Reference Sheet

Method	Description
Math.round(x)	Will round the value of the input
	Math.round(5.782) would return 6.0
Math.abs(x)	Will take the absolute value of the input
	Math.abs(-7) would return 7.0
Math.max(x , y)	Will take two inputs and return the larger of the two
	Math.max(8 , 10) would return 10.0
Math.min(x , y)	Will take two inputs and return the smaller of the two
	Math.min(8 , 10) would return 8.0
Math.pow(x , y)	Will take the first input and raise it to the power of the
	Math.pow(5 , 2) would return 25.0
Math.sqrt(x)	Will take the square root of the input
	Math.sqrt(49) would return 7.0
Math.random()	No input needed, will return a double greater than or equal
	to 0 and less than 1. [0,1)
	Math.random() could return 0.7856

• If you have a computer and internet access at home, you can go to BlueJ.org to download a free copy of BlueJ just like we've used in the classroom.

Casting

Casting can be used to convert one datatype into another compatible datatype. For example:

double myDouble = 5.72; int myInt = (int) myDouble; // takes the double (5.72) and truncates it to be 5

Math.random()

The code below shows how to generate a random number between 1 and 100.

```
public class MathPractice
 {
2
3
      public static void main(String[]args)
      {
          int a = 7;
5
          int b = 5;
6
          double num1 = Math.min(a, b);
          double num2 = Math.max(-a, b);
8
9
          double num3 = Math.abs(a);
          double num4 = Math.abs(-a);
10
11
      }
12
```

Use the code segment above to answer the following questions.

- What would the following method print? System.out.println(num1);
- What would the following method print? System.out.println(num2);
- What would the following method print? System.out.println(num3);
- 4) What would the following method print? System.out.println(num4);
- What would the following method return? Math.round(num1/num3);
- What would the following method return? Math.round(num4/num1);
- 7) Write a method that will take num2 and raise it to the second power.
- 8) Write a method that will round the value of (a) multiplied by 3 and divided by 2.

```
Packet #7
```

```
public class MathPractice2
2 {
     public static void main(String[]args)
3
      {
          int a = 2:
          int b = 5;
          double c = 3.14;
          double d = 2.78;
          double num1 = Math.pow(b, 2);
          double num2 = Math.pow(a, 3);
          double num3 = Math.sqrt(num1);
12
          double num4 = Math.sqrt(num2);
          long num5 = Math.round(c);
13
          long num6 = Math.round(d);
14
15
      }
16
 }
```

Use the code segment above to answer the following questions.

- What would the following method print? System.out.println(num1);
- What would the following method print? System.out.println(num2);
- What would the following method print? System.out.println(num3);
- 4) What would the following method print? System.out.println(num4);
- What would the following method print? System.out.println(num5);
- What would the following method print? System.out.println(num6);
- 7) Write a method for returning the maximum value of num2 and num5.
- 8) What would the method from question 7 return?

Refer to the reference sheet provided to help answer the questions below.

- 1) Which use of Math.random() below would cause an error message? Explain
 - a) int num = Math.random()
 - b) double num = Math.random()
- 2) Which code will generate a random integer between 1 and 10?
 - a) Math.random(1, 10)
 - b) 1 * Math.random() + 10
 - c) 10 * Math.random() + 1
 - d) (int)(1 * Math.random() + 10)
- 3) Math.random() generates number from 0 to 1. Which of these values is excluded as a possible value?
- 4) 10 * Math.random() + 5 will generate numbers in the range of [5, 15). What is the range for 5 * Math.random() + 10?
- 5) Use Math.random() to write a line of code that would generate numbers in the ranges below.
 - a) [1,100) b) [20,50)
 - c) [-10,0) d) [50,200)

The code written below is a class that will generate a random number between 1 and 1000, and then cast it into an integer. Write conditionals (if-statements) to do the following.

If score is more than 800, print "New High Score"

If score is between 500 and 799, print "Nice Job"

If score is between 1 and 499, print "Try again"

public class Packet9

{

```
public static void main (String [] args)
```

{

int score = (int)(1000 * Math.random() + 1);

}

}

Finish writing the class below. It should check to see if variables a, b, and c make a Pythagorean Triple. Remember, the Pythagorean Theorem is $a^2 + b^2 = c^2$.

*Hint: a = 3, b = 4, and c = 5 should print "Yes, that's a Pythagorean Triple."

*Hint: a = 3, b = 4, and c = 10 should print "No, those numbers are not a Pythagorean Triple."

```
public class Packet10
{
       public static void main (String[] args)
       {
               int a = 3;
               int b = 4;
               int c = 5;
                    //replace with testing the numbers for a Pythagorean Triple
               if (
                                                                                            )
              {
                      //replace with print command
               }
               else
               {
                      //replace with print command
               }
       }
}
```