These questions similar to those that might appear on a CMPT 166 midterm or final.

If-statements

1. (5 marks) Assume that `a` and `b` are both variables of type `float` that have already been assigned values (but you don't know what those values are). For each of the following questions, **write a boolean expression in the box** that makes the if-statement do what is requested.

   a) Draws a circle just when `a` and `b` have the same value.

```
if (                              ) {
   rect(a, b, 100, 10);
}
```

   b) Draws a circle just when `a` and `b` have *different* values.

```
if (                              ) {
   rect(a, b, 100, 10);
}
```

   c) Draws a circle just when `a` is one more than `b`.

```
if (                              ) {
   rect(a, b, 100, 10);
}
```

   d) Draws a circle just when `a` is 2, and `b` is greater than `a`.

```
if (                              ) {
   rect(a, b, 100, 10);
}
```

e) Draws a circle just when `a` is 7 or `b` is 5.

```
if (                              ) {
   ellipse(250, 250, 100, 100);
}
```

2. (5 marks) In the following questions, assume that `x` is 3 and `y` is 4. For each question, write in the box the word that gets printed (either "frog" or "tiger").

a)
```
if (x == 3 && y != 4) {
  print("tiger");
} else {
  print("frog");
}
```

b)
```
if (x <= 3 || y != 4) {
  print("tiger");
} else {
  print("frog");
}
```

c)
```
if (!(x < 3 && y > 4)) {
  print("tiger");
} else {
  print("frog");
}
```

d)
```
if (!(x != y)) {
  print("tiger");
} else {
  print("frog");
}
```

e)
```
if (!!(x < y)) {
  print("tiger");
} else {
  print("frog");
}
```

Color Mapping

(5 marks) Suppose the screen is 400-by-400 pixels. Write a call to Processing's `map` function that maps `mouseX` to the range [100, 300].

Processing Flow Chart

Draw a flow chart that shows when Processing's `setup()` and `draw()` functions are called. Draw it as neatly as possible, and be sure that all the arrows and boxes are clear.