Q 1.1: Which of the following is **not** true?

- A. Adding more layers can improve the performance of a neural network.
- B. Residual connections help deal with vanishing gradients.
- C. CNN architectures use no more than ~20 layers to avoid problems such as vanishing gradients.
- D. It is usually easier to learn a zero mapping than the identity mapping.
Break & Quiz

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Break & Quiz

Q 1.1: Which of the following is not true?

• A. Adding more layers can improve the performance of a neural network. (Yes, as long as we’re careful, e.g., ResNets.)
• B. Residual connections help deal with vanishing gradients. (Yes, this is an explicit consideration for residual connections.)
• C. CNN architectures use no more than ~20 layers to avoid problems such as vanishing gradients. (No, much deeper networks.)
• D. It is usually easier to learn a zero mapping than the identity mapping. (Yes: simple way to learn zero is to make weights zero)
Q 2.1: If we apply data augmentation blindly, we might
(i) Change the label of the data point
(ii) Produce a useless training point

• A. (i) but not (ii)
• B. (ii) but not (i)
• C. Neither
• D. Both
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- A. (i) but not (ii) (Can do (ii): imagine turning up the contrast till the image is completely black and is unusable).
- B. (ii) but not (i) (Can change label: rotate a 6 into a 9).
- C. Neither (Can do either).
- D. Both
Q 2.2: What are some consequences of data augmentation?
(i) We have to store a much bigger dataset in memory
(ii) For a fixed batch size, there will be more batches per epoch

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• A. (i) but not (ii) ((i) is false: can store original points only, and then transform them on-the-fly).

• B. (ii) but not (i)

• C. Neither ((ii) is true: more points, same batch size means more batches).

• D. Both