

Name KEY

Date \_\_\_\_\_

Period \_\_\_\_\_

**Worksheet 4.1: 1D Array Exercises**

1. Declare and initialize an array of integers so that it contains ten elements that hold the first ten perfect squares (starting with 1). Use a for loop to initialize elements of the array.

```
int[] nums = new int[10];
for (int i = 0; i < nums.length; i++) {
    nums[i] = (i+1)*(i+1);
}
```

2. Write the lines of code that will traverse the array you created in number one and prints the values in a row with a space in between each element value.

```
for (int i = 0; i < nums.length; i++) {
    System.out.print(nums[i] + " ");
}
```

3. Write code that will sum up the values in the array declared in number one.

```
int sum = 0;
for (int i : nums)
    sum += i;
}
```

4. Declare and initialize an array with 8 integer elements. Use the random method of the Math class to initialize the values with random integers between 1 and 50.

```
int[] nums2 = new int[8];
for (int i = 0; i < nums2.length; i++) {
    nums2[i] = (int)(50 * Math.random() + 1);
}
```

- Write code that will search the array and print the smallest number from #4.

```
int min = nums2[0];
for (int x : nums2) {
    if (x < min)
        min = x;
}
System.out.println("The min is " + min);
```

Write code that will search the array and print the largest number from #4.

```
int max = nums[0];
for (int x : nums) {
    if (x > max)
        max = x;
}
System.out.println(max);
```

5. Declare and initialize an array of Strings, which will contain the names of your teachers this year (i.e. Mrs. Smith, Mr. Lowe...). Use an initializer list.

```
String[] teachers = { "Crawford", "Pong", "Trainor",
    "Maher", "Goode" };
```

6. Write code that will swap the 2<sup>nd</sup> and 3<sup>rd</sup> elements in the array you created in number five.

```
String temp = teachers[1];
teachers[1] = teachers[2];
teachers[2] = temp;
```

7. Write code that will visit each element in the array with your teachers' names and alters them so that each element only has the last name with the "Mrs." or "Mr." or "Ms." titles removed.

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**Worksheet 4.2: 1D Array Exercises**

1. Determine the output of the following code segment:

```

int i;
int [] numbers = new int [10]; //init 0
for (i = 0; i < numbers.length; i++){
    numbers[i] = 2*(i - 5);
    numbers[i] = numbers[i] * numbers[i];
}
for (i = 0; i < numbers.length; i++){
    System.out.print(numbers[i] + " ");
}

```

100 64 36 16 4 0 4 16 36 64

100	64	36	16	4	0	4	16	36	64
-----	----	----	----	---	---	---	----	----	----

i: 0 1 2 3 4 5 6 7

100 64 36 16 4 0 4 16 36 64

2. Write a method that takes an array of integers and returns whether they are all even or not.

```

public boolean allEven (int [] nums) {
    boolean b = true; // assume true, till one false
    for (int x : nums) {
        if (x % 2 == 1)
            b = false;
    }
    return b;
}

```

3. Write a method that takes an array of Strings and returns how many of the elements begin with a vowel. Be careful to consider the upper and lower case vowels.

```

public int vowelStart (String [] sArr) {
    int count = 0;
    for (String s : sArr) {
        String x = s.substring(0,1);
        if ("aeiou".indexOf(x) > -1)
            count++;
    }
    return count;
}

```

★ CHALLENGE

4. Write a method that takes an array of Strings and returns how many vowels are in all of the words.

```
public int countAllVowels( String sArr ) {
    int count = 0;
    for (String s : sArr) {
        for (int i=0; i < s.length(); i++) {
            String x = s.substring(i, i+1);
            if ( "aeiou".indexOf(x) > -1 )
                count++;
        }
    }
    return count;
}
```

5. Consider the following code segment.

```
public void mysteryMethod(int[] first, int[] second) {
    int smaller = 0;
    if (first.length < second.length)
        smaller = first.length;
    else
        smaller = second.length;

    int pos = 0;
    for (int i = 0; i < smaller; i++) {
        if (first[i] < second[i]) {
            temp = first[pos];
            first[pos] = second[pos];
            second[pos] = temp;
            pos++;
        }
    }
}
```

smaller  
06

pos  
0

i: 0

Given the following declarations:

```
int[] arrA = {8, 3, 6, 1, 2, 3, 12, 9, 7};
```

```
int[] arrB = {7, 8, 2, 11, 0, 4};
```

7 9 11 4  
5 3 1 3

What do arrA and arrB hold after the following call: `mysteryMethod(arrA, arrB)`?

arrA → { 7, 9, 6, 11, 2, 4, 10, 9, 7 }

arrB → { 5, 3, 2, 1, 0, 3 }