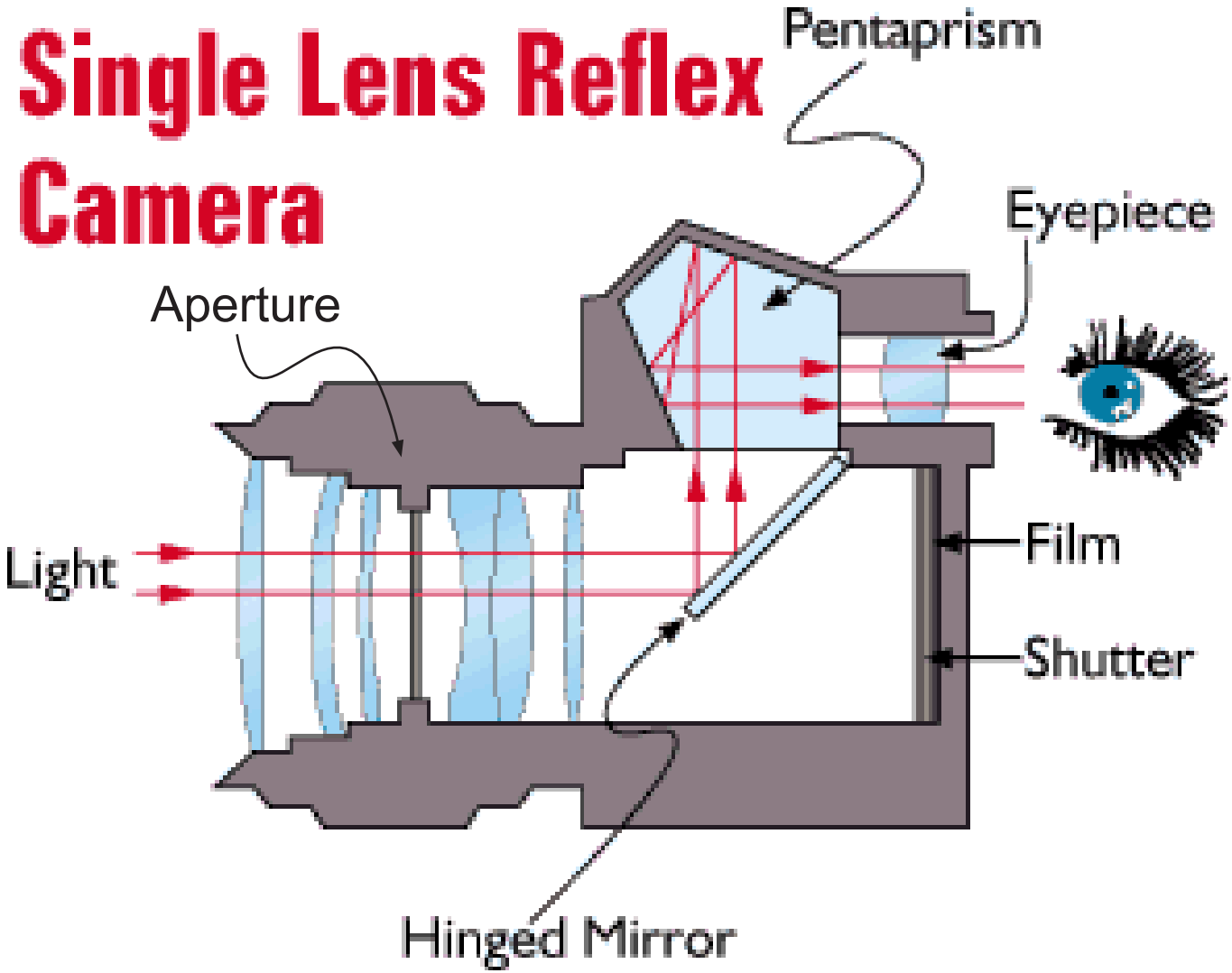
Principles of Digital Photography

Paul Erdman

Single Lens Reflex Camera



General Photography Basics

$$Exposure = Aperture + Shutter\ speed$$

Key Concepts:

- Exposure
- Shutter Speed
- Aperture (fstops, depth of field) LINK
  **the bigger the aperture, the narrower the depth of field*
- Zoom
- Flash (range, effects on exposure)

Digital Photography Basics

Analog and digital cameras are very much alike; the only significant difference is the storage media.

Key Concepts:

- MegaPixels and Image Size
  (width in pixels x height in pixels = 1,000,000 pixels)
- Image Quality
- Image file types (JPG, TIF, RAW)
- Optical vs. Digital zoom

Fundamental Principles of Digital Imaging

1. *The resolution of an image is an indication of how its pixels are distributed.*

Resolution = Pixels (Dots) per Inch

Resolution = Pixels ÷ Size (in inches)

Pixels ÷ Resolution = Size (in inches)

Size (in inches) x Resolution = Pixels

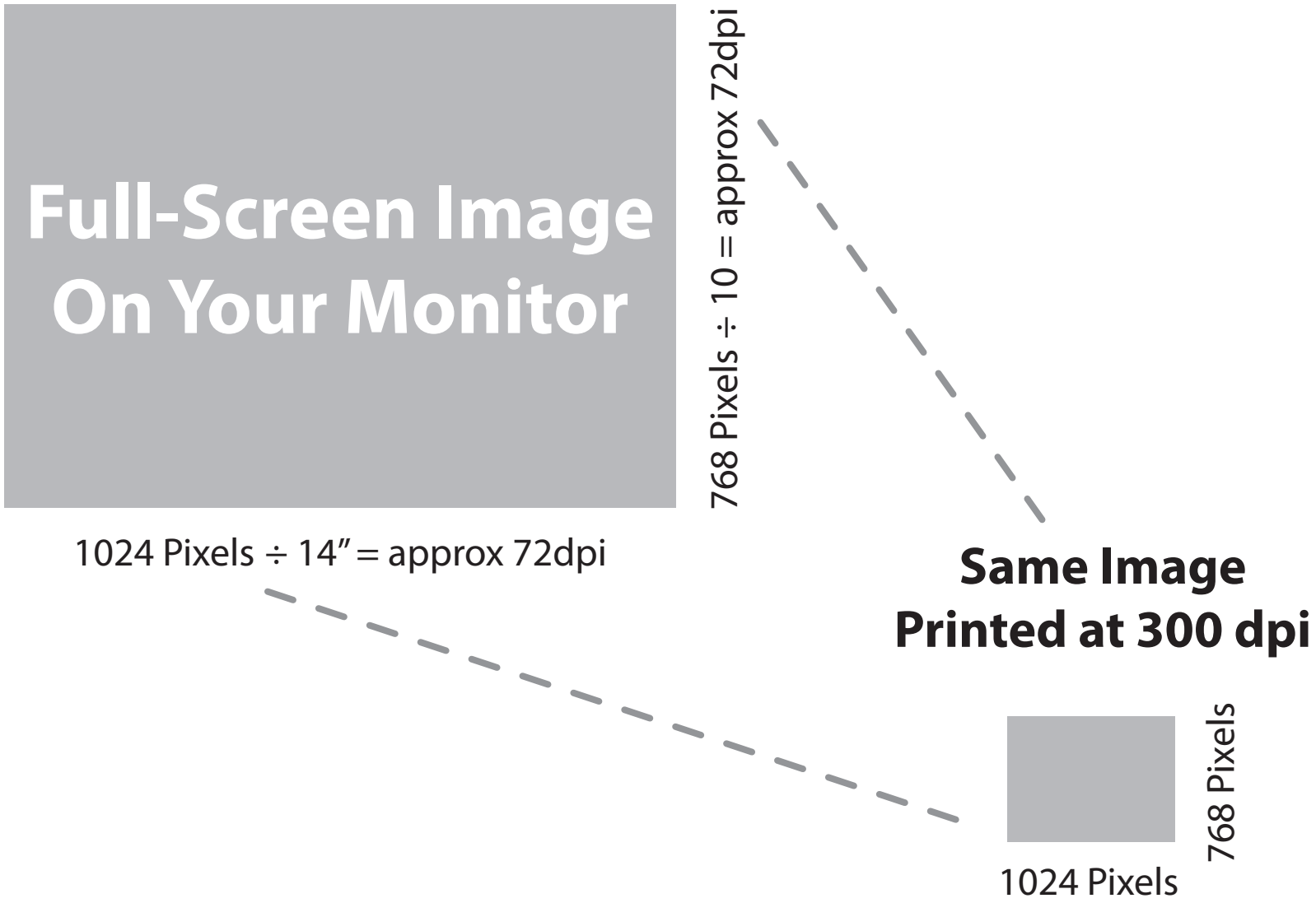
Size (in inches) ÷ Pixels = Resolution

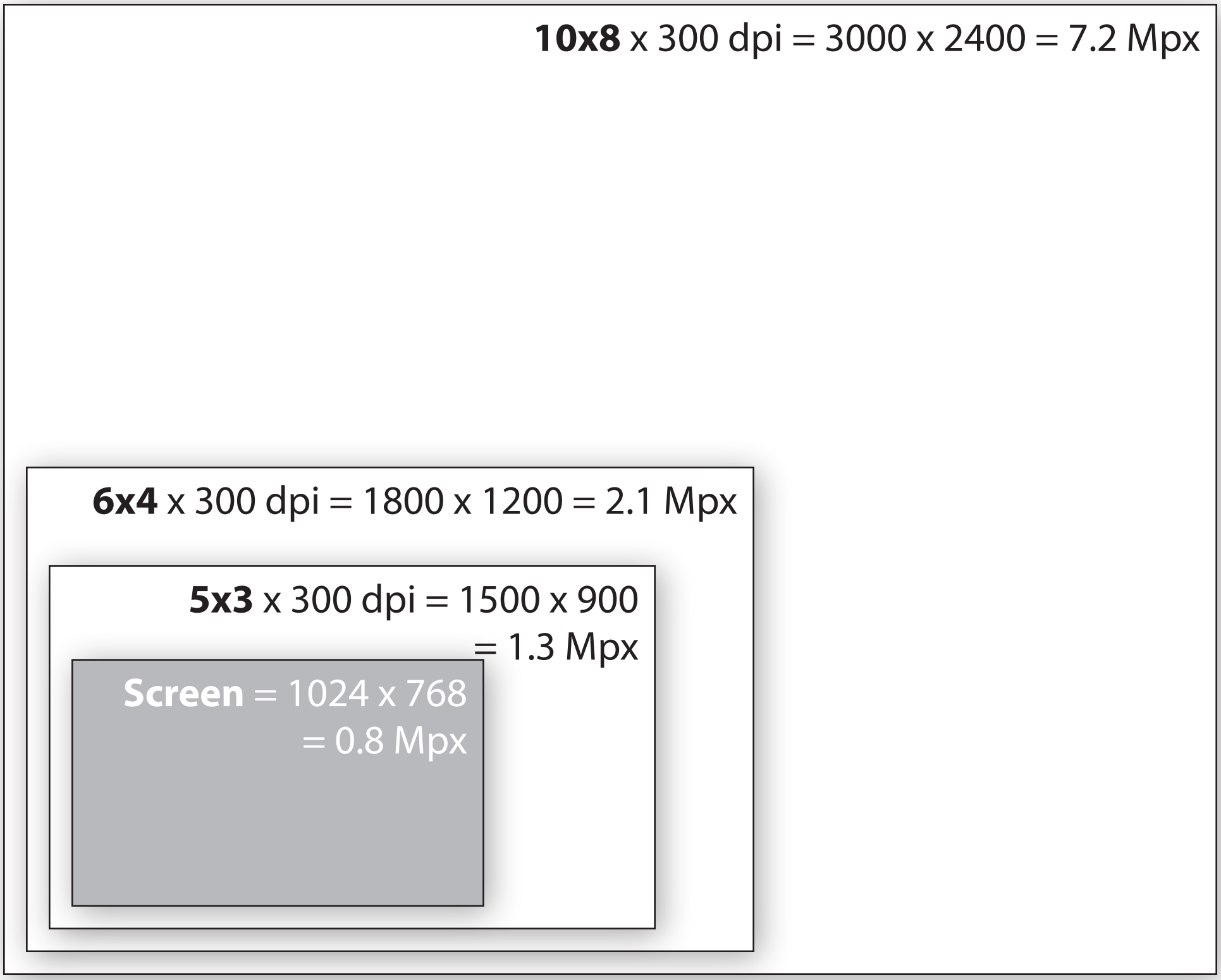
Fundamental Principles of Digital Imaging

2. ***Pixels are sacred*** *— never throw them away, and never invent them from scratch, without first carefully considering the consequences.*

Applying the principle:

- Images for **Screen (72 ppi)** vs. **Print (300 dpi)**: *just because it looks huge on screen doesn't mean you need to make it smaller — especially if you will be printing it at large sizes!*
- You can make it smaller, but you can't make it bigger — at least, *not without inventing or stretching pixels.*


Full-Screen Image
On Your Monitor
768 Pixels ÷ 10 = approx 72dpi
1024 Pixels ÷ 14" = approx 72dpi
Same Image
Printed at 300 dpi
768 Pixels
1024 Pixels


10x8 x 300 dpi = 3000 x 2400 = 7.2 Mpx
6x4 x 300 dpi = 1800 x 1200 = 2.1 Mpx
5x3 x 300 dpi = 1500 x 900
= 1.3 Mpx
Screen = 1024 x 768
= 0.8 Mpx

Saving Your Work

Beware of the lossy JPG!

**Always save your work in a format that will NOT throw away data*

Advantages of PSD

TIFs as a non-PhotoShop alternative

Organizing Your Images

The key to organizing your images is putting them where you can find them again!

Different Approaches:

- Folders by date taken
- Folders by topic (client, subject matter, etc.)

Using software-based vs. system-based organization:
Many cameras, scanners, and software packages come with proprietary image organization tools which can actually make finding your images more difficult!

Backing up Your Data

Periodically burn a CD (or use some other proper back-up technology) of your important personal data, including your images. This protects your work in case of hard drive failure or accidental deletion.

Also, consider saving different versions of your work. Particularly, before making major changes to an image, consider using "Save As" and changing the name.

Printing your Work

Remember the Principles of Digital Imaging!

**If you spread your pixels to thin, you start to see them!*

Destructive vs. Non-Destructive Image Editing

Using Layers, it is possible to made significant changes to your image without ever changing the original. This is referred to as "non-destructive editing."

Repurposing Images

Always keep your original at the largest size you will ever need it to be.

- Keep your original, with all layers intact, in case you need to edit it in the future.
- Use "Save for Web" to make small-file-size JPG versions to send people, or a high-quality JPG for print.

**Typically, only people with Adobe PhotoShop or PSE will be able to open your PSD files. Usually you will want to send people JPGs.*