# GRAPHIC RESOLUTION AND FILE SIZES

Graphic quality is measured by an image's height and width in pixels, and the number of colors that make up each pixel (referred to as bit-depth). These factors determine an image's resolution and file size. DPI (dots per inch, or pixels per inch) also determines an image's resolution, but does not effect the image's file size. All multimedia images for display on a monitor have a DPI of 72.

The higher an image's bit-depth, the better the image quality. Higher quality graphics have larger files. Lower bit-depth graphics often are lower in image quality. Lower quality graphics yield smaller graphic file sizes.

**ALL GRAPHICS ARE 72 DPI (dots per inch)**

SMALLER DIMENSION → LARGER DIMENSION

| | | | COMMON GRAPHIC DIMENSIONS (WIDTH X HEIGHT) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | BIT DEPTH | NUMBER OF COLORS | 32 x 32 | 160 x 120 | 240 x 180 | 320 x 240 | 640 x 480 | 1,024 x 768 |
| LOWER QUALITY ↓ | 1 | 2 | 0.13 K | 2.34 K | 5.27 K | 9.38 K | 37.5 K | 96 K |
| | 2 | 4 | 0.25 K | 4.69 K | 10.55 K | 18.75 K | 75 K | 192 K |
| | 4 | 16 | 0.5 K | 9.38 K | 21.09 K | 37.5 K | 150 K | 384 K |
| | 8 | 256 | 1 K | 18.75 K | 42.19 K | 75 K | 300 K | 768 K |
| | 16 | 65,536 | 2 K | 37.5 K | 84.38 K | 150 K | 600 K | 1,536 K |
| HIGHER QUALITY ↓ | 24 | 16,777,216 | 3 K | 56 K | 126.56 K | 225 K | 900 K | 2,304 K |

ACCEPTABLE QUALITY FOR MOST MULTIMEDIA PROJECTS

GRAPHIC FILE SIZE FORMULA:
( ( HEIGH IN PIXELS * WIDTH IN PIXELS * BIT DEPTH ) / 8 ) / 1,024 = GRAPHIC FILE SIZE IN KILOBYTES

An acceptable quality level for most multimedia projects is an image whose resolution is 8-bit at any size. This resolution is commonly used because the visual quality is acceptable, the file doesn't take up much space on a hard drive, and the file is small enough to load into RAM quickly. At this resolution, images using default palettes are often visually acceptable but contain some pixel dithering. (Pixel dithering approximates needed colors that can't be found in the image's palette). An image using a custom color palette, or a palette that is made up of an optimal 265 colors, can look almost as good as higher bit-depth images, but without the file size overhead.

Most Shockwave movies that play over the Internet tend to rely on a 8-bit graphics or graphics with lower bit-depths. These resolutions work well when used carefully because they don't create huge file sizes, and thus speed download times.