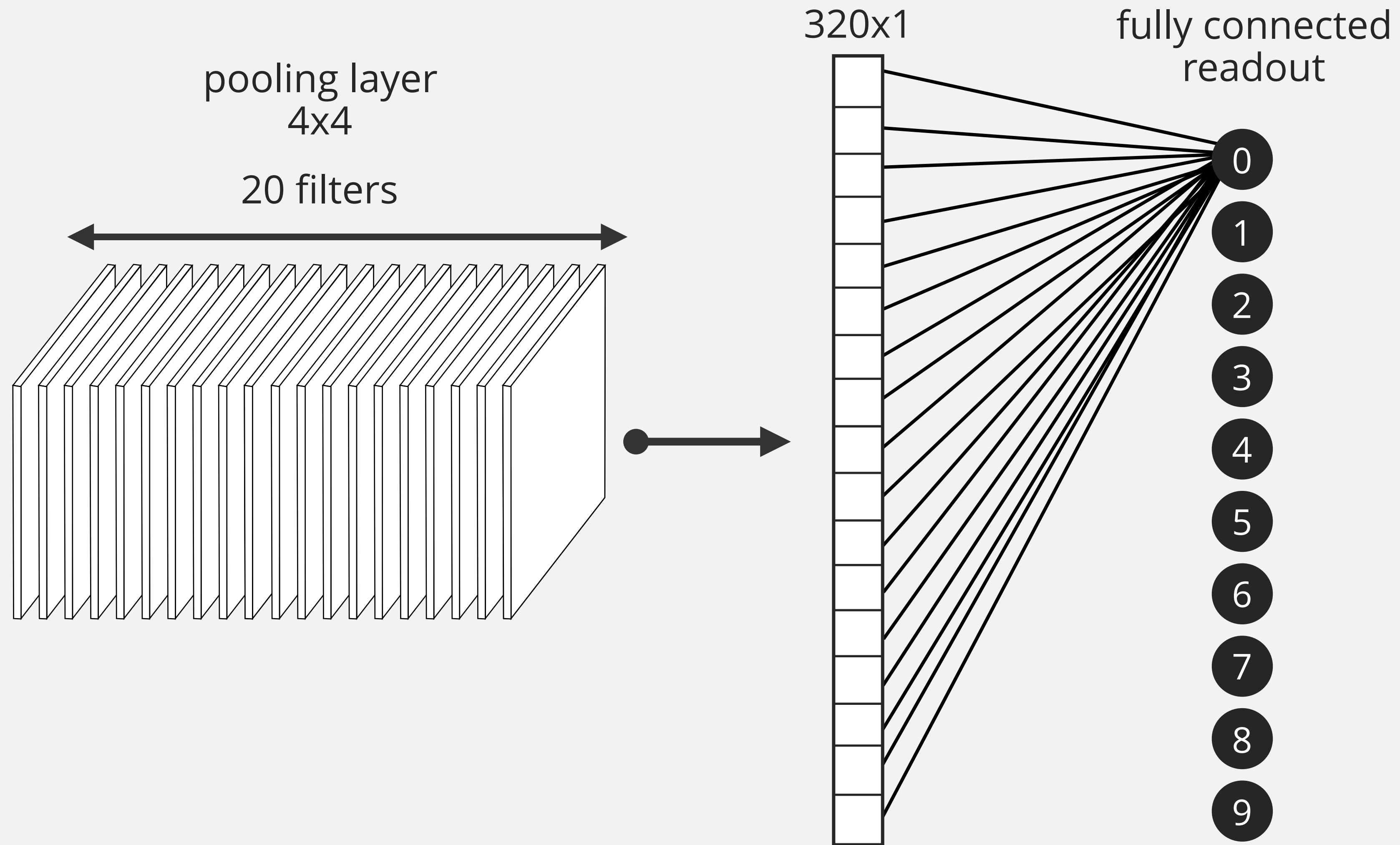
fully connected
readout

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

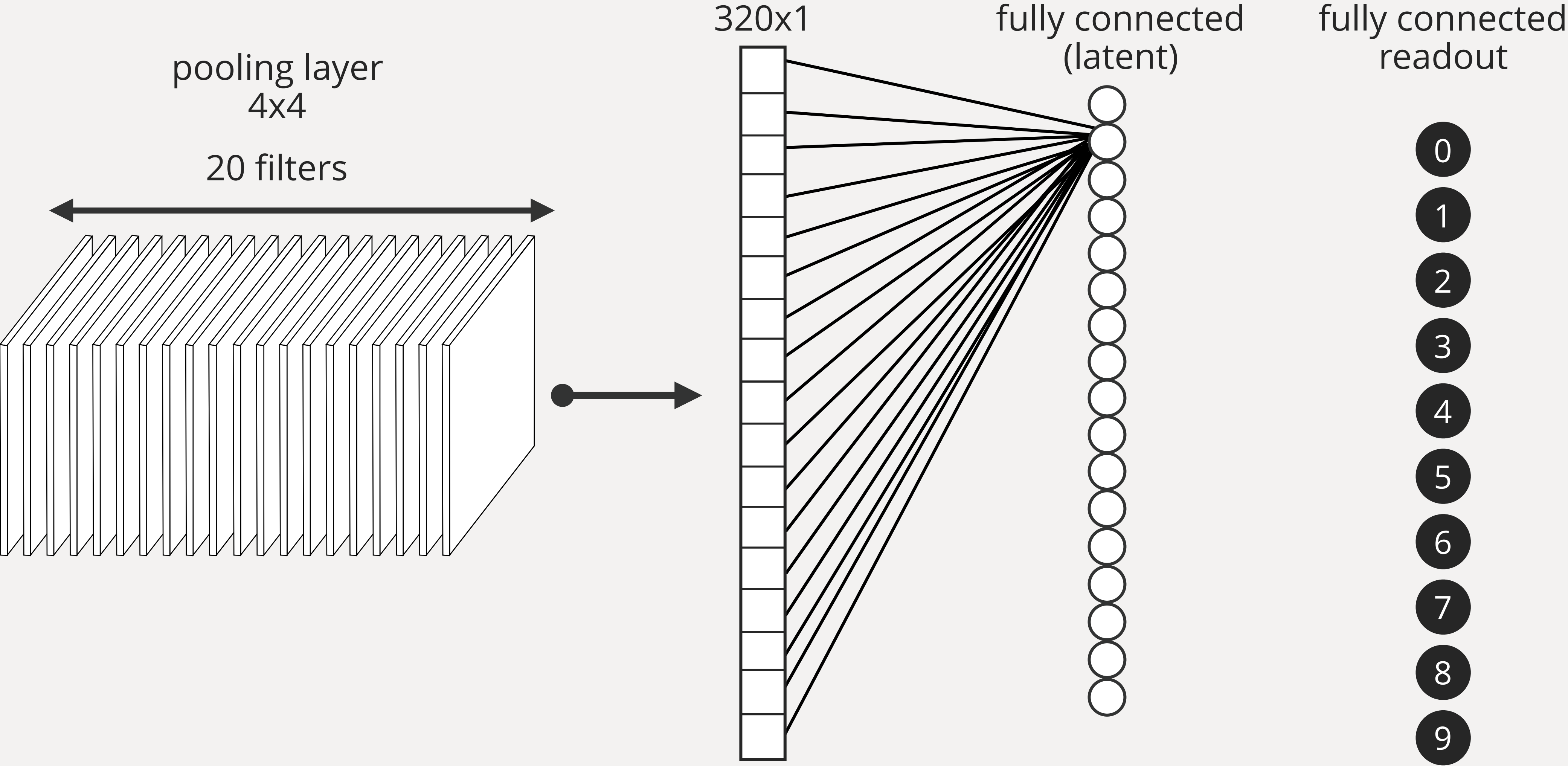
Fully Connected Layer



Fully Connected Layer



Fully Connected Layer



Fully Connected Layer

