Digital Media E-10: Exposing Digital Photography
Harvard Extension School
Fall 2015

Problem Set 4

Due 11:59PM ET on Thursday, October 29, 2015.
Staff email: staff@dme10.org
Submit this problem set at http://digitalphotography.exposed/submit

By the deadline, type your answers in any word processing application you wish and export your document in Portable Document Format (PDF) for submission. If you prefer, you may write out the problems on a sheet of paper, scan that, and submit the scanned document as a PDF. Before the due date, visit the submission tool to upload to the staff.

1. (5 points) It can take about 30 minutes for your eyes to become completely adjusted to night vision. If you needed a flashlight to illuminate something, what color light would be best to retain your night vision?

2. (5 points) What is bokeh? How do the number of aperture blades of a lens affect it?

3. (5 points) What is the range of depth of field when using the hyperfocal distance?

4. (5 points) How many discrete values are represented by: 8 bits? 1 byte? 16 bits?

5. (5 points) List two reasons why a prime lens might be better than a zoom lens.

6. (5 points) Why is optical zoom preferable to digital zoom?

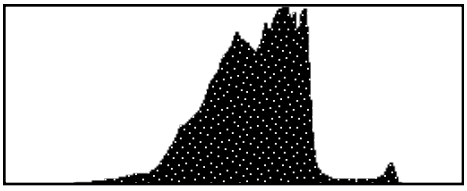
7. (5 points) Will polarizing and haze/UV filters decrease the amount of light entering a lens? Explain why or why not.

8. (5 points) Explain at least three differences between having image stabilization built into a lens and having it built into the camera's sensor. How does it affect cost, the image viewed through the viewfinder, and stabilization quality?

9. (5 points) Name any two situations in which using rear-curtain sync instead of front-curtain sync would be beneficial when taking photos with flash.

10. (5 points) Some flash units have a "high speed sync" mode, which allows a camera to take a photograph with the flash while using a shutter speed that exceeds the X-sync speed, and the photo will not appear with improper light levels. How might this high speed sync mode work?

11. (10 points) Consider the *Luminosity Histogram* on the right. Does it imply that the exposure is correct for the photograph it represents? Explain why or why not.



Luminosity Histogram

12. (10 points) Again, consider the *Luminosity Histogram.* What does it imply about the dynamic range of the scene?

13. (10 points) How does modifying the contrast of an image change the apparent dynamic range of a photograph?

14. (10 points) Consider the histogram to the right ("*RGB Histogram*"). It is an RGB histogram from the same image as the *Luminosity Histogram* above. Explain why it looks so similar to the *Luminosity Histogram*.

RGB Histogram

15. (10 points) Explain the difference between the values that luminosity and RGB histograms measure. What is luminosity? Why should you not rely on only one histogram to understand what is happening in a photograph?