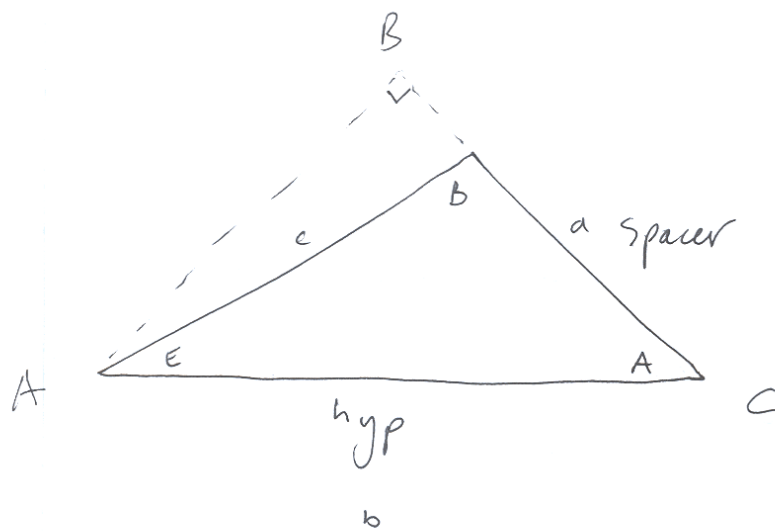


The law of sines



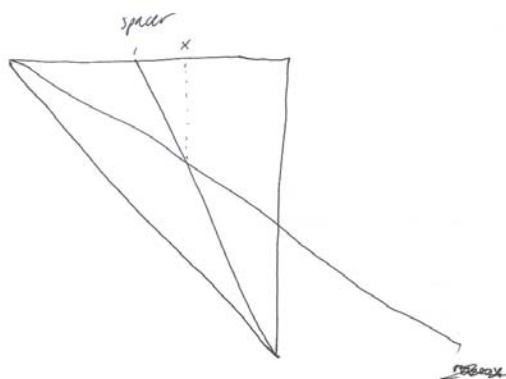
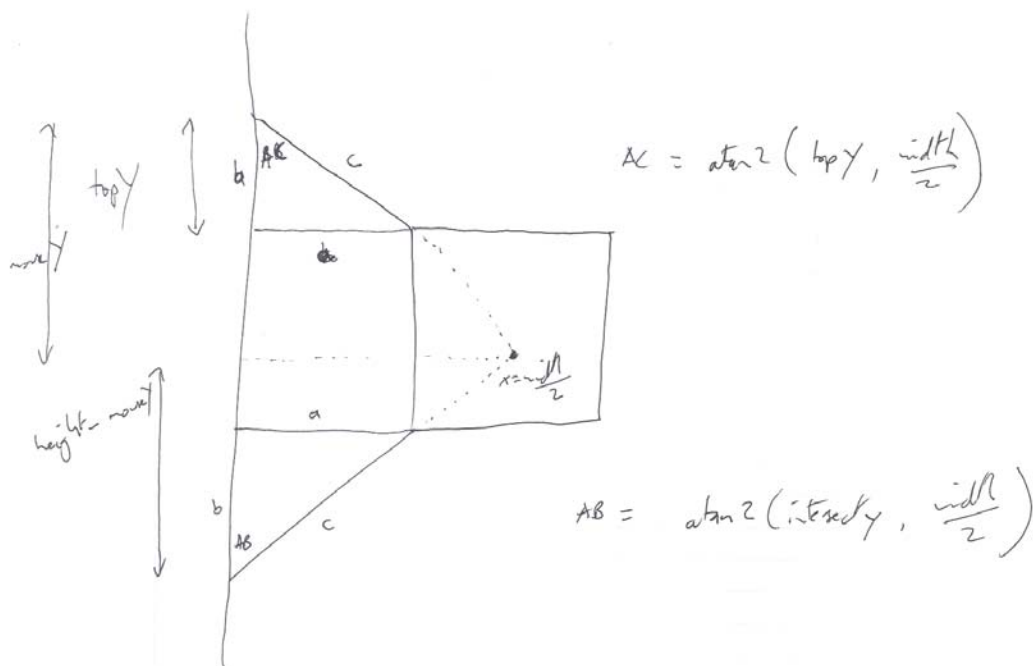
$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

$$\frac{\sin(E)}{\text{spacer}} = \frac{\sin(B)}{\text{hyp}}$$

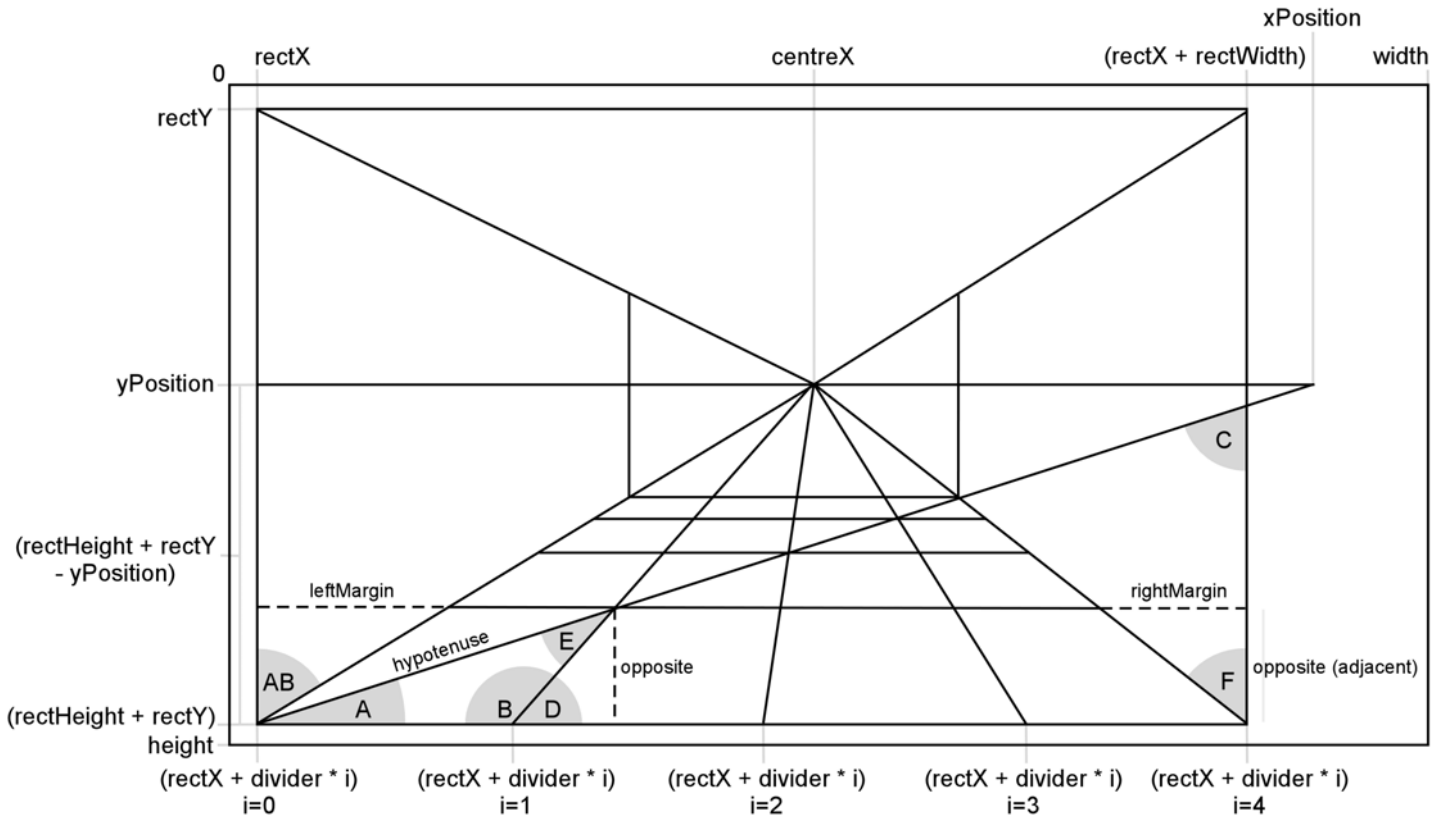
$$\text{hyp} \times \left(\frac{\sin(E)}{\text{spacer}} \right) = \sin B$$

$$\text{hyp} = \frac{\sin B}{\left(\frac{\sin(E)}{\text{spacer}} \right)}$$

Calculating the position of the upper connecting lines



Finalised calculations



$$\text{angleA} = \text{atan2}(\text{rectY} + \text{rectHeight} - \text{yPosition}, \text{xPosition} - \text{rectX})$$

$$\text{angleAB} = \text{atan2}(\text{centreX} - \text{rectX}, \text{rectY} + \text{rectHeight} - \text{yPosition})$$

$$\text{angleF} = \text{atan2}(\text{rectX} + \text{rectWidth} - \text{centreX}, \text{rectY} + \text{rectHeight} - \text{yPosition})$$

$$\text{angleA1} = \text{atan2}(\text{yPosition} - \text{rectY}, \text{centreX} - \text{rectX})$$

$$\text{dividerX} = \text{centreX} - \text{rectX} - \text{divider} * i$$

$$\text{angleD} = \text{atan2}(\text{rectY} + \text{rectHeight} - \text{yPosition}, \text{dividerX})$$

$$\text{angleB} = \text{Pi} - \text{angleD}$$

$$\text{angleE} = \text{Pi} - \text{angleA} - \text{angleB}$$

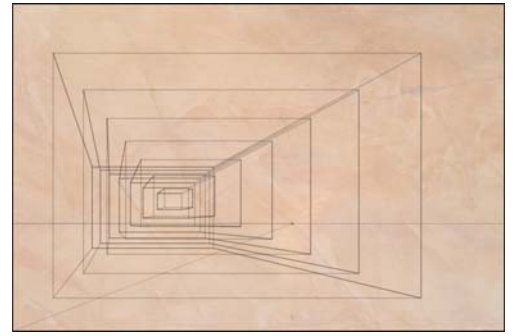
$$\text{hypotenuse} = \sin(\text{angleAB}) / (\sin(\text{angleE}) / (\text{divider} * i))$$

$$\text{opposite} = \sin(\text{angleA}) * \text{hypotenuse}$$

$$\text{leftMargin} = \text{opposite} * \tan(\text{angleAB})$$

$$\text{rightMargin} = \tan(\text{angleF}) * \text{opposite (adjacent)}$$

Boxes within boxes - initial sketch



or $b[i].x + b[i].w/divisions$
 (ie offset by one square)

rect($b[i].x, b[i].y + 0[i].h * 0.1,$
 $b[i].x + b[i].w, b[i].y + b[i].h * 0.9$)

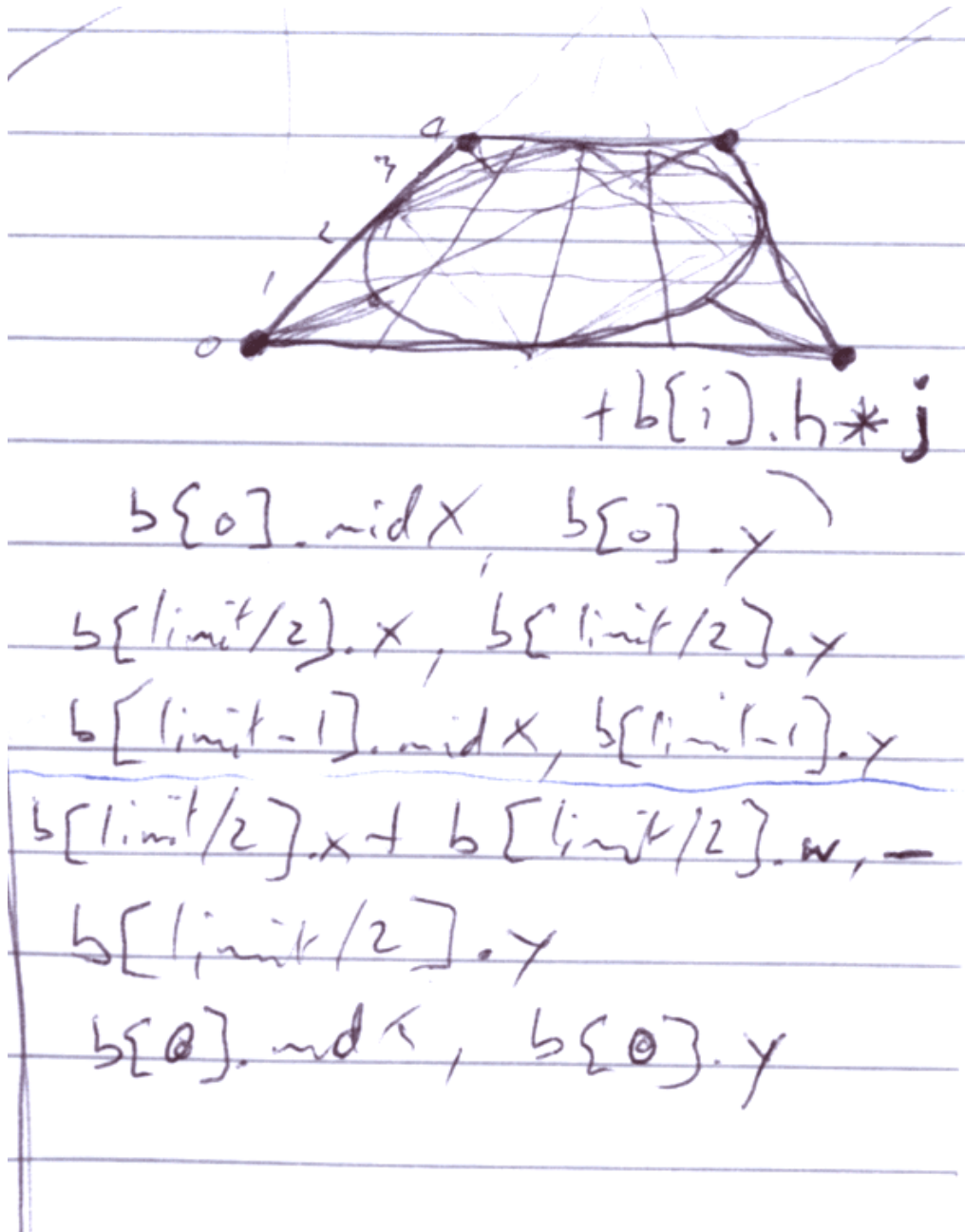
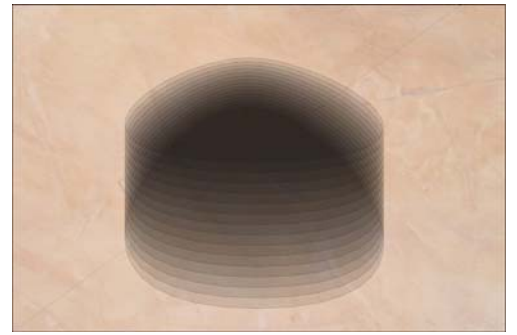
if ($i > (limit-1)/2$) {

rect($b[i].x + (b[i].w/divisions) * i,$ $b[i].mid * ?$
 $b[i].y = (b[i].h/divisions) * i,$
 $b[i].x + b[i].w - (b[i].w/divisions) * i,$
 $b[i].y - b[i].h + (b[i].h/divisions) * i$) ; }

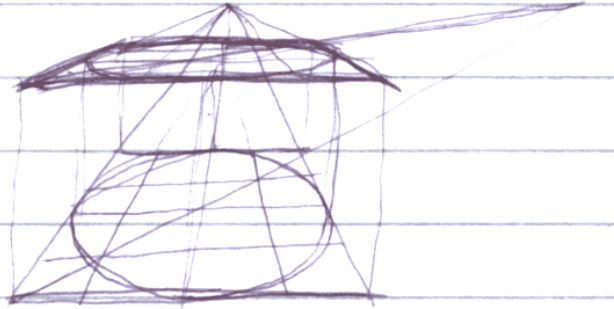
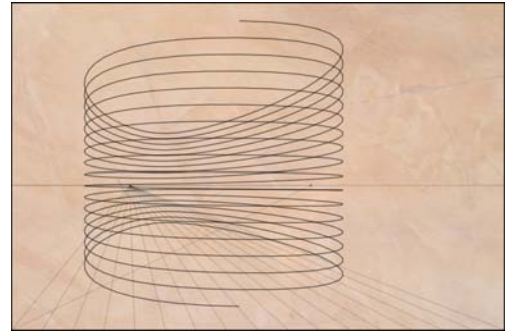
(else if ($i < (limit-1)/2$) { // need to check
 if this will have consistent
 results --

Need to offset based on center x - ie: $b[i].mid * x$

Ellipses (vertical) – initial sketch



Spiral – initial sketch



increase y value of each point to create a spiral.

```
int float foo = 0.05;  
while (foo < 1)  
    b[0].y + b[0].h * foo;  
    foo += 0.05; (height / 20 [increments])  
    b[limit/2].y + b[limit/2].h * foo;  
    foo += 0.05;  
    ... etc.
```