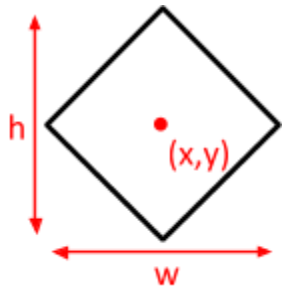
Lecture 10: Input and Output Worksheet **Solutions**

Functions Practice: Diamond

```
void diamond( float x, float y, float w, float h ) {
   beginShape();
      vertex( x,       y - h/2 );
      vertex( x + w/2, y       );
      vertex( x,       y + h/2 );
      vertex( x - w/2, y       );
      vertex( x,       y - h/2 );
   endShape();
}
```



Mouse Example: Drawing Dots

1) Write out the Processing code below to draw a **red** dot (diameter 20) centered on the current mouse position.

```
fill(255, 0, 0);
ellipse(mouseX, mouseY, 20, 20);
```

2) Write out the Processing code below to draw a **blue** dot (diameter 20) centered on the current mouse position.

```
fill(0, 0, 255);
ellipse(mouseX, mouseY, 20, 20);
```

Mouse Example: Rectangle Hover

1) Write out an expression (*i.e.* what would go inside an `if`) that will return `true` if the mouse is currently over the middle half of the canvas both vertically and horizontally.

```
// the following two lines are part of the same expression
(mouseX >= width/4) && (mouseX <= 3*width/4) &&
(mouseY >= height/4) && (mouseY <= 3*height/4)
```

Keyboard Example: Keyboard Dots

```
int position = 0;

void setup() {
  size(400, 100);
  noStroke();
  background(0);
  fill(0);
}

void draw() {
  ellipse(position, 40, 40, 40);
}

void keyPressed() {
  if (key == 'g') {
     fill(0, 255, 0);
  }
  if (key == 'y') {
     fill(255, 255, 0);
  }
  if (key == 'm') {
     fill(255, 0, 255);
  }
  position = position + 50;
}
```

1) What is initially drawn before any key is pressed?

   A *black* circle of diameter 40 at position (0, 40) that you can't see against the black background.

2) What happens if we press `'g'` once after we start the program?

   A *green* circle of diameter 40 is drawn at position (50,40) – `position` has been incremented by 50.

3) What happens if we press `'k'`?

   The fill does not change, but `position` still gets incremented by 50 so a new dot of the same color as the previous one gets drawn to the right.