1. Describe a possible machine learning problem for which an RNN would be an appropriate architecture.

**Solution:** There are many different possible answers.

2. Circle all of the following that are true

   A. An RNN contains state information $h$ that is updated from timestep to timestep.
   
   B. The state information $h_t$ depends on the state information at timestep $t - 1$, $h_{t-1}$, as well as the input at timestep $t$, $x_t$.
   
   C. When inputting a sequence of input to an RNN, one starts with the length of the input, and then inputs each of the input elements one by one.

   **Solution:** We don’t feed in the length of the input to the RNN.

   D. When an RNN outputs a sequence, it first outputs the sequence length, and then outputs each element of the sequence.
   
   E. RNNs with long sequences are difficult to train because the number of weights to learn is dependent on the length of the sequence.

   **Solution:** The number of weights is independent of the length of the sequence.