1. Consider the following method. (Matching 3 points each)

public static int mystery(int[] arr)

{

int x = 0;

for (int k = 0; k < arr.length; k = k + 2)

x = x + arr[k];

return x;

}

Assume that the array nums has been declared and initialized as follows.

int[] nums = {3, 6, 1, 0, 1, 4, 2};

What value will be returned as a result of the call mystery(nums) ?

(A) 5

(B) 6

(C) 7

(D) 10

(E) 17

**Questions 2 refer to the following information.**

Consider the following partial class declaration.

public class SomeClass

{

private int myA;

private int myB;

private int myC;

// Constructor(s) not shown

public int getA()

{ return myA; }

public void setB(int value)

{ myB = value; }

}

2. The following declaration appears in another class.

SomeClass obj = new SomeClass();

Which of the following code segments will compile without error?

(A) int x = obj.getA();

(B) int x;

obj.getA(x);

(C) int x = obj.myA;

(D) int x = SomeClass.getA();

(E) int x = getA(obj);

4. Consider the following code segment.

int x = 7;

int y = 3;

if ((x < 10) && (y < 0))

System.out.println("Value is: " + (x \* y));

else

System.out.println("Value is: " + (x / y));

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

(A) Value is: 21

(B) Value is: 2.3333333

(C) Value is: 2

(D) Value is: 0

(E) Value is: 1

6. Consider the following method that is intended to determine if the double values d1 and d2 are close enough to be considered equal. For example, given a tolerance of 0.001, the values 54.32271 and 54.32294 would be considered equal.

/\*\* @return true if d1 and d2 are within the specified tolerance,

\* false otherwise

\*/

public boolean almostEqual(double d1, double d2, double tolerance)

{

**/\* *missing code* \*/**

}

Which of the following should replace /**\* *missing code* \*/** so that almostEqual will work as intended?

(A) return (d1 - d2) <= tolerance;

(B) return ((d1 + d2) / 2) <= tolerance;

(C) return (d1 - d2) >= tolerance;

(D) return ((d1 + d2) / 2) >= tolerance;

(E) return Math.abs(d1 - d2) <= tolerance;

8. Consider the following class declaration.

public class Student

{

private String myName;

private int myAge;

public Student()

{ /\* implementation not shown \*/ }

public Student(String name, int age)

{ /\* implementation not shown \*/ }

// No other constructors

}

Which of the following declarations will compile without error?

I. Student a = new Student();

II. Student b = new Student("Juan", 15);

III. Student c = new Student("Juan", "15");

(A) I only

(B) II only

(C) I and II only

(D) I and III only

(E) I, II, and III

9. Consider the following method that is intended to return the sum of the elements in the array key.

public static int sumArray(int[] key)

{

int sum = 0;

for (int i = 1; i <= key.length; i++)

{

**/\* *missing code* \*/**

}

return sum;

}

Which of the following statements should be used to replace /\* *missing code* \*/ so that sumArray will work as intended?

(A) sum = key[i];

(B) sum += key[i - 1];

(C) sum += key[i];

(D) sum += sum + key[i - 1];

(E) sum += sum + key[i];

12. Consider the following method.

public String mystery(String input)

{

String output = "";

for (int k = 1; k < input.length(); k = k + 2)

{

output += input.substring(k, k + 1);

}

return output;

}

What is returned as a result of the call mystery("computer") ?

(A) "computer"

(B) "cmue"

(C) "optr"

(D) "ompute"

(E) Nothing is returned because an IndexOutOfBoundsException is thrown.

13. Consider the following code segment.

int[] arr = {7, 2, 5, 3, 0, 10};

for (int k = 0; k < arr.length - 1; k++)

{

if (arr[k] > arr[k + 1])

System.out.print(k + " " + arr[k] + " ");

}

What will be printed as a result of executing the code segment?

(A) 0 2 2 3 3 0

(B) 0 7 2 5 3 3

(C) 0 7 2 5 5 10

(D) 1 7 3 5 4 3

(E) 7 2 5 3 3 0

17. Consider the following code segment.

int[] arr = {1, 2, 3, 4, 5, 6, 7};

for (int k = 3; k < arr.length - 1; k++)

arr[k] = arr[k + 1];

Which of the following represents the contents of arr as a result of executing the code segment?

(A) {1, 2, 3, 4, 5, 6, 7}

(B) {1, 2, 3, 5, 6, 7}

(C) {1, 2, 3, 5, 6, 7, 7}

(D) {1, 2, 3, 5, 6, 7, 8}

(E) {2, 3, 4, 5, 6, 7, 7}

19. Assume that a and b have been defined and initialized as int values. The expression

!(!(a != b ) && (b > 7))

is equivalent to which of the following?

(A) (a != b) || (b < 7)

(B) (a != b) || (b <= 7)

(C) (a == b) || (b <= 7)

(D) (a != b) && (b <= 7)

(E) (a == b) && (b > 7)

26. Assume that the array arr has been defined and initialized as follows.

int[] arr = /\* initial values for the array \*/ ;

Which of the following will correctly print all of the odd integers contained in arr but none of the even

integers contained in arr ?

(A) for (int x : arr)

if (x % 2 != 0)

System.out.println(x);

(B) for (int k = 1; k < arr.length; k++)

if (arr[k] % 2 != 0)

System.out.println(arr[k]);

(C) for (int x : arr)

if (x % 2 != 0)

System.out.println(arr[x]);

(D) for (int k = 0; k < arr.length; k++)

if (arr[k] % 2 != 0)

System.out.println(k);

(E) for (int x : arr)

if (arr[x] % 2 != 0)

System.out.println(arr[x]);

30. Consider the following method.

public static String scramble(String word, int howFar)

{

return word.substring(howFar + 1, word.length()) + word.substring(0, howFar);

}

What value is returned as a result of the call scramble("compiler", 3)?

(A) "compiler"

(B) "pilercom"

(C) "ilercom"

(D) "ilercomp"

(E) No value is returned because an IndexOutOfBoundsException will be thrown.

33. Consider the following code segment.

int sum = 0;

int k = 1;

while (sum < 12 || k < 4)

sum += k;

System.out.println(sum);

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

(A) 6

(B) 10

(C) 12

(D) 15

(E) Nothing is printed due to an infinite loop.

35. Consider the following code segment.

int num = 2574;

int result = 0;

while (num > 0)

{

result = result \* 10 + num % 10;

num /= 10;

}

System.out.println(result);

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

(A) 2

(B) 4

(C) 18

(D) 2574

(E) 4752

IV: Coding

1. Write the code to make a class called Person which will store a name. Include in the class the following:
2. **Default constructor** that sets the name to “Emma”
3. A **constructor** that is sent the name.
4. A **toString**() method that returns the name
5. A **rename()** method that is sent a String and change the name to the String and does not return anything.
6. Write the STATIC METHOD for **one** of the following. **Do not write the main body**.
7. Problem: You want to drop a ball and then **tell** (SOP) how many bounces it takes for the ball to drop to half of its original height. Information: In the main body, the user input the original height and the percentage of that height that is lost with every bounce and then output answer in the main body. For example: If original height was 16 feet and you lose 25% of height with each bounce, the following information would be appropriate:

Bounce Height

1. 16
2. 12
3. 9
4. 6.75.

So it took 3 bounces for ball to be less than ½ the original height of 16 feet.

1. In a method, have a computer roll two dice 100 times. After summing each pair of dice, have the computer calculate the longest sequence of continuous 7’s that were rolled. **Return this value** back to the main body. Example:

Roll Dice1 Dice2 Total Longest sequence of 7’s

1 2 5 7 1

2 5 6 11 1

3 2 3 5 1

4 3 4 7 1

5 1 6 7 2

1. 6 6 12 2
2. Select **one** of the following and write the code necessary to solve the problem, make sure you write down the number of the problem you select. ( 20 points each) 🡪 No need for any subroutines and no need to have the public static void …. You do need to declare the variables needed for the code.
   1. Input: assume an answer key (array of String called ***key***) to a drivers exam - 25 question multiple choice - has already been inputted. Write code that will allow a student to take the exam (just say what is the answer to question 1: a, b, c, d, e; what is the answer to question 2: a, b, c, d, e … what is the answer to question #25: a, b, c, d, e ….

output: If the student gets at least 80% correct, state, “Student passed exam”;

otherwise, say, “Student will need to retake exam”.

* 1. Input: Assume an array of 20 single letter Strings, called ***letters***, has already

been created. Also, input a desired number, called ***desired*** .

output: “Yes” if more than ***desired*** of all characters in the array letters are less

than “K”; otherwise, output “no”.