5.1

Matlab Code:

```
Editor – /Users/Alex/Desktop/matlab_files/hw5.m

hw5.m

1    IMG=readjpg('cpl.jpg');
2    size(IMG);
3
4    x = 3000;
5    y = 4000;
6
7    r=zeros(x,y); g=zeros(x,y); b=zeros(x,y);
8    r=IMG(:,:,1); g=IMG(:,:,2); b=IMG(:,:,3);
9
10   rn = r*0.299;
11   gn = g*0.587;
12   bn = b*0.114;
13   Y = rn + gn + bn;
14
15   dispimg(Y)
16
17   diary off
```
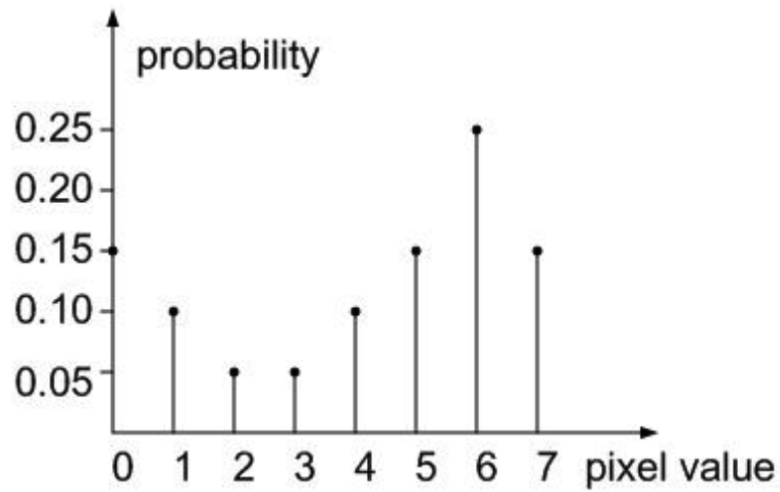
Original Image: Altered Image:

5.2 Given a histogram from an image as shown, use histogram equalization to find a mapping function between input pixel values and output pixel values.

$s_0 = Round\{(8 - 1) * (0)\} = 0$

$s_1 = Round\{(7) * (0.10)\} = 1$

$s_2 = Round\{(7) * (0.10 + 0.05)\} = 1$

$s_3 = Round\{(7) * (0.10 + 0.05 + 0.05)\} = 1$

$s_4 = Round\{(7) * (0.10 + 0.05 + 0.05 + 0.10)\} = 2$

$s_5 = Round\{(7) * (0.10 + 0.05 + 0.05 + 0.10 + 0.15)\} = 3$

$s_6 = Round\{(7) * (0.10 + 0.05 + 0.05 + 0.10 + 0.15 + 0.25)\} = 5$

$s_7 = Round\{(7) * (0.10 + 0.05 + 0.05 + 0.10 + 0.15 + 0.25 + 0.15)\} = 6$

Equalized Chart