# AP-CSA-TEST-1-A (60 mins)

1. What is the value of len after the following executes?

```
String s1 = "Hey, buddy!";
int len = s1.length();
```

A. 8          B. 9          C.10          D.11

2. What is the value of s1 after the following code executes?

```
String s1 = "Hey";
String s2 = s1.substring(0,1);
String s3 = s2.toLowerCase();
```

A. Hey          B. He          C. he          D. h

3. After the following code is executed, which of I, II and/or III will evaluate to true?

```
String s1 = "xyz";
String s2 = s1;
String s3 = s2;


I.   s1.equals(s3)
II.  s1 == s2
III. s1 == s3
```

A. I          B. I, II          C. II, III          D. I, II, III

4. What is output from the following code?

```
String s = "Georgia Tech";
String s1 = s.substring(0,7);
String s2 = s1.substring(2);
String s3 = s2.substring(0,3);
System.out.println(s3);
```

A. org          B. eor          C. eorg          D. orgi

5. Consider the following code segment.

```
double d1 = 10.0;
Double d2 = 20.0;
Double d3 = new Double(30.0);
double d4 = new Double(40.0);

System.out.println(d1 + d2 + d3.doubleValue() + d4);
```

What, if anything, is printed when the code segment is executed?
A. 100.0          B. 10.050.040.0          C. 10.020.070.0          D. There is no output due to a compilation error

6. Given the following code segment, which of the following is true?

```
String s1 = new String("Hi There");
String s2 = new String("Hi There");
String s3 = s1;

I.    (s1 == s2)
II.   (s1.equals(s2))
III.  (s1 == s3)
IV.   (s2.equals(s3))
```

A.  II and IV          B.   II, III, and IV        C. I, II, III, IV          D. II only

7.  Which of the following would be true about 40% of the time?
    A.   Math.random() < 0.4          B. Math.random() = 0.4
    C.   Math.random() >0.4           D. Math.random() ≠ 0.4

8.  Which of the following would return a random number from 1 to 5 inclusive?
    A.   (int) (Math.random() * 5)          B. (int) (Math.random() * 6)
    C.   (int) (Math.random() * 5) + 1      D. (int) Math.random()*5+1

9.  Given the following code segment, what is in the string referenced by s1?

```
String s1 = "xy";
String s2 = s1;
s1 = s1 + s2 + "z";
```

A xyxy          B. xyxyz          C.xy xy z          D. xy z

10. A science teacher wants to create an Elements class for the Periodic Table. They want to include several attributes to the Elements class: the atomic weight, the element name, and the atomic number for the element.
    For example, if you wanted to create an entry for Oxygen you would use the following data:
    Name: Oxygen
    Atomic Weight: 15.999
    Atomic Number: 8
    Which of the following instance variables makes the most sense based on these attributes?
    A.                                              B.
    private int atomicWeight;                        private int atomicWeight;
    private String name;                             private String name;
    private int atomicNum;                           private double atomicNum;

    C.                                              D.
    private double atomicWeight;                     private double atomicWeight;
    private String name;                             private String name;
    private double atomicNum;                        private int atomicNum;

11. Which of the following would return a random number from 0 to 10 inclusive?
    A.   (int) (Math.random() * 10)          B. (int) (Math.random() * 11)
    C.   ((int) Math.random() * 10) + 1      D. (int) Math.random()*11

12. A procedure that is defined by the user is called a
    A. method          B. keyword          C. variable          D.   variable type

13. What is true of a void method?
    A. It returns any value.　　B. It returns no value.　　C. It takes no parameters.　　D. It can take any parameter.

14. Which of the following code segments would successfully square the minimum value between two int variables x, y?
    A.　Math.min(Math.pow(x, y));　　　　B. Math.pow(Math.min(x, y));
    C.　Math.pow(Math.min(x, y), 2);　　 D. Math.pow(2, Math.min(x, y));

15. Consider the following method:
```
public double doubleVal(double x)
{
    return x *2;
}
```
The following code segment calls the method doubleVal:
    Double val = 6.5;
    System.out.println(doubleVal(val));
What is printed when the code segment is executed?
    A.13　　　　B. 13.0　　　　　　C. 12　　　D.　12.5

16. What does the following code print?
```
System.out.println("13" + 5 + 3);
```
    A.　21　　　　　　B. 1353　　　　　　C.138　　　　　　D. It will give a run-time error

17. Which of the following code segments would correctly assign word from the String sentence = "Grab the last word" to the variable lastWord?
```
I. String lastWord = sentence.substring(sentence.length()-4, sentence.length());
II. String lastWord = sentence.substring(sentence.indexOf("w"), sentence.indexOf
("d"));
III. String lastWord = sentence.substring(14, 16) + sentence.substring(1, 2) + se
ntence.substring(sentence.length()-1, sentence.length());
```
    A.　I　　　　　　B. II and III　　　　　　C. I and II　　　　　　D. I and III

18. Which of the following statements assigns a random integer between 25 and 60, inclusive, to rn ?
    A. int rn = (int) (Math.random() * 25) + 36;　　　　B. int rn = (int) (Math.random() * 25) + 60;
    C. int rn = (int) (Math.random() * 36) + 25;　　　　D. int rn = (int) (Math.random() * 60) + 25;

19. Consider this code snippet that uses a class called Rectangle.
    int roomHeight = 40;
    int roomWidth = roomHeight * 3;
    Rectangle room = new Rectangle(roomHeight, roomWidth);
    Which of the following is a reference variable?
    A. room　　　　　　B. roomHeight　　　　　　C. rommWidth　　　　　　D.Rectangle

20. Consider the following code segment.

```
int a = 5;
int b = 8;
int c = 3;
System.out.println(a + b / c * 2);
```

What is printed as a result of executing this code?

A. 2          B. 6          C. 8          D. 9

21. Consider the following code segment.

```
String oldStr = "ABCDEF";
String newStr = oldStr.substring(1, 3) + oldStr.substring(4);
System.out.println(newStr);
```

What is printed as a result of executing the code segment?

A. ABCD          B. BCDE          C. BCEF          D.BCDEF

22. Consider the following class.

public class SomeMethods

{
public void one(int first)

{/* implementation not shown */}

public void one(int first, int second)

{/* implementation not shown */}

public void one(int first, String second)

{/* implementation not shown */}

}

Which of the following methods can be added to the SomeMethods class without causing a compile-time error?

I.  public void one(int value)
    {/* implementation not shown */}

II.  public void one (String first, int second)

    {/* implementation not shown */}

III.  public void one (int first, int second, int third)

    {/* implementation not shown */}

A. I only          B. I and II only          C. I and III only          D. II and III only

23. Given the following code segment, what is the value of s1 after the code executes?

```
String s1 = "Hi There";
String s2 = s1;
String s3 = s2;
String s4 = s1;
s2 = s2.toLowerCase();
s3 = s3.toUpperCase();
s4 = null;
```

A.  null          B.hi there          C. HI THERE          <mark>D. Hi There</mark>

24. Consider the following class:

```
public class RandomCalculator
{
   private int x;
   private int y;

    public RandomCalculator(int one, int two)
    {
        x = one;
        y = two;
    }

    public int add(int num)
    {
        return x + y + num;
    }

    public int add(double num)
    {
        return (int)(num) + x / y;
    }

    public int add(double num, int num2)
    {
        return (int)(num2 + num + x - y);
    }

    public double add(int num, double num2)
    {
        return num + num2 - x + y;
    }
}
```

What would the output be of the following code segment:
```
RandomCalculator calc = new RandomCalculator(4, 5);
System.out.println(calc.add(5.0));
System.out.println(calc.add(5.0, 5));
System.out.println(calc.add(5, 5.0));
```

| A. | B. | C. | D. |
|----|----|----|----|
| 14 | <mark>5</mark> | 5 | 14 |
| 9 | <mark>9</mark> | 9.0 | 11.0 |
| 11 | <mark>11.0</mark> | 11 | 9 |

25. What is the value of pos after the following code executes?

5

```
String s1 = "ac ded ca";
int pos = s1.indexOf("d");
```

A. -1             B. 3             C.4             D.5

26. Consider the following class definition.

```
public class Bird
{
    private String species;
    private String color;
    private boolean canFly;
    public Bird(String str, String col, boolean cf)
    {
        species = str;
        color = col;
        canFly = cf;
    }
}
```

Which of the following constructors, if added to the Bird class, will cause a compilation error?

A.
```
public Bird() {
    species = "unknown";
    color = "unknown";
    canFly = false;
}
```

B.
```
public Bird(boolean cf) {
    species = "unknown";
    color = "unknown";
    canFly = cf;
}
```

C.
```
public Bird(String col, String str) {
    species = str;
    color = col;
    canFly = false;
}
```

D.
```
public Bird(String col, String str, boolean cf) {
    species = str;
    color = col;
    canFly = cf;
}
```

27. In the code segment below, assume that the int variables a and b have been properly declared and initialized.

```
int c = a;
int d = b;
c += 3;
d--;
double num = c;
num /= d;
```

Which of the following best describes the behavior of the code segment?

A. The code segment stores the value of (a + 3) / b in the variable num

B. The code segment stores the value of (a + 3) / (b - 1) in the variable num

C. The code segment stores the value of (a + 3) / (b - 2) in the variable num.

D. The code segment causes a runtime error in the last line of code because num is type double and d is type int.

28. Consider the following methods, which appear in the same class

```
public void slope(int x1, int y1, int x2, int y2)
{
    int xChange = x2 - x1;
    int yChange = y2 - y1;
    printFraction(yChange, xChange);
}

public void printFraction(int numerator, int denominator)
{
    System.out.print(numerator + "/" + denominator);
}
```

Assume that the method call slope(1, 2, 5, 10) appears in a method in the same class. What is printed as a result of the method call?

A. 8/4          B. 5/1          C. 4/8          D.2/1

29. Consider the following code segment.

```
double x = (int) (5.5 - 2.5);
double y = (int) 5.5 - 2.5;
System.out.println(x - y);
```

What is printed as a result of executing the code segment?

A. -1.0          B. -0.5          C. 0.0          D.0.5

30. Consider the following code segment.

```
String temp = "comp";
System.out.print(temp.substring(0) + " " +
            temp.substring(1) + " " +
            temp.substring(2) + " " +
            temp.substring(3));
```

What is printed when the code segment is executed?

A. comp          B. c o m p          C. comp com co c          D.comp omp mp p

31. Consider the following code segment.

```
String str = "0";
str += str + 0 + 8;
System.out.println(str);
```

What is printed as a result of executing the code segment?

A. 8          B. 08          C. 008          D.0008

32. Consider the following code segment.

```
int one = 1;
int two = 2;
String zee = "Z";
System.out.println(one + two + zee);
```

What is printed as a result of executing the code segment?

A. 12Z          B. 3Z          C. 12zee          D.3zee

33. Consider the following method, which is intended to return true if at least one of the three strings s1, s2, or s3 contains the substring "art". Otherwise, the method should return false.

7

```
public static boolean containsArt(String s1, String s2, String s3)
{

  String all = s1 + s2 + s3;

  return (all.indexOf("art") != -1);

}
```

Which of the following method calls demonstrates that the method does not work as intended?

A. containsArt ("rattrap", "similar", "today")          B. containsArt ("start", "article", "Bart")

C. containsArt ("harm", "chortle", "crowbar")          D. containsArt ("matriculate", "carat", "arbitrary")

34. Consider the following class definition

```
public class ExamScore
{
      private String studentId;
      private double score;
      public ExamScore(String sid, double s)
      {
          studentId = sid;
          score = s;
      }
      public double getScore()
      {
          return score;
      }
      public void bonus(int b)
      {
          score += score * b/100.0;
      }
}
```

Assume that the following code segment appears in a class other than **ExamScore**.

```
ExamScore es = new ExamScore("12345", 80.0);
es.bonus(5);
System.out.println(es.getScore());
```

What is printed as a result of executing the code segment?

A. 4.0          B. 5.0          C. 84.0          D.85.0

35. A student has created an OrderedPair class to represent points on an -plane. The class contains the following.

    An int variable called **x** to represent an -coordinate.

    An int variable called **y** to represent a -coordinate.

    A method called **printXY** that will print the values of x and y.

The object **origin** will be declared as type **OrderedPair.**

Which of the following descriptions is accurate?

A. **origin** is an instance of the **printXY** method.          B. **origin** is an instance of the **OrderedPair** class.

C. **origin** is an instance of two int objects.          D. **OrderedPair** is an instance of the origin object.