A 1. Assume an array named `values` is declared and instantiated with the following statement:

```
float[] values = new float[899];
```

What is the subscript number (also called the index number) of the first element in the array?

A) 0 B) 1 C) 899 D) 900 E) 901

B 2. Assume an array named `values` is declared and instantiated with the following statement:

```
float[] values = new float[899];
```

What is the subscript number (also called the index number) of the last element in the array?

A) 897 B) 898 C) 899 D) 900 E) 901

*Remember that the first element would be `values[0]`, so the 899th element would be `values[898]`.

1. How would you declare and instantiate (in the same line) the following: an array of 30 integers using the name `ages`? (3 pts)

2. How would you declare and instantiate (in the same line) the following: an array of 1000 floating-point numbers using the name `average`? (3 pts)

```
int ages[] = new int[30];

float average[] = new float[1000];
```

Explain what the following Processing code does in each numbered line. (5 pts)

```
int[] values = new int [100]; _____[1]_____
void draw() {
for (int i = 0; i < values.length; i++) { _____[2]_____
 values[i] = i; _____[3]_____
 println(values[i]); _____[4]_____
}
}
```

- Blank 1: declares and instantiates an integer array, `values`, with 100 elements
- Blank 2: `for` loop header that starts at i=0, goes through i=99, and adds 1 to i each time the loop runs
- Blank 3: assigns current value of i to `values[i]`
- Blank 4: prints out each element of the `values` array (numbers 0-99, each on a new line)

Explain what the following Processing code does in each numbered line. (10 pts)

```
float[] gray; _____[1]_____

void setup() {
  size(240, 120);
  gray = new float[width]; _____[2]_____
  for (int i = 0; i < gray.length; i++) { _____[3]_____
    gray[i] = random(0, 255);_____[4]_____
  }
}

void draw() {
  for (int i = 0; i < gray.length; i++) { _____[5]_____
    stroke(gray[i]); _____[6]_____
    line(i, 0, i, height);_____[7]_____
  }
}
```

- Blank 1: declares floating-point array called `gray`
- Blank 2: instantiates `gray` and gives it a length equal to the width of the sketch, 240
- Blank 3: `for` loop header that starts at i=0, goes through i=239, and adds 1 to i each time the loop runs
- Blank 4: assigns a random value between 0 and 255 to each element of the `gray` array
- Blank 5: `for` loop header that starts at i=0, goes through i=239, and adds 1 to i each time the loop runs
- Blank 6: assigns the value of `gray[i]` to `stroke` (will be a random grayscale color as it will be between 0-255)
- Blank 7: draws a line from `(i, 0)` to `(i, height)`