**CVI620/ DPS920 Worksheet 2- Digital Images**

1. We have a lens with a focal length of 100mm. How far away from the lens should the sensor be for a sharp (not blurry) image of an object which is 5 meters away from the lens?
2. If the above lens is used in a camera with a maximum aperture of f/4, and the sensor is at 101mm away from the lens, how wide would the circle of confusion be?
3. Would the object be more blurry or less blurry if the aperture was set to f/1.9?

1. For a camera with the maximum aperture of f / 1.9, in which the sensing plane is 106mm away from the lens, how should we adjust the focal length for an object that is 40m away from the camera?
2. How much memory is needed for an image with 1080p HD resolution (i.e. 1920x1080), if
3. Black and white (binary)
4. Grayscale with 256 gray levels
5. RGB color channels, each with 256 colors
6. If the above color image is compressed to 2MB, does it have a lower quality than the original image?