Exercise Solutions:

1) The function mystery is defined below. What value is returned by mystery(1)? What are all of the possible return values of this function?

```java
int mystery(int x) {
    return min(10, max(0, 2*x));
}
```

mystery(1) returns $\min(10, \max(0, 2)) = \min(10, 2) = 2$.
All possible values are: 0, 2, 4, 6, 8, 10.

2) We’ve written a function that draws a cross. The plot below is the result of calling cross(2, 5, 3, 4). On the same plot, draw the result of calling cross(10, 10, 8, 6).

![Cross drawing](image)

We can infer from the given drawing that the parameters to cross() represent the center x-position, center y-position, width, and height, in that order.

3) Write a Processing function below that computes and returns the average of 3 given numbers.

**Hint:** this function should take three floats as arguments.

```java
float average_of_three(float a, float b, float c) {
    return (a + b + c) / 3;
}
```

4) Write a Processing function below that, when given two coordinates $(x_1, y_1)$ and $(x_2, y_2)$, draws a line segment between the coordinates, places a point at the midpoint, and returns the length of the line segment.

**Hint 1:** The commands sq() and sqrt() compute the square and square root of a number, respectively.

**Hint 2:** What should the data type of the return value be?

```java
float draw_line(int x1, int y1, int x2, int y2) {
    line(x1, y1, x2, y2);
    point((x1 + x2) / 2, (y1 + y2) / 2);
    return sqrt(sq(x1 - x2) + sq(y1 - y2));
}
```