Sample Exam 2 (Chapters 6 to 11)

Each question worth 20%   Name _____

1) Write a Java program which prompts for integers. If you enter an integer in the range 11 to 27 inclusive, your program should terminate. Otherwise, your program should output the square of the number entered, and then repeat. The output of your program should look like the output in the following sample session:

```
Enter integer
3
3 squared = 9
Enter integer
-5
-5 squared = 25
Enter integer
-1
-1 squared = 1
Enter integer
11                ———         program terminates at this point
```

2) Write a method (just a method—not a complete program) that is passed two `int` arrays. Your method should copy the numbers in the second array to corresponding slots in the first array. If the first array is smaller than the second, copy only enough numbers from the second array to fill up the first array.

3) Write a complete Java program that simulates the tossing of two dice. Your program should determine empirically the probability of getting a 7 or 11.

4) Write a complete Java program in which you have three classes: `Test`, `Parent`, and `Child`. `Child` is a subclass of `Parent`.

`Test` contains the `main` method with the following code:
```
Child c = new Child();
c.display();
```

`Parent` contains
```
private int x
```

```
public Parent(int xx)
```
    Initializes `x` to `xx`.

```
public void display()
```
    Displays the value of `x`.

`Child` contains
```
private int y;
```

```
public Child()
```
    Calls the other `Child` constructor passing it 5 and 7.

```
public Child(int xx, int yy)
```
    Calls the `Parent` constructor, passing it `xx`.
    Initializes `y` to `yy`.

```
public void display()
```
    Displays the value of `x` and `y`.

5) a) When the following program is run, what is displayed? Explain your answer briefly.

```
class See
{
    public static int x = 10;
    //----------------------------------
    public See()
    {
        x++;
    }
}
//================================================
class TestSee
{
    public static void main(String[] args)
    {
        See z = new See();
        for (int i = 1; i <= 100; i++)
            z = new See();
        System.out.println(z.x);
    }
}
```

b) Write a copy constructor for the class below. Be as efficient as possible. *Hint*: `Integer` is an immutable class.

```
import java.util.Random;
class Saw
{
    private int x;
    private Integer p;
    //----------------------------------
    public Saw()
    {
        Random r = new Random();
        x = r.nextInt();
        p = new Integer(r.nextInt());
    }
}
```