Drawing in Processing

`line(startX, startY, endX, endY)`
Draws a line from (startX, startY) to (endX, endY).
```
line(0, 0, 5, 5);  line(2, 2, 7, 7);  line(4, 7, 1, 2);
```

`rect(startX, startY, width, height)`
Draws a width x height rectangle with upper left corner at point (startX, startY).
```
rect(0, 0, 5, 5);  rect(2, 2, 5, 5);  rect(1, 2, 3, 5);
```

`ellipse(centerX, centerY, width, height)`
Draws an ellipse of the given width and height centered at point (centerX, centerY).
```
ellipse(2, 2, 4, 4);  ellipse(4, 3, 4, 4);  ellipse(2, 4, 2, 6);
```

`triangle(x1, y1, x2, y2, x3, y3)`
Draws a triangle between points (x1, y1), (x2, y2) and (x3, y3).
```
triangle(0, 0, 0, 5, 5);  triangle(2, 2, 7, 7);  triangle(4, 2, 6, 5, 2, 5);
```
**Color**

Colors are represented by 3 numbers that specify the amount of red, green and blue to mix together. These numbers range from 0 - 255.

In Processing, colors mix like light. For example, 255 of red, 255 of green and 255 of blue makes white. Here are more examples:

- 255, 255, 0 - yellow
- 255, 0, 255 - magenta
- 88, 0, 88 - dark purple
- 0, 0, 0 - black

**background(red, green, blue)**
Changes the background color.

**fill(red, green, blue)**
Changes the current fill color. All future filled shapes will be of this color.

**stroke(red, green, blue)**
Changes the current outline color. All future outlined shapes will be of this color.

**Transparency**

The **fill** and **stroke** commands can also take in a 4th parameter between 0-255 to represent transparency. 255 means fully opaque (not transparent at all) and 0 is fully transparent (invisible!).

**More Drawing Commands**

**noStroke()**
All future shapes will be drawn without an outline.

**strokeWeight(weight)**
All future outlines will be drawn with the specified thickness.

**noFill()**
All future shapes will be drawn without being filled out.

**smooth()**
All future shapes will be drawn smoothly (may slow down drawing speed).
Processing Drawing Challenges

1. The following Processing program contains several errors. Can you find and fix them all?
   
   ```processing
   size 300, 300;
   rect(100 200 40 50);
   lines(100, 200, 140, 250)
   ```

2. In Processing, write code to create a window of size 200 x 150 and draw an 'X' across the entire screen.

3. Draw out the result of running the Processing code on the left in the grid on the right.
   ```processing
   ellipse(7, 7, 9, 12);
   ellipse(5, 5, 4, 4);
   ellipse(9, 5, 4, 4);
   ellipse(5, 5, 1, 1);
   ellipse(9, 5, 1, 1);
   triangle(6, 7, 8, 7, 7, 9);
   ```

4. Write the Processing code that would draw the house shown below. You may find it helpful to start by labeling important coordinates.

   After writing the code on paper, type it into Processing to check your work. Notice that it is very small! How would you scale it up to look larger?