

# Worksheet I

Answer all the problems completely on a separate sheet of paper. Read all the problems closely, and ask if you have any questions on what a problem means. This worksheet is due at the start of class on Mon, Sep 15.

## Problem 1 (2 pts)

What is the luminance (or “brightness”) of a color?

## Problem 2 (10 pts)

Most color displays use three colors. However, **4-color displays** are beginning to appear in televisions and mobile phones.

- (a) Why are most displays built using only three primary colors?
- (b) What would be the advantage of building a display using four colors?
- (c) Most content such as images and videos contains three component colors (RGB). Suppose we want to display an RGB image on a 4-color display. Assume the display colors are Red, Green, Blue, and Yellow. The RGB values for the Yellow are represented by the values (YR, YG, YB). Provide an algorithm or function which, given a color (R, G, B), determines the display colors (Rd, Gd, Bd, Yd). Be sure and explain your algorithm.

## Problem 3 (8 pts)

Give two (2) reasons why the mouse is a better input device than the keyboard. Give two (2) reasons why the keyboard is a better input device than the mouse. Be sure and explain your reasons.

## Problem 4 (5 pts)

Why are computer graphics images always in-focus? What causes images to be out-of-focus in a real camera?