Characteristic curves

Characteristic curves

- Graphed to show the relationship between exposure and density
- Curve represents given conditions - record materials, exposures, and equipment

Three parts

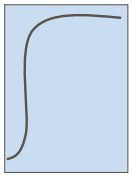
- Toe - represents shadow areas of the original
- Straight-line portion - used to determine the contrast of the film by representing the midtone values
- Shoulder - highlights of the original

Contrast

- Angle of straight-line portion defines contrast, or gamma
- Greater the angle, the greater the contrast
- 45^0 angle indicates a perfect match betweens tones of original and film

Line negatives

- The higher the gamma, the higher the contrast.
- Line negative
  - Steps 1-4 black
  - Step 5 gray
  - Steps 6-12 clear
  - Results in a very steep curve



Plotting

- Density of the original on the horizontal
- Density of the negative on the vertical

Table of Densities

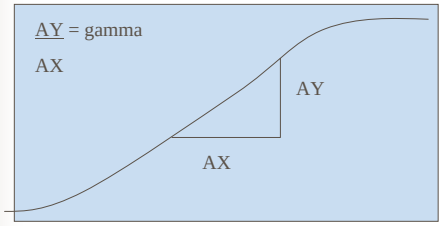
Density of Step #	Original Dens.	Density of Test
1	.08	2.20
2	.27	2.13
3	.41	2.03
4	.57	1.94

Plotting

- Key points into Excel
- Computer draws a curve between the points
- Determine Gamma
  - contrast represented by the slope of the straight line portion

$$\text{Gamma} = \frac{\text{vertical distance}}{\text{horizontal distance}} \quad \frac{AY}{AX} \quad \frac{.62}{.63} = .98$$

Halftone plots



Varying Results

- Vary exposure times
  - Main
  - Flash

Reading densities

- Click on the X-Key icon
  - Click on Connect in the X-Key window
- Open Excel – spreadsheet software
  - Open 680-B or 670-D file on the desktop
- Click in the top space in column 2
  - Read densities on the negative, step 1-12
- Save to YOUR disk, DO NOT overwrite the desktop file

Plotting in Excel

- Go to the lab and open your file
- Insert, Chart or Chart icon in menu bar
  - Wizard opens
  - Choose “XY (Scatter)”
  - Sub-type – Scatter with data points connected by smoothed lines.

Plotting curves

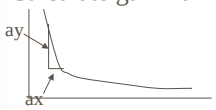
- Click Next
  - You will see a plotted curve
  - If not, click and drag to hilite your numbers
- Click Next
  - You will see the curve with 5 tabs above
- Under Titles
  - Name the chart
  - Label X as Grayscale and Y as Negative

Plotting curves

- Click gridlines
  - Check Major gridlines in X and Y
- Click data labels
  - Click show value
- Click next
- Object in sheet should be checked
- Click Finish

Before you Print!

- Move chart closer to #’s
- Print
  - Page 1-1
  - Printing all will give a nearly blank sheet
- Calculate gamma



$\frac{AY}{AX} = \text{gamma}$