Homework 2.1

1. You are going to create a simple vector image that you will be able to move in 3 dimensions. Using the grid below, create a simple image composed of a line, a triangle and a quadrangle (four sides).
   - Make sure that the center of your image is at position (0, 0).
   - Color your image, taking into consideration that the line color and the fill color of your image can be different.
   - Things you could create: a helicopter, a kite, a boat, a tank, a lamp, a fish

![Grid with axes and coordinates](image)

2. Write down the starting and ending points (x, y) for the line, triangle, and quadrangle.
   - **Line:** \( P1 (____, ____), P2 (____, ____), \)
   - **Triangle:** \( P1 (____, ____), P2 (____, ____), P3 (____, ____), \)
   - **Quad:** \( P1 (____, ____), P2 (____, ____), P3 (____, ____), P4 (____, ____), \)

3. We are going to want to be able to move your image around the screen and we are going to want to be able to make your image larger and smaller without distorting your image. Right now, your image is centered at (0, 0). If we tried to draw your image as it is, most of your image would appear off screen.
   - We are going to add a number (xP) to all x values, which will shift your image in the X plane.
   - We are going to add a number (yP) to all y values, which will shift your image in the Y plane.
Finally we are going to multiply all of your x values and y values by a fraction (sp) which will change how far the points appear from the center of the drawing (change the size).

4. Fill in the function below:

```cpp
void draw_simple_image()
{
    // The Line
    stroke(#__________); // A color for the lines
    strokeWeight(____ * sP); // The thickness of the lines
    fill(#__________); // The color inside the lines
    line(((____ * sP) + xP), ((____ * sP) + yP),
         ((____ * sP) + xP), ((____ * sP) + yP));

    // The Triangle
    stroke(#__________); // A color for the lines.
    strokeWeight(____ * sP); // The thickness of the lines
    fill(#__________); // The color inside the lines
    triangle(((____ * sP) + xP), ((____ * sP) + yP),
             ((____ * sP) + xP), ((____ * sP) + yP),
             ((____ * sP) + xP), ((____ * sP) + yP));

    // The Quadrangle
    stroke(#__________); // A color for the lines
    strokeWeight(____ * sP); // The thickness of the lines
    fill(#__________); // The color inside the lines
    quad(((____ * sP) + xP), ((____ * sP) + yP),
         ((____ * sP) + xP), ((____ * sP) + yP),
         ((____ * sP) + xP), ((____ * sP) + yP),
         ((____ * sP) + xP), ((____ * sP) + yP));
}
```

5. What would be the result (how would the image you drew in step 1) change, if the following values are assigned to the variables xP, yP and sP.

```cpp
xP = 50;
yP = 50;
sP = .5;
```