

QUIZ #1

1. Number variables in Java have several different types – please describe these two below, and why you might use one or the other. (1pt extra credit: can you name two more variable types of any kind?)

Integer (int) – a whole number (no decimal), can be positive or negative
Used where decimal precision is not necessary, such as naming a file or setting the size of a sketch

Floating point (float) – a decimal number, can be positive or negative
Used where more precision is needed, such as to mimic real-world analog values or for smooth movement

String (sequence of characters), char (single character), boolean (true/false), long (big integers), double (big floats).

2. Sketches and shapes in Processing are measured in what unit? Where is the 0,0 origin located? (1pt extra credit: how many pixels per inch on a standard monitor?)

Pixels. The origin is in the upper-left corner.
Extra credit: 72 pixels per inch (ppi) on a standard monitor

3. How is color listed in Processing by default? List both the abbreviation and what it stands for, as well as the number range used. (1pt extra credit: can you name another color model that Processing accepts?)

RGB (red, green, blue) – values from 0-255
Extra credit: HSB (hue, saturation, brightness) or hex color

4. Iteration is a process of incrementing and is key to much of programming. Can you write a for-loop that counts from 0-9, printing the values to the console?

```
for (int i=0; i<10; i+=1) {  
  println(i);  
}
```

Note, we list the terminating statement of `i<10` so it will stop at 9.

5. The other key topic in programming we covered so far is recursion. What are the two requirements of a recursive function? What happens if the function doesn't have the second requirement?

An initial value(s) that are acted on, and an exit condition (also called a "base case") determining when the recursion should stop. Without the exit condition, the function would run forever.

6. Make a drawing (of anything) that shows recursion (can be simple). Briefly describe how it exhibits recursion. (5pts extra credit: can you write a recursive function that counts from 0-9, like the previous question?)

Extra credit:

```
void setup() {  
    count(0);  
}
```

```
void count(int i) {  
    if (i<10) {  
        println(i);  
        count(i+1);  
    }  
}
```

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