Runtime and Big-O notation   *(find and work with a partner)*

1. Say I want to sort the array of Strings {"pear", "banana", "apple"} in alphabetical order. Using insertion sort with linked lists, what does the list look like at each step?

2. If I want to sort n elements, what is the worst-case runtime of insertion sort?

3. What modifiers (or lack of modifiers) does each of the following have in the ORIGINAL field or method?

   (a) `length` for arrays, i.e. `myArray.length`

      public   final   static
      private   non-final   non-static

   (b) `size()` for LinkedLists, i.e. `myList.size()`

      public   final   static
      private   non-final   non-static

4. Fill in the table below highlighting the pros and cons of arrays and (linked) lists.

	Pros	Cons
Arrays		
Lists		

5. Write code (or pseudocode) to multiply two matrices of integers (using double would make this more general, but we'll use ints for now). You may assume both matrices are square and of size $n \times n$. What is the runtime of matrix multiplication?

```
public static int[][] matrixMult(int[][] mat1, int[][] mat2) {




}
```