CS-141 Basic Array Problems

1. Declare and create an array of 50 integers called `myNums` where the i^{th} element has the value 2*i.
2. Print the values of `myNums` using each of the following methods
    a. the `Arrays` class
    b. a *for-loop*
    c. an *enhanced for-loop*.
3. Compute the average of all of the elements of `myNums`.
4. Print out all the elements of myNums which are divisible by 4.
5. Declare and create a 2D array of `doubles` called `cells` with 4 rows and 8 columns. Set the value of each element of `cells` to be equal to the product of its row and column.
6. What type of variable is `cells`? What type is `cells[2]`? What type is `cells[1][2]`?
7. What is the value of `cells.length`? What is the value of `cells[2].length`? Does `cells[2][3].length` make any sense? Why or why not?
8. Compute and print the average of the values in each row of `cells`.
9. Compute and print the average of the values in each column of `cells`.
10. Compute and print the average over *all* the values in `cells`.
11. Suppose you are writing a solitaire card game which begins with 7 piles of cards aligned in a row. The i^{th} pile contains i+1 cards. Create a 2D array to represent these cards. Set the value of each card randomly to a value in the range 0 to 51.
12. Write a method that takes a card (i.e. number 0 to 51) and prints the card's name. Use arrays to store the names of the suits (Diamonds, Hearts, …) and the names of the face cards (Ace, 1, 2, …).
13. Use your method above to print out the 7 piles of cards, e.g.

```
Pile 0:
Ace of Hearts

Pile 1:
3 of Clubs
Jack of Diamonds

Pile 2:
  …
```

14. Declare and create an `ArrayList` of `Strings` called `animals`.
    a. Add animal names to the list (e.g. ant, aardvark, cat, crow, snake, dog, zebra, cheetah, coyote, duck, dingo, deer).
    b. Use a loop to print out the resulting elements in the `animals`.
    c. Use a loop to remove all animals whose names begin with `'a'` or `'c'`.