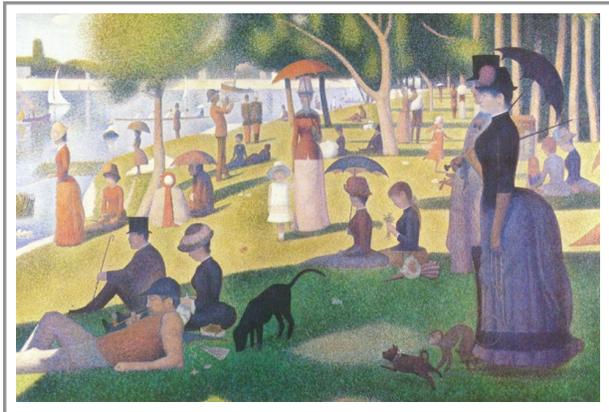


GRADE 11 PHOTOGRAPH-RESOLUTION

The number one thing you can do to improve the quality of your digital images is to understand the concept of *resolution*. Unless you make the right choices about resolution, your images will be a disappointment, no matter how



perfect the setting, or how ideal lighting conditions.

Have you ever seen the painting “A Sunday Afternoon on the Island of La Grande Jatte,” by French artist Georges Seurat? Seurat was a master of a technique known as pointillism, in which scenes are composed of millions of tiny dots of paint, created by dabbing the canvas with the tip of a paintbrush. When you stand across the room from a pointillist painting, the dots blend together, forming a seamless image. Only when you get up close to the canvas can you distinguish the individual dots.

Digital images work something like pointillist paintings. Rather than being made up of dots of paint, however, digital images are composed of tiny squares of

colour known as *pixels*. The term **pixel** is short for **picture element**.

If you magnify an image on-screen you can make out the individual pixels, zoom out on the image and the pixels seem to blend together, just as with the pointillist painting.

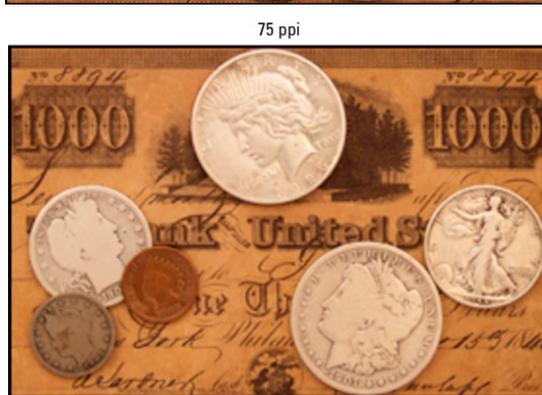
IMAGE RESOLUTION AND IMAGE QUALITY

Every digital image is born with a set number of pixels. Low-end digital cameras typically create images that are 640 pixels wide and 480 pixels tall for example.

Some people use the term **pixel dimensions** to refer to the number of pixels in an image (number of pixels wide, by number of pixels high). Others use the term **image size**, which can lead to confusion because that term is also used to refer to the physical dimensions of the image (inches wide, by inches tall, for example). For our class, we will be using the term **pixel dimension** to refer to the *pixel count* and **image size** to mean *physical dimensions* (4x6, 8x10 etc.)

Resolution refers to the number of pixels per inch (ppi) in your image. Resolution has a major effect on the quality of your image, especially when printed. The more pixels per inch (ppi) the crisper the image, as illustrated on the figures below:

The first image has a resolution of 300 pixels per inch or ppi, the second has a resolution of 150 ppi, and the third has a resolution of 75 ppi.



The image with 300 ppi looks crisp and terrific. When the resolution of the image is reduced to 150 ppi, the image loses some sharpness and detail. Reducing the resolution of the image to 75 ppi results in significant image degradation.

Note: resolution is measured in terms of linear inch, not square inch. So a resolution of 72 ppi means that you have 72 pixels horizontally and 72 pixels vertically, or 5184 pixels for each square inch of image.

Change in pixel size isn't the only reason that lower resolution images look worse than higher resolution images. A pixel can only have one colour. You can't have a pixel that is light blue in one area and dark blue in another. With fewer pixels, you have fewer distinct blocks of colour to represent your scene, which means that the small image details get lost.

ANSWER THE FOLLOWING QUESTIONS:

1. What does the term pixel stand for?
2. What is a pixel?
3. What is the pixel resolution for a typical low-end digital camera?
4. How is a pixel similar to a pointillist painting?
5. Which resolution provides the crispest image?
6. How does lower resolution change an image?
7. What does image size refer to?
8. What does pixel dimension refer to?
9. How many pixels are actually present on a square inch at the resolution of 75 ppi?
10. What resolution do you think is best for print images based on what you have read? Why?
11. What resolution do you think would be best for a web image based on what you have read? Why?