1. Z= 20m; f=0.02m; u =4m; v=2m
   1. X = uz/f = (4\*20)/0.02 = 4000m
   2. Y = vz/f = (2\*20)/0.02 = 2000m
2. {5, 3, 5, 4, 4, 4, 10, 4, 5}
   1. Chart, histogram

      Description automatically generatedM =
   2. (40-2)/(10-3)=38/7=5.42

Y=5.42(x-3)+2 = 5.42x-14.42

|  |  |  |
| --- | --- | --- |
| Old Values | New Values | Rounded |
| 3 | 2 | 2 |
| 4 | 7.42 | 7 |
| 5 | 12.84 | 13 |
| 6 | 18.26 | 18 |
| 7 | 23.68 | 24 |
| 8 | 29.1 | 29 |
| 9 | 34.52 | 35 |
| 10 | 39.94 | 40 |
|  |  |  |

* 1. Ans
  2. Chart, histogram

     Description automatically generated
  3. Histogram Stretching is used for enhancing contrast in a picture. More Specifically increasing contrast while histogram equalization enhances contrast.

1. Ans:
   1. Under the file name Prob#3.py
   2. Chart, histogram

      Description automatically generated
   3. Also under file name Prob#3part\_C.py
      1. Chart, bar chart, histogram

         Description automatically generated
2. Ans:
   1. When only displayed the blue channel, the whole picture was only shades of blue. All the other ranges of color(R and G) where absent. Same with the other colors. With the green channel only open and the others set to 0, the picture only had shades of Green. Same observation with Red when all the others where set to zero in the image only shades od red was displayed on the picture.

A picture containing text, display, sign, crowd

Description automatically generated

* 1. As for when we merge the colors back with the cv2.merge the order of which we list the colors matter to get the original picture back the right order to merge is ((b,g,r)) and then you get the original order of colors back.
  2. When doing this any shades of red pixels are eliminated, and therefore blue and green pixels take place of the red pixels

A football player kicking a ball

Description automatically generated with medium confidence

* 1. When merging just ((B,B,B) the image is then turned into a grayscale image.

zA person kicking a football ball

Description automatically generated