

Practice Problems – Functions (chapter 7)

1. // What is printed by this program?

```
void setup() {
  func1(func2(func3(10)));
}
void func1(int x) {
  println("func1 " + x);
}
int func2(int x) {
  println("func2 " +x);
  return func3(2*x);
}
int func3(int x) {
  println("func3 " + x);
  return x*10;
}
```

2. // What goes in the blank?

```
_____ mystery(int x){
  return x*x;
}
```

3. // What does this program print?

```
void setup() {
  int x = 5;
  printVal(x);
  printVal(7);
  println(x);
}
void printVal(int x) {
  println(x);
}
```

4. // What does this program print?

```
int x = 5;
void setup() {
  int z = timesTwo(x);
  println(x);
  println(z);
}
int timesTwo(int y) {
  x = y*2;
  println(x);
  return x;
}
```

5. Design a function, called `distance`, that takes four parameters, all float, and returns a float. The first and second parameters will be the `x` and `y` values of a point, and the third and fourth parameters will be the `x` and `y` values of another point. The function should compute the distance between the first point and second point. You will need to use the Pythagorean theorem in order to compute this distance. Processing provides a function to help us out with this: `sqrt(x)` will compute the square-root of `x`.

6. // How many rows and how many columns will this program have?

```
void setup(){
  for(int i=0; i<6; i++){
    for(int j=0; j<8; j++){
      rect(i*10, j*10, 10, 10);
    }
  }
}
```

7. // What does this program print?

```
void setup(){
  println(mystery(30,20,10));
  println(mystery(20,30,10));
  println(mystery(10,20,30));
}
boolean mystery(int a,int b,int c){
  return a <= b && b <= c;
}
```

8. // What does this program print?

```
void setup() {
  int x = 5;
  int it = x;
  printIt();
  it = 7;
  printIt();
  printIt();
}
int it;
void printIt() {
  println(it);
  it = 0;
}
```

9. // What is printed by the following program?

```
void setup() {
  func1(1);
  func2(2);
  func2(func3(3));
}
void func1(int x) {
  println("func1 " + x);
}
void func2(int x) {
  println("start func2");
  func1(x);
  println("end func2");
}
int func3(int x) {
  println("func3 " + x);
  return x*10;
}
```

10. Write a function that computes x^n (x risen to the power of n). Assume that x and n are both integers and that n is greater than or equal to 0. The function should return xn .

11. What expression goes in the blank so this program draws a red ball when the mouse is to the right of the center and a black ball when the mouse is to the left of center?

```
void draw() {
  background(255);
  drawBall(mouseX, mouseY, _____);
}
void drawBall(int x,int y,boolean red) {
  if (red) {
    fill(255,0,0);
  }
  else {
    fill(0);
  }
  ellipse(x, y, 40, 40);
}
```