Exercise 4.4

```
/* Saket Bakshi. 10/15/18. Period 6
This program, for #4 of Ch 4, takes two user inputted integers and
calculates various parameters about them.
*/
public class PracticeExercisesCh4E4
{
	private int firstNumber;
	private int secondNumber;
	private int sum;
	private int difference;
	private int product;
	private double average;
	private int distance;
	private int maximum;
	private int minimum;

	/** This class takes two integers and calculates their sum, difference, product, average,
distance, maximum, and minimum.
	@param first the first integer
	@param second the second integer
	*/
	public PracticeExercisesCh4E4(int first, int second)
	{
		this.firstNumber = first;
		this.secondNumber = second;
		this.sum = first + second;
		this.difference = first - second;
		this.product = first * second;
		this.average = this.product / 2;
		this.distance = Math.abs(this.difference);
		this.maximum = Math.max(this.firstNumber, this.secondNumber);
		this.minimum = Math.min(this.firstNumber, this.secondNumber);
	}

	/** Returns the sum
	@return the sum of the integers
	*/
	public int getSum()
	{
		return this.sum;
	}
```

```
/** Returns the difference
@return the difference of the integers
*/
public int getDifference()
{
	return this.difference;
}

/** Returns the product
@return the product of the integers
*/
public int getProduct()
{
	return this.product;
}

/** Returns the average
@return the average of the integers
*/
public double getAverage()
{
	return this.average;
}

/** Returns the distance
@return the distance of the integers
*/
public int getDistance()
{
	return this.distance;
}

/** Returns the maximum
@return the maximum of the integers
*/
public int getMax()
{
	return this.maximum;
}

/** Returns the minimum
@return the minimum of the integers
*/
```

```
	public int getMin()
	{
		return this.minimum;
	}
}
/* Saket Bakshi. 10/15/18. Period 6
This program, for #4 of Ch 4, tests the class for calculating parameters about two inputted
integers.
*/
import java.util.Scanner;

public class PracticeExercisesCh4E4Tester
{
	public static void main(String[] args)
	{
		Scanner key = new Scanner(System.in);

		System.out.print("Give me two integers: ");
		int first = key.nextInt();
		int second = key.nextInt(); //prompts user for numbers

		PracticeExercisesCh4E4 twoInts = new PracticeExercisesCh4E4(first, second);
		System.out.println();
		System.out.println("Here is information about your numbers:");
		System.out.println();

		System.out.printf("Sum: \t" + twoInts.getSum());
		System.out.println("");

		System.out.printf("Difference: \t" + twoInts.getDifference());
		System.out.println("");

		System.out.printf("Product: \t" + twoInts.getProduct());
		System.out.println("");

		System.out.printf("Average: \t" + twoInts.getAverage());
		System.out.println("");

		System.out.printf("Distance: \t" + twoInts.getDistance());
		System.out.println("");

		System.out.printf("Maximum: \t" + twoInts.getMax());
		System.out.println("");
```

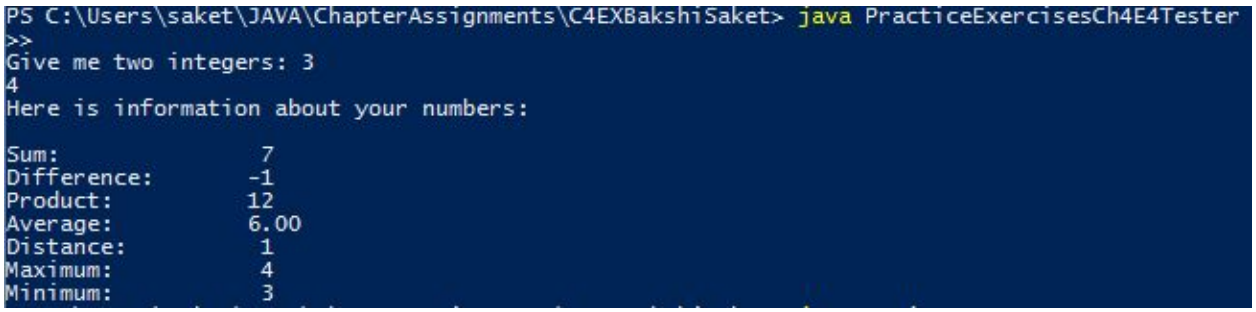
```
                System.out.printf("Minimum: \t" + twoInts.getMin());
                System.out.println("");

                //gives out all calculated information on the numbers
        }
}
```

```
PS C:\Users\saket\JAVA\ChapterAssignments\C4EXBakshiSaket> java PracticeExercisesCh4E4Tester
Give me two integers: 3
4

Here is information about your numbers:

Sum:    7
Difference:     -1
Product:        12
Average:        6.0
Distance:       1
Maximum:        4
Minimum:        3
PS C:\Users\saket\JAVA\ChapterAssignments\C4EXBakshiSaket>
```

Exercise 4.5

```
/* Saket Bakshi. 10/15/18. Period 6
This program, for #5 of Ch 4, tests the class for calculating parameters about two inputted
integers. It prints results properly aligned.
*/
import java.util.Scanner;

public class PracticeExercisesCh4E5Tester
{
        public static void main(String[] args)
        {
                Scanner key = new Scanner(System.in);

                System.out.print("Give me two integers: ");
                int first = key.nextInt();
                int second = key.nextInt(); //prompts user for numbers

                PracticeExercisesCh4E4 twoInts = new PracticeExercisesCh4E4(first, second);
                System.out.println();
                System.out.println("Here is information about your numbers:");
                System.out.println();

                System.out.printf("Sum: %15d", twoInts.getSum());
                System.out.println("");

                System.out.printf("Difference: %8d", twoInts.getDifference());
```

```
                System.out.println("");

                System.out.printf("Product: %11d", twoInts.getProduct());
                System.out.println("");

                System.out.printf("Average: %13.2f", twoInts.getAverage());
                System.out.println("");

                System.out.printf("Distance: %10d", twoInts.getDistance());
                System.out.println("");

                System.out.printf("Maximum: %11d", twoInts.getMax());
                System.out.println("");

                System.out.printf("Minimum: %11d", twoInts.getMin());
                System.out.println("");

                //gives out all calculated information on the numbers
        }
}
```



Exercise 4.7

```
/* Saket Bakshi. 10/15/18. Period 6
This program takes a radius and returns the area and circumference of a circle with that radius
as well as the volume and surface area of a sphere with that radius.
Ch 4, Exercise 7
*/
import java.util.Scanner;

public class PracticeExercisesCh4E7
{
        public static void main(String[] args)
        {
                Scanner key = new Scanner(System.in);
```

```
		System.out.println("What is your radius? ");
		int radius = key.nextInt(); //makes variable to store radius

		double area, circumference, volume, surfaceArea; //makes variables for circle and sphere parameters

		area = Math.PI * radius * radius;
		circumference = 2 * Math.PI * radius;
		volume = 4 / 3 * Math.PI * Math.pow(radius, 3);
		surfaceArea = 4 * Math.PI * Math.pow(radius, 2); //doing all calculations

		System.out.println("For a circle of radius " + radius + ", the area is " + area + " and the circumference is " + circumference + ".");
		System.out.println("For a sphere of radius " + radius + ", the volume is " + volume + " and the surface area is " + surfaceArea + ".");
		//Prints the parameters
	}
}
```

```
PS C:\Users\saket\JAVA\ChapterAssignments\C4EXBakshiSaket> java PracticeExercisesCh4E7
What is your radius?
5
For a circle of radius 5, the area is 78.53981633974483 and the circumference is 31.41592653589793.
For a sphere of radius 5, the volume is 392.6990816987241 and the surface area is 314.1592653589793.
PS C:\Users\saket\JAVA\ChapterAssignments\C4EXBakshiSaket>
```

Project 4.2

```
/* Saket Bakshi. 10/15/18. Period 6
This program calculates the date for Easter Sunday.
Ch 4, Project 2
*/
import java.util.Scanner;

public class PracticeExercisesCh4P2
{
	public static void main(String[] args)
	{
		Scanner key = new Scanner(System.in);
		int year;

		System.out.println("For what year do you want to find the date for Easter Sunday?");

		year = key.nextInt(); //getting the initial year

		int a, c, e, h, k, r, p, b, d, g, j, m, n;
```

```
a = year % 19;
b = year / 100;
c = year % 100;
d = b / 4;
e = b / 4;
g = (8 * b + 13) / 25;
h = (19 * a + b - d - g + 15) / 30;
j = c / 4;
k = c % 4;
m = (a + (11 * h)) / 319;
r = ((2 * e) + (2 * j ) -k -h -m + 32) % 7;
n = (h - m + r + 90) / 25;
p = (h - m + r + n + 19) % 32; //doing Friedrich's calculations

String month = "";

if(n == 1)
        month = "January";
if(n == 2)
        month = "February";
if(n == 3)
        month = "March";
if(n == 4)
        month = "April";
if(n == 5)
        month = "May";
if(n == 6)
        month = "June";
if(n == 7)
        month = "July";
if(n == 8)
        month = "August";
if(n == 9)
        month = "September";
if(n == 10)
        month = "October";
if(n == 11)
        month = "November";
if(n == 12)
        month = "December";
```

```
            System.out.println("Easter will be on day " + p + " of " + month + " in " + year);
            //returning the date and month for the year
        }
}
```

```
PS C:\Users\saket\JAVA\ChapterAssignments\C4EXBakshiSaket> java PracticeExercisesCh4P2
For what year do you want to find the date for Easter Sunday?
2018
Easter will be on day 28 of March in 2018
PS C:\Users\saket\JAVA\ChapterAssignments\C4EXBakshiSaket>
```