AP Computer Science Problem Set 1

9/10

Name: Corbin Frisvold

1. B Which of the following pairs of declarations will cause an error message?

I
```
double x = 14.7;
int y = x;
```

II
```
double x = 14.7;
int y = (int) x;
```
← 14

III
```
int x = 14;
double y = x;
```
→ 14.0

(A) None
(B) I only
(C) II only
(D) III only
(E) I and III only

2. E Refer to the following code fragment:

```
double answer = 13 / 5;
System.out.println("13 / 5 = " + answer);
```

The output is

```
13 / 5 = 2.0
```

The programmer intends the output to be

```
13 / 5 = 2.6
```

Which of the following replacements for the first line of code will *not* fix the problem?

(A) `double answer = (double) 13 / 5;`
(B) `double answer = 13 / (double) 5;`
(C) `double answer = 13.0 / 5;`
(D) `double answer = 13 / 5.0;`
(E) `double answer = (double) (13 / 5);`

3. D What will the output be for the following poorly formatted program segment, if the input value for num is 22?

```
int num = call to a method that reads an integer;
if (num > 0) ✓
if (num % 5 == 0) ✗
System.out.println(num);
else System.out.println(num + " is negative");
```

(A) 22
(B) 4
(C) 2 is negative
(D) 22 is negative
(E) Nothing will be output.

✓ D A program has a String variable fullName that stores a first name, followed by a space, followed by a last name. There are no spaces in either the first or last names. Here are some examples of fullName values: "Anthony Coppola", "Jimmy Carroll", and "Tom DeWire". Consider this code segment that extracts the last name from a fullName variable, and stores it in lastName with no surrounding blanks:

```
int k = fullName.indexOf(" ");     //find index of blank
String lastName = /* expression */
```

Which is a correct replacement for /* *expression* */?

I `fullName.substring(k);` ✗ Starts @ space

II `fullName.substring(k + 1);` - continues to end

III `fullName.substring(k + 1, fullName.length());` - ends @ end

(A) I only
(B) II only
(C) III only
(D) II and III only
(E) I and III only

✓5. A This question refers to the following declaration:

```
String line = "Some more silly stuff on strings!";
//the words are separated by a single space
```

What string will str refer to after execution of the following?

```
int x = line.indexOf("m");
String str = line.substring(10, 15) + line.substring(25, 25 + x);
```

"Silly" + "St" 27

(A) "sillyst"
(B) "sillystr"
(C) "silly st"
(D) "silly str"
(E) "sillystrin"

✓6. A A program simulates fifty slips of paper, numbered 1 through 50, placed in a bowl for a raffle drawing. Which of the following statements stores in winner a random integer from 1 to 50?

(A) `int winner = (int) (Math.random() * 50) + 1;`
(B) `int winner = (int) (Math.random() * 50);`
(C) `int winner = (int) (Math.random() * 51);`
(D) `int winner = (int) (Math.random() * 51) + 1;`
(E) `int winner = (int) (1 + Math.random() * 49);`

Not including 1!

Math.random() = [0, 1)
.50 = 0, 49
+1 = [1, 50]

(-1)

(1) E

Consider these declarations:

```
String s1 = "crab";
String s2 = new String("crab");
String s3 = s1;
```

Which expression involving these strings evaluates to `true`?

I `s1 == s2` true

II `s1.equals(s2)` true

III `s3.equals(s2)` true

(A) I only
(B) II only
(C) II and III only
(D) I and II only
(E) I, II, and III

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Should be C, I checks memory addresses, which aren't the same.

Questions 8 - 10 refer to the following `Date` class declaration.

```
public class Date
{
    private int myDay;
    private int myMonth;
    private int myYear;

    public Date()                                   //default constructor
    {
        ...
    }

    public Date(int mo, int day, int yr)    //constructor
    {
        ...
    }

    public int month()        //returns month of Date
    {
        ...
    }

    public int day()          //returns day of Date
    {
        ...
    }

    public int year()         //returns year of Date
    {
        ...
    }

    //Returns String representation of Date as "m/d/y", e.g. 4/18/1985.
    public String toString()
    {
        ...
    }
}
```

√8. B

Which of the following correctly constructs a Date object?

(A) `Date d = new (2, 13, 1947);`

(B) `Date d = new Date(2, 13, 1947);` declares + constructs

(C)
```
Date d;
d = new (2, 13, 1947);
```

(D)
```
Date d;
d = Date(2, 13, 1947);
```

(E) `Date d = Date(2, 13, 1947);`

√9. A

A method in a client program for the Date class has this declaration:

```
Date d1 = new Date(month, day, year);
```

where month, day, and year are previously defined integer variables. The same method now creates a second Date object d2 that is an exact copy of the object d1 refers to. Which of the following code segments will *not* do this correctly?

I `Date d2 = d1;`

II `Date d2 = new Date(month, day, year);`

III `Date d2 = new Date(d1.month(), d1.day(), d1.year());`

(A) I only
(B) II only
(C) III only
(D) II and III only
(E) I, II, and III

√10. E

A client program creates a Date object as follows:

```
Date d = new Date(1, 13, 2002);
```

Which of the following subsequent code segments will cause an error?

(A) `String s = d.toString();`
(B) `int x = d.day();`
(C) `Date e = d;`
(D) `Date e = new Date(1, 13, 2002);`
(E) `int y = d.myYear;`